CITY OF CAMBRIDGE, MASSACHUSETTS

PLANNING BOARD

CITY HALL ANNEX, 344 BROADWAY, CAMBRIDGE, MA 02139

SPECIAL PERMIT APPLICATION • COVER SHEET

In accordance with the requirements of the City of Cambridge Zoning Ordinance, the undersigned hereby petitions the Planning Board for one or more Special Permits for the premises indicated below.

Location of Premises: 110 Fawcett Street, Cambridge, MA

Zoning District: MMOD-1, AOD-2, and underlying IB-2

Applicant Name: Cardiac Arrhythmia Syndromes Foundation (CAS Foundation)

Applicant Address: 9 Bartlet Street, #335, Andover, MA 01810

Contact Information: 978-474-8008 Jvining@thecasfoundatic

Telephone # Email Address Fax #

List all requested special permit(s) (with reference to zoning section numbers) below. *Note that the Applicant is responsible for seeking all necessary special permits for the project. A special permit cannot be granted if it is not specifically requested in the Application.*

Special Permit from Planning Board to permit a Registered Marijuana Dispensary use in the Medical Marijuana Overlay District -1(20.700) in the Alewife Overlay District-2 with a base zoning of Industrial B2 (Section 4.35).
Special Permit from the Planning Board to permit construction/remodel in a Flood Plain Overly District (20.73)

List all submitted materials (include document titles and volume numbers where applicable) below.

1. Application Forms
   (Cover Sheet, Dimensional Form, Ownership Certificate, Fee Schedule)
2. Project Narratives
3. Project Plans and Illustrations
4. Certifications of Other Agency Review

Signature of Applicant:

For the Planning Board, this application has been received by the Community Development Department (CDD) on the date specified below:

Date Signature of CDD Staff

DIMENSIONAL FORM

Project Address: 110 Fawcett Street, Cambridge **Application Date:**

	Existing	Allowed or Required (max/min)	Proposed
Lot Area (sq ft)	11136	5000	11136
Lot Width (ft)	31.38	50	31.38
Total Gross Floor Area (sq ft)	4740	8352	4740
Residential Base			
Non-Residential Base	4740	8352	4740
Inclusionary Housing Bonus			
Total Floor Area Ratio	0.42	0.75	0.42
Residential Base			
Non-Residential Base	0.42	0.75	0.42
Inclusionary Housing Bonus			
Total Dwelling Units			
Base Units			
Inclusionary Bonus Units			
Base Lot Area / Unit (sq ft)			
Total Lot Area / Unit (sq ft)			
Building Height(s) (ft)	26	70	26
Front Yard Setback (ft)	Existing	15	Existing
Side Yard Setback (specify) (ft)	Existing	0	Existing
Side Yard Setback (specify) (ft)	Existing	0	Existing
Rear Yard Setback (ft)	3’	0	3’
Open Space (% of Lot Area)	7.6	15	17
Private Open Space	7.6	0	7.6
Permeable Open Space	7.6%	25	17
Other Open Space (Specify)		0	
Off-Street Parking Spaces	N/A	7.9/5.3	8
Long-Term Bicycle Parking	N/A	0.1 per 1000= 1	4
Short-Term Bicycle Parking	N/A	0.6 per 1000= 3	6
Loading Bays	1	B2 less than 10000= 0	0

Use space below and/or attached pages for additional notes:

OWNERSHIP CERTIFICATE

Project Address: 110 Fawcett Street **Application Date:**

This form is to be completed by the property owner, signed, and submitted with the Special Permit Application:

I hereby authorize the following Applicant: Cardiac Arrhythmia Syndromes Foundation (CAS Foundation)

at the following address: 9 Bartlet Street, Andover, MA 02820

to apply for a special permit for: Registered Medical Marijuana Dispensary (RMD)

on premises located at: 110 Fawcett Street

for which the record title stands in the name of: Belam Realty, LLC

whose address is: 15 Ward Street, Somerville, MA 02143

by a deed duly recorded in the:

Middlesex South Registry of Deeds of County: Book: 42860 Page: 396

OR Registry District of the Land Court, Certificate No.: Book: Page:

Jonah Jacob MANAGER

Signature of Land Owner (If authorized Trustee, Officer or Agent, so identify)

Jonah H. Jacob, Manager

To be completed by Notary Public:

Commonwealth of Massachusetts, County of Middlesex

The above named Jonah H. Jacob personally appeared before me,

on the month, day and year 09/03/16 and made oath that the above statement is true.

Notary: E. Peter Mullane

My Commission expires: 09/01/17

E. PETER MULLANE
NOTARY PUBLIC
COMMONWEALTH OF MASSACHUSETTS
My Comm. Expires Sept. 1, 2017

Project Address: 110 Fawcett Street, Cambridge **Application Date:**

The Applicant must provide the full fee (by check or money order) with the Special Permit Application. Depending on the nature of the proposed project and the types of Special Permit being sought, the required fee is the larger of the following amounts:

- If the proposed project includes the creation of new or substantially rehabilitated floor area, or a change of use subject to Section 19.20, the fee is ten cents ($0.10) per square foot of total proposed Gross Floor Area.
- If a Flood Plain Special Permit is being sought as part of the Application, the fee is one thousand dollars ($1,000.00), unless the amount determined above is greater.
- In any case, the minimum fee is one hundred fifty dollars ($150.00).

Fee Calculation

New or Substantially Rehabilitated Gross Floor Area (SF): 4748	× $0.10 = $475	
Flood Plain Special Permit	Enter $1,000.00 if applicable:	
Other Special Permit	Enter $150.00 if no other fee is applicable:	
TOTAL SPECIAL PERMIT FEE	**Enter Larger of the Above Amounts:**	$475

CITY OF CAMBRIDGE, MASSACHUSETTS

PLANNING BOARD

CITY HALL ANNEX, 344 BROADWAY, CAMBRIDGE, MA 02139

CERTIFICATION OF RECEIPT OF PLANS
BY CITY OF CAMBRIDGE TRAFFIC, PARKING & TRANSPORTATION

City Department/Office:	Traffic, Parking & Transportation
Project Address:	110 Fawcett Street, Cambridge
Applicant Name:	Cardiac Arrhythmia Syndromes Foundation (CAS Foundation)

For the purpose of fulfilling the requirements of Section 19.20 and/or 6.35.1 and/or 5.28.2 of the Cambridge Zoning Ordinance, this is to certify that this Department is in receipt of the application documents submitted to the Planning Board for approval of a Project Review Special Permit for the above referenced development project: (a) an application narrative, (b) small format application plans at 11" x 17" or the equivalent and (c) Certified Traffic Study. The Department understands that the receipt of these documents does not obligate it to take any action related thereto.

Signature of City Department/Office Representative **Date**

CITY OF CAMBRIDGE, MASSACHUSETTS

PLANNING BOARD

CITY HALL ANNEX, 344 BROADWAY, CAMBRIDGE, MA 02139

CERTIFICATION OF RECEIPT OF PLANS
BY CITY OF CAMBRIDGE DEPARTMENT OF PUBLIC WORKS

City Department/Office: Department of Public Works

Project Address:	110 Fawcett Street, Cambridge
Applicant Name:	CAS Foundation

For the purpose of fulfilling the requirements of Section 19.20 of the Cambridge Zoning Ordinance, this is to certify that this Department is in receipt of the application documents submitted to the Planning Board for approval of a Project Review Special Permit for the above referenced development project: (a) an application narrative and (b) small format application plans at 11" x 17" or the equivalent. The Department understands that the receipt of these documents does not obligate it to take any action related thereto.

Signature of City Department/Office Representative **Date**

CITY OF CAMBRIDGE, MASSACHUSETTS

PLANNING BOARD

CITY HALL ANNEX, 344 BROADWAY, CAMBRIDGE, MA 02139

CERTIFICATION OF RECEIPT OF PLANS BY CITY OF CAMBRIDGE TREE ARBORIST

City Department/Office:	Tree Arborist
Project Address:	110 Fawcett Street, Cambridge
Applicant Name:	CAS Foundation

For the purpose of fulfilling the requirements of Section 4.26, 19.20 or 11.10 of the Cambridge Zoning Ordinance, this is to certify that this Department is in receipt of the application documents submitted to the Planning Board for approval of a MultiFamily, Project Review or Townhouse Special Permit for the above referenced development project: a Tree Study which shall include (a) Tree Survey, (b) Tree Protection Plan and if applicable, (c) Mitigation Plan, twenty one days before the Special Permit application to Community Development.

Signature of City Department/Office Representative **Date**

CITY OF CAMBRIDGE, MASSACHUSETTS

PLANNING BOARD

CITY HALL ANNEX, 344 BROADWAY, CAMBRIDGE, MA 02139

CERTIFICATION OF RECEIPT OF PLANS
BY CITY OF CAMBRIDGE WATER DEPARTMENT

City Department/Office:	Water Department
Project Address:	110 Fawcett Street, Cambridge
Applicant Name:	CAS Foundation

For the purpose of fulfilling the requirements of Section 19.20 of the Cambridge Zoning Ordinance, this is to certify that this Department is in receipt of the application documents submitted to the Planning Board for approval of a Project Review Special Permit for the above referenced development project: (a) an application narrative and (b) small format application plans at 11" x 17" or the equivalent. The Department understands that the receipt of these documents does not obligate it to take any action related thereto.

Signature of City Department/Office Representative **Date**

CITY OF CAMBRIDGE, MASSACHUSETTS

PLANNING BOARD

CITY HALL ANNEX, 344 BROADWAY, CAMBRIDGE, MA 02139

CERTIFICATION OF RECEIPT OF PLANS BY CITY OF CAMBRIDGE LEED SPECIALIST

City Department/Office:	Not applicable (under 25,000 sf)
Project Address:	110 Fawcett Street, Cambridge
Applicant Name:	CAS Foundation

For the purpose of fulfilling the requirements of Section 22.20 of the Cambridge Zoning Ordinance, this is to certify that this Department is in receipt of the application documents submitted to the Planning Board for approval of a Special Permit for the above referenced development project: (a) an application narrative, (b) small format application plans at 11" x 17" or the equivalent and (c) completed LEED Project Checklist for the appropriate LEED building standard, accompanying narrative and affidavit. The Department understands that the receipt of these documents does not obligate it to take any action related thereto.

Signature of City Department/Office Representative **Date**

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The CAS Foundation, Inc.

RMD Project General Narrative – 110 Fawcett Street

The CAS Foundation, Inc. (CAS) respectfully offers this narrative, the application, and supporting materials to the Planning Board of the City of Cambridge after careful examination of its Special Permit requirements in a manner that aims to demonstrate that CAS will consistently meet its obligations. We have made every effort to plan and design a facility that meets or exceeds all requirements and to establish a dispensary that is consistent with the character and needs of the City of Cambridge and its citizens.

The proposed CAS Foundation, Inc. (CAS) Registered Marijuana Dispensary facility consists of a free-standing 4,650-square-foot building located at 110 Fawcett Street in Cambridge. The building is serviced by adjacent parking as well as additional designated satellite parking directly across Fawcett Street. This site is located within the existing Medical Marijuana District 1, (MMD-1), located in the Alewife area. CAS secured this site after investing significant effort and resources to comply with the MMD-1 zoning. The CAS Foundation strictly adheres to and satisfies the provisions of the Medical Marijuana Overlay district section 20.700 of the Cambridge Zoning Ordinance and Map.

The building located at 110 Fawcett Street is a corrugated metal warehouse. As noted above, there is ample parking available for patients, staff, and administration. Staff parking spaces are being leased behind 115 Fawcett Street. This structure will undergo extensive exterior and interior reconstruction and will be equipped with areas of ingress and egress on Fawcett Street. The majority of the space will be used as a retail Registered Marijuana Dispensary (RMD), while a small portion will be devoted to office space (to be occupied by administrative staff). Our plans include a secure storage vault room within which we will use a storage safe that will consist of a GSA approved 13 cubic foot, drill-resistant, steel-plated safe with keypad access and anchored to the floor.

Once the build-out is completed, this site will be outfitted with state-of-the-art patient access and security functions. All security measures will be in compliance with 105 CMR 725.110. The building will be outfitted with surveillance cameras, silent and audible alarms, motion detectors, and real-time remote monitors. The steel entry doors will be equipped with an electronic control access system and will be controlled by keycard locks that create an audit trail. The on and off-site parking will be monitored by surveillance cameras enabled to pan, tilt, and zoom. The parking lots and perimeter of the facility will be amply lit with warning and surveillance signs. All exterior areas of the property and the appropriate adjacent area will be

under video (with audio) surveillance twenty-four hours a day, with live monitoring – seven days a week, and every day of the year.

The retail dispensing area will include: (1) an entry trap where patients will demonstrate that they are current registrants in the Department of Public Health (DPH) Medical Marijuana Program in order to gain access to the facility; (2) a reception/waiting area; (3) a dispensing area; (4) a sales and transaction area; (5) a packaged products fulfillment area that is separate and secure from the dispensing area where patient orders will be filled. Products will be packaged in child-proof containers, and labeled with important health and safety information; and (6) an exit trap to allow for secure exit from the facility. The build out will also include the construction of a secure storage area and an office/administrative area. CAS has secured provisional approval from MDPH for a cultivation site located in Fitchburg. The Fawcett Street site will not conduct any activities related to marijuana cultivation or product manufacturing.

Zoning Relief Requested

The Applicant, CAS, requests the following relief under the Cambridge Zoning Ordinance:

1. Generally applicable special permit criteria pursuant to section 10.43 of the Ordinance;
2. Special permit relief pursuant to Section 20.700 of the Ordinance.
3. Curb Cut requires NO relief. Curb cuts are allowed once per 100 feet of frontage. Property has 220 feet of frontage, thus the second curb cut is by right and shall be permitted through DPW and ultimately approved by the City Council.
4. Flood Plain 100 year elevation: project shall be located above the 100 year FEMA Flood Zone AE-7 (see attached Joyce Consulting Group Flood Plain Narrative Memo). All Planning Board criteria for Special Permit (Sections 20.74 for procedures and 20.75 for the criteria) shall be met.

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Generally Applicable Criteria for Approval of a Special Permit

Pursuant to section 10.43 of the Cambridge Zoning Ordinance, special permits will normally be granted where provisions of this Ordinance are met, except when particulars of the location or use, not generally true of the district or of the uses permitted in it, would cause granting of such permit to be to the detriment of the public good because:

a. It appears that requirements of this Ordinance cannot or will not be met.

With the requested Special Permit, the Project will meet all requirements of the Ordinance.

b. Traffic generated and or patterns of access or egress would cause congestion, hazard, or substantial change in established neighborhood character.

Traffic generated and patterns of access or egress will not cause congestion, hazard, or substantial change in the established neighborhood character. The MMD-1 was created in this area due, in part, to its historically industrial nature; although, the area is in somewhat of a transition period, our establishment will be consistent with both the established and emerging character of the neighborhood. Moreover, the retail space is less than 5,000 sf, with a portion of that dedicated to administrative use, office space, and storage. The facility will be equipped, after build-out, with a large lobby and waiting area to prevent registered patients from loitering outside the facility (which will be strongly discouraged). Upon entry patients pass through a mantrap into an ample waiting room which will allow patients to be inside and learn about products while awaiting their turn to enter the sales area consisting of private consultation booths where transactions take place. Educational and instructional materials will be available as well as information about dosage, abuse and resources for help.

Additionally, the Alewife MBTA station is nearby, the area is served by bus routes, and there is ample on-site and satellite parking available to patients, staff, and administration. The site will also include bicycle parking. For additional information regarding transportation impacts, see the Transportation Memorandum by Howard Stein Hudson Associates, included herewith.

c. The continued operation of or the development of adjacent uses as permitted in the Zoning Ordinance would be adversely affected by the nature of the proposed use, or

The proposed use is retail only, with an emphasis on patient care. As such, there are no applicable adjacent uses that will be developed or adversely affect the nature of the proposed use. CAS has received provisional approval for a cultivation and processing site in Fitchburg. There will be no cultivation or processing activities of any type occurring at the proposed CAS RMD. In addition, the building proposed to site the CAS RMD is located on a lot that borders the railway and is sufficiently removed from the neighboring industrial buildings.

d. Nuisance or hazard would be created to the detriment of the health, safety and/or welfare of the occupant of the proposed use or the Citizens of the City, or

No nuisance or hazard will be created that will affect the health, safety, or welfare of the occupant of the proposed use or the Citizens of the City. Eighty percent of the Citizens of Cambridge voted to support the ballot initiative, which allowed Medical Marijuana dispensaries in the Commonwealth. Moreover, since Cambridge adopted its zoning in 2013, CAS is the only applicant that has received a Provisional Certificate of Registration for a Cambridge dispensing facility within the MMD-1 from MPDH.

e. For other reasons, the proposed use would not impair the integrity of the district or adjoining district, or otherwise derogate from the intent and purpose of this Ordinance, and;

The proposed Dispensary will not impair the integrity of the District or the adjoining district because it is located within the MMD-1 and its use will not be apparent to the public way. Additionally, the floor plan allows for registered patients to quickly and safely enter the facility and remain in a waiting/consulting/educational area until they are assisted by a dispensary agent. Finally, the overall security plan, which incorporates Crime Prevention through Environmental Design techniques, provides a proven approach to safe and efficient entry and egress and establishes significant deterrent measures to prevent any noticeable nuisances associated with this emerging industry from occurring.

f. The new use or building construction is inconsistent with the Urban Design Objectives set forth in Section 19.30.

The building construction and proposed use is consistent with the Urban Design Objectives set forth in Section 19.30. The CAS Foundation has invested considerable time and resources to design a facility that will complement and improve the aesthetics of the surrounding neighborhood. The design will shield from the public view the entirety of the sales area and regulated materials. The proposed lighting and security measures will be sensitively placed to provide a safe yet unobtrusive means of surveillance; the appropriate and most sensitive portions of the building and building site. In addition, the design and use of the proposed facility will be consistent with and maintain the form and character desirable for new development in the neighborhood.

20.705 Special Permit Criteria.

20.705 Special Permit Criteria. In granting a special permit for a Registered Marijuana Dispensary, in addition to the general criteria for issuance of a special permit as set forth in Section 10.43 of this Ordinance, the Planning Board shall find that the following criteria are met:

a. The Registered Marijuana Dispensary ("RMD") is located to serve an area that currently does not have reasonable access to medical marijuana, or if it is proposed to serve an area that is already served by other Registered Marijuana Dispensaries, it has been established by the Massachusetts Department of Public Health that supplemental service is needed.

   CAS's proposed RMD facility is the only applicant that has received a Provisional Certificate of Registration for a Cambridge dispensing facility within the MMD-1 from MDPH. Based on the public testimony from residents and patients, the 110 Fawcett Street location will serve a critical need in a publicly accessible and inviting pedestrian-friendly environment.

b. The site is located at least five hundred feet distant from a school, daycare center, preschool or afterschool facility or any facility in which children commonly congregate, or if not located at such a distance, it is determined by the Planning Board to be sufficiently buffered from such facilities such that its users will not be adversely impacted by the operation of the Registered Marijuana Dispensary.

   The site is located at least five hundred feet from a school, daycare center, preschool or afterschool facility, or any facility where children commonly congregate. In addition, this particular site is sufficiently removed from neighboring buildings and is adjacent to the

railway. There is little, if any, future potential for any such use to be located in the adjacent area, and there is sufficient buffer between the proposed facility and adjacent buildings to preclude any adverse impacts. In addition, CAS notes that the signage restrictions required by MDPH and the Crime Prevention through Environmental Design techniques will add to buffer any nearby use.

c. The site is designed such that it provides convenient, safe and secure access and egress for clients and employees arriving to and leaving from the site using all modes of transportation, including drivers, pedestrians, bicyclists and public transportation users.

The proposed CAS RMD facility sited at 110 Fawcett Street is conveniently located within a 0.3 mile walk of Massachusetts Bay Transportation Authority (MBTA) bus routes #74 and #78 on Concord Avenue and less than one mile from Alewife Station. The #74 provides service between Belmont Center and Harvard Station and the #78 operates between Arlmont Village in Arlington and Harvard Station. At Alewife, there is Red Line rapid transit service, seven MBTA bus routes, public parking, and a Hubway bike share station. The CAS Foundation is also exploring the feasibility of operating a shuttle service for patients and employees between the site, Alewife Station, and other destinations.

Our physically challenged patients will receive door-to-door service. We are very sensitive to all our patients having the opportunity to enjoy the in-store dispensary experience. We will meet or exceed all ADA standards. We will also provide home delivery services.

CAS Foundation will employ a state-of-the-art security system. All security measures will be in compliance with 105 CMR 725.110. The building will be outfitted with surveillance cameras, silent and audible alarms, motion detectors, and real-time remote monitoring by a third party. Steel entry doors will be equipped with an electronic control access system and will be controlled by keycard locks that that create an audit trail. The on-site and off-site parking will be monitored by surveillance cameras fixed enabled to pan, tilt, and zoom. The parking lots and perimeter of the facility will be amply lit with warning and surveillance signs. All exterior areas of the property and the appropriate adjacent neighborhood will be under video (with audio) surveillance 24/7/365 (twenty-four hours a day, seven days a week, and every day of the year).

The network of surveillance cameras will be strategically placed around the perimeter of the building and in every area inside the building where clients will be and where marijuana products will be handled. This includes all entrance and exit traps, the secure waiting area, the dispensary floor, the sales and fulfillment areas, the inventory safe area,

all back office entrances, exits, and corridors, and the entire delivery packaging/loading/unloading areas. The cameras are vandal-resistant and equipped to operate in both day and night modes. Areas where medical cannabis is handled will be monitored by video surveillance cameras that are arrayed in fixed positions at a height that will provide a clear unobstructed view of all activity as well as clear and certain identification of persons and activities at all times. Cameras will also be placed at each location where dispensing, fulfillment, and labeling activities occur, in adequate fixed positions and at a height that will provide a clear unobstructed view of regular activity, allowing for the clear and certain identification of persons and activities at all times.

All surveillance recordings will be kept for a minimum of 90 calendar days. The outside perimeter of the premises will be lit in a manner that allows security staff to monitor the area and enables the video surveillance system to easily capture all activities. However, the cameras are designed to operate in the infrared spectrum requiring no light at all. The lighting and surveillance systems will be designed to minimize any impact on our neighbors.

The CAS Foundation also offers and welcomes complete video, forensic and intrusion integration with the Cambridge Police Department. If requested, the CAS Foundation will provide full and seamless integration of all exterior surveillance cameras and intrusion alarm notifications at no cost to the City of Cambridge.

d. Traffic generated by client trips, employee trips, and deliveries to and from the Registered Marijuana Dispensary shall not create a substantial adverse impact on nearby residential uses.

   Please s*ee the Transportation Analysis included with the application.*

e. Loading, refuse and service areas are designed to be secure and shielded from abutting uses.

   Unregulated solid waste (i.e., trash) and recyclables will be stored inside the building in wheeled in bins for regularly scheduled collection by a private hauler.

   All regulated materials will be transported by CAS back to its facility in Fitchburg for proper disposal or destruction. No waste materials of a regulated nature will be stored or contained on the outside/ exterior of the facility.

f. The building and site have been designed to be compatible with other buildings in the area and to mitigate any negative aesthetic impacts that might result from required security measures and restrictions on visibility into the building's interior.

CAS Foundation has invested considerable time and resources to design a facility that will complement and improve the aesthetics of the surrounding neighborhood. The design will shield from the public view the entirety of the sales area and regulated materials. The proposed security measures will be sensitively placed to provide a safe yet unobtrusive means of surveilling the appropriate and most sensitive portions of the building and building site.

g. No structure or building shall be erected, constructed, expanded, substantially improved, or moved and no earth or other materials shall be dumped, filled, excavated, transferred or otherwise altered in the Flood Plain Overlay District unless a special permit is granted by the Planning Board.

The project is designed to be above the 100 year flood plain and meet or exceed all regulatory requirements of Section 20.75. No filling or encroachments shall be allowed in Zone A without offsets in retention per the section. All flood water retention systems shall be designed and located to enhance the landscape and to not cause any nuisances, hazards, or detriments to the occupants of the site or to abutters. CAS Foundation has maintained the services of a fully licensed and experienced site engineer to meet or exceed the flood water regulations.

20.75 Flood Plain Special Permit Criteria.

20.75 Criteria. The Planning Board shall grant a Special Permit for development in the Flood Plain Overlay District if the Board finds that such development has met all of the following criteria in addition to other criteria specified in Section 10.43:

1. No filling or other encroachment shall be allowed in Zone A areas or in the floodway which would impair the ability of these Special Flood Hazard Areas to carry and discharge flood waters, except where such activity is fully offset by stream improvements such as, but not limited to, flood water retention systems as allowed by applicable law.

The project has been designed to result in an overall cut over the project site, providing an additional eighty-four cubic feet of flood capacity. This will improve the ability of the Flood Plain to carry flood waters in the event of a 100 year flood.

2. Displacement of water retention capacity at one location shall be replaced in equal volume at another location on the same lot, on an abutting lot in the same ownership, on a noncontiguous lot in the same ownership, or in accordance with the following requirements.

The water retention capacity of the project with will be increased by approximately eighty-four cubic feet on the lot of the proposed redevelopment.

3. All flood water retention systems shall be suitably designed and located so as not to cause any nuisance, hazard, or detriment to the occupants of the site or abutters. The Planning Board may require screening, or landscaping of flood water retention systems to create a safe, healthful, and pleasing environment.

The proposed site grading primarily mirrors that of the existing conditions with an additionally proposed localized depression within the landscaped area between the parking areas. This area will be aesthetically pleasing with low-lying ground cover proposed for vegetation.

4. The proposed use shall comply in all respects with the provision of the underlying zoning district, provisions of the State Building Code, Wetlands Protection Act, and any other applicable laws.

The proposal will comply with the applicable Zoning, State Building Code, WPA and applicable laws.

5. Applicants for development in the Alewife area shall be familiar with area specific and general city-wide land use plans and policy objectives (e.g. Concord- Alewife Plan, A Report of the Concord Alewife Planning Study, November 2005; Toward a Sustainable Future, Cambridge Growth Policy, 1993, Update, 2007; Section 19.30 - Urban Design Objectives of this Zoning Ordinance) and shall demonstrate how their plan meets the spirit and intent of such documents in conjunction with the requirements of this Section 20.70 - Flood Plain Overlay District and Section 20.90 – Alewife Overlay Districts 1-6.

The Applicant is aware of the information pertaining to anticipated flood elevations in 2030 (elevation 19.17) and 2070 (elevation 22.5). Based on the evaluation of these potential future flood elevations, mechanical equipment (i.e. a/c units, condensers, etc) is proposed within the ceiling space of the renovated building and will not be located at ground level.

6. The requirement of Section 20.74(3) has been met.

20.74(3) Certification and supporting documentation by a Massachusetts registered professional engineer demonstrating that such encroachment of the floodway as specified above in Subsection 20.73 shall not result in any increase in flood levels during the occurrence of the 100-year flood;

Enclosed with the application is a memorandum prepared by Michael Joyce, P.E. of Joyce Consulting Group titled "Utility and Flood Plain Narrative" dated October 20, 2016. This memorandum certifies that the proposed development will not increase the flood levels on-site or off-site during the 100-year flood.

CONCLUSION

For all the reasons set forth in the application and supporting materials included herewith we respectfully request you approve the requested Special Permit relief.

The CAS Foundation

Special Permit Specific Narrative – 110 Fawcett Street, Cambridge

The CAS Foundation, Inc. (CAS) respectfully offers this narrative, the application, and supporting materials to the Planning Board of the City of Cambridge after careful examination of its Special Permit requirements in a manner that aims to demonstrate that CAS will consistently meet its obligations. We have made every effort to plan and design a facility that meets or exceeds all requirements and to establish a dispensary that is consistent with the character and needs of the City of Cambridge and its citizens.

Description of Facility

The proposed CAS Foundation, Inc. (CAS) Registered Marijuana Dispensary facility consists of a freestanding 4,650-square-foot building located at 110 Fawcett Street in Cambridge. The building is serviced by adjacent parking as well as additional designated satellite parking directly across Fawcett Street. This site is located within the existing Medical Marijuana District 1, (MMD-1), located in the Alewife area. CAS secured this site after investing significant effort and resources to comply with the MMD-1. The CAS Foundation strictly adheres to and satisfies the provisions of the Medical Marijuana Overlay district section 20.700 of the Cambridge Zoning Ordinance and Map.

Compliance with Zoning:

The property at 110 Fawcett Street in Cambridge conforms to the zoning requirements of the Industrial B2 district within the Alewife Overlay District. It is specifically located within the approved Medical Marijuana District 1 (MMD-1).

Attached is the dimensional form which indicates that the existing 4700 sf building sits on a sliver of property that is only 31.38 feet wide at its most narrow end. This is less than the zone's requirement of 50 feet. However this is an existing to remain condition, as is the lack of a 15-foot front setback. It is noted that the corner of the building is the closest point to the "front" of the property. All other requirements of the zoning regulations are met or exceeded.

The building located at 110 Fawcett Street is a corrugated metal warehouse. This structure will undergo extensive exterior and interior reconstruction and will be equipped with areas of ingress and egress on Fawcett Street. The majority of the space will be used as a retail Registered Marijuana Dispensary (RMD), while a small portion will be devoted to office space (to be occupied by office/administrative staff) and our plans include a secure storage vault room within which we will use a storage safe that will consist of a GSA approved 13 cubic-foot, drill-resistant, steel-plated safe with keypad access and anchored to the floor. As noted above, there is ample parking available for patients, staff, and administration. Staff parking spaces are being leased behind another property owned by our landlord across Fawcett Street.

Once the build-out is completed, this site will be outfitted with state-of-the-art patient access and security functions. All security measures will be in compliance with 105 CMR 725.110. The building will be outfitted with surveillance cameras, silent and audible alarms, motion detectors, and real-time remote monitors. The steel entry doors will be equipped with an electronic control access system and will be controlled by keycard locks that create an audit trail. The on and off-site parking will be monitored by surveillance cameras enabled to pan, tilt, and zoom, and ability to see during both day and night (without additional lighting). The parking lots and perimeter of the facility will be amply lit with warning and surveillance signs. All exterior areas of the property and the appropriate adjacent area will be under video (with audio) surveillance twenty-four hours a day, with live monitoring – seven days a week, and every day of the year.

The retail dispensing area will include: (1) an entry trap where patients will demonstrate that they are current registrants in the Department of Public Health (DPH) Medical Marijuana Program in order to gain access to the facility; (2) a reception/waiting area; (3) a dispensing area; (4) a sales and transaction area; (5) a packaged products fulfillment area that is separate and secure from the dispensing area where patient orders will be filled. Products will be packaged in childproof containers, and labeled with important health and safety information; and (6) an exit trap to allow for secure exit from the facility. The build out will also include the construction of a secure storage area and an office/administrative area. CAS has secured provisional approval from MDPH for a cultivation site located in Fitchburg. The Fawcett Street site will not conduct any activities related to marijuana cultivation or product manufacturing.

Patient Facing Dispensary Operations

Dispensary operations consist of an initial ID check of all potential patients at the sheltered front portico at the exterior of the building. In order to access any part of the CAS facility, a patient must first make an appointment with a Massachusetts licensed physician who has registered with the Department of Public Health Medical Use of Marijuana Program. The patient's physician must determine, in his/her professional opinion, that the patient has a debilitating medical condition for which medical marijuana is a viable treatment option. The physician will certify and register the patient in the DPH interoperable database. The patient must then complete the registration process and be issued a medical marijuana ID card by the DPH. There will be no diagnosis or issuance of physician certifications or DPH ID cards at the CAS Cambridge facility.

If the patient presents a valid DPH-issued ID upon arrival to the facility, the patient will be admitted to the secure entrance trap area where his/her credentials are verified through the DPH database. Once verified, patients will be admitted to a secure reception/waiting area before being called into the dispensing area. The reception area consists of a reception desk staffed by a dispensary employee, and a waiting area. When a qualified patient visits a CAS dispensary for the first time they will be given a brief orientation to the facility. Patient records will be originated from a questionnaire that may include summary biographical data, as well as

a scanned copy of the patient's physician-issued certification, DPH-issued ID card, and state-issued ID card. Each subsequent visit to the RMD will generate an entry in the patient's record indicating their access to the RMD, purchase and sales data such as type, quantity, batch and pricing information. To fill a patient order, the system creates a new sales ticket and enters information that links a specific client record to specific product inventory. Upon completion of the order, the system updates the transaction record, the product inventory record, and the client record accordingly. Our patient record keeping system keeps information confidential and is consistent with HIPAA requirements where appropriate.

Patients will be admitted to the dispensing area as space allows. The CAS process provides for one-on-one interaction between a dispensary agent and a patient throughout the dispensing process. A dispensary agent will escort the patient to an individual display pedestal where all products are displayed. The patient will be able to choose from among a variety of forms of medicine such as cannabis flowers and marijuana infused products.

The dispensary agent will confirm with the DPH database that the patient is eligible to receive medicine, and record the patient's order on a handheld device. Once a patient has placed an order with a dispensary agent, he/she will move to the fulfillment area where payments will be processed and the medicine will be sealed in a childproof exit bag. All medicated products will be manufactured and packaged at the CAS cultivation and processing facility in Fitchburg. The patient will exit through the secure exit trap. Patients are required to exit the facility as soon as their order has been filled. They are not allowed to take their medicine on the premises or loiter around the exterior of the dispensary.

A security desk is located beside the entrance on the inside of the Dispensary. During business hours, the security desk will be staffed by a qualified security agent. The agent will attend to all patients entering the facility by authenticating their credentials and allowing them access to the Dispensary.

Non-Patient Facing Dispensary Operations

A. Inventory Management

Stringent controls will be put in place by our Point of Sale (POS)/Inventory tracking system, tools and forms for accounting and verification, and tasks and processes that will ensure accountability at every stage, such as verifying product identification and weight measurements in multiple departments (Cultivation, Inventory, Processing, Sales). We will use either MJ Freeway or BioTrack for our POS inventory management system.

We will obtain and report the customer ID and patient information, all validated against the patient's DPH issued card and accepted ID. We will track sales of medicated products to patients. Our record keeping system will be integrated throughout so that we can provide data

feeds to the data points needed to meet regulatory compliance, accessing the Department's hosted system by secure web connection.

Our POS solution will be integrated with QuickBooks. Couple all this information with the ability to monitor key performance indicators, and we truly have an end-to-end solution that will give us full access into every aspect of our business as we use technological solutions to meet business challenges.

Our system will track and time-stamp plant assignments, movements, and changes in state; batch dates of creation, yield weights, and created packages; nutrients used; test results; MIP ingredients; creation, movement, and sale of finished product; and employee system access. The system delineates inventory by location and stage of production process, and it stores the operation's gross inventory in sub-locations as appropriate.

B. Payment Processing and Cash Handling

CAS maintains a business banking relationship with a well-known banking institution in Massachusetts that will handle all of our business banking needs. CAS will accept cash and debit cards. We expect that in the early months of operations 50-70 percent of transactions will occur in cash. Like any such business, CAS will employ a sophisticated cash-handling procedure that will include comprehensive employee training, strict policies and procedures for how cash is counted, handled, recorded and stored. Cash collection will occur on a timely basis to ensure that no more cash than is necessary for the ordinary course of business is kept on site.

C. General & Administrative and Recordkeeping Functions

General and administrative functions for the Cambridge facility will take place off site. CAS uses industry standard applications for accounting and personnel recordkeeping. We maintain audit and compliance procedures that generate and maintain accounting and other financial records. CAS also uses a comprehensive inventory control and tracking system that generates records relating to products and inventory. This system chronicles every step, ingredient, activity, and transaction in the life cycle of our plants. All activity is fully auditable.

Personnel Policies

CAS has adopted personnel policies to guide recruitment, hiring, training and managing its employees. Clearly defined and reinforced personnel policies will contribute to a consistently safe, patient-focused work environment, staffed by a competent team. Adherence to proper safety protocols and adequate oversight of information will be the foundation of all our personnel policies. CAS is dedicated to competitive pay structures, opportunities for advancement, and merit-based bonuses, and will provide employees with a highly competitive benefits package. CAS will not discriminate against current or potential employees based on race, color, religious creed, national origin, sex, gender identity, sexual orientation, genetic information, or ancestry of any individual, refuse to hire or employ or to bar or to discharge from employment such individual or to discriminate against such individual in compensation or

in terms, conditions or privileges of employment, unless based upon a bona fide occupational qualification.

Patient Education

Education is a top priority. We will provide educational support on a one-to-one basis beginning with the first patient visit. Our Intake Specialist will take a detailed intake history in a private and comfortable space set aside for intake and educational purposes.

CAS will provide patients with printed as well as online information including scientific research related to the medicinal use of marijuana, how to promote an overall healthy lifestyle, the safest and most effective means of administering marijuana for medicinal use and booklets and materials on a number of conditions, medications, and side effects.

CAS will provide online access and print booklets to a family of appropriate materials including; Research on Cannabis, History of Cannabis as Medicine, Comparison of Medications - Efficacy and Side-Effects, Chronic Pain and Medical Marijuana, Multiple Sclerosis and Medical Cannabis, Cancer and Medical Marijuana, HIV/AIDS and Medical Marijuana, ASA Newsletters, Talking to Your Doctor, Cannabis Safety, Guide to Using Medical Cannabis, Recipes for Non-Inhalation Delivery Methods, and a How to Access Local Patient Support Groups.

We will also provide information and resource materials about substance abuse and marijuana addiction from national health organizations. Website and booklets are available in English and Spanish, with more languages to follow.

Security

The Medical Cannabis industry presents a dynamic and rapidly evolving business environment in which all agents and employees must focus on the safety of clients, employees and the broader community in which they operate. Security in the Medical Cannabis space requires a comprehensive and holistic planning approach. Security safeguards generally fall into one of three categories: physical security, operational security and information security.

Physical security involves measures undertaken to protect clients, staff, equipment, inventory and cash against anticipated threats. It includes both passive and active measures. Passive measures may include the use of architecture, signage, landscaping and lighting to achieve improved security by deterring, disrupting or mitigating potential threats. Active measures include the use of personnel and technologies designed to deter, detect, report and react against threats.

Operational security involves creating policies and procedures, and establishing controls, to ensure regulatory compliance, 360-degree visibility into all stages of the supply chain, and audit traceability and forensic reporting in the event of a breach via a comprehensive electronic access control system. This is done by identifying, controlling and protecting those interests associated with the integrity and the unimpeded performance of a facility. The two

fundamental pillars of operational security are (1) procedures and (2) personnel. Procedures establish controls to prevent unauthorized access to a facility, inventory and other business assets, whether through carelessness, criminal intent or an outside threat. Trained operations and security personnel protect and enforce the security procedures and policies governing facility operations.

Information security involves protecting the confidentiality, integrity and availability of data from accidental or intentional misuse by people inside or outside an organization or facility. Key elements of information security include limiting information to authorized entities; preventing unauthorized changes to or the corruption of proprietary data; guaranteeing authorized individuals the appropriate access to critical information and systems; and ensuring that data is transmitted to, received by or shared with only the intended recipient.

Security Systems Summary

This building will be outfitted with state-of-the-art patient access and security functions. All security measures will be in compliance with 105 CMR 725.110. The building will be outfitted with (thirty) plus high definition IR surveillance cameras that are connected to a secure video VLAN. All cameras will be stored for a minimum of sixty days depending on location. Silent and audible alarms will be added as another security layer via Access Control and Intrusion. Real-time remote monitors for Access Control and CCTV will be available 24 hours a day. Steel entry doors will be equipped with an electronic control access system and will be controlled by electric and electrical mechanical locks that create an audit trail. The on and off-site parking will be monitored by surveillance cameras with the ability to edge record. The parking lots and perimeter of the facility will be amply lit with warning and surveillance signs. All exterior areas of the property and the appropriate adjacent area will be under video surveillance twenty-four hours a day, with live monitoring – seven days a week, and every day of the year.

A. Law Enforcement and Public Safety Official Communication

CAS officials met with the Police Commissioner and on September 19, 2016. CAS will continue to maintain direct communication and an open door policy with regards to all state and town law enforcement, public safety and public health agencies; including, but not limited to the DPH. This policy begins by notifying such agencies of our presence and our intended operations. It continues by informing them of our operations and educating them on various aspects of what we do. This can include informing them about the products we handle, the purpose and locations of key functions in the facility, our incident preparedness policies and procedures, emergency exits and assemblage locations, utility service shut off points, and emergency/post emergency contact information.

B. On-Site Security Personnel

Dispensary security operations will be overseen by a dedicated security agent who will be present on-site at all times during business operations. The duties of this agent are

multifaceted, and include monitoring and surveillance of the facility entrance and exit, perimeter inspections, and working with dispensary staff to prevent adverse incidents from occurring. The agent will be supported by a comprehensive electronic security system comprised of cameras, motion detectors, and duress alarms, as well as comprehensive emergency procedures and employee training.

C. 24/7/365 Surveillance Cameras

A secured network of surveillance cameras will be strategically placed around the perimeter of the building and in every area inside the building where clients will be and where regulated products are handled. This includes all entrance and exit traps, the secure waiting area, the dispensary floor, the sales and fulfillment areas, the inventory safe area, all back office entrances, exits and corridors, and the entire delivery packaging/loading/unloading area. The building will be outfitted with (thirty) plus high definition IR surveillance cameras that are connected to a secure video VLAN. All cameras will be stored for a minimum of sixty days depending on location. Surveillance cameras are enabled to pan, tilt, and zoom, and ability to see during both day and night (without additional lighting). Real-time remote monitors for Access Control and CCTV will be available 24 hours a day.

D. Access Control System

An automated access control panel will control all access points in the facility. The system is strategically designed to enhance personal safety and prevent diversion and theft by limiting work area access to authorized personnel only and tracking activity throughout the facility. Only personnel that are essential to the operation of a given area will be allowed access to that area. All visitors must be logged in and out, and that log will be available for inspection by the DPH at all times. All visitor identification badges shall be returned to the RMD upon exit.

E. Alarm Systems

The facility will be equipped with two independent alarm systems on all perimeter entry points and perimeter windows. Two independent systems (access control/intrusion) will monitor the system 24 hours a day. The system provides redundant backup in the event that the primary system fails to function properly.

F. Inventory Tracking and Control System

A comprehensive inventory tracking and control system is essential to the security of the facility. It allows CAS to maintain awareness and control over where products are at any given stage in the distribution process. CAS will utilize a fully integrated enterprise application software package that includes cultivation management, inventory management, patient management, and employee tracking, as well as a Point-of-Sale system. In addition to daily inventory tracking procedures, a monthly inventory count will be conducted by the entire Inventory Department to ensure absolute accuracy and accountability

G. Employee Training

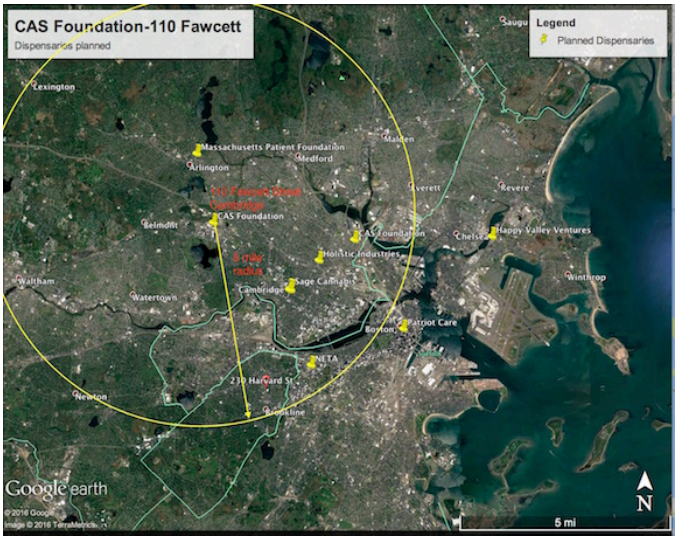
Staff will be hired on a 3-month probationary status. They will participate in rigorous training, and be evaluated for suitability in a restricted-access medical environment. Training includes the employee handbook, reading materials, lectures by professionals, hands-on training and quizzes. Legal- Training will cover all State & Federal laws relating to marijuana, & medical cannabis. Legal obligations of licensed cannabis dispensaries will be emphasized. Topics will include the rules & regulations, sexual harassment, interaction with law enforcement, and the rights and responsibilities of medical cannabis patients. Legal training will include at least one two-hour session with an attorney.

Medical- Training will include disabled rights and sensitivity, how to identify and interact with a patient having a medical emergency, the proper uses and benefits and warnings of medical cannabis.

Sales- Staff will be trained in patient care without pushing retail sales. The focus will be on assisting patients in making appropriate decisions about how best to choose the type of medicine that is right for them. Staff will be provided with ongoing training in product information as well as general service philosophy.

Safety- In addition to its focus on safety, security training will include acceptable currency identification, warning signs of possible diversion to the illegal market, lock and alarm procedures, perimeter and entrance control, robbery response techniques, conflict resolution techniques and diversion detection techniques.

Service Area Map and Narrative



Service Map Indicating Current

And Potential Dispensaries

CAS expects to service an area within a radius of approximately five miles from its proposed location at 110 Fawcett St. This service area encompasses all of the City of Cambridge and parts of the municipalities of Arlington, Belmont, Boston, Brookline, Somerville and Watertown.

Based on patient saturation rates in other medical marijuana states, the Massachusetts Department of Public Health (DPH) estimates that between 1.5 and 2% of the general population will eventually become medical marijuana patients. Out of a statewide general population of 6,745,000 people, it is expected that there will eventually be between 101,000 and 135,000 medical marijuana patients across the Commonwealth. In other medical marijuana states, it has taken up to five years for the patient population to fully develop. The DPH began registering patients in February 2015, and there are currently just over 37,300 active patients registered with the DPH. This reflects a patient adoption rate that is slightly slower than in other states.

The total estimated general population within the CAS service area is approximately 250,000. The total estimated patient population once full saturation of the general population is reached is approximately 4,000 to 5,000 patients.

There are currently no existing RMDs within the CAS service area. However, it is expected that there will be approximately three RMDs sited in the City of Cambridge within the CAS service area within the next 12-24 months. There are currently three existing RMDs just outside of the CAS service area: one in Boston, one in Brookline, and one in Newton. As the Department of Public Health continues to accept applications for RMD registration on a rolling basis, it is possible that additional RMDs will eventually be sited within the CAS service area.

Transportation Assessment for 110 Fawcett Street, Cambridge

CAS has engaged Howard Stein Hudson for its traffic assessment. Please refer to the attached Technical Memorandum dated September 2016.

Tree Protection Ordinance

The City of Cambridge Tree Protection Ordinance (Chapter 8.66) requires the maintenance or replacement in kind of Significant existing trees, however, the Medical Marijuana guidelines: 105 CMR 725.110(A)(11) requires that an Registered Marijuana Dispensary must "[e]nsure that trees, bushes, and other foliage outside of the RMD do not allow for a person or persons to conceal themselves from sight..." Local ordinances or bylaws may not require landscaping that would conflict with this provision.

While there are no Significant trees on the property, as none meet the definition of 8" in diameter at breast height, we propose to remove several small white pines along the 110 Fawcett Street building edge (visible in the pictures) and replace them around the site in similar numbers with ornamental trees that shall be limbed up to 5 feet to ensure that no one may hide behind the trees. The remainder of the landscape is specified to be low shrubs and ground covers. See the landscape plan.

A project of less than 25,000 sf is not required to be submitted for review by the City Arborist, but we acknowledge the environmental importance of trees and landscape and have endeavored to improve the property at 110 Fawcett in regard to reducing run-off by decreasing paved areas, by adding groundcovers and pervious areas to the lot. We also respect the goals of urban landscaping to maintain or increase carbon dioxide and ozone reduction, the increased production of oxygen and the reduction of urban heat islands by way of shading provided by foliage.

TO:	City of Cambridge Planning Board	DATE:	September 30, 2016
FROM:	Joe SanClemente, P.E., AICP Andrew Fabiszewski	HSH PROJECT NO.:	2016104.00
SUBJECT:	Transportation Analysis – 110 Fawcett St, Cambridge, Massachsuetts		

Introduction

On behalf of the Cardiac Arrhythmia Syndromes Foundation (CAS Foundation), Howard Stein Hudson (HSH) has prepared this transportation analysis for the proposed Registered Marijuana Dispensary (RMD) at 110 Fawcett Street in Cambridge, Massachusetts.

The transportation assessment was prepared pursuant to section 20.704 of the Zoning Ordinance and addresses:

- Expected origin and frequency of client and employee trips to the site;
- Expected modes of transportation used by clients and employees; and
- Frequency and scale of deliveries to and from the site.

This memorandum also discusses parking and transportation demand management (TDM) strategies.

Since RMDs are not well-documented in terms of trip generation patterns, and are relatively new to the Commonwealth of Massachusetts, the proposed operations and trip generation estimates were evaluated based on information provided by the CAS Foundation and through a qualitative assessment of the adjacent transportation network.

Project Description

The Project site is currently occupied by an approximately 4,700 square foot (sf) corrugated metal warehouse building and undefined surface parking with vehicular access via a single curb cut on Fawcett Street. The building is largely vacant and has no significant trip activity associated with it.

The proposed Project involves the renovation of the existing building for the new RMD and associated site work including surface parking and landscaping. The Project will have up to 13 parking spaces for patients, visitors, and staff, including eight surface parking spaces on-site and up

to five additional parking spaces off-site, across the street at 125 Fawcett Street that will be leased on an as needed basis. To accommodate the on-site parking, the Project proposes to modify the existing curb cut and add a second curb cut at the western side of the property. Access to the ancillary parking on 125 Fawcett Street would continue to occur via an existing curb cut; no modifications are necessary.

The site is conveniently located within a 0.3 mile walk of Massachusetts Bay Transportation Authority (MBTA) bus routes #74 and #78 on Concord Avenue and less than one mile from Alewife Station. The #74 provides service between Belmont Center and Harvard Station and the #78 operates between Arlmont Village in Arlington and Harvard Station. At Alewife, there is Red Line rapid transit service, seven MBTA bus routes, public parking for 2,733 vehicles, and a Hubway bike share station.

Sidewalks are provided on both sides of Fawcett Street and are in excellent condition as they were recently reconstructed.

Trip Generation and Operations

Facility Operations

Based on information provided by the CAS Foundation, the planned weekly hours of operation will be 8:00 a.m. to 8:00 p.m. from Monday to Friday, 10:00 a.m. to 6:00 p.m. on Saturday, and 12:00 p.m. to 4:00 p.m. on Sunday. During the first 45 to 60 days of operation, the RMD will be appointment only. After this initial period, the RMD will also accept walk-ins.

The RMD is anticipated to serve patients primarily in Cambridge and adjacent communities within 30 minutes travel time of the site. The service area will also be largely dependent on competition in the area as other RMD's open.

The CAS Foundation also proposes to provide home delivery services to patients within 30 to 40 minutes of the site (or about 10 to 15 miles). As currently envisioned patients would be able to either call in or place orders online. Then deliveries would be made to patients within two to three hours of placing an order. Multiple deliveries could be made at one time that will reduce the number of patients that need to go to the facility, thereby reducing overall traffic and parking demand at the site.

Patients

The CAS Foundation projects that they will service approximately 62 patients per day in the first year and up to 138 patients per day in the third year of operation. This would correspond to about 276 person trips per day (138 entering and 138 exiting) after three years.

Patient visits are expected to occur throughout the day with peak times likely occurring during Friday and Saturday afternoon and evening hours. Peak patient activity during these time periods is anticipated to range between 8 and 16 patients per hour – or up to 32 person trips per hour (16 entering and 16 exiting).

HSH reviewed mode share data from the U.S. Census American Community Survey to determine how patients in the area might travel to the dispensary. The transit mode share (for commuters) in the census tracts surrounding the site ranged from 17 to 34%, depending on proximity to transit, so to provide a conservative estimate HSH assumed a 15% combined transit/walk/bike share.

At 15% transit/walk/bike, or 85% auto, it is estimated that there would be approximately 117 patients per day arriving by vehicle (117 entering and 117 exiting) and about 21 patients per day arriving by transit/walk/bike (21 entering and 21 exiting). On an hourly basis, this would translate to about 14 patients per hour arriving by vehicle and 2 patients per hour arriving by transit/walk/bike. Although these trips estimates could be lower depending on the success of the home delivery service.

Staff

The CAS Foundation is projecting that the RMD will have up to 40 full-time equivalent (FTE) staff by the third year of operation.

It is estimated that there would be approximately 11 unique employees working on-site throughout the day with up to seven employees on-site during the peak demand periods. Full-time shift schedules are expected to range from about 8:00 a.m. to 5:00 p.m. and 11:00 a.m. to 8:00 p.m. on weekdays. Part-time employee shifts would stagger throughout the day.

Therefore employees are expected to generate about 22 person trips (11 entering and 11 exiting) on a typical day. Assuming 15% of employees utilize public transit, walk, or bike, this would correspond to 18 vehicle trips per day (9 entering and 9 exiting) and 4 transit/walk/bike trips per day (2 entering and 2 exiting).

Service and Deliveries

Service and delivery activity for the proposed RMD is expected to be fairly minimal and will be scheduled to occur during off-peak periods where possible.

All product will be grown at an off-site facility and delivered to the proposed RMD in a passenger vehicle. It is anticipated that deliveries would occur once daily. On-site manufacturing would be limited to individual prescription packaging and labeling.

Cash pick-ups would occur twice per day in a passenger sized vehicle. The timing of the cash pick-ups, and product delivery, would vary each day to reduce predictably for security reasons.

Home deliveries would occur throughout the day as orders come in. However, it is anticipated that that multiple delivery orders could be made at the same time to reduce the number of trips in and out of the site.

Other deliveries to the site include standard services such as package delivery (e.g., UPS, FedEx etc.), mail delivery, and trash pick-up. The RMD will have private trash pick and is expected to be serviced once per week. Trash would be stored inside the building and wheeled in bins to the curb side on collection days.

Combined Project Trip Generation

When combining patient, staff, and service/delivery trips, the Project is expected to generate about 280 vehicles trips per day (140 entering and 140 exiting). During the busiest hours, the site may generate approximately 30 to 40 vehicle trips per hour (or about 15 to 20 entering and 15 to 20 exiting). This corresponds to less than one new vehicle trip per minute.

Parking Demand

During the peak demand periods, it is anticipated that approximately 14 patients per hour will arrive at the RMD via vehicle. According to the CAS Foundation, the average service time within the facility is expected to be about 12 minutes and could vary up to 20 minutes for newer patients. Therefore, assuming the longer service time, patient parking demand is projected to be about five to seven spaces depending on arrival patterns. Although patient parking demand could also be lower depending on the success of the home delivery service.

Employees of RMD will be encouraged to take public transit, bike to work, or park off-site at Alewife Station. The CAS Foundation is also exploring the feasibility of operating a shuttle service for employees and patients between the site, Alewife Station, and other destinations.

The Project is proposing to provide 13 parking spaces, including eight spaces on-site and five ancillary spaces across the street. It is anticipated that the 13 spaces will be sufficient to accommodate, patient parking, the home delivery van, employee parking, and building service requirements. Unrestricted on-street parking is also currently provided along Fawcett Street in the vicinity of the site.

Transportation Demand Management (TDM)

The Project Proponent is committed to providing Transportation Demand Management (TDM) measures aimed at reducing vehicle trips to the site. TDM measures include:

- Home Delivery Service – the RMD will offer home delivery service to patients, which will limit the need for patients to travel to the site.
- Short-term Bicycle Parking – the Project will provide 6 covered bicycle parking spaces near the main entry for patients.
- Secure Covered Bicycle Parking and Changing Facilities – the Project will provide employees with 6 secure covered bicycle parking spaces, a shower/changing room, and lockers.
- Rideshare Alternatives – Encourage staff to use ridesharing services (e.g., Uber) for last mile connection between Alewife station and the Project site to reduce employee parking needs.
- Shuttle Service – the CAS Foundation is exploring the feasibility of operating a shuttle service for patients and employees between the site, Alewife Station, and other destinations.
- Project Web Site – the RMD's website will provide information detailing travel options to the site, including MBTA service options, Hubway, and home delivery service.
- Alewife Bicycle/Pedestrian Bridge and Commuter Rail Station – the Proponent will advocate for, and support, the City's efforts to advance the Alewife Bicycle/Pedestrian Bridge Connection and potential Commuter Rail stop which is currently undergoing feasibility study. As currently envisioned the entrance to the bridge connection would be located adjacent to the Project site on Fawcett Street and would greatly reduce the walking distance to Alewife Station and provide convenient access to Commuter Rail service.

Summary

The Project involves the renovation of an existing, and mostly vacant, warehouse building into a new RMD with 13 parking spaces for patients, visitors, and staff, including eight surface parking spaces on-site and up to five ancillary parking spaces across the street at 125 Fawcett Street that will be leased on an as needed basis. The RMD is anticipated to service patients within a 30 minute travel time from the site and will also provide home delivery service for existing patients that will help minimize the number of patient trips to the site on a daily basis and the overall need for parking.

The Project proponent is committed to implementing a Transportation Demand Management plan (TDM) aimed at reducing single occupant vehicle trips to and from the site. As part of the proposed TDM plan, the Project will provide covered bicycle storage for patients, secure covered bicycle storage and shower/changing facilities for staff, and will encourage patients and staff to utilize nearby MBTA services and Hubway bike share at Alewife Station. The proponent is also evaluating the feasibility of providing a shuttle service for patients and employees.

Overall the Project is expected to generate less than one vehicle trip per minute on the adjacent roadway network, which will not have a significant impact on area traffic operations. The proposed parking supply is anticipated to be sufficient to accommodate, patient parking, the home delivery van, employee parking, and building service requirements.

City of Cambridge
Richard C. Rossi • City Manager

Executive Department
Lisa C. Peterson • Deputy City Manager

December 17, 2015

Ms. Jayne Vining, CEO and Founder
The CAS Foundation
9 Bartlet St. #335
Andover, MA 01810

Dear Ms. Vining:

The City of Cambridge, does hereby provide non-opposition to The CAS Foundation to operate a Registered Marijuana Dispensary in Cambridge, Massachusetts. I have been authorized to provide this letter on behalf of the Cambridge City Council by a vote taken at a duly noticed meeting held on June 22, 2015. The City of Cambridge has verified with the appropriate local officials that the proposed RMD facility is located in a zoning district that allows such use by right or pursuant to local permitting.

Very truly yours,

Richard C. Rossi
City Manager

The Commonwealth of Massachusetts
Executive Office of Health and Human Services
Department of Public Health
Bureau of Health Care Safety and Quality
Medical Use of Marijuana Program
99 Chauncy Street, 11th Floor, Boston, MA 02111

CHARLES D. BAKER
Governor

KARYN E. POLITO
Lieutenant Governor

MARYLOU SUDDERS
Secretary

MONICA BHAREL, MD, MPH
Commissioner

Tel: 617-660-5370
www.mass.gov/medicalmarijuana

July 27, 2016

BY U.S. MAIL AND E-MAIL

Ms. Jayne Vining
Cardiac Arrhythmia Syndromes Foundation, Inc.
9 Bartlet Street, Unit 335
Andover, MA 01810

Re: Provisional Certificate of Registration for a Registered Marijuana Dispensary for a Dispensary in Cambridge (110 Fawcett Street) and a Cultivation and Processing Facility in Fitchburg

Dear Ms. Vining:

Please be advised that you have been selected to receive a Registered Marijuana Dispensary ("RMD") Provisional Certificate of Registration at your proposed Cambridge retail dispensary and Fitchburg cultivation and processing facility and to move forward to the Inspectional Phase. The issuance of this RMD Provisional Certificate of Registration is subject to the following ongoing conditions:

1. All dispensary agents and capital investors shall be subject to a background check as set forth in the *Guidance for Registered Marijuana Dispensaries Regarding Background Checks* prior to commencing work as a dispensary agent or contributing funds to the RMD.

2. The RMD shall comply with the Humanitarian Medical Use of Marijuana Act, Ch. 369 of the Acts of 2012 (the "Act"), as implemented by Department of Public Health (the "Department") Regulations, 105 CMR 725.000, et seq. ("Regulations"), during the period of its provisional registration, except as expressly waived in writing by the Department pursuant to 105 CMR 725.700.

3. The RMD shall be subject to inspection and audit to ascertain compliance with any applicable law or regulation, including laws and regulations of the Commonwealth relating to taxes, child support, workers compensation, and professional and commercial insurance coverage.

4. The RMD shall be subject to inspection and audit to ascertain that the RMD is operating at all times in a manner not detrimental to public safety, health, or welfare.

5. The RMD shall be subject to inspection and audit to ascertain that its facilities are compliant with all applicable state and local codes, bylaws, ordinances and regulations.

6. The RMD shall be subject to inspection and audit to ascertain that it has sufficient financial resources to meet the requirements of the Act or 105 CMR 725.000, et seq.

7. The RMD shall cooperate with and provide information to Department inspectors, agents and employees upon request.

8. The RMD shall, as necessary, amend its bylaws to expressly require compliance with 725.100(A)(1) and the "*Guidance for Registered Marijuana Dispensaries Regarding Non-Profit Compliance*" by stating that the RMD shall "at all times operate on a non-profit basis for the benefit of registered qualifying patients" and shall "ensure that revenue of the RMD is used solely in furtherance of its nonprofit purpose." If the bylaws do not expressly include such requirement, they shall be amended within thirty days of the date of this letter and the amended bylaws shall be filed with the Department by mail at the above address and by email at RMDcompliance@state.ma.us.

9. The RMD shall keep current all information required by 105 CMR 725.000, et seq., or as otherwise required by the Department pursuant to 725.100(F)(4) and may not make certain changes without prior approval from the Department pursuant to 725.100(F)(1)-(3).

10. The RMD must submit payment of the registration fee required pursuant to 105 CMR 725.100(C)(1) and 801 CMR 4.02.

In the Inspections Phase, the Department will continue to verify, among other things, that the RMD will operate in compliance with the RMD operational requirements, see 105 CMR 725.105 (A)-(Q), and security requirements, see 105 CMR 725.110(A)-(F). Furthermore, the Department may impose other conditions that the Department determines necessary to ensure the RMD will operate in accordance with applicable Massachusetts laws and regulations.

Please be advised pursuant to 105 CMR 725.100(C)(1) the Department may issue a Final Certificate of Registration only after an applicant has successfully completed the Inspections Phase and the Department has issued final approval.

Please mail the enclosed remittance form with a bank/cashier's check in the amount of $50,000 payable to the Commonwealth of Massachusetts within thirty (30) days of the date of this letter to:

Department of Public Health
Medical Use of Marijuana Program
RMD Registration
99 Chauncy Street, 11th Floor
Boston, MA 02111

After the registration fee is processed, this letter shall serve as your Provisional Certificate of Registration with the aforementioned conditions. The Department will continue to verify all information provided by you, and that you are compliant with applicable Massachusetts law and regulations. It is within the Department's discretion to revoke this Provisional Certificate of Registration at any time.

Should you have any questions, please contact the Department at RMDcompliance@state.ma.us.

Sincerely,

Eric Sheehan, J.D.
Interim Bureau Director
Bureau of Health Care Safety and Quality
Massachusetts Department of Public Health

The CAS Foundation®

a 501 (c)(3) NOT FOR PROFIT

Dear Cambridge Resident:

We are reaching out to you as a neighbor in the area who may be interested in attending an information session regarding 110 Fawcett Street, Cambridge, MA.

We are proposing to redevelop the property and open a medical marijuana dispensary at this location. We invite you to learn more about our application and meet our team. Dessert and coffee will be provided.

Date: Wednesday October 26, 2016

Time: 7:00 – 9:00 pm

Location: The Best Western Plus Hotel, 220 Alewife Brook Parkway, Cambridge, MA

We look forward to meeting you!

Sincerely,

Liberty "Bert" Vining, J.D.
Chief Operations Officer
The CAS Foundation
BVining@TheCASFoundation.org

The CAS Foundation®

a 501 (c)(3) NOT FOR PROFIT

Dear Cambridge Resident:

Thank you for the opportunity to share why **The CAS Foundation will be the best partner** for the City of Cambridge. **We will work hard to earn your trust** and support.

The CAS Foundation (CAS) has a **proven record** of providing preventive care throughout the country and is credited with saving countless lives through our SafeBeat Initiative.

CAS has an **unparalleled executive management team** experienced in running a healthcare nonprofit. We are committed to serving and protecting medical marijuana patients by providing safe, secure and legal access while rigorously enforcing the laws of the Commonwealth.

The facility at 110 Fawcett Street will be a state-of-the-art medical marijuana dispensary that will be a **safe and a responsible** neighbor that will not negatively impact the community.

We are excited to offer **Host Community Benefits:**

- **Security** – A state-of-the-art security system will make our facility the safest area in the city. We will have 24/7/365 monitoring, over 80 remote surveillance cameras with thermal and night vision, and direct cooperation with local police.
- **Employment Opportunities** – CAS Foundation is committed to paying a living wage and will provide preferential treatment for employment opportunities to host community residents.
- **Advisory Board** – An Advisory Board made up of community residents will help us be the best partner to the City and respond immediately to concerns.
- **Host Community Fee Agreement** – The Cambridge City Council chose not to accept a host fee; instead the Council prefers these funds be used to reduce the cost for low-income patients and veterans. We will allocate significant funds to assist in this regard.
- **Corporate Citizenship** – CAS will be a participant in the community; supporting local schools, youth organizations and other community priorities.

Thank you. We look forward to being a great neighbor.

Liberty "Bert" Vining, J.D.
Chief Operations Officer
The CAS Foundation
BVining@TheCASFoundation.org

CAS Foundation – Community Engagement Summary

The CAS Foundation, Inc. (CAS) has been engaged in a variety of outreach activities in the community surrounding its proposed location at 110 Fawcett Street, Cambridge. The following is a summary of these activities.

CAS began by meeting with City Councilors to present our proposal, hear issues and address concerns. We then approached several neighborhood groups and associations to answer questions raised by community members. CAS met with resident association leaders: Fresh Pond Residents Alliance; Terry Drucker, President, and Cambridge Highlands Neighborhood Association; Ann Tennis, President. At these meetings CAS made a presentation that included information about the site, a summary of the existing location and immediate area, and photographs of the site and abutting properties. CAS also gave information about its proposed operational model, background on the Medical Marijuana Program administered by the Department of Public Health, and details descriptions of proposed operational procedures for patient flow and overall facility operations. The presentation invitation notice and marketing collateral is attached.

In addition to the community association meetings, CAS personnel canvassed the abutting businesses and residents on all adjacent streets on October 15 & 22, 2016. CAS personnel went door-to-door throughout the area of the map below and introduced the organization and spoke about CAS's planned operations.

Community Education Meeting:

CAS held a Community Education Meeting at the Best Western Hotel, Wednesday evening, October 26, 2016 from 7:00 - 9:00 pm. CAS discussed its plans for the site, reviewed the existing location and immediate area, and talked about the impacts that the CAS use would have on the immediate area. CAS again gave information about its proposed operational model, background on the Medical Marijuana Program administered by the Department of Public Health, and details descriptions of proposed operational procedures for patient flow and overall facility operations. The meeting was noticed in the Cambridge Day online version, and a mailing was sent to the neighborhood groups and associations.

We advised that 110 Fawcett Street is going to be among the safest blocks in Cambridge with our security camera system tied in with the police department and DPH. Attendees were concerned about arrests being made of patients after purchase. Bert assured everyone that treatment of customers is a priority. Jayne Vining mentioned that we are working closely with the police department which believes that our security plans have more than adequately address all security concerns. CAS has facilitated places for people to be inside and out of harmful weather and off the street to alleviate concerns of many clients congregating outside

the dispensary. We advised attendees that the average age of registered medical marijuana users is between the ages of 47 and 65.

Bert spoke about how the CAS Foundation was started to provide free hearts screenings to youth in the wake of a family tragedy. Profits from the dispensary will still go toward providing screenings to those who cannot afford it. The attendees felt this was a "wonderful idea" and "should have been here a long time ago."

The concerns voiced by the members of the public who attended our community meeting. All the attendees strongly supported not only the concept of medical marijuana, but the specific business model and operations methods proposed by CAS. The attendees are familiar with our site as they exercise at Danehy Park and were delighted that we are remodeling a building that is currently an eyesore and that we will be including green space and landscaping as features of the property renovation.

Questions were asked about our proposed days and hours of operation, purchasing limits, product pricing and security. There were concerns voiced regarding the heightened security in the area because citizens were fearful that an increased police presence may contribute to incidents police harassment. We assured attendees that we are doing everything possible to provide a safe environment in and around the dispensary.

There were also concerns voiced about the ability of the federal government to obtain access to personal health records, including CAS records relating to the purchase of medical marijuana. There were concerns voiced regarding the amount of marijuana that an individual could purchase and the public was pleased to be informed of the DPH database that would prevent any individual from dispensary shopping around to obtain greater amounts. There were also concerns voiced regarding child proof packaging and the regulations against improper dissemination of medicine after its purchase by bona fide patients to non-patients on the black market.

Finally, and most telling, one elderly woman who suffered from a variety of medical conditions which manifested themselves in acute pain inquired how she could obtain proper DPH registration because her primary care physician refused to evaluate her for the use of medical marijuana, ostensibly due to her age. This, I think, is an important narrative that should be shared with members of the planning board, elected officials or other concerned parties because it is a factual account of the target population that is interested in medical marijuana and it dispels the popular and anecdotal, but unscientific stigma, that the siting of a medical marijuana facility in your backyard will lead to all the ills associated with illicit drug use and distribution.

Questions were asked whether the CAS Foundation will be opening medical marijuana facilities in addition to recreational marijuana facilities if Question 4 passes November 8th. We advised that this facility will most likely remain a medical marijuana facility and that recreational facilities are unlikely to open for 4-5 years after the law passes.

We were asked about our product offerings. We advised that the CAS Foundation will initially be selling medical marijuana in its natural form that can be smoked or vaporized as well as vape pens. Our product offerings will Eventually expand to include concentrates, tinctures, lotions, oils and edibles. This attendee was pleased that the facility is handicap accessible and easy for seniors to get to and feels that this will be especially useful for veterans with PTSD. The attendee finally commented that the local dealers will be put out of business and forced to work.

Outline of All Community Engagement Activities

1. 9/19/16; Preliminary Special Permit meeting with members of the Planning Board, including, amongst others: Jeff Roberts, Liza Paden, and the Superintendent of Police.
2. 9/22; met with Doug Brown, President, Fresh Pond Residents Alliance; he is very supportive.
3. 9/22; met with Sean Curran, Representative of 95 Fawcett St., Also very supportive.
4. Met with City Councilors: Devereax (8/30), Cheung (8/22), Kelley (9/7), McGovern (8/31)
    a. Pending meetings TBD: Toomey and Maher have each rescheduled twice.
5. 10/6; Tom Lucey, VP of Community Relations at Harvard, also very supportive of CAS.
6. 10/11; Bert Vining emailed our Community Meeting notice for 10/26 to the CDD to post to the Community Calendar and website. We have also requested to be agenda items on the next meetings for the Fresh Pond Residents Alliance with Terry Drucker, and the Cambridge Highlands Neighborhood Association via Ann Tennis. We are presently awaiting their response.
7. 10/11; The list of abutters and neighborhood groups provided by the CDD were sent our Community Meeting notice by first-class U.S. Mail.
8. 10/12; Our Community Meeting notices were posted on the fence at 110 Fawcett St.
9. 10/12; Bert Vining met with three administrators in the management office of the Atwater building condos. I gave them meeting notices and my card, showed the architectural drawings and had a nice conversation. They don't have a message board but will contact me if they can make a notice/announcement to their residents. They were not sure how residents would support a dispensary but said that they believe we They received meeting notices, saw the drawings, approved our plans and support our proposed use. will be well received given our extensive security safeguards and improvements.
10. 10/12; Bert Vining met the owner and employees of Longleaf Lumber, Inc. at 115 Fawcett St. The owner was extremely supportive and signed our petition of support. We had a nice talk and he enjoyed the drawings very much. Another employee (both

registered Cambridge voters) signed the petition as well. They are thrilled with the developments. They received meeting notices, saw the drawings, approved our plans and support our proposed use.

11. 10/12; Bert Vining met with the owners of Iggy's Bread and were thrilled with our plans and very supportive. They received meeting notices, saw the drawings, approved our plans and support our proposed use.
12. 10/12; Bert Vining met with the managers of Native Importers at 125 Fawcett and they are very supportive. They received meeting notices, saw the drawings, approved our plans and support our proposed use.
13. Mailings went out yesterday to the list provided by the CDD. And to several key residents and neighborhood groups. We have requested to be agenda items on the next meetings for the Fresh Pond Residents Alliance and Cambridge Highlands Residents Association.
14. 10/13; Our Engineer, Mike Joyce, of Joyce Consulting Group, met with the Director of the DPW. The meeting with the DPW went well; they agree in concept with everything that we are proposing.
15. 10/14; Our Engineer, Mike Joyce, of Joyce Consulting Group, began coordinating and meeting with the Water Department.
16. 10/15 & 10/22; CAS Representatives canvassed the neighborhood and promoted out Community Outreach meeting and collected signatures of support for registered Cambridge voters.
17. 10/26/16; CAS held a Community Education Meeting at the Best Western Hotel, Wednesday evening, October 26, 2016 from 7:00 - 9:00 pm.

Joyce Consulting Group, PC
100 Wyman Road
Braintree, MA 02184
hello@joycecg.com
781.817.6120

memo

To: City of Cambridge Planning Board

From: Michael G. Joyce, PE

Date: October 20, 2016

Re: JCG Job No. 16-029
110 Fawcett Street, Cambridge MA
Utility & Flood Plain Narrative

Comments: The project, as shown on the enclosed Site Plan, consists of renovating an existing lumber shed building located at the site into a new commercial/retail building with associated landscape, walkways and parking. The site is located on the northern side of Fawcett Street, between Fawcett Street and existing MBTA rail property. A general description of the proposed utility connections are as follows:

DOMESTIC WATER & FIRE PROTECTION

The City of Cambridge Water Department (CWD) owns and operates the water main in the vicinity of the project site. Available to service the site is a 12-inch water main in Fawcett Street. The nearest fire hydrant is located approximately 150 feet west of the building on the southern side of Fawcett Street. The existing site, being a lumber shed, does not have an existing water service connection.

The new commercial/retail building proposes to connect a new 2-inch Type K Copper domestic water service and a new 4-inch DICL fire protection service to the existing 12-inch water line in Fawcett Street. See Site Plan for proposed connection locations. The renovated building will have a 1-1/2-inch water meter on the domestic service and a Double Check Valve assembly on the Fire Protection service. Given that the project is a relatively small retail/commercial facility with minimal anticipated water use, the project will not have a significant impact to the CWD water supply network.

SEWER

City of Cambridge owned and operated sewer mains provide sanitary sewer service in the vicinity of the Project with a 15-inch sanitary sewer main available for connection in Fawcett Street. The existing site, being a lumber shed, does not have an existing sewer service connection.

The sewer connection proposed for this project is to the 15-inch sewer main in Fawcett Street. Due to the location of an 8'x4' box drainage culvert between the existing building and the 15-inch sewer, the project proposes to make the connection to the 15-inch sewer via an on-site pump station to a new sewer manhole in Fawcett Street followed by a gravity sewer connection to the main, refer to enclosed Site Plan. The anticipated sewage generation for the project may be found in Table 1: Anticipated Sewer Generation – 110 Fawcett Street, Cambridge MA

Table 1: Anticipated Sewer Generation – 110 Fawcett Street, Cambridge, MA

Proposed Use	Gallons Per Day (gpd)	# of Users or Square Footage	Total Sewer Flow
Retail	0.050gpd/sf	4,672 sf	235 gpd
		TOTAL:	**235 gpd**

Given that the project is a relatively small retail/commercial facility with minimal anticipated sewage generation, the project will not have a significant impact to the City of Cambridge's wastewater collection network or wastewater treatment facility.

STORMWATER MANAGEMENT

In addition to sanitary sewer mains, the City of Cambridge also provides local storm drain service. In the vicinity of the Project site, an 8'x4' box culvert storm drain main is available in Fawcett Street. The existing site does not have a stormwater collection system and the site does not tie into the Cambridge-operated storm drain system.

In order to be in compliance with City of Cambridge's Stormwater Management requirements, the project proposes to collect runoff from the redevelopment and direct it to an underground infiltration area before allowing the stormwater to overflow off-site into the 8'x4' box culvert storm drain main in Fawcett Street. Please refer to calculations in the enclosed Stormwater Report for detailed information on the closed drainage system and infiltration system proposed for the redevelopment.

Given that the proposed project will be decreasing runoff rates during storm events from the pre-redevelopment to post-redevelopment conditions, the project will not have a significant impact to the City of Cambridge's stormwater collection network.

FLOOD PLAIN DOCUMENTATION

Based on FEMA Flood Zone mapping, the site falls within FEMA Flood Zone AE-7 per the Flood Insurance Rate Map (FIRM) No. 25017C 0419E, effective June 4, 2010. The Flood Zone AE-7 represents a 100-year flood elevation of 18.65 (City of Cambridge Base Datum). Existing elevations on the site range from elevation ±17.2, just north of the existing building to elevation ±19.1, just east of and closest to the existing building.

The proposed first floor elevation of the renovated building will be located above the 100-year flood elevation of 18.65; currently the proposed first floor elevation is 19.0. Site work for the proposed project, including installation of parking areas and a drainage depression, will result in a net increase in flood storage volume on the site and will not increase the flood levels on-site or off-site during the 100-year flood.

Additionally, the City of Cambridge's Public Works Department has provided the Applicant with information pertaining to anticipated flood elevations in 2030 (elevation 19.17) and 2070 (elevation 22.5). Based on the evaluation of these potential future flood elevations, mechanical equipment (i.e. a/c units, condensers, etc) is proposed within the ceiling space of the renovated building and will not be located at ground level.

The Applicant is currently in the process of preparing a Notice of Intent submittal, for work within the Floodplain, with the City of Cambridge's Conservation Commission. It is anticipated that the project will be on the November 2016 Conservation Commission Agenda.

110 Fawcett Street
Cambridge, MA

Stormwater Report

Prepared for:

Elton + Hampton Architects
103 Terrace Street
Roxbury, MA 02120

Submitted by:

Joyce Consulting Group
100 Wyman Road
Braintree, MA
(781) 817-6120
hello@joycecg.com

October 21, 2016

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EXISTING CONDITIONS

Site Description

The site is located at 110 Fawcett Street in the City of Cambridge. The site is approximately 11,136 square feet of land bounded to the north and east by MBTA owned tracks and property, the south by Fawcett Street, and the by a commercial property. Existing site features are indicated on the "Existing Conditions Plan" (included in Appendix D) and can be seen below in Figure 1 "110 Fawcett Street Aerial Image."

Figure 1: 110 Fawcett Street Aerial Image

The site currently consists nearly entirely of impervious area composed of rooftop and asphalt paving and compacted gravel. There is currently a vacant bank building located on the site that was historically utilized as a lumber shed.

The topography surrounding the site and existing building is nearly level and slopes gradually towards the north east corner of the lot. The building roof top has not roof leaders with stormwater sheeting off from the ridge. The site does not have any stormwater management infrastructure of any sort.

The site does fall within a FEMA Flood Plain (Elevation 18.65 City of Cambridge Base) a resource area as defined in the Massachusetts Wetlands Protection Act. The proposed project will require approval from the City of

Cambridge Conservation Commission. Overall the project will result in a net increase in Flood Storage within the site.

The Soil Survey of Middlesex Counties, Massachusetts, as mapped by the National Resources Conservation Service (NRCS), indicates that soils on the lot consist of Urban Land with wet substratum. For the purpose of the stormwater management analysis, Joyce Consulting Group has classified the soils as the lowest rated B soil with an anticipated infiltration rate of 0.52 in/hr.

For the sake of the stormwater analysis in this report, the immediate area of development is analyzed for pre-development and post-development runoff calculations. The drainage area, as delineated by the property line, is the entirety of the development lot as it drains off site and ultimately into the City of Cambridge's Stormwater collection system.

PROPOSED CONDITIONS

Project Description

The proposed project includes the renovation of the existing lumber shed on the site into a commercial retail facility. Site work includes associated site preparation adjacent to the building, installation of new sidewalks, new utilities, two exterior parking areas, and an infiltration area below grade between the two proposed parking areas. The rehabilitated commercial building will have vehicular access from Fawcett Street. There will be no significant change in grade on site with the exception of a proposed depression within the landscaped area between the proposed parking locations. Overall the proposed work will greatly improve the site, converting previously paved and compacted gravel areas into parking areas and significant green space. Detail for proposed site features and utility connections are indicated on the "Site Utility Plan" (included in Appendix D).

From an overall stormwater management perspective, the site will maintain the current flow pattern but stormwater quality will be improved through the use of landscape areas, a deep sump yard inlet and recharge areas located throughout the site. The proposed parking areas will be pitched to the landscape area at the center of the site. The stormwater runoff will first be treated by flowing over the landscaped portion of the site, prior to entering a deep sump yard inlet. This inlet then directs the stormwater to a infiltration basin consisting of eight(8) Stormtech SC-740 infiltration chambers set in crushed stone. In addition to this infiltration area, half of the rooftop will be collected by an infiltration trench directly abutting the building and overflowing to the infiltration basin at the center of the site.

The proposed stormwater system will attenuate peak rates and quantities of runoff before draining off site. Refer to the Department of Environmental Protection's Stormwater Management Standards narrative for "Standard 2 Peak Rate Attenuation" later in this report for calculations. The proposed system will provide pre-treatment to parking lot runoff in the form of vegetated landscape and a deep sump yard inlet. A detailed operations and maintenance schedule is planned to ensure the continued integrity and functionality of the stormwater managetment system over the long run.

Sediment and Erosion Control Measures

It is anticipated that sediment loss from the site during construction will be minimal as the structure is existing and there is limited earthwork and grading proposed. Regardless, sediment and erosion control practices will be implemented during construction to prevent possible damage to surrounding properties. At a minimum, the following guidelines will be adhered to during construction:

1. Keep land disturbance to a minimum. Plan the phases of development so that only the areas actively being developed are exposed. All other areas should have natural vegetation and/or existing conditions preserved, have good temporary cover, or permanent vegetation established.
2. Stabilize disturbed areas.
3. Protect disturbed areas from stormwater runoff. Install erosion control or stormwater management measures to prevent water from entering and running over disturbed areas, and to prevent erosion damage to downstream facilities.

Installation of perimeter control practices (siltation fences) will also occur prior to construction commencing. The contractor will be required to do inspections of all controls regularly to ensure that the controls are working properly. The contractor shall clean and reinstall any control that need to be cleaned or replaced.

Department of Environmental Protection's Stormwater Management Standards

Project Type: The project, as proposed, is a redevelopment, as the site is currently occupied by the lumber shed and associated paving and packed gravel. As a Redevelopment, this project will be subject to meet all of the Stormwater Standards to the maximum extent practicable.

Overall the project will provide an improvement to stormwater runoff quantity and quality from the site. Currently there is no functioning stormwater collection system providing any sediment removal to parking and driveway areas on the site that are considered sediment laden. The redevelopment of the site will provide a collection system that allows clean rooftop runoff a chance to infiltrate before running downstream and removes sediment from uncovered parking lot runoff prior to entering the drainage system.

LID Measures:

The project has taken into consideration Low Impact Development measures to the extent that it limits the impact of the development to previously developed areas and employs LID techniques to manage stormwater on the site. Parking areas have been minimized and where parking areas are uncovered, stormwater management is proposed. Additionally, the infiltration trench and infiltration bed below the landscape areas will provide a way for stormwater to get back into the ground before it is allowed to flow downstream. This configuration will further cleanse stormwater and treat it prior to introducing it to the City of Cambridge's closed drainage system.

Standard 1: No New Untreated Discharges

Compliance: The proposed design will comply with this Standard. There will be no new untreated stormwater discharges from areas with pollutant loading. All of the stormwater runoff flowing off the site will be treated by recharge/infiltration areas prior to being allowed to flow downstream.

Standard 2: Peak Rate Attenuation

Compliance: This project will comply with this standard – see Table 1, below. In addition to complying with the Massachusetts Stormwater Handbook Standard, the project will also comply with the City of Cambridge Standard by matching the rate of runoff for the proposed 25-year storm to the existing 2-year storm. Stormwater management systems have been designed to mitigate post-development peak discharge rates to less than pre-development levels. Supporting hydrologic model calculations are attached at the end of this report.

Table 1: Peak Rates of Runoff (all rates listed in cfs)

	Design Point– SC-1			
	2-Year	10-year	25-year	100-Year
Existing	0.82	1.30	1.58	1.98
Proposed	0.16	0.40	0.82	1.64

Standard 3: Recharge

Compliance: The loss of annual recharge to groundwater shall be eliminated or minimized though the use of infiltration measures including environmentally sensitive design, low impact development techniques, stormwater best management practices (BMPs) and good operation and maintenance. Due to the presence of urban soils (with

unknown composition), a potentially wet substratum on the site and the presence of soils compacted over time given the use of the site (the majority of the site has been used for drive surfaces and building), the success and benefit of direct infiltration of runoff is likely minimal. However, the current design provides a recharge bed located at the center of the site in an effort to spread out the ability of the site to recharge. As indicated below, it is anticipated that the system will dewater within the required maximum time of 72-hours assuming a typical infiltration rate for the most slowly draining hydrologic soil group 'B' soil.

Recharge:

INSTRUCTIONS:

1. Determine the increase in impervious area (in square feet) proposed above each Hydrologic Soil Group and input those areas in the appropriate blue cells.
2. The Required Recharge Volume (in cubic feet) will be calculated and displayed in the yellow cell.

Step No.			
1	Impervious area located above:		
	Hydrologic Soil Group "A" Soil =	0	sf
	Hydrologic Soil Group "B" Soil =	7649	sf
	Hydrologic Soil Group "C" Soil =	0	sf
	Hydrologic Soil Group "D" Soil =	0	sf
2	Required Recharge Volume =	223.10	cf

Step No.				
1	Method:	Static		
2	Required Recharge Volume (in cubic feet):	223	as determined by the	Static Method
3	Bottom Area (in Feet)	335		

		Hydraulic Conductivity Rate:	In-Situ Saturated Hydraulic Conductivity Rate
4a	ONLY - If using Dynamic: In Situ Method --> Enter Hydraulic Conductivity Rate		0

	Texture Class	NRCS Hydrologic Soil Group (HSG)	Infiltration Rate (Inches/Hour)	
4b	Loam	B	0.52	Hours
			$Time_{drawdown}$ =	15.36
			72-Hour Drawdown Requirement Check:	OK

Standard 4: Water Quality

Compliance: Per the Stormwater Management Standards, the required water quality volume equals 0.5 inches of runoff times the total impervious area of the post construction development project site. Calculated below in Table 2 are the required water quality volumes for the new development.

	Total Impervious	*Water Quality Volume Req'd*	*Water Quality Volume Provided (infiltration bed and trench)*
28-34 Chapman Street	7,649 sf	319 cf	816 cf

Table 2: Required Water Quality Volumes

The stormwater management practices/ water quality BMPs selected were based on site compatibility and potential to remove the most sediment in the smallest footprint, due to limited space on the site and limited separation from groundwater levels. The anticipated TSS removal calculations are included below for the treatment TSS removal train. The Treatment Train consists of Street Sweeping, Grass Channels, deep sump yard inlet and the recharge bed below the landscape area prior to discharge downstream; this treatment train achieves the minimum 80%TSS removal.

DESCRIPTION OF DISCHARGE POINT: City of Cambridge Closed Drainage System

TSS Removal Calculation Worksheet

Location: 110 Fawcett Street

B BMP[1]	C TSS Removal Rate[1]	D Starting TSS Load*	E Amount Removed (C*D)	F Remaining Load (D-E)
Street Sweeping - 5%	0.05	1.00	0.05	0.95
Grass Channel	0.80	0.95	0.76	0.19
Deep Sump and Hooded Catch Basin	0.25	0.19	0.05	0.14
Infiltration Basin	0.80	0.14	0.11	0.03
	0.00	0.03	0.00	0.03

Total TSS Removal = 97%

Separate Form Needs to be Completed for Each Outlet or BMP Train

Project: 16029
Prepared By: mgj
Date: 10/21/2016

*Equals remaining load from previous BMP (E) which enters the BMP

An Operation and Maintenance (O&M) Plan for the storm drainage system, including the Infiltration Bed, has been included at the end of this report as well as a Long Term Pollution Prevention Plan for the site.

Standard 5: Land Uses with Higher Potential Pollutant Loads (LUHPPLs) [Redevelopment, Pretreatment & Structural BMPs to Maximum Extent Practicable]

Compliance: The project is not associated with Higher Potential Pollutant Loads. This project complies with this standard.

Standard 6: Critical Areas

Compliance: The site is not located within a Critical Area.

Standard 7: Redevelopments and Other Projects Subject to the Standards only to the maximum extent practicable.

Compliance: This project is a redevelopment, as a redevelopment this project will be subject to all of the Stormwater Management Standards to the maximum extent practicable.

Standard 8: Construction Period Pollution Prevention and Erosion and Sedimentation Control.

Compliance: The project will comply with this standard. Sedimentation and erosion controls will be incorporated as part of the design of this project and employed during site construction. The Stormwater Pollution Prevention Plan prepared for this development will be submitted before land disturbance begins.

Standard 9: Operation and Maintenance Plan

Compliance: An operations and maintenance plan intended to ensure the continued proper functioning of the existing stormwater controls and the proposed stormwater controls has been included with this report as Appendix E.

Standard 10: Prohibition of Illicit Discharges.

Compliance: An Illicit Discharge Statement will be provided prior to discharge to post-construction BMP's as required.

CONCLUSION

In conclusion, the proposed redevelopment of 110 Fawcett Street will have a beneficial effect on the stormwater management of the site and will comply with the DEP's Stormwater Management Handbook standards as noted in this report.

APPENDIX LIST

Appendix A – USGS Topography Map

Appendix B – FIRM Map for site

Appendix C – NRCS (SCS) Soil Description and Map

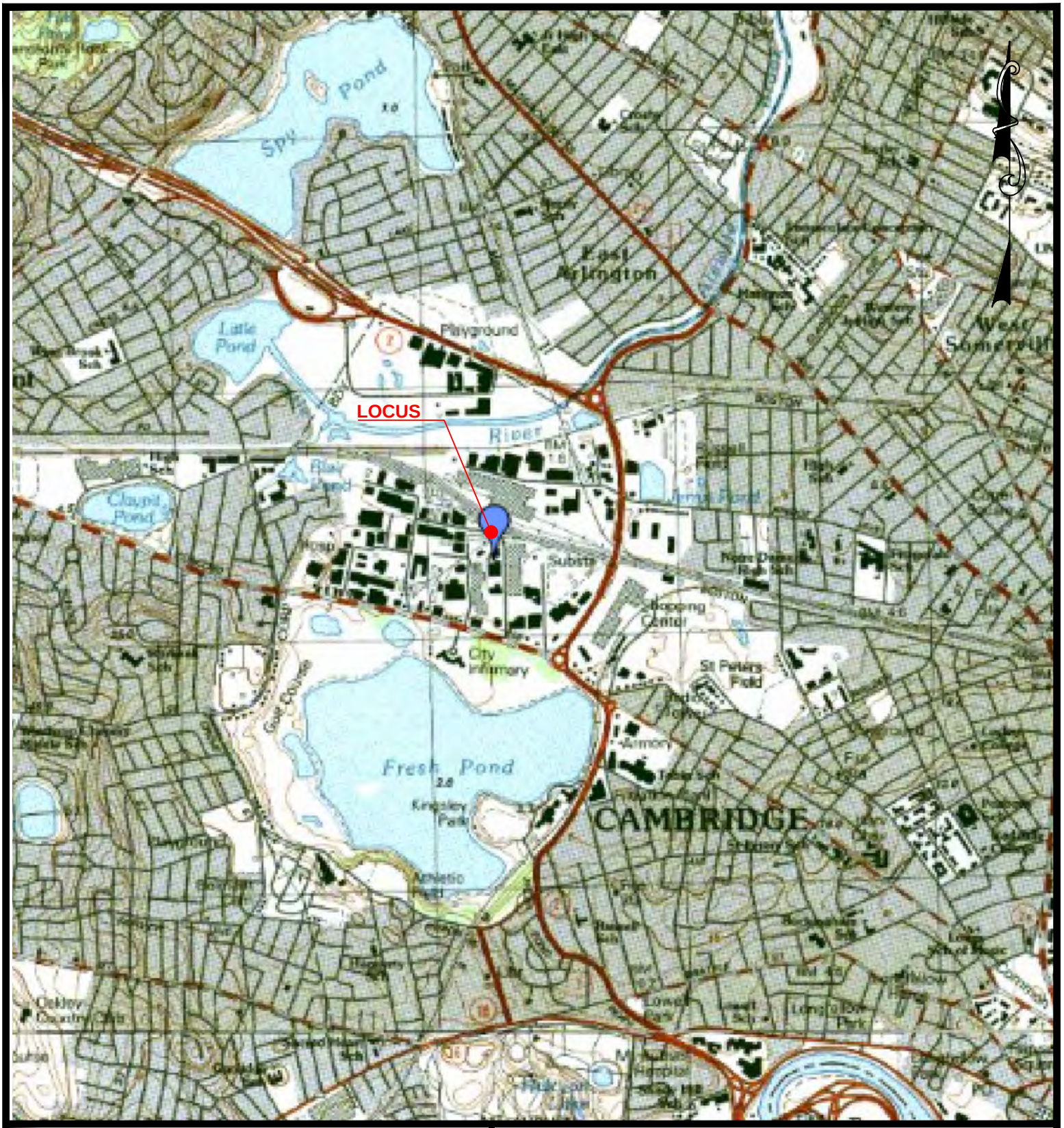
Appendix D – Existing Conditions Plans
Proposed Conditions Plans

Appendix E – Operations and Maintenance Plan

Appendix F – Hydrologic Model

APPENDIX A

USGS TOPOGRAPHY MAP



JCG JOYCE CONSULTING GROUP
CIVIL ENGINEERS

100 WYMAN ROAD
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PLAN TITLE:

USGS LOCUS PLAN
110 FAWCETT STREET
CAMBRIDGE, MA

PREPARED FOR:

ELTON + HAMPTON ARCHITECTS
103 TERRACE STREET
ROXBURY, MA

DATE 10–04–16	REV	SCALE N.T.S.	JOB NO. 16050

APPENDIX B

FIRM MAP FOR SITE

MAP SCALE 1" = 500'

250 0 500 1000

FEET

METER

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0419E

FIRM

FLOOD INSURANCE RATE MAP

MIDDLESEX COUNTY, MASSACHUSETTS
(ALL JURISDICTIONS)

PANEL 419 OF 656

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
ARLINGTON, TOWN OF	250177	0419	E
BELMONT, TOWN OF	250182	0419	E
CAMBRIDGE, CITY OF	250186	0419	E
SOMERVILLE, CITY OF	250214	0419	E
WATERTOWN, TOWN OF	250223	0419	E

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
25017C0419E

EFFECTIVE DATE
JUNE 4, 2010

Federal Emergency Management Agency

APPENDIX C

NRCS (SCS) SOIL DESCRIPTION AND MAP

Soil Map—Middlesex County, Massachusetts
(110 Fawcett Street - Cambridge MA)

Map Scale: 1:5,680 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 50 100 200 300

Feet
0 250 500 1000 1500

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 19N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:25,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Middlesex County, Massachusetts
Survey Area Data: Version 15, Sep 28, 2015

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Aug 10, 2014—Aug 25, 2014

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Middlesex County, Massachusetts (MA017)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
223A	Scio very fine sandy loam, 0 to 3 percent slopes	0.8	0.5%
603	Urban land, wet substratum	157.7	95.5%
652	Udorthents, refuse substratum	0.0	0.0%
655	Udorthents, wet substratum	6.7	4.1%
Totals for Area of Interest		**165.2**	**100.0%**

Middlesex County, Massachusetts

603—Urban land, wet substratum

Map Unit Setting

National map unit symbol: 9951
Mean annual precipitation: 32 to 50 inches
Mean annual air temperature: 45 to 50 degrees F
Frost-free period: 110 to 200 days
Farmland classification: Not prime farmland

Map Unit Composition

Urban land: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Urban Land

Setting

Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Excavated and filled land over alluvium and/or marine deposits

Minor Components

Udorthents, loamy

Percent of map unit: 10 percent
Hydric soil rating: No

Rock outcrop

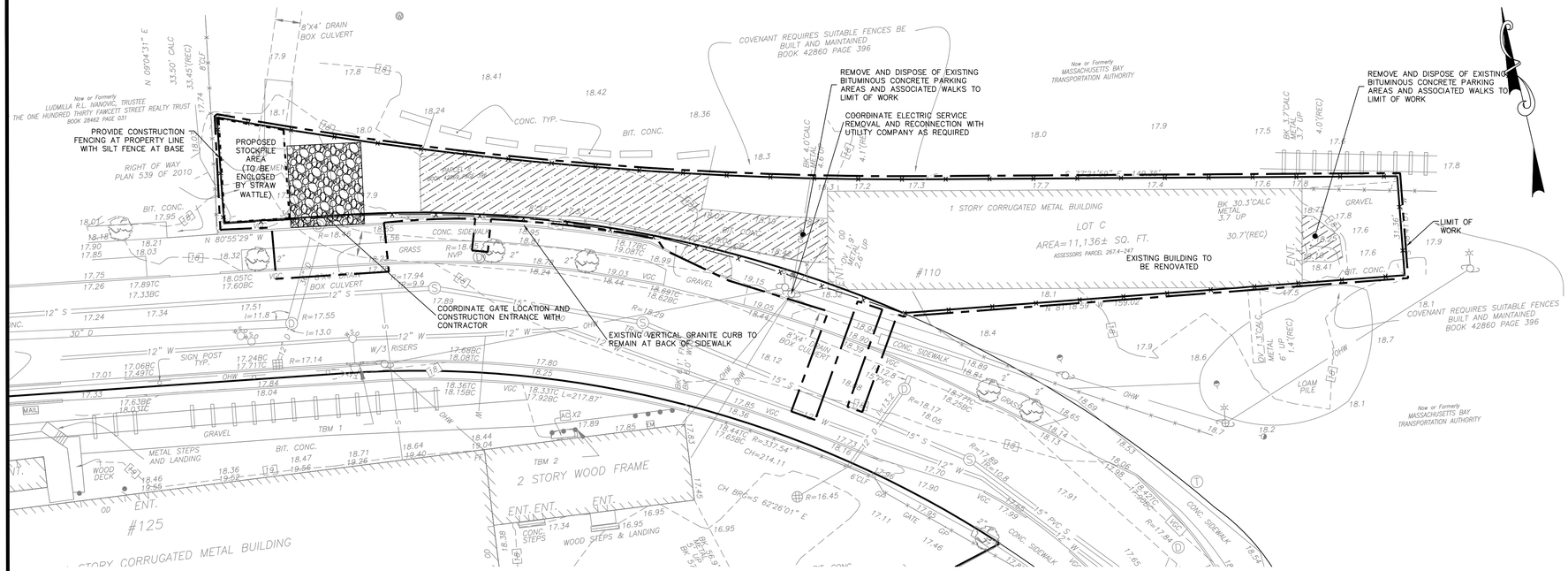
Percent of map unit: 5 percent
Landform: Ledges
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Head slope
Down-slope shape: Concave
Across-slope shape: Concave

Data Source Information

Soil Survey Area: Middlesex County, Massachusetts
Survey Area Data: Version 15, Sep 28, 2015

APPENDIX D

EXISTING CONDITIONS PLANS
PROPOSED CONDITIONS PLANS



SCALE: 1" = 20'

0' 10' 20' 40' 60'

SITE PLAN
1"=20'

GENERAL NOTES

1) VERTICAL DATUM IS CAMBRIDGE CITY BASE.

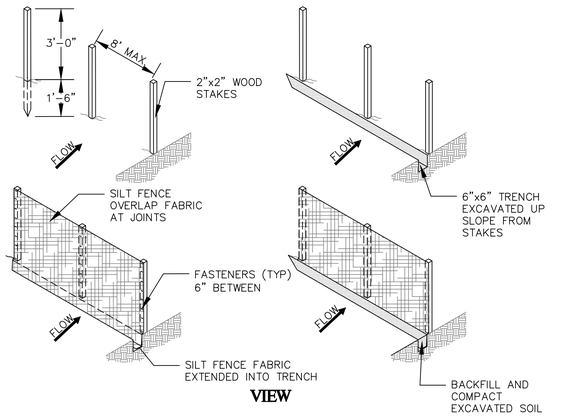
2) SITE FEATURES AND UTILITIES SHOWN ON THIS PLAN ARE BASED ON A PLAN CREATED BY FELDMAN LAND SURVEYORS TITLED "PARTIAL EXISTING CONDITIONS 110 & 125 FAWCETT STREET CAMBRIDGE, MA" WITH A SCALE OF 1"=30' AND A DATE OF 09-14-16.

3) LOCATION OF SUBSURFACE UTILITIES IS APPROXIMATE. THE CONTRACTOR SHALL PROTECT AND MAINTAIN ALL EXISTING UTILITY SERVICES THROUGHOUT CONSTRUCTION. CONTACT DIG SAFE AT 1-888-DIGSAFE AT LEAST 72 HOURS PRIOR TO CONSTRUCTION. CONTRACTOR SHALL VERIFY LOCATION OF EXISTING UTILITIES PRIOR TO CONSTRUCTION.

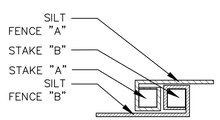
4) FEMA FLOOD ELEV. =18.65 (CITY OF CAMBRIDGE DATUM)(NAVD88 ELEV. 7)

EROSION AND SEDIMENT CONTROL NOTES

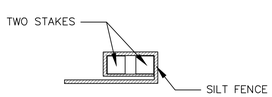
1. PRIOR TO ANY LAND DISTURBANCE ACTIVITIES COMMENCING ON THE SITE, THE DEVELOPER SHALL PHYSICALLY MARK LIMITS OF NO LAND DISTURBANCE ON THE SITE WITH TAPE, SIGNS, OR ORANGE CONSTRUCTION FENCE, SO THAT WORKERS CAN SEE THE AREAS TO BE PROTECTED. THE PHYSICAL MARKERS SHALL REMAIN IN PLACE UNTIL A CERTIFICATE OF COMPLETION HAS BEEN ISSUED.
2. APPROPRIATE EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSTALLED PRIOR TO SOIL DISTURBANCE. MEASURES SHALL BE TAKEN TO CONTROL EROSION WITHIN THE PROJECT AREA. SEDIMENT IN RUNOFF WATER SHALL BE TRAPPED AND RETAINED WITHIN THE PROJECT AREA. WETLAND AREAS AND SURFACE WATERS SHALL BE PROTECTED FROM SEDIMENT.
3. MINIMIZE TOTAL AREA OF DISTURBANCE AND PROTECT NATURAL FEATURES AND SOIL.
4. THE CONTRACTOR SHALL SEQUENCE ALL ACTIVITIES TO MINIMIZE SIMULTANEOUS AREAS OF DISTURBANCE. MASS CLEARINGS AND GRADING OF THE ENTIRE SITE SHALL BE AVOIDED.
5. MINIMIZE SOIL EROSION AND CONTROL SEDIMENTATION DURING CONSTRUCTION,
6. DIVERT UNCONTAMINATED WATER AROUND DISTURBED AREAS.
7. INSTALL AND MAINTAIN ALL EROSION AND SEDIMENT CONTROL MEASURES IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS AND GOOD ENGINEERING PRACTICES OR THE 2008 EPA'S CONSTRUCTION GENERAL PERMIT.
8. PROTECT AND MANAGE ON AND OFF-SITE MATERIAL STORAGE AREAS (OVERBURDEN AND STOCKPILES OF DIRT, BORROW AREAS, OR OTHER AREAS USED SOLELY BY THE PERMITTED PROJECT ARE CONSIDERED A PART OF THE PROJECT).
9. COMPLY WITH APPLICABLE FEDERAL, STATE AND LOCAL LAWS AND REGULATIONS INCLUDING WASTE DISPOSAL, SANITARY SEWER OR SEPTIC SYSTEM REGULATIONS, AND AIR QUALITY REQUIREMENTS, INCLUDING DUST CONTROL.
10. SEDIMENT SHALL BE REMOVED ONCE THE VOLUME REACHES ¼ TO ½ THE HEIGHT OF THE EROSION CONTROL DEVICE. SEDIMENT SHALL BE REMOVED FROM SILT FENCE PRIOR TO REACHING THE LOAD-BEARING CAPACITY OF THE SILT FENCE WHICH MAY BE LOWER THAN ¼ TO ½ THE HEIGHT.
11. SEDIMENT FROM SEDIMENT TRAPS OR SEDIMENTATION PONDS SHALL BE REMOVED WHEN DESIGN CAPACITY HAS BEEN REDUCED BY 50 PERCENT.
12. BMPS TO BE USED FOR INFILTRATION AFTER CONSTRUCTION SHALL NOT BE USED AS BMPS DURING CONSTRUCTION UNLESS OTHERWISE APPROVED BY THE BOARD. MANY INFILTRATION TECHNOLOGIES ARE NOT DESIGNED TO HANDLE THE HIGH CONCENTRATIONS OF SEDIMENTS TYPICALLY FOUND IN CONSTRUCTION RUNOFF, AND THUS MUST BE PROTECTED FROM CONSTRUCTION RELATED SEDIMENT LOADINGS.
13. SOIL STOCKPILES MUST BE STABILIZED OR COVERED AT THE END OF EACH WORKDAY. STOCKPILE SIDE SLOPES SHALL NOT BE GREATER THAN 2:1. ALL STOCKPILES SHALL BE SURROUNDED BY SEDIMENT CONTROLS.
14. FOR ACTIVE CONSTRUCTION AREAS SUCH AS BORROW OR STOCKPILE AREAS, ROADWAY IMPROVEMENTS AND AREAS WITHIN 50 FEET OF A BUILDING UNDER CONSTRUCTION, A PERIMETER SEDIMENT CONTROL SYSTEM SHALL BE INSTALLED AND MAINTAINED TO CONTAIN SOIL.
15. A TRACKING PAD OR OTHER APPROVED STABILIZATION METHOD SHALL BE CONSTRUCTED AT ALL ENTRANCE/EXIST POINTS OF THE SITE TO REDUCE THE AMOUNT OF SOIL CARRIED ONTO ROADWAYS AND OFF THE SITE.
16. PERMANENT SEEDING SHALL BE UNDERTAKEN IN THE SPRING FROM MARCH THROUGH MAY, AND IN LATE SUMMER AND EARLY FALL FROM AUGUST TO OCTOBER 15. DURING THE PEAK SUMMER MONTHS AND IN THE FALL AFTER OCTOBER 15, WHEN SEEDING IS FOUND TO BE IMPRACTICAL, APPROPRIATE TEMPORARY STABILIZATION SHALL BE APPLIED. PERMANENT SEEDING MAY BE UNDERTAKEN DURING THE SUMMER IF PLANS PROVIDE FOR ADEQUATE MULCHING AND WATERING.
17. TEMPORARY SEDIMENT TRAPPING DEVICES MUST NOT BE REMOVED UNTIL PERMANENT STABILIZATION IS ESTABLISHED IN ALL CONTRIBUTORY DRAINAGE AREAS.
18. ALL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES SHALL BE REMOVED AFTER FINAL SITE STABILIZATION. DISTURBED SOIL AREAS RESULTING FROM THE REMOVAL OF TEMPORARY MEASURES SHALL BE PERMANENTLY STABILIZED WITHIN 30 DAYS OF REMOVAL.
19. PROPERLY MANAGE ON-SITE CONSTRUCTION AND WASTE MATERIALS.
20. PREVENT OFF-SITE VEHICLE TRACKING OF SEDIMENTS.
21. DUST SHALL BE CONTROLLED AT THE SITE.
22. ALL PREVIOUSLY DISTURBED LAND SHALL BE STABILIZED BY APPROVED METHODS AFTER 14 DAYS IF LEFT UNDISTURBED. THIS INCLUDES STOCKPILES, CONSTRUCTION ENTRANCES, GRADED AREAS AND OTHER CONSTRUCTION ACTIVITY RELATED CLEARING.
23. IF WORK IS HALTED OVER WINTER MONTHS THE CONTRACTOR SHALL BE RESPONSIBLE FOR STABILIZING THE AREA THROUGH GROUNDCOVER PRACTICES..



VIEW



JOINT DETAIL

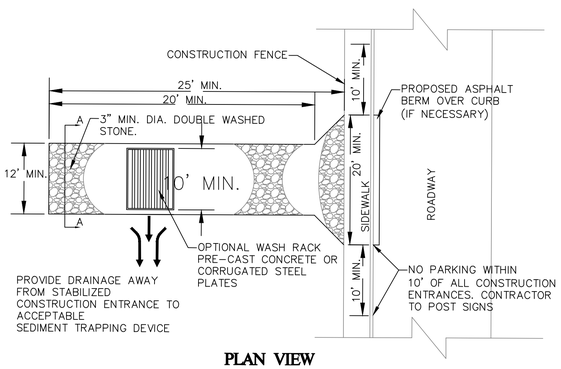


END JOINT DETAIL

INSPECTION SCHEDULE SHALL COMPLY WITH THE 2008 EPA CONSTRUCTION GENERAL PERMIT

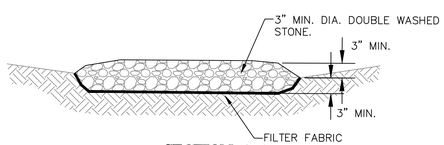
MAINTENANCE SHALL OCCUR WHEN NECESSARY. SILT FENCE SHALL BE REPLACE EVERY 6 MONTHS AND STACKS SHALL BE INSPECTED TO ENSURE STRUCTURAL INTEGRITY. SILT FENCE SHALL BE INSPECTED WEEKLY AND ALL MAINTENANCE ISSUES SHALL BE CORRECT AT THAT TIME.

SILT FENCE DETAIL
NOT TO SCALE



PLAN VIEW
NOT TO SCALE

CONTRACTOR TO PROVIDE A WATER SOURCE FOR A WASH STATION FOR ALL VEHICLES LEAVING THE SITE.



SECTION A-A

CONSTRUCTION ENTRANCE DETAIL
NOT TO SCALE

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MICHAEL J. JOYCE CIVIL No. 47855 REGISTERED PROFESSIONAL ENGINEER
10-21-16

LEGEND

AERIAL FIBER OPTIC		WV	WATER VALVE
W	EX. WATER	HY	HYDRANT
S	EX. SEWER	SMH	SEWER MANHOLE
D	EX. DRAIN	TMH	TELEPHONE MANHOLE
E	EX. ELECT	CB	EX. CATCH BASIN
T	EX. TEL	HH	EX. HANDHOLE
G	EX. GAS	UP	UTILITY POLE
LP	LIGHT POLE	GV	GAS VALVE
DMH	DRAIN MANHOLE		
EMH	ELECTRIC MANHOLE		
VGC	VERTICAL GRANITE CURB		
FGC	FLUSH GRANITE CURB		
CRTW	CONCRETE RETAINING WALL		

SCALE	1"=20'	JOB NO.	JCG 16-029
DATE	10-21-16	TAX MAP NO.	N/A

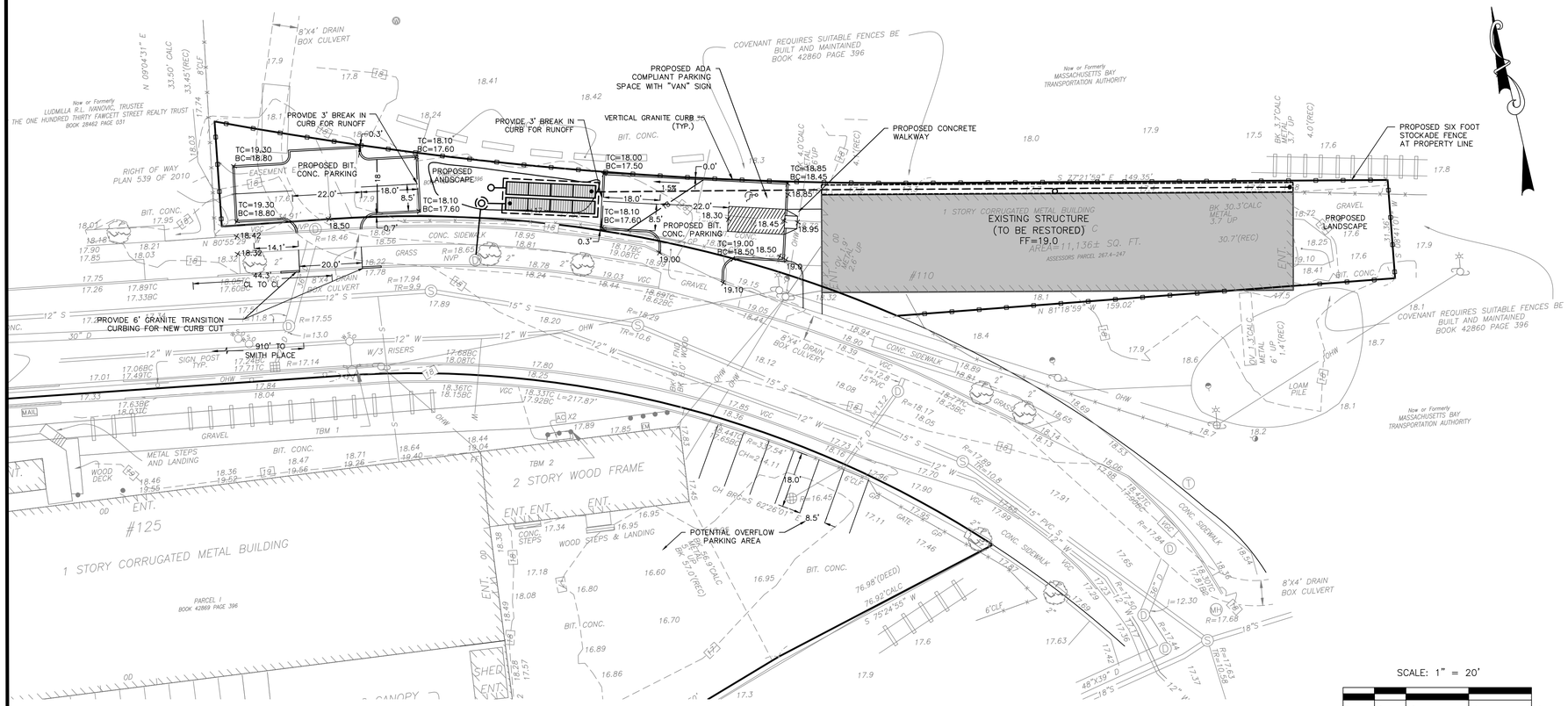
REVISIONS

NO.	REVISION	BY

PLAN TITLE:
SITE DEMOLITION PLAN
110 FAWCETT STREET
CAMBRIDGE, MA

PREPARED FOR:
ELTON + HAMPTON ARCHITECTS
103 TERRACE STREET
ROXBURY, MA 02120

C-1
SHEET 1 OF 4



SITE PLAN
1"=20'

SCALE: 1" = 20'
0' 10' 20' 40' 60'

GENERAL NOTES

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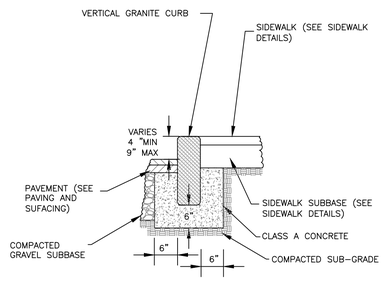
4) FEMA FLOOD ELEV. =18.65 (CITY OF CAMBRIDGE DATUM)(NAVD88 ELEV. 7)

GENERAL GRADING NOTES

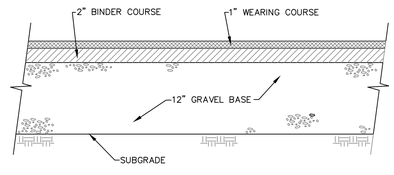
1. ALL PAVED AREAS MUST PITCH TO DRAIN AT A MINIMUM OF ONE-EIGHTH INCH (1/8") PER FOOT.
2. WHERE NEW PAVING MEETS EXISTING PAVING, MEET LINE AND GRADE OF EXISTING.
3. UNDERGROUND UTILITIES SHOWN AS APPROXIMATE ONLY.
4. PROVIDE POSITIVE DRAINAGE AWAY FROM FACE OF BUILDINGS AT ALL LOCATIONS.
5. ALL PROPOSED TOP OF CURB ELEVATIONS ARE SIX INCHES (6") ABOVE BOTTOM OF CURB ELEVATIONS UNLESS SHOWN OTHERWISE.
6. THE GENERAL CONTRACTOR SHALL BLEND NEW EARTHWORK SMOOTHLY INTO EXISTING EARTHWORK.
7. ALL POINTS OF CONSTRUCTION EGRESS AND/OR INGRESS SHALL BE MAINTAINED TO PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC ROADS.
8. THE CONTRACTOR SHALL VERIFY ALL EXISTING GRADES IN THE FIELD AND REPORT ANY DISCREPANCIES IMMEDIATELY TO THE ARCHITECT/ENGINEER PRIOR TO STARTING WORK.
9. ANY ALTERATIONS TO THESE DRAWINGS MADE IN THE FIELD DURING CONSTRUCTION SHALL BE RECORDED BY THE GENERAL CONTRACTOR AND SHARED WITH THE ARCHITECT AND ENGINEER AS REQUIRED.
10. SURPLUS MATERIALS SHALL NOT BE REMOVED FROM THE SITE UNLESS DIRECTED BY THE OWNER OR OWNER'S REPRESENTATIVE.
11. ANY AREAS OUTSIDE OF THE LIMIT-OF-WORK THAT IS DISTURBED SHALL BE RESTORED TO ITS ORIGINAL CONDITION AT NO COST TO THE OWNER.
12. FURNISH AND INSTALL 3" OF SCREENED LOAM AND HYDROSEED IN ALL DISTURBED AREAS.

LEGEND

DMH	PROPOSED DRAIN MANHOLE
CB	PROPOSED STORMCEPTOR INLET
SMH	PROPOSED SEWER MANHOLE
WG	PROPOSED GATE VALVE
CO	PROPOSED CLEANOUT
IP	PROPOSED INSPECTION PORT
W	PROPOSED WATER LINE
D	PROPOSED DRAIN LINE
S	PROPOSED SEWER LINE
E	PROPOSED ELECTRIC LINE
G	PROPOSED GAS LINE
90.0 X	PROPOSED SPOT GRADE
85	EXISTING CONTOUR
85	PROPOSED CONTOUR
VIF	VERIFY IN FIELD
IP	INSPECTION PORT
LP	LIGHT POLE
LB	LIGHT BOLLARD
// //	LINE TO BE ABANDONED
RCP	REINFORCED CONCRETE PIPE
PVC	POLYVINYL CHLORIDE PIPE
DI	CLASS 52 CEMENT LINED DUCTILE IRON
LF	LINEAR FEET
INV.	INVERT
TYP.	TYPICAL
CONC.	CONCRETE
BIT. CONC.	BITUMINOUS CONCRETE
RD	ROOF DRAIN
SS	SANITARY SEWER



VERTICAL GRANITE CURB DETAIL
NOT TO SCALE



PAVEMENT SECTION DETAIL
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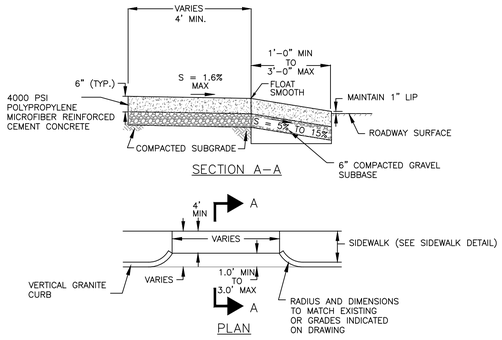


DRIVEWAY APRON DETAIL
NOT TO SCALE

JOYCE CONSULTING GROUP
CIVIL ENGINEERS
100 WYMAN ROAD
BRAINTREE, MA 02184
781-817-6120
hello@joycecg.com

LEGEND

W	EX. WATER	WV	WATER VALVE
S	EX. SEWER		HYDRANT
D	EX. DRAIN	SMH	SEWER MANHOLE
E	EX. ELECT	TMH	TELEPHONE MANHOLE
T	EX. TEL	CB	EX. CATCH BASIN
G	EX. GAS	HH	EX. HANDHOLE
LP	LIGHT POLE	UP	UTILITY POLE
DMH	DRAIN MANHOLE	GV	GAS VALVE
EMH	ELECTRIC MANHOLE		
VGC	VERTICAL GRANITE CURB		
FGC	FLUSH GRANITE CURB		
CRTW	CONCRETE RETAINING WALL		

SCALE	1"=20'	JOB NO.	JCG 16-029
DATE	10-21-16	TAX MAP NO.	N/A

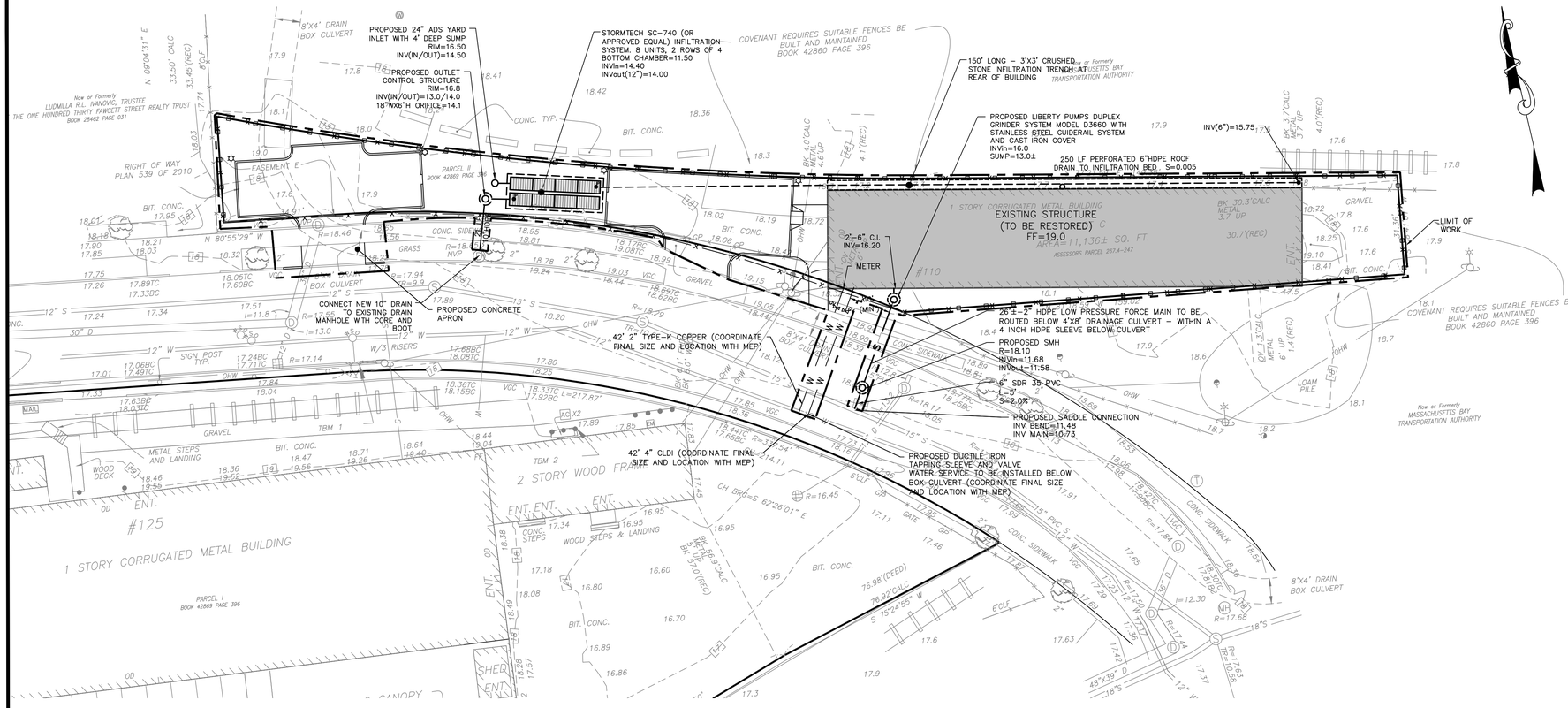
REVISIONS

NO.	REVISION	BY

PLAN TITLE:
SITE LAYOUT & GRADING PLAN
110 FAWCETT STREET
CAMBRIDGE, MA

PREPARED FOR:
ELTON + HAMPTON ARCHITECTS
103 TERRACE STREET
ROXBURY, MA 02120

C-2
SHEET 2 OF 4



SITE PLAN
1"=20'

SCALE: 1" = 20'

0' 10' 20' 40' 60'

GENERAL NOTES

1) VERTICAL DATUM IS CAMBRIDGE CITY BASE.

2) SITE FEATURES AND UTILITIES SHOWN ON THIS PLAN ARE BASED ON A PLAN CREATED BY FELDMAN LAND SURVEYORS TITLED "PARTIAL EXISTING CONDITIONS 110 & 125 FAWCETT STREET CAMBRIDGE, MA" WITH A SCALE OF 1"=30' AND A DATE OF 09-14-16.

3) LOCATION OF SUBSURFACE UTILITIES IS APPROXIMATE. THE CONTRACTOR SHALL PROTECT AND MAINTAIN ALL EXISTING UTILITY SERVICES THROUGHOUT CONSTRUCTION. CONTACT DIG SAFE AT 1-888-DIGSAFE AT LEAST 72 HOURS PRIOR TO CONSTRUCTION. CONTRACTOR SHALL VERIFY LOCATION OF EXISTING UTILITIES PRIOR TO CONSTRUCTION.

4) FEMA FLOOD ELEV. =18.65 (CITY OF CAMBRIDGE DATUM)(NAVD88 ELEV. 7)

SITE UTILITY NOTES

1. ALL CONSTRUCTION METHODS AND MATERIALS SHALL CONFORM TO THE LATEST EDITION OF THE MASSACHUSETTS HIGHWAY DEPARTMENT'S "STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES" AND ALL SUPPLEMENTS, AND SHALL CONFORM TO ALL APPLICABLE REQUIREMENTS AND SPECIFICATIONS OF THE CITY OF CAMBRIDGE.

2. THE LOCATIONS OF ALL EXISTING UTILITIES SHOWN ARE APPROXIMATE. THE CONTRACTOR SHALL VERIFY THE LOCATION AND CONDITION OF ALL EXISTING UTILITIES THAT MAY BE AFFECTED BY THE PROPOSED WORK AND SHALL CONTACT DIG-SAFE PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING THE CONDITION AND THE FUNCTIONALITY OF ALL UTILITIES THAT ARE AFFECTED BY THE WORK AND SHALL REPAIR OR REPLACE ANY STRUCTURES OR UTILITIES THAT ARE DAMAGED DURING CONSTRUCTION.

3. PRIOR TO STARTING ANY OTHER WORK ON THE SITE, THE CONTRACTOR SHALL NOTIFY APPROPRIATE AGENCIES AND SHALL INSTALL EROSION CONTROL MEASURES AS SHOWN ON THE DRAWINGS AND AS IDENTIFIED BY ALL LOCAL, STATE, AND/OR FEDERAL APPROVAL DOCUMENTS ASSOCIATED WITH THE PROJECT.

4. ALL PIPING SHALL BE LAID ON UNIFORM, CONTINUOUS GRADE OVER COMPACTED OR UNDISTURBED SUBBASE.

5. ALL STRUCTURES AND THEIR APPURTENANCES WITHIN OR ADJACENT TO VEHICLE TRAVEL WAYS SHALL BE CAPABLE OF WITHSTANDING H-20 WHEEL LOADS.

6. THE SITE CONTRACTOR SHALL COORDINATE WITH THE ELECTRICAL CONTRACTOR FOR FURNISHING AND INSTALLING REQUIRED SITE ELECTRICAL ITEMS SUCH AS PULL BOXES, HAND HOLES, CONDUITS, DUCTBANKS, LIGHT POLE BASES, CONCRETE PADS, ETC. AND SHALL COORDINATE LOCATION OF AND PROVIDE EXCAVATION AND BACKFILL FOR THESE ITEMS AS REQUIRED FOR A COMPLETE AND FUNCTIONAL SYSTEM.

7. THE SITE CONTRACTOR SHALL PROVIDE EXCAVATION AND BACKFILL SERVICES RELATED TO INSTALLATION OF GAS PIPING IN ACCORDANCE WITH THE GAS COMPANY'S REQUIREMENTS. FINAL LOCATION OF ANY NEW GAS SERVICES SHALL BE COORDINATED WITH THE BUILDING PLUMBING ENGINEER AND THE GAS COMPANY.

8. THE LOCATION, SIZE, DEPTH AND SPECIFICATIONS FOR CONSTRUCTION OF PROPOSED PRIVATE UTILITY SERVICES (GAS, TELECOMMUNICATIONS, ELECTRIC) SHALL BE AS REQUIRED BY THE CONTROLLING COMPANY. FINAL LOCATIONS AND DESIGN LOADS SHALL BE COORDINATED WITH THE ENGINEER PRIOR TO INSTALLATION.

WATER SYSTEM NOTES

1. ALL ABANDONED WATER LINES (EX. TEMPORARY, DOMESTIC, FIRE, IRRIGATION, NON-ACTIVE, ETC) MUST BE CUT AND CAPPED AT THE MAIN WITH RESTRAINED JOINTS OR CLIPPED AND THEN INSPECTED BY THE WATER DEPARTMENT. TRENCH AND SURFACE CONDITION MUST BE INSPECTED BY THE CITY OF CAMBRIDGE DEPARTMENT OF PUBLIC WORKS AND CITY OF CAMBRIDGE WATER DEPARTMENT (CWD).

2. ALL MATERIALS FOR WATER WORK SHALL MEET AMERICAN WATER WORKS ASSOCIATION (AWWA) STANDARDS AS APPLICABLE. ALL OTHER MATERIALS MUST MEET SPECIFICATIONS OF THE DPW AND CWD.

3. DUCTILE IRON PIPE IS TO BE CLASS 52 OR GREATER WITH ¼" CEMENT LINING. COPPER TUBING SHALL BE TYPE K ONLY.

4. MULTIPLE TAPS MUST BE A MINIMUM OF THREE (3) FEET APART AND THREE (3) FEET FROM ANY JOINT OR BELL ON THE MAIN BEING TAPPED.

5. WHEN WORK IS COMPLETED, AS-BUILT DRAWING MUST BE SUBMITTED TO THE CWD (PREFERABLE IN ELECTRONIC FORMAT) WITHIN 60 DAYS IN TRIPLICATE PRIOR TO WATER TURN-ON.

6. THE CWD MUST BE NOTIFIED WITHIN 24 HOURS BEFORE WATER WORK IS TO START.

7. ALL SHUT-OFFS/TURN-ONS TO BE PERFORMED BY CWD PERSONNEL. TO ARRANGE FOR THIS SERVICE CALL (617) 349-4763.

8. ALL WATER WORK MUST BE INSPECTED PRIOR TO TRENCH BACKFILL. PLEASE CALL TO MAKE ARRANGEMENTS 24 HOURS IN ADVANCE FOR INSPECTIONS.

9. ALL COMPANIES PERFORMING WATER CONSTRUCTION MUST BE BONDED WITH THE DPW.

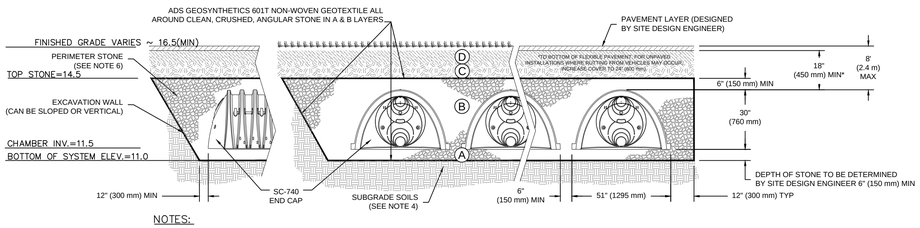
10. AFTER THE CWD PERMIT IS APPROVED A STREET OPENING PERMIT MUST BE OBTAINED FROM DPW.

11. IF SERVICE IS TO BE USED FOR CONSTRUCTION PURPOSES, BACK FLOW DEVICES MAY BE REQUIRED. FOR MORE INFORMATION ON BACKFLOW PREVENTION PLEASE CONTACT THE CWD CROSS CONNECTION DEPARTMENT.

12. THE CAMBRIDGE FIRE DEPARTMENT (CFD) APPROVAL IS REQUIRED FOR FIRE LINE INSTALLATION. A BACKFLOW DEVICE PERMIT MUST BE OBTAINED FORM THE ENGINEERING DIVISION BY CALLING (617) 349-4782.

13. A 72 HOUR NOTICE IS REQUIRED BY THE CWD TO MARK OUT THE WATER UTILITIES BEFORE CONSTRUCTION CAN BEGIN.

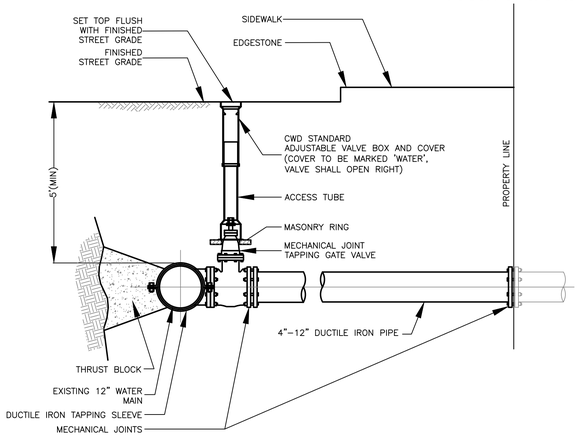
14. ALL NEW WATER MAINS MUST BE PRESSURE TESTED AND CHLORINATED BEFORE ACTIVATION IN THE DISTRIBUTION SYSTEM. A 24-HOUR NOTICE IS REQUIRED BY THE CWD FOR PRESSURE TEST AND SAMPLING AFTER CHLORINATION. ANY QUESTIONS, CONTACT THE CWD LABORATORY SUPERVISOR TO ARRANGE SAMPLE COLLECTION.



NOTES:

1. SC-740 CHAMBERS SHALL CONFORM TO THE REQUIREMENTS OF ASTM F2418 "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS", OR ASTM F2922 "STANDARD SPECIFICATION FOR POLYETHYLENE (PE) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
2. SC-740 CHAMBERS SHALL BE DESIGNED IN ACCORDANCE WITH ASTM F2787 "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
3. "ACCEPTABLE FILL MATERIALS" TABLE ABOVE PROVIDES MATERIAL LOCATIONS, DESCRIPTIONS, GRADATIONS, AND COMPACTION REQUIREMENTS FOR FOUNDATION, EMBEDMENT, AND FILL MATERIALS.
4. THE SITE DESIGN ENGINEER IS RESPONSIBLE FOR ASSESSING THE BEARING RESISTANCE (ALLOWABLE BEARING CAPACITY) OF THE SUBGRADE SOILS AND THE DEPTH OF FOUNDATION STONE WITH CONSIDERATION FOR THE RANGE OF EXPECTED SOIL MOISTURE CONDITIONS.
5. PERIMETER STONE MUST BE EXTENDED HORIZONTALLY TO THE EXCAVATION WALL FOR BOTH VERTICAL AND SLOPED EXCAVATION WALLS.
6. ONCE LAYER 'C' IS PLACED, ANY SOIL/MATERIAL CAN BE PLACED IN LAYER 'D' UP TO THE FINISHED GRADE. MOST PAVEMENT SUBBASE SOILS CAN BE USED TO REPLACE THE MATERIAL REQUIREMENTS OF LAYER 'C' OR 'D' AT THE SITE DESIGN ENGINEER'S DISCRETION.

UNDERGROUND INFILTRATION DETAIL
NOT TO SCALE



WATER CONNECTION DETAIL
NOT TO SCALE

COMMONWEALTH OF MASSACHUSETTS MICHAEL J. JOYCE CIVIL No. 47855 REGISTERED PROFESSIONAL ENGINEER
10.21.16

JCG JOYCE CONSULTING GROUP CIVIL ENGINEERS
100 WYMAN ROAD
BRAINTREE, MA 02184
781-817-6120
hello@joycecg.com

LEGEND

W	EX. WATER	WV	WATER VALVE
S	EX. SEWER		HYDRANT
D	EX. DRAIN	SMH	SEWER MANHOLE
E	EX. ELECT	TMH	TELEPHONE MANHOLE
T	EX. TEL	CB	EX. CATCH BASIN
G	EX. GAS	HH	EX. HANDHOLE
LP	LIGHT POLE	UP	UTILITY POLE
DMH	DRAIN MANHOLE		GAS VALVE
EMH	ELECTRIC MANHOLE		
VGC	VERTICAL GRANITE CURB		
FGC	FLUSH GRANITE CURB		
CRTW	CONCRETE RETAINING WALL		

SCALE	1"=20'	JOB NO.	JCG 16-029
DATE	10-21-16	TAX MAP NO.	N/A

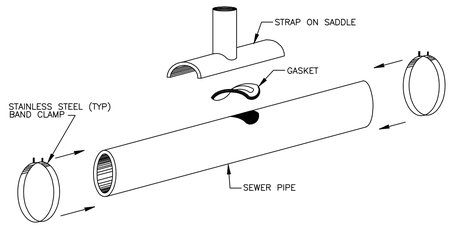
REVISIONS

NO.	REVISION	BY

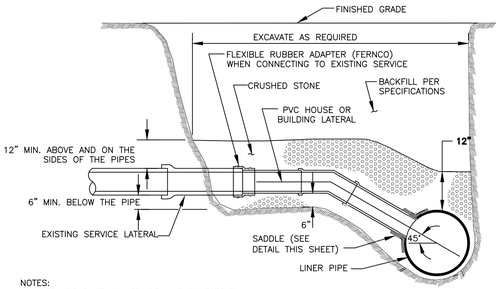
PLAN TITLE:
SITE UTILITY PLAN
110 FAWCETT STREET
CAMBRIDGE, MA

PREPARED FOR:
ELTON + HAMPTON ARCHITECTS
103 TERRACE STREET
ROXBURY, MA 02120

C-3
SHEET 3 OF 4



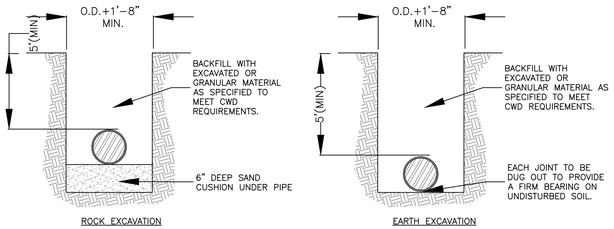
SADDLE CONNECTION – PLAN
NOT TO SCALE



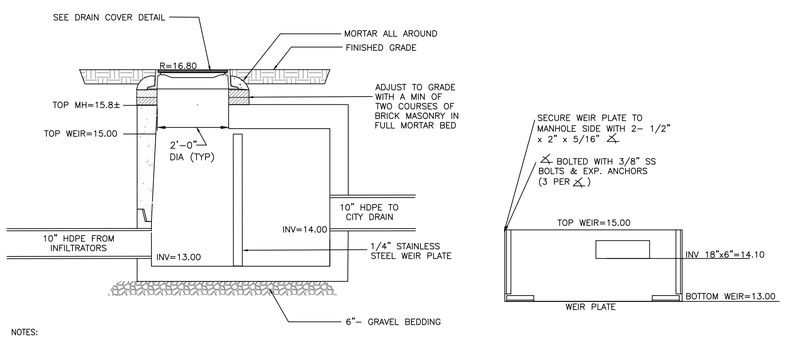
NOTES:
1. REPLACE EXISTING SERVICE LINE TO EXTENT SHOWN ON PLAN/PROFILES AND AS SPECIFIED.

SADDLE CONNECTION – SECTION
NOT TO SCALE

SEWER CONNECTION DETAIL
NOT TO SCALE

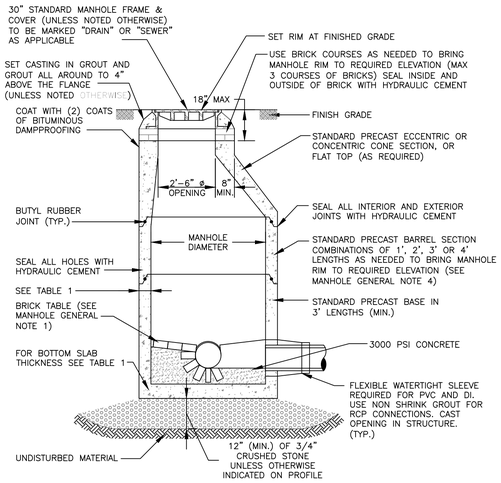


WATER LINE TRENCH DETAIL
NOT TO SCALE

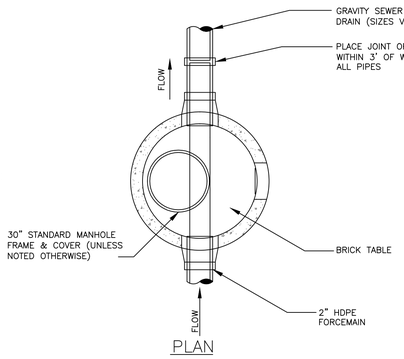


NOTES:
1. PROVIDE RESILIENT CONNECTOR WHERE PIPE ENTERS MANHOLE.
2. DESIGN LIVE LOAD HS20-44.

OUTLET CONTROL STRUCTURE DETAIL
NOT TO SCALE

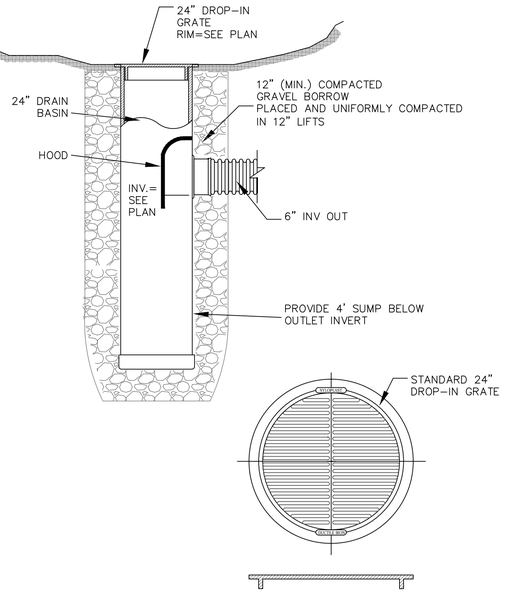


SECTION A–A



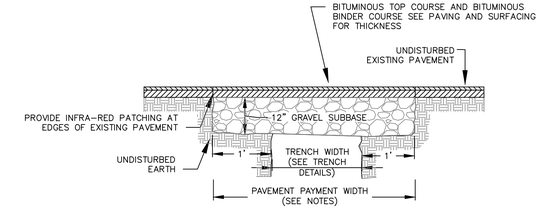
PLAN

SEWER MANHOLE DETAIL
NOT TO SCALE



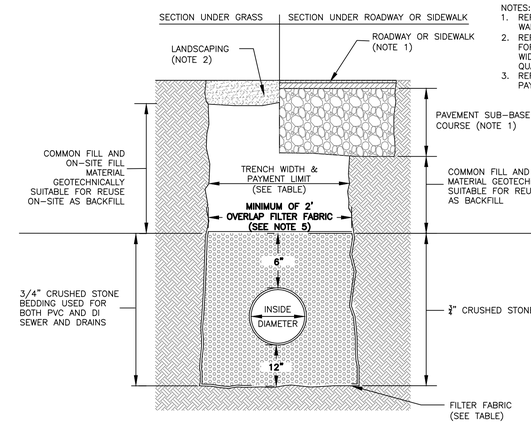
NOTE:
DRAIN BASIN SHALL BE NYLOPLAST MODEL 2824 AG OR APPROVED EQUAL

AREA DRAIN
NOT TO SCALE



NOTES:
1. PERMANENT TRENCH PAVEMENT PAYMENT WIDTH SHALL BE THE TRENCH PAY LIMIT PLUS 2 FEET
2. TEMPORARY TRENCH PAVEMENT PAYMENT WIDTH SHALL BE EQUAL TO THE TRENCH PAYMENT LIMIT
3. REMOVE AND DISPOSE ALL TEMPORARY PAVEMENT AS REQUIRED. RESTORE AND COMPACT SUBBASE AS REQUIRED PRIOR TO PERMANENT TRENCH PAVEMENT.

TRENCH RESTORATION DETAIL
NOT TO SCALE



NOTES:
1. REFER TO PAVING AND SURFACING, AND CURBS, WALKS AND DRIVEWAYS REQUIREMENTS.
2. REFER TO "TRENCH PAY LIMIT TABLE FOR PIPES" FOR PAYMENT OF ALL ITEMS IN WHICH PAY TRENCH WIDTH IS A VARIABLE FOR CALCULATIONS OF QUANTITIES EXCEPT FOR TRENCH PAVEMENT.
3. REFER TO TRENCH PAVEMENT DETAIL FOR PAVEMENT PAYMENT WIDTHS.

TRENCH PAY LIMIT TABLE FOR PIPES

PIPE SIZE (DIA.)	MAX TRENCH WIDTH
LESS THAN 2"	2'-0"
2" TO 6"	3'-0"
8" TO 22"	4'-0"
24" & GREATER	I.D. + 2'-0"

I.D. = INSIDE DIMENSION

FOR TRENCHES GREATER THAT 5' DEEP ADD MAXIMUM 3' FOR TEMPORARY SUPPORT OF EXCAVATION

FILTER FABRIC USE

	SOIL TYPE	
	SILT OR CLAY	GRANULAR SOIL
ABOVE GROUND WATER	FILTER FABRIC NOT REQUIRED	FILTER FABRIC NOT REQUIRED
BELOW GROUND WATER	FILTER FABRIC REQUIRED	FILTER FABRIC NOT REQUIRED

SEWER AND STORM DRAIN TRENCH DETAIL
NOT TO SCALE

COMMONWEALTH OF MASSACHUSETTS
MICHAEL J. CLANCY
No. 47855
REGISTERED PROFESSIONAL ENGINEER
10-21-16

JOYCE CONSULTING GROUP
CIVIL ENGINEERS
100 WYMAN ROAD
BRAINTREE, MA 02184
781-817-6120
hello@joycecg.com

LEGEND

W	EX. WATER	WV	WATER VALVE
S	EX. SEWER		HYDRANT
D	EX. DRAIN	SMH	SEWER MANHOLE
E	EX. ELECT	TMH	TELEPHONE MANHOLE
T	EX. TEL	CB	EX. CATCH BASIN
G	EX. GAS	HH	EX. HANDHOLE
LP	LIGHT POLE	UP	UTILITY POLE
DMH	DRAIN MANHOLE	GV	GAS VALVE
EMH	ELECTRIC MANHOLE		
VGC	VERTICAL GRANITE CURB		
FGC	FLUSH GRANITE CURB		
CRTW	CONCRETE RETAINING WALL		

SCALE	1"=20'	JOB NO.	JCG 16-029
DATE	10-21-16	TAX MAP NO.	N/A

REVISIONS

NO.	REVISION	BY

PLAN TITLE:
DETAIL SHEET I
110 FAWCETT STREET
CAMBRIDGE, MA

PREPARED FOR:
ELTON + HAMPTON ARCHITECTS
103 TERRACE STREET
ROXBURY, MA 02120

C-4
SHEET 4 OF 4

APPENDIX E

OPERATIONS AND MAINTENANCE PLAN

Stormwater Operation and Maintenance Plan
Erosion and Sedimentation Control Plan,
Pollution Prevention Plan,
and Construction Scheduling

Stormwater Management System:
Site Redevelopment @ 110 Fawcett Street
Cambridge, MA

Stormwater Management System's Owner & Responsible Party:
Current Owner
110 Fawcett Street
Quincy, MA 02120

As part of any infrastructure improvement the system must be maintained in order to work properly. The following is an Operation and Maintenance plan to upkeep the proposed non-structural and structural best performance practices as outlined in the Massachusetts Department of Environmental Protection's Stormwater Management Policy and in accordance with the approved design drawings.

Operation and Maintenance Plan During Construction, Construction Pollution Prevention Plan, and Construction Scheduling:

Operator to Complete : "CONSTRUCTION: Erosion and Sedimentation Controls Inspection & Maintenance Report" after completion of each maintenance activity.

The potential pollutants and their sources during construction are as follows:

Source of Pollution	Type of Pollution	Approximate Chemical/Physical Description	Potential Stormwater Pollutants	BMP Section
Erosion and sedimentation during excavation/grading	Sedimentation	Soil, sediment	Soil, sediment	Sediment and Erosion Control
Dust during soil removal,excavation, grading and construction	Dust Particles	Dust Particles	Dust Particles	Sediment and Erosion Control
Vehicle/machine/equipment refueling or maintenance	Gasoline	Colorless, pale brown or pink petroleum hydrocarbon	Benzene, ethyl benzene, toluene, xylene, MTBE	Good Housekeeping
Vehicle/machine/equipment refueling or maintenance	Diesel Fuel	Clear, blue-green to yellow liquid	Petroleum distillate, oil & grease, naphthalene, xylenes	Good Housekeeping
Vehicle/machine/equipment refueling or maintenance	Antifreeze/coolant	Clear green/yellow liquid	Ethylene glycol, propylene glycol, heavy metals (copper, lead, zinc)	Good Housekeeping
Vehicle/machine/equipment refueling or maintenance	Hydraulic oil/fluids	Brown oily petroleum hydrocarbon	Mineral oil	Good Housekeeping

1) Sediment and Erosion Control

All erosion and sediment control measures must be installed prior to any disturbance.

Perimeter Silt Fence: A silt fence must be installed around a section of the perimeter of the site as shown on the enclosed Site Plan Set.

Installation: Follow manufacturer's specifications.

Maintenance: Silt fence should be inspected daily and trapped sediment should be removed.

Dust Control: Sprinkle water as necessary to control dust during construction.

Material Stockpiling: Stockpiles of material must be placed upgradient of the perimeter silt fence and, if left overnight, protected from the weather with silt fence around the immediate stock pile perimeter.

2) Good Housekeeping

The following good housekeeping BMP's will be implemented in order to prevent pollution during construction:

- All vehicles on site will be monitored for leaks and receive regular preventive maintenance to reduce the chance of leakage.
- Petroleum products will be stored in tightly sealed containers which are clearly labeled.
- If portable sanitary units are used, sanitary waste will be removed as necessary to avoid overfilling.
- All paint and other hazardous waste materials will be tightly sealed and stored when not in use. Excess material will not be discharged into the stormwater system, but will be properly disposed of according to the manufacturer's specifications.
- If dewatering is necessary during excavation, water should be directed to the temporary dewatering perimeter as shown on the plan. Sediment will be immediately removed from the siltation fabric during dewatering procedures.
- All spills will be cleaned up immediately upon discovery. Spills large enough to reach the stormwater systems will be reported to the National Response Center at 1-800-424-8802

3) Upon completion of construction and permanent stabilization of all disturbed areas, sediment control may be removed.

Operation and Maintenance Plan Post Construction

Operator to Complete : "POST CONSTRUCTION: Stormwater Management System Report" after completion of each maintenance activity.

Pavement Sweeping

The locus site shall be swept a minimum of four (4) times a year (quarterly) primarily in the spring and fall utilizing a Mechanical Sweeper (Rotary Broom).

Yard Inlet Cleaning

All yard inlets shall be cleaned and inspected in late winter or early spring after the snow melts. Inspections should include the frame and grate, pipe, structure itself and the trap for damage and or repair. Sediment shall be removed from the catch basins when sediment is within 2.5 feet of the outlet invert.

Piping, Inlets, Outlets

Because piping is installed underground it is difficult to inspect it is important to ensure that all piping is functioning properly. Inlets and outlets should be inspected in late winter or early spring after the snow melts, preferably during a rain event. In addition to ensuring that all piping is functioning properly, any sediment or garbage that has gathered at inlets or outlets each inspection period.

Subsurface Infiltration System Inspection and Cleaning

Conduct semi-annual inspections and inspections after large storm events (more than 3.2-inches of rainfall in a 24-hour period.) Remove sediment by jetting system in accordance with Manufacturer's recommendations when sediment is observed in the inspection ports.

Snow Management

Snow will be stored at corners and edges of parking areas; at no time will the snow be stored directly over any curb opening. In the event of the snow storage capacity being maximized, a snow removal contractor will remove snow from the site.

Maintenance Access Areas:

Catch Basin Inlet and Hood

Catch basins and its hoods are easily accessible for maintenance. No designated access area is needed.

Infiltration Bed Maintenance

The Infiltration Bed is accessible from the parking area.

Parking Lot Cleaning

All vehicular paved areas are accessible from Fawcett Street.

Estimated Operations and Maintenance Budget:

Maintenance Task	Estimated Cost	Frequency (times/year)	Annual Budget
Pavement Sweeping	$300	4	$1,200
Inspection of Stormwater Management System	$100	4	$400
Catch Basin Cleaning (Sediment Removal)	$500	0.5 (anticipated maximum)	$250
Infiltration System Cleaning (Water Jetting)	$1,000	0.25 (anticipated maximum)	$250
	TOTAL ANTICIPATED BUDGET:		$2,100

Illicit Discharge Compliance Statement

No known illicit discharges presently exist at 110 Fawcett Street. Runoff consists mainly of pavement and roof runoff. Routine visual inspections of all catch basins, oil water separators, and infiltration systems are meant to ensure and prevent any illicit discharges from occurring in the future.

_____

Owner

CONSTRUCTION: Erosion and Sedimentation Controls Inspection & Maintenance Report

110 Fawcett Street, Cambridge, MA

Stormwater Management System Owner:

Current Property Owner – 110 Fawcett Street

INSPECTOR: _____ DATE: _____ NUMBER: _____

DAYS SINCE LAST RAINFALL: _____ AMOUNT LAST RAINFALL: _____ INCHES

TEMPORARY STABILIZATION

CATCH BASIN SILT SACKS? (YES/NO)	PAVED AREAS? (YES/NO)	LANDSCAPED AREAS? (YES/NO)

COMMENTS/ACTION:

TO BE PERFORMED BY: _____ ON OR BEFORE: _____

STABILIZED CONSTRUCTION ENTRANCE

IS SEDIMENT TRACKED ONTO ROAD? (YES/NO)	IS THE GRAVEL CLEAN? (YES/NO)	DOES ALL TRAFFIC USE THE STABILIZED ENTRANCE TO LEAVE THE SITE? (YES/NO)

COMMENTS/ACTION:

TO BE PERFORMED BY: _____ ON OR BEFORE: _____

SILT FENCES AND HAYBALES

	DEPTH OF SEDIMENT	CONDITION OF EFFLUENT?	CONDITION OF SILT FENCE	ANY EVIDENCE OF SEDIMENT BYPASSING THE FENCE
SILT FENCE				

COMMENTS/ACTION:

TO BE PERFORMED BY: _____ ON OR BEFORE: _____

CHANGES REQUIRED TO THE POLLUTION PREVENTION PLAN/REASONS FOR CHANGES:

INSPECTED BY _____ SIGNATURE _____ DATE _____

POST CONSTRUCTION: Stormwater Management System Report

110 Fawcett Street - Cambridge, MA

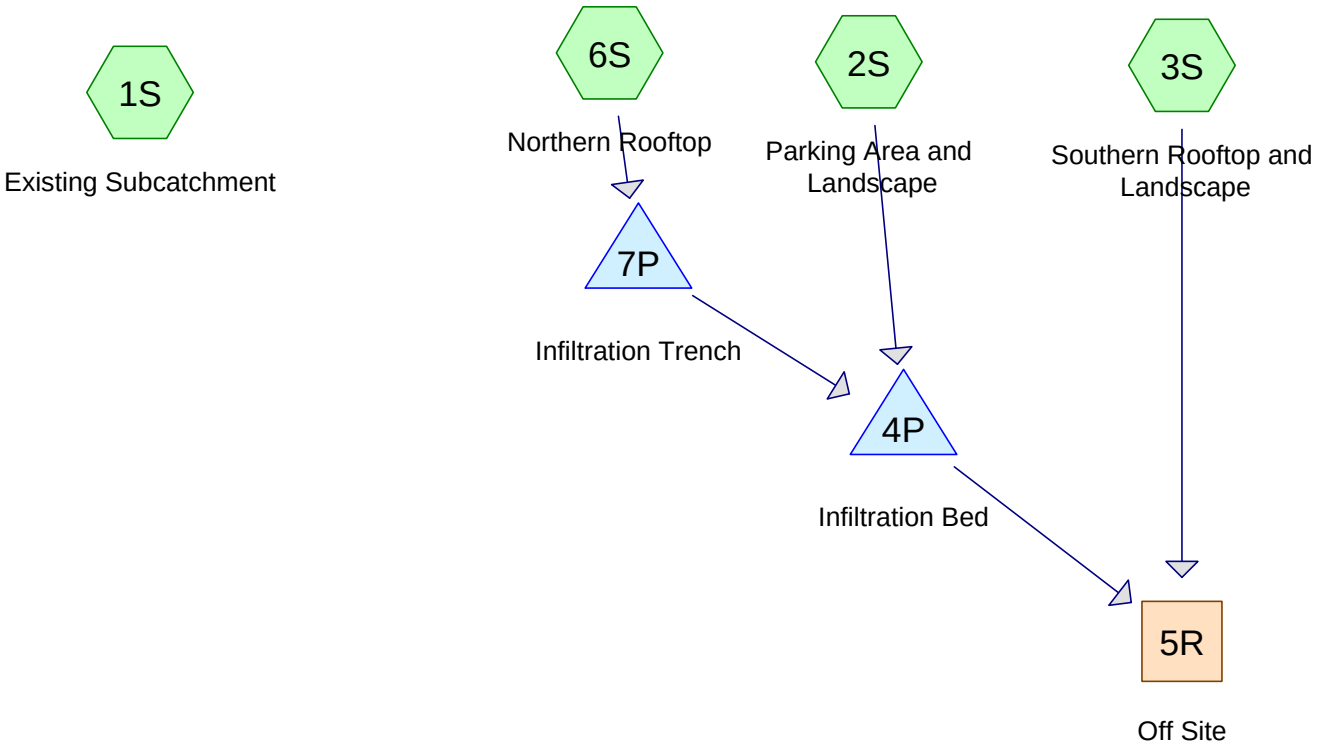
Stormwater Management System Owner:

Current Property Owner – 110 Fawcett Street, Cambridge

110 Fawcett Street Cambridge, MA	Inspected by:_____ Date:_____	
Component	Status	Action Taken

APPENDIX F

HYDROLOGIC MODEL



Subcat Reach Pond Link

Drainage Diagram for 110 Fawcett Stormwater Report
Prepared by Joyce Consulting Group, Printed 10/21/2016

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.152	61	>75% Grass cover, Good, HSG B (2S, 3S)
0.166	85	Gravel roads, HSG B (1S)
0.123	98	Paved parking, HSG B (1S, 2S)
0.215	98	Roofs, HSG B (1S, 3S, 6S)
0.655	86	**TOTAL AREA**

Summary for Subcatchment 1S: Existing Subcatchment

Runoff = 0.82 cfs @ 12.07 hrs, Volume= 0.056 af, Depth> 2.04"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.10"

Area (sf)	CN	Description
2,233	98	Paved parking, HSG B
146	98	Paved parking, HSG B
4,673	98	Roofs, HSG B
7,221	85	Gravel roads, HSG B
14,273	91	Weighted Average
7,221		50.59% Pervious Area
7,052		49.41% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, Direct**

Summary for Subcatchment 2S: Parking Area and Landscape

Runoff = 0.21 cfs @ 12.08 hrs, Volume= 0.014 af, Depth> 1.22"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.10"

Area (sf)	CN	Description
1,259	98	Paved parking, HSG B
1,717	98	Paved parking, HSG B
2,941	61	>75% Grass cover, Good, HSG B
5,917	80	Weighted Average
2,941		49.70% Pervious Area
2,976		50.30% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, Direct**

Summary for Subcatchment 3S: Southern Rooftop and Landscape

Runoff = 0.16 cfs @ 12.09 hrs, Volume= 0.011 af, Depth> 0.94"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.10"

Area (sf)	CN	Description
2,336	98	Roofs, HSG B
3,683	61	>75% Grass cover, Good, HSG B
6,019	75	Weighted Average
3,683		61.19% Pervious Area
2,336		38.81% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, Direct**

Summary for Subcatchment 6S: Northern Rooftop

Runoff = 0.16 cfs @ 12.07 hrs, Volume= 0.012 af, Depth> 2.68"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.10"

Area (sf)	CN	Description
2,337	98	Roofs, HSG B
2,337		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, Direct**

Summary for Reach 5R: Off Site

Inflow Area = 0.328 ac, 53.59% Impervious, Inflow Depth > 0.40" for 2-Year event
Inflow = 0.16 cfs @ 12.09 hrs, Volume= 0.011 af
Outflow = 0.16 cfs @ 12.09 hrs, Volume= 0.011 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Pond 4P: Infiltration Bed

Inflow Area = 0.189 ac, 64.37% Impervious, Inflow Depth > 1.06" for 2-Year event
Inflow = 0.21 cfs @ 12.08 hrs, Volume= 0.017 af
Outflow = 0.00 cfs @ 11.05 hrs, Volume= 0.003 af, Atten= 98%, Lag= 0.0 min
Discarded = 0.00 cfs @ 11.05 hrs, Volume= 0.003 af
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 13.77' @ 20.00 hrs Surf.Area= 335 sf Storage= 589 cf

Plug-Flow detention time= 211.4 min calculated for 0.003 af (19% of inflow)
Center-of-Mass det. time= 116.3 min (915.1 - 798.8)

Volume	Invert	Avail.Storage	Storage Description
#1A	11.00'	322 cf	**11.00'W x 30.48'L x 3.50'H Field A** 1,173 cf Overall - 368 cf Embedded = 806 cf x 40.0% Voids
#2A	11.50'	368 cf	**StormTech SC-740** x 8 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap
		690 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	14.10'	**18.0" W x 6.0" H Vert. Orifice/Grate** C= 0.600
#2	Discarded	11.00'	**0.520 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.00 cfs @ 11.05 hrs HW=11.04' (Free Discharge)
2=Exfiltration (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=11.00' (Free Discharge)
1=Orifice/Grate (Controls 0.00 cfs)

Summary for Pond 7P: Infiltration Trench

Inflow Area = 0.054 ac,100.00% Impervious, Inflow Depth > 2.68" for 2-Year event
Inflow = 0.16 cfs @ 12.07 hrs, Volume= 0.012 af
Outflow = 0.06 cfs @ 12.32 hrs, Volume= 0.009 af, Atten= 64%, Lag= 14.9 min
Discarded = 0.01 cfs @ 9.30 hrs, Volume= 0.006 af
Primary = 0.05 cfs @ 12.32 hrs, Volume= 0.003 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 15.13' @ 12.32 hrs Surf.Area= 450 sf Storage= 208 cf

Plug-Flow detention time= 124.5 min calculated for 0.009 af (72% of inflow)
Center-of-Mass det. time= 58.9 min (797.0 - 738.1)

Volume	Invert	Avail.Storage	Storage Description
#1	14.00'	528 cf	**3.00'W x 150.00'L x 3.00'H Prismatoid** 1,350 cf Overall - 29 cf Embedded = 1,321 cf x 40.0% Voids
#2	15.00'	29 cf	**6.0" D x 150.0'L Pipe Storage** Inside #1
		558 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	17.00'	**36.0" x 999.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Primary	15.00'	**6.0" Vert. Orifice/Grate** C= 0.600
#3	Discarded	14.00'	**0.520 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.01 cfs @ 9.30 hrs HW=14.03' (Free Discharge)
└**3=Exfiltration** (Exfiltration Controls 0.01 cfs)

Primary OutFlow Max=0.05 cfs @ 12.32 hrs HW=15.13' (Free Discharge)
└**1=Orifice/Grate** (Controls 0.00 cfs)
└**2=Orifice/Grate** (Orifice Controls 0.05 cfs @ 1.24 fps)

Summary for Subcatchment 1S: Existing Subcatchment

Runoff = 1.30 cfs @ 12.07 hrs, Volume= 0.090 af, Depth> 3.31"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=4.50"

Area (sf)	CN	Description
2,233	98	Paved parking, HSG B
146	98	Paved parking, HSG B
4,673	98	Roofs, HSG B
7,221	85	Gravel roads, HSG B
14,273	91	Weighted Average
7,221		50.59% Pervious Area
7,052		49.41% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, Direct**

Summary for Subcatchment 2S: Parking Area and Landscape

Runoff = 0.39 cfs @ 12.08 hrs, Volume= 0.026 af, Depth> 2.29"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=4.50"

Area (sf)	CN	Description
1,259	98	Paved parking, HSG B
1,717	98	Paved parking, HSG B
2,941	61	>75% Grass cover, Good, HSG B
5,917	80	Weighted Average
2,941		49.70% Pervious Area
2,976		50.30% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, Direct**

Summary for Subcatchment 3S: Southern Rooftop and Landscape

Runoff = 0.33 cfs @ 12.08 hrs, Volume= 0.022 af, Depth> 1.90"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=4.50"

Area (sf)	CN	Description
2,336	98	Roofs, HSG B
3,683	61	>75% Grass cover, Good, HSG B
6,019	75	Weighted Average
3,683		61.19% Pervious Area
2,336		38.81% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, Direct**

Summary for Subcatchment 6S: Northern Rooftop

Runoff = 0.24 cfs @ 12.07 hrs, Volume= 0.018 af, Depth> 3.96"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=4.50"

Area (sf)	CN	Description
2,337	98	Roofs, HSG B
2,337		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, Direct**

Summary for Reach 5R: Off Site

Inflow Area = 0.328 ac, 53.59% Impervious, Inflow Depth > 1.37" for 10-Year event
Inflow = 0.40 cfs @ 12.35 hrs, Volume= 0.037 af
Outflow = 0.40 cfs @ 12.35 hrs, Volume= 0.037 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Pond 4P: Infiltration Bed

Inflow Area = 0.189 ac, 64.37% Impervious, Inflow Depth > 2.13" for 10-Year event
Inflow = 0.56 cfs @ 12.10 hrs, Volume= 0.034 af
Outflow = 0.27 cfs @ 12.35 hrs, Volume= 0.019 af, Atten= 51%, Lag= 15.4 min
Discarded = 0.00 cfs @ 9.80 hrs, Volume= 0.004 af
Primary = 0.27 cfs @ 12.35 hrs, Volume= 0.015 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 14.25' @ 12.35 hrs Surf.Area= 335 sf Storage= 656 cf

Plug-Flow detention time= 121.3 min calculated for 0.019 af (56% of inflow)
Center-of-Mass det. time= 54.1 min (838.5 - 784.4)

Volume	Invert	Avail.Storage	Storage Description
#1A	11.00'	322 cf	**11.00'W x 30.48'L x 3.50'H Field A** 1,173 cf Overall - 368 cf Embedded = 806 cf x 40.0% Voids
#2A	11.50'	368 cf	**StormTech SC-740** x 8 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap
		690 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	14.10'	**18.0" W x 6.0" H Vert. Orifice/Grate** C= 0.600
#2	Discarded	11.00'	**0.520 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.00 cfs @ 9.80 hrs HW=11.04' (Free Discharge)
└**2=Exfiltration** (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=0.26 cfs @ 12.35 hrs HW=14.24' (Free Discharge)
└**1=Orifice/Grate** (Orifice Controls 0.26 cfs @ 1.22 fps)

Summary for Pond 7P: Infiltration Trench

Inflow Area = 0.054 ac,100.00% Impervious, Inflow Depth > 3.96" for 10-Year event
Inflow = 0.24 cfs @ 12.07 hrs, Volume= 0.018 af
Outflow = 0.19 cfs @ 12.13 hrs, Volume= 0.014 af, Atten= 19%, Lag= 3.8 min
Discarded = 0.01 cfs @ 8.10 hrs, Volume= 0.006 af
Primary = 0.19 cfs @ 12.13 hrs, Volume= 0.008 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 15.27' @ 12.13 hrs Surf.Area= 450 sf Storage= 238 cf

Plug-Flow detention time= 94.7 min calculated for 0.014 af (79% of inflow)
Center-of-Mass det. time= 37.7 min (772.8 - 735.0)

Volume	Invert	Avail.Storage	Storage Description
#1	14.00'	528 cf	**3.00'W x 150.00'L x 3.00'H Prismatoid** 1,350 cf Overall - 29 cf Embedded = 1,321 cf x 40.0% Voids
#2	15.00'	29 cf	**6.0" D x 150.0'L Pipe Storage** Inside #1
		558 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	17.00'	**36.0" x 999.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Primary	15.00'	**6.0" Vert. Orifice/Grate** C= 0.600
#3	Discarded	14.00'	**0.520 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.01 cfs @ 8.10 hrs HW=14.03' (Free Discharge)
└**3=Exfiltration** (Exfiltration Controls 0.01 cfs)

Primary OutFlow Max=0.18 cfs @ 12.13 hrs HW=15.26' (Free Discharge)
└**1=Orifice/Grate** (Controls 0.00 cfs)
└**2=Orifice/Grate** (Orifice Controls 0.18 cfs @ 1.75 fps)

Summary for Subcatchment 1S: Existing Subcatchment

Runoff = 1.58 cfs @ 12.07 hrs, Volume= 0.110 af, Depth> 4.04"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.30"

Area (sf)	CN	Description
2,233	98	Paved parking, HSG B
146	98	Paved parking, HSG B
4,673	98	Roofs, HSG B
7,221	85	Gravel roads, HSG B
14,273	91	Weighted Average
7,221		50.59% Pervious Area
7,052		49.41% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, Direct**

Summary for Subcatchment 2S: Parking Area and Landscape

Runoff = 0.50 cfs @ 12.08 hrs, Volume= 0.033 af, Depth> 2.95"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.30"

Area (sf)	CN	Description
1,259	98	Paved parking, HSG B
1,717	98	Paved parking, HSG B
2,941	61	>75% Grass cover, Good, HSG B
5,917	80	Weighted Average
2,941		49.70% Pervious Area
2,976		50.30% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, Direct**

Summary for Subcatchment 3S: Southern Rooftop and Landscape

Runoff = 0.44 cfs @ 12.08 hrs, Volume= 0.029 af, Depth> 2.50"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.30"

Area (sf)	CN	Description
2,336	98	Roofs, HSG B
3,683	61	>75% Grass cover, Good, HSG B
6,019	75	Weighted Average
3,683		61.19% Pervious Area
2,336		38.81% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, Direct**

Summary for Subcatchment 6S: Northern Rooftop

Runoff = 0.28 cfs @ 12.07 hrs, Volume= 0.021 af, Depth> 4.69"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.30"

Area (sf)	CN	Description
2,337	98	Roofs, HSG B
2,337		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, Direct**

Summary for Reach 5R: Off Site

Inflow Area = 0.328 ac, 53.59% Impervious, Inflow Depth > 1.99" for 25-Year event
Inflow = 0.82 cfs @ 12.19 hrs, Volume= 0.054 af
Outflow = 0.82 cfs @ 12.19 hrs, Volume= 0.054 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Pond 4P: Infiltration Bed

Inflow Area = 0.189 ac, 64.37% Impervious, Inflow Depth > 2.79" for 25-Year event
Inflow = 0.73 cfs @ 12.09 hrs, Volume= 0.044 af
Outflow = 0.58 cfs @ 12.20 hrs, Volume= 0.029 af, Atten= 21%, Lag= 6.5 min
Discarded = 0.00 cfs @ 9.15 hrs, Volume= 0.004 af
Primary = 0.57 cfs @ 12.20 hrs, Volume= 0.026 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 14.34' @ 12.20 hrs Surf.Area= 335 sf Storage= 669 cf

Plug-Flow detention time= 99.6 min calculated for 0.029 af (67% of inflow)
Center-of-Mass det. time= 38.1 min (817.6 - 779.5)

Volume	Invert	Avail.Storage	Storage Description
#1A	11.00'	322 cf	**11.00'W x 30.48'L x 3.50'H Field A** 1,173 cf Overall - 368 cf Embedded = 806 cf x 40.0% Voids
#2A	11.50'	368 cf	**StormTech SC-740** x 8 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap
		690 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	14.10'	**18.0" W x 6.0" H Vert. Orifice/Grate** C= 0.600
#2	Discarded	11.00'	**0.520 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.00 cfs @ 9.15 hrs HW=11.04' (Free Discharge)
2=Exfiltration (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=0.57 cfs @ 12.20 hrs HW=14.34' (Free Discharge)
1=Orifice/Grate (Orifice Controls 0.57 cfs @ 1.57 fps)

Summary for Pond 7P: Infiltration Trench

Inflow Area = 0.054 ac,100.00% Impervious, Inflow Depth > 4.69" for 25-Year event
Inflow = 0.28 cfs @ 12.07 hrs, Volume= 0.021 af
Outflow = 0.25 cfs @ 12.12 hrs, Volume= 0.017 af, Atten= 11%, Lag= 2.7 min
Discarded = 0.01 cfs @ 7.40 hrs, Volume= 0.006 af
Primary = 0.24 cfs @ 12.12 hrs, Volume= 0.011 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 15.31' @ 12.12 hrs Surf.Area= 450 sf Storage= 247 cf

Plug-Flow detention time= 86.3 min calculated for 0.017 af (81% of inflow)
Center-of-Mass det. time= 33.4 min (767.5 - 734.1)

Volume	Invert	Avail.Storage	Storage Description
#1	14.00'	528 cf	**3.00'W x 150.00'L x 3.00'H Prismatoid** 1,350 cf Overall - 29 cf Embedded = 1,321 cf x 40.0% Voids
#2	15.00'	29 cf	**6.0" D x 150.0'L Pipe Storage** Inside #1
		558 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	17.00'	**36.0" x 999.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Primary	15.00'	**6.0" Vert. Orifice/Grate** C= 0.600
#3	Discarded	14.00'	**0.520 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.01 cfs @ 7.40 hrs HW=14.03' (Free Discharge)
└**3=Exfiltration** (Exfiltration Controls 0.01 cfs)

Primary OutFlow Max=0.24 cfs @ 12.12 hrs HW=15.30' (Free Discharge)
├**1=Orifice/Grate** (Controls 0.00 cfs)
└**2=Orifice/Grate** (Orifice Controls 0.24 cfs @ 1.88 fps)

Summary for Subcatchment 1S: Existing Subcatchment

Runoff = 1.98 cfs @ 12.07 hrs, Volume= 0.141 af, Depth> 5.15"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=6.50"

Area (sf)	CN	Description
2,233	98	Paved parking, HSG B
146	98	Paved parking, HSG B
4,673	98	Roofs, HSG B
7,221	85	Gravel roads, HSG B
14,273	91	Weighted Average
7,221		50.59% Pervious Area
7,052		49.41% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, Direct**

Summary for Subcatchment 2S: Parking Area and Landscape

Runoff = 0.67 cfs @ 12.07 hrs, Volume= 0.045 af, Depth> 3.98"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=6.50"

Area (sf)	CN	Description
1,259	98	Paved parking, HSG B
1,717	98	Paved parking, HSG B
2,941	61	>75% Grass cover, Good, HSG B
5,917	80	Weighted Average
2,941		49.70% Pervious Area
2,976		50.30% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, Direct**

Summary for Subcatchment 3S: Southern Rooftop and Landscape

Runoff = 0.60 cfs @ 12.08 hrs, Volume= 0.040 af, Depth> 3.47"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=6.50"

Area (sf)	CN	Description
2,336	98	Roofs, HSG B
3,683	61	>75% Grass cover, Good, HSG B
6,019	75	Weighted Average
3,683		61.19% Pervious Area
2,336		38.81% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, Direct**

Summary for Subcatchment 6S: Northern Rooftop

Runoff = 0.34 cfs @ 12.07 hrs, Volume= 0.026 af, Depth> 5.78"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=6.50"

Area (sf)	CN	Description
2,337	98	Roofs, HSG B
2,337		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, Direct**

Summary for Reach 5R: Off Site

Inflow Area = 0.328 ac, 53.59% Impervious, Inflow Depth > 2.98" for 100-Year event
Inflow = 1.64 cfs @ 12.10 hrs, Volume= 0.081 af
Outflow = 1.64 cfs @ 12.10 hrs, Volume= 0.081 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Pond 4P: Infiltration Bed

Inflow Area = 0.189 ac, 64.37% Impervious, Inflow Depth > 3.81" for 100-Year event
Inflow = 0.96 cfs @ 12.09 hrs, Volume= 0.060 af
Outflow = 1.06 cfs @ 12.10 hrs, Volume= 0.046 af, Atten= 0%, Lag= 1.1 min
Discarded = 0.00 cfs @ 8.40 hrs, Volume= 0.004 af
Primary = 1.05 cfs @ 12.10 hrs, Volume= 0.041 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 14.46' @ 12.10 hrs Surf.Area= 335 sf Storage= 685 cf

Plug-Flow detention time= 80.9 min calculated for 0.045 af (75% of inflow)
Center-of-Mass det. time= 28.6 min (802.6 - 774.0)

Volume	Invert	Avail.Storage	Storage Description
#1A	11.00'	322 cf	**11.00'W x 30.48'L x 3.50'H Field A** 1,173 cf Overall - 368 cf Embedded = 806 cf x 40.0% Voids
#2A	11.50'	368 cf	**StormTech SC-740** x 8 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap
		690 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	14.10'	**18.0" W x 6.0" H Vert. Orifice/Grate** C= 0.600
#2	Discarded	11.00'	**0.520 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.00 cfs @ 8.40 hrs HW=11.04' (Free Discharge)
2=Exfiltration (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=1.02 cfs @ 12.10 hrs HW=14.46' (Free Discharge)
1=Orifice/Grate (Orifice Controls 1.02 cfs @ 1.92 fps)

Summary for Pond 7P: Infiltration Trench

Inflow Area = 0.054 ac,100.00% Impervious, Inflow Depth > 5.78" for 100-Year event
Inflow = 0.34 cfs @ 12.07 hrs, Volume= 0.026 af
Outflow = 0.31 cfs @ 12.11 hrs, Volume= 0.022 af, Atten= 10%, Lag= 2.5 min
Discarded = 0.01 cfs @ 6.55 hrs, Volume= 0.007 af
Primary = 0.30 cfs @ 12.11 hrs, Volume= 0.015 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 15.36' @ 12.11 hrs Surf.Area= 450 sf Storage= 258 cf

Plug-Flow detention time= 78.6 min calculated for 0.022 af (84% of inflow)
Center-of-Mass det. time= 31.0 min (764.0 - 733.1)

Volume	Invert	Avail.Storage	Storage Description
#1	14.00'	528 cf	**3.00'W x 150.00'L x 3.00'H Prismatoid** 1,350 cf Overall - 29 cf Embedded = 1,321 cf x 40.0% Voids
#2	15.00'	29 cf	**6.0" D x 150.0'L Pipe Storage** Inside #1
		558 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	17.00'	**36.0" x 999.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Primary	15.00'	**6.0" Vert. Orifice/Grate** C= 0.600
#3	Discarded	14.00'	**0.520 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.01 cfs @ 6.55 hrs HW=14.03' (Free Discharge)
└**3=Exfiltration** (Exfiltration Controls 0.01 cfs)

Primary OutFlow Max=0.30 cfs @ 12.11 hrs HW=15.35' (Free Discharge)
└**1=Orifice/Grate** (Controls 0.00 cfs)
└**2=Orifice/Grate** (Orifice Controls 0.30 cfs @ 2.02 fps)