

# Town of Sturbridge Planning Board

Charles Blanchard, Chair  
Russell Chamberland  
Dane Labonte  
Michael Chisholm  
Jeff Adams  
Christopher Bouchard  
Susan Waters

Jean M. Bubon, Town Planner

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## PLANNING BOARD NOTICE OF DECISION SPECIAL PERMIT AND SITE PLAN APPROVAL

Date: April 15, 2020

Applicant: Heal Sturbridge, Inc.  
1200 Walnut Street  
Newton, MA 02461

Phone: (617)965-3500

Owner: Old Road Realty, LLC  
1 West Boylston Street  
Worcester, MA 01605

Engineer: Randall Hart  
VHB Engineering  
99 High Street  
Boston, MA 02110

Parcel Information: Assessor's Map 415-02335-660  
Book 42238 Page 0283

Zoning Designation: General Industrial District

Property Location: 660 Main Street

Description of Request: The applicant requests a Special Permit and Site Plan Approval as required by Chapter 31, 24, and 25 of the Sturbridge Zoning Bylaws, to co-locate an Adult Use Marijuana Establishment in the premise in which Heal, Inc. operates an Off Site Medical Marijuana Dispensary.

Materials Submitted: The following information was submitted as part of the Special Permit/Site Plan application on March 17, 2020:

- Cover Letter from Katherine Braucher Adams, Esquire;

- A completed application for Special Permit and Site Plan Approval dated 3/3/2020;
- A 500' Offset Plan entitled "Sketch of Land in Sturbridge, Mass. Prepared for Old Road Realty, LLC." Plan date – February 25, 2020. Plan prepared by Thompson-Liston Associates, Inc. – 51 Main street, P.O. Box 570, Boylston, MA 01505-0570;
- Heal Sturbridge, Inc. Odor Control Plan;
- Heal Sturbridge, Inc. Security Overview;
- Heal, Inc. Building Photos;
- Heal Sturbridge, Inc. Documentation of Open Application with Cannabis Control Commission;
- A copy of the Executed Host Community Agreement between the Town of Sturbridge and Heal Sturbridge, Inc.;
- A listing of Heal Sturbridge, Inc. Officers and Board Members;
- A copy of the Commercial Lease for 660 Main Street;
- A Plan entitled "As Built Site Plan of Land in Sturbridge, Massachusetts owned by: Old Road Realty, LLC. Plan date July 10, 2019. Plan prepared by Thompson Liston Associates, Inc. – 51 Main street, P.O. Box 570, Boylston, MA 01505-0570;
- Locus Plan of Land in Sturbridge, Mass Prepared for Old Road Realty, LLC. Plan date February 25, 2020. Plan prepared by Thompson Liston Associates, Inc. – 51 Main street, P.O. Box 570, Boylston, MA 01505-0570;
- A Plan entitled "Proposed Floor Plans". Plan date February, 2018. Plan prepared by Stephen Fleshman Architect, LLC – 99 Apple Road, Brimfield, MA 01010;
- A Plan entitled "Landscape Plan-As Built – Heal, Inc. 660 Main Street, Sturbridge, MA. Plan date February 2020. Plan prepared by Joseph Coan Landscape Architecture, Sturbridge, MA;
- Traffic Impact and Access Study and exhibits prepared by Matthew Kealey of VHB dated March 12, 2020;
- A document entitled "Vital Statistics, 660 Main Street;
- A document entitled "Heal Sturbridge, Inc. – 660 Main Street, Narrative f Operations;
- A copy of the deed for the property;
- Full Size Plan entitled "As Built Site Plan of Land in Sturbridge, Massachusetts owned by: Old Road Realty, LLC. Plan date July 10, 2019. Plan prepared by Thompson Liston Associates, Inc. – 51 Main street, P.O. Box 570, Boylston, MA 01505-0570;
- Filing Fees
- Peer Review Fees

Additional Information Reviewed:

- Comments from Rebecca Gendreau, Conservation Agent dated March 20, 2020;
- Comments from John Marinelli, Fire Inspector dated March 20, 2020;
- Comments from Nelson Burlingame, Building Inspector dated March 26, 2020;
- Memorandum from Thomas Ford, Chief of Police dated October 9, 2019;
- Peer Review Memo from Pare Corporation dated April 2, 2020;
- VHB Response to Peer Review Comments dated April 7, 2020;
- Peer Review Memo from Pare Corporation dated April 9, 2020.



Applicable Section of Zoning By-Law: Chapter 24 - Administration, Chapter 25 – Site Plan Review, and Chapter 31 – Adult Use Marijuana

Date of Meeting: April 14, 2020

Members Present: Charlie Blanchard, Sue Waters, Russell Chamberland, Michael Chisholm, Christopher Bouchard, Jeff Adams, and Dane Labonte.

At the Planning Board meeting of April 14, 2020, on a motion made by Christopher Bouchard, seconded by Russel Chamberland and voted 7-0; the Board voted to grant the Special Permit for an Adult Use Marijuana and approve the Site Plan as requested by the applicant. The approval was granted subject to the following conditions of approval:

1. All proposed operations shall be in conformance with the application and supporting documentation provided.
2. Operating hours must comply with the terms of the Host Community Agreement with the Town as may from time to time, be amended.

Failure to comply with all conditions stated herein, and with all related statutes and other regulatory measures, shall be deemed cause to modify or revoke this Site Plan Approval. This Site Plan Approval does not relieve the applicant or any other person of the necessity of complying with all other applicable federal, state or local statutes, bylaws or regulations.

The provisions of this Site Plan Approval shall apply and be binding upon the applicant, its employees, and all successors and assigns in interest and control.

This Site Plan Approval shall lapse one year from the date of issuance if construction or substantial use thereof has not sooner commenced. An extension of time (one year) may be granted by the Planning Board upon application by the owner/applicant prior to the expiration and upon review of the circumstances and a finding of good cause.

Approval has been limited to matters of Site Plan Review only and not to construction details. Any persons aggrieved by a decision of the Planning Board may appeal to the Superior Court in accordance with the General Laws, Chapter 40A, Section 17.

  
\_\_\_\_\_  
Charles Blanchard, Chair

  
\_\_\_\_\_  
Date Filed

cc: Randall Hart, VHB Engineering  
Old Road Realty, LLC  
N. Burlingame, Building Inspector

STEPHEN J. BUCHBINDER  
ALAN J. SCHLESINGER  
LEONARD M. DAVIDSON  
A. MIRIAM JAFFE  
SHERMAN H. STARR, JR.  
JUDITH L. MELIDEO-PREBLE  
BARBARA D. DALLIS  
PAUL N. BELL  
KATHERINE BRAUCHER ADAMS  
FRANKLIN J. SCHWARZER  
RACHAEL C. CARVER  
ADAM M. SCHECTER

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TELEPHONE (617) 965-3500  
www.sab-law.com

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OFFICE OF TOWN CLERK  
STURBRIDGE, MA

E-Mail: kadams@sab-law.com

March 17, 2020

**BY HAND**

Ms. Jean Bubon  
Town Planner  
Sturbridge Town Hall  
308 Main Street  
Sturbridge, MA 01556

Re: Petition of Heal Sturbridge, Inc./660 Main Street

Dear Ms. Bubon,

Heal Sturbridge, Inc. ("HSI") hereby applies for a special permit and site plan review for approval as an Adult Use Marijuana Establishment. The proposed facility will be located at 660 Main Street. By way of background, Heal, Inc. ("Heal") received a special permit and site plan approval on March 23, 2017 as an Offsite Medical Marijuana Dispensary ("OMMD") located in the same building at 660 Main Street. Heal's special permit recognized an agreement made by Heal with the Board of Selectmen that Heal would refrain from engaging in Adult Use sales until July of 2021. HSI is an affiliated entity to Heal, Inc<sup>1</sup>. On March 17, 2020, the Board of Selectmen signed an Adult Use Host Community Agreement with HSI for a co-located facility at 660 Main Street. Heal will operate its approved OMMD and HSI will engage in Adult Use sales within the same building. Because HSI is a separate entity, it is not bound by the agreement made by Heal to refrain from Adult Use sales until July of 2021. Accordingly, by virtue of the executed Adult Use Host Community Agreement, HSI is eligible to apply for a special permit and site plan review immediately.

Accordingly, attached please find HSI's original special permit and site plan review application and fifteen copies of the following documents:

Special permit and site plan review application as well as a narrative outline of HSI's proposed compliance with Section 31 and the following exhibits:

1. 500 Foot Offset Plan prepared by Thompson-Liston Associates and dated February 25, 2020;
2. Odor Control Plan;
3. Security Overview;
4. Building Photos and Signage Renderings;
5. Evidence of Cannabis Control Commission Application and executed Host Community Agreement;
6. List of Managers;
7. Lease;
8. As-built site plan dated July 10, 2019 and locus plan by Thompson-Liston Associates, Inc.;
9. Floor Plans entitled "Proposed Floor Plans" dated February 2018 by Stephen Fleshman;
10. As-Built Landscape Plan dated February 2020 prepared by Joseph Coan, RLA;

<sup>1</sup> Heal Sturbridge, Inc. and Heal, Inc. are both wholly owned subsidiaries of TAJ Green, LLC.



11. Traffic Impact and Access Study and exhibits thereto prepared by Matthew Kealey of VHB dated March 12, 2020<sup>2</sup>;
12. Summary of Vital Statistics;
13. Narrative of Proposed Operations; and
14. Easement to New England Telephone and Telegraph Company.

Full size copies of the July 10, 2019 as-built site plans have been clipped to the end of the application. I have also enclosed (a) a CD containing electronic copies of the aforementioned documents, (b) a check in the amount of \$275.00 made payable to the Town of Sturbridge for the special permit application, (c) a check in the amount of \$100.00 made payable to the Town of Sturbridge for the site plan review (minimum payment), (d) a current certified Abutters List from the Assessor's Office and accompanying mailing labels, and (e) a Municipal Lien Certificate from the Finance Department.

HSI is hopeful that the Planning Board will grant the special permit and site plan approval for Adult Use sales to HSI. HIS's proposal has been carefully crafted to provide the Planning Board to make the required findings pursuant to Section 31.06 of the Zoning By-Law. If an approval is not granted, then Heal will return to the Planning Board at some point in the future seeking to add Adult Use sales to its approved OMMD. Such an expansion is expressly contemplated as a conversion in Chapter 31 of the Bylaws and requires only site plan review. Heal is eligible to convert in July of 2021, and potentially earlier than that if it executes a revised Medical Host Community Agreement with the Board of Selectmen. As Town Counsel Jonathan Eichman advised the Board of Selectmen on March 2 and March 5, 2020, if Heal converts in the future, the limit of two Marijuana Establishments in Sturbridge, as set forth in Chapter 31.03B of the Bylaws, would not operate to prevent the conversion, even if two other Marijuana Establishments have received special permits at that time.

Please feel free to call me if you have any questions respecting the foregoing.

Very truly yours,

Katherine Braucher Adams

KBA/mer  
Enclosures

cc: (By Hand, w/enclosures)  
Ms. Lynne Giroud, Town Clerk  
(By Hand w/out enclosures)  
Mr. Jeffrey Bridges, Town Administrator  
(By First Class Mail, w/enclosures)  
Ms. Patricia Faass

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<sup>2</sup> Per your instructions, we are submitting two hard copies of the 88-page traffic study appendix.

**Heal Sturbridge, Inc./660 Main Street**  
**Narrative of Proposed Operations**

HSI proposes to use an undivided portion of Heal, Inc.'s approved OMMD facility at 660 Main Street for retail sales of marijuana to customers aged 21 and over.

**Appointments and Traffic Control**

HIS has agreed agrees to cooperate with Town officials on traffic management to ensure that sufficient traffic control measures are in place to mitigate traffic impacts. HSI will pay for all traffic control measures reasonably required by the Town and shall also, at its own expense, employ a police detail, if deemed necessary by the Town, to manage traffic at the site of the Facility.

For at least the initial month of operation, HSI will restrict adult use sales at the Facility to only those patrons who have scheduled an appointment unless and until the Town's Board of Selectmen provides prior written consent to lift said restriction. During this initial period, HSI has agreed to limit its appointments to no more than six hundred (600) customers per day in order to control the amount of traffic on and around the site of the Facility. As a practical matter, and as reflected in the May 10, 2019 trip generation memorandum submitted by VHB, HSI anticipates approximately 340 daily trips during the week, and 412 on Saturdays. These estimates are predicated on 36 available appointments per hour at the 6 point of sale stations within the facility. Given the estimated turnover of customers every ten to fifteen minutes, HSI expects that the 27 onsite parking spaces will be more than adequate for its business. In the event that it becomes necessary to maximize the available onsite parking for customers, HSI and Heal's employees have been granted permission to park in the upper parking lot at the office park at 660 Main Street.

HSI has agreed to employ a police detail, if deemed necessary by the Town, to manage traffic at the site of the Facility during the initial operations of the facility. In addition, a staff member will be stationed outside to assist with traffic flow.



### **Access and Customer Flow**

Patients and retail customers will be able to book an appointment directly on the company's website, and separate appointment calendar systems will be maintained for the two categories of patrons (medical and adult use). Consumers 21 years of age or older with a verified and valid, government-issued photo ID (or in possession of a Medical Use of Marijuana Program ID Card) will enter the facility through an access vestibule located adjacent to the parking lot. Once their credentials are verified, customers would enter through to the dispensary floor.

Once patrons arrive at the site they will be directed to separate check in areas. Medical cardholders will have their Medical Use of Marijuana Program ID Card verified before they enter the facility, and adult use patrons will be permitted to enter once their valid identification card has been authenticated to confirm that they are 21 years of age or older.

Once admitted into the facility, there will be a dedicated point of sale station with a private consultation area for medical cardholders. This separation will take the form of divider which creates a separate dedicated queue for medical transactions. This dedicated medical sales area will enable medical patients to receive consultation regarding medical marijuana use and our available medical cannabis products. While this queue will be reserved for medical purchases, patients are free to utilize any queue while making purchases, and are not only restricted to the medical purchase queue.

Heal and HSI will utilize Point of Sale (POS) software to virtually separate medical and adult-use operations by designating at the point of sale whether a particular marijuana product is intended for sale as a medical product or as an adult use product.

### **Deliveries and Storage**

Deliveries for HSI and Heal will be made through the dedicated rear delivery door. Once product is carried into the building it will be inventoried in the receiving room before it is transferred to the vault. At the beginning of each day, product will be transferred from the vault to the sales floor. Products will be returned to the secure vault for storage overnight at the close of every day.



## TOWN OF STURBRIDGE

### PLANNING BOARD

#### Permit Application

**For Official Use:**

Date of Receipt: \_\_\_\_\_

Received By: \_\_\_\_\_

File Number: \_\_\_\_\_

Date of Approval: \_\_\_\_\_

Completed: \_\_\_\_\_

Not Completed: \_\_\_\_\_

 **Special Permit** **Site Plan Review** **Waiver****Part A****General Information**

## 1. NAME OF REGISTERED OWNER

Old Road Realty, LLC, James Chacharone, ManagerAddress 1 West Boylston StreetCity Worcester State MA Zip Code 01605Telephone No. n/aEmail Address n/a

## 2. NAME OF APPLICANT/AGENT

Heal Sturbridge, Inc<sup>1</sup>, Patricia Faass, President

<sup>1</sup> Heal Sturbridge, Inc. is an affiliate entity to Heal, Inc. Both entities are wholly owned subsidiaries of TAJ Green, LLC. Heal, Inc. received a special permit and site plan review in 2017 for the site which is the subject of this application. Heal, Inc. will operate an OMMD (“Offsite Medical Marijuana Dispensary”) at the site once it has final approvals from the Cannabis Control Commission. Heal Sturbridge, Inc. will operate an adult use retail establishment within the same footprint. Because state regulations require that the sales of the medical and adult use transactions be accounted for separately, a separate entity (Heal Sturbridge, Inc.) has been formed for the adult use portion of the business.



Address c/o Katherine Braucher Adams, Esq., Schlesinger and Buchbinder, LLP  
City Newton State MA Zip Code 02461-1267  
Telephone No. (617) 965-3500  
Email Address kadams@sab-law.com

3. MATTERS RELATED TO THE APPLICATION SHOULD BE ADDRESSED TO:

(check one or more)

Owner  Applicant/Agent

4. PROOF OF OWNERSHIP ACCOMPANYING APPLICATION:

(check one or more)

Owner  Applicant/Agent

**Part B**

**Details of Application**

5. Location of Subject Property

Municipal Address: 660 Main Street

Lot(s): 660 Plan: Map 23

Assessment Lot Number(s): 660

6. Is the subject property subject to any easements, rights-of-way, or other rights over adjacent properties (i.e., mutual driveway)? Easement for pole and wire rights to New England Telephone and Telegraph Company, a copy of which is attached hereto as Exhibit 14.

Yes  No

7. Existing use of Property: The portion of the site which is the subject of this petition was developed as an OMMD in 2019 pursuant to special permit and site plan approval granted to Heal, Inc in 2017.

8. Date of construction of all existing and proposed buildings and structures on the subject property: 660 Main Street contains four buildings, constructed in 1966, 1977, 1986, and 2019, respectively.

Services available to the subject property:	Existing	Proposed
Type of water services (i.e., municipal water or private well)	Municipal water	Municipal water
Type of sewage disposal (i.e., municipal sewage disposal or private septic system)	Municipal water	Municipal water
Type of storm drainage (i.e., sewers, ditches, swales, or other means)	Detention structure and infiltration	Detention structure and infiltration

9. Project Details

	Total Gross Floor Area		Total Gross Leasable Area		Number of Units	
	Existing	Proposed	Existing	Proposed	Existing	Proposed
Industrial						
Office						
Commercial	1696 SF	1696 SF	0	1696 SF	0	1
Institutional						
Residential						
Total	1696 SF	1696 SF	0	1696 SF	0	1

**Part C**

**Project Narrative** (Must be completed by applicant or agent)

Describe the proposed project in terms of use, design elements, and construction timeframe.

The proposed use is as an Adult Use Marijuana Establishment (“ME”) to be co-located in the premises in which Heal, Inc. operates an Off Site Medical Marijuana Dispensary (“OMMD”), and a narrative of this proposed use is included in the applicant’s submission pursuant to Chapter 31 of the Zoning By-law and hereby incorporated by reference. The design concept is a simple two story structure set into the hill side representative of a barn in a pasture. Heal, Inc. received a final certificate of occupancy for the work on June 19, 2019.

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Explain how the design and layout of the development or use constitutes suitable development without detriment to the neighborhood or to the environment.

The site was selected for the proposed use as a dispensary because of its location within the Medical Marijuana Overlay District, and its compliance with the 500 foot buffer zone provided for therein. The barn in a pasture concept was chosen to reflect a scale similar to the adjacent residential properties. Recessing the structure into the hillside reduces the overall mass and helps to reduce the amount of grading required for the site.

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Describe any special processes, mitigation measures, or unique circumstances which may have a bearing on project approval.

The applicant is providing a submission which meets the criteria set forth in Chapter 31 of the Zoning By-laws, and which is attached hereto. In addition to the Special Permit and Site Plan Review process in Sturbridge, the applicant will need to receive a Final Certificate of Registration and pass a final inspection by the Massachusetts Cannabis Control Commission prior to opening.

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10. Please list any technical studies or background material being submitted to support the application.

Traffic Report prepared by Vanasse Hangen Brustlin Inc. dated December 19, 2016, updated trip generation memorandum dated May 10, 2019.

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11. Please indicate (✓) if the applicant or owner has submitted any of the following applications for all or part of the subject property and complete the following chart:

Other Applications	Required		Submitted		File Number	Status of Application
	Yes	No	Yes	No		
Conservation Commission (Notice of Intent or Request for Determination)		✓		✓		
DPW (Curb Cut Permit)		✓		✓		
Board of Health (Septic, food, other)		✓		✓		
Zoning Board of Appeals (Special Permit, Variance)		✓		✓		
Board of Selectmen (Liquor License)		✓		✓		
Other (please list below)						

Other: Applicant will require final approval from the Massachusetts Cannabis Control Commission prior to opening.

**SITE PLAN CHECK LIST**

1. Existing Site Plan - note any non-conformance

YES	NO	-must give reason below	For Planning Board Use
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Locus	_____
<input checked="" type="checkbox"/>	<input type="checkbox"/>	North arrow	_____
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Survey	_____
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Existing Structures	_____
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Existing roads and curbs	_____
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Contours and elevations	_____
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Abutters within 300 feet	_____
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Zone and dimensional requirements	_____
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Setbacks	_____

Additional comments: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_



2. Proposed - meets zoning unless noted

(Proposed refers to the locus premises to be leased to the applicant)

YES	NO	-must give reason below	For Planning Board Use
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Lot dimensions	_____
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Proposed buildings	_____
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Percent building & impervious areas	_____
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Sidewalks and buffer areas	_____
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Streets, driveways, and access	_____
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Circulation patterns	_____
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Parking spaces and calculations	_____
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Allowed use reference	_____
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Loading areas	_____
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Building mean height	_____
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Dumpsters and screening	N/A
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Outdoor storage areas	N/A

Additional comments: 27 parking stalls are shown on the enclosed site plan. The applicant proposes 22 of these stalls in accordance with Section 20.22 of the Zoning By-laws (9 stalls for the approximately 1,696 SF building, and 13 stalls for employees) and 5 additional stalls. Since the retail and medical operations will take place simultaneously, we are consolidating the operations for the purpose of complying with Section 20.22.

3. Grading

YES	NO	-must give reason below	For Planning Board Use
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Buffer zones and distances	_____
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Wetlands and vernal pools	_____
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Riparian features	_____
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Flood zones	N/A
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Ground water elevations	_____
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Siltation fencing	_____
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Significant species type	N/A
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Detention and retention basins	_____
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Grading Plan	_____

Additional comments: \_\_\_\_\_

4. Utilities

YES	NO	-must give reason below	For Planning Board Use
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Water lines and connections	_____
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Hydrants and sprinklers*	_____
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Sewer lines and connections	_____
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Electric and wire lines	_____
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Drainage structures	_____
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Oil and propane tanks	_____
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Snow storage area	_____
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Public and private wells	_____ N/A

Additional comments: \_\_\_\_\_ \*Hydrants identified, no sprinklers in building.

5. Landscaping, Lighting, and Signs

(specific to locus premises to be leased to the applicant not entire parcel)

YES	NO	-must give reason below	For Planning Board Use
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Landscaping and calculations	_____
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Lighting location, size, type, direction	_____
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Open space as percent of lot	_____
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Sign location size and detail	_____
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Geologic features	_____ N/A
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Dust and noise control measures	_____ N/A
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Fencing permanent and temporary	_____ N/A

Additional comments: Heal, Inc. requested and received a waiver of Section 25.07(j)1.(d) insofar as the provision set forth in the Town of Sturbridge Landscaping Guide (1990) requires one shade tree or street tree for every 40' of lot perimeter. Due to the site security concerns posed by the police chief as well as the site's constraints, the applicant installed 10 large shade trees and 8 understory trees. The large shade trees are located along the driveway and within the parking lot. These trees were located by the landscape architect to reduce the heat island effect of the pavement while providing visual interest without

obstructing views. The coniferous understory trees were located to provide a wind break from the north and the deciduous understory trees will accent the building and enhance the general aesthetic.

6. Detail Sheets

YES	NO	-must give reason below	For Planning Board Use
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Tree planting	_____
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Shrub planting	_____
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Light poles	_____
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Hydrants	_____
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Catch basins	_____
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Man holes	_____
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Traps	_____
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Trenching	_____
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Road profiles	N/A
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Curbing and berms	_____
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Signs and support	_____
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sewer fixtures	_____
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Water lines	_____
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Fencing	N/A
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Headwalls	N/A
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Siltation fencing	Site has been developed
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Facades	Site has been developed
<input type="checkbox"/>	<input checked="" type="checkbox"/>	External materials and colors	Site has been developed
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Fenestration	Site has been developed

Additional comments: \_\_\_\_\_

7. Calculations and Studies unless waived

YES	NO	-must give reason below	For Planning Board Use
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Lot coverage	_____
<input checked="" type="checkbox"/>	<input type="checkbox"/>	ITE trip generation calculations	_____



- Planting calculations & schedule Site has been developed
- Traffic impacts Site has been developed
- Drainage calculations Site has been developed
- Water and sewer demands Site has been developed
- Hydrant pressure tests Site has been developed
- Water and aquifer studies Site has been developed
- Other \_\_\_\_\_

Additional comments: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

8. Permits applied for / received from other boards, agencies, or commissions

Board/Agency	Action or Conditions
_____	_____
_____	_____
_____	_____
_____	_____

AUTHORIZATION (must be signed by applicant)

I hereby request that the Town of Sturbridge Planning Board review this application for Site Plan approval, including all plans, documents, and information herewith. I represent that to the best of my knowledge and belief, this application is being submitted in accordance with the Site Plan Review Regulations of the Planning Board of the Town of Sturbridge.

\_\_\_\_\_  
Signature of Applicant

\_\_\_\_\_  
Date

AUTHORIZATION (must be signed by owner)

I am the record owner of the property for which this application is being filed and as such, I am familiar with the work proposed to be carried out on my property.

I hereby give permission for this application to be filed with the full understanding that certain restrictions may be placed on the property relative to the approval of the proposed work.

I further certify that under the penalties of perjury, I am authorized to sign this application.

\_\_\_\_\_

\_\_\_\_\_  
Date

If someone is representing the applicant or owner, the applicant must designate such representation below:

Name of Representative: Katherine Braucher Adams

Address of Representative: 1200 Walnut Street, Newton, MA 02461-1267

Telephone No.: (617) 965-3500

Relationship of representative to owner or applicant: Attorney

If representing a group, corporation, or other organization please attach a copy of the vote authorizing you to act on behalf of such organization for the purposes of this application.

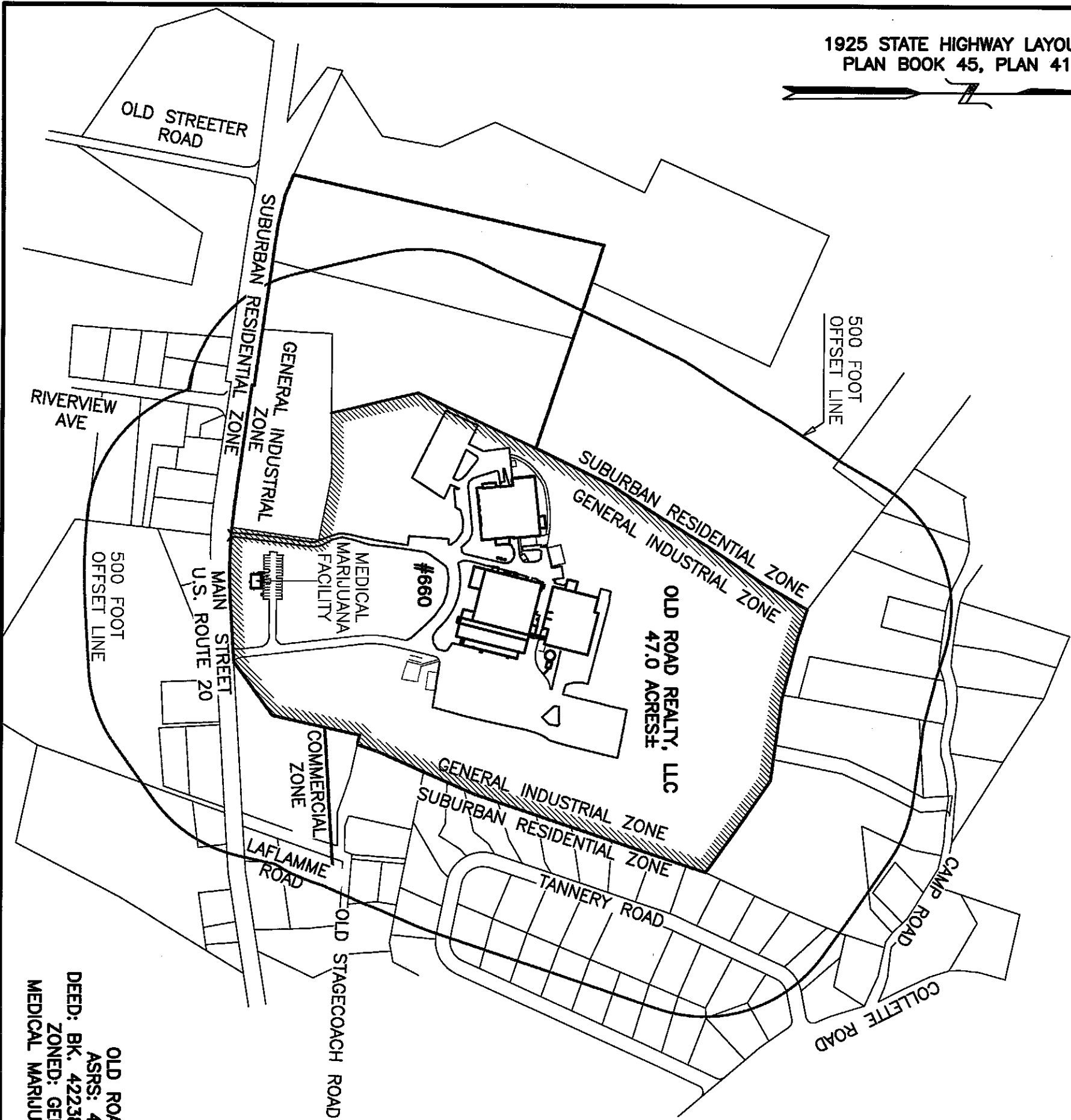
An application will not be considered complete and will not be submitted to the Planning Board for its action until all required documentation/information has been submitted to the Town Planner and filed with the Town Clerk.

Incomplete applications will be automatically rejected and returned to the applicant.

Applications should be submitted to:

Town of Sturbridge Planning Department  
Center Office Building  
301 Main Street  
Sturbridge, MA 01566  
508-347-2508

Applicants are strongly encouraged to schedule a submitted meeting with the Town Planner.

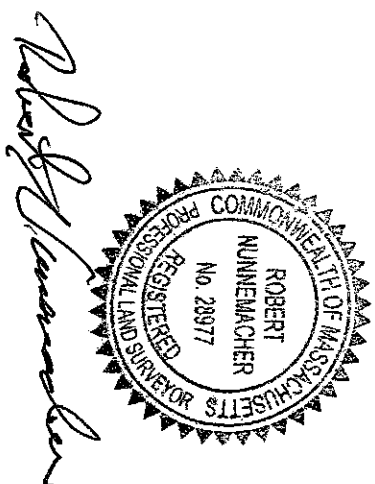


ON FEBRUARY 18, 2020 A REPRESENTATIVE OF THOMPSON-LISTON ASSOCIATES, INC. VIEWED, FROM THE STREET, ALL THE PROPERTIES LOCATED WITHIN 500 FEET OF THE PROPERTY LINE OF OLD ROAD REALTY, LLC AS SHOWN HEREON.  
 NO PRE-EXISTING PUBLIC OR PRIVATE, SCHOOL (PRE-SCHOOL THROUGH GRADE 12), CHILD CARE FACILITY, PUBLIC PLAYGROUND, PUBLIC PARK, YOUTH CENTER, LIBRARY, OR SIMILAR FACILITY IN WHICH CHILDREN COMMONLY CONGREGATE WERE OBSERVED ON THOSE PROPERTIES.

ROBERT NUNNEMACHER, PLS

OLD ROAD REALTY, LLC  
 ASRS: 415-2335-660  
 DEED: BK. 42238, PG. 283, PARCEL #1  
 ZONED: GENERAL INDUSTRIAL  
 MEDICAL MARIJUANA OVERLAY DISTRICT

SKETCH OF LAND IN  
 STURBRIDGE, MASS.  
 PREPARED FOR  
 OLD ROAD REALTY, LLC  
 FEBRUARY 25, 2020 1 INCH = 400 FEET  
 THOMPSON-LISTON ASSOCIATES, INC.  
 CIVIL ENGINEERS & LAND SURVEYORS  
 51 MAIN STREET, PO BOX 570  
 BOYLSTON, MASS. 01505-0570  
 VOICE: 508-869-6151  
 EMAIL: info@tlinc.net





## Heal Sturbridge, Inc. Odor Control Plan

HSI shall make every effort to mitigate any potential nuisance at the Facility, including, but not limited to, use of HEPA and carbon filters for its internal air system to mitigate odors. No odor-emitting activities will take place at the facility since all of HSI's products (along with all of Heal, Inc.'s products) will be delivered to the facility in pre-measured and sealed packages (in accordance with 935 CMR 500.105(6)), and be sold in the same packages. No product will be removed from its factory sealed packaging during the sales process. Therefore, the potential for odor to emit from the facility is extremely low. VOC removal carbon filter housing cans (see example below) have been installed on the discharge side of the three exhaust fans to ensure that no odor is detectable from the outside.



### At a Glance

Each Original Can-Filter® uses the most conceptually sound, pelletized carbon, packed-bed design to deliver the best performing carbon filter on the market. Even with the industry's thickest carbon bed, at 2.5 in, the Can Original provides for some of the lowest pressure drops, even on smaller size filters. This hefty pelletized carbon bed effectively makes the Original filter the "biggest sponge" for VOC removal capable of holding massive amounts of contaminant leading to a lifespan that leaves other filters, frankly, in the dust. The Original Can-Filter® are designed for the control of VOCs (paint fumes, hydrocarbons, etc...), odors and other gaseous contaminants. Built with the same proven packed bed design and pelletized virgin activated carbon we've used for 30 years, this line of time tested activated carbon air filters sets the standard for long life, consistent performance and low pressure drop. Rated at a conservative 0.1 sec contact time, the Original Can-Filter® provide excellent value and confidence.

### Details

- Made in North America
- 7 sizes from 33-150cm, largest in industry
- You pick the flange that's right for you
- Low pressure drop even on smaller sizes
- Pelletized carbon delivers the cleanest filter available

### TECHNICAL DATA

**Max Exhaust CFM:** 420 CFM / 713 m<sup>3</sup>h @ 0.1 sec contact time

**Max Recirculating (Scrubbing) CFM:** 840 CFM / 1426 m<sup>3</sup>h

**Recommended Min Airflow:** 210 CFM / 357 m<sup>3</sup>h

**Prefilter:** Yes

**Flange:** 6" – 8" – 10"

**Outside Diameter:** 42 cm / 16.5"

**Height:** 50 cm / 19.7"

**Total Weight:** 25 kg / 55 lbs.

**Carbon Weight:** 19 kg / 42 lbs.

**Carbon Bed Depth:** 6.5 cm / 2.56"

**Max Operating Temp:** 80°C / 176°F

**Pressure drop at max CFM:** 180pa / .75"wg

## **Heal Sturbridge, Inc, Security Overview**

HSI will implement policies and procedures to maintain a secure facility and to prevent diversion, in accordance with 935 CMR 500.110. The security plan will ensure the safety of the general public, employees, and consumers alike.

Security measures taken by HSI to protect the premises, employees, consumers and general public will include, but not be limited to, the following:

- Positively identifying individuals seeking access to the premises of the Marijuana Establishment or to whom or marijuana products are being transported pursuant to 935 CMR 500.105(14) to limit access solely to individuals 21 years of age or older;
- Adopting procedures to prevent loitering and ensure that only individuals engaging in activity expressly or by necessary implication permitted by these regulations and its enabling statute are allowed to remain on the premises;
- Disposing of marijuana in accordance with 935 CMR 500.105(12) in excess of the quantity required for normal, efficient operation as established within 935 CMR 500.105;
- Securing all entrances to the Marijuana Establishment to prevent unauthorized access;
- Establishing limited access areas pursuant to 935 CMR 500.110(4), which will be accessible only to specifically authorized personnel limited to include only the minimum number of employees essential for efficient operation;
- Storing all finished marijuana products in a secure, locked safe or vault in such a manner as to prevent diversion, theft and loss;
- Keeping all safes, vaults, and any other equipment or areas used for the production, cultivation, harvesting, processing or storage of marijuana products securely locked and protected from entry, except for the actual time required to remove or replace marijuana;
- Keeping all locks and security equipment in good working order;
- Prohibiting keys, if any, from being left in the locks or stored or placed in a location accessible to persons other than specifically authorized personnel;
- Prohibiting accessibility of security measures, such as combination numbers, passwords or electronic or biometric security systems, to persons other than specifically authorized personnel;
- Ensuring that the outside perimeter of the Marijuana Establishment is sufficiently lit to facilitate surveillance, where applicable;
- Ensuring that all marijuana products are kept out of plain sight and are not visible from a public place without the use of binoculars, optical aids or aircraft;

- Developing emergency policies and procedures for securing all product following any instance of diversion, theft or loss of marijuana, and conduct an assessment to determine whether additional safeguards are necessary;
- Developing sufficient additional safeguards as required by the Cannabis Control Commission (“the Commission”) for Marijuana Establishments that present special security concerns; and
- Sharing the Marijuana Establishment’s security plan and procedures with law enforcement authorities and fire services and periodically updating law enforcement authorities and fire services if the plans or procedures are modified in a material way.

### **Alarm Requirements**

HSI will implement alarms and other security equipment to prevent and detect potential loss and diversion of marijuana. This equipment will include perimeter alarms installed by Netwatch, USA at all entrances and exits of HIS’s facility, a failure notification system, a panic alarm connected to local law enforcement, video cameras in all areas that contain marijuana, and 24-hour recordings of all video surveillance. Heal has installed video cameras in accordance with a security plan reviewed and reviewed by the police department, and HSI will modify these locations to the extent requested by the police department.

### **Limited Access Areas**

HSI will designate limited access areas by posting clearly visible signs, no smaller than 12” x 12” and which state: “Do Not Enter-Limited Access Area-Access Limited to Authorized Personnel Only” in lettering no smaller than one inch in height. HSI will limit individuals allowed access to these areas to employees, agents, law enforcement, and others as authorized by the Commission. HSI will require all employees to wear employee identification badges at all times while inside the marijuana establishment. Employees of HSI will escort all visitors, including vendors and contractors, into limited access areas. These visitors will be logged in and out, and HSI will maintain this log.



Heal, Inc.

**Building Photos: Exterior**







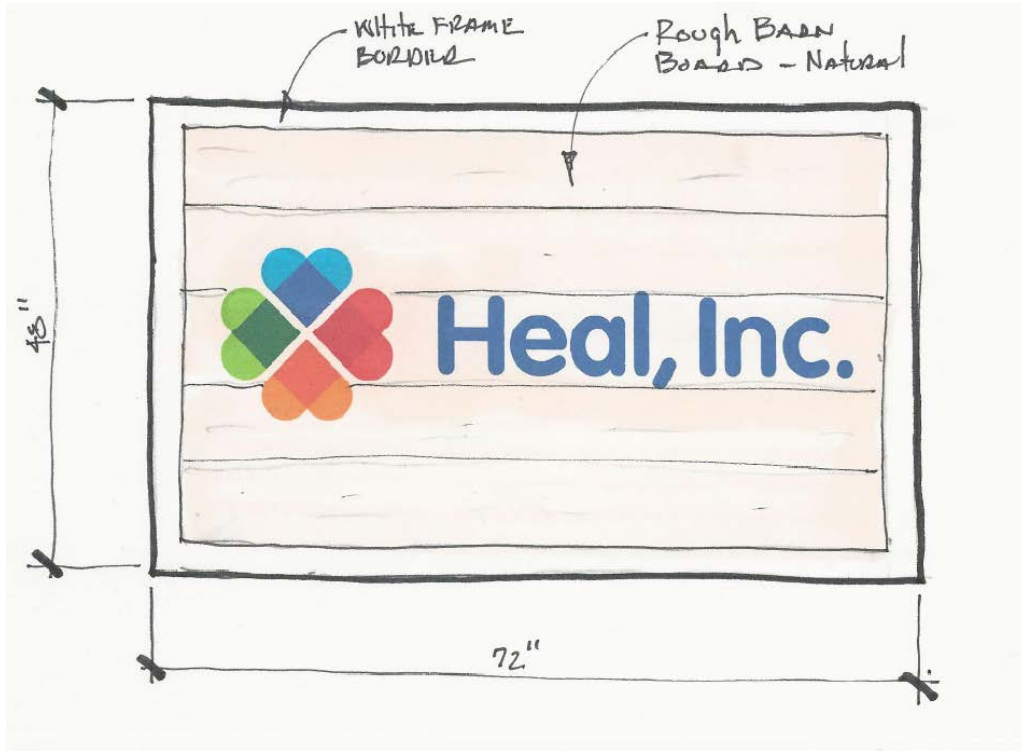
**Building Photos: Interior**



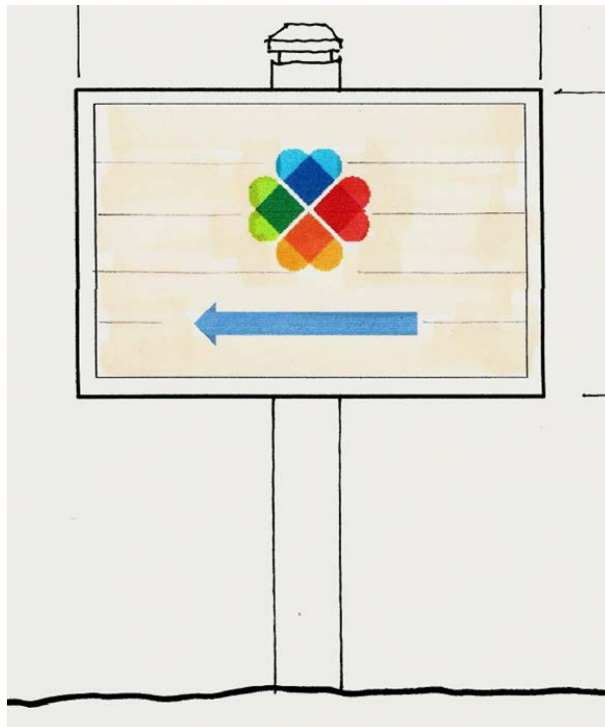


Heal, Inc.

**Signage Planned  
Building Sign**



**Driveway Entrance Sign**





STUBBRIDGE  
BUSINESS PARK

660 STATE AVE

PHOTONIS

Lake Region MEDICAL

Coker TRAINING CENTER

ALLSTAR

Heel, Inc.

P R O P O S E D   S I G N A G E

## **Heal Sturbridge, Inc. Officers and Board Members**

Patricia Faass: President and CEO, Co-Founder, Board Member

Alexander Oliphant: Co-Founder

James Bonaccorsi: Co-Founder, Board Member

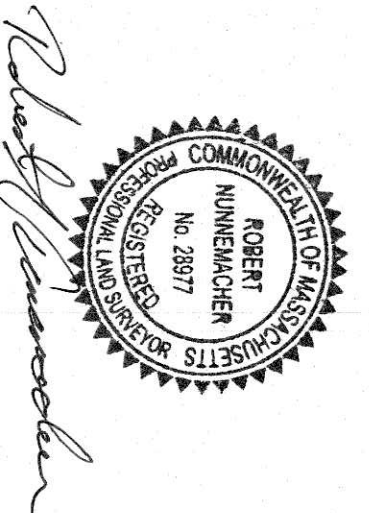
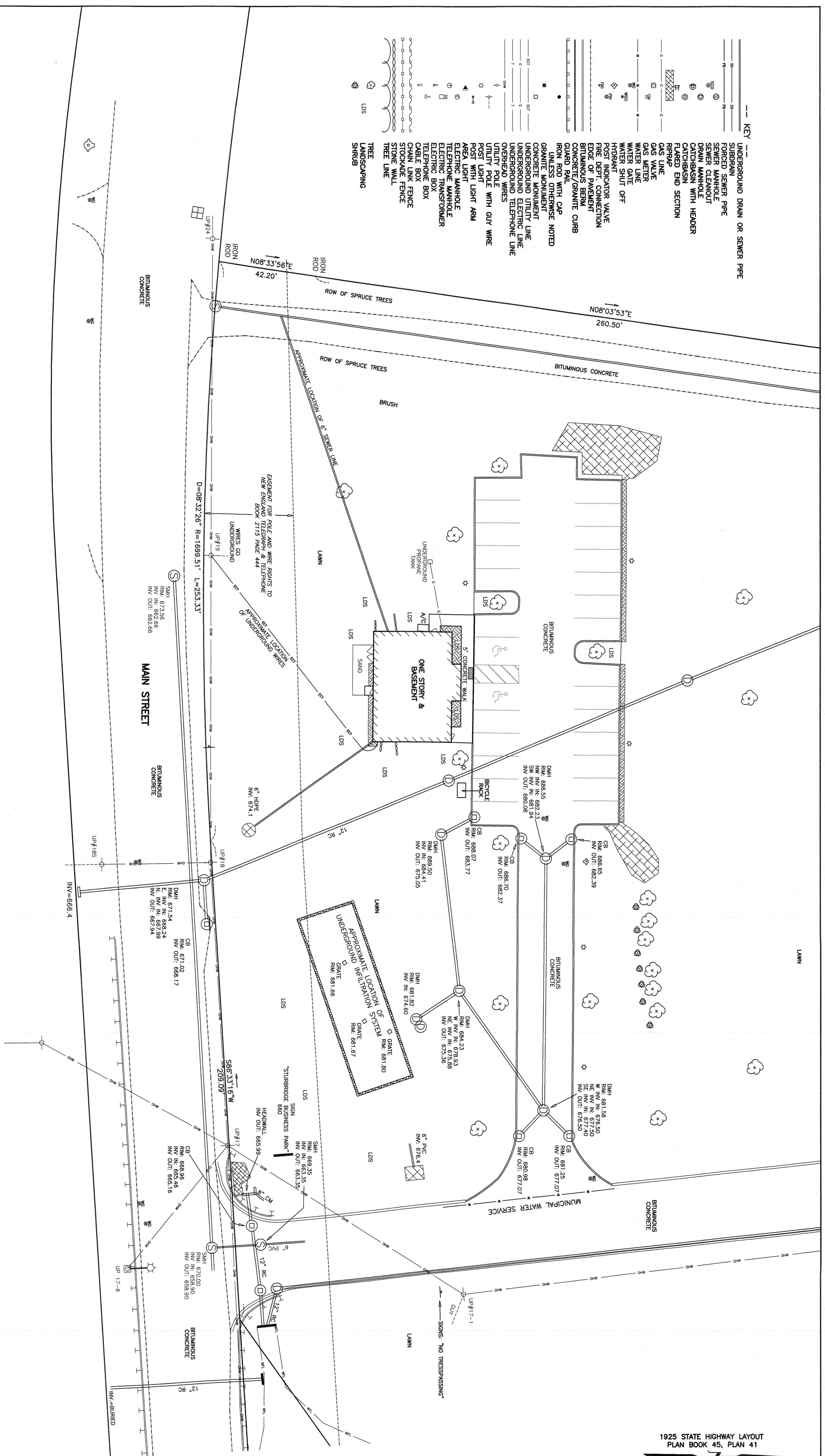
Gary Einsidler: Board Member

Ted Karwoski: Board Member

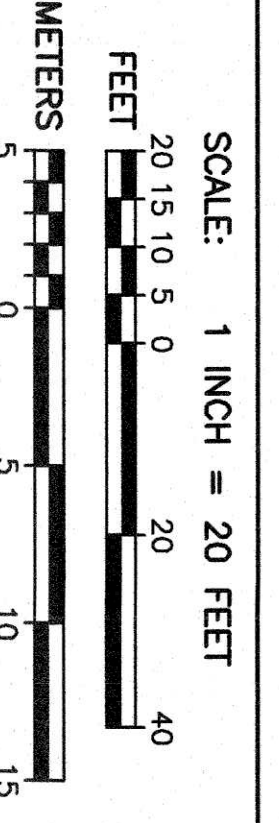
W. Thomas Gutowski: Board Member



- KEY**
- UNDERGROUND DRAIN OR SEWER PIPE
  - SUBDRAIN
  - FORCED SEWER PIPE
  - SEWER MANHOLE
  - SEWER MANHOLE
  - SEWER MANHOLE
  - CATCHBASIN WITH HEADER
  - CATCHBASIN WITH HEADER
  - FLARED END SECTION
  - RIPRAP
  - GAS LINE
  - GAS VALVE
  - GAS VALVE
  - WATER METER
  - WATER LINE
  - WATER GATE
  - WATER SHUT OFF
  - PROPAGATOR VALVE
  - FIRE DEPT. CONNECTION
  - EDGE OF PAVEMENT
  - BRITUMINOUS BERM
  - CONCRETE/GRANITE CURB
  - GUARD RAIL
  - IRON ROD WITH CAP
  - UNLESS OTHERWISE NOTED
  - GRANITE MONUMENT
  - CONCRETE MONUMENT
  - UNDERGROUND UTILITY LINE
  - UNDERGROUND ELECTRIC LINE
  - UNDERGROUND TELEPHONE LINE
  - OVERHEAD WIRES
  - UTILITY POLE WITH GUY WIRE
  - UTILITY POLE WITH GUY WIRE
  - POST WITH LIGHT ARM
  - AREA LIGHT
  - ELECTRIC MANHOLE
  - ELECTRIC TRANSFORMER
  - TELEPHONE BOX
  - CABLE BOX
  - CHAIN LINK FENCE
  - STOCKADE FENCE
  - STONE WALL
  - TREE LINE
  - TREE LANDSCAPING SHRUB



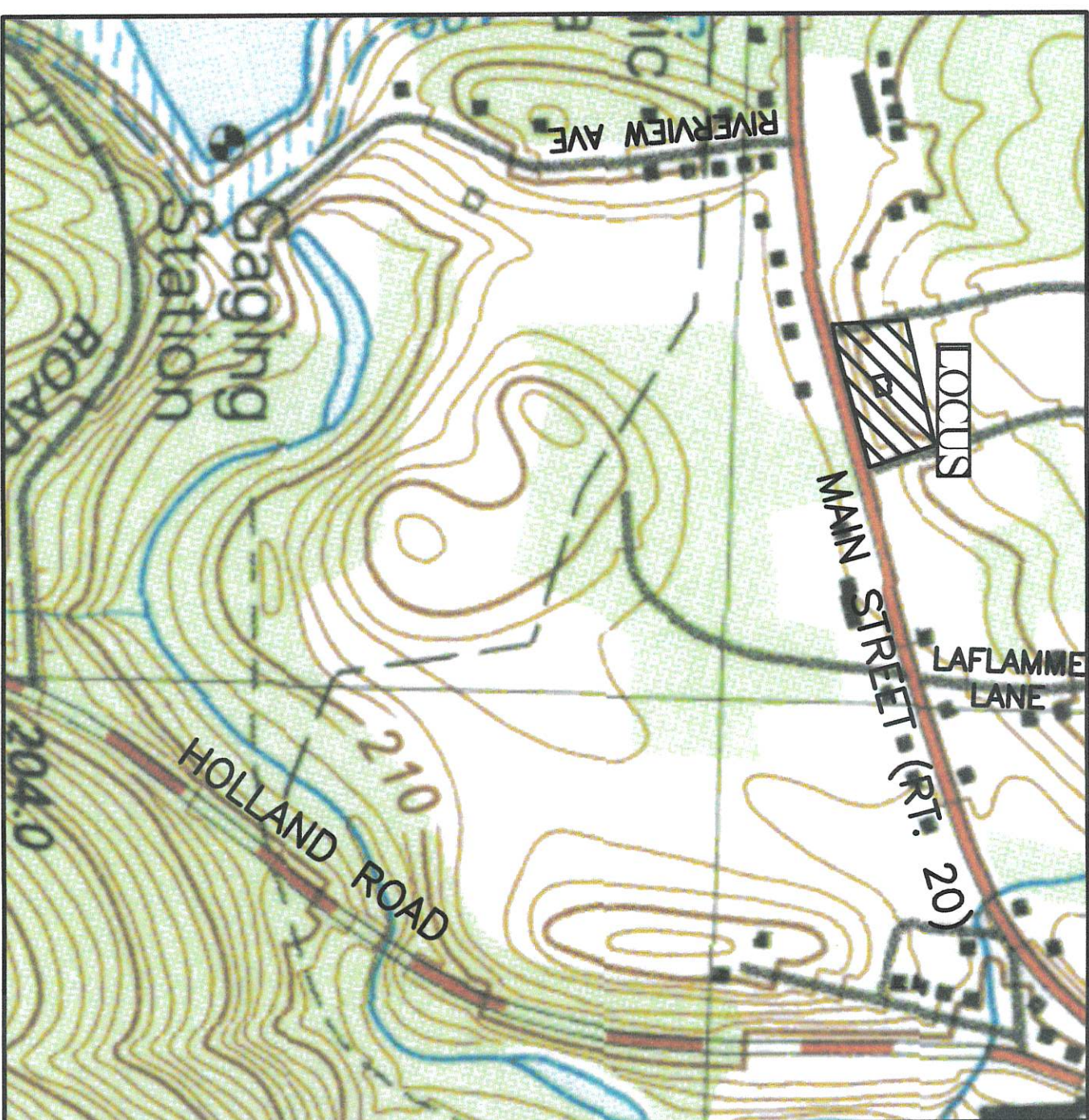
CLT. NO.	1032
JOB NO.	287-1863
DWG. NO.	HEAL INC ASB
DATE:	JULY 10, 2019
REVISION DATES:	



THOMPSON-LISTON ASSOCIATES, INC.  
PROFESSIONAL CIVIL ENGINEERS  
PROFESSIONAL LAND SURVEYORS  
51 MAIN STREET, PO BOX 570  
BOYLSTON, MASS. 01505-0570  
TEL: 508-869-6151 EMAIL: info@tlinc.net

AS BUILT SITE PLAN OF LAND IN  
STURBRIDGE, MASSACHUSETTS  
OWNED BY:  
OLD ROAD REALTY, LLC  
ASSESSORS: 415-2335-660  
AREA: 47.02 ACRES  
PREPARED FOR:  
HEAL, INC.



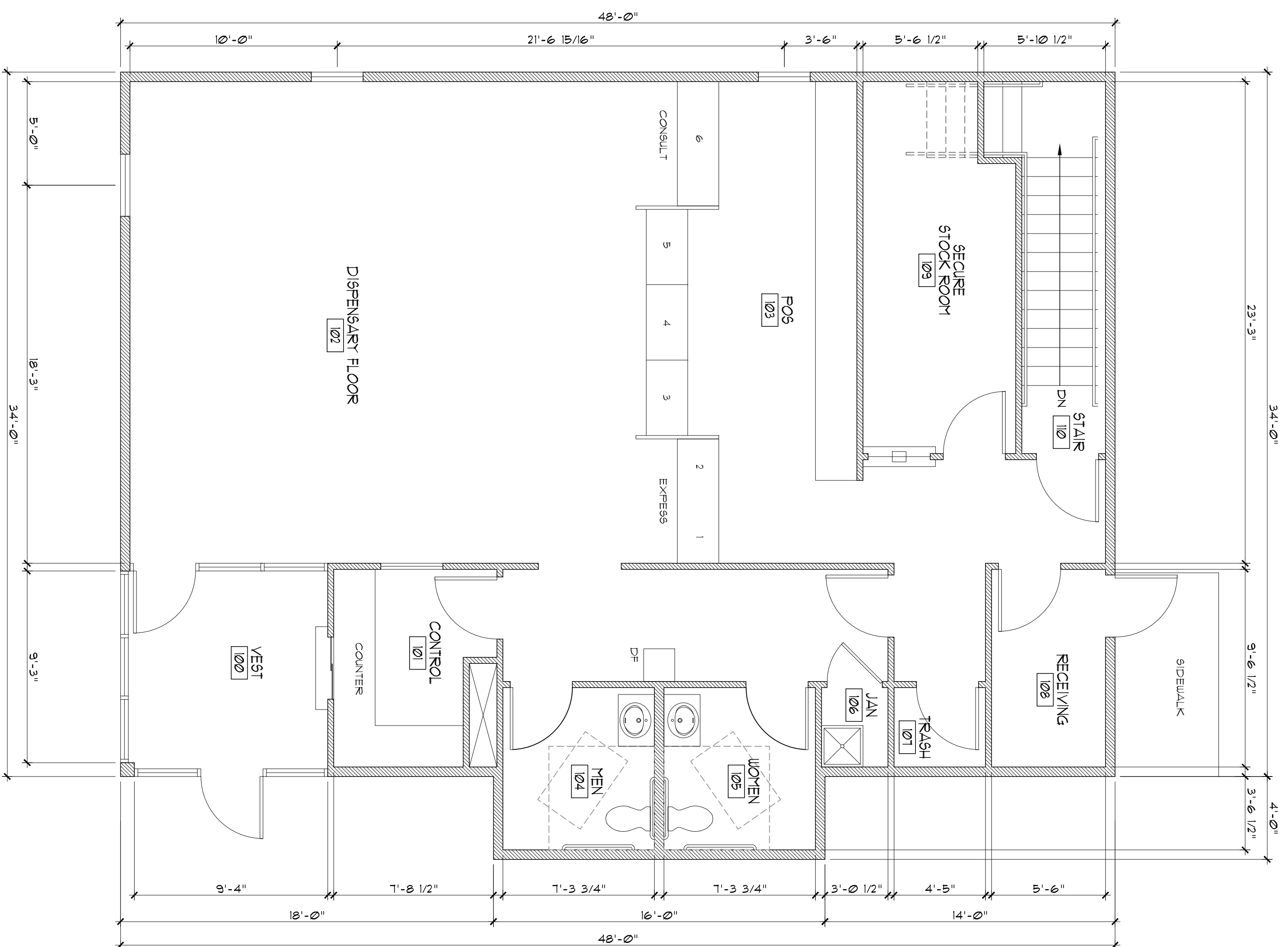


# LOCUS MAP

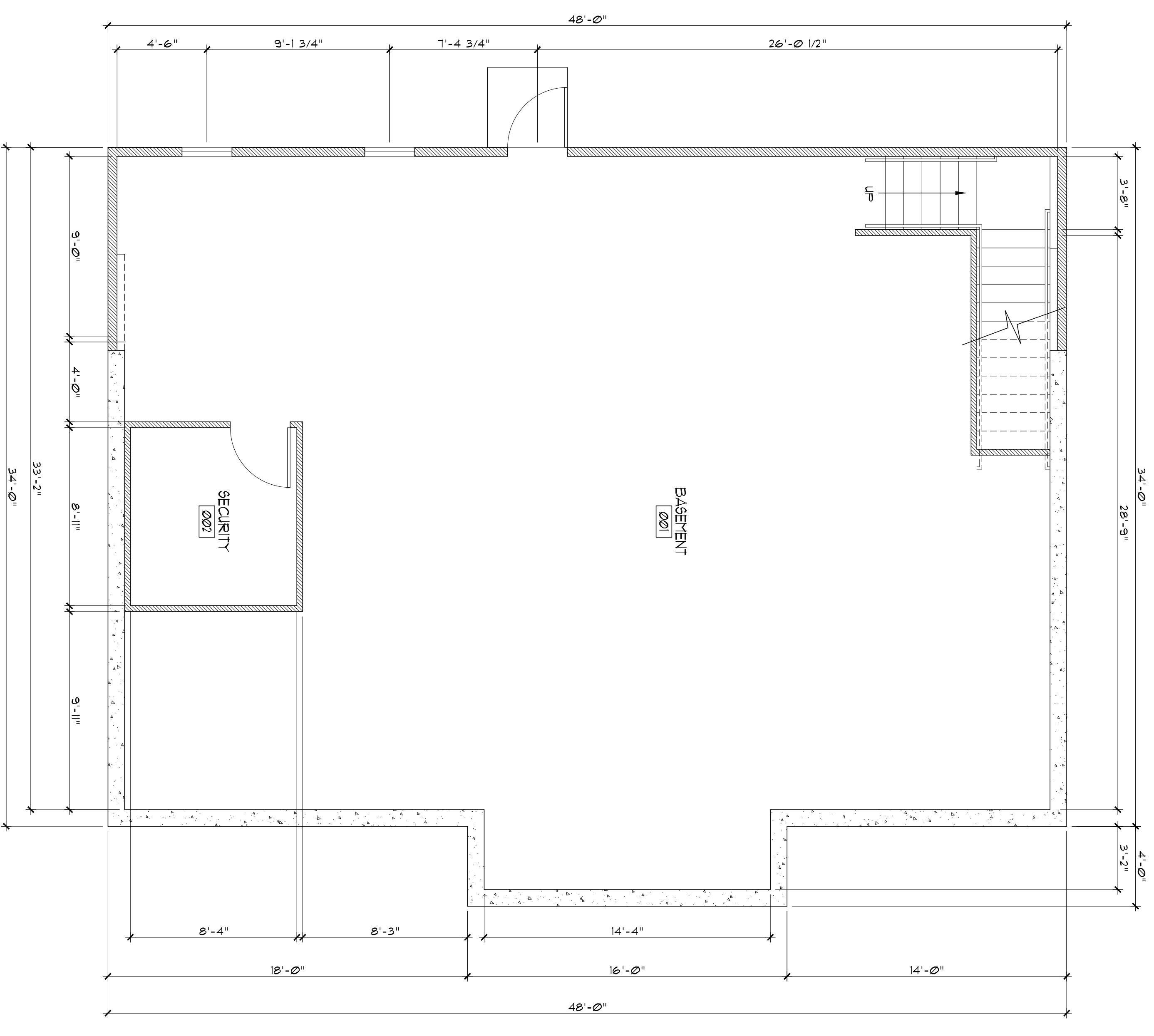
SCALE: 1" = 400'

LOCUS PLAN OF LAND IN  
STURBRIDGE, MASS.  
PREPARED FOR  
OLD ROAD REALTY, LLC  
FEBRUARY 25, 2020 1 INCH = 400 FEET  
THOMPSON-LISTON ASSOCIATES, INC.  
CIVIL ENGINEERS & LAND SURVEYORS  
51 MAIN STREET, PO BOX 570  
BOYLSTON, MASS. 01505-0570  
VOICE: 508-869-6151  
EMAIL: info@tldinc.net





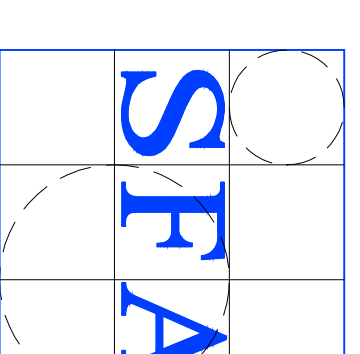
**UPPER FLOOR  
PROPOSED FLOOR PLAN**  
A  
SCALE: 1/4" = 1'-0"



**LOWER FLOOR  
PROPOSED FLOOR PLAN**  
B  
SCALE: 1/4" = 1'-0"

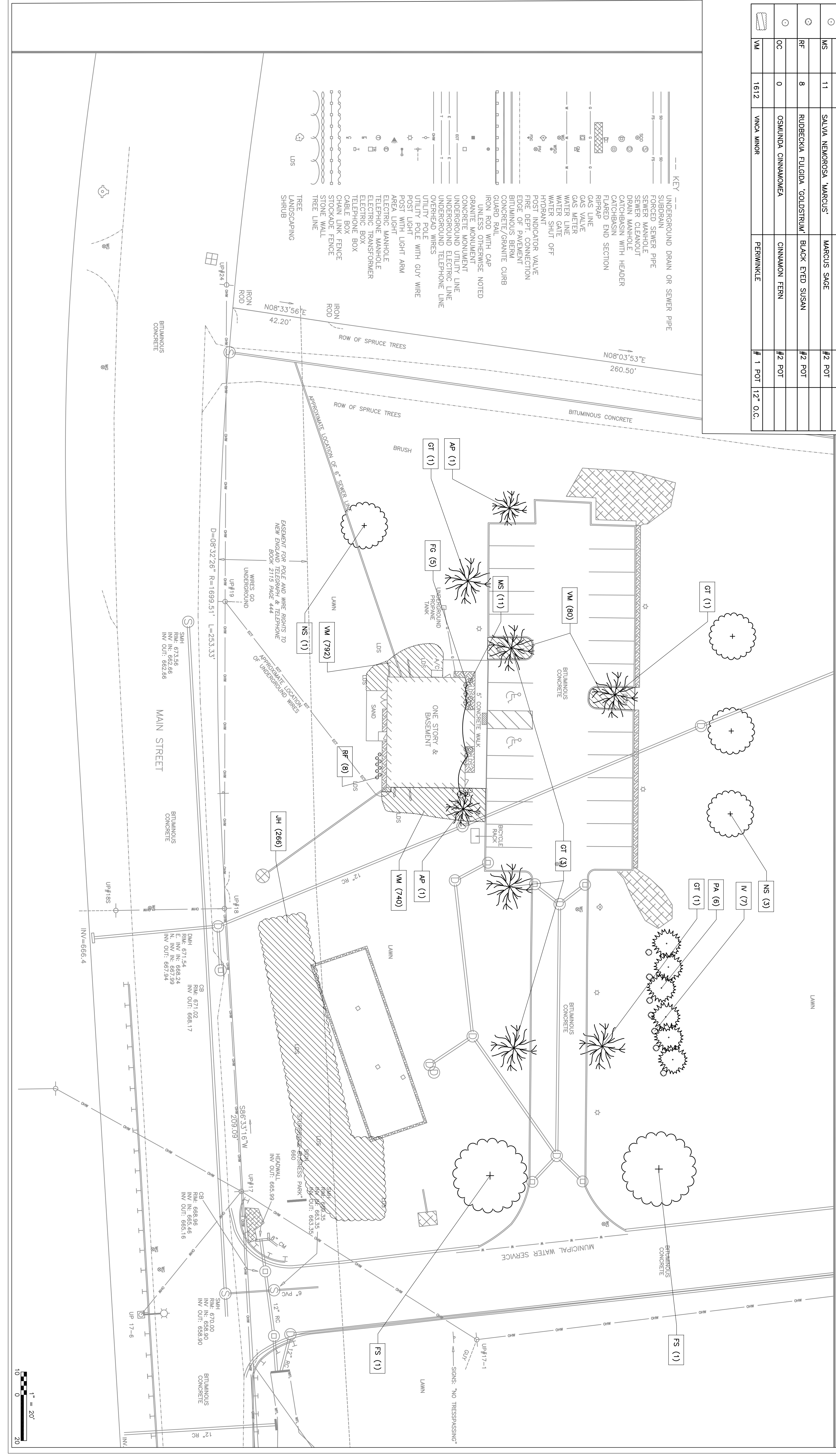
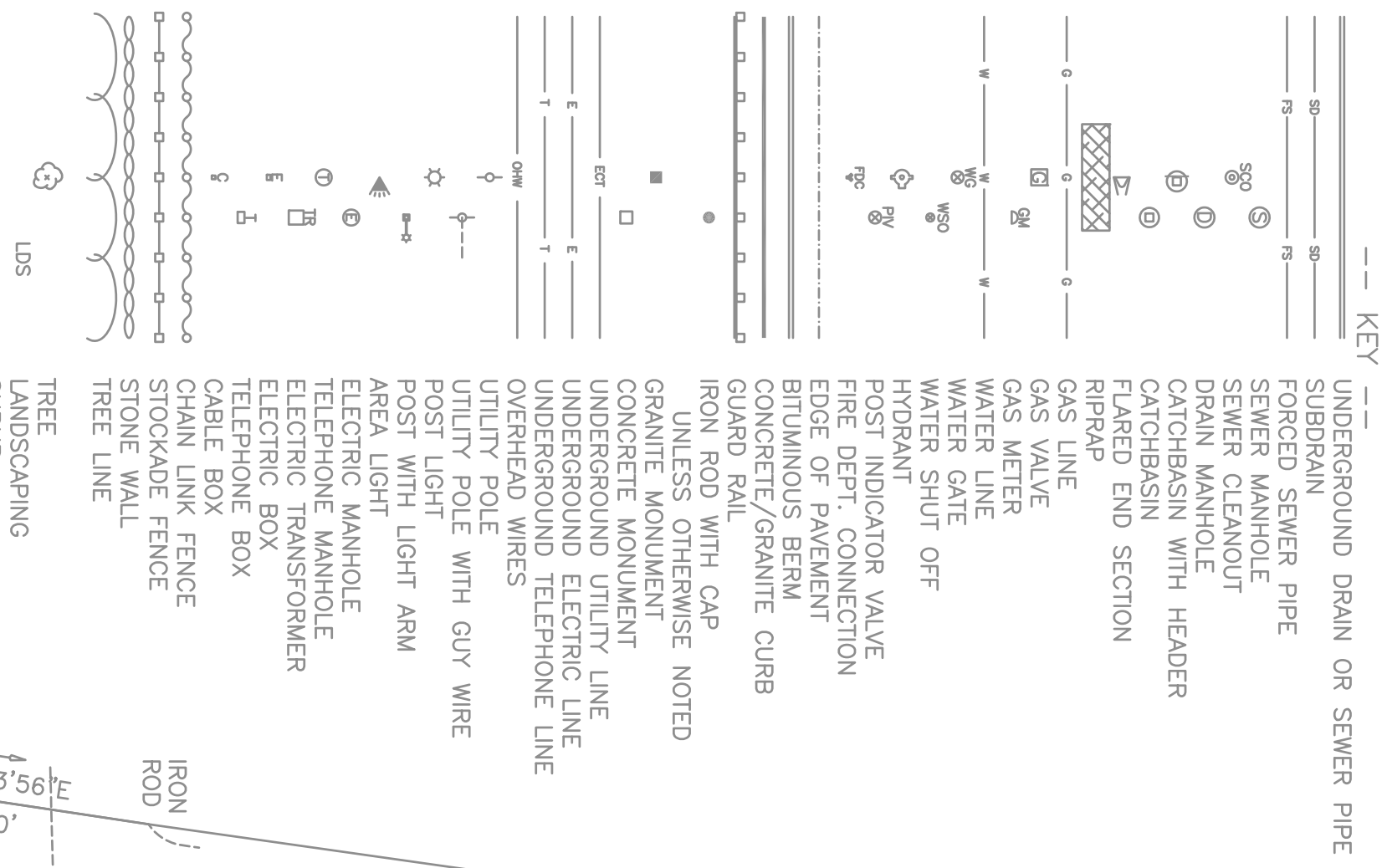
# PROPOSED FLOOR PLANS

FEBRUARY, 2018  
SCALE: 1/4" = 1'-0"



**STEPHEN FLESHMAN  
ARCHITECT, LLC**  
99 APPLE ROAD  
BRIMFIELD, MA 01010  
P: 508.347.7188  
F: 508.347.8939  
E: FLESHMAN@SFA-ARCH.COM

SYM.	QTY.	BOTANICAL NAME	COMMON NAME	SIZE	ROOT
<b>TREES</b>					
PA	6	PICEA ABIES	NORWAY SPRUCE	7-8 FT.	BB
AP	2	ACER PALMATUM 'BLOODGOOD'	BLOODGOOD MAPLE	7-8 FT.	BB
GT	6	GLEDITSIA TRIACANTHOS 'NERMIS'	THORNLESS HONEY LOCUST	2"-2.5" CAL.	BB
NS	4	NYSSA SYLVAICA	BLACK GUM	2"-2.5" CAL.	BB
FS	2	FAGUS SYLVATICA 'REVERSI'	RIVERS PURPLE BEECH	2.5"-3" CAL.	BB
<b>SHRUBS</b>					
IV	6	ILEX VERTICILLATA	COMMON WINTERBERRY	#15 POT	
FG	5	FOTHERGILLA GARDENII	FOTHERGILLA	2-2.5 FT. BB	
<b>PERENNIALS AND GROUND COVERS</b>					
MS	11	SALVIA NEMOROSA 'MARCUS'	MARCUS SAGE	#2 POT	
RF	8	RUDEBECKIA FLUIDA 'GOLDSTRUM'	BLACK EYED SUSAN	#2 POT	
OC	0	OSMUNDA CINNAMOMEA	CINNAMON FERN	#2 POT	
VM	1612	VINCA MINOR	PERIWINKLE	#1 POT 12" O.C.	



NUMBER	DATE	MADE BY	CHECKED BY	DESCRIPTION

**LANDSCAPE PLAN-AS BUILT**

HEAL INC. 660 MAIN STREET  
STURBRIDGE, MA

Proj. Mgr.: JC  
Designed: JC  
Drawn: JC  
Checked: JC  
Scale: AS NOTED  
Date: FEB 2020

**JCLA**  
JOSEPH COAN LANDSCAPE ARCHITECTURE  
STURBRIDGE MA (413) 668-4553

**MASSACHUSETTS REGISTERED LANDSCAPE ARCHITECT**  
JOSEPH C. COAN No. 3008

1-1

Proj. No. \_\_\_\_\_  
Dwg. No. \_\_\_\_\_





## Memorandum

To: Ms. Patricia Faass  
4 Irving Road  
Weston, Massachusetts 02463

Date: March 12, 2020

Project #: 13678.00

From: Matt Kealey, P.E., PTOE  
Project Manager

Re: Proposed Dispensary  
660 Main Street  
Sturbridge, Massachusetts

Adam Prichard  
Transportation Consultant

In December 2016, VHB, Inc. conducted a traffic impact and access study (TIAS) to support the Town of Sturbridge approval process for the proposed development of a medical marijuana dispensary (the Project) at 660 Main Street in Sturbridge, Massachusetts (the Site). The project included the construction of an approximately 2,700 square foot (sf) medical marijuana dispensing facility supported by approximately 30 surface parking spaces. Access to Sturbridge Business Park is provided by an existing full access, unsignalized driveway (Galileo Drive) along Main Street (Route 20). Access to the Project will be located off Galileo Drive. Since the original filing, the project has been modified to include a 1,696 sf building supported by 27 parking spaces. An As-Built plan for the site is provided in the Attachments to this memorandum. The Proponent is now proposing the addition of recreational marijuana sales to this facility. Under this proposal, the medical and recreational sales will be collocated within the building. Given the change in use, the Town of Sturbridge has requested an update to the 2016 TIAS.

This memorandum includes an evaluation of the existing traffic operations and safety; assessment of future conditions without the project; an estimate of projected traffic volumes for the project; and its potential impact on future traffic operations in the area.

### Existing Conditions

The following section provides a description of the existing study area roadways and intersection characteristics.

#### Study Area

##### Main Street (Route 20)

Main Street (Route 20) is an east/west urban principal arterial roadway under the Massachusetts Department of Transportation (MassDOT) jurisdiction in the vicinity of the Site. Main Street (Route 20) is a two-lane roadway, with approximately 15-foot lanes and 2-foot shoulders, with a posted speed limit of 45 miles per hour (mph). Approximately 1,500 feet west of the Galileo Drive, the roadway provides two lanes in each direction. No sidewalks are present along Main Street (Route 20) within the vicinity of the site. Land use along Main Street (Route 20) consists of a mix of commercial and residential uses.

##### Main Street (Route 20) at Galileo Drive (Sturbridge Business Park Driveway)

Main Street (Route 20) is intersected by Galileo Drive (Sturbridge Business Park Driveway) from the north to form a three-legged unsignalized intersection. All approaches consist of one general purpose lane accommodating all movements. No stop sign or stop bar is present on the southbound approach of Galileo Drive. No sidewalks or crosswalks are present at the intersection.

101 Walnut Street  
PO Box 9151  
Watertown, MA 02472-4026  
P 617.924.1770

**Traffic Volumes**

To assess the existing operational conditions at the study area, a review of existing condition traffic volumes was conducted. Automatic traffic recorder (ATR) counts were conducted in September 2016 along Main Street (Route 20) in the vicinity of the Site. The observed traffic volume data are summarized below in Table 1 and Figure 1, and included in the Attachments to this memorandum.

▪ **Table 1 Existing Traffic Volume Summary**

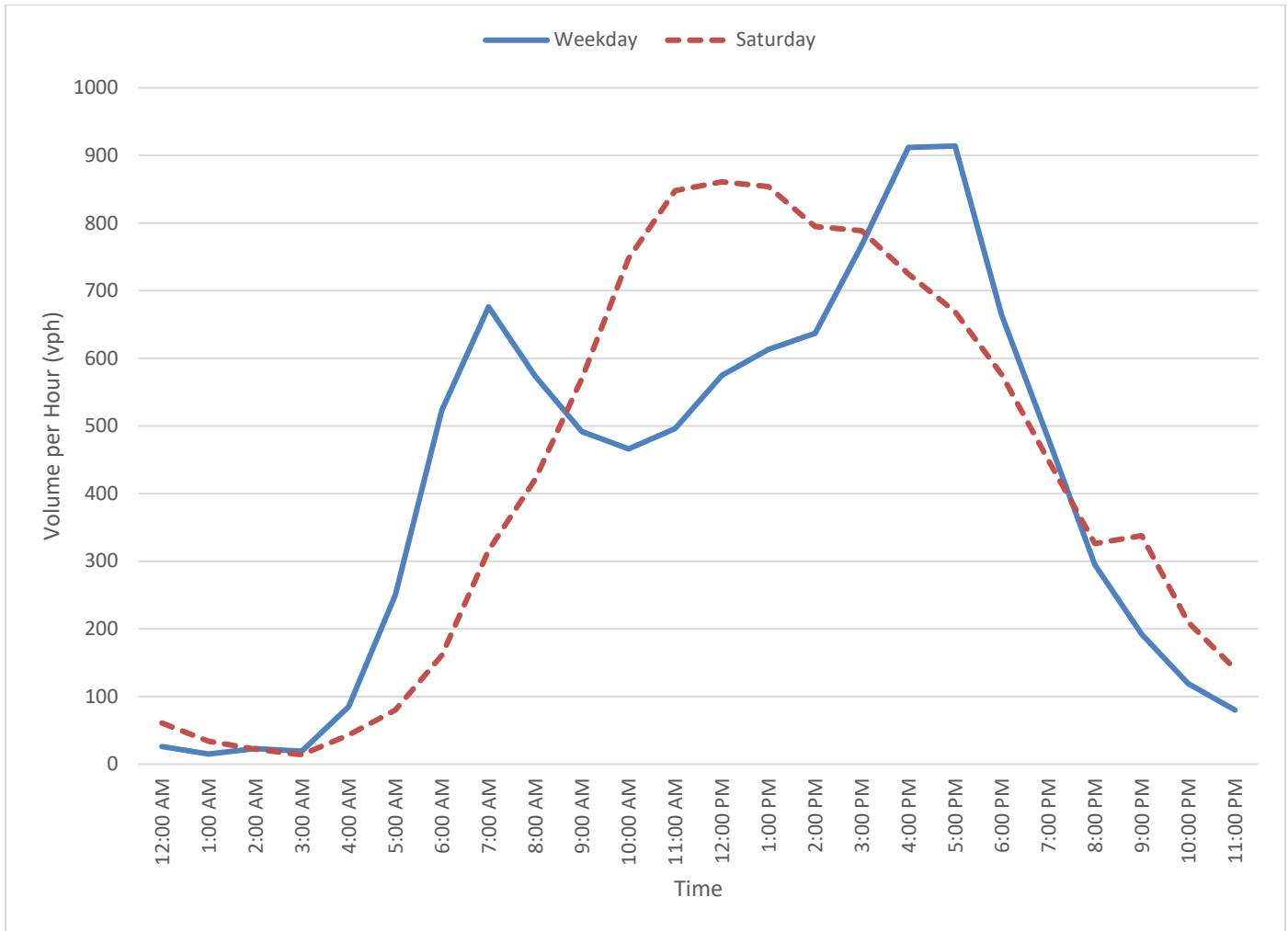
Location	Weekday				Saturday			
	Daily	Weekday Evening Peak Hour			Daily	Saturday Midday Peak Hour		
	Vol (vpd) <sup>a</sup>	Vol (vph) <sup>b</sup>	K Factor <sup>c</sup>	Dir. Dist. <sup>d</sup>	Vol (vpd)	Vol (vph)	K Factor	Dir. Dist.
Main Street west of Galileo Drive	9,900	915	9%	57% WB	10,100	915	9%	53% WB

Source: Automatic Traffic Recorder (ATR) counts conducted by VHB in September 2016.

- a Daily traffic expressed in vehicles per day.
- b Peak hour volumes expressed in vehicles per hour.
- c Percent of daily traffic, which occurs during the peak hour.
- d Directional distribution of peak period traffic.

As shown in Table 1, during a typical weekday, Main Street (Route 20) carries approximately 9,900 vehicles per day with 915 vehicles during the weekday evening peak hour. Main Street (Route 20) traffic is slightly heavier in the westbound direction in the weekday evening peak hour. During a typical Saturday, Main Street (Route 20) carries approximately 10,100 vehicles during the Saturday midday peak hour. Traffic along Main Street (Route 20) is slightly heavier in the westbound direction during the Saturday midday peak hour.

Figure 1 Existing Traffic Volume Graph



As shown in Figure 1, Main Street (Route 20) roadway volumes peak during the weekday evening commuter peak period and Saturday midday peak period. It should be noted that Main Street (Route 20) roadway volumes during the weekday morning commuter peak period are less than those in the weekday evening commuter peak period.

In addition, peak hour turning movement counts (TMCs) were conducted at the study area intersection in September 2016 concurrent with the ATR count during the weekday evening peak period from 4:00 PM to 6:00 PM and during the Saturday midday peak period from 11:00 AM to 2:00 PM. The dispensary is not expected to be open during the weekday morning commuter peak period. Based on a review of the count data, the weekday evening and Saturday midday peak hours of vehicular activity were determined to be 4:00 PM to 5:00 PM and 11:30 AM to 12:30 PM, respectively. The 2016 traffic volumes were adjusted to reflect 2020 conditions based on a historic growth rate



discussed in the Future Conditions section of this memorandum. The traffic volume counts are provided in the Attachments to this memorandum.

### **Seasonal Variation**

The peak hour traffic data collected for the Project was obtained during the month of September 2016. To quantify the seasonal variation of traffic volumes in the area, historic traffic data available from MassDOT were reviewed. According to published MassDOT weekday seasonal factors, September traffic counts are generally higher than average month conditions. To present a conservative analysis, the traffic volumes were not reduced to reflect average month conditions. The 2020 Existing peak hour traffic volume networks are provided in the Attachments to this memorandum.

### **Crash Summary**

To identify potential vehicle crash trends in the study area, vehicular crash data for the study area intersections were obtained from Massachusetts Department of Transportation (MassDOT) for the most recent five-year period (2013-2017) available. A summary of the MassDOT vehicle crash history is provided in Table 2 and the detailed crash data is provided in the Attachments to this memorandum.

The current MassDOT average crash rate for unsignalized intersections in District 3 (the MassDOT district for Sturbridge) is 0.61 crashes per million entering vehicles. In other words, on average, 0.61 crashes occurred per million vehicles entering unsignalized intersections, throughout District 3. The crash rate worksheet is included in the Attachments to this memorandum.

▪ **Table 2      Vehicular Crash Data (2013-2017)**

	Main Street at Galileo Drive
Signalized?	No
MassDOT Average Crash Rate	0.61
Calculated Crash Rate	0.10
Exceeds Average Crash Rate?	No
<b>Year</b>	
2013	1
2014	0
2015	1
2016	0
<u>2017</u>	<u>0</u>
Total	2
Average	0.40
<b>Collision Type</b>	
Angle	1
Head-on	0
Rear-end	0
Sideswipe, opposite direction	1
Single vehicle crash	0
<b>Crash Severity</b>	
Fatal injury	0
Non-fatal injury	0
Property damage only (none injured)	2
<b>Time of Day</b>	
Weekday, 7:00 AM - 9:00 AM	0
Weekday, 4:00 PM - 6:00 PM	0
Saturday, 11:00 AM - 2:00 PM	0
Weekday, other time	2
Weekend, other time	0
<b>Pavement Conditions</b>	
Dry	1
Wet	0
Snow	1
<b>Non-Motorist (Bike, Pedestrian)</b>	<b>0</b>

Source: MassDOT vehicle crash data

As shown in Table 2, the intersection of Main Street (Route 20) at Galileo Drive experienced two reported crashes over the five-year period. The calculated crash rate for the intersection is 0.10, which is less than the MassDOT average crash rate for District 3 (the district in which the intersection is located) of 0.61. The crashes that occurred at the intersection were angle and sideswipe, opposite direction collisions, resulting in property damage only. It should be noted no crashes involving injuries or crashes involving non-motorists (bike, pedestrian) were reported.

### **Sight Distance**

A sight distance analysis, in conformance with guidelines of the American Association of State Highway and Transportation Officials (AASHTO) was performed at the unsignalized intersection of Main Street (Route 20) and Galileo Drive. Sight distance considerations are generally divided into two categories: Stopping Sight Distance (SSD) and Intersection Sight Distance (ISD). Stopping Sight Distance (SSD) is the distance required for a vehicle approaching an intersection from either direction to perceive, react and come to a complete stop before colliding with an object in the road, in this case the exiting vehicle from a driveway. In this respect, SSD can be considered as the minimum visibility criterion for the safe operation of an unsignalized intersection.

Intersection Sight Distance (ISD) is based on the time required for perception, reaction and completion of the desired critical exiting maneuver once the driver on a minor street or driveway approach decided to execute the maneuver. Calculation for the critical ISD includes the time to (1) turn left, and to clear the half of the intersection without conflicting with the vehicles approaching from the left; and (2) accelerate to the operating speed of the roadway without causing approaching vehicles to unduly reduce their speed. In this context, ISD can be considered as a desirable visibility criterion for the safe operation of an unsignalized intersection. Essentially, while SSD is the minimum distance needed to avoid collisions, ISD is the minimum distance needed so that mainline motorists will not have to substantially reduce their speed due to turning vehicles. To maintain the safe operation of an unsignalized intersection, ISD only needs to be equal to the stopping sight distance, though it is desirable to meet ISD requirements by themselves.

To calculate the required SSD and ISD at the unsignalized intersection of Main Street (Route 20) and Galileo Drive the 85th percentile speed measured by the ATR count described above was utilized. The 85th percentile speed along Main Street (Route 20) was observed to be 51 mph eastbound and 48 mph westbound. The posted speed limit along Main Street (Route 20) is 45 mph in both the eastbound and westbound directions. Table 3 summarizes the sight distance analysis and the sight distance worksheets are included in the Attachments to this memorandum.

▪ **Table 3 Sight Distance Analysis Summary**

Location	Stopping Sight Distance <sup>a</sup>			Intersection Sight Distance <sup>a</sup>		
	Traveling	Required	Measured	Looking	Desired	Measured
Galileo Drive at Main Street (Route 20)	Eastbound	440	800	Left	565	600
	Westbound	400	850	Right	460	650

<sup>a</sup> Based on guidelines established in A Policy on the Geometric Design of Highways and Streets, Sixth Edition, American Association of State Highway and Transportation Officials (AASHTO), 2011 for an 85<sup>th</sup> percentile speed of 51 mph eastbound and 48 mph westbound.

As shown in Table 3, the minimum stopping sight distance requirements and the desired intersection sight distance requirements are exceeded at the Galileo Drive intersection.

**Future Conditions**

To determine the impacts of the site-generated traffic volumes in the vicinity of the site, future traffic conditions were evaluated. A seven-year horizon (2027) was used for the evaluation consistent with MassDOT TIA requirements.

Traffic growth on area roadways is a function of the expected land development, environmental activity, and changes in demographics. A frequently used procedure is to identify estimated traffic generated by planned developments that would be expected to affect the project study area roadways. An alternative procedure is to estimate an annual percentage increase and apply that increase to study area traffic volumes. For this evaluation, both procedures were used. The following summarizes this traffic forecasting process.

**Historic Growth**

Historic traffic data in the vicinity of the project site was reviewed to determine an appropriate growth rate. A MassDOT permanent count station is located at Route 20 (Sturbridge Road) east of New Holland Road (ID 3329) in Brimfield, Massachusetts. The traffic count data from the count station showed a decrease or no change for three of the last four years, and an increase of one-percent for a one-year period (2016-2019). To be conservative, a growth rate of one-percent per year was used for this study. The historic traffic data is included in the Attachments to this memorandum.

**Site Specific Growth**

In addition to accounting for background growth, the traffic associated with other planned and/or approved developments near the site was considered. Based on discussions with the Town of Sturbridge, it was determined that there are no planned projects in the vicinity of the site that are likely to influence traffic conditions.

**Background Transportation Projects**

In assessing future traffic conditions, proposed roadway improvements within the study area were considered. Based on discussions with the Town of Sturbridge, there is one transportation project that located to the west of the project study area within the seven-year horizon.

- **Route 20 Safety Improvements, Resurfacing and Related Work:** The Route 20 project by MassDOT reduces the number of lanes on Route 20 from four-lanes to two-lanes along the segment between New Holland Road and Old Streeter Road, which is located approximately 1,500-feet west of Galileo Drive. No changes in roadway geometry directly in front of the project site are included in this project.

### **No-Build Traffic Volumes**

The 2027 No-Build traffic volumes were generated by consideration of the above described factors. The resulting 2027 No-Build peak hour traffic volume networks are provided in the Attachments to this memorandum.

### **Trip Generation**

The rate at which any development generates traffic is dependent upon the size, location, and concentration of surrounding developments. As mentioned above, the proposed Project will involve the addition of recreational marijuana sales to the previously approved medical dispensary at 660 Main Street. It should be noted that the medical marijuana dispensary was approved in 2017 for a building size of approximately 2,700 sf, but the actual building is approximately 1,696 sf. To estimate the total site-generated traffic, transactional data and operations for the facility were provided by the Proponent. This methodology of using transactional data to estimate trip generation was used in the December 19, 2016 memorandum prepared by VHB for the permitting of the medical marijuana dispensary on-Site. The same methodology was used in the May 10, 2019 trip generation memorandum in order to be consistent with the previous filing. The trip generation projections from that memorandum have been used for analysis purposes for this evaluation.

The dispensary is anticipated to be open seven days a week with operational hours from 10:00 AM to 7:00 PM Monday through Thursday, 10:00 AM to 9:00 PM on Friday and Saturday, and 12:00 PM to 6:00 PM on Sunday. The Proponent anticipates a maximum of fifteen employees at the facility at one time. There will be six cash registers in the dispensary, and each customer appointment is anticipated to last approximately ten minutes.

Table 4 provides a trip generation summary of the proposed marijuana dispensary, as summarized in the May 10, 2019 memorandum. To be conservative, 36 customer appointments (six appointments per cash register) and six total employee trips were assumed to occur during each peak hour.

▪ **Table 4 Trip Generation Summary**

Time Period	Direction	Proposed Marijuana
		Dispensary
Weekday Daily <sup>a</sup>	Enter	340
	<u>Exit</u>	<u>340</u>
	Total	680
Weekday Evening <sup>b</sup>	Enter	42
	<u>Exit</u>	<u>42</u>
	Total	84
Saturday Daily <sup>c</sup>	Enter	412
	<u>Exit</u>	<u>412</u>
	Total	824
Saturday MIDDAY <sup>b</sup>	Enter	42
	<u>Exit</u>	<u>42</u>
	Total	84

a Weekday daily trip generation Monday through Thursday. Based on 324 customer visits (36 per hour for 9 hours), 15 employee trips, and 1 supply delivery per day.

b Peak hour trip generation based on 36 customer visits and 6 employee trips per peak hour.

c Saturday daily trip generation based on 396 customer visits (36 per hour for 11 hours), 15 employee trips, and 1 supply delivery per day.

As shown in Table 4, the proposed marijuana dispensary is expected to result in a total of 680 vehicle trips (340 entering / 340 exiting) on a typical weekday, with a total of 84 vehicle trips (42 entering / 42 exiting) during the weekday evening peak hour. On a typical Saturday, the project is expected to generate a total of 824 vehicle trips (412 entering / 412 exiting) with 84 vehicle trips (42 entering / 42 exiting) during the Saturday midday peak hour.

It should be noted that the proposed trip generation estimates assume that the maximum number of appointments will occur for all hours that the dispensary is open. In actuality, all six cash registers may not be open at all hours based on demand, and there may be breaks in customers between appointments. Therefore, the trip generation estimates shown in Table 4 are conservative and the actual number of trips generated by the Site may be lower than what is presented above.

**Trip Distribution**

The directional distribution of traffic approaching and departing the site is a function of several variables. These include population densities, existing travel patterns, and the efficiency of the roadways leading to and from the site. The trip distribution of the site traffic used in this analysis is based on existing travel patterns along Main Street (Route

20). The trip distribution patterns for the project are presented in Table 5 and provided as a figure in the Attachments to this memorandum.

▪ **Table 5 Trip Distribution**

<b>Roadway</b>	<b>Direction (From/To)</b>	<b>Trip Distribution</b>
Main Street (Route 20)	East	55%
<u>Main Street (Route 20)</u>	<u>West</u>	<u>45%</u>
<b>Total</b>		<b>100%</b>

### **Build Traffic Volumes**

The project-related traffic volumes are assigned to the study area roadway network based on the trip distribution patterns shown in Table 5 and added to the 2027 No-Build peak hour traffic volume networks to develop the 2027 Build weekday evening and Saturday midday peak hour traffic volume networks. The site-generated trip traffic volume networks and 2027 Build traffic volume networks are provided in the Attachments to this memorandum.

### **Traffic Operations Analysis**

To assess quality of flow, intersection capacity analyses were conducted with respect to 2020 Existing, 2027 No-Build, and 2027 Build traffic volume conditions. Capacity analyses provide an indication of how well the roadway facilities serve the traffic demands placed upon them. Roadway operating conditions are classified by calculated levels-of-service.

The evaluation criteria used to analyze area intersections and roadways in this traffic study are based on the 2010 Highway Capacity Manual (HCM). Level-of-service (LOS) is the term used to denote the different operating conditions that occur on a given roadway segment under various traffic volume loads. It is a qualitative measure that considers a number of factors including roadway geometry, speed, travel delay, freedom to maneuver, and safety. Level-of-service provides an index to operational qualities of a roadway segment or an intersection. Level-of-service designations range from A to F, with LOS A representing the best operating conditions and LOS F representing congested operating conditions.

### **Intersection Capacity Analysis**

Levels-of-service analyses were conducted for the 2020 Existing, 2027 No-Build, and 2027 Build conditions for the study area intersections. Table 6 summarizes the capacity analysis for the unsignalized intersections. The capacity analyses worksheets are included in the Attachments to this memorandum.



▪ **Table 6 Unsynchronized Intersection Capacity Analysis**

Location	Movement	2020 Existing Conditions					2027 No-Build Conditions					2027 Build Conditions				
		D <sup>a</sup>	v/c <sup>b</sup>	Del <sup>c</sup>	LOS <sup>d</sup>	95 Q <sup>e</sup>	D	v/c	Del	LOS	95 Q	D	v/c	Del	LOS	95 Q
<b>Main Street (Route 20) at Galileo Drive</b>																
Weekday	EB L	neg	0.00	9	A	0	neg	0.00	9	A	0	20	0.02	9	A	3
Evening	SB L/R	60	0.24	22	C	23	60	0.26	25	C	25	105	0.47	32	D	58
Saturday	EB L	neg	-	0	A	-	neg	-	0	A	-	20	0.02	9	A	3
Midday	SB L/R	6	0.04	19	C	3	6	0.03	19	C	3	50	0.20	21	C	18
<b>Galileo Drive at Site Driveway</b>																
Weekday	EB L/R											45	0.05	9	A	8
Evening	NB L											45	0.03	7	A	3
		<i>Intersection does not exist under 2020 Existing Conditions.</i>					<i>Intersection does not exist under 2027 No-Build Conditions.</i>									
Saturday	EB L/R											45	0.05	9	A	3
Midday	NB L											45	0.03	7	A	3

- a. Demand of critical movement.
- b. Volume to capacity ratio.
- c. Average total delay, in seconds per vehicle.
- d. Level-of-service.
- e. 95th percentile queue, in feet.

As shown in Table 6, between 2027 No-Build and 2027 Build conditions, the intersection of Main Street (Route 20) and Galileo Drive is expected to degrade from LOS C to LOS D during the weekday evening peak hour and remain at LOS C during the Saturday midday peak hour. The intersection of Galileo Drive at the site driveway is expected to operate at LOS A under 2027 Build conditions during both peak hours.

**Conclusion**

VHB has conducted an updated traffic impact study for development of a marijuana dispensary at 660 Main Street in Sturbridge, Massachusetts. The proposed project is estimated to generate a total of 680 vehicle trips (340 entering / 340 exiting) on a typical weekday, with a total of 84 vehicle trips (42 entering / 42 exiting) during the weekday evening peak hour. On a typical Saturday, the project is expected to generate a total of 824 vehicle trips (412 entering / 412 exiting) with 84 vehicle trips (42 entering / 42 exiting) during the Saturday midday peak hour. Based on the intersection capacity analysis, it is expected that the project will have a minimal impact upon intersection operations within the study area. The analysis indicates that no physical roadway improvements are necessary to accommodate the project.



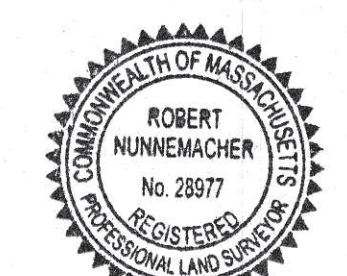
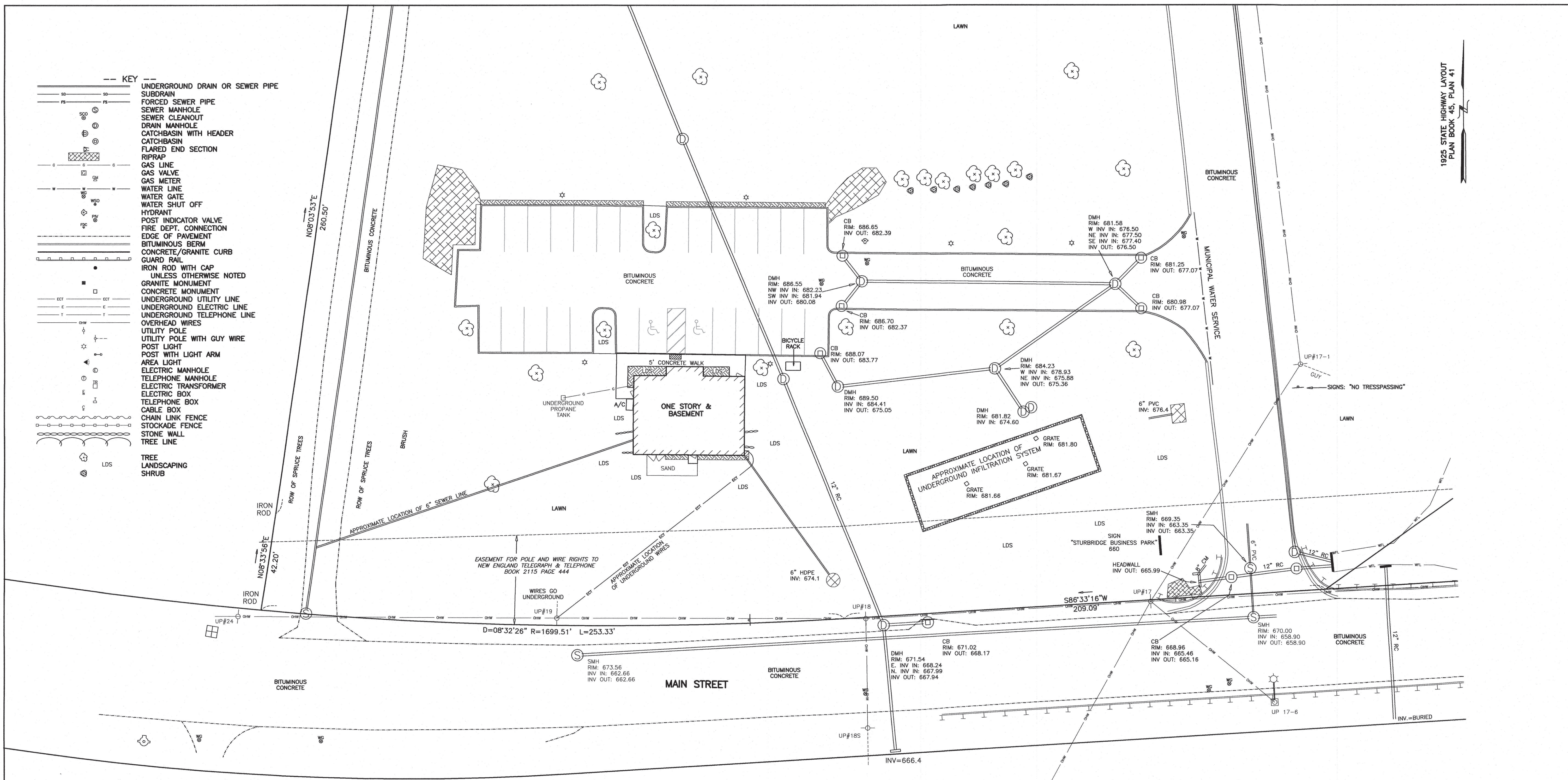
# Attachments

- Proposed Site Plan
- Traffic Volume Count Data
- Seasonal Adjustment Factors
- Vehicular Crash Data
- Sight Distance Worksheet
- Historic Traffic Growth
- Trip Generation
- Trip Distribution
- Traffic Volume Networks
- Intersection Capacity Analyses





- KEY ---
- UNDERGROUND DRAIN OR SEWER PIPE
  - SUBDRAIN
  - FORCED SEWER PIPE
  - SEWER MANHOLE
  - SEWER CLEANOUT
  - DRAIN MANHOLE
  - CATCHBASIN WITH HEADER
  - CATCHBASIN
  - FLARED END SECTION
  - RIPRAP
  - GAS LINE
  - GAS VALVE
  - GAS METER
  - WATER LINE
  - WATER GATE
  - WATER SHUT OFF
  - HYDRANT
  - POST INDICATOR VALVE
  - FIRE DEPT. CONNECTION
  - EDGE OF PAVEMENT
  - BITUMINOUS BERM
  - CONCRETE/GRANITE CURB
  - GUARD RAIL
  - IRON ROD WITH CAP
  - UNLESS OTHERWISE NOTED
  - GRANITE MONUMENT
  - CONCRETE MONUMENT
  - UNDERGROUND UTILITY LINE
  - UNDERGROUND ELECTRIC LINE
  - UNDERGROUND TELEPHONE LINE
  - OVERHEAD WIRES
  - UTILITY POLE
  - UTILITY POLE WITH GUY WIRE
  - POST LIGHT
  - POST WITH LIGHT ARM
  - AREA LIGHT
  - ELECTRIC MANHOLE
  - TELEPHONE MANHOLE
  - ELECTRIC TRANSFORMER
  - ELECTRIC BOX
  - TELEPHONE BOX
  - CABLE BOX
  - CHAIN LINK FENCE
  - STOCKADE FENCE
  - STONE WALL
  - TREE LINE
  - TREE LANDSCAPING
  - SHRUB



*Robert Nunemacher*

CLT. NO.	1032	SCALE: 1 INCH = 20 FEET FEET: 20 15 10 5 0 20 40 METERS: 5 0 5 10 15
JOB NO.	287-1863	
DWG. NO.	HEAL INC ASB	<b>THOMPSON-LISTON ASSOCIATES, INC.</b> PROFESSIONAL CIVIL ENGINEERS PROFESSIONAL LAND SURVEYORS 51 MAIN STREET, PO BOX 570 BOYLSTON, MASS. 01505-0570 TEL: 508-869-6151 EMAIL: info@tlainc.net
DATE:	JULY 10, 2019	
REVISION DATES:		

AS BUILT SITE PLAN OF LAND IN  
STURBRIDGE, MASSACHUSETTS  
OWNED BY:  
**OLD ROAD REALTY, LLC**  
ASSESSORS: 415-2335-660  
AREA: 47.02 ACRES  
PREPARED FOR:  
**HEAL, INC.**





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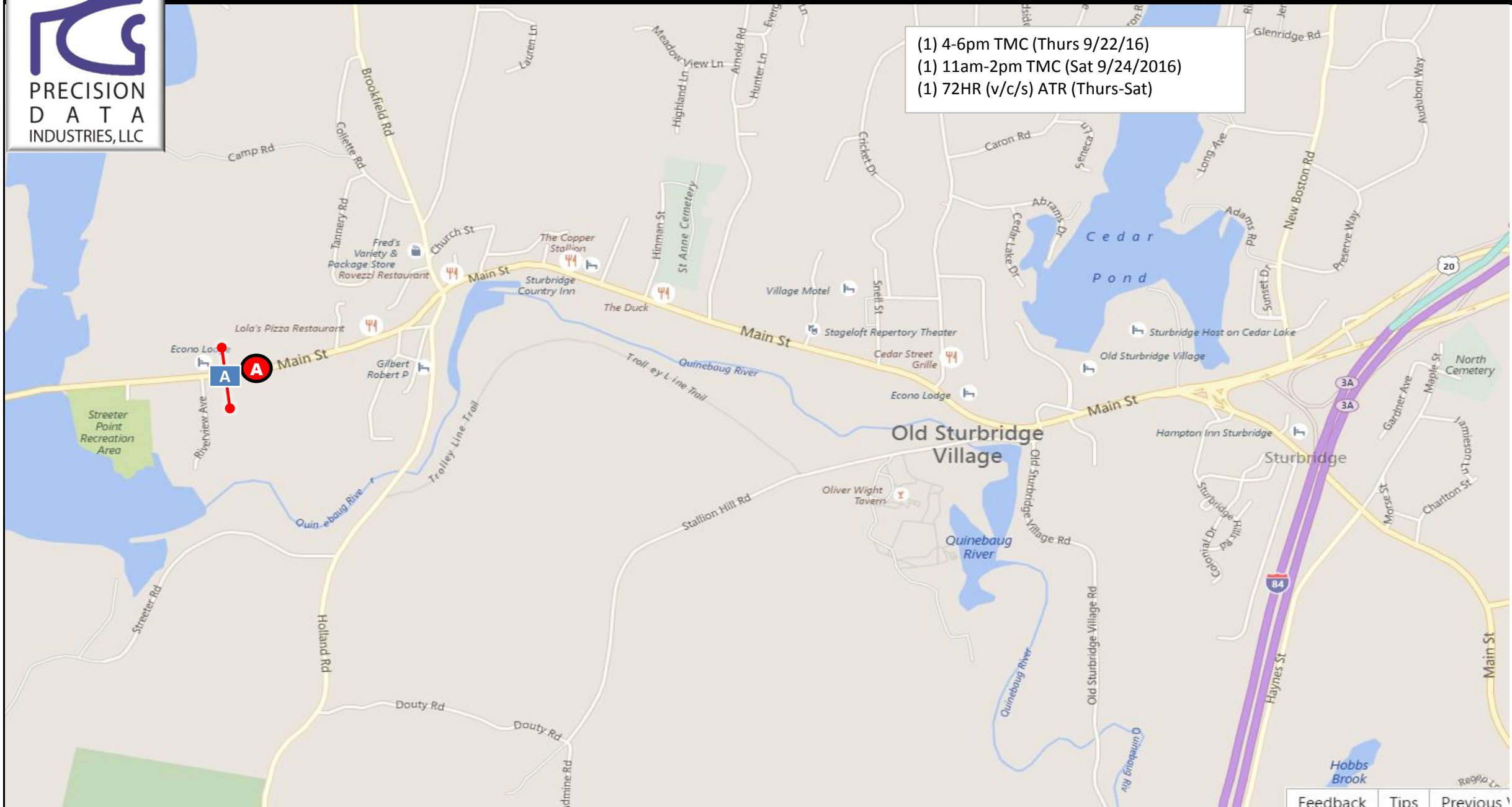
Traffic Volume Count Data



# Location Map: 165278 Sturbridge, MA

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

- (1) 4-6pm TMC (Thurs 9/22/16)
- (1) 11am-2pm TMC (Sat 9/24/2016)
- (1) 72HR (v/c/s) ATR (Thurs-Sat)



[Feedback](#) [Tips](#) [Previous](#)

Client:  
VHB

Engineer:  
K. Keen

Site Code:  
13678.00

Date:  
Thurs 9/22 thru Sat 9/24/2016

PDI Job #  
165278

City, State:  
Sturbridge, MA



PRECISION  
D A T A  
INDUSTRIES, LLC

46 Morton Street, Framingham, MA 01702  
Office: 508-875-0100 Fax: 508-875-0118  
Email: datarequests@pdillc.com

Main Street (Route 20) west of  
Galileo Drive East  
City, State: Sturbridge, MA  
Client: VHB/ K. Keen

165278 A Volume  
Site Code: 13678.00

Start Time	22-Sep-16		23-Sep-16		24-Sep-16		25-Sep-16		26-Sep-16		27-Sep-16		28-Sep-16		Week Average	
	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB
12:00 AM	12	14	6	32	14	47	33	32	12	22	*	*	*	*	15	29
01:00	7	8	12	22	12	22	11	14	9	9	*	*	*	*	10	15
02:00	9	14	12	12	11	11	6	12	10	4	*	*	*	*	10	11
03:00	14	5	17	10	11	3	12	10	21	11	*	*	*	*	15	8
04:00	67	18	54	16	26	17	12	5	57	15	*	*	*	*	43	14
05:00	203	47	183	42	59	21	32	15	200	46	*	*	*	*	135	34
06:00	373	150	370	141	100	61	74	42	379	147	*	*	*	*	259	108
07:00	<b>443</b>	233	<b>392</b>	202	198	118	136	77	<b>412</b>	223	*	*	*	*	<b>316</b>	171
08:00	371	203	361	218	236	185	190	139	347	220	*	*	*	*	301	193
09:00	292	200	280	205	316	254	257	250	264	168	*	*	*	*	282	215
10:00	259	207	250	235	<b>415</b>	333	317	276	260	216	*	*	*	*	300	253
11:00	256	<b>240</b>	253	<b>246</b>	384	<b>464</b>	<b>371</b>	<b>339</b>	246	<b>263</b>	*	*	*	*	302	<b>310</b>
12:00 PM	274	301	312	360	<b>413</b>	448	357	416	264	272	*	*	*	*	324	359
01:00	281	332	318	329	382	<b>472</b>	366	395	238	283	*	*	*	*	317	362
02:00	260	377	315	426	356	439	357	389	237	343	*	*	*	*	305	395
03:00	330	437	409	486	380	409	417	342	<b>347</b>	439	*	*	*	*	<b>377</b>	423
04:00	382	<b>530</b>	391	<b>498</b>	362	363	386	374	323	446	*	*	*	*	369	<b>442</b>
05:00	<b>395</b>	519	<b>443</b>	474	342	327	363	330	266	<b>460</b>	*	*	*	*	362	422
06:00	304	360	362	396	285	291	530	<b>427</b>	177	355	*	*	*	*	332	366
07:00	199	282	219	310	192	257	<b>549</b>	208	109	202	*	*	*	*	254	252
08:00	101	194	140	234	113	213	281	162	91	126	*	*	*	*	145	186
09:00	64	128	96	209	125	213	106	92	61	74	*	*	*	*	90	143
10:00	43	76	74	119	76	134	48	45	38	47	*	*	*	*	56	84
11:00	32	48	41	74	47	94	21	28	30	44	*	*	*	*	34	58
Total	4971	4923	5310	5296	4855	5196	5232	4419	4398	4435	0	0	0	0	4953	4853
Day	9894		10606		10051		9651		8833		0		0		9806	
AM Peak	07:00	11:00	07:00	11:00	10:00	11:00	11:00	11:00	07:00	11:00	-	-	-	-	07:00	11:00
Vol.	443	240	392	246	415	464	371	339	412	263	-	-	-	-	316	310
PM Peak	17:00	16:00	17:00	16:00	12:00	13:00	19:00	18:00	15:00	17:00	-	-	-	-	15:00	16:00
Vol.	395	530	443	498	413	472	549	427	347	460	-	-	-	-	377	442

Comb. Total	9894	10606	10051	9651	8833	0	0	9806
ADT	ADT 9,807	AADT 9,807						



Main Street (Route 20) west of  
Galileo Drive East  
City, State: Sturbridge, MA  
Client: VHB/ K. Keen



PRECISION  
D A T A  
INDUSTRIES, LLC

46 Morton Street, Framingham, MA 01702  
Office: 508-875-0100 Fax: 508-875-0118  
Email: datarequests@pdillc.com

165278 A Volume  
Site Code: 13678.00

Start Time	EB		WB		Combin ed		22-Sep-16 Thu
	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	
12:00	2	64	6	73	8	137	
12:15	1	72	4	83	5	155	
12:30	5	59	2	77	7	136	
12:45	4	12 79	274	2 14 68	301	6 26 147	575
01:00	3	78	3	85	6	163	
01:15	1	75	1	78	2	153	
01:30	0	64	3	72	3	136	
01:45	3	7 64	281	1 8 97	332	4 15 161	613
02:00	1	66	3	90	4	156	
02:15	2	70	6	103	8	173	
02:30	1	56	1	96	2	152	
02:45	5	9 68	260	4 14 88	377	9 23 156	637
03:00	4	90	3	86	7	176	
03:15	3	98	0	123	3	221	
03:30	1	63	2	119	3	182	
03:45	6	14 79	330	0 5 109	437	6 19 188	767
04:00	9	97	1	137	10	234	
04:15	6	92	5	130	11	222	
04:30	22	103	3	130	25	233	
04:45	30	67 90	382	9 18 133	530	39 85 223	912
05:00	36	93	2	133	38	226	
05:15	46	92	13	122	59	214	
05:30	64	100	16	140	80	240	
05:45	57	203 110	395	16 47 124	519	73 250 234	914
06:00	72	94	19	109	91	203	
06:15	77	79	36	99	113	178	
06:30	116	73	46	81	162	154	
06:45	108	373 58	304	49 150 71	360	157 523 129	664
07:00	106	60	38	79	144	139	
07:15	106	58	56	77	162	135	
07:30	125	46	63	70	188	116	
07:45	106	443 35	199	76 233 56	282	182 676 91	481
08:00	88	31	48	66	136	97	
08:15	98	30	55	44	153	74	
08:30	97	22	55	48	152	70	
08:45	88	371 18	101	45 203 36	194	133 574 54	295
09:00	77	19	50	37	127	56	
09:15	76	18	40	29	116	47	
09:30	66	20	54	32	120	52	
09:45	73	292 7	64	56 200 30	128	129 492 37	192
10:00	67	17	45	21	112	38	
10:15	49	10	47	22	96	32	
10:30	73	7	56	15	129	22	
10:45	70	259 9	43	59 207 18	76	129 466 27	119
11:00	67	16	54	13	121	29	
11:15	69	5	54	17	123	22	
11:30	54	2	61	12	115	14	
11:45	66	256 9	32	71 240 6	48	137 496 15	80
Total	2306	2665	1339	3584	3645	6249	
Percent	63.3%	42.6%	36.7%	57.4%			
Day Total		4971		4923		9894	
Peak	06:45	- 05:15	- 07:15	- 04:00	- 07:00	- 05:00	- - -
Vol.	445	- 396	- 243	- 530	- 676	- 914	- - -
P.H.F.	0.890	0.900	0.799	0.967	0.899	0.952	

Main Street (Route 20) west of  
Galileo Drive East  
City, State: Sturbridge, MA  
Client: VHB/ K. Keen



PRECISION  
D A T A  
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Office: 508-875-0100 Fax: 508-875-0118  
Email: datarequests@pdillc.com

165278 A Volume  
Site Code: 13678.00

Start Time	EB		WB		Combin ed		23-Sep-16 Fri					
	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.						
12:00	4	76	11	88	15	164						
12:15	0	75	10	78	10	153						
12:30	1	90	8	96	9	186						
12:45	1	71	312	3	32	98	360	38	169	672		
01:00	4	78		11		90		15	168			
01:15	4	79		4		86		8	165			
01:30	2	85		4		81		6	166			
01:45	2	76	318	3	22	72	329	5	34	148	647	
02:00	5	67		6		86		11	153			
02:15	3	85		2		123		5	208			
02:30	1	74		1		107		2	181			
02:45	3	89	315	3	12	110	426	6	24	199	741	
03:00	7	113		6		73		13	186			
03:15	1	104		1		121		2	225			
03:30	3	96		2		138		5	234			
03:45	6	96	409	1	10	154	486	7	27	250	895	
04:00	9	107		1		123		10	230			
04:15	8	93		3		123		11	216			
04:30	15	99		5		134		20	233			
04:45	22	92	391	7	16	118	498	29	70	210	889	
05:00	32	108		4		120		36	228			
05:15	39	118		9		121		48	239			
05:30	50	116		15		115		65	231			
05:45	62	101	443	14	42	118	474	76	225	219	917	
06:00	58	91		17		87		75	178			
06:15	81	91		23		106		104	197			
06:30	119	89		37		96		156	185			
06:45	112	91	362	64	141	107	396	176	511	198	758	
07:00	92	67		44		83		136	150			
07:15	106	63		59		91		165	154			
07:30	104	56		47		77		151	133			
07:45	90	33	219	52	202	59	310	142	594	92	529	
08:00	86	32		75		72		161	104			
08:15	89	43		40		58		129	101			
08:30	87	36		66		62		153	98			
08:45	99	29	140	37	218	42	234	136	579	71	374	
09:00	67	21		39		66		106	87			
09:15	77	27		54		49		131	76			
09:30	70	19		62		54		132	73			
09:45	66	29	96	50	205	40	209	116	485	69	305	
10:00	53	32		48		27		101	59			
10:15	57	13		60		27		117	40			
10:30	75	15		53		36		128	51			
10:45	65	14	74	74	235	29	119	139	485	43	193	
11:00	62	22		61		22		123	44			
11:15	75	9		61		23		136	32			
11:30	54	7		62		18		116	25			
11:45	62	3	41	62	246	11	74	124	499	14	115	
Total	2190	3120		1381		3915		3571		7035		
Percent	61.3%	44.3%		38.7%		55.7%						
Day Total		5310		5296				10606				
Peak	06:30	-	05:00	-	10:45	-	03:30	-	06:30	-	03:15	-
Vol.	429	-	443	-	258	-	538	-	633	-	939	-
P.H.F.	0.901		0.939		0.872		0.873		0.899		0.939	

Main Street (Route 20) west of  
Galileo Drive East  
City, State: Sturbridge, MA  
Client: VHB/ K. Keen



PRECISION  
D A T A  
INDUSTRIES, LLC

46 Morton Street, Framingham, MA 01702  
Office: 508-875-0100 Fax: 508-875-0118  
Email: datarequests@pdillc.com

165278 A Volume  
Site Code: 13678.00

Start Time	EB		WB		Combin ed		24-Sep-16 Sat
	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	
12:00	4	117	15	117	19	234	
12:15	5	108	13	113	18	221	
12:30	4	96	11	106	15	202	
12:45	1	14 92	413	8	47 112	448	9 61 204 861
01:00	4	112	5	142	9	254	
01:15	5	81	10	99	15	180	
01:30	1	103	3	113	4	216	
01:45	2	12 86	382	4	22 118	472	6 34 204 854
02:00	2	98	3	130	5	228	
02:15	6	80	3	110	9	190	
02:30	1	90	3	103	4	193	
02:45	2	11 88	356	2	11 96	439	4 22 184 795
03:00	1	80	0	102	1	182	
03:15	3	128	1	99	4	227	
03:30	1	88	1	107	2	195	
03:45	6	11 84	380	1	3 101	409	7 14 185 789
04:00	5	94	6	92	11	186	
04:15	4	84	4	104	8	188	
04:30	7	89	4	83	11	172	
04:45	10	26 95	362	3	17 84	363	13 43 179 725
05:00	6	92	1	98	7	190	
05:15	16	78	3	75	19	153	
05:30	20	70	9	85	29	155	
05:45	17	59 102	342	8	21 69	327	25 80 171 669
06:00	17	78	9	76	26	154	
06:15	24	72	12	93	36	165	
06:30	24	53	14	66	38	119	
06:45	35	100 82	285	26	61 56	291	61 161 138 576
07:00	39	55	24	69	63	124	
07:15	48	39	26	63	74	102	
07:30	54	58	33	69	87	127	
07:45	57	198 40	192	35	118 56	257	92 316 96 449
08:00	51	25	39	58	90	83	
08:15	57	30	42	54	99	84	
08:30	61	34	50	57	111	91	
08:45	67	236 24	113	54	185 44	213	121 421 68 326
09:00	79	23	61	62	140	85	
09:15	79	30	48	68	127	98	
09:30	80	44	74	48	154	92	
09:45	78	316 28	125	71	254 35	213	149 570 63 338
10:00	103	22	78	51	181	73	
10:15	91	22	96	30	187	52	
10:30	117	20	74	30	191	50	
10:45	104	415 12	76	85	333 23	134	189 748 35 210
11:00	83	13	102	32	185	45	
11:15	96	12	107	16	203	28	
11:30	104	12	118	21	222	33	
11:45	101	384 10	47	137	464 25	94	238 848 35 141
Total	1782	3073	1536	3660	3318	6733	
Percent	53.7%	45.6%	46.3%	54.4%			
Day Total		4855		5196		10051	
Peak	10:00	- 12:00	- 11:00	- 00:15	- 11:00	- 00:15	- - -
Vol.	415	- 413	- 464	- 473	- 848	- 881	- - -
P.H.F.	0.887	0.882	0.847	0.833	0.891	0.867	

Main Street (Route 20) west of  
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City, State: Sturbridge, MA  
Client: VHB/ K. Keen



PRECISION  
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INDUSTRIES, LLC

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Office: 508-875-0100 Fax: 508-875-0118  
Email: datarequests@pdillc.com

165278 A Volume  
Site Code: 13678.00

Start Time	EB		WB		Combin ed		25-Sep-16 Sun
	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	
12:00	7	90	10	82	17	172	
12:15	13	100	9	99	22	199	
12:30	7	85	5	112	12	197	
12:45	6	33 82	357	8 32	123	416	14 65 205 773
01:00	5	87	6	96	11	183	
01:15	2	94	4	98	6	192	
01:30	4	98	1	100	5	198	
01:45	0	11 87	366	3 14	101	395	3 25 188 761
02:00	2	82	3	93	5	175	
02:15	1	88	3	97	4	185	
02:30	1	99	5	105	6	204	
02:45	2	6 88	357	1 12	94	389	3 18 182 746
03:00	5	92	1	106	6	198	
03:15	4	98	2	86	6	184	
03:30	2	91	4	73	6	164	
03:45	1	12 136	417	3 10	77	342	4 22 213 759
04:00	2	94	4	96	6	190	
04:15	4	88	0	95	4	183	
04:30	3	113	1	89	4	202	
04:45	3	12 91	386	0 5	94	374	3 17 185 760
05:00	4	86	2	93	6	179	
05:15	7	87	2	81	9	168	
05:30	11	95	3	75	14	170	
05:45	10	32 95	363	8 15	81	330	18 47 176 693
06:00	17	111	12	101	29	212	
06:15	16	132	11	117	27	249	
06:30	26	145	7	108	33	253	
06:45	15	74 142	530	12 42	101	427	27 116 243 957
07:00	24	131	23	66	47	197	
07:15	34	145	12	49	46	194	
07:30	31	145	25	46	56	191	
07:45	47	136 128	549	17 77	47	208	64 213 175 757
08:00	41	94	27	49	68	143	
08:15	39	81	32	40	71	121	
08:30	58	55	40	36	98	91	
08:45	52	190 51	281	40 139	37	162	92 329 88 443
09:00	60	31	67	31	127	62	
09:15	60	25	62	22	122	47	
09:30	62	25	52	14	114	39	
09:45	75	257 25	106	69 250	25	92	144 507 50 198
10:00	62	17	52	15	114	32	
10:15	88	11	79	9	167	20	
10:30	77	15	61	12	138	27	
10:45	90	317 5	48	84 276	9	45	174 593 14 93
11:00	87	7	80	8	167	15	
11:15	80	8	85	5	165	13	
11:30	114	2	91	11	205	13	
11:45	90	371 4	21	83 339	4	28	173 710 8 49
Total	1451	3781	1211	3208	2662	6989	
Percent	54.5%	54.1%	45.5%	45.9%			
Day Total		5232		4419		9651	
Peak	10:45	- 06:30	- 10:45	- 00:15	- 10:45	- 06:00	- - -
Vol.	371	- 563	- 340	- 430	- 711	- 957	- - -
P.H.F.	0.814	0.971	0.934	0.874	0.867	0.946	

Main Street (Route 20) west of  
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165278 A Volume  
Site Code: 13678.00

Start Time	EB		WB		Combin ed		26-Sep-16 Mon					
	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.						
12:00	5	51	8	63	13	114						
12:15	5	84	5	62	10	146						
12:30	1	63	7	79	8	142						
12:45	1	66	264	2	22	68	272	3	34	134	536	
01:00	3	61		1		70		4		131		
01:15	3	66		1		67		4		133		
01:30	1	57		3		76		4		133		
01:45	2	9	54	238	4	9	70	283	6	18	124	521
02:00	1		50		0		84		1		134	
02:15	1		59		0		88		1		147	
02:30	2		54		4		90		6		144	
02:45	6	10	74	237	0	4	81	343	6	14	155	580
03:00	3		88		2		102		5		190	
03:15	7		98		4		110		11		208	
03:30	5		80		2		118		7		198	
03:45	6	21	81	347	3	11	109	439	9	32	190	786
04:00	8		96		2		100		10		196	
04:15	12		80		3		121		15		201	
04:30	13		68		6		112		19		180	
04:45	24	57	79	323	4	15	113	446	28	72	192	769
05:00	35		75		6		126		41		201	
05:15	48		72		6		117		54		189	
05:30	59		64		19		103		78		167	
05:45	58	200	55	266	15	46	114	460	73	246	169	726
06:00	65		36		30		100		95		136	
06:15	87		47		35		92		122		139	
06:30	120		43		35		83		155		126	
06:45	107	379	51	177	47	147	80	355	154	526	131	532
07:00	107		32		51		56		158		88	
07:15	86		37		58		50		144		87	
07:30	112		22		50		47		162		69	
07:45	107	412	18	109	64	223	49	202	171	635	67	311
08:00	94		25		56		52		150		77	
08:15	99		28		58		32		157		60	
08:30	88		23		49		24		137		47	
08:45	66	347	15	91	57	220	18	126	123	567	33	217
09:00	64		11		41		18		105		29	
09:15	56		17		46		16		102		33	
09:30	70		17		32		20		102		37	
09:45	74	264	16	61	49	168	20	74	123	432	36	135
10:00	79		7		48		10		127		17	
10:15	62		10		53		5		115		15	
10:30	59		13		63		16		122		29	
10:45	60	260	8	38	52	216	16	47	112	476	24	85
11:00	60		19		57		13		117		32	
11:15	67		7		65		13		132		20	
11:30	59		3		88		10		147		13	
11:45	60	246	1	30	53	263	8	44	113	509	9	74
Total	2217		2181		1344		3091		3561		5272	
Percent	62.3%		41.4%		37.7%		58.6%					
Day Total		4398				4435				8833		
Peak	06:15	-	03:15	-	11:00	-	04:15	-	07:30	-	03:15	-
Vol.	421	-	355	-	263	-	472	-	640	-	792	-
P.H.F.	0.877		0.906		0.747		0.937		0.936		0.952	



PRECISION  
D A T A  
INDUSTRIES, LLC

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Office: 508-875-0100 Fax: 508-875-0118  
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Main Street (Route 20) west of  
Galileo Drive East  
City, State: Sturbridge, MA  
Client: VHB/ K. Keen

165278 A Class  
Site Code: 13678.00

EB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
09/22/1														
6	1	9	2	0	0	0	0	0	0	0	0	0	0	12
01:00	0	6	1	0	0	0	0	0	0	0	0	0	0	7
02:00	0	6	3	0	0	0	0	0	0	0	0	0	0	9
03:00	0	9	2	0	2	0	0	0	0	0	1	0	0	14
04:00	2	44	9	0	10	1	0	0	1	0	0	0	0	67
05:00	2	115	46	2	30	1	0	4	3	0	0	0	0	203
06:00	2	245	74	5	44	0	0	2	1	0	0	0	0	373
07:00	3	315	81	4	31	2	1	5	1	0	0	0	0	443
08:00	5	256	68	3	31	3	0	2	3	0	0	0	0	371
09:00	2	186	60	5	31	2	1	2	2	0	0	0	1	292
10:00	1	183	47	3	23	0	0	0	2	0	0	0	0	259
11:00	7	169	43	3	23	2	1	6	2	0	0	0	0	256
12 PM	6	181	59	1	19	4	0	3	1	0	0	0	0	274
13:00	11	186	52	6	21	1	0	3	1	0	0	0	0	281
14:00	5	170	48	1	29	1	0	3	3	0	0	0	0	260
15:00	13	226	57	5	24	2	0	2	1	0	0	0	0	330
16:00	11	269	66	1	29	1	0	5	0	0	0	0	0	382
17:00	8	306	60	0	19	1	0	1	0	0	0	0	0	395
18:00	6	232	47	0	18	1	0	0	0	0	0	0	0	304
19:00	7	157	21	0	12	1	0	1	0	0	0	0	0	199
20:00	3	72	15	0	8	1	0	0	2	0	0	0	0	101
21:00	1	54	8	0	0	1	0	0	0	0	0	0	0	64
22:00	0	37	3	0	2	0	0	0	1	0	0	0	0	43
23:00	0	25	5	0	1	0	0	0	1	0	0	0	0	32
Total	96	3458	877	39	407	25	3	39	25	0	1	0	1	4971
Percent	1.9%	69.6%	17.6%	0.8%	8.2%	0.5%	0.1%	0.8%	0.5%	0.0%	0.0%	0.0%	0.0%	
AM Peak	11:00	07:00	07:00	06:00	06:00	08:00	07:00	11:00	05:00		03:00		09:00	07:00
Vol.	7	315	81	5	44	3	1	6	3		1		1	443
PM Peak	15:00	17:00	16:00	13:00	14:00	12:00		16:00	14:00					17:00
Vol.	13	306	66	6	29	4		5	3					395

Main Street (Route 20) west of  
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165278 A Class  
Site Code: 13678.00

EB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
09/23/1														
6	0	6	0	0	0	0	0	0	0	0	0	0	0	6
01:00	0	8	3	0	1	0	0	0	0	0	0	0	0	12
02:00	0	7	3	0	1	0	0	0	1	0	0	0	0	12
03:00	0	14	1	0	0	0	0	0	2	0	0	0	0	17
04:00	2	40	9	0	3	0	0	0	0	0	0	0	0	54
05:00	2	98	42	2	31	1	0	2	5	0	0	0	0	183
06:00	4	248	72	5	38	0	0	2	1	0	0	0	0	370
07:00	2	276	59	7	42	1	0	4	1	0	0	0	0	392
08:00	3	241	74	2	33	3	1	1	3	0	0	0	0	361
09:00	3	192	46	5	25	3	0	4	2	0	0	0	0	280
10:00	4	166	47	6	21	3	0	3	0	0	0	0	0	250
11:00	3	174	45	2	23	2	1	3	0	0	0	0	0	253
12 PM	6	218	53	2	26	3	1	0	3	0	0	0	0	312
13:00	6	218	51	10	27	2	0	2	2	0	0	0	0	318
14:00	5	216	62	6	23	1	0	2	0	0	0	0	0	315
15:00	9	301	73	1	21	1	0	3	0	0	0	0	0	409
16:00	5	276	67	4	33	3	0	1	2	0	0	0	0	391
17:00	8	338	67	3	23	4	0	0	0	0	0	0	0	443
18:00	6	251	63	0	39	2	1	0	0	0	0	0	0	362
19:00	2	157	35	2	23	0	0	0	0	0	0	0	0	219
20:00	3	107	20	0	9	0	0	1	0	0	0	0	0	140
21:00	0	83	9	0	4	0	0	0	0	0	0	0	0	96
22:00	0	63	8	0	3	0	0	0	0	0	0	0	0	74
23:00	0	30	9	0	2	0	0	0	0	0	0	0	0	41
Total	73	3728	918	57	451	29	4	28	22	0	0	0	0	5310
Percent	1.4%	70.2%	17.3%	1.1%	8.5%	0.5%	0.1%	0.5%	0.4%	0.0%	0.0%	0.0%	0.0%	
AM Peak	06:00	07:00	08:00	07:00	07:00	08:00	08:00	07:00	05:00					07:00
Vol.	4	276	74	7	42	3	1	4	5					392
PM Peak	15:00	17:00	15:00	13:00	18:00	17:00	12:00	15:00	12:00					17:00
Vol.	9	338	73	10	39	4	1	3	3					443



PRECISION  
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Main Street (Route 20) west of  
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165278 A Class  
Site Code: 13678.00

EB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
09/24/1														
6	0	11	3	0	0	0	0	0	0	0	0	0	0	14
01:00	0	8	3	0	0	0	0	0	1	0	0	0	0	12
02:00	0	10	1	0	0	0	0	0	0	0	0	0	0	11
03:00	0	10	0	0	1	0	0	0	0	0	0	0	0	11
04:00	0	17	9	0	0	0	0	0	0	0	0	0	0	26
05:00	4	31	12	0	8	0	0	3	1	0	0	0	0	59
06:00	1	72	18	0	7	0	0	2	0	0	0	0	0	100
07:00	1	135	43	1	14	1	0	3	0	0	0	0	0	198
08:00	2	172	46	2	11	0	0	3	0	0	0	0	0	236
09:00	6	228	52	1	26	1	0	2	0	0	0	0	0	316
10:00	12	292	72	0	36	0	0	3	0	0	0	0	0	415
11:00	6	284	69	1	19	2	0	3	0	0	0	0	0	384
12 PM	11	287	79	2	29	0	1	3	1	0	0	0	0	413
13:00	11	271	64	0	35	1	0	0	0	0	0	0	0	382
14:00	7	264	57	0	25	1	0	2	0	0	0	0	0	356
15:00	18	264	72	1	23	1	0	0	1	0	0	0	0	380
16:00	9	260	54	0	34	3	0	2	0	0	0	0	0	362
17:00	7	259	56	1	18	1	0	0	0	0	0	0	0	342
18:00	3	210	56	0	14	1	0	1	0	0	0	0	0	285
19:00	1	144	26	1	18	1	0	0	1	0	0	0	0	192
20:00	1	83	19	0	9	0	0	1	0	0	0	0	0	113
21:00	0	99	20	0	5	0	0	0	1	0	0	0	0	125
22:00	1	60	11	0	4	0	0	0	0	0	0	0	0	76
23:00	0	39	4	0	3	0	0	0	1	0	0	0	0	47
Total	101	3510	846	10	339	13	1	28	7	0	0	0	0	4855
Percent	2.1%	72.3%	17.4%	0.2%	7.0%	0.3%	0.0%	0.6%	0.1%	0.0%	0.0%	0.0%	0.0%	
AM Peak	10:00	10:00	10:00	08:00	10:00	11:00		05:00	01:00					10:00
Vol.	12	292	72	2	36	2		3	1					415
PM Peak	15:00	12:00	12:00	12:00	13:00	16:00	12:00	12:00	12:00					12:00
Vol.	18	287	79	2	35	3	1	3	1					413





PRECISION  
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Main Street (Route 20) west of  
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City, State: Sturbridge, MA  
Client: VHB/ K. Keen

165278 A Class  
Site Code: 13678.00

EB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
09/25/1														
6	0	25	5	0	3	0	0	0	0	0	0	0	0	33
01:00	0	10	1	0	0	0	0	0	0	0	0	0	0	11
02:00	0	4	2	0	0	0	0	0	0	0	0	0	0	6
03:00	1	9	1	0	1	0	0	0	0	0	0	0	0	12
04:00	0	10	2	0	0	0	0	0	0	0	0	0	0	12
05:00	1	14	11	0	4	0	0	2	0	0	0	0	0	32
06:00	1	54	11	0	8	0	0	0	0	0	0	0	0	74
07:00	2	97	20	0	15	0	0	2	0	0	0	0	0	136
08:00	2	129	31	0	23	1	0	3	1	0	0	0	0	190
09:00	3	187	40	0	22	2	0	3	0	0	0	0	0	257
10:00	10	215	66	1	20	0	0	4	1	0	0	0	0	317
11:00	4	261	67	0	33	0	0	5	1	0	0	0	0	371
12 PM	11	260	56	0	23	0	0	6	1	0	0	0	0	357
13:00	17	271	53	0	21	1	0	3	0	0	0	0	0	366
14:00	23	261	48	1	19	2	0	3	0	0	0	0	0	357
15:00	19	281	82	0	29	0	0	6	0	0	0	0	0	417
16:00	13	283	67	0	18	1	1	1	2	0	0	0	0	386
17:00	14	266	60	0	16	0	0	6	1	0	0	0	0	363
18:00	10	408	77	3	27	2	0	3	0	0	0	0	0	530
19:00	6	450	61	0	25	2	0	2	3	0	0	0	0	549
20:00	0	228	38	0	14	0	0	0	1	0	0	0	0	281
21:00	1	90	10	0	3	1	0	0	0	0	1	0	0	106
22:00	0	39	7	0	0	0	0	1	1	0	0	0	0	48
23:00	0	19	1	0	1	0	0	0	0	0	0	0	0	21
Total	138	3871	817	5	325	12	1	50	12	0	1	0	0	5232
Percent	2.6%	74.0%	15.6%	0.1%	6.2%	0.2%	0.0%	1.0%	0.2%	0.0%	0.0%	0.0%	0.0%	
AM Peak	10:00	11:00	11:00	10:00	11:00	09:00		11:00	08:00					11:00
Vol.	10	261	67	1	33	2		5	1					371
PM Peak	14:00	19:00	15:00	18:00	15:00	14:00	16:00	12:00	19:00		21:00			19:00
Vol.	23	450	82	3	29	2	1	6	3		1			549

Main Street (Route 20) west of  
Galileo Drive East  
City, State: Sturbridge, MA  
Client: VHB/ K. Keen



PRECISION  
D A T A  
INDUSTRIES, LLC

46 Morton Street, Framingham, MA 01702  
Office: 508-875-0100 Fax: 508-875-0118  
Email: datarequests@pdillc.com

165278 A Class  
Site Code: 13678.00

EB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
09/26/1														
6	0	12	0	0	0	0	0	0	0	0	0	0	0	12
01:00	0	7	1	0	1	0	0	0	0	0	0	0	0	9
02:00	0	8	2	0	0	0	0	0	0	0	0	0	0	10
03:00	0	16	1	0	2	0	0	1	1	0	0	0	0	21
04:00	0	40	12	0	4	0	0	0	1	0	0	0	0	57
05:00	1	125	41	2	28	0	0	2	1	0	0	0	0	200
06:00	1	255	64	1	53	4	0	0	1	0	0	0	0	379
07:00	0	289	78	3	36	1	1	2	2	0	0	0	0	412
08:00	3	245	59	3	29	1	0	4	3	0	0	0	0	347
09:00	2	180	52	4	17	3	0	3	3	0	0	0	0	264
10:00	6	170	47	4	25	1	0	3	4	0	0	0	0	260
11:00	3	158	51	2	23	2	0	4	3	0	0	0	0	246
12 PM	2	180	50	0	26	3	0	3	0	0	0	0	0	264
13:00	4	152	39	15	23	2	0	3	0	0	0	0	0	238
14:00	8	148	51	1	17	6	0	4	2	0	0	0	0	237
15:00	6	227	68	3	26	9	0	5	3	0	0	0	0	347
16:00	6	220	59	1	30	3	0	2	2	0	0	0	0	323
17:00	4	194	40	1	21	3	0	2	1	0	0	0	0	266
18:00	2	114	40	0	18	1	0	1	1	0	0	0	0	177
19:00	0	77	20	1	10	1	0	0	0	0	0	0	0	109
20:00	2	79	5	0	3	0	0	0	2	0	0	0	0	91
21:00	1	47	8	1	4	0	0	0	0	0	0	0	0	61
22:00	0	29	5	0	4	0	0	0	0	0	0	0	0	38
23:00	1	24	3	0	1	1	0	0	0	0	0	0	0	30
Total	52	2996	796	42	401	41	1	39	30	0	0	0	0	4398
Percent	1.2%	68.1%	18.1%	1.0%	9.1%	0.9%	0.0%	0.9%	0.7%	0.0%	0.0%	0.0%	0.0%	
AM Peak	10:00	07:00	07:00	09:00	06:00	06:00	07:00	08:00	10:00					07:00
Vol.	6	289	78	4	53	4	1	4	4					412
PM Peak	14:00	15:00	15:00	13:00	16:00	15:00		15:00	15:00					15:00
Vol.	8	227	68	15	30	9		5	3					347



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Main Street (Route 20) west of  
Galileo Drive East  
City, State: Sturbridge, MA  
Client: VHB/ K. Keen

165278 A Class  
Site Code: 13678.00

WB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
09/22/1														
6	0	12	2	0	0	0	0	0	0	0	0	0	0	14
01:00	0	8	0	0	0	0	0	0	0	0	0	0	0	8
02:00	0	13	1	0	0	0	0	0	0	0	0	0	0	14
03:00	1	2	0	0	1	0	0	1	0	0	0	0	0	5
04:00	0	12	4	0	0	0	0	0	2	0	0	0	0	18
05:00	1	27	10	1	5	2	0	0	1	0	0	0	0	47
06:00	3	107	23	2	12	2	0	0	1	0	0	0	0	150
07:00	6	146	51	6	19	4	0	1	0	0	0	0	0	233
08:00	6	120	49	5	18	1	0	3	1	0	0	0	0	203
09:00	2	117	51	6	17	2	0	2	3	0	0	0	0	200
10:00	2	139	45	3	14	2	0	0	2	0	0	0	0	207
11:00	8	158	47	4	16	1	4	2	0	0	0	0	0	240
12 PM	6	203	62	3	17	0	1	6	3	0	0	0	0	301
13:00	10	238	55	3	13	3	2	3	5	0	0	0	0	332
14:00	9	258	79	5	20	0	0	4	2	0	0	0	0	377
15:00	6	290	98	3	30	3	2	4	1	0	0	0	0	437
16:00	14	380	110	0	17	3	0	3	3	0	0	0	0	530
17:00	15	397	82	0	20	2	0	1	2	0	0	0	0	519
18:00	6	280	46	0	26	0	0	2	0	0	0	0	0	360
19:00	3	218	42	1	15	2	0	1	0	0	0	0	0	282
20:00	3	144	31	0	14	0	0	2	0	0	0	0	0	194
21:00	1	105	14	0	7	0	0	1	0	0	0	0	0	128
22:00	0	59	12	0	5	0	0	0	0	0	0	0	0	76
23:00	0	42	5	0	1	0	0	0	0	0	0	0	0	48
Total	102	3475	919	42	287	27	9	36	26	0	0	0	0	4923
Percent	2.1%	70.6%	18.7%	0.9%	5.8%	0.5%	0.2%	0.7%	0.5%	0.0%	0.0%	0.0%	0.0%	
AM Peak	11:00	11:00	07:00	07:00	07:00	07:00	11:00	08:00	09:00					11:00
Vol.	8	158	51	6	19	4	4	3	3					240
PM Peak	17:00	17:00	16:00	14:00	15:00	13:00	13:00	12:00	13:00					16:00
Vol.	15	397	110	5	30	3	2	6	5					530

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165278 A Class  
Site Code: 13678.00

WB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
09/23/1														
6	1	25	5	0	1	0	0	0	0	0	0	0	0	32
01:00	0	19	2	0	1	0	0	0	0	0	0	0	0	22
02:00	0	7	3	0	2	0	0	0	0	0	0	0	0	12
03:00	0	6	1	0	2	0	0	1	0	0	0	0	0	10
04:00	1	11	2	0	1	1	0	0	0	0	0	0	0	16
05:00	0	22	14	1	4	0	0	0	1	0	0	0	0	42
06:00	1	94	28	1	13	3	0	0	1	0	0	0	0	141
07:00	5	136	35	4	16	3	0	0	2	1	0	0	0	202
08:00	2	139	51	5	13	0	1	3	4	0	0	0	0	218
09:00	2	120	47	7	22	0	2	1	4	0	0	0	0	205
10:00	4	151	52	3	17	2	2	1	3	0	0	0	0	235
11:00	4	182	36	4	14	2	0	2	2	0	0	0	0	246
12 PM	10	239	75	7	26	1	1	0	1	0	0	0	0	360
13:00	6	217	70	1	27	3	0	4	1	0	0	0	0	329
14:00	9	280	88	7	31	2	0	6	3	0	0	0	0	426
15:00	10	335	101	1	32	1	0	6	0	0	0	0	0	486
16:00	11	370	89	2	22	0	0	3	1	0	0	0	0	498
17:00	7	359	72	1	27	1	1	6	0	0	0	0	0	474
18:00	8	293	60	0	27	2	0	3	3	0	0	0	0	396
19:00	6	249	46	0	8	1	0	0	0	0	0	0	0	310
20:00	3	174	41	0	14	0	0	2	0	0	0	0	0	234
21:00	0	161	36	0	12	0	0	0	0	0	0	0	0	209
22:00	0	94	20	1	4	0	0	0	0	0	0	0	0	119
23:00	0	62	10	0	2	0	0	0	0	0	0	0	0	74
Total	90	3745	984	45	338	22	7	38	26	1	0	0	0	5296
Percent	1.7%	70.7%	18.6%	0.8%	6.4%	0.4%	0.1%	0.7%	0.5%	0.0%	0.0%	0.0%	0.0%	
AM Peak	07:00	11:00	10:00	09:00	09:00	06:00	09:00	08:00	08:00	07:00				11:00
Vol.	5	182	52	7	22	3	2	3	4	1				246
PM Peak	16:00	16:00	15:00	12:00	15:00	13:00	12:00	14:00	14:00					16:00
Vol.	11	370	101	7	32	3	1	6	3					498



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Main Street (Route 20) west of  
Galileo Drive East  
City, State: Sturbridge, MA  
Client: VHB/ K. Keen

165278 A Class  
Site Code: 13678.00

WB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
09/24/1														
6	0	38	6	1	1	0	0	0	1	0	0	0	0	47
01:00	0	14	7	0	1	0	0	0	0	0	0	0	0	22
02:00	0	9	2	0	0	0	0	0	0	0	0	0	0	11
03:00	0	2	0	0	1	0	0	0	0	0	0	0	0	3
04:00	1	10	4	0	2	0	0	0	0	0	0	0	0	17
05:00	0	15	4	0	1	1	0	0	0	0	0	0	0	21
06:00	1	45	8	0	4	1	0	2	0	0	0	0	0	61
07:00	1	75	23	2	13	3	0	1	0	0	0	0	0	118
08:00	2	134	35	1	11	0	0	1	1	0	0	0	0	185
09:00	3	183	54	0	8	1	1	3	1	0	0	0	0	254
10:00	3	243	69	0	14	0	0	1	3	0	0	0	0	333
11:00	6	347	84	0	25	1	0	1	0	0	0	0	0	464
12 PM	7	312	99	1	22	2	0	4	1	0	0	0	0	448
13:00	12	339	86	0	31	0	1	2	1	0	0	0	0	472
14:00	12	329	77	0	18	1	0	2	0	0	0	0	0	439
15:00	14	300	70	1	20	1	1	2	0	0	0	0	0	409
16:00	3	282	57	0	19	1	0	1	0	0	0	0	0	363
17:00	6	248	55	1	16	0	0	0	1	0	0	0	0	327
18:00	1	226	53	0	10	0	0	1	0	0	0	0	0	291
19:00	3	188	48	1	15	0	0	2	0	0	0	0	0	257
20:00	1	160	38	0	14	0	0	0	0	0	0	0	0	213
21:00	3	173	29	0	8	0	0	0	0	0	0	0	0	213
22:00	1	104	23	0	6	0	0	0	0	0	0	0	0	134
23:00	0	81	9	0	4	0	0	0	0	0	0	0	0	94
Total	80	3857	940	8	264	12	3	23	9	0	0	0	0	5196
Percent	1.5%	74.2%	18.1%	0.2%	5.1%	0.2%	0.1%	0.4%	0.2%	0.0%	0.0%	0.0%	0.0%	
AM Peak	11:00	11:00	11:00	07:00	11:00	07:00	09:00	09:00	10:00					11:00
Vol.	6	347	84	2	25	3	1	3	3					464
PM Peak	15:00	13:00	12:00	12:00	13:00	12:00	13:00	12:00	12:00					13:00
Vol.	14	339	99	1	31	2	1	4	1					472



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Main Street (Route 20) west of  
Galileo Drive East  
City, State: Sturbridge, MA  
Client: VHB/ K. Keen

165278 A Class  
Site Code: 13678.00

WB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
09/25/1														
6	0	29	3	0	0	0	0	0	0	0	0	0	0	32
01:00	0	12	2	0	0	0	0	0	0	0	0	0	0	14
02:00	0	9	2	0	1	0	0	0	0	0	0	0	0	12
03:00	0	9	1	0	0	0	0	0	0	0	0	0	0	10
04:00	0	4	0	0	1	0	0	0	0	0	0	0	0	5
05:00	0	7	5	0	0	1	0	2	0	0	0	0	0	15
06:00	0	24	10	0	3	0	0	5	0	0	0	0	0	42
07:00	0	55	14	0	8	0	0	0	0	0	0	0	0	77
08:00	4	99	29	0	7	0	0	0	0	0	0	0	0	139
09:00	12	168	50	1	18	1	0	0	0	0	0	0	0	250
10:00	12	189	58	0	15	0	0	2	0	0	0	0	0	276
11:00	13	249	59	0	17	0	0	1	0	0	0	0	0	339
12 PM	16	303	77	2	14	2	0	2	0	0	0	0	0	416
13:00	12	293	65	0	20	3	0	2	0	0	0	0	0	395
14:00	18	297	50	0	19	0	1	2	2	0	0	0	0	389
15:00	7	263	59	0	10	1	0	1	1	0	0	0	0	342
16:00	12	286	53	1	22	0	0	0	0	0	0	0	0	374
17:00	5	252	57	0	13	1	0	1	1	0	0	0	0	330
18:00	14	317	70	3	14	0	1	6	2	0	0	0	0	427
19:00	1	157	34	0	16	0	0	0	0	0	0	0	0	208
20:00	0	130	23	0	6	1	0	2	0	0	0	0	0	162
21:00	2	71	16	0	2	0	0	1	0	0	0	0	0	92
22:00	0	33	11	0	0	0	0	1	0	0	0	0	0	45
23:00	0	26	2	0	0	0	0	0	0	0	0	0	0	28
Total	128	3282	750	7	206	10	2	28	6	0	0	0	0	4419
Percent	2.9%	74.3%	17.0%	0.2%	4.7%	0.2%	0.0%	0.6%	0.1%	0.0%	0.0%	0.0%	0.0%	
AM Peak	11:00	11:00	11:00	09:00	09:00	05:00		06:00						11:00
Vol.	13	249	59	1	18	1		5						339
PM Peak	14:00	18:00	12:00	18:00	16:00	13:00	14:00	18:00	14:00					18:00
Vol.	18	317	77	3	22	3	1	6	2					427

Main Street (Route 20) west of  
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WB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
09/26/1														
6	0	18	3	0	1	0	0	0	0	0	0	0	0	22
01:00	0	6	1	0	0	0	0	1	0	0	1	0	0	9
02:00	0	4	0	0	0	0	0	0	0	0	0	0	0	4
03:00	0	8	0	0	3	0	0	0	0	0	0	0	0	11
04:00	0	9	3	1	2	0	0	0	0	0	0	0	0	15
05:00	0	31	10	1	3	1	0	0	0	0	0	0	0	46
06:00	2	97	30	0	11	3	0	2	2	0	0	0	0	147
07:00	2	150	40	6	19	4	1	0	1	0	0	0	0	223
08:00	4	144	47	3	16	1	0	3	2	0	0	0	0	220
09:00	4	97	41	4	12	5	0	2	3	0	0	0	0	168
10:00	3	133	51	4	17	1	0	4	3	0	0	0	0	216
11:00	4	178	49	3	19	2	2	2	4	0	0	0	0	263
12 PM	3	184	54	1	16	1	0	6	7	0	0	0	0	272
13:00	5	187	52	4	26	1	1	6	1	0	0	0	0	283
14:00	7	242	59	5	20	4	1	3	2	0	0	0	0	343
15:00	2	292	109	3	25	3	0	3	2	0	0	0	0	439
16:00	5	305	94	2	35	0	0	3	2	0	0	0	0	446
17:00	3	339	84	1	32	1	0	0	0	0	0	0	0	460
18:00	4	266	62	0	21	0	0	1	1	0	0	0	0	355
19:00	3	159	28	0	11	0	0	1	0	0	0	0	0	202
20:00	1	93	23	0	6	1	1	0	1	0	0	0	0	126
21:00	1	59	10	0	3	0	0	1	0	0	0	0	0	74
22:00	0	41	3	0	3	0	0	0	0	0	0	0	0	47
23:00	0	33	7	0	4	0	0	0	0	0	0	0	0	44
Total	53	3075	860	38	305	28	6	38	31	0	1	0	0	4435
Percent	1.2%	69.3%	19.4%	0.9%	6.9%	0.6%	0.1%	0.9%	0.7%	0.0%	0.0%	0.0%	0.0%	
AM Peak	08:00	11:00	10:00	07:00	07:00	09:00	11:00	10:00	11:00		01:00			11:00
Vol.	4	178	51	6	19	5	2	4	4		1			263
PM Peak	14:00	17:00	15:00	14:00	16:00	14:00	13:00	12:00	12:00					17:00
Vol.	7	339	109	5	35	4	1	6	7					460



PRECISION  
D A T A  
INDUSTRIES, LLC

46 Morton Street, Framingham, MA 01702  
Office: 508-875-0100 Fax: 508-875-0118  
Email: datarequests@pdillc.com

Main Street (Route 20) west of  
Galileo Drive East  
City, State: Sturbridge, MA  
Client: VHB/ K. Keen

165278 A Speed  
Site Code: 13678.00

EB	Start Time	14	15	19	20	24	25	29	30	34	35	39	40	44	45	49	50	54	55	59	60	64	65	69	70	9999	Total	85th % ile	Ave Speed	
09/22/	16	0	0	0	0	0	0	0	0	0	1	4	3	3	0	0	0	0	0	0	1	0	0	0	0	0	12	52	47	
	01:00	0	0	0	0	0	0	0	0	0	0	0	5	2	0	0	0	0	0	0	0	0	0	0	0	0	7	46	43	
	02:00	0	0	0	0	0	0	0	0	0	1	6	1	0	1	0	0	0	0	0	0	0	0	0	0	0	9	47	44	
	03:00	0	0	0	0	0	0	0	0	0	1	1	5	4	3	0	0	0	0	0	0	0	0	0	0	0	14	55	49	
	04:00	0	0	0	0	3	1	5	18	24	11	3	1	1	1	0	0	0	0	0	1	1	0	0	0	67	51	46		
	05:00	0	0	1	3	4	7	30	90	55	11	2	0	0	0	0	0	0	0	0	2	0	0	0	0	203	52	47		
	06:00	0	3	2	2	1	10	76	182	81	14	2	0	0	0	0	0	0	0	0	2	0	0	0	0	373	51	47		
	07:00	0	0	1	2	5	12	75	186	136	20	4	2	0	0	0	0	0	0	0	4	2	0	0	0	443	52	48		
	08:00	1	1	3	2	3	11	60	157	108	22	2	0	0	0	0	0	0	0	0	2	0	0	1	0	371	52	47		
	09:00	0	0	1	1	2	17	74	144	36	15	2	0	0	0	0	0	0	0	0	2	0	0	0	0	292	50	46		
	10:00	0	0	2	3	2	6	63	119	53	8	3	0	0	0	0	0	0	0	0	3	0	0	0	0	259	51	47		
	11:00	2	1	0	4	2	38	105	84	18	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	256	47	43		
	12 PM	1	4	1	3	6	22	129	85	16	6	1	0	0	0	0	0	0	0	0	1	0	0	0	0	274	47	43		
	13:00	1	0	2	2	8	37	115	99	16	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	281	47	43		
	14:00	0	0	2	2	3	13	58	106	61	12	3	0	0	0	0	0	0	0	0	3	0	0	0	0	260	52	47		
	15:00	0	1	3	4	3	23	79	136	68	11	1	1	0	0	0	0	0	0	0	1	1	0	0	0	330	51	46		
	16:00	1	0	1	2	1	26	58	171	93	23	5	0	1	0	0	0	0	0	0	5	0	0	1	0	382	52	47		
	17:00	0	0	0	4	2	18	90	157	104	16	3	1	0	0	0	0	0	0	0	3	1	0	0	0	395	52	47		
	18:00	0	0	0	1	0	4	47	138	83	22	6	0	0	0	0	0	0	0	0	6	0	0	3	0	304	52	48		
	19:00	0	0	0	0	2	10	53	86	35	12	1	0	0	0	0	0	0	0	0	1	0	0	0	0	199	51	47		
	20:00	0	0	0	0	1	3	35	40	16	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	101	51	46		
	21:00	0	0	0	0	2	5	19	24	12	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	64	50	46		
	22:00	0	0	0	0	1	4	11	15	6	5	1	0	0	0	0	0	0	0	0	1	0	0	0	0	43	53	47		
	23:00	0	0	0	0	0	3	14	11	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	32	48	45		
	Total	6	10	19	38	49	277	1225	2065	1019	215	38	5	5	4971															
	%	0.1%	0.2%	0.4%	0.8%	1.0%	5.6%	24.6%	41.5%	20.5%	4.3%	0.8%	0.1%	0.1%																
AM Peak	11:00	06:00	08:00	11:00	07:00	11:00	11:00	07:00	07:00	08:00	07:00	07:00	08:00	07:00	07:00	08:00	07:00													
Vol.	2	3	3	4	5	38	105	186	136	22	4	2	1	443																
PM Peak	12:00	12:00	15:00	15:00	13:00	13:00	12:00	16:00	17:00	16:00	18:00	15:00	18:00	17:00																
Vol.	1	4	3	4	8	37	129	171	104	23	6	1	3	395																

Stats

15th Percentile : 40 MPH  
 50th Percentile : 46 MPH  
 85th Percentile : 51 MPH  
 95th Percentile : 54 MPH

Mean Speed(Average) : 46 MPH  
 10 MPH Pace Speed : 40-49 MPH  
 Number in Pace : 3290  
 Percent in Pace : 66.2%  
 Number of Vehicles > 45 MPH : 2934  
 Percent of Vehicles > 45 MPH : 59.0%





PRECISION  
D A T A  
INDUSTRIES, LLC

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Main Street (Route 20) west of  
Galileo Drive East  
City, State: Sturbridge, MA  
Client: VHB/ K. Keen

165278 A Speed  
Site Code: 13678.00

EB	Start Time	14	15	19	20	24	25	29	30	34	35	39	40	44	45	49	50	54	55	59	60	64	65	69	70	9999	Total	85th % ile	Ave Speed	
09/23/																														
16	0	0	0	0	0	0	0	0	0	0	1	1	1	1	3	1	1	0	0	0	0	0	0	0	0	0	6	49	45	
01:00	0	0	0	0	0	0	0	0	0	0	1	1	3	7	1	1	0	0	0	0	0	0	0	0	0	0	12	48	45	
02:00	0	0	0	0	0	0	0	0	0	0	2	3	6	6	1	0	0	0	0	0	0	0	0	0	0	0	12	48	45	
03:00	0	1	0	0	0	0	0	0	0	0	1	5	6	6	3	1	0	0	0	0	0	0	0	0	0	0	17	51	45	
04:00	0	0	0	0	0	0	0	0	3	3	2	17	15	12	12	4	1	0	0	0	0	1	0	0	0	54	52	46		
05:00	0	0	0	1	4	3	6	41	71	50	6	41	71	50	5	2	0	0	0	0	0	0	0	0	0	183	51	47		
06:00	1	0	4	5	5	12	101	138	88	15	12	101	138	88	15	1	0	0	0	0	0	0	0	0	0	370	51	46		
07:00	0	1	1	4	3	17	108	181	68	7	0	1	1	1	1	1	0	0	0	0	0	0	0	0	0	392	50	46		
08:00	0	0	1	2	2	12	80	173	78	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	361	51	47		
09:00	0	0	2	0	2	14	58	134	57	12	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	280	51	47		
10:00	0	0	2	2	1	9	67	106	48	13	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	250	51	46		
11:00	0	0	3	1	1	6	69	118	50	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	253	50	46		
12 PM	0	0	4	3	6	22	66	133	61	12	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	312	51	46		
13:00	0	0	1	3	1	19	85	128	59	21	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	318	51	46		
14:00	0	0	0	3	1	17	76	148	61	8	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	315	50	46		
15:00	0	1	3	1	12	27	96	167	80	17	1	3	1	409	51	46														
16:00	0	0	1	0	1	31	103	174	64	11	2	2	2	391	50	46														
17:00	0	0	1	1	2	9	108	208	94	18	2	0	0	443	51	47														
18:00	0	0	0	1	6	9	90	154	85	17	0	0	0	362	51	47														
19:00	0	0	0	0	2	12	65	87	43	9	1	0	0	219	51	46														
20:00	0	0	0	0	3	8	51	59	14	4	1	0	0	140	48	45														
21:00	0	0	0	1	4	19	41	27	3	1	0	0	0	96	47	42														
22:00	0	0	0	1	2	8	31	22	10	0	0	0	0	74	48	44														
23:00	0	0	0	0	1	11	17	8	4	0	0	0	0	41	47	42														
Total	1	3	24	32	61	275	1382	2273	1035	193	19	8	4	5310																
%	0.0%	0.1%	0.5%	0.6%	1.1%	5.2%	26.0%	42.8%	19.5%	3.6%	0.4%	0.2%	0.1%																	
AM Peak	06:00	03:00	06:00	06:00	06:00	07:00	07:00	07:00	06:00	06:00	05:00	07:00	07:00	07:00																
Vol.	1	1	4	5	5	17	108	181	88	15	2	1	1	392																
PM Peak		15:00	12:00	12:00	15:00	16:00	17:00	17:00	17:00	13:00	12:00	15:00	16:00	17:00																
Vol.		1	4	3	12	31	108	208	94	21	5	3	2	443																

Stats

15th Percentile : 40 MPH  
 50th Percentile : 45 MPH  
 85th Percentile : 51 MPH  
 95th Percentile : 53 MPH

Mean Speed(Average) : 46 MPH  
 10 MPH Pace Speed : 40-49 MPH  
 Number in Pace : 3655  
 Percent in Pace : 68.8%  
 Number of Vehicles > 45 MPH : 3077  
 Percent of Vehicles > 45 MPH : 58.0%



PRECISION  
D A T A  
INDUSTRIES, LLC

46 Morton Street, Framingham, MA 01702  
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Main Street (Route 20) west of  
Galileo Drive East  
City, State: Sturbridge, MA  
Client: VHB/ K. Keen

165278 A Speed  
Site Code: 13678.00

EB	Start Time	1	15	20	25	30	35	40	45	50	55	60	65	70	Total	85th % ile	Ave Speed
09/24/																	
16	0	0	0	0	0	0	4	2	8	0	0	0	0	0	14	47	43
01:00	0	0	0	0	0	0	2	5	4	0	1	0	0	0	12	47	44
02:00	0	0	0	0	0	0	3	2	5	1	0	0	0	0	11	48	44
03:00	0	0	1	0	0	0	3	2	4	1	0	0	0	0	11	48	42
04:00	0	0	0	1	0	0	5	8	8	4	0	0	0	0	26	49	44
05:00	0	0	1	0	2	7	19	22	8	0	0	0	0	0	59	48	44
06:00	0	0	0	0	0	2	32	49	14	2	1	0	0	0	100	49	46
07:00	0	0	0	0	1	5	46	81	51	10	3	1	0	0	198	52	48
08:00	0	0	1	0	0	12	42	109	53	18	0	1	0	0	236	52	47
09:00	0	0	0	1	2	5	71	139	73	22	1	1	1	1	316	52	48
10:00	1	2	2	1	2	15	102	162	96	30	2	0	0	0	415	52	47
11:00	0	0	2	0	1	11	94	186	82	6	1	1	0	0	384	50	47
12 PM	0	1	1	3	3	16	71	170	112	29	5	1	1	1	413	52	48
13:00	0	1	0	1	2	13	73	170	97	18	6	1	0	0	382	52	48
14:00	0	0	0	0	0	5	60	153	111	24	3	0	0	0	356	52	48
15:00	1	1	0	0	4	5	61	163	114	26	5	0	0	0	380	52	48
16:00	0	0	1	1	1	9	65	163	100	21	0	0	0	1	362	52	48
17:00	0	0	0	0	0	6	77	149	97	9	1	1	2	2	342	51	47
18:00	0	0	0	1	1	10	63	134	66	8	1	0	1	1	285	51	47
19:00	0	0	0	0	3	8	63	82	31	5	0	0	0	0	192	50	46
20:00	0	0	1	0	2	10	29	51	13	5	1	0	1	1	113	49	45
21:00	0	0	0	1	1	6	37	43	26	10	0	1	0	0	125	52	47
22:00	0	0	0	0	0	4	26	32	13	0	1	0	0	0	76	49	46
23:00	0	0	0	0	0	1	15	26	4	0	1	0	0	0	47	48	46
Total	2	5	10	10	25	167	1065	2113	1167	244	32	8	7	7	4855		
%	0.0%	0.1%	0.2%	0.2%	0.5%	3.4%	21.9%	43.5%	24.0%	5.0%	0.7%	0.2%	0.1%				
AM Peak	10:00	10:00	10:00	04:00	05:00	10:00	10:00	11:00	10:00	10:00	10:00	07:00	07:00	09:00	10:00		
Vol.	1	2	2	1	2	15	102	186	96	30	3	1	1	1	415		
PM Peak	15:00	12:00	12:00	12:00	15:00	12:00	17:00	12:00	15:00	12:00	13:00	12:00	17:00	12:00			
Vol.	1	1	1	3	4	16	77	170	114	29	6	1	2	2	413		

Stats

15th Percentile : 41 MPH  
 50th Percentile : 46 MPH  
 85th Percentile : 52 MPH  
 95th Percentile : 54 MPH

Mean Speed(Average) : 47 MPH  
 10 MPH Pace Speed : 45-54 MPH  
 Number in Pace : 3280  
 Percent in Pace : 67.6%  
 Number of Vehicles > 45 MPH : 3148  
 Percent of Vehicles > 45 MPH : 64.8%



PRECISION  
D A T A  
INDUSTRIES, LLC

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Main Street (Route 20) west of  
Galileo Drive East  
City, State: Sturbridge, MA  
Client: VHB/ K. Keen

165278 A Speed  
Site Code: 13678.00

EB	Start Time	14	15	19	20	24	25	29	30	34	35	39	40	44	45	49	50	54	55	59	60	64	65	69	70	9999	Total	85th % ile	Ave Speed	
09/25/																														
16	0	0	0	0	0	0	0	0	0	0	3	6	19	4	1	0	0	0	0	0	0	0	0	0	0	0	33	49	46	
01:00	0	0	0	0	0	0	0	0	0	0	0	2	5	4	0	0	0	0	0	0	0	0	0	0	0	0	11	51	48	
02:00	0	0	0	0	0	0	0	0	0	0	0	4	1	1	0	0	0	0	0	0	0	0	0	0	0	0	6	49	44	
03:00	0	0	0	0	0	0	0	0	0	0	1	5	3	2	1	0	0	0	0	0	0	0	0	0	0	0	12	51	46	
04:00	0	0	0	0	1	0	0	0	0	0	0	4	5	2	0	0	0	0	0	0	0	0	0	0	0	0	12	49	45	
05:00	0	0	1	0	0	0	0	0	0	1	6	11	12	1	0	0	0	0	0	0	0	0	0	0	0	0	32	52	47	
06:00	0	0	0	0	0	1	0	0	0	1	3	15	28	16	10	1	0	0	0	0	0	0	0	0	0	0	74	53	48	
07:00	0	0	0	0	0	0	0	0	0	4	19	65	39	7	0	2	0	0	0	0	0	0	0	0	0	0	136	52	48	
08:00	0	0	0	0	0	1	0	0	0	0	34	83	56	13	2	1	0	0	0	0	0	0	0	0	0	0	190	52	48	
09:00	1	1	1	0	2	12	61	116	48	14	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	257	51	46	
10:00	0	0	1	1	3	14	108	143	38	6	0	2	1	1	317	48	45													
11:00	0	0	0	2	2	8	91	149	89	21	7	1	1	371	52	47														
12 PM	1	0	0	0	2	7	58	171	94	21	2	0	1	357	52	48														
13:00	0	0	1	2	0	6	64	178	91	19	4	0	1	366	52	48														
14:00	0	0	1	1	3	12	66	151	98	18	5	0	2	357	52	48														
15:00	0	0	0	0	1	11	79	179	122	21	0	2	2	417	52	48														
16:00	0	0	0	0	7	20	63	129	121	39	7	0	0	386	53	48														
17:00	1	0	0	0	4	20	83	144	87	19	3	1	1	363	52	47														
18:00	0	3	3	0	15	36	119	208	112	33	0	0	1	530	51	46														
19:00	0	1	0	2	7	23	125	193	143	44	8	1	2	549	52	47														
20:00	0	0	0	0	0	5	57	87	104	21	6	1	0	281	53	49														
21:00	0	0	1	0	4	3	33	36	21	6	2	0	0	106	52	46														
22:00	0	0	0	0	3	5	13	17	7	2	1	0	0	48	51	45														
23:00	0	0	0	0	0	2	3	10	3	2	1	0	0	21	53	48														
Total	3	5	9	9	55	196	1118	2131	1314	319	50	11	12	5232																
%	0.1%	0.1%	0.2%	0.2%	1.1%	3.7%	21.4%	40.7%	25.1%	6.1%	1.0%	0.2%	0.2%																	
AM Peak	09:00	09:00	05:00	11:00	10:00	10:00	10:00	11:00	11:00	11:00	11:00	11:00	07:00	10:00	11:00															
Vol.	1	1	1	2	3	14	108	149	89	21	7	2	1	371																
PM Peak	12:00	18:00	18:00	13:00	18:00	18:00	19:00	18:00	19:00	19:00	19:00	19:00	15:00	14:00	19:00															
Vol.	1	3	3	2	15	36	125	208	143	44	8	2	2	549																

Stats

15th Percentile : 41 MPH  
 50th Percentile : 46 MPH  
 85th Percentile : 52 MPH  
 95th Percentile : 55 MPH

Mean Speed(Average) : 47 MPH  
 10 MPH Pace Speed : 45-54 MPH  
 Number in Pace : 3445  
 Percent in Pace : 65.8%  
 Number of Vehicles > 45 MPH : 3411  
 Percent of Vehicles > 45 MPH : 65.2%



PRECISION  
D A T A  
INDUSTRIES, LLC

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Main Street (Route 20) west of  
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Client: VHB/ K. Keen

165278 A Speed  
Site Code: 13678.00

EB	Start Time	14	15	19	20	24	25	29	30	34	35	39	40	44	45	49	50	54	55	59	60	64	65	69	70	9999	Total	85th % ile	Ave Speed
09/26/	16	0	0	0	0	0	0	0	0	0	1	3	6	1	1	1	1	1	1	0	0	0	0	0	0	0	12	49	46
	01:00	0	0	0	0	0	0	0	0	0	0	0	5	2	2	0	0	0	0	0	0	0	0	0	0	0	9	50	45
	02:00	0	0	0	0	0	0	1	1	1	1	4	2	1	1	0	0	0	0	0	0	0	0	0	0	10	51	44	
	03:00	0	0	0	0	0	0	1	1	1	3	10	6	0	0	0	0	0	0	0	0	0	0	0	0	21	51	47	
	04:00	0	0	2	4	1	0	10	24	10	5	1	0	0	0	0	0	0	5	1	0	0	0	0	0	57	52	46	
	05:00	0	1	1	6	3	9	41	93	37	9	0	0	0	0	0	0	0	9	0	0	0	0	0	0	200	51	46	
	06:00	0	0	0	5	1	23	132	166	48	4	0	0	0	0	0	0	0	4	0	0	0	0	0	0	379	48	45	
	07:00	1	0	1	2	4	20	123	182	61	14	4	0	0	0	0	0	0	14	4	0	0	0	0	0	412	50	46	
	08:00	0	0	0	1	1	18	100	150	65	10	2	0	0	0	0	0	0	10	2	0	0	0	0	0	347	50	46	
	09:00	0	0	1	1	2	6	47	124	75	7	1	0	0	0	0	0	0	7	1	0	0	0	0	0	264	51	47	
	10:00	0	1	1	1	4	10	63	115	55	9	0	0	0	0	0	0	0	9	0	0	0	0	0	1	260	51	46	
	11:00	1	1	1	2	2	8	68	104	48	11	0	0	0	0	0	0	0	11	0	0	0	0	0	0	246	51	46	
	12 PM	1	1	0	7	1	17	83	107	40	7	0	0	0	0	0	0	0	7	0	0	0	0	0	0	264	49	45	
	13:00	0	0	2	5	4	17	66	86	43	12	1	0	0	0	0	0	0	12	1	0	0	0	0	2	238	51	45	
	14:00	0	0	1	2	2	8	61	95	50	17	1	0	0	0	0	0	0	17	1	0	0	0	0	0	237	52	47	
	15:00	0	0	1	3	4	12	98	148	65	15	1	0	0	0	0	0	0	15	1	0	0	0	0	0	347	51	46	
	16:00	0	0	1	4	6	18	68	149	64	10	1	0	0	0	0	0	0	10	1	0	0	0	0	2	323	51	46	
	17:00	0	0	0	3	2	13	60	118	55	10	5	0	0	0	0	0	0	10	5	0	0	0	0	0	266	51	47	
	18:00	0	0	0	0	0	7	50	74	35	10	1	0	0	0	0	0	0	10	1	0	0	0	0	0	177	51	47	
	19:00	0	0	0	1	1	10	41	37	17	2	0	0	0	0	0	0	0	2	0	0	0	0	0	0	109	49	45	
	20:00	0	0	0	1	2	1	24	40	21	2	0	0	0	0	0	0	0	2	0	0	0	0	0	0	91	51	46	
	21:00	0	0	0	0	0	4	15	29	11	2	0	0	0	0	0	0	0	2	0	0	0	0	0	0	61	50	46	
	22:00	0	0	0	0	1	4	8	14	6	5	0	0	0	0	0	0	0	5	0	0	0	0	0	0	38	53	47	
	23:00	0	0	0	0	1	7	8	8	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	30	50	44	
	Total	3	4	12	48	44	215	1181	1883	822	163	18	0	5	4398														
	%	0.1%	0.1%	0.3%	1.1%	1.0%	4.9%	26.9%	42.8%	18.7%	3.7%	0.4%	0.0%	0.1%															
AM Peak	07:00	05:00	04:00	05:00	07:00	06:00	06:00	07:00	09:00	07:00	07:00															10:00	07:00		
Vol.	1	1	2	6	4	23	132	182	75	14	4															1	412		
PM Peak	12:00	12:00	13:00	12:00	16:00	16:00	15:00	16:00	15:00	14:00	17:00															13:00	15:00		
Vol.	1	1	2	7	6	18	98	149	65	17	5															2	347		

Stats

15th Percentile : 40 MPH  
 50th Percentile : 45 MPH  
 85th Percentile : 51 MPH  
 95th Percentile : 53 MPH

Mean Speed(Average) : 46 MPH  
 10 MPH Pace Speed : 40-49 MPH  
 Number in Pace : 3064  
 Percent in Pace : 69.7%  
 Number of Vehicles > 45 MPH : 2514  
 Percent of Vehicles > 45 MPH : 57.2%



PRECISION  
D A T A  
INDUSTRIES, LLC

46 Morton Street, Framingham, MA 01702  
Office: 508-875-0100 Fax: 508-875-0118  
Email: datarequests@pdillc.com

Main Street (Route 20) west of  
Galileo Drive East  
City, State: Sturbridge, MA  
Client: VHB/ K. Keen

165278 A Speed  
Site Code: 13678.00

WB	Start Time	14	15	19	20	24	25	29	30	34	35	39	40	44	45	49	50	54	55	59	60	64	65	69	70	9999	Total	85th % ile	Ave Speed	
09/22/	16	0	0	0	2	0	0	0	0	0	1	2	7	2	2	0	0	0	0	0	0	0	0	0	0	0	14	48	43	
	01:00	0	0	0	0	1	1	1	1	1	1	3	2	0	0	0	0	0	0	0	0	0	0	0	0	0	8	46	40	
	02:00	0	1	0	0	2	0	1	1	1	3	4	3	0	0	0	0	0	0	0	0	0	0	0	0	14	50	41		
	03:00	0	0	0	0	0	0	0	1	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	5	52	45		
	04:00	0	0	0	0	0	0	0	2	5	9	2	0	0	0	0	0	0	0	0	0	0	0	0	0	18	48	45		
	05:00	0	1	0	1	0	0	0	9	15	18	3	0	0	0	0	0	0	0	0	0	0	0	0	0	47	47	43		
	06:00	0	0	1	0	0	0	10	39	76	23	0	0	0	0	0	0	0	0	0	0	0	0	0	1	150	49	46		
	07:00	0	0	4	2	1	35	82	81	24	3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	233	48	44		
	08:00	1	0	3	2	2	20	72	79	23	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	203	48	44		
	09:00	0	4	3	2	6	21	79	74	10	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	200	47	43		
	10:00	0	0	3	0	1	22	85	74	19	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	207	48	44		
	11:00	1	0	2	4	3	38	99	77	14	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	240	47	43		
	12 PM	0	2	0	1	11	40	122	103	19	1	0	0	0	0	0	0	0	0	0	0	0	0	0	2	301	47	43		
	13:00	0	0	3	2	2	36	145	128	13	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	332	47	44		
	14:00	0	1	3	3	5	22	135	175	28	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	377	48	44		
	15:00	1	0	4	3	8	43	130	177	63	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	437	49	45		
	16:00	0	0	9	6	10	64	125	244	66	5	0	0	0	0	0	0	0	0	0	0	0	0	1	0	530	48	44		
	17:00	0	0	4	2	8	23	114	264	93	9	1	1	0	0	0	0	0	0	0	0	0	0	0	0	519	50	46		
	18:00	0	0	0	1	1	16	99	184	52	5	1	1	0	0	0	0	0	0	0	0	0	0	0	0	360	49	46		
	19:00	0	0	1	0	2	23	117	115	23	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	282	48	44		
	20:00	0	0	0	0	0	21	83	67	19	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	194	48	44		
	21:00	0	0	0	0	3	7	42	55	19	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	128	49	45		
	22:00	0	0	0	0	0	6	25	34	9	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	76	48	45		
	23:00	0	0	1	0	0	3	7	23	13	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	48	51	47		
	Total	3	9	43	32	64	465	1630	2070	542	54	3	2	6	4923															
	%	0.1%	0.2%	0.9%	0.7%	1.3%	9.4%	33.1%	42.0%	11.0%	1.1%	0.1%	0.0%	0.1%																
AM Peak	08:00	09:00	07:00	11:00	09:00	11:00	11:00	07:00	07:00	07:00	07:00														06:00	11:00				
Vol.	1	4	4	4	6	38	99	81	24	3	1														1	240				
PM Peak	15:00	12:00	16:00	16:00	12:00	16:00	13:00	17:00	17:00	17:00	17:00	17:00	17:00	17:00	12:00	16:00														
Vol.	1	2	9	6	11	64	145	264	93	9	1	1	2	530																

Stats

15th Percentile : 39 MPH  
 50th Percentile : 44 MPH  
 85th Percentile : 48 MPH  
 95th Percentile : 52 MPH

Mean Speed(Average) : 44 MPH  
 10 MPH Pace Speed : 40-49 MPH  
 Number in Pace : 3700  
 Percent in Pace : 75.2%  
 Number of Vehicles > 45 MPH : 2263  
 Percent of Vehicles > 45 MPH : 46.0%



PRECISION  
D A T A  
INDUSTRIES, LLC

46 Morton Street, Framingham, MA 01702  
Office: 508-875-0100 Fax: 508-875-0118  
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Main Street (Route 20) west of  
Galileo Drive East  
City, State: Sturbridge, MA  
Client: VHB/ K. Keen

165278 A Speed  
Site Code: 13678.00

WB	Start Time	14	15	19	20	24	25	29	30	34	35	39	40	44	45	49	50	54	55	59	60	64	65	69	70	9999	Total	85th % ile	Ave Speed
09/23/	16	0	0	0	1	0	0	0	0	0	2	1	10	14	4	1	4	1	1	0	0	0	0	0	0	0	32	49	45
	01:00	0	0	0	0	1	0	0	0	0	1	1	6	10	3	1	3	1	1	0	0	0	0	0	0	0	22	50	45
	02:00	0	1	0	0	0	0	0	0	0	1	1	3	6	1	0	3	1	0	0	0	0	0	0	0	0	12	48	43
	03:00	0	0	0	0	0	0	0	0	0	2	2	5	1	2	0	5	2	0	0	0	0	0	0	0	10	50	44	
	04:00	0	0	0	1	0	0	0	0	0	2	2	4	5	4	0	4	4	0	0	0	0	0	0	0	16	51	44	
	05:00	0	0	0	0	0	1	1	1	1	5	5	10	20	5	1	10	5	1	0	0	0	0	0	0	42	48	45	
	06:00	0	0	1	1	1	4	12	12	12	12	12	50	55	16	1	16	16	1	0	0	0	0	0	1	141	48	44	
	07:00	0	0	3	1	1	18	66	66	66	66	66	90	90	19	4	19	19	4	0	0	0	0	0	0	202	48	45	
	08:00	0	0	1	1	3	40	77	77	77	77	77	75	75	20	1	20	20	1	0	0	0	0	0	0	218	48	43	
	09:00	0	0	0	0	1	16	87	87	87	87	87	68	68	32	0	32	32	0	0	1	1	1	1	0	205	49	45	
	10:00	0	0	0	2	2	29	95	95	95	95	95	90	90	17	0	17	17	0	0	0	0	0	0	0	235	47	44	
	11:00	0	0	6	3	5	22	90	90	90	90	90	99	99	20	0	20	20	0	1	1	1	1	1	0	246	48	44	
	12 PM	0	0	3	3	15	44	140	140	140	140	140	138	138	17	0	17	17	0	0	0	0	0	0	0	360	47	43	
	13:00	0	1	4	1	11	33	139	139	139	139	139	116	116	23	1	23	23	1	0	0	0	0	0	0	329	47	43	
	14:00	2	1	2	4	9	37	182	182	182	182	182	139	139	47	3	47	47	3	0	0	0	0	0	0	426	48	44	
	15:00	0	0	4	1	6	49	157	157	157	157	157	207	207	56	4	56	56	4	2	2	2	2	2	0	486	48	45	
	16:00	2	0	6	1	4	32	149	149	149	149	149	212	212	83	9	83	83	9	0	0	0	0	0	0	498	50	45	
	17:00	0	1	0	1	3	37	145	145	145	145	145	220	220	61	5	61	61	5	1	1	1	1	1	0	474	48	45	
	18:00	0	0	0	1	6	42	153	153	153	153	153	154	154	37	3	37	37	3	0	0	0	0	0	0	396	48	44	
	19:00	0	0	0	2	4	36	123	123	123	123	123	113	113	28	3	28	28	3	0	1	1	1	1	0	310	48	44	
	20:00	0	0	0	2	5	22	95	95	95	95	95	92	92	17	1	17	17	1	0	0	0	0	0	0	234	48	44	
	21:00	0	0	0	0	5	32	90	90	90	90	90	70	70	10	2	10	10	2	0	0	0	0	0	0	209	47	43	
	22:00	0	0	0	0	6	17	43	43	43	43	43	43	43	9	1	9	9	1	0	0	0	0	0	0	119	48	43	
	23:00	0	0	0	1	3	10	29	29	29	29	29	26	26	5	0	5	5	0	0	0	0	0	0	0	74	47	43	
	Total	4	4	32	26	94	541	1948	1948	1948	1948	1948	2063	2063	536	41	536	536	41	4	2	1	1	1	0	5296			
	%	0.1%	0.1%	0.6%	0.5%	1.8%	10.2%	36.8%	39.0%	39.0%	39.0%	39.0%	10.1%	10.1%	0.8%	0.1%	0.1%	0.1%	0.8%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%				
AM	Peak		02:00	11:00	11:00	11:00	08:00	10:00	11:00	11:00	09:00	10:00	11:00	11:00	09:00	07:00	11:00	09:00	07:00	11:00	09:00	06:00	11:00	11:00	11:00				
	Vol.		1	6	3	5	40	95	99	99	32	4	1	1	1	1	1	1	4	1	1	1	1	1	1	246			
PM	Peak	14:00	13:00	16:00	14:00	12:00	15:00	14:00	17:00	16:00	16:00	16:00	15:00	19:00	16:00	16:00	15:00	19:00	16:00	16:00	15:00	19:00	16:00	16:00	16:00				
	Vol.	2	1	6	4	15	49	182	220	83	9	2	1	1	1	1	1	1	4	1	1	1	1	1	1	498			

Stats

15th Percentile : 39 MPH  
 50th Percentile : 43 MPH  
 85th Percentile : 48 MPH  
 95th Percentile : 51 MPH

Mean Speed(Average) : 44 MPH  
 10 MPH Pace Speed : 40-49 MPH  
 Number in Pace : 4011  
 Percent in Pace : 75.7%  
 Number of Vehicles > 45 MPH : 2234  
 Percent of Vehicles > 45 MPH : 42.2%





PRECISION  
D A T A  
INDUSTRIES, LLC

46 Morton Street, Framingham, MA 01702  
Office: 508-875-0100 Fax: 508-875-0118  
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Main Street (Route 20) west of  
Galileo Drive East  
City, State: Sturbridge, MA  
Client: VHB/ K. Keen

165278 A Speed  
Site Code: 13678.00

WB

Start Time	14	15	19	20	24	25	29	30	34	35	39	40	44	45	49	50	54	55	59	60	64	65	69	70	9999	Total	85th % ile	Ave Speed	
09/24/16	0	0	0	1	1	1	1	4	17	18	4	0	1	0	0	0	0	0	0	0	0	0	0	0	0	47	48	44	
01:00	0	0	0	0	0	1	5	9	5	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	22	47	43	
02:00	0	0	0	0	0	0	0	4	5	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11	50	47	
03:00	0	0	0	1	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	46	39	
04:00	0	0	1	1	0	1	6	6	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	17	48	43	
05:00	0	0	0	0	0	1	9	5	5	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	21	51	46	
06:00	0	0	0	1	0	0	1	27	27	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	61	48	45	
07:00	0	0	0	0	0	0	12	45	42	15	3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	118	49	45	
08:00	0	0	2	1	1	15	72	75	17	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	185	48	44	
09:00	0	0	1	1	7	17	96	100	27	3	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	254	48	45	
10:00	0	0	2	1	6	34	113	143	32	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	333	48	44	
11:00	0	0	2	0	2	64	191	166	33	5	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	464	48	44	
12 PM	0	1	1	0	4	40	217	146	31	6	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	448	48	44	
13:00	0	0	0	0	12	39	204	178	32	6	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	472	48	44	
14:00	0	0	0	4	12	32	170	168	48	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	439	48	44	
15:00	0	0	0	1	1	44	159	166	35	2	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	409	48	44	
16:00	0	0	0	0	0	32	137	150	39	4	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	363	48	45	
17:00	0	0	0	0	1	38	141	119	23	4	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	327	48	44	
18:00	0	0	0	0	4	35	124	98	27	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	291	48	44	
19:00	0	0	1	0	2	34	106	91	21	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	257	48	44	
20:00	0	0	0	0	1	14	81	86	28	1	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	213	48	45	
21:00	0	0	1	1	5	29	86	72	18	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	213	48	44	
22:00	0	0	0	1	1	7	51	49	24	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	134	50	45	
23:00	0	0	0	0	0	8	27	46	12	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	94	48	45	
Total	0	1	12	14	61	506	2093	1962	480	53	6	0	0	8	5196														
%	0.0%	0.0%	0.2%	0.3%	1.2%	9.7%	40.3%	37.8%	9.2%	1.0%	0.1%	0.0%	0.2%																
AM Peak			08:00	00:00	09:00	11:00	11:00	11:00	11:00	11:00	00:00			09:00	11:00														
Vol.			2	1	7	64	191	166	33	5	1			1	464														
PM Peak		12:00	12:00	14:00	13:00	15:00	12:00	13:00	14:00	12:00	12:00			20:00	13:00														
Vol.		1	1	4	12	44	217	178	48	6	1			2	472														

Stats

15th Percentile : 39 MPH  
 50th Percentile : 43 MPH  
 85th Percentile : 48 MPH  
 95th Percentile : 51 MPH

Mean Speed(Average) : 44 MPH  
 10 MPH Pace Speed : 40-49 MPH  
 Number in Pace : 4055  
 Percent in Pace : 78.0%  
 Number of Vehicles > 45 MPH : 2117  
 Percent of Vehicles > 45 MPH : 40.7%



PRECISION  
D A T A  
INDUSTRIES, LLC

46 Morton Street, Framingham, MA 01702  
Office: 508-875-0100 Fax: 508-875-0118  
Email: datarequests@pdillc.com

Main Street (Route 20) west of  
Galileo Drive East  
City, State: Sturbridge, MA  
Client: VHB/ K. Keen

165278 A Speed  
Site Code: 13678.00

WB

Start Time	14	15	19	20	24	25	29	30	34	35	39	40	44	45	49	50	54	55	59	60	64	65	69	70	9999	Total	85th % ile	Ave Speed	
09/25/16	0	0	0	0	0	1	2	16	7	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	32	50	44	
01:00	0	0	0	0	0	0	0	0	0	0	0	6	4	2	1	1	0	0	0	0	0	0	0	0	0	14	53	47	
02:00	0	0	0	0	0	0	0	0	0	1	4	4	4	0	3	0	0	0	0	0	0	0	0	0	0	12	56	47	
03:00	0	0	0	0	0	0	0	0	0	0	2	6	2	0	0	0	0	0	0	0	0	0	0	0	0	10	50	47	
04:00	0	0	0	0	1	0	1	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	45	39	
05:00	0	0	0	0	0	2	2	4	3	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15	51	44	
06:00	0	0	0	0	1	0	6	17	13	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	42	48	44	
07:00	0	0	0	0	0	1	5	22	31	17	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	77	50	46	
08:00	0	0	0	0	0	1	9	41	57	25	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	139	50	46	
09:00	0	0	1	0	1	1	22	92	98	32	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	250	48	45	
10:00	0	1	2	0	2	17	116	113	24	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	276	48	44	
11:00	0	2	1	3	3	33	128	134	31	3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	339	48	44	
12 PM	0	0	4	0	6	60	178	135	30	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	416	47	43	
13:00	0	1	0	1	6	33	169	158	27	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	395	47	44	
14:00	0	0	3	1	7	35	170	141	31	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	389	48	44	
15:00	0	0	1	0	2	22	128	149	37	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	342	48	45	
16:00	0	1	1	0	2	29	130	181	26	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	374	48	45	
17:00	0	0	0	1	2	33	129	125	39	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	330	48	45	
18:00	1	0	2	3	1	42	170	173	30	3	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	427	48	44	
19:00	0	0	0	0	4	39	76	75	13	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	208	47	43	
20:00	0	0	0	0	1	18	61	66	14	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	162	48	44	
21:00	0	0	0	0	0	10	27	43	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	92	48	45	
22:00	0	0	0	0	0	3	18	18	5	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	45	48	45	
23:00	0	0	0	0	0	0	1	9	12	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	28	50	46	
Total	1	5	15	11	42	423	1715	1747	417	33	8	1	1	1	1	1	1	1	1	1	1	1	1	1	1	4419			
%	0.0%	0.1%	0.3%	0.2%	1.0%	9.6%	38.8%	39.5%	9.4%	0.7%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%				
AM Peak		11:00	10:00	11:00	11:00	11:00	11:00	11:00	11:00	09:00	02:00	09:00	08:00	08:00	11:00														
Vol.		2	2	3	3	33	128	134	32	3	2	1	1	339															
PM Peak	18:00	13:00	12:00	18:00	14:00	12:00	12:00	16:00	17:00	16:00	18:00																		
Vol.	1	1	4	3	7	60	178	181	39	4	2																		

Stats

15th Percentile : 39 MPH  
 50th Percentile : 43 MPH  
 85th Percentile : 48 MPH  
 95th Percentile : 51 MPH

Mean Speed(Average) : 44 MPH  
 10 MPH Pace Speed : 40-49 MPH  
 Number in Pace : 3462  
 Percent in Pace : 78.3%  
 Number of Vehicles > 45 MPH : 1858  
 Percent of Vehicles > 45 MPH : 42.0%



PRECISION  
D A T A  
INDUSTRIES, LLC

46 Morton Street, Framingham, MA 01702  
Office: 508-875-0100 Fax: 508-875-0118  
Email: datarequests@pdillc.com

Main Street (Route 20) west of  
Galileo Drive East  
City, State: Sturbridge, MA  
Client: VHB/ K. Keen

165278 A Speed  
Site Code: 13678.00

WB

Start Time	14	15	19	20	24	25	29	30	34	35	39	40	44	45	49	50	54	55	59	60	64	65	69	70	9999	Total	85th % ile	Ave Speed	
09/26/																													
16	0	0	0	0	0	0	0	0	1	6	8	5	2	0	0	0	0	0	0	0	0	0	0	0	0	22	52	47	
01:00	0	0	0	0	0	1	1	4	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9	46	42	
02:00	0	0	0	0	0	0	0	2	1	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	4	56	47	
03:00	0	0	1	0	0	0	2	2	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11	47	42	
04:00	0	0	1	0	0	0	0	7	6	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15	47	43	
05:00	0	0	0	1	0	8	18	14	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	46	48	43	
06:00	0	0	0	1	2	9	47	69	15	3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	147	48	45	
07:00	0	0	0	7	5	18	74	87	26	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	223	48	44	
08:00	0	1	1	1	1	26	82	74	33	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	220	49	44	
09:00	0	0	0	1	3	18	56	67	22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	168	48	45	
10:00	0	0	1	0	1	18	84	90	21	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	216	48	45	
11:00	0	0	3	2	4	29	102	94	28	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	263	48	44	
12 PM	0	0	5	4	15	40	100	89	18	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	272	47	42	
13:00	1	0	4	3	3	38	109	103	19	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	283	48	43	
14:00	1	0	2	3	0	31	126	140	38	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	343	48	44	
15:00	0	0	5	5	12	37	140	190	47	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	439	48	44	
16:00	0	1	3	3	5	30	133	197	67	6	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	446	49	45	
17:00	0	0	1	3	7	19	123	240	63	3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	460	48	46	
18:00	0	0	1	5	6	23	101	163	49	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	355	49	45	
19:00	0	0	0	0	1	18	73	79	26	2	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	202	49	45	
20:00	0	0	0	0	0	12	32	61	19	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	126	49	46	
21:00	0	0	0	0	1	4	18	39	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	74	49	46	
22:00	0	0	0	0	0	2	22	15	7	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	47	49	45	
23:00	0	0	0	0	0	1	15	18	9	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	44	50	46	
Total	2	2	28	39	67	385	1476	1853	530	43	7	0	3	4435															
%	0.0%	0.0%	0.6%	0.9%	1.5%	8.7%	33.3%	41.8%	12.0%	1.0%	0.2%	0.0%	0.1%																
AM Peak		08:00	11:00	07:00	07:00	11:00	11:00	11:00	08:00	07:00	06:00														09:00	11:00			
Vol.		1	3	7	5	29	102	94	33	6	1													1	263				
PM Peak	13:00	16:00	12:00	15:00	12:00	12:00	15:00	17:00	16:00	18:00	19:00														15:00	17:00			
Vol.	1	1	5	5	15	40	140	240	67	7	3													1	460				

Stats

15th Percentile : 39 MPH  
 50th Percentile : 44 MPH  
 85th Percentile : 48 MPH  
 95th Percentile : 52 MPH

Mean Speed(Average) : 45 MPH  
 10 MPH Pace Speed : 40-49 MPH  
 Number in Pace : 3329  
 Percent in Pace : 75.1%  
 Number of Vehicles > 45 MPH : 2065  
 Percent of Vehicles > 45 MPH : 46.6%



PRECISION  
D A T A  
INDUSTRIES, LLC

46 Morton Street, Framingham, MA 01702  
Office: 508-875-0100 Fax: 508-875-0118  
Email: datarequests@pdillc.com

File Name : 165278 A  
Site Code : 13678.00  
Start Date : 9/22/2016  
Page No : 1

N: Galileo Dr (Sturbridge Business Park)  
E/W: Main Street (Route 20)  
City, State: Sturbridge, MA  
Client: VHB/ K. Keen

Groups Printed- Cars - Heavy Vehicles

Start Time	Galileo Drive (Sturbridge Business Park) From North			Main Street (Route 20) From East			Main Street (Route 20) From West			Int. Total
	Right	Left	U-Turn	Right	Thru	U-Turn	Thru	Left	U-Turn	
04:00 PM	0	17	0	2	138	0	94	2	0	253
04:15 PM	4	10	0	3	130	0	91	0	0	238
04:30 PM	5	8	0	1	125	0	102	0	0	241
04:45 PM	2	14	0	2	133	0	91	0	0	242
Total	11	49	0	8	526	0	378	2	0	974
05:00 PM	0	17	0	0	129	0	94	1	0	241
05:15 PM	0	6	0	0	125	0	92	0	0	223
05:30 PM	2	2	0	2	137	0	100	1	0	244
05:45 PM	1	3	0	1	124	0	110	1	0	240
Total	3	28	0	3	515	0	396	3	0	948
Grand Total	14	77	0	11	1041	0	774	5	0	1922
Apprch %	15.4	84.6	0	1	99	0	99.4	0.6	0	
Total %	0.7	4	0	0.6	54.2	0	40.3	0.3	0	
Cars	13	75	0	10	1023	0	755	5	0	1881
% Cars	92.9	97.4	0	90.9	98.3	0	97.5	100	0	97.9
Heavy Vehicles	1	2	0	1	18	0	19	0	0	41
% Heavy Vehicles	7.1	2.6	0	9.1	1.7	0	2.5	0	0	2.1

Start Time	Galileo Drive (Sturbridge Business Park) From North				Main Street (Route 20) From East			Main Street (Route 20) From West			Int. Total		
	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Thru	Left		U-Turn	App. Total
04:00 PM	0	17	0	17	2	138	0	140	94	2	0	96	253
04:15 PM	4	10	0	14	3	130	0	133	91	0	0	91	238
04:30 PM	5	8	0	13	1	125	0	126	102	0	0	102	241
04:45 PM	2	14	0	16	2	133	0	135	91	0	0	91	242
Total Volume	11	49	0	60	8	526	0	534	378	2	0	380	974
% App. Total	18.3	81.7	0		1.5	98.5	0		99.5	0.5	0		
PHF	.550	.721	.000	.882	.667	.953	.000	.954	.926	.250	.000	.931	.962
Cars	10	47	0	57	7	514	0	521	364	2	0	366	944
% Cars	90.9	95.9	0	95.0	87.5	97.7	0	97.6	96.3	100	0	96.3	96.9
Heavy Vehicles	1	2	0	3	1	12	0	13	14	0	0	14	30
% Heavy Vehicles	9.1	4.1	0	5.0	12.5	2.3	0	2.4	3.7	0	0	3.7	3.1

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 04:00 PM



PRECISION  
D A T A  
INDUSTRIES, LLC

46 Morton Street, Framingham, MA 01702  
Office: 508-875-0100 Fax: 508-875-0118  
Email: datarequests@pdillc.com

File Name : 165278 A  
Site Code : 13678.00  
Start Date : 9/22/2016  
Page No : 1

N: Galileo Dr (Sturbridge Business Park)  
E/W: Main Street (Route 20)  
City, State: Sturbridge, MA  
Client: VHB/ K. Keen

Groups Printed- Cars

Start Time	Galileo Drive (Sturbridge Business Park) From North			Main Street (Route 20) From East			Main Street (Route 20) From West			Int. Total
	Right	Left	U-Turn	Right	Thru	U-Turn	Thru	Left	U-Turn	
04:00 PM	0	16	0	1	135	0	91	2	0	245
04:15 PM	3	9	0	3	127	0	86	0	0	228
04:30 PM	5	8	0	1	122	0	99	0	0	235
04:45 PM	2	14	0	2	130	0	88	0	0	236
Total	10	47	0	7	514	0	364	2	0	944
05:00 PM	0	17	0	0	126	0	92	1	0	236
05:15 PM	0	6	0	0	125	0	91	0	0	222
05:30 PM	2	2	0	2	136	0	99	1	0	242
05:45 PM	1	3	0	1	122	0	109	1	0	237
Total	3	28	0	3	509	0	391	3	0	937
Grand Total	13	75	0	10	1023	0	755	5	0	1881
Apprch %	14.8	85.2	0	1	99	0	99.3	0.7	0	
Total %	0.7	4	0	0.5	54.4	0	40.1	0.3	0	

Start Time	Galileo Drive (Sturbridge Business Park) From North				Main Street (Route 20) From East				Main Street (Route 20) From West				Int. Total
	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	
04:00 PM	0	16	0	16	1	135	0	136	91	2	0	93	245
04:15 PM	3	9	0	12	3	127	0	130	86	0	0	86	228
04:30 PM	5	8	0	13	1	122	0	123	99	0	0	99	235
04:45 PM	2	14	0	16	2	130	0	132	88	0	0	88	236
Total Volume	10	47	0	57	7	514	0	521	364	2	0	366	944
% App. Total	17.5	82.5	0		1.3	98.7	0		99.5	0.5	0		
PHF	.500	.734	.000	.891	.583	.952	.000	.958	.919	.250	.000	.924	.963

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 04:00 PM



PRECISION  
D A T A  
INDUSTRIES, LLC

46 Morton Street, Framingham, MA 01702  
Office: 508-875-0100 Fax: 508-875-0118  
Email: datarequests@pdillc.com

N: Galileo Dr (Sturbridge Business Park)  
E/W: Main Street (Route 20)  
City, State: Sturbridge, MA  
Client: VHB/ K. Keen

File Name : 165278 A  
Site Code : 13678.00  
Start Date : 9/22/2016  
Page No : 1

Groups Printed- Heavy Vehicles

Start Time	Galileo Drive (Sturbridge Business Park) From North			Main Street (Route 20) From East			Main Street (Route 20) From West			Int. Total
	Right	Left	U-Turn	Right	Thru	U-Turn	Thru	Left	U-Turn	
04:00 PM	0	1	0	1	3	0	3	0	0	8
04:15 PM	1	1	0	0	3	0	5	0	0	10
04:30 PM	0	0	0	0	3	0	3	0	0	6
04:45 PM	0	0	0	0	3	0	3	0	0	6
Total	1	2	0	1	12	0	14	0	0	30
05:00 PM	0	0	0	0	3	0	2	0	0	5
05:15 PM	0	0	0	0	0	0	1	0	0	1
05:30 PM	0	0	0	0	1	0	1	0	0	2
05:45 PM	0	0	0	0	2	0	1	0	0	3
Total	0	0	0	0	6	0	5	0	0	11
Grand Total	1	2	0	1	18	0	19	0	0	41
Apprch %	33.3	66.7	0	5.3	94.7	0	100	0	0	
Total %	2.4	4.9	0	2.4	43.9	0	46.3	0	0	

Start Time	Galileo Drive (Sturbridge Business Park) From North				Main Street (Route 20) From East				Main Street (Route 20) From West				Int. Total
	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	
04:00 PM	0	1	0	1	1	3	0	4	3	0	0	3	8
04:15 PM	1	1	0	2	0	3	0	3	5	0	0	5	10
04:30 PM	0	0	0	0	0	3	0	3	3	0	0	3	6
04:45 PM	0	0	0	0	0	3	0	3	3	0	0	3	6
Total Volume	1	2	0	3	1	12	0	13	14	0	0	14	30
% App. Total	33.3	66.7	0		7.7	92.3	0		100	0	0		
PHF	.250	.500	.000	.375	.250	1.00	.000	.813	.700	.000	.000	.700	.750

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 04:00 PM







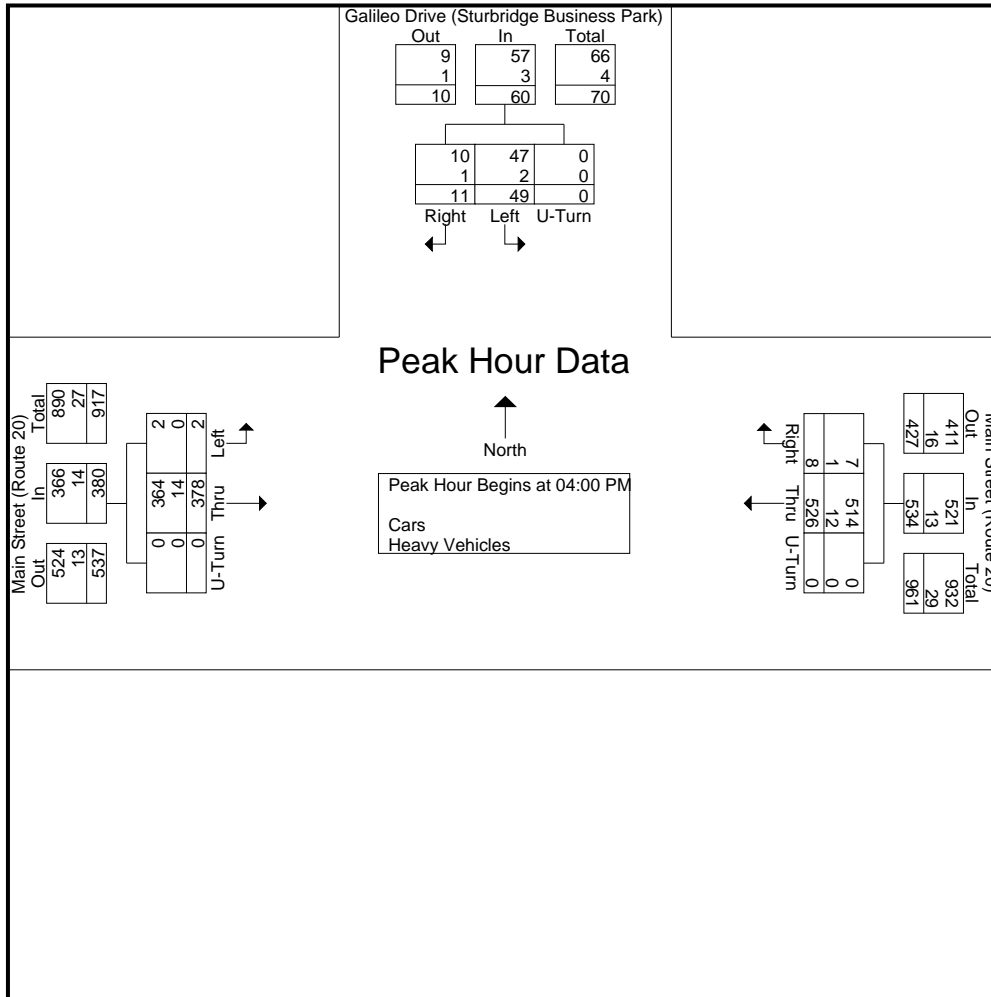
PRECISION  
D A T A  
INDUSTRIES, LLC

46 Morton Street, Framingham, MA 01702  
Office: 508-875-0100 Fax: 508-875-0118  
Email: datarequests@pdillc.com

File Name : 165278 A  
Site Code : 13678.00  
Start Date : 9/22/2016  
Page No : 1

N: Galileo Dr (Sturbridge Business Park)  
E/W: Main Street (Route 20)  
City, State: Sturbridge, MA  
Client: VHB/ K. Keen

Start Time	Galileo Drive (Sturbridge Business Park)				Main Street (Route 20)				Main Street (Route 20)				Int. Total
	From North				From East				From West				
	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 04:00 PM													
04:00 PM	0	17	0	17	2	138	0	140	94	2	0	96	253
04:15 PM	4	10	0	14	3	130	0	133	91	0	0	91	238
04:30 PM	5	8	0	13	1	125	0	126	102	0	0	102	241
04:45 PM	2	14	0	16	2	133	0	135	91	0	0	91	242
<b>Total Volume</b>	<b>11</b>	<b>49</b>	<b>0</b>	<b>60</b>	<b>8</b>	<b>526</b>	<b>0</b>	<b>534</b>	<b>378</b>	<b>2</b>	<b>0</b>	<b>380</b>	<b>974</b>
<b>% App. Total</b>	<b>18.3</b>	<b>81.7</b>	<b>0</b>		<b>1.5</b>	<b>98.5</b>	<b>0</b>		<b>99.5</b>	<b>0.5</b>	<b>0</b>		
PHF	.550	.721	.000	.882	.667	.953	.000	.954	.926	.250	.000	.931	.962
Cars	10	47	0	57	7	514	0	521	364	2	0	366	944
% Cars	90.9	95.9	0	95.0	87.5	97.7	0	97.6	96.3	100	0	96.3	96.9
Heavy Vehicles	1	2	0	3	1	12	0	13	14	0	0	14	30
% Heavy Vehicles	9.1	4.1	0	5.0	12.5	2.3	0	2.4	3.7	0	0	3.7	3.1





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E/W: Main Street (Route 20)  
City, State: Sturbridge, MA  
Client: VHB/ K. Keen

File Name : 165278 AA  
Site Code : 13678.00  
Start Date : 9/24/2016  
Page No : 1

Groups Printed- Cars - Heavy Vehicles

Start Time	Galileo Drive (Sturbridge Business Park) From North			Main Street (Route 20) From East			Main Street (Route 20) From West			Int. Total
	Right	Left	U-Turn	Right	Thru	U-Turn	Thru	Left	U-Turn	
11:00 AM	1	2	0	1	102	0	84	0	0	190
11:15 AM	0	2	0	0	107	0	100	0	0	209
11:30 AM	0	1	0	2	116	0	107	0	0	226
11:45 AM	0	0	0	2	138	0	103	0	0	243
Total	1	5	0	5	463	0	394	0	0	868
12:00 PM	1	1	0	0	112	0	115	0	0	229
12:15 PM	0	1	0	0	112	0	107	0	0	220
12:30 PM	0	0	0	0	107	0	97	0	0	204
12:45 PM	0	0	0	0	111	0	93	0	0	204
Total	1	2	0	0	442	0	412	0	0	857
01:00 PM	0	0	0	0	142	0	110	0	0	252
01:15 PM	0	0	0	1	103	0	81	0	0	185
01:30 PM	0	0	0	0	115	0	103	0	0	218
01:45 PM	0	0	0	0	120	0	86	0	0	206
Total	0	0	0	1	480	0	380	0	0	861
Grand Total	2	7	0	6	1385	0	1186	0	0	2586
Apprch %	22.2	77.8	0	0.4	99.6	0	100	0	0	
Total %	0.1	0.3	0	0.2	53.6	0	45.9	0	0	
Cars	2	7	0	6	1375	0	1163	0	0	2553
% Cars	100	100	0	100	99.3	0	98.1	0	0	98.7
Heavy Vehicles	0	0	0	0	10	0	23	0	0	33
% Heavy Vehicles	0	0	0	0	0.7	0	1.9	0	0	1.3

Start Time	Galileo Drive (Sturbridge Business Park) From North				Main Street (Route 20) From East				Main Street (Route 20) From West				Int. Total
	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	
11:30 AM	0	1	0	1	2	116	0	118	107	0	0	107	226
11:45 AM	0	0	0	0	2	138	0	140	103	0	0	103	243
12:00 PM	1	1	0	2	0	112	0	112	115	0	0	115	229
12:15 PM	0	1	0	1	0	112	0	112	107	0	0	107	220
Total Volume	1	3	0	4	4	478	0	482	432	0	0	432	918
% App. Total	25	75	0		0.8	99.2	0		100	0	0		
PHF	.250	.750	.000	.500	.500	.866	.000	.861	.939	.000	.000	.939	.944
Cars	1	3	0	4	4	476	0	480	423	0	0	423	907
% Cars	100	100	0	100	100	99.6	0	99.6	97.9	0	0	97.9	98.8
Heavy Vehicles	0	0	0	0	0	2	0	2	9	0	0	9	11
% Heavy Vehicles	0	0	0	0	0	0.4	0	0.4	2.1	0	0	2.1	1.2

Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 11:30 AM



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File Name : 165278 AA  
Site Code : 13678.00  
Start Date : 9/24/2016  
Page No : 1

Groups Printed- Cars

Start Time	Galileo Drive (Sturbridge Business Park) From North			Main Street (Route 20) From East			Main Street (Route 20) From West			Int. Total
	Right	Left	U-Turn	Right	Thru	U-Turn	Thru	Left	U-Turn	
11:00 AM	1	2	0	1	102	0	83	0	0	189
11:15 AM	0	2	0	0	106	0	98	0	0	206
11:30 AM	0	1	0	2	116	0	107	0	0	226
11:45 AM	0	0	0	2	137	0	103	0	0	242
Total	1	5	0	5	461	0	391	0	0	863
12:00 PM	1	1	0	0	112	0	113	0	0	227
12:15 PM	0	1	0	0	111	0	100	0	0	212
12:30 PM	0	0	0	0	106	0	93	0	0	199
12:45 PM	0	0	0	0	110	0	88	0	0	198
Total	1	2	0	0	439	0	394	0	0	836
01:00 PM	0	0	0	0	141	0	110	0	0	251
01:15 PM	0	0	0	1	102	0	81	0	0	184
01:30 PM	0	0	0	0	113	0	102	0	0	215
01:45 PM	0	0	0	0	119	0	85	0	0	204
Total	0	0	0	1	475	0	378	0	0	854
Grand Total	2	7	0	6	1375	0	1163	0	0	2553
Apprch %	22.2	77.8	0	0.4	99.6	0	100	0	0	
Total %	0.1	0.3	0	0.2	53.9	0	45.6	0	0	

Start Time	Galileo Drive (Sturbridge Business Park) From North				Main Street (Route 20) From East				Main Street (Route 20) From West				Int. Total
	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	
11:30 AM	0	1	0	1	2	116	0	118	107	0	0	107	226
11:45 AM	0	0	0	0	2	137	0	139	103	0	0	103	242
12:00 PM	1	1	0	2	0	112	0	112	113	0	0	113	227
12:15 PM	0	1	0	1	0	111	0	111	100	0	0	100	212
Total Volume	1	3	0	4	4	476	0	480	423	0	0	423	907
% App. Total	25	75	0		0.8	99.2	0		100	0	0		
PHF	.250	.750	.000	.500	.500	.869	.000	.863	.936	.000	.000	.936	.937

Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 11:30 AM



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File Name : 165278 AA  
Site Code : 13678.00  
Start Date : 9/24/2016  
Page No : 1

Groups Printed- Heavy Vehicles

Start Time	Galileo Drive (Sturbridge Business Park) From North			Main Street (Route 20) From East			Main Street (Route 20) From West			Int. Total
	Right	Left	U-Turn	Right	Thru	U-Turn	Thru	Left	U-Turn	
11:00 AM	0	0	0	0	0	0	1	0	0	1
11:15 AM	0	0	0	0	1	0	2	0	0	3
11:30 AM	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	1	0	0	0	0	1
Total	0	0	0	0	2	0	3	0	0	5
12:00 PM	0	0	0	0	0	0	2	0	0	2
12:15 PM	0	0	0	0	1	0	7	0	0	8
12:30 PM	0	0	0	0	1	0	4	0	0	5
12:45 PM	0	0	0	0	1	0	5	0	0	6
Total	0	0	0	0	3	0	18	0	0	21
01:00 PM	0	0	0	0	1	0	0	0	0	1
01:15 PM	0	0	0	0	1	0	0	0	0	1
01:30 PM	0	0	0	0	2	0	1	0	0	3
01:45 PM	0	0	0	0	1	0	1	0	0	2
Total	0	0	0	0	5	0	2	0	0	7
Grand Total	0	0	0	0	10	0	23	0	0	33
Apprch %	0	0	0	0	100	0	100	0	0	
Total %	0	0	0	0	30.3	0	69.7	0	0	

Start Time	Galileo Drive (Sturbridge Business Park) From North				Main Street (Route 20) From East				Main Street (Route 20) From West				Int. Total
	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	
12:00 PM	0	0	0	0	0	0	0	0	2	0	0	2	2
12:15 PM	0	0	0	0	0	1	0	1	7	0	0	7	8
12:30 PM	0	0	0	0	0	1	0	1	4	0	0	4	5
12:45 PM	0	0	0	0	0	1	0	1	5	0	0	5	6
Total Volume	0	0	0	0	0	3	0	3	18	0	0	18	21
% App. Total	0	0	0		0	100	0		100	0	0		
PHF	.000	.000	.000	.000	.000	.750	.000	.750	.643	.000	.000	.643	.656

Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 12:00 PM



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Start Date : 9/24/2016  
Page No : 1

Groups Printed- Peds and Bicycles

Start Time	Galileo Drive (Sturbridge Business Park) From North				Main Street (Route 20) From East				Main Street (Route 20) From West				Int. Total
	Right	Left	Peds EB	Peds WB	Right	Thru	Peds SB	Peds NB	Thru	Left	Peds NB	Peds SB	
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	2	0	0	0	0	0	0	0	0	2
Total	0	0	0	2	0	0	0	0	0	0	0	0	2
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
01:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
01:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
01:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
01:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	2	0	0	0	0	0	0	0	0	2
Apprch %	0	0	0	100	0	0	0	0	0	0	0	0	0
Total %	0	0	0	100	0	0	0	0	0	0	0	0	0

Start Time	Galileo Drive (Sturbridge Business Park) From North					Main Street (Route 20) From East					Main Street (Route 20) From West					Int. Total
	Right	Left	Peds EB	Peds WB	App. Total	Right	Thru	Peds SB	Peds NB	App. Total	Thru	Left	Peds NB	Peds SB	App. Total	
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	2
Total Volume	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	2
% App. Total	0	0	0	100		0	0	0	0		0	0	0	0		
PHF	.000	.000	.000	.250	.250	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.250

Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 11:00 AM



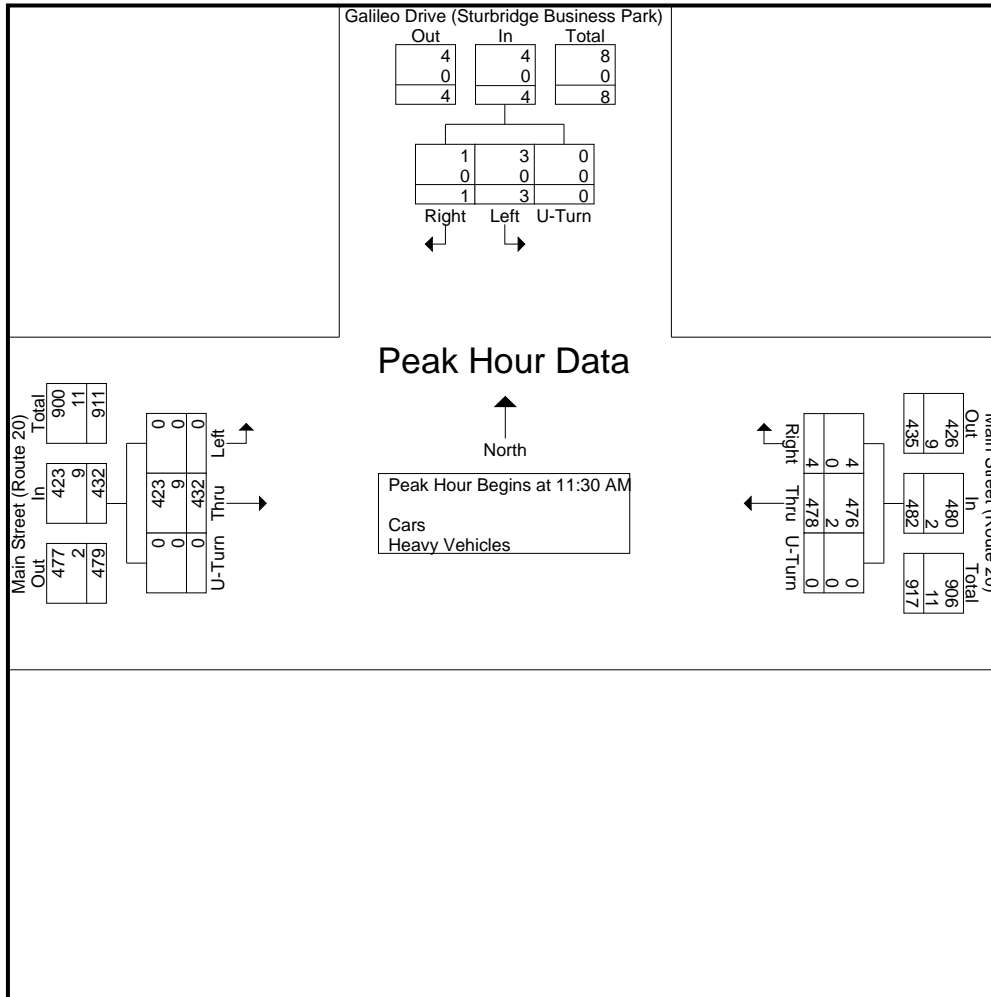
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Start Time	Galileo Drive (Sturbridge Business Park)				Main Street (Route 20)				Main Street (Route 20)				Int. Total
	From North				From East				From West				
	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	
Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 11:30 AM													
11:30 AM	0	1	0	1	2	116	0	118	107	0	0	107	226
11:45 AM	0	0	0	0	2	138	0	140	103	0	0	103	243
12:00 PM	1	1	0	2	0	112	0	112	115	0	0	115	229
12:15 PM	0	1	0	1	0	112	0	112	107	0	0	107	220
<b>Total Volume</b>	<b>1</b>	<b>3</b>	<b>0</b>	<b>4</b>	<b>4</b>	<b>478</b>	<b>0</b>	<b>482</b>	<b>432</b>	<b>0</b>	<b>0</b>	<b>432</b>	<b>918</b>
<b>% App. Total</b>	<b>25</b>	<b>75</b>	<b>0</b>		<b>0.8</b>	<b>99.2</b>	<b>0</b>		<b>100</b>	<b>0</b>	<b>0</b>		
PHF	.250	.750	.000	.500	.500	.866	.000	.861	.939	.000	.000	.939	.944
Cars	1	3	0	4	4	476	0	480	423	0	0	423	907
% Cars	100	100	0	100	100	99.6	0	99.6	97.9	0	0	97.9	98.8
Heavy Vehicles	0	0	0	0	0	2	0	2	9	0	0	9	11
% Heavy Vehicles	0	0	0	0	0	0.4	0	0.4	2.1	0	0	2.1	1.2





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Seasonal Adjustment Factors



**MASSACHUSETTS HIGHWAY DEPARTMENT - STATEWIDE TRAFFIC DATA COLLECTION**

**2011 WEEKDAY SEASONAL FACTORS \***

\* Note: These are weekday factors. The average of the factors for the year will not equal 1, as weekend data are not considered.

FACTOR GROUP	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
GROUP 1 - WEST INTERSTATE	0.98	0.93	0.90	0.89	0.90	0.88	0.91	0.90	0.89	0.89	0.93	0.95
GROUP 2 - RURAL MAJOR COLLECTOR (R-5) Use group 2 for R5, R6, & R0	1.12	1.12	1.07	0.99	0.91	0.90	0.86	0.86	0.92	0.93	1.01	1.05
GROUP 3A - RECREATIONAL **(1-4) See below	1.26	1.25	1.20	1.06	0.96	0.89	0.76	0.76	0.92	0.99	1.08	1.14
GROUP 3B - RECREATIONAL *** (5) See below	1.22	1.26	1.22	1.06	0.96	0.90	0.72	0.74	0.97	1.02	1.14	1.15
GROUP 4 - I-495 INTERSTATE	1.02	1.00	1.00	0.96	0.92	0.89	0.85	0.83	0.93	0.96	1.01	1.03
GROUP 5 - EAST INTERSTATE	1.04	1.00	0.96	0.93	0.92	0.91	0.91	0.89	0.93	0.93	0.96	1.01
GROUP 6 - URBAN ARTERIALS, COLLECTORS & RURAL ARTERIALS (R-2, R-3) Use group 6 for U2, U3, U5, U6, U0, R2, & R3	1.03	1.01	0.96	0.92	0.91	0.90	0.92	0.92	0.93	0.92	0.97	0.97
GROUP 7 - I-84 PROXIMITY (STAS. 17,3921)	1.24	1.24	1.15	1.04	0.99	1.00	0.93	0.89	1.05	1.05	1.05	1.12
GROUP 8 - I-295 PROXIMITY (STA. 6590)	1.00	0.99	0.95	0.92	0.94	0.91	0.93	0.92	0.95	0.94	0.97	0.95
GROUP 9 - I-195 PROXIMITY (STA. 7)	1.13	1.05	1.03	0.95	0.89	0.87	0.86	0.79	0.88	0.91	0.99	1.03

**RECREATIONAL: (ALL YEARS)**

**\*\*GROUP 3A:**

- 1. CAPE COD (ALL TOWNS)
- 2. PLYMOUTH (SOUTH OF RTE.3A)

- 7014, 7079, 7080, 7090, 7091, 7092, 7093, 7094, 7095, 7096, 7097, 7108, 7178
- 3. MARTHA'S VINEYARD
- 4. NANTUCKET

**\*\*\*GROUP 3B:**

- 5. PERMANENTS 2 & 189
- 1066, 1067, 1083, 1084, 1085, 1086, 1087, 1088, 1089, 1090, 1091, 1092,
- 1093, 1094, 1095, 1096, 1097, 1098, 1099, 1100, 1101, 1102, 1103, 1104,
- 1105, 1106, 1107, 1108, 1113, 1114, 1116, 2196, 2197, 2198

**2011 AXLE CORRECTION FACTORS**

**ROUND OFF**

ROAD INVENTORY FUNCTIONAL CLASSIFICATION	AXLE CORRECTION FACTOR
RURAL	
1	0.95
2	0.97
3	0.98
0,5,6	0.98
URBAN	
1	0.96
2	0.98
3	0.98
5	0.98
0,6	0.99
I-84	0.90

0 - 999.....10  
> 1,000.....100

Apply I-84 factor to stations: 3290, 3929



## INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Sturbridge, MA COUNT DATE : Sept, 2016

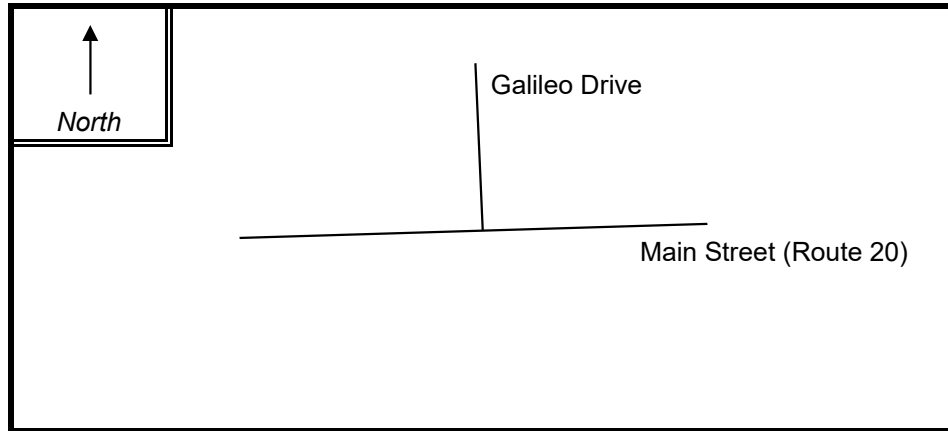
DISTRICT : 3 UNSIGNALIZED :  0.61 SIGNALIZED :  0.89

~ INTERSECTION DATA ~

MAJOR STREET : Main Street (Route 20)

MINOR STREET(S) : Galileo Drive

**INTERSECTION  
DIAGRAM**  
(Label Approaches)



PEAK HOUR VOLUMES

APPROACH :	1	2	3	4	5	Total Peak Hourly Approach Volume
DIRECTION :	NB	SB	EB	WB		
PEAK HOURLY VOLUMES (AM/PM) :	0	60	380	535		975

"K" FACTOR :  INTERSECTION ADT ( **V** ) = TOTAL DAILY APPROACH VOLUME :

TOTAL # OF CRASHES :  # OF YEARS :  AVERAGE # OF CRASHES PER YEAR ( **A** ) :

CRASH RATE CALCULATION :  RATE =  $\frac{(A * 1,000,000)}{(V * 365)}$

Comments : MassDOT Crash Data (2013-2017)

Project Title & Date: Heal, Inc.

Police Agency	Crash Number	City/Town	RMV Document #	Crash Date	Crash Time	Crash Severity	Number of Vehicles	Number of NonFatal Injuries	Number of Fatal Injuries	Manner of Collision	Road Surface	Ambient Light	Weather Condition	Roadway	Near Intersection Roadway	Distance And Direction From Intersection	Vehicle Travel Directions	Most Harmful Events	Distance And Direction From Exit Number	Distance And Direction From Landmark	Distance And Direction From Milemarker	Vehicle Action Prior to Crash	Non Motorist Type
Local police	3393926	STURBRIDGE	PR201307100326	02/21/2013	12:06 PM	Property damage only (none injured)	2	0	0	Angle	Dry	Daylight	Clear	MAIN STREET Rte 20 W	RIVERVIEW AVENUE	1000 feet S of	V1: S / V2: E	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)				V1: Turning left / V2: Turning left	
Local police	4018457	STURBRIDGE	PR201506400750	02/05/2015	9:14 AM	Property damage only (none injured)	2	0	0	Sideswipe, opposite direction	Snow	Daylight	Snow/Cloudy	MAIN STREET Rte 20	LAFLAMME LANE	500 feet W of	V1: E / V2: W	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)				V1: Travelling straight ahead / V2: Travelling straight ahead	



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Sight Distance Worksheet

**Stopping Sight Distance and Intersection Sight Distance Calculator [v0.97]**  
**Based on 'A Policy on Geometric Design of Highways and Streets', AASHTO, 2004**

Section I				Section III																																					
<b>Project Information</b>				<b>ISD and SSD Calculations</b> (rounded up to the next highest 5 feet) [sources: SSD - AASHTO, pp.110-117; ISD - AASHTO, pp. 650 - 664]																																					
Project Number: 13678.00		Analyst: VHB		Cases are described in detail on subsequent pages. In summary... B1: left turn from minor road, from stop control B2: right turn from minor road, from stop control B3: crossing maneuver from minor road, from stop control, assuming left- and right turns are not permitted [otherwise, case B1 or B2 would supercede]																																					
City/Town, State: Sturbridge, MA		Client:																																							
Location: Main Street at Galileo Drive																																									
<b>Street Names and Directions</b>			<b>Street Notes</b>																																						
Major Street name: Main Street		EB/WB																																							
Minor Street name: Galileo Drive		NB/SB																																							
Minor Street intersects from the:		north																																							
The minor street <i>predominantly</i> serves...		Passenger Cars																																							
Sight distance location intersection is...		Existing																																							
Total number of lanes on Major Street is...		2																																							
<b>Grade Information</b> [enter down slope as a negative number]																																									
Major Street Approach Grade:		0.00%	EB																																						
		0.00%	WB																																						
Minor Street Approach Grade:		0.00%	NB																																						
		4.00%	SB																																						
<b>Major Street Speed Information</b>																																									
		<i>Posted</i>				<i>Observed *</i>																																			
		45	EB			51																																			
		45	WB			48																																			
				<i>* note: off-peak 85th percentile speeds</i>																																					
Section II				Section IV																																					
<b>ISD and SSD Observations</b>				<b>AASHTO Guidance</b>																																					
Instructions on how to observe and measure ISD and SSD are included on subsequent pages.				Refer to AASHTO for specific guidance on SSD and ISD if presented with an unusual/atypical case.																																					
<p><b>ISD</b> - Intersection sight distance is the distance that is based on the time required for perception, reaction and completion of the desired critical exiting maneuver [typically, a left turn] once the driver on a minor street approach [or a site drive] decides to execute the maneuver. Calculation for the critical ISD includes the time to [1] turn left, and to clear the near half of the intersection without conflicting with the vehicles approaching from the left; and [2] upon turning left, to accelerate to the operating speed on the roadway without causing approaching vehicles on the main road to unduly reduce their speed. In this context, ISD can be considered as a <i>desirable</i> visibility criterion for the safe operation of an unsignalized intersection.</p> <p><b>SSD</b> - Stopping sight distance is the distance required for a vehicle approaching an intersection from either direction to perceive, react, and come to a complete stop before colliding with the exiting vehicle from a driveway. In this respect, SSD can be considered as the <i>minimum</i> visibility criterion for the safe operation of an unsignalized intersection.</p>				<p>Adequate ISD is not needed at signalized intersections, assuming traffic signal heads are visible on all approaches. Any object that would obstruct the driver's view should be removed or lowered, if practical. Such objects include buildings, parked cars, highway structures, hedges/vegetation/trees/bushes/unmowed lawn, walls, fences, and terrain.</p> <p>For ISD, an object should be considered an obstruction if it obstructs the vision of a driver whose eye height is 3.5 feet above the roadway surface and the object to be seen is 3.5 feet above the surface of the intersecting road.</p> <p>Where horizontal sight restrictions occur on downgrades, particularly at the ends of long downgrades, it is desirable to provide SSD that exceeds those values indicated above (refer to page 114 of AASHTO).</p>																																					
			<b>Limiting Factors:</b>																																						
<b>Observed ISD:</b>		600	looking left [east]	vegetation and vertical curve																																					
(rounded to nearest 5 feet)		650	looking right [west]	horizontal curve																																					
<b>Observed SSD:</b>		800	traveling EB	vertical curve																																					
(rounded to nearest 5 feet)		850	traveling WB	vertical curve																																					
				<p><b>Desirable Calculated ...</b></p> <table border="1"> <tr> <td>... ISD, case B1:</td> <td>565</td> <td><b>Condition Met?</b></td> <td>Yes</td> </tr> <tr> <td>... ISD, case B2:</td> <td>460</td> <td><b>Condition Met?</b></td> <td>Yes</td> </tr> <tr> <td>... ISD, case B3:</td> <td>490</td> <td><b>Condition Met?</b></td> <td>Yes</td> </tr> </table> <p>[note: if number of lanes crossed exceeds 6, or if grades are steep, consult the manual]</p> <p><b>Minimum Calculated ...</b></p> <table border="1"> <tr> <td>... ISD, case B1:</td> <td>440</td> <td><b>Condition Met?</b></td> <td>Yes</td> </tr> <tr> <td>... ISD, case B2:</td> <td>400</td> <td><b>Condition Met?</b></td> <td>Yes</td> </tr> <tr> <td>... ISD, case B3:</td> <td>440</td> <td><b>Condition Met?</b></td> <td>Yes</td> </tr> </table> <p>[note: minimum ISD is equal to required SSD]</p> <p><b>Calculated ...</b></p> <table border="1"> <tr> <td>... SSD:</td> <td>440</td> <td>traveling EB</td> <td><b>Condition Met?</b></td> <td>Yes</td> </tr> <tr> <td></td> <td>400</td> <td>traveling WB</td> <td><b>Condition Met?</b></td> <td>Yes</td> </tr> </table>				... ISD, case B1:	565	<b>Condition Met?</b>	Yes	... ISD, case B2:	460	<b>Condition Met?</b>	Yes	... ISD, case B3:	490	<b>Condition Met?</b>	Yes	... ISD, case B1:	440	<b>Condition Met?</b>	Yes	... ISD, case B2:	400	<b>Condition Met?</b>	Yes	... ISD, case B3:	440	<b>Condition Met?</b>	Yes	... SSD:	440	traveling EB	<b>Condition Met?</b>	Yes		400	traveling WB	<b>Condition Met?</b>	Yes
... ISD, case B1:	565	<b>Condition Met?</b>	Yes																																						
... ISD, case B2:	460	<b>Condition Met?</b>	Yes																																						
... ISD, case B3:	490	<b>Condition Met?</b>	Yes																																						
... ISD, case B1:	440	<b>Condition Met?</b>	Yes																																						
... ISD, case B2:	400	<b>Condition Met?</b>	Yes																																						
... ISD, case B3:	440	<b>Condition Met?</b>	Yes																																						
... SSD:	440	traveling EB	<b>Condition Met?</b>	Yes																																					
	400	traveling WB	<b>Condition Met?</b>	Yes																																					





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## Historic Traffic Growth

**AADT by Year Comparison Matrix for 1/1/2010 - 12/31/2019**  
**Criteria: Location ID = 3329**

**District**  
**Location ID** 3329

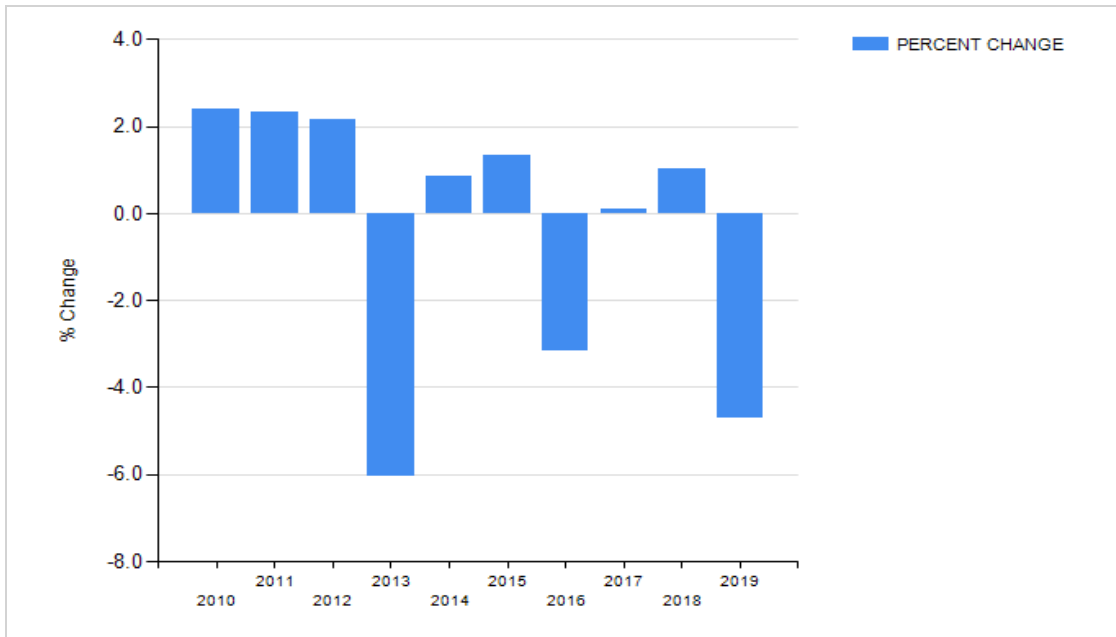
**County** Hampden  
**Roadbed** ML

**Community** Brimfield  
**Direction** 2-WAY

**Collection Type** HPMS  
**Route** 20

**Located On:** STURBRIDGE ROAD

Year	AADT	2010	2011	2012	2013	2014	2015	2016	2017	2018
2010	8,009									
2011	8,195	2.3								
2012	8,371	4.5	2.1							
2013	7,864	-1.8	-4.0	-6.1						
2014	7,932	-1.0	-3.2	-5.2	0.9					
2015	8,038	0.4	-1.9	-4.0	2.2	1.3				
2016	7,785	-2.8	-5.0	-7.0	-1.0	-1.9	-3.1			
2017	7,793	-2.7	-4.9	-6.9	-0.9	-1.8	-3.0	0.1		
2018	7,872	-1.7	-3.9	-6.0	0.1	-0.8	-2.1	1.1	1.0	
2019	7,501	-6.3	-8.5	-10.4	-4.6	-5.4	-6.7	-3.6	-3.7	-4.7







## Memorandum

To: Mr. Alexander Oliphant  
4 Irving Road  
Weston, Massachusetts 02493

Date: May 10, 2019

Project #: 13678.00

From: Randall C. Hart, Principal  
Matthew Duranleau, EIT

Re: Trip Generation Memorandum  
Proposed Recreational Marijuana Dispensary  
660 Main Street  
Sturbridge, Massachusetts

---

Vanasse Hangen Brustlin, Inc. (VHB) has evaluated the trip generation potential of a proposed recreational marijuana dispensary (the "Project") to be located at 660 Main Street in Sturbridge, Massachusetts (the "Site"). The Project involves the addition of recreational marijuana sales to the formerly approved medical sale facility. This memorandum outlines the trip generation changes anticipated by the proposed Project.

### Trip Generation

The rate at which any development generates traffic is dependent upon the size, location, and concentration of surrounding developments. As mentioned above, the proposed Project will involve the addition of recreational marijuana sales to the previously approved medical dispensary at 660 Main Street. It should be noted that the medical marijuana dispensary was approved in 2017 for a building size of approximately 2,700 sf, but the actual building is approximately 1,695 sf. To estimate the total site-generated traffic, transactional data and operations for the facility were provided by the Proponent. This methodology of using transactional data to estimate trip generation was used in the December 19, 2016, memorandum prepared by VHB for the permitting of the medical marijuana dispensary on-Site. The same methodology has been used in this memorandum in order to be consistent with the previous filing.

The dispensary is anticipated to be open seven days a week with operational hours from 10:00 AM to 7:00 PM Monday through Thursday, 10:00 AM to 9:00 PM on Friday and Saturday, and 12:00 PM to 6:00 PM on Sunday. The Proponent anticipates a maximum of fifteen employees at the facility at one time. There will be six cash registers in the dispensary, and each customer appointment is anticipated to last approximately ten minutes.

Table 1 provides a trip generation summary of the proposed recreational marijuana dispensary and a comparison to the trip generation of the already-approved medical-only dispensary. To be conservative, 36 customer appointments (six appointments per cash register) and six total employee trips were assumed to occur during each peak hour.

101 Walnut Street  
PO Box 9151  
Watertown, MA 02472-4026  
P 617.924.1770

**Table 1 Trip Generation Summary**

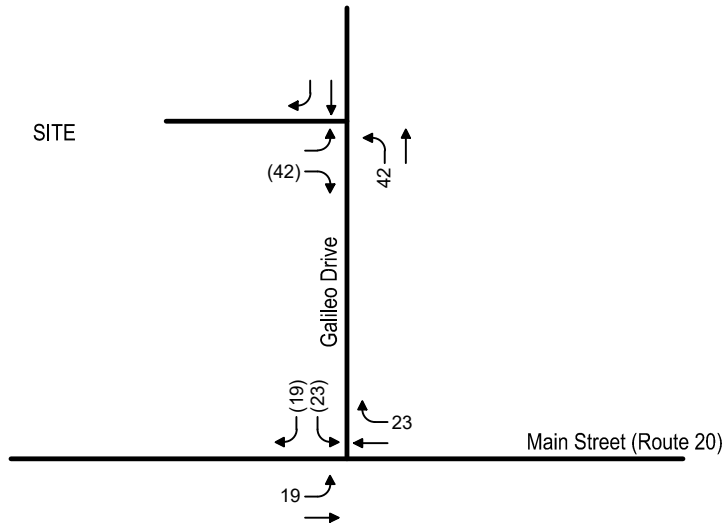
Time Period	Direction	Recreational Marijuana		Change Expected
		Dispensary	Formerly Medical Only <sup>d</sup>	
Weekday Daily <sup>a</sup>	Enter	340	172	+ 168
	Exit	<u>340</u>	<u>172</u>	<u>+ 168</u>
	Total	680	344	+ 336
Weekday Evening <sup>b</sup>	Enter	42	24	+ 18
	Exit	<u>42</u>	<u>26</u>	<u>+ 16</u>
	Total	84	50	+ 34
Saturday Daily <sup>c</sup>	Enter	412	172	+ 240
	Exit	<u>412</u>	<u>172</u>	<u>+ 240</u>
	Total	824	344	+ 480
Saturday Midday <sup>b</sup>	Enter	42	26	+ 16
	Exit	<u>42</u>	<u>26</u>	<u>+ 16</u>
	Total	84	52	+ 32

- a Weekday daily trip generation Monday through Thursday. Based on 324 customer visits (36 per hour for 9 hours), 15 employee trips, and 1 supply delivery per day.
- b Peak hour trip generation based on 36 customer visits and 6 employee trips per peak hour.
- c Saturday daily trip generation based on 396 customer visits (36 per hour for 11 hours), 15 employee trips, and 1 supply delivery per day.
- d From December 19, 2016 Traffic Memorandum prepared by VHB.

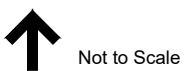
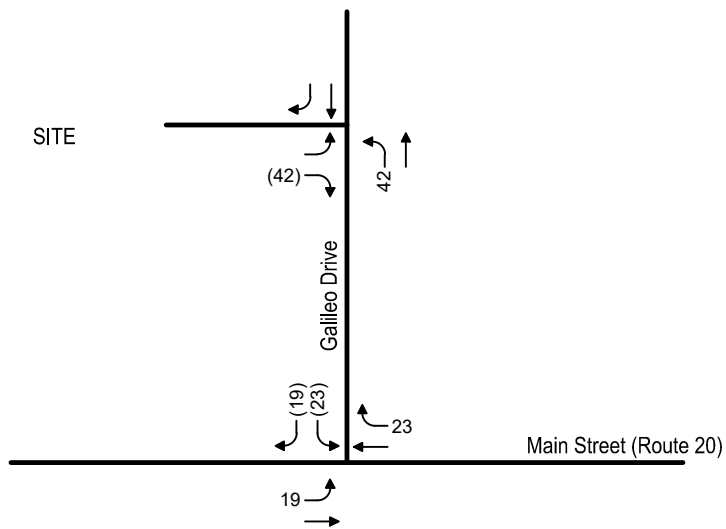
As shown in Table 1, the proposed recreational marijuana dispensary is expected to result in a total of 680 vehicle trips (340 entering / 340 exiting) on a typical weekday, with a total of 84 vehicle trips (42 entering / 42 exiting) during the weekday evening peak hour. On a typical Saturday, the project is expected to generate a total of 824 vehicle trips (412 entering / 412 exiting) with 84 vehicle trips (42 entering / 42 exiting) during the Saturday midday peak hour. Compared to the trips that are expected to be generated by a medical-only dispensary on-Site, the Project will generate approximately 336 and 480 additional daily trips on a typical weekday and a typical Saturday, respectively, and approximately 34 and 32 additional peak hour trips during the weekday evening and Saturday midday peak hours, respectively.

It should be noted that the proposed trip generation estimates assume that the maximum number of appointments will occur for all hours that the dispensary is open. In actuality, all six cash registers may not be open at all hours based on demand, and there may be breaks in customers between appointments. Therefore, the trip generation estimates shown in Table 1 are conservative and the actual number of trips generated by the Site may be lower than what is presented above.

Weekday Evening Peak Hour  
xx = Entering Trips  
(xx) = Exiting Trips



Saturday Midday Peak Hour  
xx = Entering Trips  
(xx) = Exiting Trips



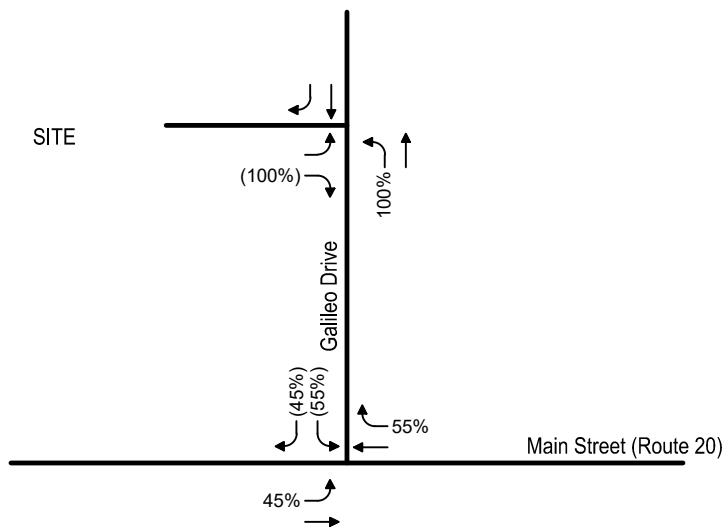
Site-Generated Trips

Heal, Inc.  
Sturbridge, Massachusetts





xx% = Entering Trips  
(xx%) = Exiting Trips



↑  
Not to Scale

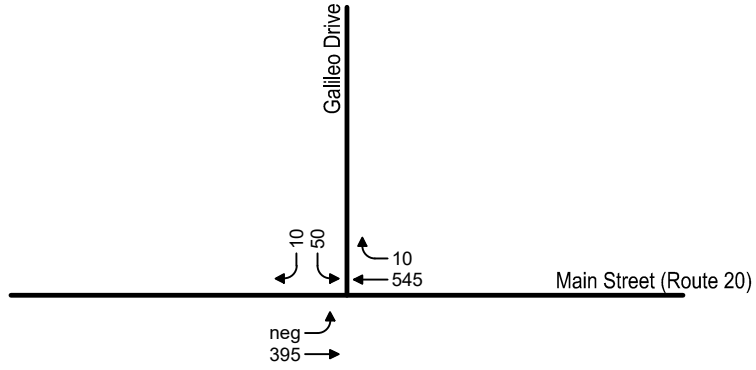


Trip Distribution

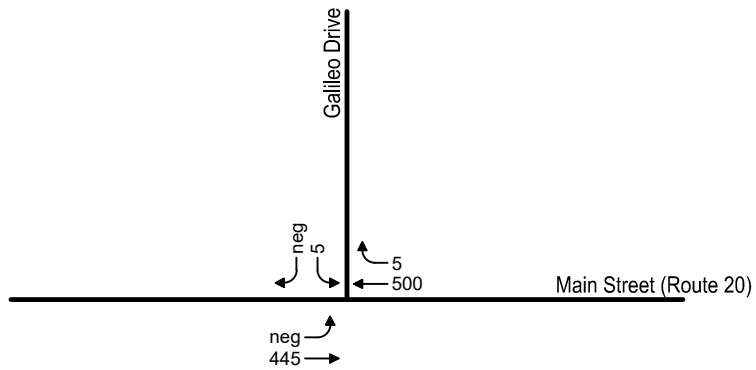
Heal, Inc.  
Sturbridge, Massachusetts



Weekday Evening Peak Hour  
neg = Negligible



Saturday Midday Peak Hour  
neg = Negligible

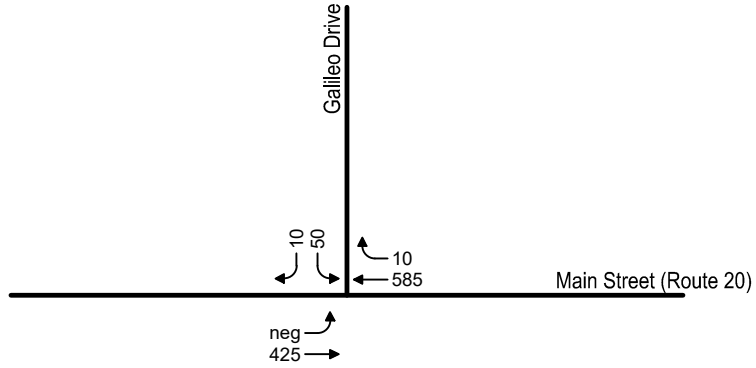


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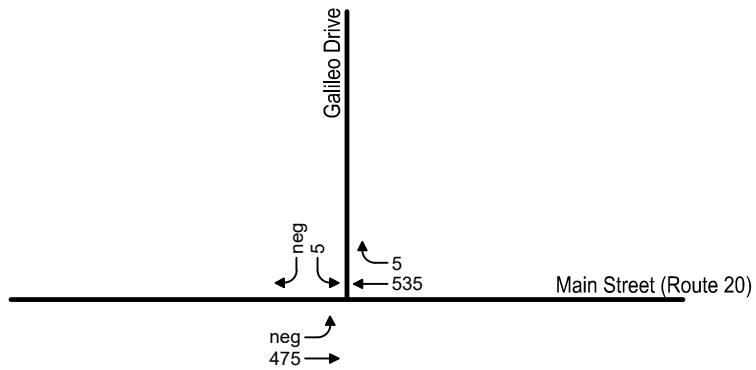


2020 Existing Conditions  
Peak Hour Traffic Volumes  
Heal, Inc.  
Sturbridge, Massachusetts

Weekday Evening Peak Hour  
neg = Negligible



Saturday Midday Peak Hour  
neg = Negligible

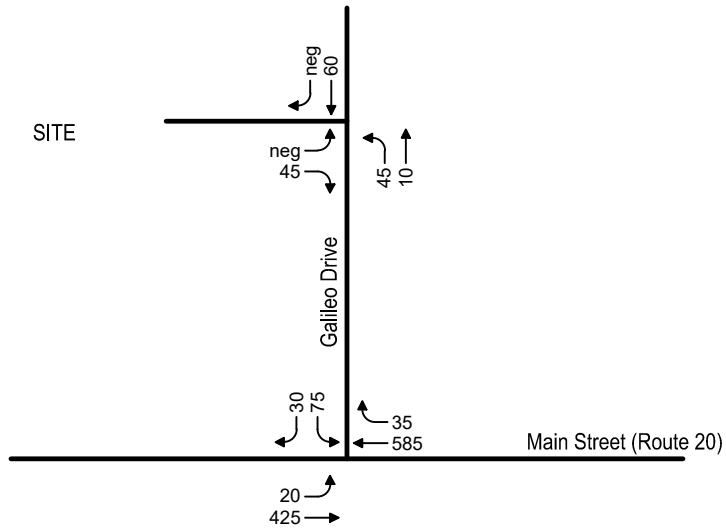


↑  
Not to Scale

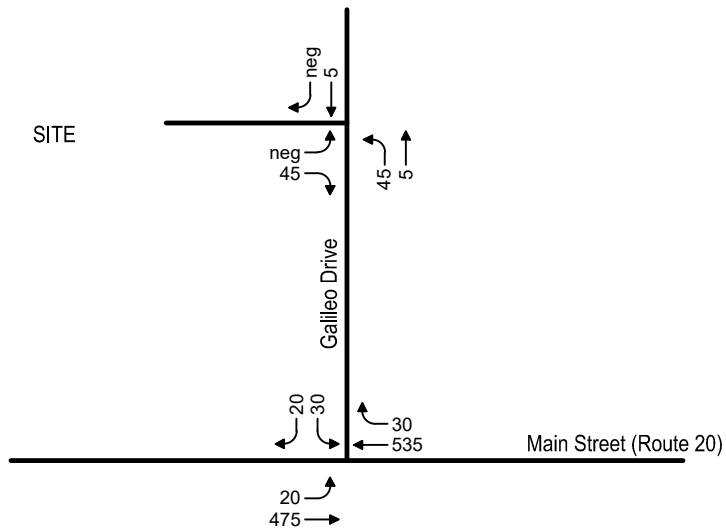


2027 No-Build Conditions  
Peak Hour Traffic Volumes  
Heal, Inc.  
Sturbridge, Massachusetts

Weekday Evening Peak Hour  
neg = Negligible



Saturday Midday Peak Hour  
neg = Negligible



↑  
Not to Scale







Intersection						
Int Delay, s/veh	1.4					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔	↔		↔	↔
Traffic Vol, veh/h	2	395	545	10	50	10
Future Vol, veh/h	2	395	545	10	50	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	93	93	95	95	88	88
Heavy Vehicles, %	4	4	2	2	5	5
Mvmt Flow	2	425	574	11	57	11

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	584	0	0	1008	579
Stage 1	-	-	-	579	-
Stage 2	-	-	-	429	-
Critical Hdwy	4.14	-	-	6.45	6.25
Critical Hdwy Stg 1	-	-	-	5.45	-
Critical Hdwy Stg 2	-	-	-	5.45	-
Follow-up Hdwy	2.236	-	-	3.545	3.345
Pot Cap-1 Maneuver	981	-	-	263	509
Stage 1	-	-	-	555	-
Stage 2	-	-	-	650	-
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	981	-	-	262	509
Mov Cap-2 Maneuver	-	-	-	262	-
Stage 1	-	-	-	555	-
Stage 2	-	-	-	648	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	21.6
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	981	-	-	-	285
HCM Lane V/C Ratio	0.002	-	-	-	0.239
HCM Control Delay (s)	8.7	0	-	-	21.6
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.9

Intersection						
Int Delay, s/veh	0.2					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔	↔		↔	↔
Traffic Vol, veh/h	0	445	500	5	5	1
Future Vol, veh/h	0	445	500	5	5	1
Conflicting Peds, #/hr	2	0	0	2	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	94	94	86	86	50	50
Heavy Vehicles, %	2	2	0	0	0	0
Mvmt Flow	0	473	581	6	10	2
Major/Minor	Major1	Major2	Minor2			
Conflicting Flow All	589	0	-	0	1059	586
Stage 1	-	-	-	-	586	-
Stage 2	-	-	-	-	473	-
Critical Hdwy	4.12	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.218	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	986	-	-	-	251	514
Stage 1	-	-	-	-	560	-
Stage 2	-	-	-	-	631	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	986	-	-	-	250	513
Mov Cap-2 Maneuver	-	-	-	-	250	-
Stage 1	-	-	-	-	559	-
Stage 2	-	-	-	-	630	-
Approach	EB	WB		SB		
HCM Control Delay, s	0	0		18.8		
HCM LOS				C		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	986	-	-	-	273	
HCM Lane V/C Ratio	-	-	-	-	0.044	
HCM Control Delay (s)	0	-	-	-	18.8	
HCM Lane LOS	A	-	-	-	C	
HCM 95th %tile Q(veh)	0	-	-	-	0.1	

**Intersection**

Int Delay, s/veh	1.4					
<b>Movement</b>	<b>EBL</b>	<b>EBT</b>	<b>WBT</b>	<b>WBR</b>	<b>SBL</b>	<b>SBR</b>
Lane Configurations		↔	↔		↔	↔
Traffic Vol, veh/h	2	425	585	10	50	10
Future Vol, veh/h	2	425	585	10	50	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	4	4	2	2	5	5
Mvmt Flow	2	462	636	11	54	11

<b>Major/Minor</b>	<b>Major1</b>	<b>Major2</b>	<b>Minor2</b>		
Conflicting Flow All	647	0	0	1107	641
Stage 1	-	-	-	641	-
Stage 2	-	-	-	466	-
Critical Hdwy	4.14	-	-	6.45	6.25
Critical Hdwy Stg 1	-	-	-	5.45	-
Critical Hdwy Stg 2	-	-	-	5.45	-
Follow-up Hdwy	2.236	-	-	3.545	3.345
Pot Cap-1 Maneuver	929	-	-	229	469
Stage 1	-	-	-	519	-
Stage 2	-	-	-	625	-
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	929	-	-	228	469
Mov Cap-2 Maneuver	-	-	-	228	-
Stage 1	-	-	-	519	-
Stage 2	-	-	-	623	-

<b>Approach</b>	<b>EB</b>	<b>WB</b>	<b>SB</b>
HCM Control Delay, s	0	0	24.5
HCM LOS			C

<b>Minor Lane/Major Mvmt</b>	<b>EBL</b>	<b>EBT</b>	<b>WBT</b>	<b>WBR</b>	<b>SBLn1</b>
Capacity (veh/h)	929	-	-	-	249
HCM Lane V/C Ratio	0.002	-	-	-	0.262
HCM Control Delay (s)	8.9	0	-	-	24.5
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	1

Intersection						
Int Delay, s/veh	0.1					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔	↔		↔	↔
Traffic Vol, veh/h	0	475	535	5	5	1
Future Vol, veh/h	0	475	535	5	5	1
Conflicting Peds, #/hr	2	0	0	2	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	0	0	0	0
Mvmt Flow	0	516	582	5	5	1
Major/Minor	Major1	Major2	Minor2			
Conflicting Flow All	589	0	-	0	1102	586
Stage 1	-	-	-	-	586	-
Stage 2	-	-	-	-	516	-
Critical Hdwy	4.12	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.218	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	986	-	-	-	236	514
Stage 1	-	-	-	-	560	-
Stage 2	-	-	-	-	603	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	986	-	-	-	235	513
Mov Cap-2 Maneuver	-	-	-	-	235	-
Stage 1	-	-	-	-	559	-
Stage 2	-	-	-	-	602	-
Approach	EB	WB		SB		
HCM Control Delay, s	0	0		19.3		
HCM LOS				C		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	986	-	-	-	258	
HCM Lane V/C Ratio	-	-	-	-	0.025	
HCM Control Delay (s)	0	-	-	-	19.3	
HCM Lane LOS	A	-	-	-	C	
HCM 95th %tile Q(veh)	0	-	-	-	0.1	

Intersection						
Int Delay, s/veh	3					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔	↔		↔	↔
Traffic Vol, veh/h	20	425	585	35	75	30
Future Vol, veh/h	20	425	585	35	75	30
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	4	4	2	2	5	5
Mvmt Flow	22	462	636	38	82	33
Major/Minor	Major1	Major2	Minor2			
Conflicting Flow All	674	0	-	0	1160	655
Stage 1	-	-	-	-	655	-
Stage 2	-	-	-	-	505	-
Critical Hdwy	4.14	-	-	-	6.45	6.25
Critical Hdwy Stg 1	-	-	-	-	5.45	-
Critical Hdwy Stg 2	-	-	-	-	5.45	-
Follow-up Hdwy	2.236	-	-	-	3.545	3.345
Pot Cap-1 Maneuver	908	-	-	-	213	461
Stage 1	-	-	-	-	511	-
Stage 2	-	-	-	-	600	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	908	-	-	-	206	461
Mov Cap-2 Maneuver	-	-	-	-	206	-
Stage 1	-	-	-	-	511	-
Stage 2	-	-	-	-	580	-
Approach	EB	WB		SB		
HCM Control Delay, s	0.4	0		31.9		
HCM LOS				D		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	908	-	-	-	245	
HCM Lane V/C Ratio	0.024	-	-	-	0.466	
HCM Control Delay (s)	9.1	0	-	-	31.9	
HCM Lane LOS	A	A	-	-	D	
HCM 95th %tile Q(veh)	0.1	-	-	-	2.3	

**Intersection**

Int Delay, s/veh	4.6					
<b>Movement</b>	<b>EBL</b>	<b>EBR</b>	<b>NBL</b>	<b>NBT</b>	<b>SBT</b>	<b>SBR</b>
Lane Configurations	↔			↔	↔	
Traffic Vol, veh/h	0	45	45	10	60	0
Future Vol, veh/h	0	45	45	10	60	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	49	49	11	65	0

<b>Major/Minor</b>	<b>Minor2</b>	<b>Major1</b>		<b>Major2</b>	
Conflicting Flow All	174	65	65	0	0
Stage 1	65	-	-	-	-
Stage 2	109	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-
Pot Cap-1 Maneuver	816	999	1537	-	-
Stage 1	958	-	-	-	-
Stage 2	916	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	790	999	1537	-	-
Mov Cap-2 Maneuver	790	-	-	-	-
Stage 1	958	-	-	-	-
Stage 2	887	-	-	-	-

<b>Approach</b>	<b>EB</b>	<b>NB</b>	<b>SB</b>
HCM Control Delay, s	8.8	6.1	0
HCM LOS	A		

<b>Minor Lane/Major Mvmt</b>	<b>NBL</b>	<b>NBT</b>	<b>EBLn1</b>	<b>SBT</b>	<b>SBR</b>
Capacity (veh/h)	1537	-	999	-	-
HCM Lane V/C Ratio	0.032	-	0.049	-	-
HCM Control Delay (s)	7.4	0	8.8	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	0.2	-	-



Intersection						
Int Delay, s/veh	1.1					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔	↔		↔	↔
Traffic Vol, veh/h	20	475	535	30	30	20
Future Vol, veh/h	20	475	535	30	30	20
Conflicting Peds, #/hr	2	0	0	2	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	0	0	0	0
Mvmt Flow	22	516	582	33	33	22
Major/Minor	Major1	Major2	Minor2			
Conflicting Flow All	616	0	-	0	1160	600
Stage 1	-	-	-	-	600	-
Stage 2	-	-	-	-	560	-
Critical Hdwy	4.12	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.218	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	964	-	-	-	218	505
Stage 1	-	-	-	-	552	-
Stage 2	-	-	-	-	576	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	964	-	-	-	210	504
Mov Cap-2 Maneuver	-	-	-	-	210	-
Stage 1	-	-	-	-	551	-
Stage 2	-	-	-	-	557	-
Approach	EB	WB		SB		
HCM Control Delay, s	0.4	0		21.4		
HCM LOS				C		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	964	-	-	-	274	
HCM Lane V/C Ratio	0.023	-	-	-	0.198	
HCM Control Delay (s)	8.8	0	-	-	21.4	
HCM Lane LOS	A	A	-	-	C	
HCM 95th %tile Q(veh)	0.1	-	-	-	0.7	

**Intersection**

Int Delay, s/veh	7.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↕		↕		↕	
Traffic Vol, veh/h	0	45	45	5	5	0
Future Vol, veh/h	0	45	45	5	5	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	49	49	5	5	0

Major/Minor	Minor2	Major1	Major2		
Conflicting Flow All	108	5	5	0	0
Stage 1	5	-	-	-	-
Stage 2	103	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-
Pot Cap-1 Maneuver	889	1078	1616	-	-
Stage 1	1018	-	-	-	-
Stage 2	921	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	862	1078	1616	-	-
Mov Cap-2 Maneuver	862	-	-	-	-
Stage 1	1018	-	-	-	-
Stage 2	893	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.5	6.6	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1616	-	1078	-	-
HCM Lane V/C Ratio	0.03	-	0.045	-	-
HCM Control Delay (s)	7.3	0	8.5	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	0.1	-	-

## **Vital Statistics, 660 Main Street**

### **Square Footage**

The building is 1696 square feet

### **Water and Sewer Estimates**

Water use will be based upon DEP Septic System tables.

Office Building—75 gallons per day per 1,000 square feet

1696 square feet means  $2 \times 75$  gallons per day = 150 gallons per day.

Sewer Use is the same by regulation but is anticipated to be 80% of water usage due to such things as gardening, lawns, etc. Accordingly, sewer discharge is anticipated to be 120 gallons per day.

### **Parking**

27 parking stalls are shown on the enclosed site plan, including one delivery stall and two HC stalls. The applicant proposes 22 of these stalls in accordance with Section 20.22 of the Zoning By-laws (9 stalls for the approximately 1,696 SF building, and 15 stalls for employees) and five additional stalls.

to be his free act and deed, before me.  
J M Cochran Justice of the Peace.  
Rec'd Oct. 10, 1916, at Sh. 30m. A. M. Ent'd & Ex'd.

\* \* \* \* \*

Mominee  
to  
N.E. Tel. & Tel.  
Company

KNOW ALL MEN BY THESE PRESENTS that I Mary Mominee of the Town of Sturbridge County of Worcester State of Massachusetts in consideration of One Dollar and other valuable considerations to me paid by the New England Telephone and Telegraph Company, a corporation duly organized under the laws of the State of New York, receipt of which is hereby acknowledged, hereby GRANT, BARGAIN, SELL and CONVEY unto the said New England Telephone and Telegraph Company the right to erect, operate, and maintain lines of telephone and telegraph, including the necessary poles and fixtures, upon and over the premises in the said Town of STURBRIDGE County of Worcester State of Massachusetts of which I am the sole owner bounded and described as follows, to wit: Pasture land bounded northerly by land of William Allen easterly by land of F. Demault, southerly by highway leading Southbridge to Springfield westerly by land of John Redding Sam Cohen. The above-granted rights being more particularly described as the exclusive right to erect and maintain poles with the wires thereon with the necessary guys and supports and the right to cut down and keep trimmed, all trees and bushes, as the grantee may desire, within a strip of land forty (40) feet in width, upon and over said described premises, the location of said strip to be determined by, and to become permanent upon, the erection of the poles in said lines of telephone and telegraph, with permission to enter upon said strip and upon said premises for access thereto for all the above purposes.

TO HAVE and TO HOLD the above-granted rights and privileges in, upon and over said premises to the said New England Telephone and Telegraph Company its successors and assigns, for their own use and behoof forever. And I do hereby for myself and my heirs, executors and administrators, covenant with the said grantee and its successors and assigns, that I am lawfully seized in fee simple of the aforesaid premises, that they are free from all incumbrances except, that I have good right to sell and convey the rights as aforesaid and that I will and my heirs, executors and administrators shall WARRANT and DEFEND the same to the said grantee and its successors and assigns forever against the lawful claims and demands of all persons.

And for the consideration aforesaid I, Harmides Mominee husband of the said Mary Mominee hereby release unto the grantee and its successors and assigns all right of and to CURTESY and all other rights and interests in the rights and easements herein conveyed.  
WITNESSE our hands and common seal, this 5 day of July 1916.

Witness Charles Parker her  
Witness Rehnle Mominee Mrs Mary + Mominee (seal)  
Witness Charles Parker mark  
Witness Rehnle Mominee. his  
Mr Harmides + Mominee mark

State of Massachusetts  
Worcester ss., July 5 1916 Then personally appeared the above-named Mary Mominee and Harmides Mominee and personally acknowledged the foregoing instrument to be their free act and deed, before me,  
Charles H Pillsbury Justice of the Peace.

Examined F L F Counsel  
Rec'd Oct. 10, 1916, at Sh. 30m. A. M. Ent'd & Ex'd.

\* \* \* \* \*

Cohen et al.  
to  
N.E. Tel. & Tel.  
Company

KNOW ALL MEN BY THESE PRESENTS that we Samuel Cohen and William Cohen single, joint owners of the Town of Sturbridge County of Worcester State of Massachusetts in consideration of One Dollar and other valuable considerations to us paid by the New England Telephone and Telegraph Company, a corporation duly organized under the laws of the State of New York, receipt of which is hereby acknowledged, hereby GRANT, BARGAIN, SELL and CONVEY unto the said New England Telephone and Telegraph Company the right to erect, operate, and maintain lines of telephone and telegraph, including the necessary poles and fixtures, upon and over the premises in the said Town of STURBRIDGE County of Worcester State of Massachusetts of which we are the sole owner bounded and described as follows, to wit: Mowing and pasture land bounded northerly by land of one Redding and Mominee southerly by land of Byron Charles easterly by land of Flavin Demault, and Happer westerly by Springfield and Brimfield highway The

above granted rights being more particularly described as the exclusive right to erect and maintain poles with the wires thereon with the necessary guys and supports and the right to cut down and keep trimmed, all trees and bushes, as the grantee may desire, within a strip of land thirty feet in width, upon and over said described premises, the location of said strip to be determined by, and to become permanent upon, the erection of the poles in said lines of telephone and telegraph, with permission to enter upon said strip and upon said premises for access thereto for all the above purposes.

TO HAVE and TO HOLD the above granted rights and privileges in, upon and over said premises to the said New England Telephone and Telegraph Company its successors and assigns, for their own use and behoof forever. And we do hereby for ourselves and our heirs, executors and administrators, covenant with the said grantee and its successors and assigns, that we are lawfully seized in fee simple of the aforesaid premises, that they are free from all incumbrances except, that we have good right to sell and convey the rights as aforesaid and that we will and our heirs, executors and administrators shall WARRANT and DEFEND the same to the said grantee and its successors and assigns forever against the lawful claims and demands of all persons.

And for the consideration aforesaid I, Jennie Cohen wife of the said Samuel Cohen hereby release unto the grantee and its successors and assigns all right of and to both DOWER and HOMESTEAD and all other rights and interests in the rights and easements herein conveyed. WITNESSES our hands and common seal this 26 day of June 1916.

Witness Chas H Pillsbury Samuel Cohen (seal)
Witness Chas H Pillsbury Jennie Cohen
Witness Chas H Pillsbury William Cohen

State of Massachusetts

Worcester ss., June 26, 1916. Then personally appeared the above-named Samuel Cohen Jennie Cohen William Cohen and personally acknowledged the foregoing instrument to be their free act and deed, before me, Charles H Pillsbury Justice of the Peace.

Examined F L F Counsel

Rec'd Oct. 10, 1916, at 8h. 30m. A. M. Ent'd & Ex'd.

\* \* \* \* \*

The Athol Co-operative Bank, the mortgagee named in a certain mortgage and the holder of a mortgage by Henry C. Bosworth and Hattie J. Bosworth to the Athol Co-operative Bank dated May 15, 1916 recorded with Worcester District Deeds, Book 2104, Page 414, for consideration paid, RELEASÉ to the said Henry C. Bosworth and Hattie J. Bosworth all interest acquired under said mortgage in the following described portion of the mortgaged premises: A certain tract of land with a dwelling and barn thereon situate in the westerly part of said PHILLIPSTON, bounded and described as follows, viz:- Beginning at the southwest corner thereof at a corner of the walls, it being at the northwest corner of land of Fred Lincoln and in line of land of Harvard College (School of Forestry); thence easterly by said Lincoln land to a corner of the walls at land of one Gill; thence northerly by said Gill land and land of George Grogan to the Ward Hill Road leading from the Trowbridge Ward place to Harvard School of Forestry in Petersham; thence crossing said road and continuing in the same course as above by land of said Bosworth forty-two and one-fourth (42 1/4) rods to an iron pin and stones by a wall; thence westerly by land of said grantor sixty-two (62) rods to an iron pin and stones in the pasture; thence southerly by land of said Bosworth eighty-three and one-half (83 1/2) rods to said Ward Hill Road at an iron pin and stones; thence easterly by said road ten and one-fourth (10 1/4) rods to a point opposite the northeast corner of said Harvard College land; thence across said road and by said Harvard College land to the place of beginning.

IN WITNESS WHEREOF, the said Athol Co-operative Bank has caused its corporate seal to be hereunto affixed and these presents to be signed acknowledged, and delivered in its name and behalf by its President Oscar T. Brooks, and its Treasurer A. Foster Hamilton, this twenty-sixth day of September, A. D. 1916.

Athol Co-operative Bank (seal)
By Oscar T Brooks President
A Foster Hamilton Treasurer

Commonwealth of Massachusetts

Worcester, ss. September 26, 1916. Then personally appeared the above-named A. Foster Hamilton and acknowledged the foregoing instrument to be the free act and deed, of the Athol Co-operative Bank, before me.

Amie M. Buchanan Special Commissioner

Rec'd Oct. 10, 1916, at 8h. 30m. A. M. Ent'd & Ex'd.

\* \* \* \* \*

**Heal Sturbridge, Inc./660 Main Street  
Chapter 31 Special Permit Submission**

With respect to the Use Regulations set forth in Chapter 31, Heal Sturbridge, Inc. (“HSI”) states as follows:

31.03(A): 660 Main Street is located in the GI and MMOD zoning district where an Adult Use Marijuana Establishment is allowed by special permit.

31.03(B): Upon information and belief, the Planning Board has not yet approved any Marijuana Retail Establishments, therefore the cap established by this section has not yet been reached.

31.03(C): HSI seeks a Marijuana Retailer license.

31.03(D): 660 Main Street is at least 500 feet from any pre-existing public or private, school (pre-school through Grade 12), child care facility, public playground, public park, youth center, library, or similar facility in which children commonly congregate. Please refer to Exhibit 1 (500 Foot Offset Plan).

31.03(E): HSI’s operations shall take place in a fixed location and shall not be visible from the outside.

31.03(F): No marijuana shall be stored outside the facility.

31.03(G): HSI’s proposed hours of operation are 10:00 a.m. until 7:00 p.m. Monday through Thursday, 10:00 a.m. until 9:00 p.m. Friday and Saturday, and 12:00 p.m. until 6:00 p.m. on Sundays. Heal may elect to open with more limited hours.

31.03(H): Please refer to Exhibit 2 (Odor Control Plan)

31.03(I): The proposed use will not create a nuisance to abutters or the surrounding area.

31.03(J): Heal, Inc. has already submitted a security plan for the proposed establishment to Chief Ford and installed the approved surveillance equipment. HSI intends to continue working with the Sturbridge Police Department to ensure that its facility provides for adequate and proper security to ensure the safety of employees and the public. Please refer to Exhibit 3 (Security Overview).

31.03(K): Heal intends to monitor the exterior of its facility to ensure that no marijuana or marijuana products are consumed on the premises of the Marijuana Establishment.

31.03(L): No drive through service is proposed.

31.03(M): N/A

31.03(N): All signage shall comply with the requirements of the Sturbridge Zoning Bylaw and the Design Review Committee. Heal has already received approval from the Design Review Committee for its proposed building and wayfinding signage. Please refer to Exhibit 4 (Building Photos and Signage Renderings).

### **Chapter 31 Application Requirements**

31.05 A: Copies of all licenses, permits and documentation demonstrating application status, registration or licensure by the Commonwealth of Massachusetts Cannabis Control Commission, including but not limited to a copy of an executed Host Community Agreement.

Please refer to Exhibit 5 for evidence of HSI's pending application with the Cannabis Control Commission and executed Host Community Agreement with the Sturbridge Board of Selectmen dated March 5, 2020.

31.05 B: A security plan showing the arrangement of pedestrian circulation and access to the public points of entry to the premises from the nearest public or private street or off-street parking area. The security plan shall detail how the property will be monitored so as to ensure the safety of employees and the public and to protect the premises property from theft or other criminal activity and shall show the location of any walkway structures, lighting, gates, fencing and landscaping.

Heal, Inc. has already submitted a security plan for the proposed establishment to Chief Ford and installed the approved surveillance equipment. HSI intends to continue working with the Sturbridge Police Department to ensure that its facility provides for adequate and proper security to ensure the safety of employees and the public. Please refer to Exhibit 3 (Security Plan).

31.05 C: A list of all managers, officers, directors, persons or entities having direct or indirect authority over the management, policies, security operations or cultivation operations of the Marijuana Establishment.

Please refer to Exhibit 6 (List of Managers).

31.05 D: An odor control plan detailing the specific odor-emitting activities or processes to be conducted on-site, the source of those odors, the locations from which they are emitted from the facility, the frequency of such odor-emitting activities, the duration of such odor-emitting activities, and the administrative and engineering controls that will be implemented to control such odors, including the maintenance of such controls.

Please refer to Exhibit 2 (Odor Control Plan).

31.05 E: An applicant who is not the property owner shall submit evidence in the form of a deed, an executed lease or a valid purchase and sale agreement documenting the applicants contingent property interest and legal right to operate a Marijuana Establishment at the property.

Please refer to Exhibit 7 (Lease).