TOWN OF HUDSON

PLANNING BOARD
PUBLIC MEETING
TOWN OF HUDSON, NH
AUGUST 27, 2014

12 School Street Hudson, New Hampshire 03051 603/886-6005

The Town of Hudson Planning Board will hold a regularly scheduled meeting on Wednesday, August 27, 2014 at 7:00 p.m. in the "Buxton Community Development Conference Room" at Town Hall. The following items will be on the agenda:

I. CALL TO ORDER BY CHAIRPERSON AT 7:00 P.M.
II. PLEDGE OF ALLEGIANCE
III. ROLL CALL
IV. SEATING OF ALTERNATES
V. MINUTES OF PREVIOUS MEETING(S)
VI. CASES REQUESTED FOR DEFERRAL
VII. CORRESPONDENCE
VIII. PERFORMANCE SURETIES
IX. ZBA INPUT ONLY
X. PUBLIC HEARINGS
XI. OLD BUSINESS/PUBLIC HEARINGS
XII. DESIGN REVIEW PHASE
XIII. CONCEPTUAL REVIEW ONLY

XIV. NEW BUSINESS/PUBLIC HEARINGS

A. Dairy Queen Site Plan — Map 175/Lot 142
SP# 11-14 — 119 Ferry Street

Purpose of plan: To propose a 1,020 sf addition on the existing Dairy Queen along with a reconfiguration of parking, access, circulation, stormwater, landscaping and lighting on Lot 142. Application Acceptance & Hearing.

XV. OTHER BUSINESS

A. Public Hearing on the Fiscal Year 2016 DRAFT Capital Improvements Program (CIP).

XVI. ADJOURNMENT

All plans and applications are available for review in the Planning Office. Comments may be submitted in writing until 10:00 a.m. on the Tuesday prior to the day of the meeting.

The public is invited to attend.

John M. Cashell
Town Planner

POSTED: Town Hall, Library, Post Office – 08-14-14

Packet: 08/27/14

Dairy Queen Amended Site Plan

Staff Report

August 27, 2014

SITE: 119 Ferry Street -- Map 175/Lot 142 --SP# 11-14

ZONING: Business (B) – Minimum lot size 30,000 with Town water & sewer and 150 ft. street frontage.

PURPOSE OF PLAN: to propose a 1,020 sf addition on the existing Dairy Queen building, along with a reconfiguration of parking, access, circulation, stormwater, landscaping and lighting on Lot 142. Application Acceptance & Hearing.

PLAN UNDER REVIEW ENTITLED: "Non-Residential Site Plan Dairy Queen, Map 175 Lots 142, 119 Ferry St., Hudson, NH, prepared by Keach-Nordstrom Associates, Inc., dated: July 18, 2014, last revised Aug. 8, 2014, consisting of Sheets 1 - 13 and Notes 1 – 27 on Sheet 1 (said plans are attached hereto).

ATTACHMENTS:

1) Site Plan Application, including the Project Narrative, Checklist & Waiver Forms and Aerial Site Photos date stamped July 21, 2014 – Attachment "**A**".
2) CLD's 2d Comments Report, including Traffic Study Critique and Application Checklist dated August 21, 2014 – "**B**". NOTE: this report also includes Keach-Nordstrom's response to CLD's Initial Comments Report and the attached revised plans reflect the changes requested in CLD's Initial Comments Report.
3) Comments/Memos from: Zoning Admin., Bill Oleksak (including ZBA Dimensional Variance Decision, HFD Deputy Fire Chief, John O'Brien, Road Agent, Kevin Burns, Asst. Assessor, Jim Michaud and the Police Dept. – "**C**".
4) CAP Fee Form – "**D**".
5) GPI Traffic Report for Dairy Queen Expansion (abridged), dated July 2014 –"**E**".

REQUESTED WAIVERS (shown in Note 19 of Master Plan Sheet 1 of 13):

1. HTC 275-8(B)12C – Residential Buffer
2. HTC 275-8(B)24 – Open Space
3. HTC 275-9(C) -- Noise Study
4. HTC 275-9(D) -- Fiscal/Environmental Impact Study
5. HTC 275-8(B)22 – Front Yard Green Space

APPLICATION TRACKING:

1. This application was submitted on July 21, 2014.
2. Initial Public Hearing scheduled for August 27, 2014.

OUTSTANDING ISSUES:

There are several outstanding issues involved in this Site Plan application, and I will address same in this section of the staff report, but first, I would like to say that this application involves an iconic staple of the Hudson Community. That is, the Grand Opening of this Dairy Queen dates back to when the Beatles first appeared on the Ed Sullivan Show in 1964, thus starting the 4th British Invasion of the North American Continent. It (Dairy Queen) has been improved upon ever since, and the present Amended Site Plan application, although minor in scale and character, represents yet another new era of investment for this successful fast-food enterprise at its longstanding Hudson location.

With the above being said, there are several outstanding issues with this application, i.e.,

As you can see in CLD's 2d Comments Report attachment "**B**" one issue involves traffic concerns at the Ridge Ave./Ferry St intersection, and the offset intersection of Adelaide St/Ferry St/George St.

A) With the proposed elimination of the existing Dairy Queen (DQ) driveway on Ferry St. and replacement of same along Adelaide St. (see Existing Conditions Plan, Sheet 2 of 13 and the Master Plan, Sheet 1 of 13), this new means of ingress/egress should make the existing Adelaide/Ferry/George Sts. intersection safer for vehicular travel.

B) The other traffic issue involves Ridge Ave./Ferry St. intersection, and the existing DQ driveway and parking spaces along Ridge Ave. That is, in CLD's comments, the author writes that this driveway and abutting DQ parking spaces encroach into the Ridge Ave. right-of-way layout. This is the case, and has been for many years. In reviewing this particular situation with the applicant's lawyer, Atty. Brad Westgate, at Wednesday night's hearing Atty. Westgate plans to offer to the Town the following solution(i.e., relative to rectifying this longstanding encroachment matter): the DQ owner also owns the land on the opposite side of Ridge Ave., and he is willing to offer to the Town an area of land on his opposing property equal to the amount of land involving the driveway and parking area encroachment. To the effect of this offer, at the hearing, Atty. Westgate will further elaborate on this matter, and once the board decides on it (which will amount to recommending the proper course of action for the applicant to pursue with the BOS), he will prepare either the appropriate easement or transfer of land deeds to the Town for execution and recording.

C) The other outstanding issues, as cited in CLD's attachment "**B**", which also includes citation of their initial comments and Keach-Nordstorm's response answers and comments address: drainage, landscaping, parking, exterior lighting, onsite pedestrian

and vehicle traffic issues and concerns. Note: no changes are proposed for the recently renovated free-standing sign, which includes an EMC component. In preparation for the hearing, please take the time to read through attachment "**B**", as well as the attached GPI Traffic Study "**E**". Please note, an abridged copy of this Traffic Report is included in this packet, while a copy of same, in its entirety, is provided in the E-Packet.

D) The CAP Fee Worksheet Form is provided as attachment "**D**". Note: this fee, in the amount of $8,884.20, was calculated by use (i.e., a fast-food restaurant with a drive-thru window), located in Sector 6, per the CAP Fee Matrix Map X the proposed additional square feet of use: 1,020 sf. (please see said Worksheet for calculated sum).

RECOMMENDATION: For this hearing, staff recommends, first, application acceptance, followed by the board having the applicant present the project, then allow for public input and then have the project representatives answer questions from the board and the public. The question and answer period, may lead to both on and offsite modifications that may cause a second hearing prior to the Planning Board taking final action on the Site Plan application. If the foregoing scenario does not occur, and the board moves to take final action at this hearing, staff has provided below appropriate DRAFT MOTIONS for the board's consideration.

DRAFT MOTIONS:

I move to accept the Site Plan application Dairy Queen's proposed expansion at 119 Ferry St., Map 175/Lot 142.

Motion by: _____Second: _____Carried/Failed: _____.

REQUESTED WAIVERS:

1. HTC 275-8(B)12C – Residential Buffer
2. HTC 275-8(B)24 – Open Space
3. HTC 275-9(C) -- Noise Study
4. HTC 275-9(D) -- Fiscal/Environmental Impact Study
5. HTC 275-8(B)22 – Front Yard Green Space

1) HTC 275-8(B)12C – Residential Buffer

I move to grant the requested waiver - HTC 275-8(B)12C – Residential Buffer - because the subject business is located in the Business Zoning District and has existed at this location for over 50 years, and the board finds that the proposed expansion, together with the proposed onsite improvements, will not further exacerbate the existing residential buffer encroachment, and as such, the granting of this waiver is in keeping with the spirit and intent of the ordinances.

Motion by: _____Second: _____Carried/Failed: _____

2) HTC 275-8(B)24 – Open Space

I move to grant the requested waiver - HTC 275-8(B)24 – Open Space - because the existing site only provides 33.7% open space v. the proposed Site Plan providing 34.4%, which, although 0.6% less than the required 35% open space, does make the site more compliance with the ordinances, and therefore, the granting of this waiver moves in the direction of better providing for the spirit and intent of the ordinances.

Motion by: _____Second: _____Carried/Failed: _____

3) HTC 275-9(C) -- Noise Study

I move to grant the requested waiver: HTC 275-9C - Noise Study - because the proposed expansion is not expected to create any increase in associated noise than what already exists for this commercial enterprise, which is located in a Business Zoning District, and therefore, the granting of this waiver is in keeping with the spirit and intent of the ordinances.

Motion by: _____Second: _____Carried/Failed: _____

4) HTC 275-9D – Fiscal and Environmental Impact Study

I move to grant the requested waiver: HTC 275-9D - Fiscal and Environmental Impact Study - because in addition to the submitted plans and submitted application documents, which include best management practices for stormwater control and a CAP Fee, said study is unnecessary in order to evaluate the fiscal and environmental impact of this expansion project, and as such, the granting of this waiver is not contrary to the spirit and intent of the Site Plan Review regulations.

Motion by: _____Second: _____Carried/Failed: _____

5) HTC 275-8(B)22 – Front Yard Green Space

I move to grant the requested waiver: HTC - 275-8(B)22 – Front Yard Green Space - because currently, as developed, the site contains 13 parking spaces within the 35 ft. green area buffer, and the proposed Site Plan calls for reducing this total to 9 spaces within said buffer, so although this proposal does not comply with the ordinances, it represents a reduction in the buffer encroachment, and therefore, the granting of this waiver moves in the direction of better providing for the spirit and intent of the ordinances.

Motion by: _____Second: _____Carried/Failed: _____

MOTION TO APPROVE:

I move to grant approval for the Site Plan entitled: "Non-Residential Site Plan Dairy Queen, Map 175 Lots 142, 119 Ferry St., Hudson, NH, prepared by Keach-Nordstrom Associates, Inc., dated: July 18, 2014, last revised Aug. 8, 2014, consisting of Sheets 1 - 13 and Notes 1 – 27 on Sheet 1 in accordance with the following terms and conditions:

1) All stipulations of approval shall be incorporated into the Development Agreement, which shall be recorded at the HCRD, together with the Site Plan-of-Record (hereinafter referred to as the Plan).

2) Prior to the Planning Board endorsement of the Plan, the Development Agreement and the Ridge Avenue easement/transfer of land deeds shall be favorably reviewed and recommended on by Town Counsel.

3) All improvements shown on the Plan, including Notes 1-27, shall be completed in their entirety and at the expense of the Applicant or his assigns.

4) After the issuance of the foundation permit for the proposed building, and prior to the issuance of the framing permit thereof, the applicant shall submit to the Hudson Community Development Department a foundation "As- Built" plan on a transparency and to the same scale as the approved site plan. The foundation "As-Built" plan shall include all structural dimensions and lot line setback measurements to the foundation and be stamped by a licensed land surveyor. Any discrepancy between the approved site plan and foundation "As-Built" plans shall be documented by the applicant and be part of the foundation "As-Built" submission.

5) A CAP Fee of $8,884.20 shall be submitted by the Applicant to the Town prior to the issuance of a Certificate of Occupancy for the expansion.

6) Prior to the issuance of a final certificate of occupancy, a L.L.S. certified "As Built" site plan shall be provided to the Town of Hudson Community Development Department, confirming that the site conforms with the Planning Board approved Plan.

7) Onsite landscaping and exterior lighting shall be provided for in accordance with the Sheets 8 & 9 of the Plan.

8) Exterior construction activities on the site shall be limited to between 7:00 A.M. and 7:00 P.M. Monday through Saturday. No construction activities shall occur on Sunday.

9) This approval shall be subject to final engineering review.

10) The applicant's engineer and/or contractor shall contact the Town of Hudson to schedule a preconstruction meeting, which will be held with Town staff prior to the start of construction.

Motion by: _____ Second: _____ Carried/Failed: _____

NOTE: all other pertinent Site Plan approval terms and conditions are included in the above-cited Site Plan-of-Record, Notes 1 – 30, including, but not limited blasting and refuse removal, etc.

KNA KEACH-NORDSTROM ASSOCIATES, INC.

"A"

July 25, 2014

Projective Narrative

Dairy Queen
Map 175; Lot 142
119 Ferry Street
Hudson, NH 03051

The subject parcel is located at 119 Ferry Street, and is referenced on Hudson's Tax Map 175 as Lot 142. The 1.108 acre parcel is in Hudson's Business (B) Zoning District. The site is currently developed with an existing Dairy Queen and apartment building. The Dairy Queen is accessed from Ferry Street and Ridge Avenue. The site distance along Ridge Avenue is currently 300'. This site distance will not change with the proposed project.

A variance was granted by the Hudson Zoning Board of Adjustment on June 19, 2014 to allow the addition within 50' of the front setback.

The proposed project entails the construction of a 1,020 square foot addition to the existing Dairy Queen building. The associated patio area will be reconstructed to contain porous pavers to help with stormwater. Along with the construction of the addition, the proposal will include reconfiguring the parking and circulation of the drive-thru area. The site will be re-graded to provide access from Adelaide Street and to close off the curb cut along Ferry Street. The site distance along Adelaide Street is greater than 400'. The stormwater will collect in a closed system and convey to the existing catch basin along Ferry Street. The entire site will contain an overall decrease in impervious surfaces, therefore no stormwater treatment or detention will be necessary.

HUDSON
JUL 25 2014
COMMUNITY DEVELOPMENT

10 Commerce Park North, Suite 3B Bedford, NH 03110 Phone (603) 627-2881 Fax (603) 627-2915

"A" cont.

HUDSON JUL 21 2014 COMMUNITY DEVELOPMENT

PRELIMINARY & FINAL SITE PLAN APPLICATION
FOR PLAN REVIEW (Also for Wireless)
TOWN OF HUDSON, NEW HAMPSHIRE

Date of Application: July 21, 2014 Tax Map # 175 Lot # 142

Name of Project: Dairy Queen

Zoning District: _____ (For Town Use) General SP# 11-14 (For Town Use)

ZBA Action: Variance Granted on June 19, 2014 to Allow Addition within setback.

PROPERTY OWNER:	DEVELOPER:
Name: Lynn C. & Ann M. White Rev. Trust	Same as owner
Address: 119 Ferry Street	
Address: Hudson, NH 03051	
Telephone # (603) 883-0400	
Fax #	
Email:	

PROJECT ENGINEER	SURVEYOR
Name: Patrick Colburn, P.E. (KNA)	Anthony Basso, L.L.S (KNA)
Address: 10 Commerce Park No., Suite 3	10 Commerce Park No., Suite 3
Address: Bedford, NH 03110	Bedford, NH 03110
Telephone # (603) 627-2881	(603) 627-2881
Fax # (603) 627-2915	(603) 627-2915
Email: pcolburn@keachnordstrom.com	abasso@keachnordstrom.com

PURPOSE OF PLAN:

To propose a 1,020 sf addition on the existing Dairy Queen along with a reconfiguration of parking, access, circulation, stormwater, landscaping and lighting on Lot 142.

For Town Use

Plan Routing Date: _____ Sub/Site Date: _____

_____ I have no comments _____ I have comments (attach to form)

_____ Title: _____ Date: _____
(Initials)

DEPT:
_____ Zoning _____ Engineering _____ Assessor ____ Police ____ Fire ____ Planning
_____ Consultant _____ Highway Department

Fees Paid: _____

SITE DATA SHEET

PLAN NAME: Dairy Queen

PLAN TYPE: SITE PLAN

LEGAL DESCRIPTION: MAP 175 LOT 142

DATE: July 21, 2014

Location by Street	119 Ferry Street
Zoning:	Business (B)
Proposed Land Use:	Restaurant
Existing Use:	Restaurant
Surrounding Land Use(s):	Commercial/Residential
Number of Lots Occupied:	One
Existing Area Covered by Building:	2,374 sf (943 sf for apartment building)
Existing Buildings to be removed:	None
Proposed Area Covered by Building:	3,393 (943 sf for apartment building)
Open Space Proposed:	34.3%
Open Space Required:	35%
Total Area:	S.F.: 48,104 Acres: 1.104
Area in Wetland:	0 Area Steep Slopes: 0
Required Lot Size:	30,000
Existing Frontage:	186.12(Adelaide); 261.39(Ferry);161.03(Ridge)
Required Frontage:	150

Building Setbacks:	Required*	Proposed
Front:	50	147.9(Adelaide) 44(Ferry) 37.8(Ridge
Side:	15	15
Rear:	15	15

SITE PLAN DATA SHEET
(Continued)

Flood Zone Reference: FIRM Map 33011C0518D, Panel # 518, 09/25/09 (Not in a Flood Zone)

Width of Driveways: 24'

Number of Curb Cuts: 2 (One on Adelaide, One on Ridge)

Proposed Parking Spaces: 32 (including 2 handicap spaces)

Required Parking Spaces: 23

Basis of Required Parking (Use): 1 Space/100 SF (Restaurant)

Dates/Case #/Description/Stipulations of ZBA, Conservation Commission, NH Wetlands Board Actions:
(Attach stipulations on separate sheet)

ZBA - 6/19/14 Case No. 175-142-000

Waivers Requested: (Left column for Town Use)	Hudson Town Code Reference	Regulation Description
	1. HTC 275-8B-12C	Residential Buffer
	2. HTC 275-9C	Noise Study
	3. HTC 275-9D	Fiscal/Enviro. Impact Study
	4. HTC 275-8B	Green/Open Space
	5. HTC 275-8B 22	Front Yard Green Space
	6.	
	7.	
	8.	

Impact Fees:
C.A.P Fee: TBD

Development Agreement Proposed:

For Town Use	
Data Sheet Checked By:	Date:

APPLICATION FOR SITE PLAN REVIEW
TOWN OF HUDSON, NEW HAMPSHIRE

Thirty (30) days prior to Planning Board Meeting, a complete site plan to include all supporting materials/documents must be submitted in final form. The site plan shall comply with the following specifications/requirements:

Applicant Initials			Staff Initials
PRC	a)	Submission of nine (9) full sets of Site Plans (sheet size: 22" x 34") shall be submitted at the time of application filing, followed by the submission of seventeen (17) 11" X 17" plan sets (revised if applicable) to the Community Development Department no later than 10:00 A.M., Tuesday the week prior to the scheduled public hearing/conceptual review date.	
PRC	b)	A Site Plan narrative, describing the purpose, locations, long-range plans, impacts on traffic, schools, and utilities	
PRC	c)	Plan scale at not less the one inch equals fifty feet (1" = 50')	
PRC	d)	Locus plan with 1,000' minimum radius of site to surrounding area	
PRC	e)	Plan date by day/month/year	
PRC	f)	Revision block inscribed on the plan	
PRC	g)	Planning Board approval block inscribed on the plan	
PRC	h)	Title of project inscribed on the plan	
PRC	i)	Names and addresses of property owners and their signatures inscribed on the plan	
PRC	j)	North point inscribed on the plan	
PRC	k)	Property lines: exact locations and dimensions	
PRC	l)	Square feet and acreage of site	
PRC	m)	Square feet of each building (existing and proposed)	
PRC	n)	Names and addresses of bordering abutters, as shown on Tax Assessor's records not more than five (5) days prior to application date to be listed on the plan.	

Applicant Initials		Staff Initials
PRC o)	Location of all structures, roads, wetlands, hydrants, wells, septic systems, 4k reserve areas, floodways/floodplains, driveways, travel areas, parking areas and natural features within 200 feet of the tract	_____
PRC p)	Locations of existing and proposed permanent monuments and bench marks within 200 feet of the development tract	_____
PRC q)	Pertinent highway projects	_____
PRC r)	Assessor's Map and Lot number(s)	_____
PRC s)	Waiver application form shall be submitted with the site plan application, note on plan listing waivers requested/granted; and all waivers granted to the site plan regulations shall be listed on the final plan; waivers to checklist shall be reduced to writing and be signed by the Planning Board Chairman and Planning Board Secretary and recorded with the plan	_____
PRC t)	Delineate zoning district on the plan	_____
PRC u)	Storm water drainage plan	_____
PRC v)	Topographical elevations at 2-foot intervals contours: existing and proposed	_____
PRC w)	Utilities: existing and proposed	_____
PRC x)	Parking: existing and proposed	_____
PRC y)	Parking space: length and width	_____
PRC z)	Aisle width/maneuvering space	_____
PRC aa)	Landscaping: existing and proposed	_____
PRC ab)	Building and wetland setback lines	_____
PRC ac)	Curb cuts	_____
PRC ad)	Rights of way: existing and proposed	_____
PRC ae)	Sidewalks: existing and proposed	_____
PRC af)	Exterior lighting plan	_____
PRC ag)	Sign locations: size and design	_____
PRC ah)	Water mains and sewerage lines	_____
PRC ai)	Location of dumpsters on concrete pads	_____
PRC aj)	All notes from plats	_____

Applicant Initials		Staff Initials
W ak)	Buffer as required by site plan regulations	
W al)	Green and open space requirements met with both types of spaces inscribed on the plan	
PRC am)	Soil types and boundaries, Note: If site contains marginal or questionable soils, a High Intensity Soil, Survey (HISS) may be deemed necessary to submit as part of the application. Said HISS, if required, shall be performed by a State of New Hampshire Certified Soil Scientist, who shall affix his/her stamp and signature shall be inscribed on the plan.	
N/A an)	Wetlands (and poorly-drained and very poorly-drained soils, also identified as Class 5 and Class 6 High Intensity Soil Survey (HISS soils), and permanent and seasonal wetlands shall be identified on the plan by a New Hampshire certified wetland or soil scientist, who shall affix his/her stamp and signature to the respective plan.	
PRC ao)	"Valid for one year after approval" statement inscribed on the plan.	
N/A ap)	Loading bays/docks	
PRC aq)	State of New Hampshire engineer's stamp, signature, surveyor's stamp, and signature	
PRC ar)	Error of closure (1 in 10,000 or better)	
PRC as)	Drafting errors/omissions	
PRC at)	Developer names, addresses, telephone numbers and signatures	
PRC au)	Photographs, electronic/digital display or video of site and area	
PRC av)	Attach one (1) copy of the building elevations	
W aw)	Fiscal impact study	
PRC ax)	Traffic study	
W ay)	Noise study	

Applicant Initials

Staff Initials

N/A az) Copies of any proposed or existing easements, covenants, deed restrictions, right of way agreements or other similar documents _____

N/A ba) Copy of applicable Town, State, Federal approval/permits to include but not limited to the following: _____

- industrial discharge application
- sewer application
- flood plain permit
- wetlands special exception
- variance
- erosion control permit (149:8a)
- septic construction approval
- dredge and fill permit
- curb cut permit
- shore-land protection certification in in accordance with RSA483-B
- if applicable, review application with Lower Merrimack River Local Advisory Committee (LMRLAC) and attach LMRLAC project comments hereto.

PRC bb) Presentation plan (colored, with color-coded bar chart) _____

PRC bc) Fees paid to clerk _____

PRC bd) Five (5) 22" x 34" copies of the plan shall be brought to the Planning Board meeting and distributed to the Planning Board members at the meeting. Note: for all subsequent meetings involving revised plans, five 22" x 34" copies of said plan shall be brought to the meeting for distribution to the board members. _____

*Under the purview of the Planning Board, any and all items may be waived.

APPLICATION FOR SITE PLAN REVIEW
TOWN OF HUDSON, NEW HAMPSHIRE

I hereby apply for Site Plan Review and acknowledge I will comply with all of the Ordinances of the Town of Hudson, New Hampshire State Laws, as well as any stipulations of the Planning Board, in development and construction of this project. I understand that if any of the items listed under the Site Plan specifications or application form are incomplete, the application will be considered rejected.

Pursuant to RSA 674:1-IV, the owner(s) by the filing of this application as indicated above, hereby given permission for any member of the Hudson Planning Board, the Town Engineer, the Conservation Commission and such agents or employees of the Town or other persons as the Planning Board may authorize, to enter upon the property which is the subject of this application at all reasonable times for the purpose of such examinations, surveys, tests and inspections as may be appropriate. The owner(s) release(s) any claim to or right he/she (they) may now or hereafter possess against any of the above individuals as a result of any examinations, surveys, tests and/or inspections conducted on his/her (their) property in connection with this applications.

Signature of Owner: _____

- If other than an individual, indicate name of organization and its principal owner, partners, or corporate officers.

Signature of Developer: _____

- The developer/individual in charge must have control over all project work and be available to the Code Enforcement Officer/Building Inspector during the construction phase of the project. The Code Enforcement Officer/Building Inspector must be notified within two (2) working days of any change by the individual in charge of the project.

APPLICATION IS DUE AT NOON 21 days prior to the Planning Board Meeting. (The date the Agenda is CLOSED.) Any applications received after that time will be deferred until the next available meeting.

SUBDIVISION/SITE PLAN WAIVER REQUEST FORM

Name of Subdivision/Site Plan: **Dairy Queen**

Street Address: **119 Ferry Street, Hudson, New Hampshire 03051**

I **Anthony Basso** hereby request that the Planning Board waive the requirements of item **HTC 275-8 (B) 22** of the Subdivision/Site Plan Checklist in reference to a plan presented by **Keach-Nordstrom Associates, Inc.** (name of surveyor and engineer) dated **July 18, 2014** for property Tax Map(s) **175** and Lot(s) **142** in the Town of Hudson, NH.

As the aforementioned applicant, I, herein, acknowledge that this waiver is requested in accordance with the provisions set forth in RSA 674:36, II (n), i.e., without the Planning Board granting said waiver, it would pose an unnecessary hardship upon me (the applicant), and the granting of this waiver would not be contrary to the spirit and intent of the Subdivision/Site Plan regulations.

Hardship reason(s) for granting this waiver (if additional space is needed please attach the appropriate documentation hereto):

Currently as developed, the site contains 13 parking spaces with the 35' green area buffer. The proposed site plan will be reducing that total number of parking spots within the buffer to 9. Removing these nine spots would significantly reduce parking on site that is necessary for the business to function.

Reason(s) for granting this waiver, relative to not being contrary to the Spirit and Intent of the Subdivision/Site Plan regulations: (if additional space is needed please attach the appropriate documentation hereto):

Granting this waiver is in keeping with the spirit and intent of the ordinance because the site will be less non-conforming. Currently the site contains 13 parking spaces within the green space buffer. Proposed will be to reduce this number to 9 parking spaces and create more green space within the parking area.

Signed: _____

Applicant or Authorized Agent

Planning Board Action:

Waiver Granted: _____

Waiver Not Granted: _____

SUBDIVISION/SITE PLAN WAIVER REQUEST FORM

Name of Subdivision/Site Plan: **Dairy Queen**

Street Address: **119 Ferry Street, Hudson, New Hampshire 03051**

I **Anthony Basso** hereby request that the Planning Board waive the requirements of item **HTC 275-8 (B) 12C** of the Subdivision/Site Plan Checklist in reference to a plan presented by

Keach-Nordstrom Associates, Inc. (name of surveyor and engineer) dated **July 18, 2014** for property Tax Map(s) **175** and Lot(s) **142** in the Town of Hudson, NH.

As the aforementioned applicant, I, herein, acknowledge that this waiver is requested in accordance with the provisions set forth in RSA 674:36, II (n), i.e., without the Planning Board granting said waiver, it would pose an unnecessary hardship upon me (the applicant), and the granting of this waiver would not be contrary to the spirit and intent of the Subdivision/Site Plan regulations.

Hardship reason(s) for granting this waiver (if additional space is needed please attach the appropriate documentation hereto):

The subject parcel is located within the Town of Hudson's Business zone. This particular business district is abutted by a residential zone which requires a residential buffer. Currently as developed, the site contains a building within the buffer. The proposed project's intent is to add onto the existing building. To move the building outside of the buffer would create significant hardship to the restaurant.

Reason(s) for granting this waiver, relative to not being contrary to the Spirit and Intent of the Subdivision/Site Plan regulations: (if additional space is needed please attach the appropriate documentation hereto):

Granting the waiver will allow the restaurant to continue to operate as it currently does. The proposed development will revitalize this parcel to create a more ascetically pleasing restaurant. Therefore, granting the waiver is not contrary to the spirit and intent of the ordinance.

Signed: _____

Applicant or Authorized Agent

Planning Board Action:

Waiver Granted: _____

Waiver Not Granted: _____

SUBDIVISION/SITE PLAN WAIVER REQUEST FORM

Name of Subdivision/Site Plan: **Dairy Queen**

Street Address: **119 Ferry Street, Hudson, New Hampshire 03051**

I **Anthony Basso** hereby request that the Planning Board waive the requirements of item **HTC 275-9C** of the Subdivision/Site Plan Checklist in reference to a plan presented by **Keach-Nordstrom Associates, Inc.** (name of surveyor and engineer) dated **July 18, 2014** for property Tax Map(s) **175** and Lot(s) **142** in the Town of Hudson, NH.

As the aforementioned applicant, I, herein, acknowledge that this waiver is requested in accordance with the provisions set forth in RSA 674:36, II (n), i.e., without the Planning Board granting said waiver, it would pose an unnecessary hardship upon me (the applicant), and the granting of this waiver would not be contrary to the spirit and intent of the Subdivision/Site Plan regulations.

Hardship reason(s) for granting this waiver (if additional space is needed please attach the appropriate documentation hereto):

A Nosie Impact Study would cause unnecessary financial burden on the applicant.

Reason(s) for granting this waiver, relative to not being contrary to the Spirit and Intent of the Subdivision/Site Plan regulations: (if additional space is needed please attach the appropriate documentation hereto):

The ordinance is in place to prevent noise pollution from occurring within areas of mixed use where it may cause disputes amongst neighbors. It is not expected that the proposed addition will bring any increased noise pollution to the site or to the residential and commercial uses surrounding it, therefore granting of the waiver is in keeping with the spirit and intent of the ordinance.

Signed: _____

Applicant or Authorized Agent

Planning Board Action:

Waiver Granted: _____

Waiver Not Granted: _____

SUBDIVISION/SITE PLAN WAIVER REQUEST FORM

Name of Subdivision/Site Plan: **Dairy Queen**

Street Address: **119 Ferry Street, Hudson, New Hampshire 03051**

I **Anthony Basso** hereby request that the Planning Board waive the requirements of item **HTC 275-9D** of the Subdivision/Site Plan Checklist in reference to a plan presented by **Keach-Nordstrom Associates, Inc.** (name of surveyor and engineer) dated **July 18, 2014** for property Tax Map(s) **175** and Lot(s) **142** in the Town of Hudson, NH.

As the aforementioned applicant, I, herein, acknowledge that this waiver is requested in accordance with the provisions set forth in RSA 674:36, II (n), i.e., without the Planning Board granting said waiver, it would pose an unnecessary hardship upon me (the applicant), and the granting of this waiver would not be contrary to the spirit and intent of the Subdivision/Site Plan regulations.

Hardship reason(s) for granting this waiver (if additional space is needed please attach the appropriate documentation hereto):

A Fiscal/Environmental Impact study beyond what we have provided through our Best Management Practices and the CAP fee required by the Town of Hudson would cause unnecessary financial burden on the applicant.

Reason(s) for granting this waiver, relative to not being contrary to the Spirit and Intent of the Subdivision/Site Plan regulations: (if additional space is needed please attach the appropriate documentation hereto):

This waiver request is not violating the spirit and intent of the ordinance due to the fact that the site is currently developed and the proposed construction will create a new decrease in impervious area. Fiscally, the site is subject to a CAP fee to be determined.

Signed: _____

Applicant or Authorized Agent

Planning Board Action:

Waiver Granted: _____

Waiver Not Granted: _____

SUBDIVISION/SITE PLAN WAIVER REQUEST FORM

Name of Subdivision/Site Plan: **Dairy Queen**

Street Address: **119 Ferry Street, Hudson, New Hampshire 03051**

I **Anthony Basso** hereby request that the Planning Board waive the requirements of item **HTC 275-8 (B)** of the Subdivision/Site Plan Checklist in reference to a plan presented by **Keach-Nordstrom Associates, Inc.** (name of surveyor and engineer) dated **July 18, 2014** for property Tax Map(s) **175** and Lot(s) **142** in the Town of Hudson, NH.

As the aforementioned applicant, I, herein, acknowledge that this waiver is requested in accordance with the provisions set forth in RSA 674:36, II (n), i.e., without the Planning Board granting said waiver, it would pose an unnecessary hardship upon me (the applicant), and the granting of this waiver would not be contrary to the spirit and intent of the Subdivision/Site Plan regulations.

Hardship reason(s) for granting this waiver (if additional space is needed please attach the appropriate documentation hereto):

Currently as developed, the site contains 33.7% open space which is less than the required 35% stated in the Hudson Site Plan Regulations. The proposed site plan will be increasing this number to 34.3% with our addition of parking islands. To increase this number more would require the loss of more parking. One spot has already been lost in the reconfiguration and more spaces would create significant hardship to the restaurant.

Reason(s) for granting this waiver, relative to not being contrary to the Spirit and Intent of the Subdivision/Site Plan regulations: (if additional space is needed please attach the appropriate documentation hereto):

Granting the waiver will increase the amount of open space from what is existing there now. The proposed development plans will revitalize this parcel and create a safer, more effective circulation for parking. Currently the site contains 33.7% open space and proposed will contain 34.3%. Therefore, granting the waiver is not contrary to the spirit and intent of the ordinance.

Signed: _____

Applicant or Authorized Agent

Planning Board Action:

Waiver Granted: _____

Waiver Not Granted: _____

APPLICATION FOR SITE PLAN REVIEW
TOWN OF HUDSON, NEW HAMPSHIRE

FOOTNOTES:

1. In the event of the denial of a plan, the recording fees collected will not be reimbursed, but will instead be used as an additional fee to help defray administrative costs associated with a denial.

2. The "Review Fees" are fees estimated necessary to offset costs incurred to review and/or compile plans, data, or other information relative to the proposal.

3. The "Amount Due" does not include fees for studies or reviews as authorized in Section G-2 of this regulation.

4. Fees must be paid in full prior to the commencement of any formal review by the Town of Hudson.

STATUS:		DATE:
____ 1.	Application incomplete	_____
✓ 2.	Application complete. Include any applicable requested waivers, fees paid, routing sheet returned	8.30.14
____ 3.	Application formally accepted or denied by Planning Board (90-day review clock by RSA 674:43 to start upon acceptance granted)	_____
____ 4.	Final approval granted or denied	_____
____ 5.	Comments:	

_____

_____

_____

_____

_____

_____

_____

KNA KEACH-NORDSTROM ASSOCIATES, INC.

KNA Project No. 14-0321-1

Owner Affidavit

I, Lynn White, owner of the property referenced on Tax Map 175; Lot 142, located at 119 Ferry Street in Hudson, New Hampshire, hereby verify that I authorize Keach-Nordstrom Associates, Inc. (KNA) to prepare, submit and represent, on my behalf, throughout the federal, state and municipal application process.

Signature of Landowner: [signature]

Printed Name of Landowner: Lynn C White

Address of Owner: 2 Bradford Circle
Hudson, NH 03051

Date: 7-17-14

119 FERRY STREET – HUDSON, NEW HAMPSHIRE

KNA Project No. 14-0321-1

Photo No. 1: An aerial view of the subject parcel (Map 175; Lot 142)

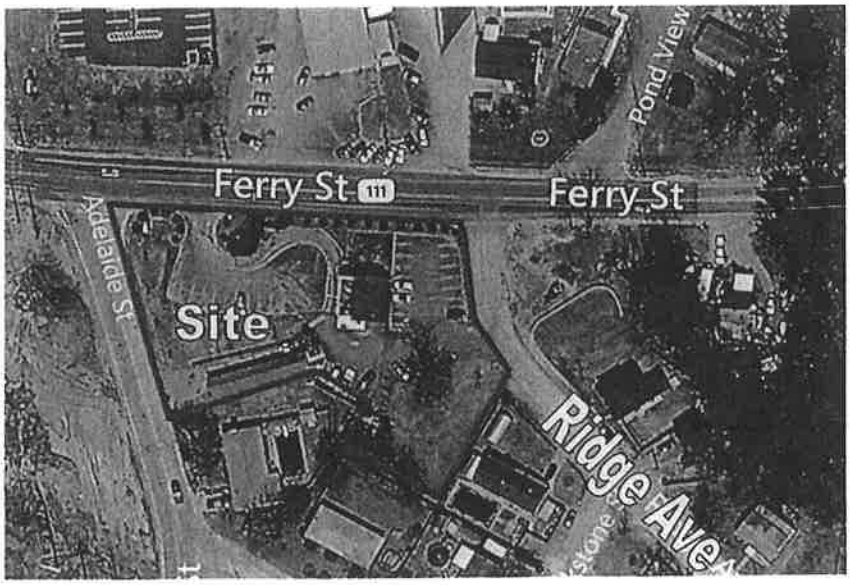

Photo No. 2: The existing Dairy Queen facility.

Photo No. 3: Looking at the existing Dairy Queen from the southern property corner.

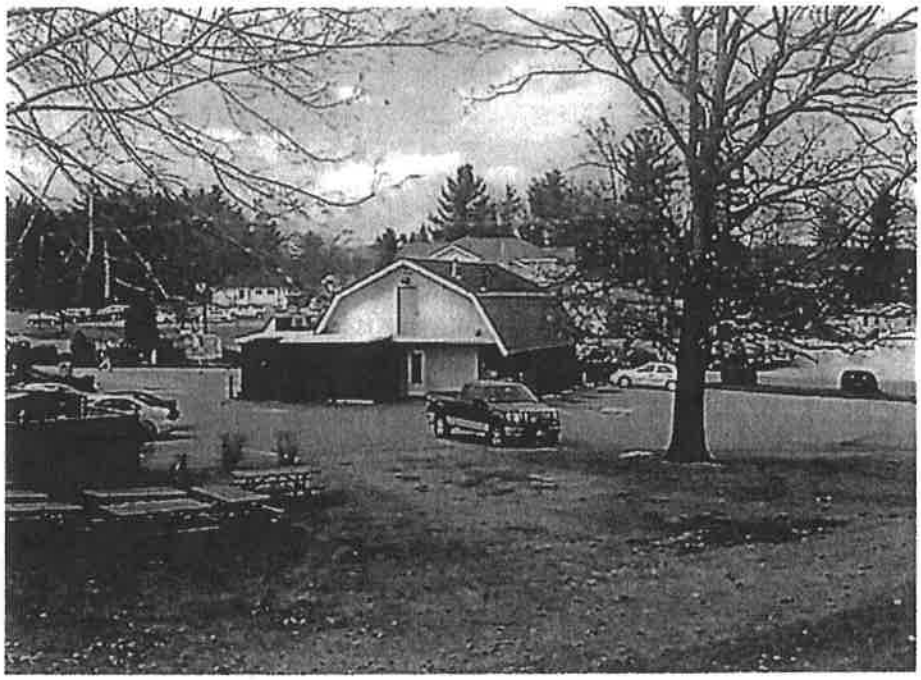

Photo No. 4: Looking east from Adelaide Street toward the site.

Photo No. 5: A view of the existing Dairy Queen and Apartment building.

"B"

CONSULTING ENGINEERS

August 21, 2014

Mr. John Cashell, Town Planner
Town of Hudson
12 School Street
Hudson, NH 03051

Re: Town of Hudson Planning Board Review
Dairy Queen, 119 Ferry Street
Tax Map 175, Lot 142, PO #1350-843
CLD Reference No. 03-0249.1400

Dear Mr. Cashell:

CLD Consulting Engineers, Inc. (CLD) has reviewed the second submission of the materials received August 11, 2014 related to the above-referenced project. A list of items reviewed is enclosed. The scope of our review is based on the Site Plan Review Codes, Stormwater Codes, Driveway Review Codes, Sewer Use Ordinance 77, and criteria outlined in the CLD Proposal approved September 16, 2003, revised September 20, 2004, June 4, 2007, and September 3, 2008.

The project consists of the construction of a 1,020-square-foot building addition and razing of an existing patio to be replaced with a pervious paver patio with associated site improvements. The existing buildings on-site will continue to be serviced by municipal water and sewer.

We note that six (6) parking spaces currently encroach into the Ridge Avenue right-of-way (ROW) and that a portion of the turning radius area for Adelaide Street is on the subject parcel. Also, a portion of the existing landscaped retaining wall is in the Ferry Street (NH Route 111) right-of-way.

The following items have outstanding issues:

2. Driveway Review Codes (HR 275-8.B. (34)/Chapter 193)

a. *Former CLD comment: HR 193-10.C. The applicant has proposed driveway stopping platforms with slopes greater than 7%.*

Current CLD Comment: The applicant has noted these are existing conditions and that they are not changing the grades at the driveways. We note grade changes are proposed at both driveways and that grades in the Ridge Avenue drive are proposed to get steeper.

d. *HR 275-9.B. We have reviewed the GPI traffic study for this development dated July 2014 and have the following comments:*

1) Former CLD comment: The study did not provide any analysis of current or projected traffic operations at the Ferry Street/Ridge Avenue intersection. Given that all site traffic already exits onto Ridge Avenue and most of it is expected to continue to use this exit under the new site configuration based on the assumed traffic distribution, an analysis of operations at its intersection with Ferry Street is appropriate. The aforementioned encroachment of on-site parking spaces in the

Ridge Avenue right-of-way may interfere with any needed modifications to this approach based on the traffic analysis.

GPI Response: Traffic increases on Ridge Avenue north of the site drive are expected to be 18 trips in the weekday PM peak and 15 trips during the Saturday midday peak, or an additional vehicle every 3-4 minutes during peak times. The new site layout will also allow for exiting traffic from Adelaide Street as well as from Ridge Avenue. Ridge Avenue volumes are also much less than on Adelaide, so the impacts of the site will be realized there rather than at Ridge Avenue. Therefore, the Ferry/Ridge intersection was not analyzed.

Current CLD Comment: Although the bulk of the impact from the site may be diverted onto Adelaide Street because of the proposed entrance relocation, the majority of the exiting traffic is still projected to use the driveway on Ridge Avenue. There is no information provided as to whether the current or proposed traffic exiting Ridge Avenue, most of which the applicant acknowledges is from Dairy Queen, turns left or right at Ferry Street, so the impact of any increase in exiting traffic on that intersection is unknown. As such, we reiterate our comment that analysis of the Ridge Avenue intersection should be included in this study. We further reiterate that the existing site also encroaches on the Ridge Avenue ROW which may inhibit any efforts to modify this approach to deal with any traffic impacts either now or in the future.

4) *Former CLD comment: Along those lines, we note that the existing vehicle queues exiting from Adelaide Street already would block the proposed driveway location and would be increased by about 4 vehicles with lengthy delays as a result of the proposed development. The study notes that under those conditions, traffic would now use the Ridge Avenue exit, but the impacts on operations at that intersection were not analyzed as noted above.*

GPI Response: As noted in the response to 2(d)1 above, the volumes on Ridge Avenue are lower than on Adelaide Street, so during peak periods there may be some additional use of the Ridge Avenue driveway, where there should be available capacity, but longer delays and queuing would result. However, the queues along Ridge Avenue should not block any residential driveways, since the closest one is 100 feet south of the Dairy Queen drive.

Current CLD Comment: The traffic projections still show the bulk of exiting traffic using the Ridge Avenue driveway, even under normal traffic conditions. Since the Ferry Street/Ridge Avenue intersection was not analyzed there is no way to quantitatively determine what the impacts to existing operations at that location will be especially if some traffic diverts there during peak periods. Since the existing and proposed Dairy Queen encroachment will not allow for future lane separation, the intersection should be analyzed to document GPI's assessment that there will be no adverse impact to the current users of Ridge Avenue.

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5) *Former CLD comment: The analyses show that the George and Adelaide Street approaches to Ferry Street already do or will operate at Level of Service "F" by the design year, either with or without the proposed development, particularly during the weekday PM peak period. The report also suggests that actual operations may be better than calculated because drivers tend to use smaller than normal gaps in the traffic stream during peak periods, but provide no documentation of gap acceptance by existing drivers already facing congested conditions at these intersections. If true, this use of smaller gaps could be a contributory factor to some of the accident history noted in the report.*

GPI Response: Comment noted. No gap or stop delay studies were conducted as part of the project. With the trimming of overgrown vegetation within the town layout noted above, the enhanced sight lines will assist drivers with their judgment to accept/reject gaps, resulting in safer operations.

Current CLD Comment: The capacity analyses results are based on standard gap acceptance models for various turning movements for drivers to complete their movement safely. While individual drivers ultimately decide which gap in the traffic stream is comfortable for them based on a variety of factors, it should not be implied that the use of smaller-than-normal gaps should be encouraged or is an acceptable way to provide additional capacity or improved traffic operations and may, in fact, be contributory to the accident history documented in the traffic report.

4. Drainage Design/Stormwater Management (HR 275-9.A./Chapter 290)

a. *Former CLD comment: HR 290-4.B.(1) The applicant has not provided pre-treatment prior to leaving the site. We note, however, that from an engineering standpoint the site improvements are reducing on-site impervious area and utilizing an existing drainage pattern, due to the redevelopment of the site and reconfiguration of the drainage system. The applicant should consider a waiver request from this Regulation.*

Current CLD Comment: The applicant has added deep sumps and hoods to all catch basins; however, the Regulation directly states "at a minimum, all stormwater must pass through basic pre-treatment (beyond catch basin sumps) prior to leaving the site." We note the applicant is improving conditions. The applicant should confirm with the Town whether a waiver is necessary.

6. Landscaping (HR 275-8B (31))

- *Former CLD comment: The applicant has proposed a Blue Spruce in the northeast corner of parking lot that appears to conflict with proposed lighting. Additionally, the proposed flowering pear trees appear to conflict with proposed lighting at the end of the drive-thru island.*

Current CLD Comment: The applicant has updated the plan. The photometric plan does not account for significant areas where proposed trees will likely block the light.

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The following items require Town input:

1. **Site Plan Review Codes**

   c. *Former CLD comment: HR 275-8.B. (30) The applicant has not shown existing or proposed loading areas on site.*

   Current CLD Comment: The applicant has noted that the existing site has no loading zone and that deliveries are currently delivered outside of normal business hours and will continue to be delivered in this fashion. The Town should determine whether a waiver is required.

   e. ***HR 275-9.C.** The applicant has noted on the plan set that a waiver from the Noise Study requirement is requested.*

   f. ***HR 275-9.D.** The applicant has noted on the plan set that a waiver from the Fiscal and Environmental Impact Study requirement is requested.*

   h. *Former CLD comment: HR 275-9.F. Copies of deeds or easements were not received for review as part of the package and no existing or proposed easements have been shown. The applicant has proposed the location of DMH#6 and both the 12-inch HDPE in and out, on the abutting Map 175 Lot 117 and proposed parking, retaining wall and drainage infrastructure within the Town right-of-way (ROW). The applicant should provide supporting legal documents for these aspects.*

   Current CLD Comment: The applicant has noted that proposed work will not further encroach into the ROW; however, the applicant is proposing additional encroachment into the Ridge Avenue right-of-way with a retaining wall. The applicant has removed drainage features that were proposed on the abutting lot. The Town should confirm they are comfortable with the construction or reconstruction of all these project features on Town property with no legal documents to indemnify or protect them from future liability (especially related to the retaining wall).

2. **Driveway Review Codes (HR 275-8.B. (34)/Chapter 193)**

   c. *Former CLD comment: HR 193-10.G. The applicant has proposed three driveways on the site.*

   Current CLD Comment: The applicant has noted that the site currently has three driveways and the site will continue to operate with three driveways. The Town should determine whether any waivers are required.

   d. *HR 275-9.B. We have reviewed the GPI traffic study for this development dated July 2014 and have the following comments:*

      3) Former CLD comment: The study notes the offset intersection of Ferry/George/Adelaide was the site of 7 collisions over the past 6 years, 3 of which resulted in personal injury. This, combined with intersection capacity deficiencies calculated later in the report, would appear to indicate that some corrective actions

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should be considered at this location, either with or without the proposed development.

While the closure of the existing entry drive directly from Ferry Street is generally a positive thing by, among other things, removing a curb cut from Ferry Street, improving drive-thru circulation, and eliminating confusion between eastbound traffic turning into Adelaide versus the site drive, the fact that the main entry to the Dairy Queen is now proposed to be relocated to Adelaide will increase site-related traffic through this intersection that will exacerbate existing and projected operational shortcomings at the intersection and along the short stretch of street (100 feet +/-) between Ferry Street and the site drive.

GPI Response: The vegetation along the frontage of the site will be cut back to enhance the available sight distance lines at this intersection. Right-turn lane and left-turn lane warrants analyses were also conducted at these intersections and were found to be satisfied under existing conditions.

Current CLD Comment: Based on these findings, the Town should consider whether there should be any mitigation provided at the Adelaide Street intersection where the impacts of the reconfigured site driveway will be felt the most.

6) *Former CLD comment: No analysis of right-turn treatment warrants was provided at either George or Adelaide intersections with Ferry Street. Given that the crossing movements between these offset streets eventually end up at right-turn movements at the other intersection, this analysis would appear appropriate.*

GPI Response: Right turn lane warrants analyses were conducted and found to be satisfied at these locations. However, since this is an expansion of an existing use for the comfort of their dine-in customers, it does not seem reasonable that the redevelopment would have to bear the costs of the design and construction of these right turn lanes if the existing right-of-way is available for the suggested improvements, since the development is expected to increase volumes at these locations by 3.2% or less.

Current CLD Comment: The existing site already contributes to the turning volumes at these intersections and the resulting capacity and traffic operating conditions, even without the proposed expansion. The Town should consider whether there should be an equitable contribution from this site towards future improvements to these intersections.

e. *Former CLD comment: The applicant should review the building expansion layout as cars exiting the drive-thru may not see cars maneuvering around the southwest corner of the building from Ridge Avenue, and vice versa. Because the space between the building and proposed retaining wall is so narrow (scales at about 20 feet), and that vehicles have to immediately maneuver to the right side of this aisle upon exiting the drive-thru window, the applicant should consider whether the drive-thru warrants a "right turn*

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only" condition for cars exiting the drive-thru or provide some other form of traffic control to better protect drive-thru traffic and pedestrians proceeding around the building to the Ridge Avenue exit. Unfortunately, such a restriction may only exacerbate the operational issues at the Ferry/Adelaide intersection noted above.

Current CLD Comment: The applicant feels that a "right turn only" sign is not warranted as the site has operated in this fashion for the last 30 years. The Town should confirm they are comfortable with this approach. The applicant notes that the site currently operates with traffic maneuvering around the building between it and the retaining wall. Current traffic striping shows this to be one-way towards Ridge Avenue. The proposed striping would make this two-way with the potential for collisions between cars traveling around the blind building corner from Ridge Avenue and cars turning left out of the drive-thru.

f. *Former CLD comment: There are existing crosswalks from George Street across Ferry Street and then across Adelaide Street to the site, which then leads to the short retaining wall and landscaped area on the northwest corner of the site. The applicant should consider modifications in this area to provide a sidewalk along their frontage for pedestrian access into the site.*

Current CLD Comment: The applicant has stated that since there are no existing sidewalks, the current site plan is not proposing to add any new pedestrian access to the site. The Town should confirm they are comfortable with this approach.

g. *Former CLD comment: The applicant has not included any on-site (or coming from off-site) pedestrian accommodations, such as directional paths or markings. We are concerned that all pedestrians gaining access to the building from the primary parking lot will need to cross the drive-thru primary traffic pattern. If this configuration is to remain, we strongly suggest additional pavement markings and warning signage to make both drivers and pedestrians aware of potential conflicts near the building and the drive-thru area in particular.*

KNA Response: A crosswalk has been added to the plan in this area. The speeds within the drive-thru, along with site distance of the entire parking lot, do not make this a pedestrian hazard.

Current CLD Comment: The Town may want to consider additional signage to emphasize the proposed crosswalk and the possible presence of pedestrians in the drive-thru area.

4. Drainage Design/Stormwater Management (HR 275-9.A./Chapter 290)

e. *Former CLD comment: The applicant has proposed drainage on the parcel across Ridge Avenue. We understand that at the current time that parcel is owned by the same owner as the subject parcel; however, we recommend that appropriate easements be developed in the event that either parcel changes ownership.*

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Current CLD Comment: The applicant has removed the DMH #6 from the abutting property; however, the applicant continues to propose private site drainage elements in the Ferry Street ROW.

8. Other

f. *Former CLD comment: The applicant has shown "retaining wall w/ force protection designed by others" within the Ridge Avenue ROW. Due to the fact that the wall is in the Town ROW, the Town should confirm that development of final wall details prior to approval is or is not appropriate.*

Current CLD Comment: The applicant has added several additional requirements to the retaining wall detail, which the applicant has noted will be provided to the Town prior to the preconstruction meeting.

g. *The applicant has proposed a retaining wall, drainage infrastructure, portions of parking lot and curbing within the right-of-way of Ridge Avenue.*

The following items have been resolved or have not further CLD input:

1. Site Plan Review Codes

a. *Former CLD comment: HR 275-8.B. (17) The applicant has shown one temporary benchmark on the plan set, but has not referenced the survey to a specific USGS benchmark.*

Current CLD Comment: The applicant has noted that the plan references USGS and that the datum is NGVD 29.

b. *Former CLD comment: HR 275-8.B. (20) The applicant has not provided the building height or size for the existing apartment building shown on subject parcel. The applicant has also not provided the height for the existing restaurant building. We note one existing exterior light (proposed to be removed) shown on the southwest corner of the existing parking lot. Additionally, existing sidewalks have not been shown.*

Current CLD Comment: The applicant has noted the stories and existing building sizes on the plans. The applicant has also confirmed there are no existing sidewalks.

2. Driveway Review Codes (HR 275-8.B. (34)/Chapter 193)

d. *HR 275-9.B. We have reviewed the GPI traffic study for this development dated July 2014 and have the following comments:*

2) Former CLD comment: The study does use appropriate traffic counts, seasonal and annual growth factors and trip generation / distribution procedures for the intersections for which they did provide analyses.

GPI Response: Comment acknowledged.

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Current CLD Comment: No further CLD comment.

7) *The site layout plan notes that the drive-thru lane is 184 feet, long enough for 12 cars. This would be an average car length of 15 feet, which is not realistic. The traffic report notes that 190 feet is approximately 9 vehicles, which would be 20 feet per vehicle on average and a more reasonable storage capacity. In either event, the drive-thru lane does not meet the Town's minimum requirement of 12 vehicle stacking spaces. While the report notes that the drive-thru queue is not expected to exceed 11 vehicles, no supporting documentation is provided.*

   KNA Response: The existing 182-foot drive-thru lane would back up onto Ferry Street after roughly 9 vehicles. The proposed drive is not becoming any less conforming with 184 feet of available space, but there is additional room for 2 vehicles on site before this lane would back up onto Adelaide Street, which is greater than currently exists.

   Current CLD Comment: Comment acknowledged. We do not believe it is likely that the drive-thru queue would ever exceed 11 vehicles. No further CLD comment.

h. *Former CLD comment: The applicant should label the aisle dimension for the area between the retaining wall and the proposed building corner.*

   Current CLD comment: The applicant has added a 22-foot aisle dimensions to the plans in this area. No further CLD comment.

i. *Former CLD comment: The applicant should confirm that bollards or other protective devices are not needed for the proposed cooler and freezer that jut out into the drive aisle area. (This is important to evaluate for the potential of a refrigerant spill.)*

   Current CLD Comment: The applicant has shown bollards on the plans. No further CLD comment.

j. *Former CLD comment: The applicant should provide additional details showing how the existing drive will be closed. This should include details for the transition between the existing retaining wall and any future curbing.*

   Current CLD Comment: The applicant has noted on the plans that the existing driveway will be closed by granite curb that will tie into the existing timber curbing and landscaped area wall. No further CLD comment.

3. Utility Design/Conflicts (HR 275-9.E.)

- *Former CLD comment: The applicant should review the design of the sewer service that will fall directly under the proposed building addition (cooler area).*

  Current CLD Comment: The applicant has revised the sewer service near the building to avoid this conflict and has moved overhead utilities underground. No further CLD comment.

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4. Drainage Design/Stormwater Management (HR 275-9.A./Chapter 290)

b. *Former CLD comment: HR 290-5.A.(5) The applicant should provide a schedule for the inspection and maintenance of onsite drainage BMPs (catch basins, DMH, pavers, etc.)*

Current CLD Comment: The applicant provided an inspection and maintenance schedule for all onsite drainage BMPs. No further CLD Comment.

c. *Former CLD comment: HR 290-5.A.(10) The Stormwater Management Report was certified by a licensed professional engineer, registered in the state of New Hampshire; however, the individual pre- and post-development drainage plans were not certified.*

Current CLD Comment: The applicant has certified the individual pre- and post-development drainage plans. No further CLD Comment.

d. *Former CLD comment: Section C of the Stormwater Management Report makes reference to DMH #5 connecting to CB A. The applicant should review the Report as we note this information appears to conflict with the Drainage Calculations, which labels the manhole as DMH #6.*

Current CLD Comment: The applicant has revised the report to correctly identify the DMH as #6 in the calculations and in the report. No further CLD Comment.

5. Erosion Control/Wetland Impacts

a. *Former CLD comment: HR 290-4.A. (4) and (13) The applicant has stated in the construction sequence on Sheet 6 that all disturbed areas shall be stabilized within 30 days of disturbance; however, on Sheet 12 in the Erosion Control notes the applicant states disturbed areas shall be stabilized within 45 days of disturbance. The applicant should conform to the Regulations requiring that disturbed areas be stabilized within 30 days of disturbance.*

Current CLD Comment: The applicant has revised the plans to indicate disturbed areas be stabilized within 30 days of disturbance. No further CLD comment.

b. *Former CLD comment: HR 290-5.B. (1) (d), (m), and (n) The applicant has provided details and indicated on the legend erosion controls that we are unable to locate on the plans, including but not limited to, sediment traps, erosion control blankets, straw bale barrier, staging and stockpile area(s).*

Current CLD Comment: The applicant has updated the erosion control plan. No further CLD comment.

c. *Former CLD comment: HR 290-5.B. (1) (v) The applicant should note how snow will be managed during winter construction conditions.*

Current CLD Comment: The applicant has added a note to the plans. No further CLD comment.

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d. *Former CLD comment: We note the applicant should provide additional erosion control measures along the east side of the site at Ridge Avenue, from Route 111 to the proposed driveway.*

Current CLD Comment: The applicant has added additional silt fence along the east side of the site at Ridge Avenue, from Route 111 to the proposed driveway. No further CLD comment.

8. Other

a. *Former CLD comment: The applicant should review the proposed Sidewalk Ramp with Detectable Warning Surface Detail as it does not match the proposed ramp layouts on the plan.*

Current CLD Comment: The applicant has removed the proposed Sidewalk Ramp with Detectable Warning Surface Detail from the plans as it does not match the proposed ramp layouts on the plan. No further CLD comment.

b. *Former CLD comment: The applicant should identify in the legend the intent for curbing on-site. A bituminous curb detail has been provided but there is no indication on the plan for its intended use.*

Current CLD Comment: The applicant has revised the legend to reflect the intended site curbing. No further CLD comment.

c. *Former CLD comment: The applicant should provide a detail for the bollard to be used in the vinyl trash enclosure detail.*

Current CLD Comment: The applicant has added a bollard detail to the plans. No further CLD comment.

d. *Former CLD comment: The applicant should confirm all appropriate sign details have been provided. We were unable to find a detail for the proposed drive-thru sign.*

Current CLD Comment: The applicant has provided additional sign details. No further CLD comment.

e. *Former CLD comment: The bar scale and listed scale do not match on the Master Plan Sheet.*

Current CLD Comment: The applicant has revised the bar scale to match the listed scale. No further CLD comment.

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Please feel free to call if you have any questions.

Very truly yours,

Heidi J. Marshall, P.E.

Paul Konieczka, AICP

HJM/PK:jt

Enclosure

cc: Town of Hudson Engineering Division – File
Keach-Nordstrom Associates, Inc.
10 Commerce Park North, Suite 3B
Bedford, NH 03110
Fax (603) 627-2915

NEW HAMPSHIRE VERMONT MAINE

540 Commercial Street • Manchester, NH 03101 • ph: (603) 668-8223 • fx: (603) 668-8802 • www.cldengineers.com

CONSULTING ENGINEERS
540 Commercial Street Manchester, NH 03101
(603) 668-8223 • Fax: (603) 668-8802
cld@cldengineers.com • www.cldengineers.com
New Hampshire • Vermont • Maine

TO: File

FROM: Kelsey M. Gagnon KMG

DATE: August 21, 2014

RE: Town of Hudson Planning Board Review
Dairy Queen, 119 Ferry Street
Tax Map 175, Lot 142, PO #1350-843
CLD Reference No. 03-0249.1400

The following list itemizes the second set of documents reviewed related to the current Dairy Queen, 119 Ferry Street review comments.

- Various correspondences between Town of Hudson and CLD, on August 13, 2014.
- Copy of *Response Letter to Traffic Peer Review Comment*, from Greenman-Pedersen, Inc. to Mr. Lynn C. & Ms. Ann M. White, dated August 15, 2014, including the following:
  1. Copy of CLD's Original August 7, 2014 Plan Review Comment Letter.
  2. Copy of *Right-Turn Lane Warrant Analysis Worksheets and Left-Turn Lane Warrant Analysis Worksheets*, dated 2014.
- Letter from the Town of Hudson to CLD, dated August 13, 2014, received August 14, 2014, including the following:
  1. Copy of *Stormwater Management Report, Dairy Queen,* prepared by Keach-Nordstrom Associates, Inc., dated July 18, 2014, revised August 8, 2014 unless otherwise noted, including the following:
     a. *Pre Development Drainage Area Plan*, Sheet 1 of 2.
     b. *Post Development Drainage Area Plan*, Sheet 2 of 2.
  2. Copy of *Non-Residential Site Plan, Dairy Queen, Map 175, Lot 142, 119 Ferry Street, Hudson, NH* Plan Set, prepared by Keach-Nordstrom Associates, Inc., dated July 18, 2014, revised August 8, 2014, unless otherwise noted, including the following:
     a. *Cover Sheet.*
     b. *Master Plan,* Sheet 1 of 13.
     c. *Existing Conditions Plan,* Sheet 2 of 13.
     d. *Demolition/Removals Plan,* Sheet 3 of 13.
     e. *Non-Residential Site Layout Plan,* Sheet 4 of 13.
     f. *Grading & Drainage Plan,* Sheet 5 of 13.
     g. *Utility Plan,* Sheet 6 of 13, dated August 8, 2014.
     h. *Erosion Control Plan,* Sheet 7 of 13.
     i. *Landscape Plan,* Sheet 8 of 13.
     j. *Lighting Plan,* Sheet 9 of 13, prepared by Charron Inc.
     k. *Construction Details,* Sheets 10 through 13 of 13.
- Letter from the Keach-Nordstrom Associates, Inc. to Town of Hudson, dated August 11, 2014, received August 11, 2014, including the following:

1. Two Copies of *Inspection and Maintenance Reporting Form for Dairy Queen*, not dated.
2. Copy of *Stormwater Management Report, Dairy Queen,* prepared by Keach-Nordstrom Associates, Inc., dated July 18, 2014, revised August 8, 2014 unless otherwise noted, including the following:
   a. *Pre Development Drainage Area Plan*, Sheet 1 of 2.
   b. *Post Development Drainage Area Plan*, Sheet 2 of 2.
3. Copy of *Non-Residential Site Plan, Dairy Queen, Map 175, Lot 142, 119 Ferry Street, Hudson, NH* Plan Set, prepared by Keach-Nordstrom Associates, Inc., dated July 18, 2014, revised August 8, 2014, unless otherwise noted, including the following:
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- Letter from the Keach-Nordstrom Associates, Inc. to CLD, dated August 11, 2014, received August 11, 2014, including the following:
  1. Copy of *Response Letter*, from Keach-Nordstrom Associates, Inc. to Town of Hudson, dated August 11, 2014.
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KMG:jt

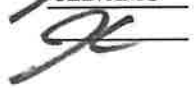
cc: John Cashell – Town of Hudson Planner
Town of Hudson Engineering Division – File

APPLICATION FOR SITE PLAN REVIEW
TOWN OF HUDSON, NEW HAMPSHIRE

Dairy Queen, 119 Ferry Street
Town of Hudson
CLD Reference No. 03-0249.1400
Reviewed August 7, 2014

Thirty (30) days prior to Planning Board Meeting, a complete site plan to include all supporting materials/documents must be submitted in final form. The site plan shall comply with the following specifications/requirements.

Applicant Initials			Staff Initials	
_____	a)	Submission of nine (9) full sets of Site Plans (sheet size: 22" x 34") at the time of application filing, followed by the submission of seventeen (17) 11" x 17" plan sets (revised if applicable) to the Community Development Department no later than 10:00 AM Tuesday the week prior to the scheduled public hearing/conceptual review date.	JC	a) One set received by CLD.
_____	b)	A Site Plan narrative, describing the purpose, locations, long range plans, impacts on traffic, schools and utilities.	CLD/KMG	
_____	c)	Plan scale at not less the one inch equals fifty feet (1" = 50')	CLD/KMG	
_____	d)	Locus plan with 1,000' minimum radius of site to surrounding area	CLD/KMG	
_____	e)	Plan date by day/month/year	JC	e) Plan date by month/day/year.
_____	f)	Revision block inscribed on the plan	CLD/KMG	
_____	g)	Planning Board approval block inscribed on the plan		g) Language does not exactly match Regulation.
_____	h)	Title of project inscribed on the plan	CLD/KMG	
_____	i)	Names and addresses of property owners and their signatures inscribed on the plan	JC	i) Owner's signatures are not inscribed on the plans.
_____	j)	North point inscribed on the plan	CLD/KMG	
_____	k)	Property lines: exact locations and dimensions	CLD/KMG	
_____	l)	Square feet and acreage of site	CLD/KMG	
_____	m)	Square feet of each building (existing & proposed)	JC	m) Square footage of the existing apartment building is not shown on plans. The square footage is noted on the *Preliminary & Final Site Plan Application*. No building heights provided.
_____	n)	Names and addresses of bordering abutters, as shown on Tax Assessor's records not more than five (5) days prior to application date to be listed on the plan	JC	n) Abutters' names and addresses are shown on plan; unable to verify 5-day update criteria.

Applicant Initials			Staff Initials	
_____	o)	Location of all structures, roads, wetlands, hydrants, wells, septic systems, 4k reserve areas, floodways/floodplains, driveways, travel areas, parking areas and natural features within 200 feet of the tract		o) No wells, septic systems, or parking areas shown within 200 feet.
_____	p)	Locations of existing and proposed permanent monuments and benchmarks within 200 feet of the development tract		p) One temporary benchmark has been shown on the plans. We are unable to verify that all locations of existing monuments within 200 feet of the development tract are shown.
_____	q)	Pertinent highway projects		q) No highway projects noted.
_____	r)	Assessor's Map and Lot number(s)	CLD/KMG	
_____	s)	Waiver application form shall be submitted with the site plan application, note on plan listing waivers requested/ granted; and all waivers granted to the site plan regulations shall be listed on the final plan; waivers to checklist shall be reduced to writing and be signed by the Planning Board Chairman and Planning Board Secretary and recorded with the plan.		s) Requested waivers were noted on the plans; however, waiver application forms were not received for review.
_____	t)	Delineate zoning district on the plan		t) Zoning noted, not delineated.
_____	u)	Stormwater drainage plan	CLD/KMG	
_____	v)	Topographical elevations at 2-foot intervals contours: existing and proposed	CLD/KMG	
_____	w)	Utilities: existing and proposed	CLD/KMG	
_____	x)	Parking: existing and proposed		x) The applicant has not included residential parking requirements in the parking calculation formula.
_____	y)	Parking space: length and width	CLD/KMG	
_____	z)	Aisle width/maneuvering space	CLD/KMG	z) WB-50 will not be able to maneuver the site.
_____	aa)	Landscaping: existing and proposed	CLD/KMG	
_____	ab)	Building and wetland setback lines		ab) Applicant noted a variance was granted on July 19, 2014 for building addition within the 50 foot setback. The applicant has proposed parking within the side and front yard setbacks.
_____	ac)	Curb cuts		ac) Curb type not called out on plans only bituminous curb detail provided. No detail for how curb along Ferry Street will tie into the existing retaining wall after the drive is closed.
_____	ad)	Right of way: existing and proposed	CLD/KMG	
_____	ae)	Sidewalks: existing and proposed		ae) No existing or proposed sidewalks are shown.
_____	af)	Exterior lighting plan	CLD/KMG	
_____	ag)	Sign locations: size and design		ag) The applicant has shown a drive-thru sign on the plans but has not provided a detail.
_____	ah)	Water mains and sewerage lines		ah) Applicant has not proposed any changes to existing water or sewer lines. Proposed building expansion is proposed over existing sewer service.
_____	ai)	Location of dumpsters on concrete pads	CLD/KMG	
_____	aj)	All notes from plats	CLD/KMG	

Applicant Initials		Staff Initials	
_____	ak) Buffer as required by site plan regulations	JC	ak) A section of the existing fence between the existing apartment building and the Dairy Queen building is proposed to be removed. (The remainder of the fence is proposed to be relocated.)
_____	al) Green and open space requirements met with percentages of both types of spaces inscribed on the plan	JC	al) Applicant noted waiver requested.
_____	am) Soil types and boundaries, Note: if site contains marginal or questionable soils, a High Intensity Soil Survey (HISS) may be deemed necessary to submit as part of the application. Said HISS, if required, shall be performed by a State of New Hampshire certified Soil Scientist, who shall affix his/her stamp and signature shall be inscribed on the plan.	JC	am) Regulation was repealed in 2010.
_____	an) Wetlands (and poorly-drained and very poorly-drained soils), also identified as Class 5 and Class 6 High Intensity Soil Survey (HISS soils), and permanent and seasonal wetlands shall be identified on the plan by a New Hampshire certified Wetland or Soil Scientist, who shall affix his/her stamp and signature to the respective plan.	JC	an) No wetlands shown on the plan.
_____	ao) "Valid for one year after approval" statement inscribed on the plan	CLD/KMG	
_____	ap) Loading bays/docks	JC	ap) None shown.
_____	aq) State of New Hampshire engineer's stamp, signature, surveyor's stamp, and signature	CLD/KMG	
_____	ar) Error of closure (1 in 10,000 or better)	CLD/KMG	
_____	as) Drafting errors/omissions	CLD/KMG	
_____	at) Developer names, addresses, telephone numbers and signatures	CLD/KMG	
_____	au) Photographs, electronic/digital display or video of site and area	JC	au) None received for review.
_____	av) Attach one (1) copy of the building elevations	JC	av) None received for review.
_____	aw) Fiscal impact study	JC	aw) Not received, applicant noted waiver requested.
_____	ax) Traffic study	CLD/KMG	
_____	ay) Noise study	JC	ay) Not received, applicant noted waiver requested.

Applicant Initials		Staff Initials	
_____ az)	Copies of any proposed or existing easements, covenants, deed restrictions, right of way agreements or other similar documents	JC	az) No deeds or easement documents received for review. No easement shown. Proposed retaining wall, portion of parking lot and curbing are within Ridge Avenues right-of-way. Portion of Adelaide Street on subject parcel.
_____ ba)	Copy of applicable Town, State, Federal approval/permits to include but not limited to the following: - industrial discharge application - sewer application - flood plain permit - wetlands special exception - variance - erosion control permit (149:8a) - septic construction approval - dredge and fill permit - curb cut permit - shoreland protection certification in accordance with RSA483-B - if applicable, review application with Lower Merrimack River Local Advisory Committee (LMRLAC) and attach LMRLAC project comments hereto.	JC	ba) No permits received in package for review.
_____ bb)	Presentation plan (colored, with color coded bar chart)	JC	bb) No presentation plan received, requires a Town action.
_____ bc)	Fees paid to clerk	JC	bc) Requires Town action.
_____ bd)	Five (5) 22" x 34" copies of the plan shall be brought to the Planning Board meeting and distributed to the Planning Board members at the meeting. Note: for all subsequent meetings involving revised plans, five 22" x 34" copies of said plan shall be brought to the meeting for distribution to the board members.	JC	bd) Requires Town action.

• Under the purview of the Planning Board any and all items may be waived.

_____
_____
_____
_____
_____
_____
_____

CAP FEE WORKSHEET

"C"

Date: 08/27/14 Sector #: 6 Map/Lot: 175/142

Project Name: **Dairy Queen -- 119 Ferry Street**

Proposed ITE Use #1: Fast-Food W Drive-Thru

Proposed Building Area (square footage): 1,020 S.F.

CAP FEES: (THREE CHECKS NEEDED)

1. (Bank 08)

(2070-090)	Route 3A:	$3,753.60 (Rte. 3A)
(2070-091)	Route 102:	$1,723.80 (Rte. 102)
(2070-086)	Route 111:	$3,406.80 (Rte. 111)
	Total CAP Fee:	**$8,884.20**

2.

(2050-182)	Recreation:	N/A

3.

(2080-051)	School:	N/A
(2080-052)	Library:	N/A

D-7

PRELIMINARY & FINAL SITE PLAN APPLICATION
FOR PLAN REVIEW (Also for Wireless)
TOWN OF HUDSON, NEW HAMPSHIRE

Date of Application: July 21, 2014 Tax Map # 175 Lot # 142

Name of Project: Dairy Queen

Zoning District: _____ (For Town Use) General SP# 11-14 (For Town Use)

ZBA Action: Variance Granted on June 19, 2014 to Allow Addition within setback.

PROPERTY OWNER:	DEVELOPER:
Name: Lynn C. & Ann M. White Rev. Trust	Same as owner
Address: 119 Ferry Street	
Address: Hudson, NH 03051	
Telephone # (603) 883-0400	
Fax #	
Email:	

HUDSON JUL 25 2014 COMMUNITY DEVELOPMENT

PROJECT ENGINEER	SURVEYOR
Name: Patrick Colburn, P.E. (KNA)	Anthony Basso, L.L.S (KNA)
Address: 10 Commerce Park No., Suite 3	10 Commerce Park No., Suite 3
Address: Bedford, NH 03110	Bedford, NH 03110
Telephone # (603) 627-2881	(603) 627-2881
Fax # (603) 627-2915	(603) 627-2915
Email: pcolburn@keachnordstrom.com	abasso@keachnordstrom.com

PURPOSE OF PLAN:

To propose a 1,020 sf addition on the existing Dairy Queen along with a reconfiguration of parking, access, circulation, stormwater, landscaping and lighting on Lot 142.

For Town Use

Plan Routing Date: 7-24-14 Sub/Site Date: 8-12-14 @ 10:00 AM Bos Mtg Room

___ I have no comments _✓_ I have comments (attach to form)

MAD (Initials) Title: Z.A. Date: 7/28/14

See attached ZBA Approval

DEPT:

___ Zoning ___ Engineering ___ Assessor ___ Police ___ Fire ___ Planning
___ Consultant ___ Highway Department

Fees Paid: _____

Hudson Town Hall
Hudson Zoning Board
12 School Street
Hudson, NH 03051

Town of Hudson

Zoning Board of Adjustment

Decision to Grant a Variance

On **June 19, 2014,** the members of the Hudson Zoning Board of Adjustment, as part of its regular public meeting for that date, heard **Case 175-142**, pertaining to a request by **Lynn C. White and Ann M. White, Trustees of the Lynn C. White and Ann M. White Revocable Trust, 119 Ferry Street, Hudson** for a Variance from the literal provisions of the Hudson Zoning Ordinance Article VII of HTC Section 334-27 Table of Minimum Dimensional Requirements, to permit portions of improvements and renovations to an existing building to be within the fifty foot (50) front yard setback. [Map 175/Lot 142, Zoned B].

Following review of the testimony and deliberation, a majority of the members of this Zoning Board voted that the variance should be granted.

For details of specific discussion relative to this decision, please consult the public minutes recorded during this hearing.

All representations of fact or intention made by the applicant or any applicant's representative(s) during testimony before the Zoning Board of Adjustment relative to the obtaining of this Variance permit shall be considered conditions of the Variance, regardless of the fact that such facts or intentions may not have been specifically stated as stipulations of the motion to grant.

In the event that the requested use subsequently is found by the Hudson Zoning Administrator to demonstrate deliberate or preventable lack of compliance with any applicable stipulation or restriction, including the verbally specified restrictions described in the preceding paragraph, such use shall be held to be in violation of the covenant made with the Board, and corrective action(s) will be enforced under N.H. R.S.A. 676:17, Fines and Penalties, which allows a civil penalty of $275 for the first offense and $550 for subsequent offenses for each day that such violation is found to continue, as well as recovery of costs and reasonable attorney's fees.

Signed: _____ Date: 06-25-14
Chairman, Hudson Zoning Board of Adjustment

Signed: William A Oleksak Date: 6-25-14
Zoning Administrator

PRELIMINARY & FINAL SITE PLAN APPLICATION
FOR PLAN REVIEW (Also for Wireless)
TOWN OF HUDSON, NEW HAMPSHIRE

Date of Application: July 21, 2014 Tax Map # 175 Lot # 142

Name of Project: Dairy Queen

Zoning District: _____ (For Town Use) General SP# 11-14 (For Town Use)

ZBA Action: Variance Granted on June 19, 2014 to Allow Addition within setback.

PROPERTY OWNER:	DEVELOPER:
Name: Lynn C. & Ann M. White Rev. Trust	Same as owner
Address: 119 Ferry Street	
Address: Hudson, NH 03051	
Telephone # (603) 883-0400	
Fax #	
Email:	

HUDSON JUL 25 2014 COMMUNITY DEVELOPMENT

PROJECT ENGINEER	SURVEYOR
Name: Patrick Colburn, P.E. (KNA)	Anthony Basso, L.L.S (KNA)
Address: 10 Commerce Park No., Suite 3	10 Commerce Park No., Suite 3
Address: Bedford, NH 03110	Bedford, NH 03110
Telephone # (603) 627-2881	(603) 627-2881
Fax # (603) 627-2915	(603) 627-2915
Email: pcolburn@keachnordstrom.com	abasso@keachnordstrom.com

PURPOSE OF PLAN:

To propose a 1,020 sf addition on the existing Dairy Queen along with a reconfiguration of parking, access, circulation, stormwater, landscaping and lighting on Lot 142.

For Town Use

Plan Routing Date: 7-24-14 Sub/Site Date: 8-12-14 @ 10:00 AM BOS Mtg Room

✓ I have no comments _____ I have comments (attach to form)

JAB (Initials) Title: Deputy F.M Chief Date: 7/31/2014

DEPT:

_____ Zoning _____ Engineering _____ Assessor ____ Police ✓ Fire ____ Planning

_____ Consultant _____ Highway Department

Fees Paid: _____

PRELIMINARY & FINAL SITE PLAN APPLICATION
FOR PLAN REVIEW (Also for Wireless)
TOWN OF HUDSON, NEW HAMPSHIRE

Date of Application: July 21, 2014 Tax Map # 175 Lot # 142

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For Town Use

Plan Routing Date: 7-24-14 Sub/Site Date: 8-12-14 @ 10:00 AM BOS Mtg Room

✓ I have no comments _____ I have comments (attach to form)

KM Title: ROAD AGENT Date: 7/29/14
(Initials)

DEPT:
_____ Zoning _____ Engineering _____ Assessor ____ Police ____ Fire ____ Planning
_____ Consultant _____ Highway Department

Fees Paid: _____

PRELIMINARY & FINAL SITE PLAN APPLICATION
FOR PLAN REVIEW (Also for Wireless)
TOWN OF HUDSON, NEW HAMPSHIRE

Date of Application: July 21, 2014 Tax Map # 175 Lot # 142

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Address: Hudson, NH 03051	
Telephone # (603) 883-0400	
Fax #	
Email:	

HUDSON JUL 25 2014 COMMUNITY DEVELOPMENT

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PURPOSE OF PLAN:

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For Town Use

Plan Routing Date: 7-24-14 Sub/Site Date: 8-12-14 @ 10:00 AM BOS Mtg Room

D I have no comments _____ I have comments (attach to form)

JA (Initials) Title: Asst. Assessor Date: 7-29-14

DEPT:

_____ Zoning _____ Engineering _____ Assessor ____ Police ____ Fire ____ Planning
_____ Consultant _____ Highway Department

Fees Paid: _____

L2

PRELIMINARY & FINAL SITE PLAN APPLICATION
FOR PLAN REVIEW (Also for Wireless)
TOWN OF HUDSON, NEW HAMPSHIRE

Date of Application: July 21, 2014 Tax Map # 175 Lot # 142

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For Town Use

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X I have no comments _____ I have comments (attach to form)

_____ Title: _____ Date: _____
(Initials)

DEPT:
_____ Zoning _____ Engineering _____ Assessor JL Police _____ Fire _____ Planning
_____ Consultant _____ Highway Department

Fees Paid: _____

TRAFFIC IMPACT AND ACCESS STUDY

DAIRY QUEEN EXPANSION
HUDSON, NEW HAMPSHIRE

GPI

181 BALLARDVALE STREET, SUITE 202
WILMINGTON, MASSACHUSETTS 01887
(978) 570-2999

PREPARED FOR:

LYNN C. & ANN M. WHITE REVOCABLE TRUST
2 BRADFORD CIRCLE
HUDSON, NEW HAMPSHIRE 03051

JULY 2014

Traffic Impact and Access Study
Dairy Queen Expansion
Hudson, New Hampshire
July 2014

TECHNICAL MEMORANDUM

REF: MAX-2014078

DATE: July 29, 2014

TO: Ms. Lynn C. & Ann M. White
Lynn C. & Ann M. White Revocable Trust
2 Bradford Circle
Hudson, New Hampshire 03051

FROM: Ms. Heather L. Monticup, P.E., Project Manager
Ms. Susannah E. Barnes, E.I.T., Engineer

RE: Traffic Impact and Access Study
Dairy Queen Expansion
119 Ferry Street (NH Route 111) – Hudson, New Hampshire

INTRODUCTION

Greenman-Pedersen, Inc. (GPI) has prepared this *Traffic Impact and Access Study* (TIAS) for a proposed Dairy Queen expansion to be located at 119 Ferry Street (NH Route 111) in Hudson, New Hampshire. As proposed, the development consists of expanding the dining room of the existing facility, thereby, increasing the square footage of the building from 1,431 square feet (sf) to 2,451 sf. Access and egress is currently provided via one enter-only driveway on Ferry Street and one full access/egress driveway on Ridge Avenue. As proposed, the enter-only driveway on Ferry Street will be closed and a full access/egress driveway will be added on Adelaide Street. The site is bounded by Ferry Street to the north, residential homes to the south, Adelaide Street to the west, and Ridge Avenue to the east. The site location in relation to the surrounding roadways is shown on the map on Figure 1.

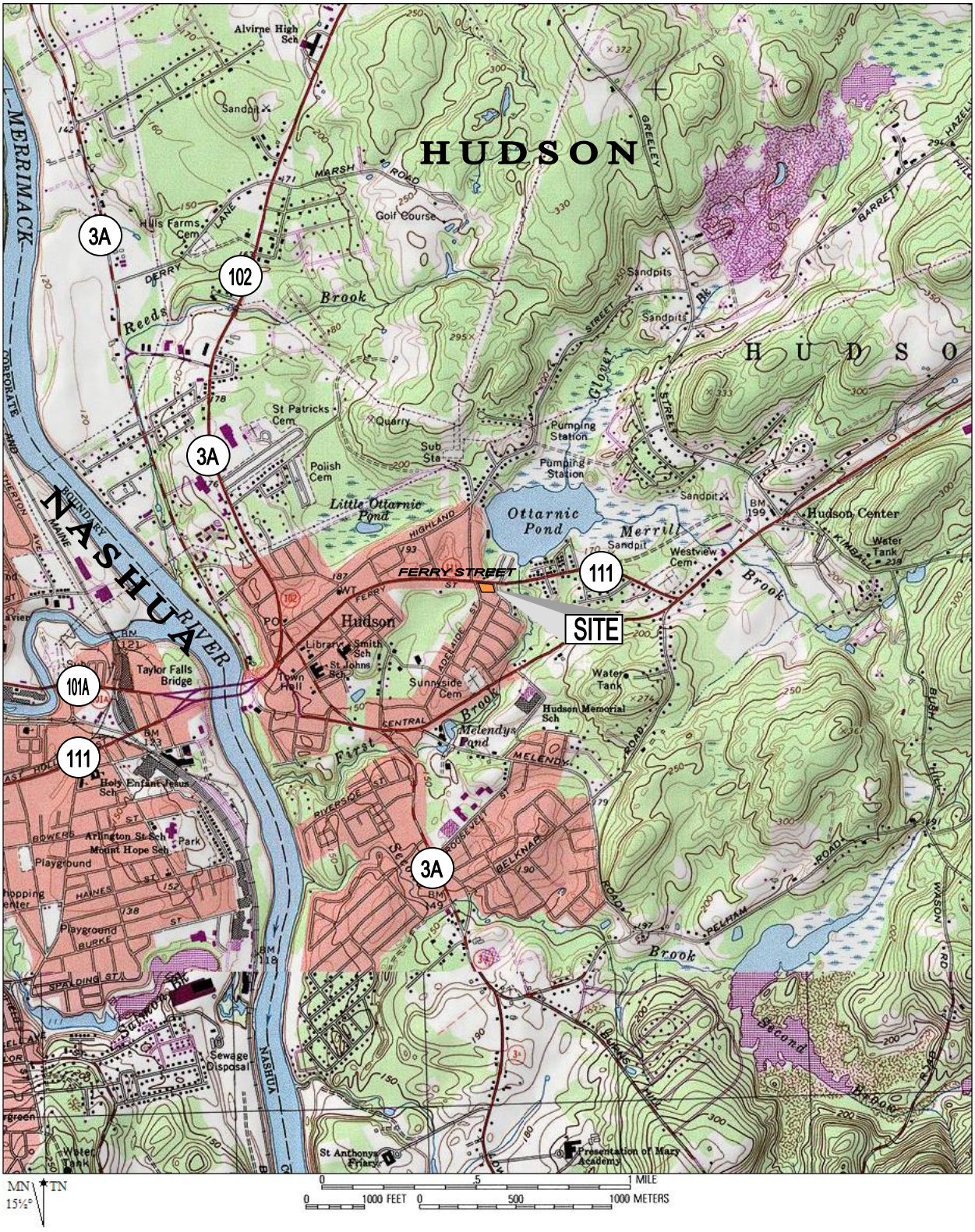

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Figure 1
Site Location Map

EXISTING CONDITIONS

Study Area

Evaluation of the traffic impacts associated with the proposed redevelopment project requires an evaluation of existing and projected traffic volumes on the adjacent streets and site driveways, the volume of traffic expected to be generated by the project, and the impact that this traffic will have on the site driveway intersections. In preparing this study for the proposed site development, the following intersections have been analyzed:

- Ferry Street (NH Route 111) at Existing Enter-Only Site Driveway (119 Ferry Street) and ProTree Performance & Dyno and Automotive Collision Repair Services Driveway
- Ridge Avenue at Site Driveway (119 Ferry Street)
- Ferry Street (NH Route 111) at Adelaide Street and George Street

Ferry Street

Ferry Street is aligned in an overall east-west direction and is under the jurisdiction of the Town of Hudson adjacent to the site. Within the vicinity of the study area, Ferry Street generally provides one through lane and a shoulder in each direction. The posted speed limit along Ferry Street is 30 miles per hour (mph) in the eastbound and westbound directions. Land uses along Ferry Street consist of commercial, industrial, and residential uses.

Traffic Volumes

Base traffic conditions within the study area were developed by conducting manual-turning movement counts (TMCs), vehicle classification counts, and automatic traffic recorder (ATR) counts in July 2014. The TMCs and vehicle classification counts were performed during the weekday PM peak period (4:00 to 6:00 PM) and the Saturday midday peak period (11:00 AM to 2:00 PM). These peak periods were chosen based on the hours of operation of the proposed use and to be consistent with New Hampshire Department of Transportation (NHDOT) traffic study guidelines. ATR counts were collected along Ferry Street, Ridge Avenue, and Adelaide Street adjacent to the site to obtain daily weekday and Saturday traffic volumes and vehicular speed data. All traffic-volume data are provided in the Appendix.

Traffic on a given roadway typically fluctuates throughout the year depending on the area and the type of roadway. Based on NHDOT guidelines for the preparation of a traffic study, existing traffic volumes must represent the peak of the monthly average peak-hour conditions. To determine if the data needed to be adjusted to account for this fluctuation, seasonal adjustment and historical count data provided by NHDOT were reviewed.[1] This information revealed that the July weekday and Saturday traffic volumes are 7.0 and 13.1 percent lower than peak-month conditions, respectively. Additionally, this information indicated that the July traffic volumes are 4.4 percent lower than the peak-month conditions during weekday PM peak period and are 16.0 percent lower than the peak-month conditions during the Saturday midday peak period. Therefore, the traffic counts were upwardly adjusted to reflect peak-month conditions. The NHDOT seasonal adjustment factors are provided in the Appendix.

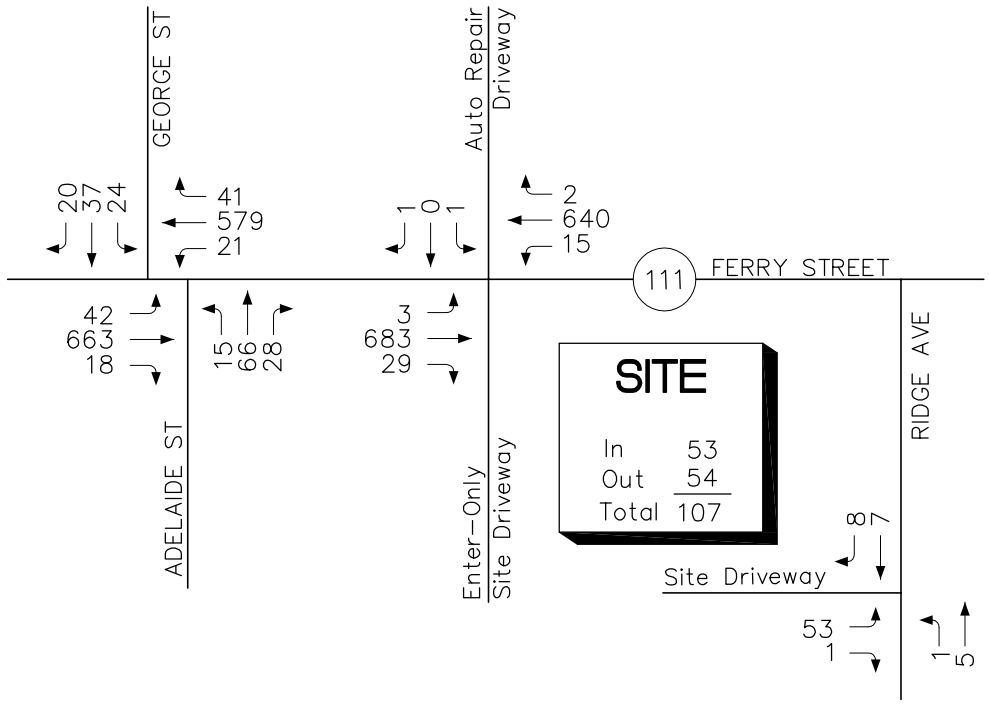
Table 1 summarizes the existing traffic volumes along Ferry Street, Ridge Street, and Adelaide Street adjacent to the site. The 2014 Existing weekday PM and Saturday midday peak-hour traffic-volume networks are shown on Figure 2.

Table 1
EXISTING TRAFFIC-VOLUME SUMMARY

Location/Time Period	Daily Volume (vpd) [a]	Peak Hour Volume (vph) [b]	K Factor (%) [c]	Directional Distribution [d]
Ferry Street adjacent to site:				
Weekday Daily	13,980			
Weekday PM Peak Hour		1,341	9.6	51% EB
Saturday Daily	11,970			
Saturday Midday Peak Hour		1,097	9.2	52% EB
Ridge Avenue adjacent to site:				
Weekday Daily	630			
Weekday PM Peak Hour		73	11.6	79% NB
Saturday Daily	550			
Saturday Midday Peak Hour		51	9.3	86% NB
Adelaide Street adjacent to site:				
Weekday Daily	1,780			
Weekday PM Peak Hour		185	10.4	59% NB
Saturday Daily	1,350			
Saturday Midday Peak Hour		139	10.3	53% SB

[a] In vehicles per day.
[b] In vehicles per hour.
[c] Percentage of daily traffic occurring during the peak hour.
[d] WB = westbound; EB = eastbound; NB = northbound; SB = southbound.

[1] *New Hampshire Department of Transportation Traffic Volume Report*; 2012, Nashua, NH 111 at Hudson TL.



WEEKDAY PM

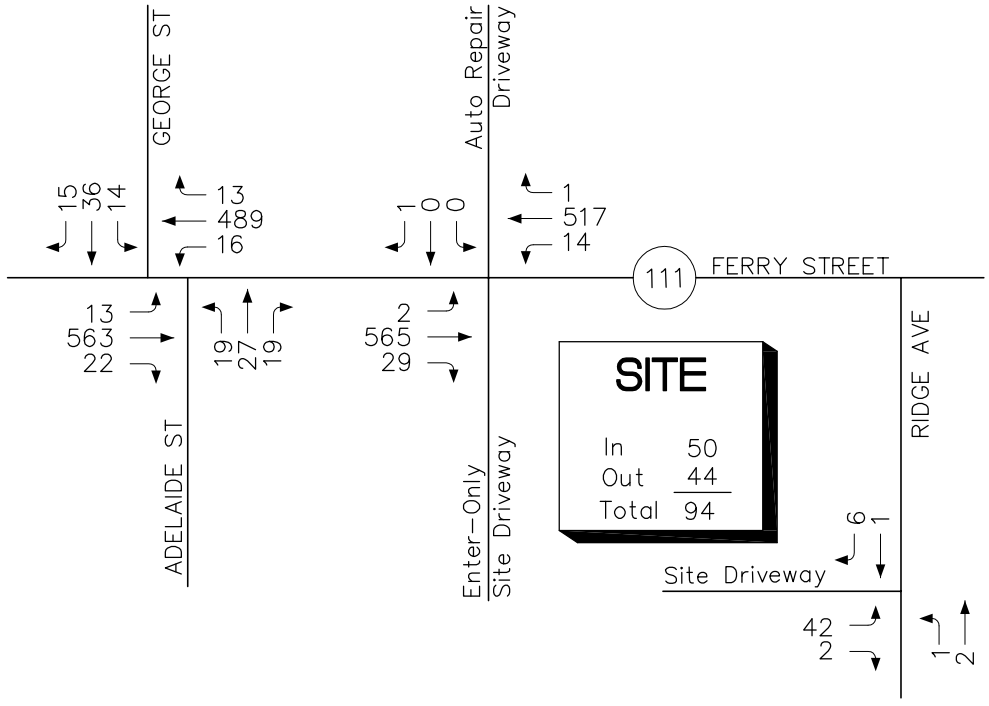


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Figure 2

2014 Existing
Peak Hour Traffic Volumes

Collision History

Collision data for the study area intersections were obtained from the Hudson Police Department (2011 through 2013) and NHDOT (2008 through 2011) for the latest three years available. A summary of the Hudson Police Department and NHDOT collision data at the study area intersections is provided in Table 2.

The intersection of Ferry Street at Ridge Avenue has experienced, on average, 0.33 reported collisions per year. The one collision that occurred between 2011 and 2013 resulted in personal injury and was due to the driver following too closely. The one collision that occurred between 2008 and 2010 resulted in property damage only and occurred in dry conditions.

The off-set intersection of Ferry Street at Adelaide Street and George Street has experienced four collisions between 2011 and 2013, and three collisions between 2008 and 2010. Of the seven collisions, three resulted in personal injury. The causes of collision based on the Hudson Police Department crashes include a rear-end collision, driver distraction, failure to yield, and obscured vision/sun glare.

The intersections with the existing site driveways were also investigated and resulted in no collisions from 2008 through 2010. From 2011 through 2013, one collision occurred at the enter-only driveway on Ferry Street that did not result in personal injury and occurred in dry conditions. The cause of the collision was negligent driving.

Table 2
COLLISION HISTORY SUMMARY

	Number of Crashes		Severity [a]			Roadway Conditions	
Location	Total	Average per Year	PD	PI	F	Dry	Wet/Icy Conditions
Hudson Police Department (2011-2013)							
Ferry Street at Ridge Avenue	1	0.33	--	1	--	1	--
Ferry Street at Adelaide St/George St	4	1.33	2	2	--	4	--
Ferry Street at Enter-Only Driveway	1	0.33	1	--	--	1	--
NHDOT (2008-2010)							
Ferry Street at Ridge Avenue	1	0.33	1	--	--	1	--
Ferry Street at Adelaide St/George St	3	1.00	2	1	--	1	2

Source: Hudson Police Department (2011-2013) and NHDOT Crash Data (2008-2010)
[a] PD = property damage only; PI = personal injury; F = fatality.

Vehicle Speeds

Vehicle speed measurements were conducted along Ferry Street and Adelaide Street adjacent to the proposed site driveways by measuring the elapsed time for vehicles traveling a short, pre-measured distance between two checkpoints. The travel times were recorded using ATRs and the speeds were derived by dividing the elapsed time into the measured distance between checkpoints. The primary use of this information is explained in the *Sight Distance* section where the speeds are correlated to sight distance measurements taken at the location of the site driveways to assure that adequate sight distances exist at the driveways to provide safe operation. The results of the speed measurements are summarized in Table 3.

Table 3
OBSERVED TRAVEL SPEEDS [a]

Location/Direction	Posted Speed Limit	Average Speed [b]	85th Percentile Speed [c]
Ferry Street adjacent to site:			
Eastbound	30	25	36
Westbound	30	25	36
Adelaide Street adjacent to site:			
Northbound	30	19	27
Southbound	30	19	27

[a] In miles per hour (mph).
[b] Average speed of all observed vehicles.
[c] Speed at, or below which 85 percent of all observed vehicles travel.

As shown in Table 3, the average speed along Ferry Street adjacent to the site was found to be 25 mph with the 85th percentile speed to be 36 mph in both directions. The observed speeds were found to be generally consistent with the posted speed limit of 30 mph for both eastbound and westbound travel. The average speed along Adelaide Street adjacent to the site was found to be 19 mph with the 85th percentile speed to be 27 mph in both directions. The observed speeds were found to be lower than the posted speed limit of 30 mph for both northbound and southbound travel due to the proximity of the intersection with Ferry Street. Speed measurements using ATRs could not be conducted on Ridge Avenue due to the curvature of the roadway and close proximity to curb cuts.

FUTURE CONDITIONS

To estimate the impact of site-generated traffic within the study area, existing traffic volumes were projected to the expected opening year of the development (2015) and to the expected opening year plus ten years (2025). These design horizons were chosen to be consistent with the Town of Hudson and NHDOT guidelines for the preparation of a traffic study. Traffic volumes on the roadway network at these times will include existing traffic, new traffic due to normal traffic growth, and traffic related to any significant developments by others expected to be completed within the area by 2015 and 2025. Consideration of these factors resulted in the development of 2015 No-Build and 2025 No-Build traffic volumes, which assume that the proposed development is not built. The incremental impacts of the proposed project may then be determined by adding site-generated traffic volumes (Build conditions) and making comparisons to the No-Build conditions.

Traffic Growth

To develop the 2015 and 2025 No-Build forecast traffic volumes, two components of traffic growth were considered. First, an annual growth percentage was determined. Based on historic traffic-volume counts provided by NHDOT and the Nashua Regional Planning Commission (NRPC), these data indicate that traffic volumes in the area have been decreasing at a rate of approximately 1.12 percent and 1.16 percent per year, respectively. In order to provide a conservative (worse-case) analysis scenario, a 1.0 percent compounded annual traffic growth rate was assumed to account for general population growth and the traffic generated by smaller area developments. The NHDOT and NRPC historical traffic data are provided in the Appendix.

Second, any traffic that may be generated by planned developments that could add a substantial volume of traffic through the study area during the design horizons was considered. Based on discussions with local officials from the Town of Hudson and City of Nashua, there are two planned developments in the vicinity of the project that would be expected to add traffic to the study area roadways; a ±17,209 square foot retail development project[2] at 66 & 68 Derry Road in Hudson and the Renaissance Downtown project[3] at 70 Bridge Street in Nashua. Traffic volumes and methodology associated with the developments were obtained from the corresponding *Traffic Impact and Access Study* prepared for each development and distributed along the adjacent roadway system. All background development data are provided in the Appendix.

[2] *Traffic Impact and Access Study*; Proposed Retail Development; 66 & 68 Derry Road (NH Route 102), Hudson, New Hampshire; Greenman-Pedersen, Inc.; April 11, 2014.

[3] *Traffic Impact and Access Study*; Bridge Street Development; 70 Bridge Street, Nashua, New Hampshire; McFarland Johnson, Inc.

Planned Roadway Improvements

Based on discussions with officials from the Town of Hudson, there are no roadway improvement projects planned to be constructed within the study area during the design horizons.

No-Build Conditions

The 2015 No-Build peak-hour traffic volumes were accordingly developed by applying a total growth of 1.0 percent (1.0 percent compounded over one year) to the 2014 Existing traffic volumes on Ferry Street, Adelaide Street, and George Street. The 2025 No-Build peak-hour traffic volumes were developed by applying a total growth of 11.6 percent (1.0 percent compounded over eleven years) to the 2014 Existing traffic volumes on Ferry Street, Adelaide Street, and George Street. The 2015 No-Build and 2025 No-Build weekday PM and Saturday midday peak-hour traffic-flow networks are graphically depicted on Figures 3 and 4, respectively.

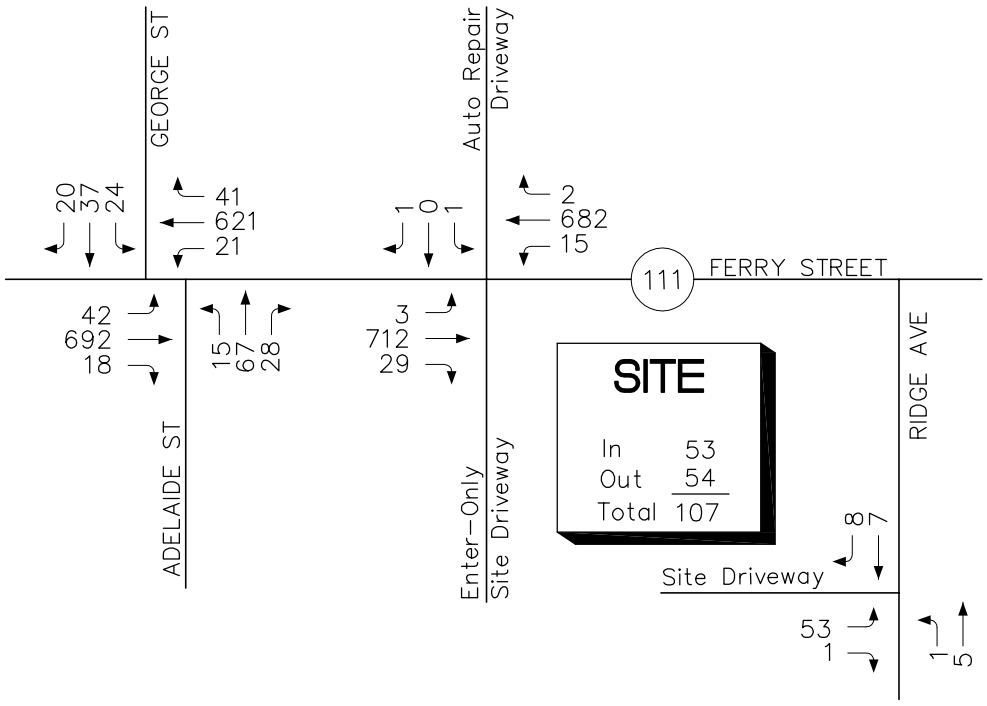
Trip Generation

The site currently contains a ±1,431 square foot Dairy Queen restaurant with a drive-through window. As proposed, the development consists of expanding the existing Dairy Queen restaurant to a ±2,451 square foot Dairy Queen restaurant with a drive-through window. Since the existing traffic counts are higher than the trip-generation information provided in the Institute of Transportation Engineers (ITE) *Trip Generation Manual*[4] for Land Use Code (LUC) 934 (Fast-Food Restaurant with Drive-Through Window), a rate (trip/sf) was used based on the counts for the existing 1,431 sf and applied to the proposed 2,451 sf restaurant. All trip-generation data are provided in the Appendix.

Not all of the vehicle trips expected to be generated by the proposed redevelopment project represent *new* trips on the study area roadway system. Studies have shown that for developments such as the one proposed, a substantial portion of the site-generated vehicle trips are already present in the adjacent passing stream of traffic or are diverted from another route to the proposed site. Based on information published in the ITE *Trip Generation Handbook*, surveys conducted nationwide at fast-food restaurants indicate that, on average, 50 percent of the traffic generated during the weekday PM peak hour is considered *pass-by* traffic, or traffic that is already on the roadway passing the site[5]. Table 4 summarizes the expected peak-hour trip-

[4] *Trip Generation Manual, 9th* Edition; Institute of Transportation Engineers; Washington, DC; 2012.

[5] *Trip Generation Handbook, Second Edition: an ITE Recommended Practice*. Washington, D.C.: Institute of Transportation Engineers, 2004.



WEEKDAY PM

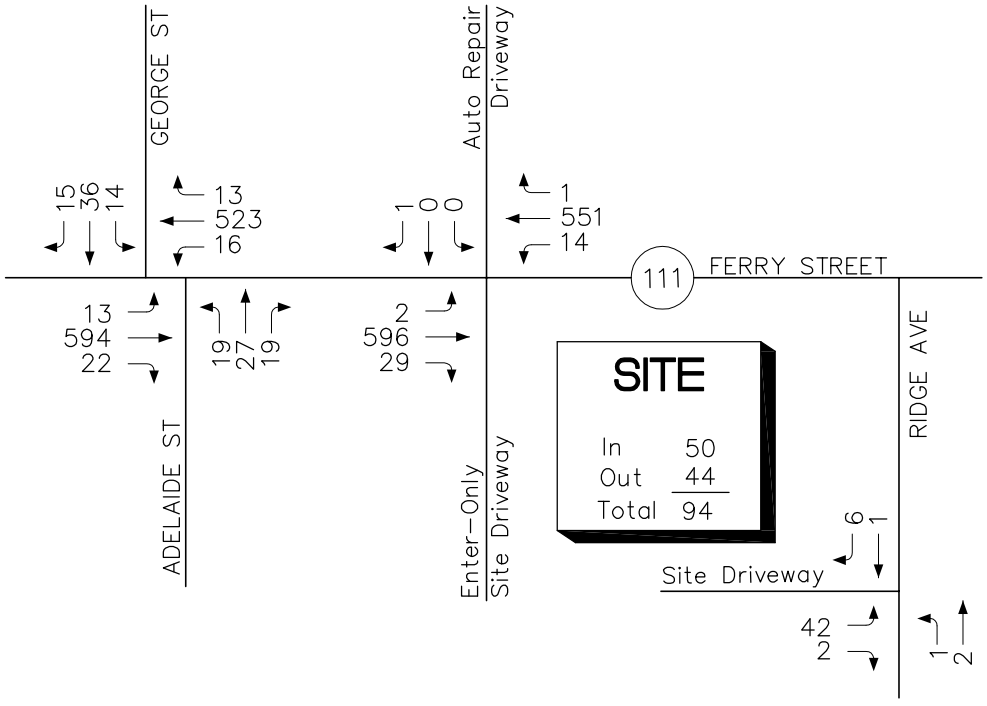


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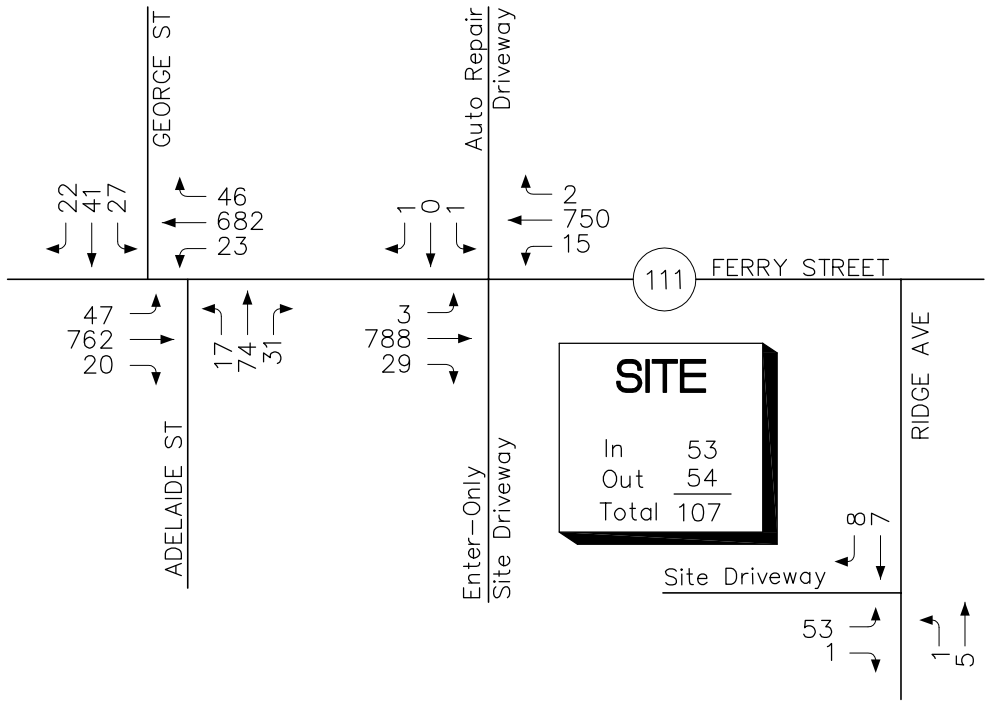
Figure 3

2015 No-Build
Peak Hour Traffic Volumes



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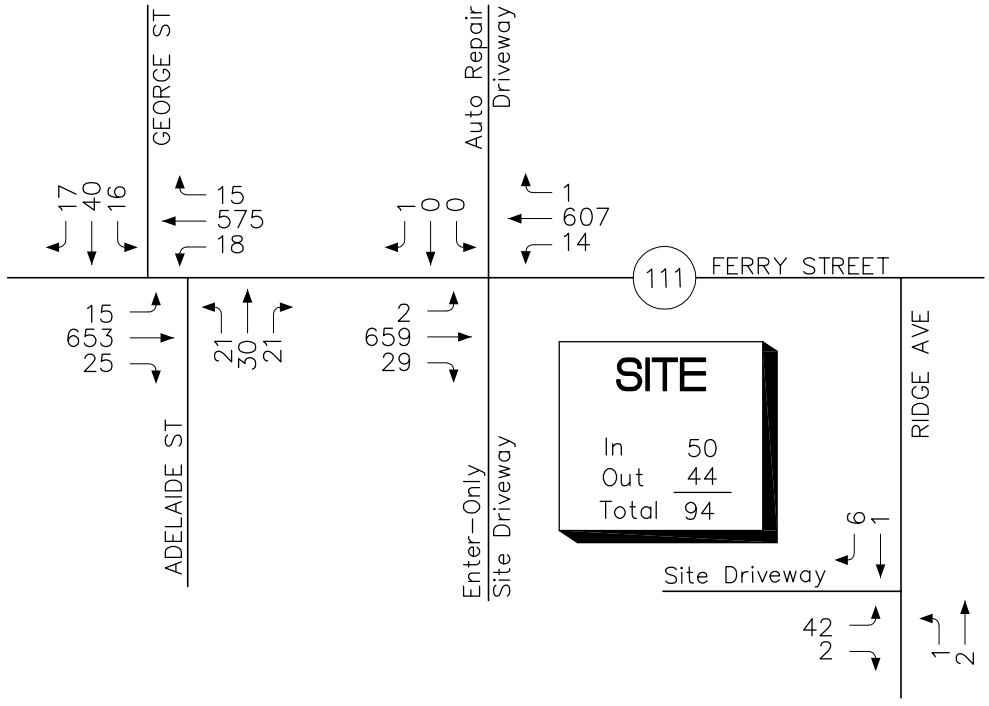

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Figure 4

2025 No-Build
Peak Hour Traffic Volumes

generation characteristics of the proposed Dairy Queen redevelopment project. The *pass-by* data are provided in the Appendix.

Table 4
TRIP-GENERATION SUMMARY

Time Period/Direction	Existing Site Trips [a]	Proposed Site Trips [b]	Additional Trips		
			Total Trips [c]	Pass-By Trips [d]	New Trips [e]
Weekday PM Peak Hour:					
Enter	53	91	38	19	19
Exit	54	92	38	19	19
Total	107	183	76	38	38
Saturday Midday Peak Hour:					
Enter	50	86	36	16	20
Exit	44	75	31	16	15
Total	94	161	67	32	35

[a] Traffic Counts conducted at all three site driveways on July 10, 2014 and July 12, 2014.
[b] Based on a rate (trip/sf) generated by existing counts for the existing 1,431 sf and applied to the proposed 2,451 sf.
[c] Proposed Site Trips minus Existing Site Trips.
[d] 50 percent of Proposed Trips during the weekday PM peak hour and 49 percent during the Saturday midday peak hour.
[e] Additional Trips minus Pass-By Trips.

As shown in Table 4, the proposed development is expected to generate 38 additional *new* vehicle trips (19 entering and 19 exiting) during the weekday PM peak hour and 35 additional *new* vehicle trips (20 entering and 15 exiting) during the Saturday midday peak hour. It should be noted that the volume of *pass-by* traffic does not reduce the total volume of traffic generated by the development and the external trips will still be realized as turning movements at the site driveways.

Trip Distribution

Having estimated project-generated vehicle trips, the next step is to determine the distribution of project traffic and assign these trips to the local roadway network. The directional distribution of site traffic on the area roadways is based on existing travel patterns and expected travel routes to the site. Accordingly, approximately 45 percent of the site-generated traffic is expected to and from the west along Ferry Street, 45 percent is expected to and from the east along Ferry Street, 5 percent is expected to and from the south along Adelaide Street, and 5 percent is expected to and from the north along George Street. The distribution of *pass-by* traffic will follow the

directional distribution of adjacent street traffic during the various peak hours observed on Ferry Street, Adelaide Street, and George Street adjacent to the site.

Sight Distance

Access and egress is currently provided via one enter-only driveway on Ferry Street and one full access/egress driveway on Ridge Avenue. As proposed, the enter-only driveway on Ferry Street will be closed and a full access/egress driveway will be added on Adelaide Street. To identify potential safety concerns associated with site access and egress, sight distances have been evaluated at the existing and proposed site driveways to determine if the available sight distances for vehicles exiting the site meet or exceed the minimum distances required for approaching vehicles to safely stop. The available sight distances were compared with minimum requirements, as established by the American Association of State Highway and Transportation Officials (AASHTO).[6] AASHTO is the national standard by which vehicle sight distance is calculated, measured, and reported. In addition, the available sight distances were compared with the Town of Hudson and NHDOT's requirement of 400 feet of All-Season Safe Sight Distance.

Sight distance is the length of roadway ahead that is visible to the driver. Stopping Sight Distance (SSD) is the minimum distance required for a vehicle traveling at a certain speed to safely stop before reaching a stationary object in its path. The values are based on a driver perception and reaction time of 2.5 seconds and a braking distance calculated for wet, level pavements. When the roadway is either on an upgrade or downgrade, grade correction factors are applied. SSD is measured from an eye height of 3.5 feet to an object height of 2 feet above street level, equivalent to the taillight height of a passenger car. The SSD is measured along the centerline of the traveled way of the major road.

Intersection sight distance (ISD) is provided on minor street approaches to allow the drivers of stopped vehicles a sufficient view of the major roadway to decide when to enter the major roadway. By definition, ISD is the minimum distance required for a motorist exiting a minor street to turn onto the major street, without being overtaken by an approaching vehicle reducing its speed from the design speed to 70 percent of the design speed. The ISD is measured from an eye height of 3.5 feet to an object height of 3.5 feet above street level. The use of an object height equal to the driver eye height makes ISDs reciprocal (i.e., if one driver can see another vehicle, then the driver of that vehicle can also see the first vehicle). When the minor street is on an upgrade that exceeds 3 percent, grade correction factors are applied. The ISD design values for right turns from a minor street are less than the design values for left turns because, in making right turns, drivers generally accept gaps that are slightly shorter than those accepted in making left turns.

[6] *A Policy on Geometric Design of Highways and Streets*; American Association of State Highway and Transportation Officials (AASHTO); 2004.

The SSD is generally more important as it represents the minimum distance required for safe stopping while ISD is based only upon acceptable speed reductions to the approaching traffic stream. The ISD, however, must be equal to or greater than the minimum required SSD in order to provide safe operations at the intersection. In accordance with the AASHTO manual, *"If the available sight distance for an entering or crossing vehicle is at least equal to the appropriate stopping sight distance for the major road, then drivers have sufficient sight distance to anticipate and avoid collisions. However, in some cases, this may require a major-road vehicle to stop or slow to accommodate the maneuver by a minor-road vehicle. To enhance traffic operations, intersection sight distances that exceed stopping sight distances are desirable along the major road."* Accordingly, ISD should be at least equal to the distance required to allow a driver approaching the minor road to safely stop.

The available SSD and ISD at the existing and proposed site driveways were measured in the field and compared to minimum requirements as established by AASHTO. Since the distance required to stop a vehicle is dependent on the speed of that vehicle, speed studies were conducted as presented in the *Existing Conditions: Vehicle Speeds* section. Based on both the posted speed limit and the observed speeds, the SSD and ISD requirements at the site driveway intersections were calculated. The required minimum sight distances for each direction are compared to the available distances, as shown in Table 5.

Table 5
SIGHT DISTANCE SUMMARY

	Stopping Sight Distance (feet)		Intersection Sight Distance (feet)		
Location/Direction	Measured	Minimum Required [a]	Measured	Minimum Required [b]	Desirable [c]
Ridge Avenue at Site Driveway:					
North of Intersection (southbound)	140 [d]	200	140 [d]	200	335
South of Intersection (northbound)	240	200	240	200	335
Adelaide Street at Site Driveway:					
North of Intersection (southbound)	150 [d]	200	150 [d]	200	335
South of Intersection (northbound)	340 [e]	200	340 [e]	200	335

[a] Values based on AASHTO requirements for the posted speed limit of 30 mph since the 85th percentile speeds of 27 mph for Adelaide Street are lower than the posted speed limit; a speed study using ATRs could not be conducted on Ridge Avenue due to the curvature and close proximity to curb cuts, therefore the enforced speed of 30 mph was used.
[b] Values based on AASHTO requirements for SSD.
[c] Values based on AASHTO requirements for enforced speed limit of 30 mph on Ridge Avenue and posted speed limit of 30 mph on Adelaide Street.
[d] Measurement is through the intersection across Ferry Street.
[e] Measurement based on existing vegetation kept low to the ground at edge of 54 and 56 Adelaide Street properties.

As indicated in Table 5, available sight distances at the existing site driveway on Ridge Avenue and the proposed site driveway on Adelaide Street exceed the minimum SSD and ISD requirements for safe operation to the south of both driveway intersections. The distance from the existing site driveway on Ridge Avenue through Ferry Street is 140 feet, which is entirely visible from the site driveway and is deemed safe for design speeds up to 23 mph. 85th percentile speeds could not be conducted on Ridge Avenue adjacent to the site driveway due to the curvature and close proximity to curb cuts. Based on field observations, however, speeds along Ridge Avenue do not appear to exceed the enforced speed limit of 30 mph. The measured sight distance south of the intersection is deemed safe for design speeds up to 34 mph, which is not expected to be exceeded due to the close proximity of Ferry Street. The distance from the proposed site driveway on Adelaide Street through Ferry Street is 150 feet, which is entirely visible from the proposed site driveway and is deemed safe for design speeds up to 24 mph.

The available sight distances at the site driveways do not meet the Town of Hudson and NHDOT's requirement of 400 feet of All-Season Safe Sight Distance, however, the Ridge Avenue driveway is an existing driveway that has already been approved for the use on the site. In addition, the Adelaide site driveway is being constructed as far south on the property to provide as much separation as possible from the Adelaide Street at Ferry Street intersection.

To ensure the safe and efficient flow of traffic to and from the site, it is recommended that any proposed plantings, vegetation, landscaping, and signing along the site frontage be kept low to the ground (no more than 3.0 feet above street level) or set back sufficiently from the edge of Ridge Street, Adelaide Street and the site driveways so as not to inhibit the available sight lines.

Site Access

Access and egress is currently provided via one enter-only driveway on Ferry Street and one full access/egress driveway on Ridge Avenue. As proposed, the enter-only driveway on Ferry Street will be closed and a full access/egress driveway will be added on Adelaide Street. The new driveway configuration allows the lengthening of the drive-through storage lane from 180 feet to 190 feet, and eliminates the potential for the drive-through queue to spill onto Ferry Street. The current driveway on Ferry Street is approximately 100 feet (center to center) from the intersection of Ferry Street at Adelaide Street and the proposed driveway on Adelaide Street is approximately 150 feet (center to center) from the intersection; 50 feet farther which provides safer access/egress to and from the site, especially due to the lower speeds and lower traffic volumes on Adelaide Street.

In addition, is has been observed that there is an issue today with vehicles travelling on Ferry Street with their directional on to turn into the Dairy Queen, however, other motorists think they are turning into Adelaide Street and, therefore, there are some near-miss collisions. By relocating the driveway to Adelaide Street, this confusion is eliminated.

Drive-Through Lane Vehicle Queuing

The proposed facility includes a reconfigured drive-through window lane. The drive-through window lane is proposed to be 20-feet wide and provide approximately 190 feet (9 vehicles) of storage without interrupting on-site circulation and an additional 40 feet (2 vehicles) without disrupting flow on Adelaide Street. This is an improvement over the existing drive-through window lane which can only accommodate 9 vehicles before disrupting flow on Ferry Street.

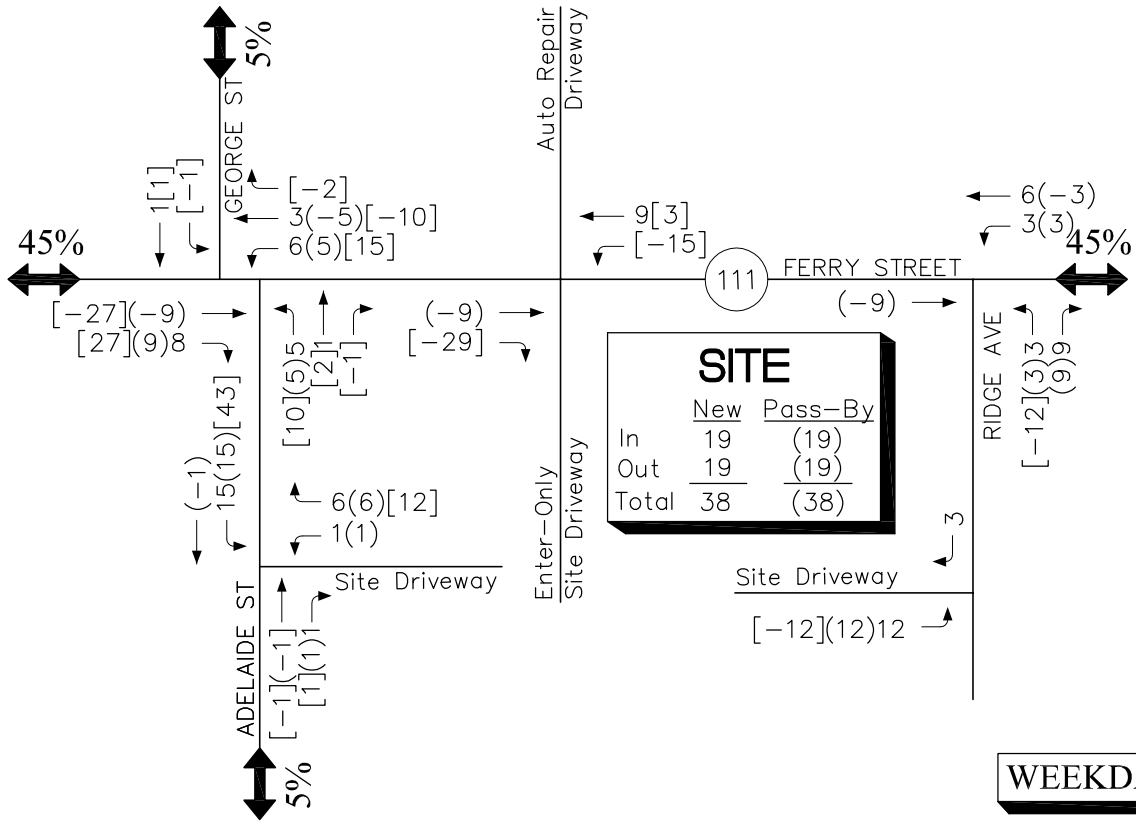
Based on the Town of Hudson Zoning Ordinance, eating and drinking establishments having a drive-through window service shall provide a minimum of 12 vehicle stacking spaces. Accordingly, the proposed Site Plan does not meet the Town's minimum requirement; however, the proposed stacking lane is an improvement over the existing condition and based on observations at the existing site the queue is not expected to exceed 11 vehicles.

Build Traffic Volumes

Based on the traffic-generation and distribution estimates for this project, the traffic volumes associated with the proposed project were assigned to the roadway network. The site-generated traffic network is shown on Figure 5 for the weekday PM and Saturday midday peak hours. The site-generated traffic volumes were then combined with the No-Build traffic volumes to develop the Build peak-hour traffic-volume networks. The 2015 and 2025 Build weekday PM and Saturday midday peak hour traffic volumes are illustrated on Figures 6 and 7, respectively.

Traffic Increases

The proposed development is expected to result in minimal increases in traffic on the study area roadways. As shown on Figure 5, traffic-volume increases beyond the study area during the peak hours are projected to be in the range of 2 to 18 vehicle trips. These increases represent, on average, one additional vehicle every 3 minutes to 30 minutes during the critical peak hours.



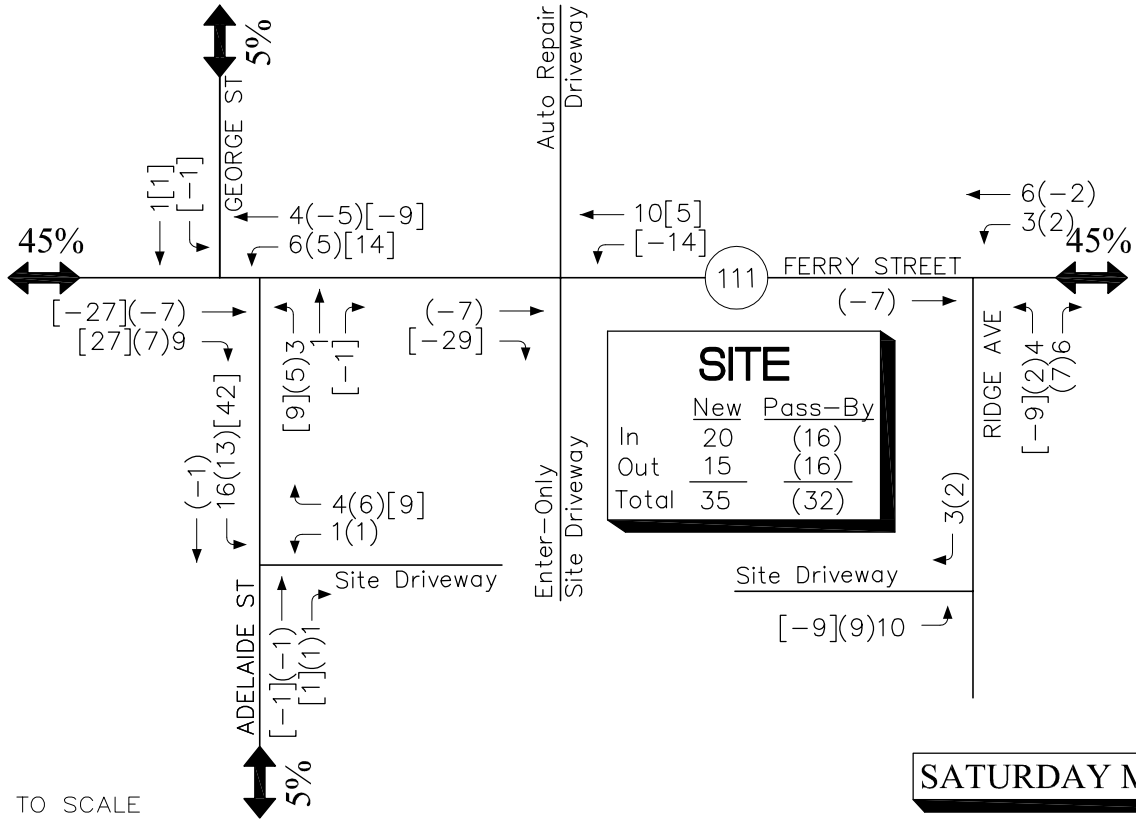


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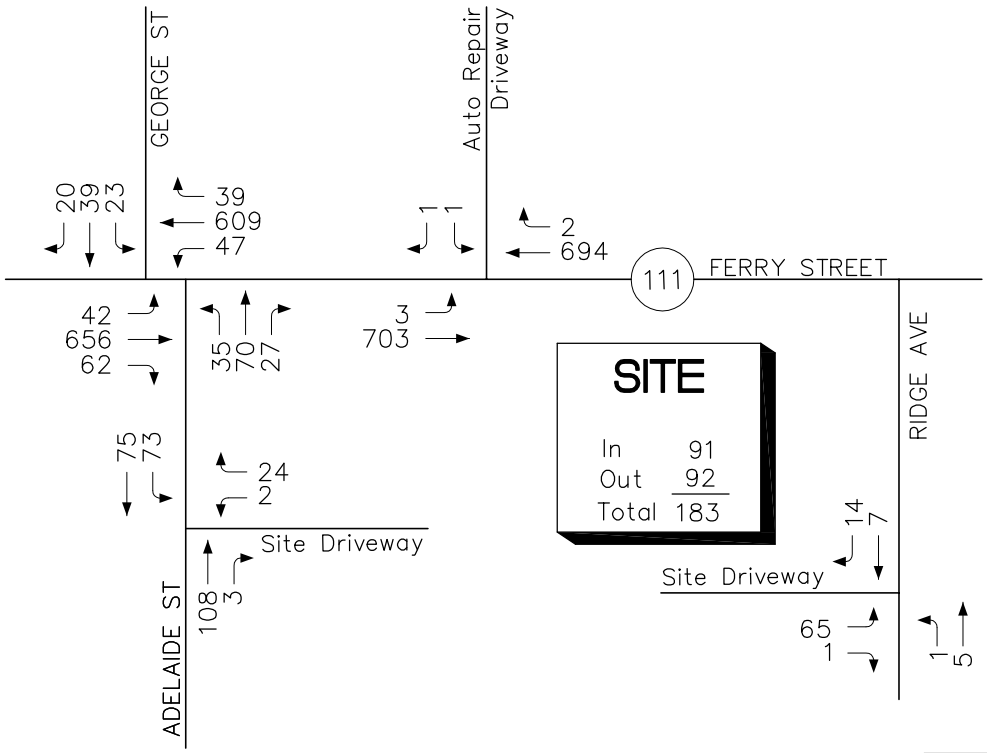
Figure 5

Site-Generated
Peak Hour Traffic Volumes



WEEKDAY PM

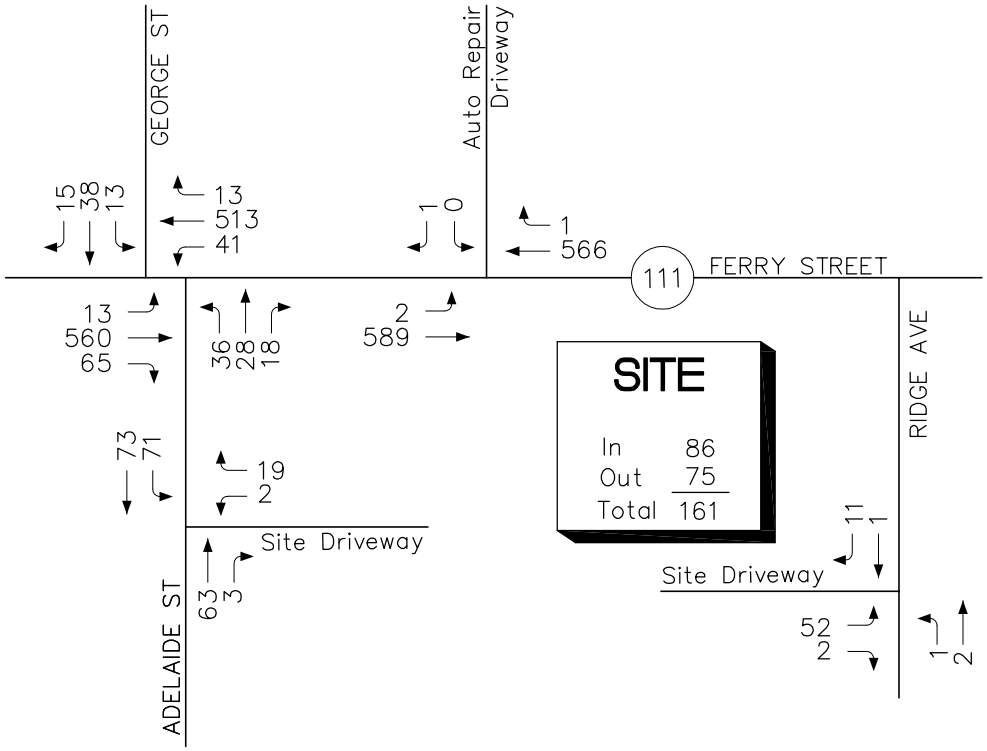


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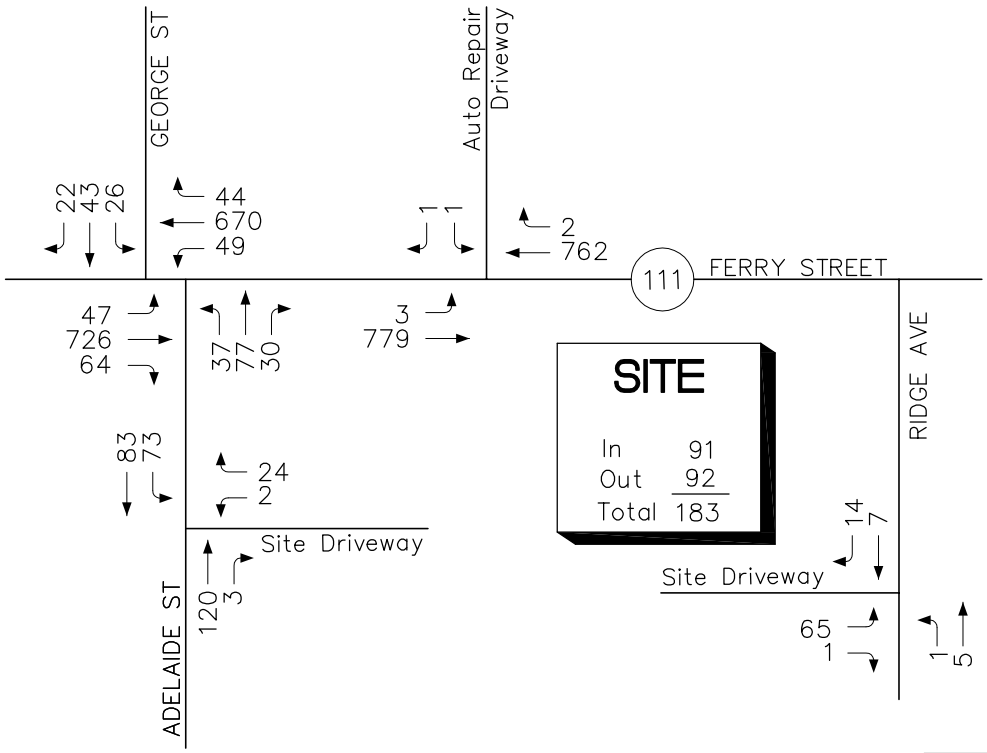
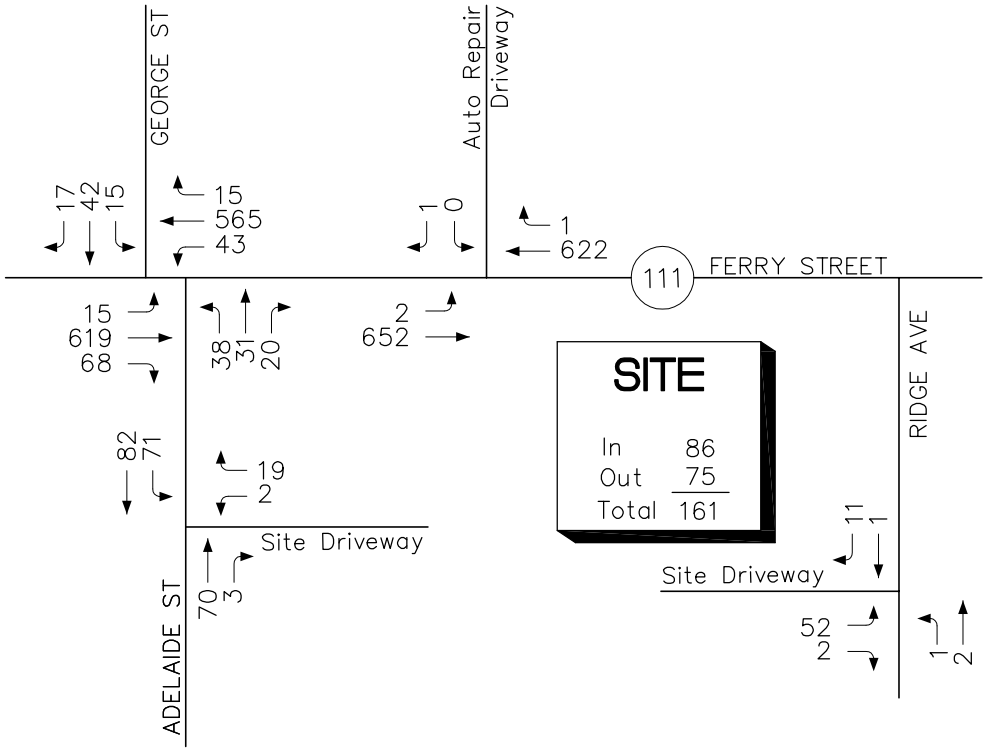
Figure 6

2015 Build
Peak Hour Traffic Volumes



WEEKDAY PM



NOT TO SCALE

SATURDAY MIDDAY

Greenman-Pedersen, Inc.

Engineering and Construction Services

Figure 7

2025 Build
Peak Hour Traffic Volumes

CAPACITY AND QUEUE ANALYSIS

Level-of-service (LOS) analyses were conducted at the study-area intersections under 2014 Existing, 2015 No-Build, 2015 Build, 2025 No-Build, and 2025 Build conditions during the weekday PM and Saturday midday peak hours. The capacity and queue analysis methodology is based on the concepts and procedures in the *Highway Capacity Manual* (HCM) and is described in the Appendix.[7]

The queue analysis methodology for signalized and unsignalized intersections is based on the concepts and procedures described in the HCM. The maximum back of queue during a 95th percentile signal cycle was calculated for each critical lane group during the peak periods studied. The back of queue is the length of a backup of vehicles from the stop line of a signalized intersection to the last vehicle in the queue that is required to stop, regardless of the signal indication. The length of this queue depends on a number of factors including signal timing, vehicle arrival patterns, and the saturation flow rate.

For unsignalized intersections, the 95th percentile queue represents the length of queue of the critical minor-street movement that is not expected to be exceeded 95 percent of the time during the analysis period (typically one hour). In this case, the queue length is a function of the capacity of the movement and the movement's degree of saturation.

Analysis Results

The results of the level-of-service and queue analyses are shown in Table 6 (2015 design year conditions) and Table 7 (2025 design year conditions) and are discussed below. All analysis worksheets are provided in the Appendix.

Capacity and queue analyses were conducted at the study area intersections utilizing Synchro software and the default values in the program. It is expected that motorists typically accept smaller gaps in traffic at unsignalized intersections during peak periods of traffic than reflected in the analysis model and, therefore, do not wait as long to exit into the main line of traffic as shown in the analysis results. Therefore, unsignalized intersection operating results are anticipated to be better than as presented in this memorandum.

[7] *Highway Capacity Manual 2000*; Transportation Research Board; Washington, D.C.; 2000.

Ferry Street at George Street

Under 2015 and 2025 Build traffic-volume conditions, the Ferry Street major street movements are expected to operate at optimal levels (LOS A) during the weekday PM and Saturday midday peak hours.

During the weekday PM peak hour, the George Street approach currently operates at LOS F and will continue to operate at LOS F as a result of background growth and the construction of the development, with increases in delay of less than 13 seconds and increases in queue lengths of less than 1 vehicle.

During the Saturday midday peak hour, the George Street approach currently operates at LOS D. Comparing 2014 Existing and 2015 No-Build traffic-volume conditions, the approach drops from LOS D to LOS E due to historical growth and background developments and remains at LOS E with the construction of the development. Comparing 2014 Existing to 2025 No-Build traffic-volume conditions, the approach drops from LOS D to LOS F due to historical growth and background developments and remains at LOS F with the construction of the development. In addition, all increases in delay on the George Street approach as a result of the redevelopment are expected to be less than 4 seconds and increases in queues to be less than 1 vehicle.

Ferry Street at Adelaide Street

Under 2015 and 2025 Build traffic-volume conditions, the Ferry Street major street movements are expected to operate at optimal levels (LOS A) during the weekday PM and Saturday midday peak hours.

During the weekday PM peak hour, the Adelaide Street approach currently operates with long delays (LOS F). With the addition of historical growth, back ground developments, and the proposed redevelopment, the Adelaide approach is expected to continue to operate with long delays (LOS F).

During the Saturday midday peak hour, the Adelaide Street approach currently operates at LOS D. Under 2015 No-Build traffic-volume conditions, the approach remains at LOS D and drops from LOS D to LOS F as a result of the redevelopment due to an increase in delay of less than 17 seconds. Under 2025 No-Build traffic-volume conditions, the approach drops from LOS D to LOS F and remains at LOS F as a result of the redevelopment.

As mentioned above, the analysis is based on default values in the program. It is expected that motorists typically accept smaller gaps in traffic at unsignalized intersections such as this one during peak periods of traffic than reflected in the analysis model. When queues from this intersection block the Adelaide site driveway, customers have the opportunity to exit the site at the Ridge Avenue driveway.

Ferry Street at Existing Enter-Only Driveway and Auto Repair Driveway

Under 2015 and 2025 Build traffic-volume conditions, the Ferry Street major street movements are expected to operate at optimal levels (LOS A) during the weekday PM and Saturday midday peak hours. The auto repair driveway is anticipated to operate at LOS D or better. Queue lengths are anticipated to be less than 1 vehicle on average with delays less than 30 seconds. Additionally, the volume-to-capacity (v/c) ratios are expected to be well below 1.00, indicating there will be adequate capacity to accommodate the anticipated traffic volumes.

Ridge Avenue at Site Driveway

Under 2015 and 2025 Build traffic-volume conditions, the Ridge Avenue and site driveway intersection is expected to operate at optimal levels (LOS A) during the weekday PM and Saturday midday peak hours. Queue lengths are anticipated to be less than 1 vehicle on average with delays less than 10 seconds. Additionally, the v/c ratios are expected to be well below 1.00, indicating there will be adequate capacity to accommodate the anticipated traffic volumes.

Adelaide Street at Proposed Site Driveway

Under 2015 and 2025 Build traffic-volume conditions, the Adelaide Street and site driveway on Adelaide Street are expected to operate at optimal levels (LOS A) during the weekday PM and Saturday midday peak hours. Queue lengths are anticipated to be less than 1 vehicle on average with delays less than 10 seconds. Additionally, the v/c ratios are expected to be well below 1.00, indicating there will be adequate capacity to accommodate the anticipated traffic volumes.

Table 6
INTERSECTION CAPACITY ANALYSIS SUMMARY – 2015 CONDITIONS

Intersection/Peak Hour/Lane Group	2014 Existing				2015 No-Build				2015 Build			
	V/C [a]	Del. [b]	LOS [c]	Queue [d]	V/C	Del.	LOS	Queue	V/C	Del.	LOS	Queue
Ferry Street at George Street												
Weekday PM:												
Ferry Street EB approach	0.05	1.4	A	--/4	0.06	1.5	A	--/4	0.06	1.5	A	--/4
Ferry Street WB approach	0.44	0.0	A	--/0	0.47	0.0	A	--/0	0.47	0.0	A	--/0
George Street SB approach	0.61	60.2	F	--/81	0.68	74.1	F	--/93	0.70	79.6	F	--/99
Saturday Midday:												
Ferry Street EB approach	0.01	0.4	A	--/1	0.01	0.4	A	--/1	0.02	0.4	A	--/1
Ferry Street WB approach	0.37	0.0	A	--/0	0.40	0.0	A	--/0	0.40	0.0	A	--/0
George Street SB approach	0.39	32.2	D	--/43	0.43	36.8	E	--/49	0.45	38.6	E	--/52
Ferry Street at Adelaide Street												
Weekday PM:												
Ferry Street EB approach	0.46	0.0	A	--/0	0.48	0.0	A	--/0	0.48	0.0	A	--/0
Ferry Street WB approach	0.03	0.7	A	--/2	0.03	0.7	A	--/2	0.06	1.6	A	--/5
Adelaide Street NB approach	0.89	98.8	F	--/160	1.00	131.9	F	--/186	1.33	252.6	F	--/285
Saturday Midday:												
Ferry Street EB approach	0.39	0.0	A	--/0	0.41	0.0	A	--/0	0.42	0.0	A	--/0
Ferry Street WB approach	0.02	0.5	A	--/2	0.02	0.6	A	--/2	0.05	1.4	A	--/4
Adelaide Street NB approach	0.38	30.8	D	--/42	0.42	34.9	D	--/48	0.60	51.5	F	--/83

[a] Volume-to-capacity ratio.
[b] Average control delay in seconds per vehicle.
[c] Level of service.
[d] Maximum queue length in feet per lane (assuming 25 feet per vehicle) that is not expected to be exceeded 95 percent of the time period.

Table 6 (continued)
INTERSECTION CAPACITY ANALYSIS SUMMARY – 2015 CONDITIONS

Intersection/Peak Hour/Lane Group	2014 Existing				2015 No-Build				2015 Build			
	V/C [a]	Del. [b]	LOS [c]	Queue [d]	V/C	Del.	LOS	Queue	V/C	Del.	LOS	Queue
Ferry Street at Existing Enter-Only Driveway												
Weekday PM:												
Ferry Street EB approach	0.00	0.1	A	--/0	0.00	0.1	A	--/0	0.00	0.1	A	--/0
Ferry Street WB approach	0.02	0.5	A	--/1	0.02	0.5	A	--/1	0.45	0.0	A	--/0
Auto Repair Driveway SB approach	0.02	27.3	D	--/2	0.03	30.0	D	--/2	0.02	23.5	C	--/2
Saturday Midday:												
Ferry Street EB approach	0.00	0.1	A	--/0	0.00	0.1	A	--/0	0.00	0.1	A	--/0
Ferry Street WB approach	0.02	0.4	A	--/1	0.02	0.4	A	--/1	0.36	0.0	A	--/0
Auto Repair Driveway SB approach	0.01	11.9	B	--/1	0.01	12.2	B	--/1	0.01	12.4	B	--/1

[a] Volume-to-capacity ratio.
[b] Average control delay in seconds per vehicle.
[c] Level of service.
[d] Maximum queue length in feet per lane (assuming 25 feet per vehicle) that is not expected to be exceeded 95 percent of the time period.

Table 6 (continued)
INTERSECTION CAPACITY ANALYSIS SUMMARY – 2015 CONDITIONS

Intersection/Peak Hour/Lane Group	2014 Existing				2015 No-Build				2015 Build			
	V/C [a]	Del. [b]	LOS [c]	Queue [d]	V/C	Del.	LOS	Queue	V/C	Del.	LOS	Queue
Ridge Avenue at Site Driveway												
Weekday PM:												
Ridge Avenue NB approach	0.00	1.2	A	--/0	0.00	1.2	A	--/0	0.00	1.2	A	--/0
Ridge Avenue SB approach	0.02	0.0	A	--/0	0.02	0.0	A	--/0	0.02	0.0	A	--/0
Site Driveway EB approach	0.09	9.1	A	--/8	0.09	9.1	A	--/8	0.12	9.2	A	--/10
Saturday Midday:												
Ridge Avenue NB approach	0.00	2.4	A	--/0	0.00	2.4	A	--/0	0.00	2.4	A	--/0
Ridge Avenue SB approach	0.01	0.0	A	--/0	0.01	0.0	A	--/0	0.01	0.0	A	--/0
Site Driveway EB approach	0.06	8.8	A	--/4	0.06	8.8	A	--/4	0.07	8.9	A	--/6
Adelaide Street at Proposed Site Driveway												
Weekday PM:												
Adelaide Street NB approach	--	--	--	--/--	--	--	--	--/--	0.09	0.0	A	--/0
Adelaide Street SB approach	--	--	--	--/--	--	--	--	--/--	0.06	4.0	A	--/4
Site Driveway WB approach	--	--	--	--/--	--	--	--	--/--	0.03	9.3	A	--/3
Saturday Midday:												
Adelaide Street NB approach	--	--	--	--/--	--	--	--	--/--	0.05	0.0	A	--/0
Adelaide Street SB approach	--	--	--	--/--	--	--	--	--/--	0.06	4.0	A	--/5
Site Driveway WB approach	--	--	--	--/--	--	--	--	--/--	0.03	9.0	A	--/2

[a] Volume-to-capacity ratio.
[b] Average control delay in seconds per vehicle.
[c] Level of service.
[d] Maximum queue length in feet per lane (assuming 25 feet per vehicle) that is not expected to be exceeded 95 percent of the time period.

Table 7
INTERSECTION CAPACITY ANALYSIS SUMMARY – 2025 CONDITIONS

Intersection/Peak Hour/Lane Group	2014 Existing				2025 No-Build				2025 Build			
	V/C [a]	Del. [b]	LOS [c]	Queue [d]	V/C	Del.	LOS	Queue	V/C	Del.	LOS	Queue
Ferry Street at George Street												
Weekday PM:												
Ferry Street EB approach	0.05	1.4	A	--/4	0.07	1.8	A	--/5	0.07	1.9	A	--/5
Ferry Street WB approach	0.44	0.0	A	--/0	0.51	0.0	A	--/0	0.52	0.0	A	--/0
George Street SB approach	0.61	60.2	F	--/81	0.95	145.9	F	--/146	0.98	158.5	F	--/153
Saturday Midday:												
Ferry Street EB approach	0.01	0.4	A	--/1	0.02	0.5	A	--/1	0.02	0.5	A	--/1
Ferry Street WB approach	0.37	0.0	A	--/0	0.44	0.0	A	--/0	0.44	0.0	A	--/0
George Street SB approach	0.39	32.2	D	--/43	0.58	53.8	F	--/76	0.60	57.3	F	--/80
Ferry Street at Adelaide Street												
Weekday PM:												
Ferry Street EB approach	0.46	0.0	A	--/0	0.53	0.0	A	--/0	0.53	0.0	A	--/0
Ferry Street WB approach	0.03	0.7	A	--/2	0.03	0.9	A	--/3	0.07	1.9	A	--/6
Adelaide Street NB approach	0.89	98.8	F	--/160	1.37	275.8	F	--/277	1.80	461.8	F	--/388
Saturday Midday:												
Ferry Street EB approach	0.39	0.0	A	--/0	0.45	0.0	A	--/0	0.46	0.0	A	--/0
Ferry Street WB approach	0.02	0.5	A	--/2	0.02	0.7	A	--/2	0.06	1.5	A	--/5
Adelaide Street NB approach	0.38	30.8	D	--/42	0.56	50.1	F	--/72	0.78	84.9	F	--/123

[a] Volume-to-capacity ratio.
[b] Average control delay in seconds per vehicle.
[c] Level of service.
[d] Maximum queue length in feet per lane (assuming 25 feet per vehicle) that is not expected to be exceeded 95 percent of the time period.

Table 7 (continued)
INTERSECTION CAPACITY ANALYSIS SUMMARY – 2025 CONDITIONS

Intersection/Peak Hour/Lane Group	2014 Existing				2025 No-Build				2025 Build			
	V/C [a]	Del. [b]	LOS [c]	Queue [d]	V/C	Del.	LOS	Queue	V/C	Del.	LOS	Queue
Ferry Street at Existing Enter-Only Driveway												
Weekday PM:												
Ferry Street EB approach	0.00	0.1	A	--/0	0.00	0.1	A	--/0	0.00	0.1	A	--/0
Ferry Street WB approach	0.02	0.5	A	--/1	0.02	0.6	A	--/2	0.49	0.0	A	--/0
Auto Repair Driveway SB approach	0.02	27.3	D	--/2	0.03	36.5	E	--/3	0.02	27.4	D	--/2
Saturday Midday:												
Ferry Street EB approach	0.00	0.1	A	--/0	0.00	0.1	A	--/0	0.00	0.1	A	--/0
Ferry Street WB approach	0.02	0.4	A	--/1	0.02	0.4	A	--/1	0.39	0.0	A	--/0
Auto Repair Driveway SB approach	0.01	11.9	B	--/1	0.01	12.8	B	--/1	0.01	13.0	B	--/1

[a] Volume-to-capacity ratio.
[b] Average control delay in seconds per vehicle.
[c] Level of service.
[d] Maximum queue length in feet per lane (assuming 25 feet per vehicle) that is not expected to be exceeded 95 percent of the time period.

Table 7 (continued)
INTERSECTION CAPACITY ANALYSIS SUMMARY – 2025 CONDITIONS

Intersection/Peak Hour/Lane Group	2014 Existing				2025 No-Build				2025 Build			
	V/C [a]	Del. [b]	LOS [c]	Queue [d]	V/C	Del.	LOS	Queue	V/C	Del.	LOS	Queue
Ridge Avenue at Site Driveway												
Weekday PM:												
Ridge Avenue NB approach	0.00	1.2	A	--/0	0.00	1.2	A	--/0	0.00	1.2	A	--/0
Ridge Avenue SB approach	0.02	0.0	A	--/0	0.02	0.0	A	--/0	0.02	0.0	A	--/0
Site Driveway EB approach	0.09	9.1	A	--/8	0.09	9.1	A	--/8	0.12	9.2	A	--/10
Saturday Midday:												
Ridge Avenue NB approach	0.00	2.4	A	--/0	0.00	2.4	A	--/0	0.00	2.4	A	--/0
Ridge Avenue SB approach	0.01	0.0	A	--/0	0.01	0.0	A	--/0	0.01	0.0	A	--/0
Site Driveway EB approach	0.06	8.8	A	--/4	0.06	8.8	A	--/4	0.07	8.9	A	--/6
Adelaide Street at Proposed Site Driveway												
Weekday PM:												
Adelaide Street NB approach	--	--	--	--/--	--	--	--	--/--	0.10	0.0	A	--/0
Adelaide Street SB approach	--	--	--	--/--	--	--	--	--/--	0.06	3.8	A	--/5
Site Driveway WB approach	--	--	--	--/--	--	--	--	--/--	0.03	9.4	A	--/3
Saturday Midday:												
Adelaide Street NB approach	--	--	--	--/--	--	--	--	--/--	0.06	0.0	A	--/0
Adelaide Street SB approach	--	--	--	--/--	--	--	--	--/--	0.06	3.8	A	--/5
Site Driveway WB approach	--	--	--	--/--	--	--	--	--/--	0.03	9.1	A	--/2

[a] Volume-to-capacity ratio.
[b] Average control delay in seconds per vehicle.
[c] Level of service.
[d] Maximum queue length in feet per lane (assuming 25 feet per vehicle) that is not expected to be exceeded 95 percent of the time period.

CONCLUSIONS

Existing and future conditions in the study area have been described, analyzed, and evaluated with respect to traffic operations and the impact of the proposed expansion project. Conclusions of this effort and recommendations are presented below.

- The site currently contains a 1,431 square-foot Dairy Queen restaurant with a drive-through window. As proposed, the development consists of expanding the dining room of the existing facility, thereby, increasing the square footage of the building from 1,431 sf to 2,451 sf.

- Access and egress is currently provided via one enter-only driveway on Ferry Street and one full access/egress driveway on Ridge Avenue. As proposed, the enter-only driveway on Ferry Street will be closed and a full access/egress driveway will be added on Adelaide Street.

- The proposed development is expected to generate 38 additional *new* vehicle trips (19 entering and 19 exiting) during the weekday PM peak hour and 35 additional *new* vehicle trips (20 entering and 15 exiting) during the Saturday midday peak hour. Traffic-volume increases beyond the study area during the peak hours are expected to be in the range of 2 to 18 vehicle trips. These increases represent, on average, one additional vehicle every 3 minutes to 30 minutes during the critical peak hours.

- The proposed facility includes a reconfigured drive-through window lane. The drive-through window lane is proposed to be 20-feet wide and striped to provide approximately 190 feet of storage which can accommodate 9 vehicles without disrupting on-site circulation. An additional 40 feet (2 vehicles) of storage is available without disrupting flow on Adelaide Street. The proposed Site Plan does not meet the Town's minimum requirement of 12 vehicle stacking spaces; however, the stacking is an improvement over the existing condition which could potentially spill out onto Ferry Road and based on observations at the existing site the queue is not expected to exceed 11 vehicles.

- Under 2015 and 2025 Build traffic-volume conditions, the Ferry Street major street movements at George Street are expected to operate at optimal levels (LOS A) during the weekday PM and Saturday midday peak hours. During the weekday PM peak hour, the George Street approach currently operates at LOS F and will continue to operate at LOS F as a result of background growth and the construction of the development, with increases in delay of less than 13 seconds and increases in queue lengths of less than 1 vehicle. During the Saturday midday peak hour, the George Street approach currently operates at LOS D. Comparing 2014 Existing and 2015 No-Build traffic-volume conditions, the

approach drops from LOS D to LOS E due to historical growth and background developments and remains at LOS E with the construction of the development. Comparing 2014 Existing to 2025 No-Build traffic-volume conditions, the approach drops from LOS D to LOS F due to historical growth and background developments and remains at LOS F with the construction of the development. In addition, all increases in delay on the George Street approach as a result of the redevelopment are expected to be less than 4 seconds and increases in queues to be less than 1 vehicle.

- Under 2015 and 2025 Build traffic-volume conditions, the Ferry Street major street movements at Adelaide Street are expected to operate at optimal levels (LOS A) during the weekday PM and Saturday midday peak hours. During the weekday PM peak hour, the Adelaide Street approach currently operates with long delays (LOS F). With the addition of historical growth, back ground developments, and the proposed redevelopment, the Adelaide approach is expected to continue to operate with long delays (LOS F). During the Saturday midday peak hour, the Adelaide Street approach currently operates at LOS D. Under 2015 No-Build traffic-volume conditions, the approach remains at LOS D and drops from LOS D to LOS F as a result of the redevelopment due to an increase in delay of less than 17 seconds. Under 2025 No-Build traffic-volume conditions, the approach drops from LOS D to LOS F and remains at LOS F as a result of the redevelopment.

- The Ferry Street enter-only driveway will be closed as part of the proposed redevelopment. Under 2015 and 2025 Build traffic-volume conditions, the Ferry Street major street movements at the auto repair driveway are expected to operate at optimal levels (LOS A) during the weekday PM and Saturday midday peak hours. The auto repair driveway is anticipated to operate at LOS D or better. Queue lengths are anticipated to be less than 1 vehicle on average with delays less than 30 seconds. Additionally, the v/c ratios are expected to be well below 1.00, indicating there will be adequate capacity to accommodate the anticipated traffic volumes.

- Under 2015 and 2025 Build traffic-volume conditions, the site driveway intersections are expected to operate at optimal levels (LOS A) during the weekday PM and Saturday midday peak hours. Queue lengths are anticipated to be less than 1 vehicle on average with delays less than 10 seconds. Additionally, the v/c ratios are expected to be well below 1.00, indicating there will be adequate capacity to accommodate the anticipated traffic volumes.

APPENDIX

TRAFFIC-COUNT DATA
TRAFFIC-VOLUME ADJUSTMENT DATA
BACKGROUND DEVELOPMENT DATA
TRIP-GENERATION DATA
CAPACITY ANALYSIS METHODOLOGY
CAPACITY AND QUEUE ANALYSIS WORKSHEETS

TRAFFIC-COUNT DATA

Traffic Survey Expedition
106 Sharon Road
N. Quincy, MA 02171
P: 617-448-5636
F: 617-301-3300
www.tsetraffic.com

GPI Project #:2014078.00
Hudson, NH
Client: John DeBarros

Site Code: 1
Station ID: Ferry Street
Next To DQ Site

Start Time	10-Jul-14 Thu	Westbound	Eastbound	Combined Total
12:00 AM		54	43	97
01:00		38	47	85
02:00		28	29	57
03:00		19	20	39
04:00		36	62	98
05:00		101	150	251
06:00		254	267	521
07:00		371	353	724
08:00		405	370	775
09:00		344	370	714
10:00		278	363	641
11:00		267	345	612
12:00 PM		284	360	644
01:00		304	315	619
02:00		317	376	693
03:00		370	463	833
04:00		414	549	963
05:00		397	574	971
06:00		381	509	890
07:00		288	334	622
08:00		262	332	594
09:00		185	279	464
10:00		186	181	367
11:00		75	87	162
Total		5658	6778	12436
Percent		45.5%	54.5%	

Traffic Survey Expedition
106 Sharon Road
N. Quincy, MA 02171
P: 617-448-5686
F: 617-801-8800
www.tsetraffic.com

GPI Project #:2014078.00
Hudson, NH
Client: John DeBarros

Site Code: 1
Station ID: Ferry Street
Next To DQ Site

Start Time	11-Jul-14 Fri	Westbound	Eastbound	Combined Total
12:00 AM		53	61	114
01:00		41	40	81
02:00		28	35	63
03:00		21	21	42
04:00		40	74	114
05:00		109	152	261
06:00		263	262	525
07:00		386	373	759
08:00		400	357	757
09:00		331	371	702
10:00		275	356	631
11:00		307	401	708
12:00 PM		320	347	667
01:00		320	356	676
02:00		319	419	738
03:00		389	481	870
04:00		384	590	974
05:00		445	544	989
06:00		404	498	902
07:00		324	342	666
08:00		252	273	525
09:00		207	247	454
10:00		271	335	606
11:00		99	139	238
Total		5988	7074	13062
Percent		45.8%	54.2%	

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F: 617-801-8300
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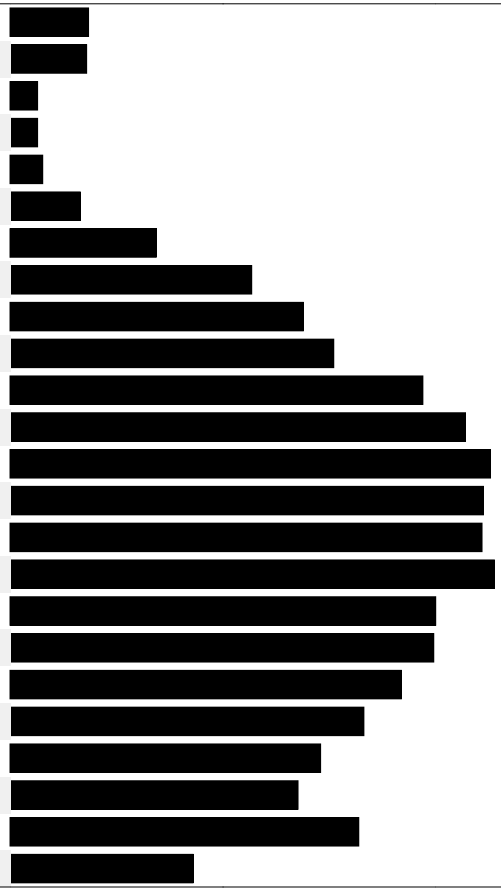
GPI Project #:2014078.00
Hudson, NH
Client: John DeBarros

Site Code: 1
Station ID: Ferry Street
Next To DQ Site

Start Time	12-Jul-14 Sat	Westbound	Eastbound	Combined Total
12:00 AM		59	63	122
01:00		47	72	119
02:00		16	27	43
03:00		24	19	43
04:00		19	32	51
05:00		48	61	109
06:00		104	123	227
07:00		179	196	375
08:00		222	233	455
09:00		235	267	502
10:00		287	353	640
11:00		311	395	706
12:00 PM		311	434	745
01:00		303	431	734
02:00		309	423	732
03:00		332	419	751
04:00		299	361	660
05:00		291	366	657
06:00		312	295	607
07:00		265	284	549
08:00		219	263	482
09:00		208	239	447
10:00		297	244	541
11:00		165	119	284
Total		4862	5719	10581
Percent		46.0%	54.0%	
Grand Total		16508	19571	
Percentage		45.8%	54.2%	
ADT		ADT 11,362		AADT 11,362



Traffic Survey Expedition
106 Sharon Road
N. Quincy, MA 02171
P: 617-448-5686
F: 617-801-8800
www.tsetraffic.com

GPI Project #:2014078.00
Hudson, NH
Client: John DeBarros

Site Code: 1
Station ID: Ferry Street
Next To DQ Site

Start Time	10-Jul-14 Thu	Westbound A.M.	Westbound P.M.	Eastbound A.M.	Eastbound P.M.	Combined A.M.	Combined P.M.	11-Jul- Fri	Westbound A.M.	Westbound P.M.	Eastbound A.M.	Eastbound P.M.	Combined A.M.	Combined P.M.
12:00		19	74	13	81	32	155		21	87	14	88	35	175
12:15		10	88	10	95	20	183		10	82	13	86	23	168
12:30		11	62	11	98	22	160		10	86	20	89	30	175
12:45		14	60	9	86	23	146		12	65	14	84	26	149
01:00		8	82	14	81	22	163		8	86	11	88	19	174
01:15		8	72	18	84	26	156		15	77	11	91	26	168
01:30		8	70	6	80	14	150		6	69	9	100	15	169
01:45		14	80	9	70	23	150		12	88	9	77	21	165
02:00		6	79	6	82	12	161		5	86	13	94	18	180
02:15		12	81	10	97	22	178		13	71	8	111	21	182
02:30		6	77	7	94	13	171		7	84	9	115	16	199
02:45		4	80	6	103	10	183		3	78	5	99	8	177
03:00		4	100	6	119	10	219		3	109	8	126	11	235
03:15		5	81	8	123	13	204		8	84	3	120	11	204
03:30		5	99	3	113	8	212		5	108	5	119	10	227
03:45		5	90	3	108	8	198		5	88	5	116	10	204
04:00		6	99	4	146	10	245		8	99	6	***135***	14	234
04:15		5	111	17	129	22	240		6	98	19	***146***	25	244
04:30		13	102	14	130	27	232		12	89	19	***162***	31	251
04:45		12	102	27	***144***	39	***246***		14	98	30	***147***	44	245
05:00		15	97	35	***156***	50	***253***		8	113	34	132	42	245
05:15		16	90	38	***138***	54	***228***		27	***116***	31	134	58	***250***
05:30		33	***101***	41	***148***	74	***249***		30	***116***	48	158	78	***274***
05:45		37	***109***	36	132	73	241		44	***100***	39	120	83	***220***
06:00		44	***107***	55	118	99	225		46	***121***	63	153	109	***274***
06:15		50	***98***	57	159	107	257		57	105	49	127	106	232
06:30		65	95	79	130	144	225		67	106	80	115	147	221
06:45		95	81	76	102	171	183		93	72	70	103	163	175
07:00		76	85	70	82	146	167		72	94	80	92	152	186
07:15		92	81	83	97	175	178		97	84	88	84	185	168
07:30		***104***	62	***98***	70	***202***	132		***116***	71	116	69	***232***	140
07:45		***99***	60	***102***	85	***201***	145		***101***	75	89	97	***190***	172
08:00		***105***	63	***108***	92	***213***	155		***109***	73	98	63	***207***	136
08:15		***105***	64	***97***	68	***202***	132		***103***	80	99	64	***202***	144
08:30		90	63	89	92	179	155		87	48	86	70	173	118
08:45		105	72	76	80	181	152		101	51	74	76	175	127
09:00		106	66	100	78	206	144		115	60	101	78	216	138
09:15		75	40	93	85	168	125		70	51	96	53	166	104
09:30		78	40	98	52	176	92		62	42	101	69	163	111
09:45		85	39	79	64	164	103		84	54	73	47	157	101
10:00		71	49	85	57	156	106		75	49	86	70	161	119
10:15		76	45	90	43	166	88		72	68	91	84	163	152
10:30		66	40	91	41	157	81		68	68	58	90	126	158
10:45		65	52	97	40	162	92		60	86	***121***	91	181	177
11:00		71	26	91	23	162	49		93	49	***100***	35	193	84
11:15		70	16	70	17	140	33		73	16	***92***	40	165	56
11:30		72	17	87	22	159	39		85	19	***91***	42	176	61
11:45		54	16	97	25	151	41		56	15	118	22	174	37
Total		2195	3463	2419	4359	4614	7822		2254	3734	2503	4571	4757	8305
Day Total		5658		6778		12436			5988		7074		13062	
% Total		17.7%	27.8%	19.5%	35.1%				17.3%	28.6%	19.2%	35.0%		
Peak	-	07:30	05:30	07:30	04:45	07:30	04:45	-	07:30	05:15	10:45	04:00	07:30	05:15
Vol.	-	413	415	405	586	818	976	-	429	453	404	590	831	1018
P.H.F.		0.983	0.935	0.938	0.939	0.960	0.964		0.925	0.936	0.835	0.910	0.895	0.929

Traffic Survey Expedition
106 Sharon Road
N. Quincy, MA 02171
P: 617-448-5686
F: 617-801-8800
www.tsetraffic.com

GPI Project #:2014078.00
Hudson, NH
Client: John DeBarros

Site Code: 1
Station ID: Ferry Street
Next To DQ Site

Start Time	12-Jul-14 Sat	Westbound A.M.	Westbound P.M.	Eastbound A.M.	Eastbound P.M.	Combined A.M.	Combined P.M.	13-Jul- Sun	Westbound A.M.	Westbound P.M.	Eastbound A.M.	Eastbound P.M.	Combined A.M.	Combined P.M.
12:00		18	68	26	91	44	159		*	*	*	*	*	*
12:15		19	86	15	***121***	34	***207***		*	*	*	*	*	*
12:30		12	65	14	***116***	26	***181***		*	*	*	*	*	*
12:45		10	92	8	***106***	18	***198***		*	*	*	*	*	*
01:00		12	78	24	***116***	36	***194***		*	*	*	*	*	*
01:15		10	72	15	100	25	172		*	*	*	*	*	*
01:30		17	64	17	111	34	175		*	*	*	*	*	*
01:45		8	89	16	104	24	193		*	*	*	*	*	*
02:00		2	72	9	99	11	171		*	*	*	*	*	*
02:15		3	79	5	112	8	191		*	*	*	*	*	*
02:30		7	79	9	98	16	177		*	*	*	*	*	*
02:45		4	***79***	4	114	8	193		*	*	*	*	*	*
03:00		4	***85***	4	88	8	173		*	*	*	*	*	*
03:15		5	***94***	6	125	11	219		*	*	*	*	*	*
03:30		6	***80***	5	111	11	191		*	*	*	*	*	*
03:45		9	73	4	95	13	168		*	*	*	*	*	*
04:00		1	85	7	84	8	169		*	*	*	*	*	*
04:15		6	63	7	77	13	140		*	*	*	*	*	*
04:30		5	76	12	100	17	176		*	*	*	*	*	*
04:45		7	75	6	100	13	175		*	*	*	*	*	*
05:00		4	63	7	101	11	164		*	*	*	*	*	*
05:15		9	61	11	80	20	141		*	*	*	*	*	*
05:30		15	79	18	101	33	180		*	*	*	*	*	*
05:45		20	88	25	84	45	172		*	*	*	*	*	*
06:00		19	78	22	83	41	161		*	*	*	*	*	*
06:15		17	82	20	63	37	145		*	*	*	*	*	*
06:30		34	64	39	79	73	143		*	*	*	*	*	*
06:45		34	88	42	70	76	158		*	*	*	*	*	*
07:00		38	72	38	62	76	134		*	*	*	*	*	*
07:15		39	70	45	77	84	147		*	*	*	*	*	*
07:30		43	65	48	67	91	132		*	*	*	*	*	*
07:45		59	58	65	78	124	136		*	*	*	*	*	*
08:00		52	62	49	47	101	109		*	*	*	*	*	*
08:15		53	58	55	84	108	142		*	*	*	*	*	*
08:30		58	46	69	68	127	114		*	*	*	*	*	*
08:45		59	53	60	64	119	117		*	*	*	*	*	*
09:00		57	60	55	60	112	120		*	*	*	*	*	*
09:15		58	48	76	55	134	103		*	*	*	*	*	*
09:30		58	49	68	55	126	104		*	*	*	*	*	*
09:45		62	51	68	69	130	120		*	*	*	*	*	*
10:00		68	66	90	58	158	124		*	*	*	*	*	*
10:15		73	43	104	49	177	92		*	*	*	*	*	*
10:30		71	81	76	60	147	141		*	*	*	*	*	*
10:45		75	107	83	77	158	184		*	*	*	*	*	*
11:00		***68***	61	***98***	41	***166***	102		*	*	*	*	*	*
11:15		***81***	39	***82***	24	***163***	63		*	*	*	*	*	*
11:30		***71***	27	***108***	32	***179***	59		*	*	*	*	*	*
11:45		***91***	38	***107***	22	***198***	60		*	*	*	*	*	*
Total		1551	3311	1841	3878	3392	7189		0	0	0	0	0	0
Day Total		4862		5719		10581			0		0		0	
% Total		14.7%	31.3%	17.4%	36.7%				0.0%	0.0%	0.0%	0.0%		
Peak	-	11:00	02:45	11:00	00:15	11:00	00:15	-	-	-	-	-	-	-
Vol.	-	311	338	395	459	706	780	-	-	-	-	-	-	-
P.H.F.		0.854	0.899	0.914	0.948	0.891	0.942							

ADT	ADT 11,362	AADT 11,362

Traffic Survey Expedition
106 Sharon Road
N. Quincy, MA 02171
P: 617-448-5686
F: 617-801-8300
www.tsetraffic.com

GPI Project #:2014078.00
Hudson, NH
Client: John DeBarros

Site Code: 1
Station ID: Adelaide Street
South of Ferry Street

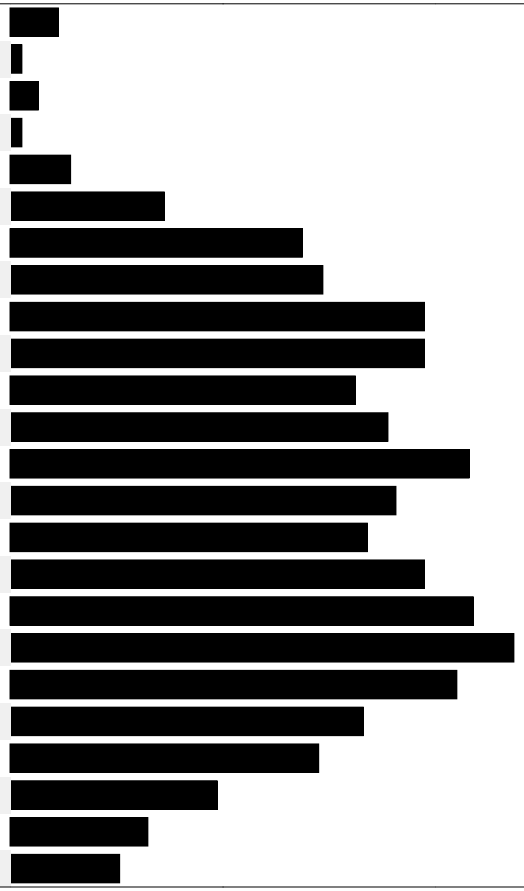
Start Time	17-Jul-14 Thu	Northbound	Southbound	Combined Total
12:00 AM		7	3	10
01:00		2	1	3
02:00		1	3	4
03:00		2	2	4
04:00		3	7	10
05:00		9	20	29
06:00		17	55	72
07:00		22	62	84
08:00		30	60	90
09:00		37	62	99
10:00		31	44	75
11:00		48	52	100
12:00 PM		57	48	105
01:00		46	51	97
02:00		26	33	59
03:00		40	70	110
04:00		77	62	139
05:00		84	73	157
06:00		64	51	115
07:00		52	52	104
08:00		44	34	78
09:00		40	28	68
10:00		21	14	35
11:00		9	12	21
Total		769	899	1668
Percent		46.1%	53.9%	

Traffic Survey Expedition
106 Sharon Road
N. Quincy, MA 02171
P: 617-448-5636
F: 617-801-3800
www.tsetraffic.com

GPI Project #:2014078.00
Hudson, NH
Client: John DeBarros

Site Code: 1
Station ID: Adelaide Street
South of Ferry Street

Start Time	18-Jul-14 Fri	Northbound	Southbound	Combined Total
12:00 AM		6	6	12
01:00		1	2	3
02:00		1	6	7
03:00		1	2	3
04:00		3	12	15
05:00		11	27	38
06:00		18	54	72
07:00		21	56	77
08:00		33	69	102
09:00		36	66	102
10:00		42	43	85
11:00		39	54	93
12:00 PM		61	52	113
01:00		56	39	95
02:00		50	38	88
03:00		55	47	102
04:00		62	52	114
05:00		61	63	124
06:00		64	46	110
07:00		50	37	87
08:00		45	31	76
09:00		26	25	51
10:00		16	18	34
11:00		19	8	27
Total		777	853	1630
Percent		47.7%	52.3%	

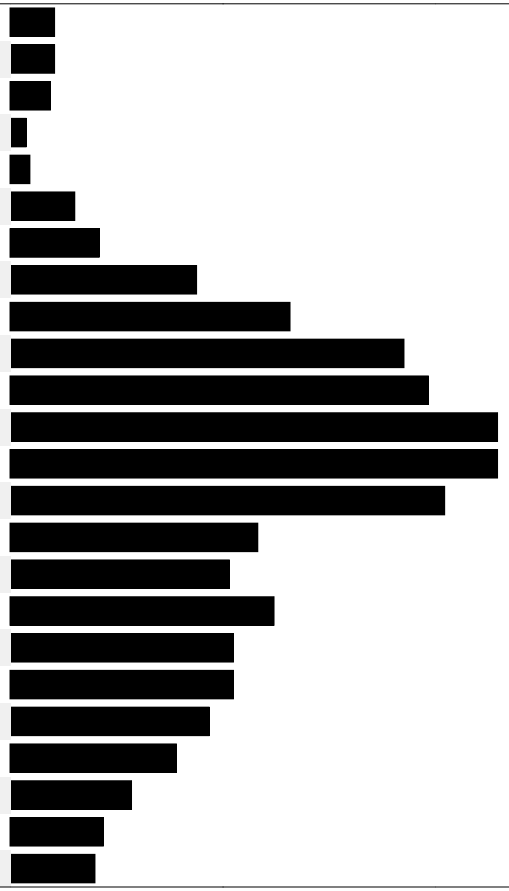


Traffic Survey Expedition
106 Sharon Road
N. Quincy, MA 02171
P: 617-448-5686
F: 617-801-8800
www.tsetraffic.com

GPI Project #:2014078.00
Hudson, NH
Client: John DeBarros

Site Code: 1
Station ID: Adelaide Street
South of Ferry Street

Start Time	19-Jul-14 Sat	Northbound	Southbound	Combined Total
12:00 AM		4	7	11
01:00		5	6	11
02:00		4	6	10
03:00		1	3	4
04:00		2	3	5
05:00		5	11	16
06:00		11	11	22
07:00		18	28	46
08:00		28	41	69
09:00		34	63	97
10:00		42	61	103
11:00		50	70	120
12:00 PM		59	61	120
01:00		48	59	107
02:00		31	30	61
03:00		31	23	54
04:00		37	28	65
05:00		30	25	55
06:00		28	27	55
07:00		22	27	49
08:00		21	20	41
09:00		15	15	30
10:00		12	11	23
11:00		10	11	21
Total		548	647	1195
Percent		45.9%	54.1%	
Grand Total		2094	2399	
Percentage		46.6%	53.4%	
ADT		ADT 1,629		AADT 1,629



Traffic Survey Expedition
106 Sharon Road
N. Quincy, MA 02171
P: 617-448-5686
F: 617-301-3800
www.tsetraffic.com

GPI Project #:2014078.00
Hudson, NH
Client: John DeBarros

Site Code: 1
Station ID: Adelaide Street
South of Ferry Street

Start Time	17-Jul-14 Thu	Northbound A.M.	Northbound P.M.	Southbound A.M.	Southbound P.M.	Combined A.M.	Combined P.M.	18-Jul- Fri	Northbound A.M.	Northbound P.M.	Southbound A.M.	Southbound P.M.	Combined A.M.	Combined P.M.
12:00		2	15	1	11	3	26		0	18	1	11	1	29
12:15		2	12	1	13	3	25		1	12	0	15	1	27
12:30		2	15	0	12	2	27		1	19	1	14	2	33
12:45		1	15	1	12	2	27		4	12	4	12	8	24
01:00		1	17	0	10	1	27		1	9	1	5	2	14
01:15		0	13	1	15	1	28		0	16	1	12	1	28
01:30		0	8	0	15	0	23		0	17	0	15	0	32
01:45		1	8	0	11	1	19		0	14	0	7	0	21
02:00		0	8	1	6	1	14		0	13	1	14	1	27
02:15		1	5	0	9	1	14		1	10	1	5	2	15
02:30		0	6	1	12	1	18		0	13	3	5	3	18
02:45		0	7	1	6	1	13		0	14	1	14	1	28
03:00		1	8	1	14	2	22		0	13	0	8	0	21
03:15		0	8	0	11	0	19		1	13	0	11	1	24
03:30		1	14	0	***28***	1	42		0	9	1	14	1	23
03:45		0	10	1	***17***	1	27		0	20	1	14	1	34
04:00		0	23	2	***16***	2	39		0	11	5	13	5	24
04:15		1	12	1	***15***	2	27		1	14	0	9	1	23
04:30		1	20	2	14	3	34		2	***19***	5	17	7	***36***
04:45		1	***22***	2	17	3	***39***		0	***18***	2	13	2	***31***
05:00		3	***19***	1	17	4	***36***		1	***14***	2	13	3	***27***
05:15		2	***25***	0	18	2	***43***		3	***18***	2	***16***	5	***34***
05:30		2	***22***	10	18	12	***40***		3	14	7	***15***	10	29
05:45		2	18	9	20	11	38		4	15	16	***19***	20	34
06:00		6	15	17	17	23	32		4	12	13	***14***	17	26
06:15		3	18	11	15	14	33		4	16	10	12	14	28
06:30		4	16	15	14	19	30		6	17	17	7	23	24
06:45		4	15	12	5	16	20		4	19	14	13	18	32
07:00		4	15	12	14	16	29		3	14	8	10	11	24
07:15		5	11	15	15	20	26		6	15	17	11	23	26
07:30		5	12	***16***	9	21	21		2	13	14	9	16	22
07:45		8	14	***19***	14	27	28		10	8	17	7	27	15
08:00		8	8	***18***	10	26	18		13	12	13	9	26	21
08:15		6	14	***16***	8	22	22		5	11	***27***	5	32	16
08:30		8	12	13	10	21	22		7	10	***13***	10	20	20
08:45		8	10	13	6	21	16		8	12	***16***	7	***24***	19
09:00		8	8	15	6	23	14		6	8	***18***	4	***24***	12
09:15		15	12	19	8	34	20		11	5	22	14	***33***	19
09:30		9	15	10	8	19	23		11	10	15	3	***26***	13
09:45		5	5	18	6	23	11		8	3	11	4	19	7
10:00		5	5	11	7	16	12		6	4	6	4	12	8
10:15		8	7	10	3	18	10		***10***	6	13	4	23	10
10:30		9	5	10	1	19	6		***9***	4	9	4	18	8
10:45		9	4	13	3	22	7		***17***	2	15	6	32	8
11:00		***14***	2	16	4	***30***	6		***9***	7	17	2	26	9
11:15		***10***	5	15	5	***25***	10		7	6	14	2	21	8
11:30		***11***	1	11	3	***22***	4		8	2	12	1	20	3
11:45		***13***	1	10	0	***23***	1		15	4	11	3	26	7
Total		209	560	371	528	580	1088		212	565	397	456	609	1021
Day Total		769		899		1668			777		853		1630	
% Total		12.5%	33.6%	22.2%	31.7%				13.0%	34.7%	24.4%	28.0%		
Peak	-	11:00	04:45	07:30	03:30	11:00	04:45	-	10:15	04:30	08:15	05:15	08:45	04:30
Vol.	-	48	88	69	76	100	158	-	45	69	74	64	107	128
P.H.F.		0.857	0.880	0.908	0.679	0.735	0.919		0.662	0.908	0.685	0.842	0.811	0.889

Traffic Survey Expedition
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N. Quincy, MA 02171
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www.tsetraffic.com

GPI Project #:2014078.00
Hudson, NH
Client: John DeBarros

Site Code: 1
Station ID: Adelaide Street
South of Ferry Street

Start Time	19-Jul-14 Sat	Northbound A.M.	Northbound P.M.	Southbound A.M.	Southbound P.M.	Combined A.M.	Combined P.M.	20-Jul- Sun	Northbound A.M.	Northbound P.M.	Southbound A.M.	Southbound P.M.	Combined A.M.	Combined P.M.
12:00		3	***16***	3	12	6	***28***		*	*	*	*	*	*
12:15		0	***19***	2	18	2	***37***		*	*	*	*	*	*
12:30		0	***8***	1	11	1	***19***		*	*	*	*	*	*
12:45		1	***16***	1	***20***	2	***36***		*	*	*	*	*	*
01:00		1	12	3	***9***	4	21		*	*	*	*	*	*
01:15		1	11	3	***20***	4	31		*	*	*	*	*	*
01:30		3	12	0	***18***	3	30		*	*	*	*	*	*
01:45		0	13	0	12	0	25		*	*	*	*	*	*
02:00		1	11	3	9	4	20		*	*	*	*	*	*
02:15		2	6	2	6	4	12		*	*	*	*	*	*
02:30		1	6	0	8	1	14		*	*	*	*	*	*
02:45		0	8	1	7	1	15		*	*	*	*	*	*
03:00		0	10	0	8	0	18		*	*	*	*	*	*
03:15		0	7	0	7	0	14		*	*	*	*	*	*
03:30		1	6	3	4	4	10		*	*	*	*	*	*
03:45		0	8	0	4	0	12		*	*	*	*	*	*
04:00		0	9	0	6	0	15		*	*	*	*	*	*
04:15		0	10	1	7	1	17		*	*	*	*	*	*
04:30		2	10	2	8	4	18		*	*	*	*	*	*
04:45		0	8	0	7	0	15		*	*	*	*	*	*
05:00		0	6	2	6	2	12		*	*	*	*	*	*
05:15		1	8	0	6	1	14		*	*	*	*	*	*
05:30		1	7	5	5	6	12		*	*	*	*	*	*
05:45		3	9	4	8	7	17		*	*	*	*	*	*
06:00		2	6	2	8	4	14		*	*	*	*	*	*
06:15		4	6	0	6	4	12		*	*	*	*	*	*
06:30		3	7	4	5	7	12		*	*	*	*	*	*
06:45		2	9	5	8	7	17		*	*	*	*	*	*
07:00		4	4	7	6	11	10		*	*	*	*	*	*
07:15		7	5	5	5	12	10		*	*	*	*	*	*
07:30		2	5	6	9	8	14		*	*	*	*	*	*
07:45		5	8	10	7	15	15		*	*	*	*	*	*
08:00		7	6	9	7	16	13		*	*	*	*	*	*
08:15		7	5	14	5	21	10		*	*	*	*	*	*
08:30		8	5	7	5	15	10		*	*	*	*	*	*
08:45		6	5	11	3	17	8		*	*	*	*	*	*
09:00		7	4	16	4	23	8		*	*	*	*	*	*
09:15		12	5	17	4	29	9		*	*	*	*	*	*
09:30		6	3	19	3	25	6		*	*	*	*	*	*
09:45		9	3	11	4	20	7		*	*	*	*	*	*
10:00		9	3	17	2	26	5		*	*	*	*	*	*
10:15		11	3	8	3	19	6		*	*	*	*	*	*
10:30		14	4	17	3	***31***	7		*	*	*	*	*	*
10:45		8	2	***19***	3	***27***	5		*	*	*	*	*	*
11:00		***12***	3	***20***	2	***32***	5		*	*	*	*	*	*
11:15		***14***	3	***16***	3	***30***	6		*	*	*	*	*	*
11:30		***10***	2	***20***	1	30	3		*	*	*	*	*	*
11:45		***14***	2	14	5	28	7		*	*	*	*	*	*
Total		204	344	310	337	514	681		0	0	0	0	0	0
Day Total		548		647		1195			0		0		0	
% Total		17.1%	28.8%	25.9%	28.2%				0.0%	0.0%	0.0%	0.0%		
Peak	-	11:00	12:00	10:45	00:45	10:30	12:00	-	-	-	-	-	-	-
Vol.	-	50	59	75	67	120	120	-	-	-	-	-	-	-
P.H.F.		0.893	0.776	0.938	0.838	0.938	0.811							

ADT	ADT 1,629	AADT 1,629

Traffic Survey Expedition
106 Sharon Road
N. Quincy, MA 02171
P: 617-448-5686
F: 617-801-8800
www.tsetraffic.com

GPI Project #:2014078.00
Hudson, NH
Client: John DeBarros

Site Code: 2
Station ID: Ferry Street
Next to DQ's Site

Westbound

Start Time	1 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 80	81 85	86 90	91 95	96 999	Total
07/10/14	26	20	7	1	0	0	0	0	0	0	0	0	0	0	54
01:00	19	15	4	0	0	0	0	0	0	0	0	0	0	0	38
02:00	11	16	0	1	0	0	0	0	0	0	0	0	0	0	28
03:00	5	11	3	0	0	0	0	0	0	0	0	0	0	0	19
04:00	9	25	2	0	0	0	0	0	0	0	0	0	0	0	36
05:00	36	55	8	2	0	0	0	0	0	0	0	0	0	0	101
06:00	69	145	39	1	0	0	0	0	0	0	0	0	0	0	254
07:00	134	191	41	4	1	0	0	0	0	0	0	0	0	0	371
08:00	158	199	44	4	0	0	0	0	0	0	0	0	0	0	405
09:00	166	141	36	1	0	0	0	0	0	0	0	0	0	0	344
10:00	95	139	40	4	0	0	0	0	0	0	0	0	0	0	278
11:00	96	135	34	2	0	0	0	0	0	0	0	0	0	0	267
12 PM	125	127	27	4	1	0	0	0	0	0	0	0	0	0	284
13:00	119	141	39	3	2	0	0	0	0	0	0	0	0	0	304
14:00	124	148	41	3	1	0	0	0	0	0	0	0	0	0	317
15:00	155	166	44	3	2	0	0	0	0	0	0	0	0	0	370
16:00	200	173	40	1	0	0	0	0	0	0	0	0	0	0	414
17:00	163	194	38	2	0	0	0	0	0	0	0	0	0	0	397
18:00	172	176	31	2	0	0	0	0	0	0	0	0	0	0	381
19:00	128	135	23	1	1	0	0	0	0	0	0	0	0	0	288
20:00	118	124	19	1	0	0	0	0	0	0	0	0	0	0	262
21:00	117	57	9	2	0	0	0	0	0	0	0	0	0	0	185
22:00	102	71	12	1	0	0	0	0	0	0	0	0	0	0	186
23:00	26	37	11	1	0	0	0	0	0	0	0	0	0	0	75
Total	2373	2641	592	44	8	0	0	0	0	0	0	0	0	0	5658

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Hudson, NH
Client: John DeBarros

Site Code: 2
Station ID: Ferry Street
Next to DQ's Site

Westbound

Start Time	1 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 80	81 85	86 90	91 95	96 999	Total
07/11/14	34	14	5	0	0	0	0	0	0	0	0	0	0	0	53
01:00	21	11	8	1	0	0	0	0	0	0	0	0	0	0	41
02:00	7	18	2	1	0	0	0	0	0	0	0	0	0	0	28
03:00	10	9	2	0	0	0	0	0	0	0	0	0	0	0	21
04:00	21	16	3	0	0	0	0	0	0	0	0	0	0	0	40
05:00	35	55	18	1	0	0	0	0	0	0	0	0	0	0	109
06:00	90	138	34	1	0	0	0	0	0	0	0	0	0	0	263
07:00	111	220	53	2	0	0	0	0	0	0	0	0	0	0	386
08:00	158	185	55	2	0	0	0	0	0	0	0	0	0	0	400
09:00	85	188	56	2	0	0	0	0	0	0	0	0	0	0	331
10:00	108	131	33	3	0	0	0	0	0	0	0	0	0	0	275
11:00	126	152	26	3	0	0	0	0	0	0	0	0	0	0	307
12 PM	124	153	40	3	0	0	0	0	0	0	0	0	0	0	320
13:00	123	148	46	3	0	0	0	0	0	0	0	0	0	0	320
14:00	139	146	28	6	0	0	0	0	0	0	0	0	0	0	319
15:00	148	196	44	1	0	0	0	0	0	0	0	0	0	0	389
16:00	212	146	24	2	0	0	0	0	0	0	0	0	0	0	384
17:00	214	197	34	0	0	0	0	0	0	0	0	0	0	0	445
18:00	168	201	32	2	1	0	0	0	0	0	0	0	0	0	404
19:00	178	122	22	1	1	0	0	0	0	0	0	0	0	0	324
20:00	101	127	20	3	1	0	0	0	0	0	0	0	0	0	252
21:00	133	66	8	0	0	0	0	0	0	0	0	0	0	0	207
22:00	118	130	18	4	1	0	0	0	0	0	0	0	0	0	271
23:00	45	41	13	0	0	0	0	0	0	0	0	0	0	0	99
Total	2509	2810	624	41	4	0	0	0	0	0	0	0	0	0	5988

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Hudson, NH
Client: John DeBarros

Site Code: 2
Station ID: Ferry Street
Next to DQ's Site

Westbound

Start Time	1 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 80	81 85	86 90	91 95	96 999	Total
07/12/14	23	27	9	0	0	0	0	0	0	0	0	0	0	0	59
01:00	28	17	1	1	0	0	0	0	0	0	0	0	0	0	47
02:00	6	10	0	0	0	0	0	0	0	0	0	0	0	0	16
03:00	15	5	4	0	0	0	0	0	0	0	0	0	0	0	24
04:00	6	10	3	0	0	0	0	0	0	0	0	0	0	0	19
05:00	21	17	8	2	0	0	0	0	0	0	0	0	0	0	48
06:00	35	48	21	0	0	0	0	0	0	0	0	0	0	0	104
07:00	44	82	45	6	2	0	0	0	0	0	0	0	0	0	179
08:00	50	113	57	2	0	0	0	0	0	0	0	0	0	0	222
09:00	71	111	49	4	0	0	0	0	0	0	0	0	0	0	235
10:00	108	136	39	4	0	0	0	0	0	0	0	0	0	0	287
11:00	118	144	44	3	2	0	0	0	0	0	0	0	0	0	311
12 PM	118	146	45	2	0	0	0	0	0	0	0	0	0	0	311
13:00	105	154	43	1	0	0	0	0	0	0	0	0	0	0	303
14:00	147	124	37	1	0	0	0	0	0	0	0	0	0	0	309
15:00	176	139	16	0	1	0	0	0	0	0	0	0	0	0	332
16:00	128	134	33	4	0	0	0	0	0	0	0	0	0	0	299
17:00	137	121	31	2	0	0	0	0	0	0	0	0	0	0	291
18:00	120	161	29	1	1	0	0	0	0	0	0	0	0	0	312
19:00	115	111	35	3	1	0	0	0	0	0	0	0	0	0	265
20:00	123	78	17	1	0	0	0	0	0	0	0	0	0	0	219
21:00	136	62	10	0	0	0	0	0	0	0	0	0	0	0	208
22:00	159	121	17	0	0	0	0	0	0	0	0	0	0	0	297
23:00	93	66	5	1	0	0	0	0	0	0	0	0	0	0	165
Total	2082	2137	598	38	7	0	0	0	0	0	0	0	0	0	4862
Grand Total	6964	7588	1814	123	19	0	0	0	0	0	0	0	0	0	16508

15th Percentile :	13 MPH
50th Percentile :	25 MPH
85th Percentile :	36 MPH
95th Percentile :	40 MPH

Statistics

Mean Speed(Average) :	25 MPH
10 MPH Pace Speed :	29-38 MPH
Number in Pace :	5189
Percent in Pace :	31.4%
Number of Vehicles > 55 MPH :	0
Percent of Vehicles > 55 MPH :	0.0%

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Hudson, NH
Client: John DeBarros

Site Code: 2
Station ID: Ferry Street
Next to DQ's Site

Eastbound

Start Time	1 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 80	81 85	86 90	91 95	96 999	Total
07/10/14	28	10	5	0	0	0	0	0	0	0	0	0	0	0	43
01:00	27	16	3	1	0	0	0	0	0	0	0	0	0	0	47
02:00	11	14	4	0	0	0	0	0	0	0	0	0	0	0	29
03:00	8	8	4	0	0	0	0	0	0	0	0	0	0	0	20
04:00	20	27	10	5	0	0	0	0	0	0	0	0	0	0	62
05:00	44	91	10	5	0	0	0	0	0	0	0	0	0	0	150
06:00	88	146	29	4	0	0	0	0	0	0	0	0	0	0	267
07:00	126	192	29	6	0	0	0	0	0	0	0	0	0	0	353
08:00	157	185	25	3	0	0	0	0	0	0	0	0	0	0	370
09:00	132	193	39	6	0	0	0	0	0	0	0	0	0	0	370
10:00	134	190	31	7	1	0	0	0	0	0	0	0	0	0	363
11:00	145	166	31	3	0	0	0	0	0	0	0	0	0	0	345
12 PM	130	179	45	4	1	1	0	0	0	0	0	0	0	0	360
13:00	111	159	39	4	2	0	0	0	0	0	0	0	0	0	315
14:00	134	196	41	3	0	1	1	0	0	0	0	0	0	0	376
15:00	187	207	65	2	1	1	0	0	0	0	0	0	0	0	463
16:00	255	222	68	4	0	0	0	0	0	0	0	0	0	0	549
17:00	199	298	72	5	0	0	0	0	0	0	0	0	0	0	574
18:00	186	260	59	4	0	0	0	0	0	0	0	0	0	0	509
19:00	125	160	43	6	0	0	0	0	0	0	0	0	0	0	334
20:00	164	138	27	2	0	1	0	0	0	0	0	0	0	0	332
21:00	192	76	9	1	1	0	0	0	0	0	0	0	0	0	279
22:00	115	62	4	0	0	0	0	0	0	0	0	0	0	0	181
23:00	45	38	2	1	1	0	0	0	0	0	0	0	0	0	87
Total	2763	3233	694	76	7	4	1	0	0	0	0	0	0	0	6778

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Eastbound

Start Time	1 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 80	81 85	86 90	91 95	96 999	Total
07/11/14	27	28	6	0	0	0	0	0	0	0	0	0	0	0	61
01:00	28	10	2	0	0	0	0	0	0	0	0	0	0	0	40
02:00	22	10	3	0	0	0	0	0	0	0	0	0	0	0	35
03:00	12	5	4	0	0	0	0	0	0	0	0	0	0	0	21
04:00	23	36	14	1	0	0	0	0	0	0	0	0	0	0	74
05:00	37	73	36	5	1	0	0	0	0	0	0	0	0	0	152
06:00	92	125	41	4	0	0	0	0	0	0	0	0	0	0	262
07:00	120	205	47	1	0	0	0	0	0	0	0	0	0	0	373
08:00	132	167	55	3	0	0	0	0	0	0	0	0	0	0	357
09:00	159	175	35	2	0	0	0	0	0	0	0	0	0	0	371
10:00	137	172	41	4	2	0	0	0	0	0	0	0	0	0	356
11:00	197	169	30	5	0	0	0	0	0	0	0	0	0	0	401
12 PM	157	159	30	1	0	0	0	0	0	0	0	0	0	0	347
13:00	169	158	24	3	1	1	0	0	0	0	0	0	0	0	356
14:00	185	195	37	2	0	0	0	0	0	0	0	0	0	0	419
15:00	227	214	37	2	1	0	0	0	0	0	0	0	0	0	481
16:00	304	236	48	2	0	0	0	0	0	0	0	0	0	0	590
17:00	212	276	52	4	0	0	0	0	0	0	0	0	0	0	544
18:00	229	222	46	1	0	0	0	0	0	0	0	0	0	0	498
19:00	145	157	37	3	0	0	0	0	0	0	0	0	0	0	342
20:00	112	132	24	5	0	0	0	0	0	0	0	0	0	0	273
21:00	162	74	10	1	0	0	0	0	0	0	0	0	0	0	247
22:00	220	94	18	3	0	0	0	0	0	0	0	0	0	0	335
23:00	83	52	4	0	0	0	0	0	0	0	0	0	0	0	139
Total	3191	3144	681	52	5	1	0	0	0	0	0	0	0	0	7074

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Eastbound

Start Time	1 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 80	81 85	86 90	91 95	96 999	Total
07/12/14	40	20	3	0	0	0	0	0	0	0	0	0	0	0	63
01:00	39	28	5	0	0	0	0	0	0	0	0	0	0	0	72
02:00	17	9	1	0	0	0	0	0	0	0	0	0	0	0	27
03:00	7	9	3	0	0	0	0	0	0	0	0	0	0	0	19
04:00	15	12	5	0	0	0	0	0	0	0	0	0	0	0	32
05:00	22	18	14	6	0	1	0	0	0	0	0	0	0	0	61
06:00	30	67	22	4	0	0	0	0	0	0	0	0	0	0	123
07:00	49	110	34	3	0	0	0	0	0	0	0	0	0	0	196
08:00	55	140	34	4	0	0	0	0	0	0	0	0	0	0	233
09:00	75	149	39	3	1	0	0	0	0	0	0	0	0	0	267
10:00	157	150	42	4	0	0	0	0	0	0	0	0	0	0	353
11:00	150	209	31	5	0	0	0	0	0	0	0	0	0	0	395
12 PM	240	163	30	1	0	0	0	0	0	0	0	0	0	0	434
13:00	175	204	46	6	0	0	0	0	0	0	0	0	0	0	431
14:00	194	184	43	2	0	0	0	0	0	0	0	0	0	0	423
15:00	212	163	43	1	0	0	0	0	0	0	0	0	0	0	419
16:00	134	164	52	10	1	0	0	0	0	0	0	0	0	0	361
17:00	127	186	46	7	0	0	0	0	0	0	0	0	0	0	366
18:00	86	147	57	5	0	0	0	0	0	0	0	0	0	0	295
19:00	138	107	35	4	0	0	0	0	0	0	0	0	0	0	284
20:00	147	93	20	3	0	0	0	0	0	0	0	0	0	0	263
21:00	162	67	9	1	0	0	0	0	0	0	0	0	0	0	239
22:00	167	72	4	0	1	0	0	0	0	0	0	0	0	0	244
23:00	72	40	6	1	0	0	0	0	0	0	0	0	0	0	119
Total	2510	2511	624	70	3	1	0	0	0	0	0	0	0	0	5719
Grand Total	8464	8888	1999	198	15	6	1	0	0	0	0	0	0	0	19571

15th Percentile :	12 MPH
50th Percentile :	25 MPH
85th Percentile :	36 MPH
95th Percentile :	40 MPH

Statistics

Mean Speed(Average) :	25 MPH
10 MPH Pace Speed :	29-38 MPH
Number in Pace :	6080
Percent in Pace :	31.1%
Number of Vehicles > 55 MPH :	7
Percent of Vehicles > 55 MPH :	0.0%

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N. Quincy, MA 02171
P: 617-448-5686
F: 617-301-8800
www.tsetraffic.com

GPI Project #:2014078.00
Hudson, NH
Client: John DeBarros

Site Code: 1
Station ID: Adelaide Street
South of Ferry Street

Northbound

Start Time	1 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 80	81 85	86 90	91 95	96 999	Total
07/17/14	5	2	0	0	0	0	0	0	0	0	0	0	0	0	7
01:00	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2
02:00	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
03:00	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2
04:00	3	0	0	0	0	0	0	0	0	0	0	0	0	0	3
05:00	7	1	1	0	0	0	0	0	0	0	0	0	0	0	9
06:00	14	3	0	0	0	0	0	0	0	0	0	0	0	0	17
07:00	22	0	0	0	0	0	0	0	0	0	0	0	0	0	22
08:00	28	2	0	0	0	0	0	0	0	0	0	0	0	0	30
09:00	37	0	0	0	0	0	0	0	0	0	0	0	0	0	37
10:00	31	0	0	0	0	0	0	0	0	0	0	0	0	0	31
11:00	47	1	0	0	0	0	0	0	0	0	0	0	0	0	48
12 PM	57	0	0	0	0	0	0	0	0	0	0	0	0	0	57
13:00	44	1	1	0	0	0	0	0	0	0	0	0	0	0	46
14:00	25	1	0	0	0	0	0	0	0	0	0	0	0	0	26
15:00	39	1	0	0	0	0	0	0	0	0	0	0	0	0	40
16:00	77	0	0	0	0	0	0	0	0	0	0	0	0	0	77
17:00	83	1	0	0	0	0	0	0	0	0	0	0	0	0	84
18:00	62	2	0	0	0	0	0	0	0	0	0	0	0	0	64
19:00	52	0	0	0	0	0	0	0	0	0	0	0	0	0	52
20:00	44	0	0	0	0	0	0	0	0	0	0	0	0	0	44
21:00	40	0	0	0	0	0	0	0	0	0	0	0	0	0	40
22:00	20	0	1	0	0	0	0	0	0	0	0	0	0	0	21
23:00	9	0	0	0	0	0	0	0	0	0	0	0	0	0	9
Total	751	15	3	0	0	0	0	0	0	0	0	0	0	0	769

Traffic Survey Expedition
106 Sharon Road
N. Quincy, MA 02171
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GPI Project #:2014078.00
Hudson, NH
Client: John DeBarros

Site Code: 1
Station ID: Adelaide Street
South of Ferry Street

Northbound

Start Time	1 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 80	81 85	86 90	91 95	96 999	Total
07/18/14	6	0	0	0	0	0	0	0	0	0	0	0	0	0	6
01:00	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
02:00	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
03:00	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
04:00	3	0	0	0	0	0	0	0	0	0	0	0	0	0	3
05:00	8	3	0	0	0	0	0	0	0	0	0	0	0	0	11
06:00	18	0	0	0	0	0	0	0	0	0	0	0	0	0	18
07:00	21	0	0	0	0	0	0	0	0	0	0	0	0	0	21
08:00	31	0	2	0	0	0	0	0	0	0	0	0	0	0	33
09:00	36	0	0	0	0	0	0	0	0	0	0	0	0	0	36
10:00	42	0	0	0	0	0	0	0	0	0	0	0	0	0	42
11:00	39	0	0	0	0	0	0	0	0	0	0	0	0	0	39
12 PM	61	0	0	0	0	0	0	0	0	0	0	0	0	0	61
13:00	55	1	0	0	0	0	0	0	0	0	0	0	0	0	56
14:00	49	1	0	0	0	0	0	0	0	0	0	0	0	0	50
15:00	55	0	0	0	0	0	0	0	0	0	0	0	0	0	55
16:00	61	1	0	0	0	0	0	0	0	0	0	0	0	0	62
17:00	60	1	0	0	0	0	0	0	0	0	0	0	0	0	61
18:00	64	0	0	0	0	0	0	0	0	0	0	0	0	0	64
19:00	49	1	0	0	0	0	0	0	0	0	0	0	0	0	50
20:00	43	2	0	0	0	0	0	0	0	0	0	0	0	0	45
21:00	26	0	0	0	0	0	0	0	0	0	0	0	0	0	26
22:00	16	0	0	0	0	0	0	0	0	0	0	0	0	0	16
23:00	18	1	0	0	0	0	0	0	0	0	0	0	0	0	19
Total	764	11	2	0	0	0	0	0	0	0	0	0	0	0	777

Traffic Survey Expedition
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GPI Project #:2014078.00
Hudson, NH
Client: John DeBarros

Site Code: 1
Station ID: Adelaide Street
South of Ferry Street

Northbound

Start Time	1 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 80	81 85	86 90	91 95	96 999	Total
07/19/14	4	0	0	0	0	0	0	0	0	0	0	0	0	0	4
01:00	5	0	0	0	0	0	0	0	0	0	0	0	0	0	5
02:00	4	0	0	0	0	0	0	0	0	0	0	0	0	0	4
03:00	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
04:00	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2
05:00	5	0	0	0	0	0	0	0	0	0	0	0	0	0	5
06:00	11	0	0	0	0	0	0	0	0	0	0	0	0	0	11
07:00	18	0	0	0	0	0	0	0	0	0	0	0	0	0	18
08:00	28	0	0	0	0	0	0	0	0	0	0	0	0	0	28
09:00	34	0	0	0	0	0	0	0	0	0	0	0	0	0	34
10:00	41	1	0	0	0	0	0	0	0	0	0	0	0	0	42
11:00	49	1	0	0	0	0	0	0	0	0	0	0	0	0	50
12 PM	58	1	0	0	0	0	0	0	0	0	0	0	0	0	59
13:00	48	0	0	0	0	0	0	0	0	0	0	0	0	0	48
14:00	31	0	0	0	0	0	0	0	0	0	0	0	0	0	31
15:00	29	1	1	0	0	0	0	0	0	0	0	0	0	0	31
16:00	36	0	1	0	0	0	0	0	0	0	0	0	0	0	37
17:00	30	0	0	0	0	0	0	0	0	0	0	0	0	0	30
18:00	26	2	0	0	0	0	0	0	0	0	0	0	0	0	28
19:00	22	0	0	0	0	0	0	0	0	0	0	0	0	0	22
20:00	20	1	0	0	0	0	0	0	0	0	0	0	0	0	21
21:00	13	2	0	0	0	0	0	0	0	0	0	0	0	0	15
22:00	12	0	0	0	0	0	0	0	0	0	0	0	0	0	12
23:00	8	2	0	0	0	0	0	0	0	0	0	0	0	0	10
Total	535	11	2	0	0	0	0	0	0	0	0	0	0	0	548
Grand Total	2050	37	7	0	0	0	0	0	0	0	0	0	0	0	2094

15th Percentile :	9 MPH
50th Percentile :	18 MPH
85th Percentile :	27 MPH
95th Percentile :	31 MPH

Statistics

Mean Speed(Average) :	19 MPH
10 MPH Pace Speed :	14-23 MPH
Number in Pace :	948
Percent in Pace :	45.3%
Number of Vehicles > 55 MPH :	0
Percent of Vehicles > 55 MPH :	0.0%

Traffic Survey Expedition
106 Sharon Road
N. Quincy, MA 02171
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GPI Project #:2014078.00
Hudson, NH
Client: John DeBarros

Site Code: 1
Station ID: Adelaide Street
South of Ferry Street

Southbound

Start Time	1 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 80	81 85	86 90	91 95	96 999	Total
07/17/14	0	3	0	0	0	0	0	0	0	0	0	0	0	0	3
01:00	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
02:00	1	2	0	0	0	0	0	0	0	0	0	0	0	0	3
03:00	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2
04:00	3	4	0	0	0	0	0	0	0	0	0	0	0	0	7
05:00	17	3	0	0	0	0	0	0	0	0	0	0	0	0	20
06:00	52	3	0	0	0	0	0	0	0	0	0	0	0	0	55
07:00	62	0	0	0	0	0	0	0	0	0	0	0	0	0	62
08:00	57	3	0	0	0	0	0	0	0	0	0	0	0	0	60
09:00	60	1	1	0	0	0	0	0	0	0	0	0	0	0	62
10:00	44	0	0	0	0	0	0	0	0	0	0	0	0	0	44
11:00	50	1	1	0	0	0	0	0	0	0	0	0	0	0	52
12 PM	47	0	1	0	0	0	0	0	0	0	0	0	0	0	48
13:00	50	0	1	0	0	0	0	0	0	0	0	0	0	0	51
14:00	32	1	0	0	0	0	0	0	0	0	0	0	0	0	33
15:00	66	1	1	2	0	0	0	0	0	0	0	0	0	0	70
16:00	62	0	0	0	0	0	0	0	0	0	0	0	0	0	62
17:00	70	3	0	0	0	0	0	0	0	0	0	0	0	0	73
18:00	50	1	0	0	0	0	0	0	0	0	0	0	0	0	51
19:00	50	2	0	0	0	0	0	0	0	0	0	0	0	0	52
20:00	33	1	0	0	0	0	0	0	0	0	0	0	0	0	34
21:00	25	3	0	0	0	0	0	0	0	0	0	0	0	0	28
22:00	14	0	0	0	0	0	0	0	0	0	0	0	0	0	14
23:00	12	0	0	0	0	0	0	0	0	0	0	0	0	0	12
Total	857	35	5	2	0	0	0	0	0	0	0	0	0	0	899

Traffic Survey Expedition
106 Sharon Road
N. Quincy, MA 02171
P: 617-448-5686
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www.tsetraffic.com

GPI Project #:2014078.00
Hudson, NH
Client: John DeBarros

Site Code: 1
Station ID: Adelaide Street
South of Ferry Street

Southbound

Start Time	1 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 80	81 85	86 90	91 95	96 999	Total
07/18/14	6	0	0	0	0	0	0	0	0	0	0	0	0	0	6
01:00	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2
02:00	6	0	0	0	0	0	0	0	0	0	0	0	0	0	6
03:00	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2
04:00	12	0	0	0	0	0	0	0	0	0	0	0	0	0	12
05:00	26	1	0	0	0	0	0	0	0	0	0	0	0	0	27
06:00	51	3	0	0	0	0	0	0	0	0	0	0	0	0	54
07:00	55	1	0	0	0	0	0	0	0	0	0	0	0	0	56
08:00	68	1	0	0	0	0	0	0	0	0	0	0	0	0	69
09:00	64	2	0	0	0	0	0	0	0	0	0	0	0	0	66
10:00	42	1	0	0	0	0	0	0	0	0	0	0	0	0	43
11:00	53	1	0	0	0	0	0	0	0	0	0	0	0	0	54
12 PM	52	0	0	0	0	0	0	0	0	0	0	0	0	0	52
13:00	37	2	0	0	0	0	0	0	0	0	0	0	0	0	39
14:00	36	2	0	0	0	0	0	0	0	0	0	0	0	0	38
15:00	47	0	0	0	0	0	0	0	0	0	0	0	0	0	47
16:00	51	1	0	0	0	0	0	0	0	0	0	0	0	0	52
17:00	61	1	1	0	0	0	0	0	0	0	0	0	0	0	63
18:00	45	1	0	0	0	0	0	0	0	0	0	0	0	0	46
19:00	36	1	0	0	0	0	0	0	0	0	0	0	0	0	37
20:00	30	1	0	0	0	0	0	0	0	0	0	0	0	0	31
21:00	23	2	0	0	0	0	0	0	0	0	0	0	0	0	25
22:00	17	1	0	0	0	0	0	0	0	0	0	0	0	0	18
23:00	8	0	0	0	0	0	0	0	0	0	0	0	0	0	8
Total	830	22	1	0	0	0	0	0	0	0	0	0	0	0	853

Traffic Survey Expedition
106 Sharon Road
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GPI Project #:2014078.00
Hudson, NH
Client: John DeBarros

Site Code: 1
Station ID: Adelaide Street
South of Ferry Street

Southbound

Start Time	1 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 80	81 85	86 90	91 95	96 999	Total
07/19/14	6	1	0	0	0	0	0	0	0	0	0	0	0	0	7
01:00	6	0	0	0	0	0	0	0	0	0	0	0	0	0	6
02:00	6	0	0	0	0	0	0	0	0	0	0	0	0	0	6
03:00	3	0	0	0	0	0	0	0	0	0	0	0	0	0	3
04:00	3	0	0	0	0	0	0	0	0	0	0	0	0	0	3
05:00	11	0	0	0	0	0	0	0	0	0	0	0	0	0	11
06:00	11	0	0	0	0	0	0	0	0	0	0	0	0	0	11
07:00	28	0	0	0	0	0	0	0	0	0	0	0	0	0	28
08:00	41	0	0	0	0	0	0	0	0	0	0	0	0	0	41
09:00	60	3	0	0	0	0	0	0	0	0	0	0	0	0	63
10:00	60	1	0	0	0	0	0	0	0	0	0	0	0	0	61
11:00	69	1	0	0	0	0	0	0	0	0	0	0	0	0	70
12 PM	61	0	0	0	0	0	0	0	0	0	0	0	0	0	61
13:00	59	0	0	0	0	0	0	0	0	0	0	0	0	0	59
14:00	28	1	1	0	0	0	0	0	0	0	0	0	0	0	30
15:00	21	0	2	0	0	0	0	0	0	0	0	0	0	0	23
16:00	28	0	0	0	0	0	0	0	0	0	0	0	0	0	28
17:00	25	0	0	0	0	0	0	0	0	0	0	0	0	0	25
18:00	27	0	0	0	0	0	0	0	0	0	0	0	0	0	27
19:00	26	1	0	0	0	0	0	0	0	0	0	0	0	0	27
20:00	18	1	1	0	0	0	0	0	0	0	0	0	0	0	20
21:00	15	0	0	0	0	0	0	0	0	0	0	0	0	0	15
22:00	11	0	0	0	0	0	0	0	0	0	0	0	0	0	11
23:00	11	0	0	0	0	0	0	0	0	0	0	0	0	0	11
Total	634	9	4	0	0	0	0	0	0	0	0	0	0	0	647
Grand Total	2321	66	10	2	0	0	0	0	0	0	0	0	0	0	2399

	15th Percentile :	9 MPH
	50th Percentile :	18 MPH
	85th Percentile :	27 MPH
	95th Percentile :	32 MPH
Statistics	Mean Speed(Average) :	19 MPH
	10 MPH Pace Speed :	14-23 MPH
	Number in Pace :	1079
	Percent in Pace :	45.0%
	Number of Vehicles > 55 MPH :	0
	Percent of Vehicles > 55 MPH :	0.0%

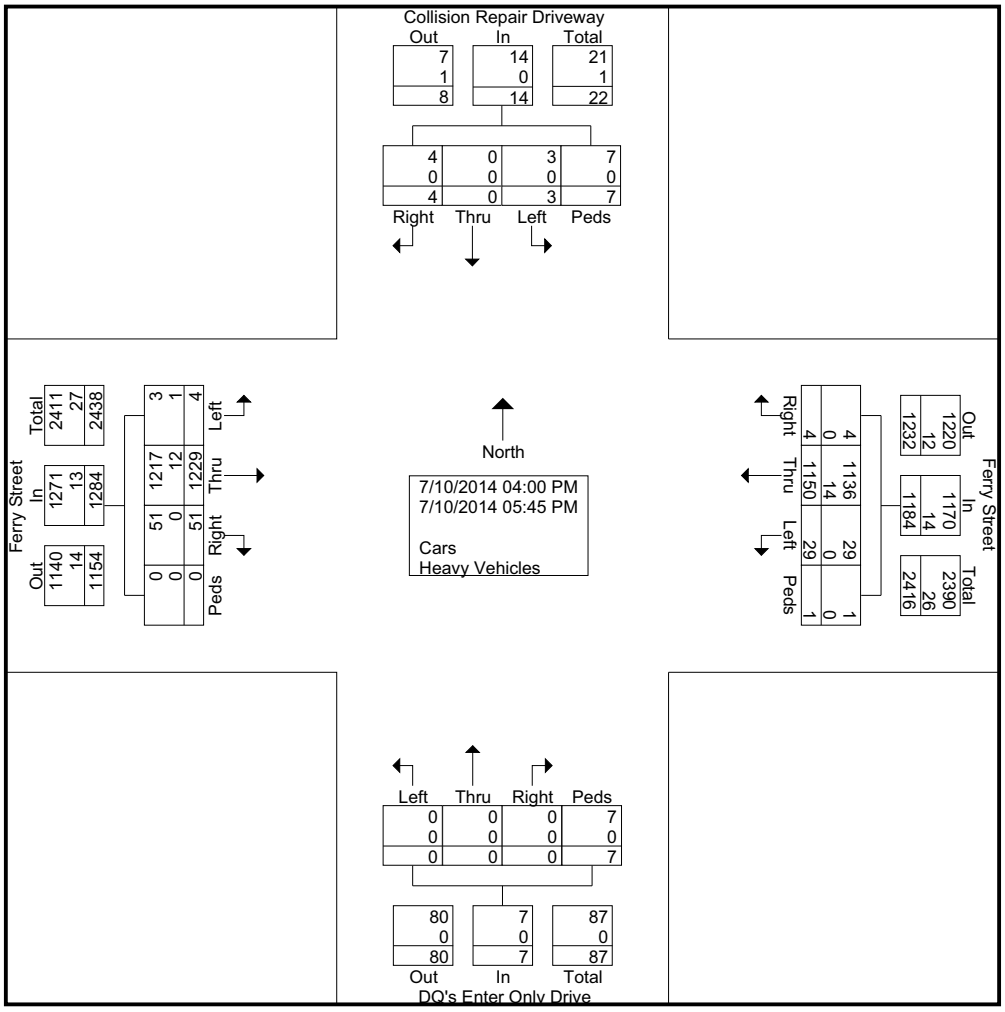
GPI Project #: 2014078.00
Hudson, NH
Client: John DeBarros

Traffic Survey Expedition
106 Sharon Road
N. Quincy, MA 02171
P: 617-448-5686
F: 617-801-3800
www.tsetraffic.com

File Name : Ferry PM
Site Code : 1
Start Date : 7/10/2014

Groups Printed- Cars - Heavy Vehicles

	DQ's Enter Only Drive Northbound					Collision Repair Driveway Southbound					Ferry Street Eastbound					Ferry Street Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
04:00 PM	0	0	0	0	0	0	0	1	1	2	0	151	5	0	156	3	131	1	0	135	293
04:15 PM	0	0	0	2	2	1	0	0	0	1	1	137	7	0	145	4	147	0	0	151	299
04:30 PM	0	0	0	1	1	1	0	0	2	3	0	143	6	0	149	4	119	1	0	124	277
04:45 PM	0	0	0	2	2	0	0	0	1	1	0	168	6	0	174	5	139	0	0	144	321
Total	0	0	0	5	5	2	0	1	4	7	1	599	24	0	624	16	536	2	0	554	1190
05:00 PM	0	0	0	0	0	0	0	1	0	1	1	160	11	0	172	4	159	0	0	163	336
05:15 PM	0	0	0	1	1	0	0	0	1	1	0	156	6	0	162	3	145	2	0	150	314
05:30 PM	0	0	0	0	0	1	0	0	1	2	2	170	6	0	178	3	170	0	1	174	354
05:45 PM	0	0	0	1	1	0	0	2	1	3	0	144	4	0	148	3	140	0	0	143	295
Total	0	0	0	2	2	1	0	3	3	7	3	630	27	0	660	13	614	2	1	630	1299
Grand Total	0	0	0	7	7	3	0	4	7	14	4	1229	51	0	1284	29	1150	4	1	1184	2489
Apprch %	0	0	0	100		21.4	0	28.6	50		0.3	95.7	4	0		2.4	97.1	0.3	0.1		
Total %	0	0	0	0.3	0.3	0.1	0	0.2	0.3	0.6	0.2	49.4	2	0	51.6	1.2	46.2	0.2	0	47.6	
Cars	0	0	0	7	7	3	0	4	7	14	3	1217	51	0	1271	29	1136	4	1	1170	2462
% Cars	0	0	0	100	100	100	0	100	100	100	75	99	100	0	99	100	98.8	100	100	98.8	98.9
Heavy Vehicles																					
% Heavy Vehicles	0	0	0	0	0	0	0	0	0	0	25	1	0	0	1	0	1.2	0	0	1.2	1.1

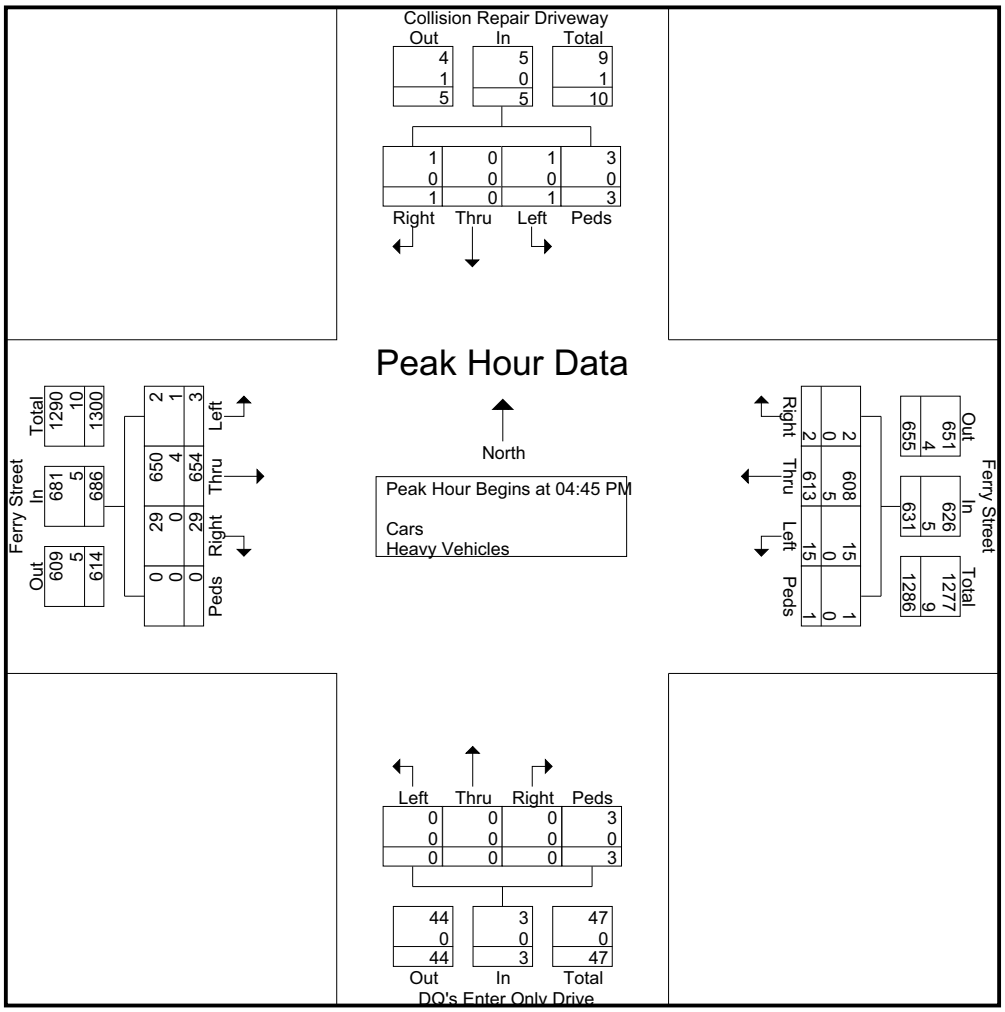


GPI Project #: 2014078.00
Hudson, NH
Client: John DeBarros

Traffic Survey Expedition
106 Sharon Road
N. Quincy, MA 02171
P: 617-443-5686
F: 617-301-3300
www.tsetraffic.com

File Name : Ferry PM
Site Code : 1
Start Date : 7/10/2014

	DQ's Enter Only Drive Northbound					Collision Repair Driveway Southbound					Ferry Street Eastbound					Ferry Street Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:45 PM																					
04:45 PM	0	0	0	**2**	**2**	0	0	0	**1**	1	0	168	6	0	174	**5**	139	0	0	144	321
05:00 PM	0	0	0	0	0	0	0	**1**	0	1	1	160	**11**	0	172	4	159	0	0	163	336
05:15 PM	0	0	0	1	1	0	0	0	1	1	0	156	6	0	162	3	145	**2**	0	150	314
05:30 PM	0	0	0	0	0	**1**	0	0	1	**2**	**2**	**170**	6	0	**178**	3	**170**	0	**1**	**174**	**354**
Total Volume	0	0	0	3	3	1	0	1	3	5	3	654	29	0	686	15	613	2	1	631	1325
% App. Total	0	0	0	100		20	0	20	60		0.4	95.3	4.2	0		2.4	97.1	0.3	0.2		
PHF	.000	.000	.000	.375	.375	.250	.000	.250	.750	.625	.375	.962	.659	.000	.963	.750	.901	.250	.250	.907	.936
Cars	0	0	0	3	3	1	0	1	3	5	2	650	29	0	681	15	608	2	1	626	1315
% Cars	0	0	0	100	100	100	0	100	100	100	66.7	99.4	100	0	99.3	100	99.2	100	100	99.2	99.2
Heavy Vehicles	0	0	0	0	0	0	0	0	0	0	1	4	0	0	5	0	5	0	0	5	10
% Heavy Vehicles	0	0	0	0	0	0	0	0	0	0	33.3	0.6	0	0	0.7	0	0.8	0	0	0.8	0.8



GPI Project #: 2014078.00
Hudson, NH
Client: John DeBarros

Traffic Survey Expedition
106 Sharon Road
N. Quincy, MA 02171
P: 617-448-5686
F: 617-801-8800
www.tsetraffic.com

File Name : Ferry PM
Site Code : 1
Start Date : 7/10/2014

Groups Printed- Cars

	DQ's Enter Only Drive Northbound					Collision Repair Driveway Southbound					Ferry Street Eastbound					Ferry Street Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
04:00 PM	0	0	0	0	0	0	0	1	1	2	0	149	5	0	154	3	129	1	0	133	289
04:15 PM	0	0	0	2	2	1	0	0	0	1	1	136	7	0	144	4	146	0	0	150	297
04:30 PM	0	0	0	1	1	1	0	0	2	3	0	142	6	0	148	4	118	1	0	123	275
04:45 PM	0	0	0	2	2	0	0	0	1	1	0	167	6	0	173	5	136	0	0	141	317
Total	0	0	0	5	5	2	0	1	4	7	1	594	24	0	619	16	529	2	0	547	1178
05:00 PM	0	0	0	0	0	0	0	1	0	1	1	159	11	0	171	4	158	0	0	162	334
05:15 PM	0	0	0	1	1	0	0	0	1	1	0	156	6	0	162	3	145	2	0	150	314
05:30 PM	0	0	0	0	0	1	0	0	1	2	1	168	6	0	175	3	169	0	1	173	350
05:45 PM	0	0	0	1	1	0	0	2	1	3	0	140	4	0	144	3	135	0	0	138	286
Total	0	0	0	2	2	1	0	3	3	7	2	623	27	0	652	13	607	2	1	623	1284
Grand Total	0	0	0	7	7	3	0	4	7	14	3	1217	51	0	1271	29	1136	4	1	1170	2462
Apprch %	0	0	0	100		21.4	0	28.6	50		0.2	95.8	4	0		2.5	97.1	0.3	0.1		
Total %	0	0	0	0.3	0.3	0.1	0	0.2	0.3	0.6	0.1	49.4	2.1	0	51.6	1.2	46.1	0.2	0	47.5	

	DQ's Enter Only Drive Northbound					Collision Repair Driveway Southbound					Ferry Street Eastbound					Ferry Street Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:45 PM																					
04:45 PM	0	0	0	**2**	**2**	0	0	0	**1**	1	0	167	6	0	173	**5**	136	0	0	141	317
05:00 PM	0	0	0	0	0	0	0	**1**	0	1	**1**	159	**11**	0	171	4	158	0	0	162	334
05:15 PM	0	0	0	1	1	0	0	0	1	1	0	156	6	0	162	3	145	**2**	0	150	314
05:30 PM	0	0	0	0	0	**1**	0	0	1	**2**	1	**168**	6	0	**175**	3	**169**	0	**1**	**173**	**350**
Total Volume	0	0	0	3	3	1	0	1	3	5	2	650	29	0	681	15	608	2	1	626	1315
% App. Total	0	0	0	100		20	0	20	60		0.3	95.4	4.3	0		2.4	97.1	0.3	0.2		
PHF	.000	.000	.000	.375	.375	.250	.000	.250	.750	.625	.500	.967	.659	.000	.973	.750	.899	.250	.250	.905	.939

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM					04:00 PM					04:45 PM					04:45 PM				
+0 mins.	0	0	0	0	0	0	0	**1**	1	2	0	167	6	0	173	**5**	136	0	0	141
+15 mins.	0	0	0	**2**	**2**	**1**	0	0	0	1	**1**	159	**11**	0	171	4	158	0	0	162
+30 mins.	0	0	0	1	1	1	0	0	**2**	**3**	0	156	6	0	162	3	145	**2**	0	150
+45 mins.	0	0	0	2	2	0	0	0	1	1	1	**168**	6	0	**175**	3	**169**	0	**1**	**173**
Total Volume	0	0	0	5	5	2	0	1	4	7	2	650	29	0	681	15	608	2	1	626
% App. Total	0	0	0	100		28.6	0	14.3	57.1		0.3	95.4	4.3	0		2.4	97.1	0.3	0.2	
PHF	.000	.000	.000	.625	.625	.500	.000	.250	.500	.583	.500	.967	.659	.000	.973	.750	.899	.250	.250	.905

GPI Project #: 2014078.00
Hudson, NH
Client: John DeBarros

Traffic Survey Expedition
106 Sharon Road
N. Quincy, MA 02171
P: 617-448-5686
F: 617-801-8800
www.tsetraffic.com

File Name : Ferry PM
Site Code : 1
Start Date : 7/10/2014

Groups Printed- Heavy Vehicles

	DQ's Enter Only Drive Northbound					Collision Repair Driveway Southbound					Ferry Street Eastbound					Ferry Street Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0	2	0	0	2	4
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	1	0	0	1	2
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	1	0	0	1	2
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	3	0	0	3	4
Total	0	0	0	0	0	0	0	0	0	0	0	5	0	0	5	0	7	0	0	7	12
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	1	0	0	1	2
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0	1	2	0	0	3	0	1	0	0	1	4
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	4	0	0	4	0	5	0	0	5	9
Total	0	0	0	0	0	0	0	0	0	0	1	7	0	0	8	0	7	0	0	7	15
Grand Total	0	0	0	0	0	0	0	0	0	0	1	12	0	0	13	0	14	0	0	14	27
Apprch %	0	0	0	0		0	0	0	0		7.7	92.3	0	0		0	100	0	0		
Total %	0	0	0	0	0	0	0	0	0	0	3.7	44.4	0	0	48.1	0	51.9	0	0	51.9	

	DQ's Enter Only Drive Northbound					Collision Repair Driveway Southbound					Ferry Street Eastbound					Ferry Street Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 05:00 PM																					
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	1	0	0	1	2
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0	**1**	2	0	0	3	0	1	0	0	1	4
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	**4**	0	0	**4**	0	**5**	0	0	**5**	**9**
Total Volume	0	0	0	0	0	0	0	0	0	0	1	7	0	0	8	0	7	0	0	7	15
% App. Total	0	0	0	0		0	0	0	0		12.5	87.5	0	0		0	100	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.250	.438	.000	.000	.500	.000	.350	.000	.000	.350	.417

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM					04:00 PM					05:00 PM					04:00 PM				
+0 mins.	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	2	0	0	2
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
+30 mins.	0	0	0	0	0	0	0	0	0	0	**1**	2	0	0	3	0	1	0	0	1
+45 mins.	0	0	0	0	0	0	0	0	0	0	0	**4**	0	0	**4**	0	**3**	0	0	**3**
Total Volume	0	0	0	0	0	0	0	0	0	0	1	7	0	0	8	0	7	0	0	7
% App. Total	0	0	0	0		0	0	0	0		12.5	87.5	0	0		0	100	0	0	
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.250	.438	.000	.000	.500	.000	.583	.000	.000	.583

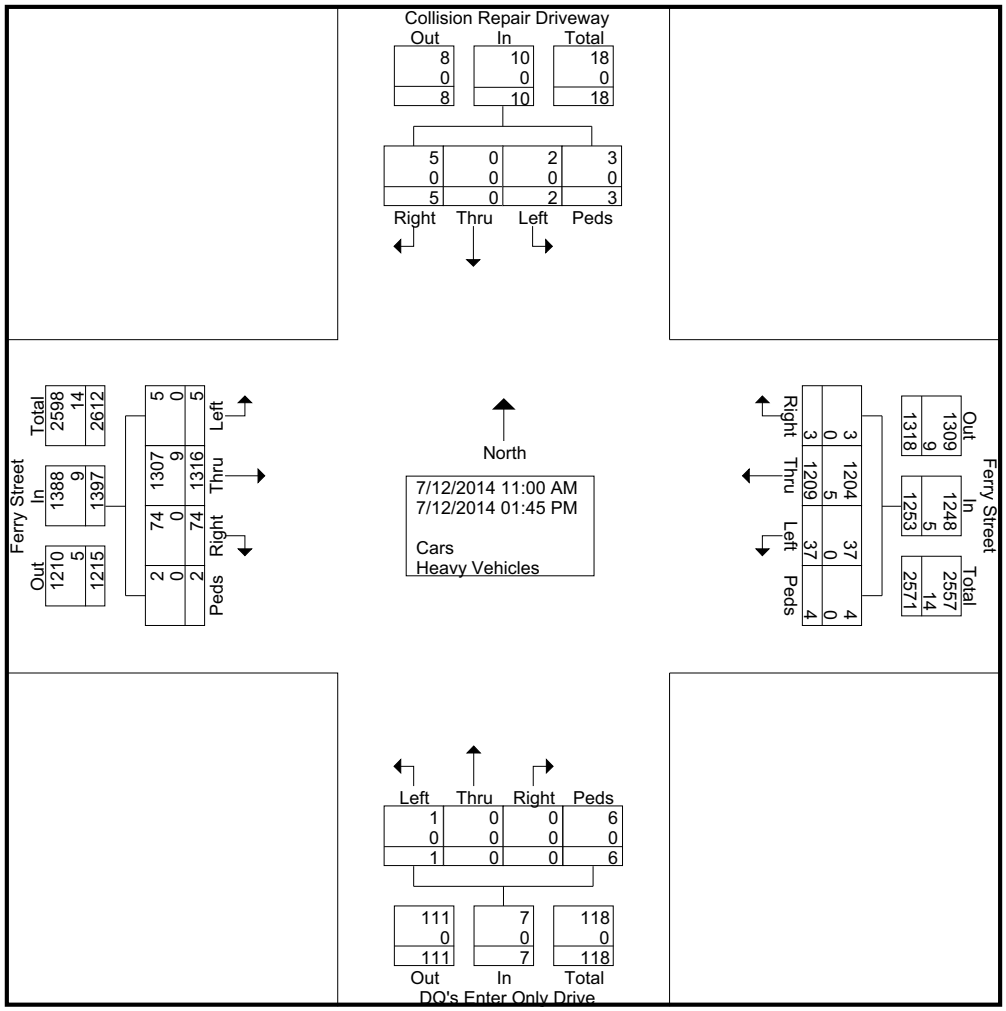
GPI Project #: 2014078.00
Hudson, NH
Client: John DeBarros

Traffic Survey Expedition
106 Sharon Road
N. Quincy, MA 02171
P: 617-448-5686
F: 617-301-3300
www.tsetraffic.com

File Name : Ferry SAT
Site Code : 1
Start Date : 7/12/2014

Groups Printed- Cars - Heavy Vehicles

	DQ's Enter Only Drive Northbound					Collision Repair Driveway Southbound					Ferry Street Eastbound					Ferry Street Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	93	7	0	100	3	97	1	0	101	201
11:15 AM	0	0	0	0	0	2	0	0	0	2	0	106	6	0	112	3	94	0	0	97	211
11:30 AM	1	0	0	2	3	0	0	2	0	2	2	108	4	0	114	3	109	0	0	112	231
11:45 AM	0	0	0	1	1	0	0	0	1	1	0	109	3	0	112	4	94	0	0	98	212
Total	1	0	0	3	4	2	0	2	1	5	2	416	20	0	438	13	394	1	0	408	855
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	115	3	1	119	3	119	0	0	122	241
12:15 PM	0	0	0	0	0	0	0	0	1	1	0	121	9	0	130	5	90	0	0	95	226
12:30 PM	0	0	0	0	0	0	0	1	0	1	0	129	5	1	135	3	120	1	2	126	262
12:45 PM	0	0	0	0	0	0	0	0	0	0	2	122	9	0	133	3	117	0	0	120	253
Total	0	0	0	0	0	0	0	1	1	2	2	487	26	2	517	14	446	1	2	463	982
01:00 PM	0	0	0	1	1	0	0	2	0	2	0	121	6	0	127	2	85	0	0	87	217
01:15 PM	0	0	0	1	1	0	0	0	0	0	0	102	12	0	114	2	108	1	1	112	227
01:30 PM	0	0	0	1	1	0	0	0	0	0	1	103	5	0	109	5	111	0	1	117	227
01:45 PM	0	0	0	0	0	0	0	0	1	1	0	87	5	0	92	1	65	0	0	66	159
Total	0	0	0	3	3	0	0	2	1	3	1	413	28	0	442	10	369	1	2	382	830
Grand Total	1	0	0	6	7	2	0	5	3	10	5	1316	74	2	1397	37	1209	3	4	1253	2667
Apprch %	14.3	0	0	85.7		20	0	50	30		0.4	94.2	5.3	0.1		3	96.5	0.2	0.3		
Total %	0	0	0	0.2	0.3	0.1	0	0.2	0.1	0.4	0.2	49.3	2.8	0.1	52.4	1.4	45.3	0.1	0.1	47	
Cars	1	0	0	6	7	2	0	5	3	10	5	1307	74	2	1388	37	1204	3	4	1248	2653
% Cars	100	0	0	100	100	100	0	100	100	100	100	99.3	100	100	99.4	100	99.6	100	100	99.6	99.5
Heavy Vehicles	0	0	0	0	0	0	0	0	0	0	0	9	0	0	9	0	5	0	0	5	14
% Heavy Vehicles	0	0	0	0	0	0	0	0	0	0	0	0.7	0	0	0.6	0	0.4	0	0	0.4	0.5

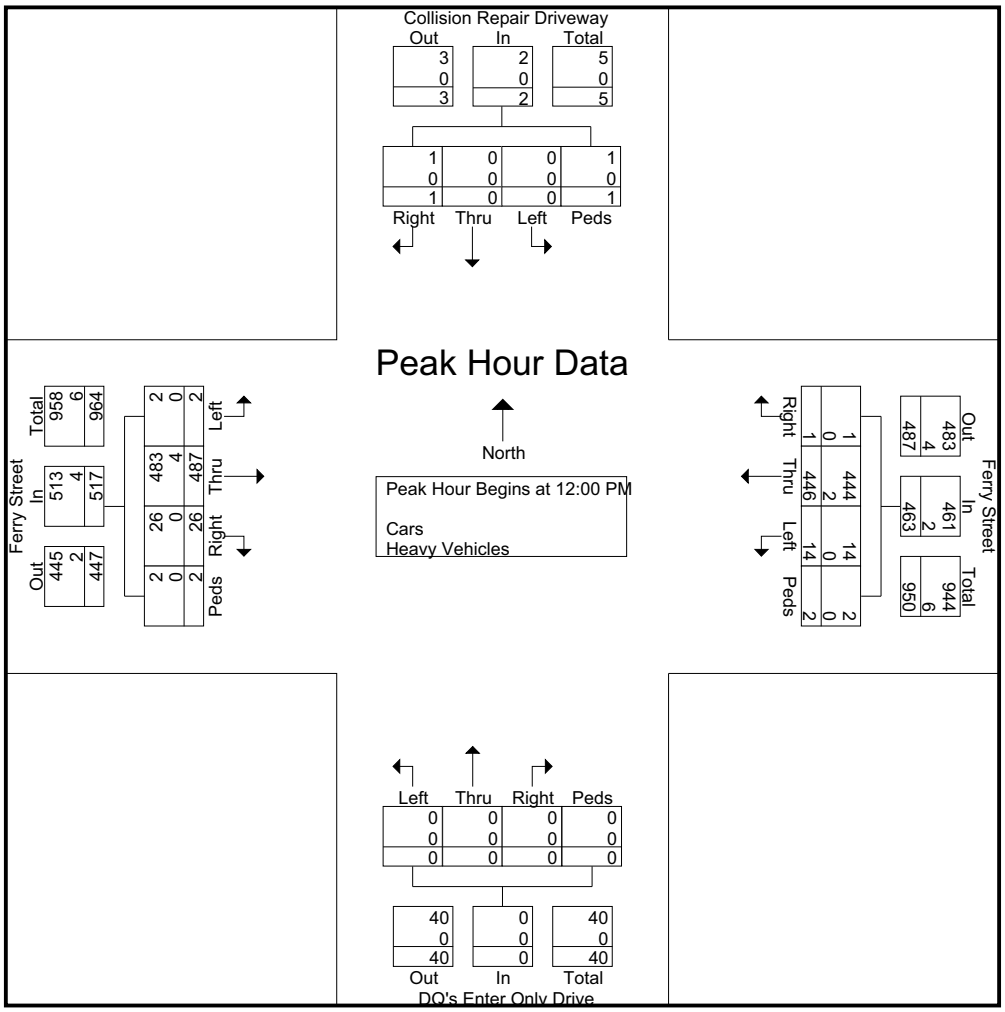


GPI Project #: 2014078.00
Hudson, NH
Client: John DeBarros

Traffic Survey Expedition
106 Sharon Road
N. Quincy, MA 02171
P: 617-448-5686
F: 617-801-8800
www.tsetraffic.com

File Name : Ferry SAT
Site Code : 1
Start Date : 7/12/2014

	DQ's Enter Only Drive Northbound					Collision Repair Driveway Southbound					Ferry Street Eastbound					Ferry Street Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
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																					
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	115	3	**1**	119	3	119	0	0	122	241
12:15 PM	0	0	0	0	0	0	0	0	**1**	**1**	0	121	**9**	0	130	**5**	90	0	0	95	226
12:30 PM	0	0	0	0	0	0	0	**1**	0	1	0	**129**	5	1	**135**	3	**120**	**1**	**2**	**126**	**262**
12:45 PM	0	0	0	0	0	0	0	0	0	0	**2**	122	9	0	133	3	117	0	0	120	253
Total Volume	0	0	0	0	0	0	0	1	1	2	2	487	26	2	517	14	446	1	2	463	982
% App. Total	0	0	0	0		0	0	50	50		0.4	94.2	5	0.4		3	96.3	0.2	0.4		
PHF	.000	.000	.000	.000	.000	.000	.000	.250	.250	.500	.250	.944	.722	.500	.957	.700	.929	.250	.250	.919	.937
Cars	0	0	0	0	0	0	0	1	1	2	2	483	26	2	513	14	444	1	2	461	976
% Cars	0	0	0	0	0	0	0	100	100	100	100	99.2	100	100	99.2	100	99.6	100	100	99.6	99.4
Heavy Vehicles	0	0	0	0	0	0	0	0	0	0	0	4	0	0	4	0	2	0	0	2	6
% Heavy Vehicles	0	0	0	0	0	0	0	0	0	0	0	0.8	0	0	0.8	0	0.4	0	0	0.4	0.6



GPI Project #: 2014078.00
Hudson, NH
Client: John DeBarros

Traffic Survey Expedition
106 Sharon Road
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P: 617-448-5686
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File Name : Ferry SAT
Site Code : 1
Start Date : 7/12/2014

Groups Printed- Cars

	DQ's Enter Only Drive Northbound					Collision Repair Driveway Southbound					Ferry Street Eastbound					Ferry Street Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	93	7	0	100	3	97	1	0	101	201
11:15 AM	0	0	0	0	0	2	0	0	0	2	0	105	6	0	111	3	94	0	0	97	210
11:30 AM	1	0	0	2	3	0	0	2	0	2	2	108	4	0	114	3	109	0	0	112	231
11:45 AM	0	0	0	1	1	0	0	0	1	1	0	109	3	0	112	4	92	0	0	96	210
Total	1	0	0	3	4	2	0	2	1	5	2	415	20	0	437	13	392	1	0	406	852
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	115	3	1	119	3	119	0	0	122	241
12:15 PM	0	0	0	0	0	0	0	0	1	1	0	119	9	0	128	5	90	0	0	95	224
12:30 PM	0	0	0	0	0	0	0	1	0	1	0	128	5	1	134	3	119	1	2	125	260
12:45 PM	0	0	0	0	0	0	0	0	0	0	2	121	9	0	132	3	116	0	0	119	251
Total	0	0	0	0	0	0	0	1	1	2	2	483	26	2	513	14	444	1	2	461	976
01:00 PM	0	0	0	1	1	0	0	2	0	2	0	121	6	0	127	2	85	0	0	87	217
01:15 PM	0	0	0	1	1	0	0	0	0	0	0	101	12	0	113	2	107	1	1	111	225
01:30 PM	0	0	0	1	1	0	0	0	0	0	1	102	5	0	108	5	111	0	1	117	226
01:45 PM	0	0	0	0	0	0	0	0	1	1	0	85	5	0	90	1	65	0	0	66	157
Total	0	0	0	3	3	0	0	2	1	3	1	409	28	0	438	10	368	1	2	381	825
Grand Total	1	0	0	6	7	2	0	5	3	10	5	1307	74	2	1388	37	1204	3	4	1248	2653
Apprch %	14.3	0	0	85.7		20	0	50	30		0.4	94.2	5.3	0.1		3	96.5	0.2	0.3		
Total %	0	0	0	0.2	0.3	0.1	0	0.2	0.1	0.4	0.2	49.3	2.8	0.1	52.3	1.4	45.4	0.1	0.2	47	

	DQ's Enter Only Drive Northbound					Collision Repair Driveway Southbound					Ferry Street Eastbound					Ferry Street Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
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																					
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	115	3	**1**	119	3	**119**	0	0	122	241
12:15 PM	0	0	0	0	0	0	0	0	**1**	**1**	0	119	**9**	0	128	**5**	90	0	0	95	224
12:30 PM	0	0	0	0	0	0	0	**1**	0	1	0	**128**	5	1	**134**	3	119	**1**	**2**	**125**	**260**
12:45 PM	0	0	0	0	0	0	0	0	0	0	**2**	121	9	0	132	3	116	0	0	119	251
Total Volume	0	0	0	0	0	0	0	1	1	2	2	483	26	2	513	14	444	1	2	461	976
% App. Total	0	0	0	0		0	0	50	50		0.4	94.2	5.1	0.4		3	96.3	0.2	0.4		
PHF	.000	.000	.000	.000	.000	.000	.000	.250	.250	.500	.250	.943	.722	.500	.957	.700	.933	.250	.250	.922	.938

Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	11:00 AM					11:00 AM					12:15 PM					12:00 PM				
+0 mins.	0	0	0	0	0	0	0	0	0	0	0	119	**9**	0	128	3	**119**	0	0	122
+15 mins.	0	0	0	0	0	**2**	0	0	0	**2**	0	**128**	5	**1**	**134**	**5**	90	0	0	95
+30 mins.	**1**	0	0	**2**	**3**	0	0	**2**	0	2	**2**	121	9	0	132	3	119	**1**	**2**	**125**
+45 mins.	0	0	0	1	1	0	0	0	**1**	1	0	121	6	0	127	3	116	0	0	119
Total Volume	1	0	0	3	4	2	0	2	1	5	2	489	29	1	521	14	444	1	2	461
% App. Total	25	0	0	75		40	0	40	20		0.4	93.9	5.6	0.2		3	96.3	0.2	0.4	
PHF	.250	.000	.000	.375	.333	.250	.000	.250	.250	.625	.250	.955	.806	.250	.972	.700	.933	.250	.250	.922

GPI Project #: 2014078.00
Hudson, NH
Client: John DeBarros

Traffic Survey Expedition
106 Sharon Road
N. Quincy, MA 02171
P: 617-448-5686
F: 617-801-8800
www.tsetraffic.com

File Name : Ferry SAT
Site Code : 1
Start Date : 7/12/2014

Groups Printed- Heavy Vehicles

	DQ's Enter Only Drive Northbound					Collision Repair Driveway Southbound					Ferry Street Eastbound					Ferry Street Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
11:00 AM	0	0	0	0	0	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	1	0	0	1	0	0	0	0	0	1
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	2
Total	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	2	0	0	2	3
12:00 PM	0	0	0	0	0	0	0	0	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	2	0	0	2	0	0	0	0	0	2
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	1	0	0	1	2
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	1	0	0	1	2
Total	0	0	0	0	0	0	0	0	0	0	0	4	0	0	4	0	2	0	0	2	6
01:00 PM	0	0	0	0	0	0	0	0	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	1	0	0	1	0	1	0	0	1	2
01:30 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
01:45 PM	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	2
Total	0	0	0	0	0	0	0	0	0	0	0	4	0	0	4	0	1	0	0	1	5
Grand Total	0	0	0	0	0	0	0	0	0	0	0	9	0	0	9	0	5	0	0	5	14
Apprch %	0	0	0	0		0	0	0	0		0	100	0	0		0	100	0	0		
Total %	0	0	0	0	0	0	0	0	0	0	0	64.3	0	0	64.3	0	35.7	0	0	35.7	

	DQ's Enter Only Drive Northbound					Collision Repair Driveway Southbound					Ferry Street Eastbound					Ferry Street Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 11:45 AM																					
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**2**	0	0	**2**	**2**
12:00 PM	0	0	0	0	0	0	0	0	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	**2**	0	0	**2**	0	0	0	0	0	2
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	1	0	0	1	2
Total Volume	0	0	0	0	0	0	0	0	0	0	0	3	0	0	3	0	3	0	0	3	6
% App. Total	0	0	0	0		0	0	0	0		0	100	0	0		0	100	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.375	.000	.000	.375	.000	.375	.000	.000	.375	.750

Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	11:00 AM					11:00 AM					12:00 PM					11:45 AM				
+0 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**2**	0	0	**2**
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	**2**	0	0	**2**	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	1	0	0	1
Total Volume	0	0	0	0	0	0	0	0	0	0	0	4	0	0	4	0	3	0	0	3
% App. Total	0	0	0	0		0	0	0	0		0	100	0	0		0	100	0	0	
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.500	.000	.000	.500	.000	.375	.000	.000	.375

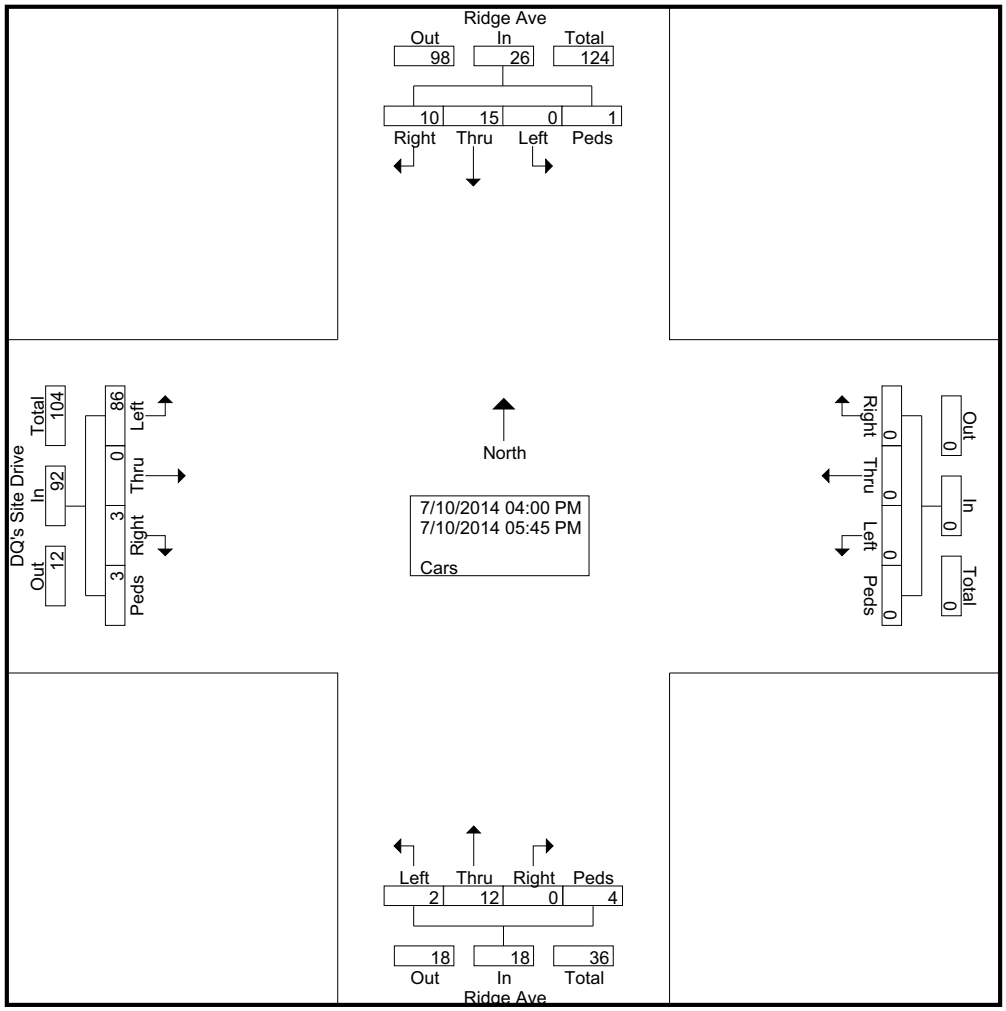
GPI Project #: 2014078.00
Hudson, NH
Client: John DeBarros

Traffic Survey Expedition
106 Sharon Road
N. Quincy, MA 02171
P: 617-448-5686
F: 617-801-8300
www.tsetraffic.com

File Name : Ridge PM
Site Code : 2
Start Date : 7/10/2014

Groups Printed- Cars

	Ridge Ave Northbound					Ridge Ave Southbound					DQ's Site Drive Eastbound					Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
04:00 PM	0	3	0	0	3	0	2	1	0	3	11	0	1	0	12	0	0	0	0	0	18
04:15 PM	0	4	0	0	4	0	0	2	0	2	14	0	0	0	14	0	0	0	0	0	20
04:30 PM	0	0	0	2	2	0	0	2	0	2	9	0	1	0	10	0	0	0	0	0	14
04:45 PM	1	0	0	0	1	0	4	3	0	7	7	0	0	0	7	0	0	0	0	0	15
Total	1	7	0	2	10	0	6	8	0	14	41	0	2	0	43	0	0	0	0	0	67
05:00 PM	0	1	0	0	1	0	3	1	0	4	23	0	0	0	23	0	0	0	0	0	28
05:15 PM	0	1	0	0	1	0	1	0	0	1	10	0	1	0	11	0	0	0	0	0	13
05:30 PM	1	1	0	0	2	0	3	1	1	5	3	0	0	0	3	0	0	0	0	0	10
05:45 PM	0	2	0	2	4	0	2	0	0	2	9	0	0	3	12	0	0	0	0	0	18
Total	1	5	0	2	8	0	9	2	1	12	45	0	1	3	49	0	0	0	0	0	69
Grand Total	2	12	0	4	18	0	15	10	1	26	86	0	3	3	92	0	0	0	0	0	136
Apprch %	11.1	66.7	0	22.2		0	57.7	38.5	3.8		93.5	0	3.3	3.3		0	0	0	0		
Total %	1.5	8.8	0	2.9	13.2	0	11	7.4	0.7	19.1	63.2	0	2.2	2.2	67.6	0	0	0	0	0	

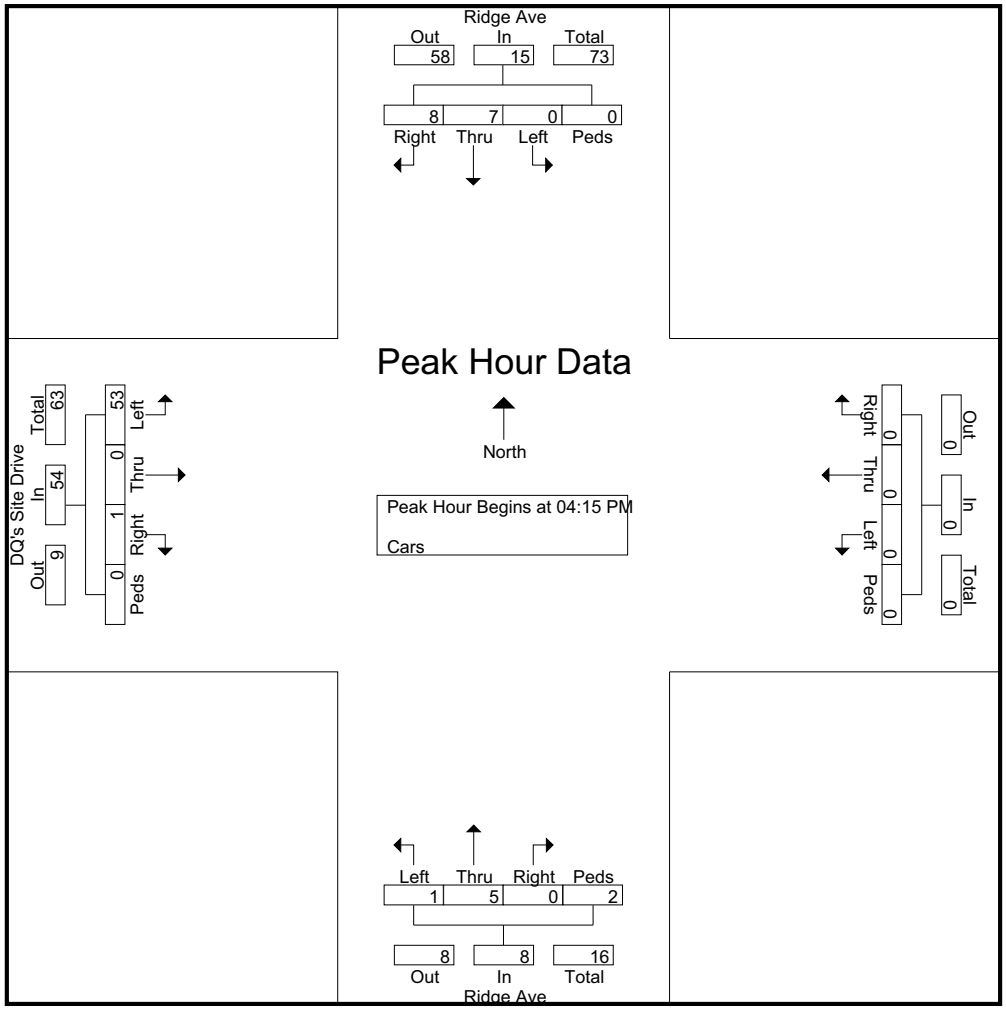


GPI Project #: 2014078.00
Hudson, NH
Client: John DeBarros

Traffic Survey Expedition
106 Sharon Road
N. Quincy, MA 02171
P: 617-448-5686
F: 617-801-8800
www.tsetraffic.com

File Name : Ridge PM
Site Code : 2
Start Date : 7/10/2014

	Ridge Ave Northbound					Ridge Ave Southbound					DQ's Site Drive Eastbound					Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:15 PM																					
04:15 PM	0	**4**	0	0	**4**	0	0	2	0	2	14	0	0	0	14	0	0	0	0	0	20
04:30 PM	0	0	0	**2**	2	0	0	2	0	2	9	0	**1**	0	10	0	0	0	0	0	14
04:45 PM	**1**	0	0	0	1	0	**4**	**3**	0	**7**	7	0	0	0	7	0	0	0	0	0	15
05:00 PM	0	1	0	0	1	0	3	1	0	4	**23**	0	0	0	**23**	0	0	0	0	0	**28**
Total Volume	1	5	0	2	8	0	7	8	0	15	53	0	1	0	54	0	0	0	0	0	77
% App. Total	12.5	62.5	0	25		0	46.7	53.3	0		98.1	0	1.9	0		0	0	0	0		
PHF	.250	.313	.000	.250	.500	.000	.438	.667	.000	.536	.576	.000	.250	.000	.587	.000	.000	.000	.000	.000	.688



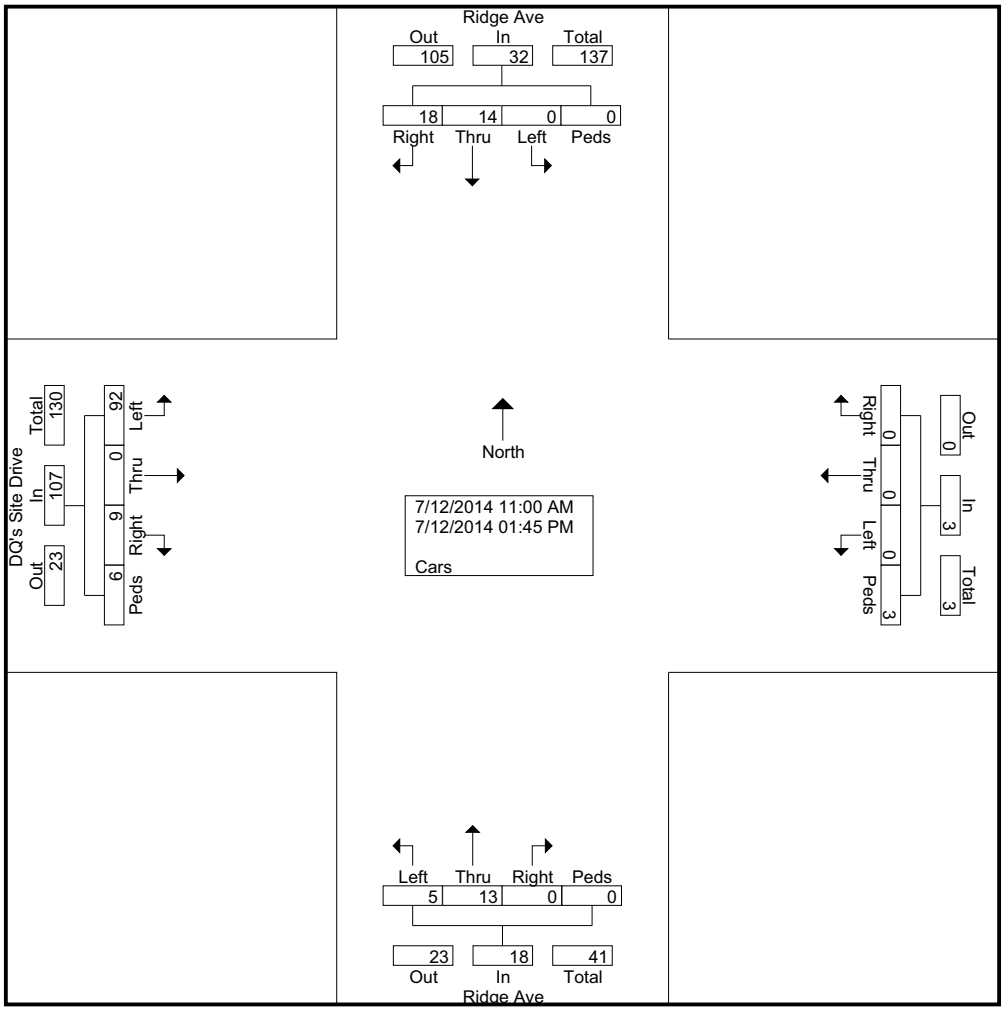
GPI Project #: 2014078.00
Hudson, NH
Client: John DeBarros

Traffic Survey Expedition
106 Sharon Road
N. Quincy, MA 02171
P: 617-448-5686
F: 617-301-8300
www.tsetraffic.com

File Name : Ridge SAT
Site Code : 2
Start Date : 7/12/2014

Groups Printed- Cars

	Ridge Ave Northbound					Ridge Ave Southbound					DQ's Site Drive Eastbound					Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
11:00 AM	0	1	0	0	1	0	1	0	0	1	5	0	0	1	6	0	0	0	0	0	8
11:15 AM	0	0	0	0	0	0	0	0	0	0	6	0	1	1	8	0	0	0	0	0	8
11:30 AM	2	4	0	0	6	0	1	3	0	4	6	0	1	0	7	0	0	0	0	0	17
11:45 AM	1	1	0	0	2	0	2	2	0	4	6	0	1	0	7	0	0	0	0	0	13
Total	3	6	0	0	9	0	4	5	0	9	23	0	3	2	28	0	0	0	0	0	46
12:00 PM	0	1	0	0	1	0	4	3	0	7	6	0	0	0	6	0	0	0	0	0	14
12:15 PM	0	3	0	0	3	0	0	2	0	2	4	0	2	0	6	0	0	0	1	1	12
12:30 PM	1	0	0	0	1	0	1	1	0	2	14	0	0	0	14	0	0	0	0	0	17
12:45 PM	0	1	0	0	1	0	0	3	0	3	6	0	2	0	8	0	0	0	1	1	13
Total	1	5	0	0	6	0	5	9	0	14	30	0	4	0	34	0	0	0	2	2	56
01:00 PM	0	1	0	0	1	0	0	2	0	2	10	0	0	1	11	0	0	0	1	1	15
01:15 PM	0	0	0	0	0	0	0	0	0	0	12	0	0	2	14	0	0	0	0	0	14
01:30 PM	0	0	0	0	0	0	3	0	0	3	9	0	1	0	10	0	0	0	0	0	13
01:45 PM	1	1	0	0	2	0	2	2	0	4	8	0	1	1	10	0	0	0	0	0	16
Total	1	2	0	0	3	0	5	4	0	9	39	0	2	4	45	0	0	0	1	1	58
Grand Total	5	13	0	0	18	0	14	18	0	32	92	0	9	6	107	0	0	0	3	3	160
Apprch %	27.8	72.2	0	0		0	43.8	56.2	0		86	0	8.4	5.6		0	0	0	100		
Total %	3.1	8.1	0	0	11.2	0	8.8	11.2	0	20	57.5	0	5.6	3.8	66.9	0	0	0	1.9	1.9	

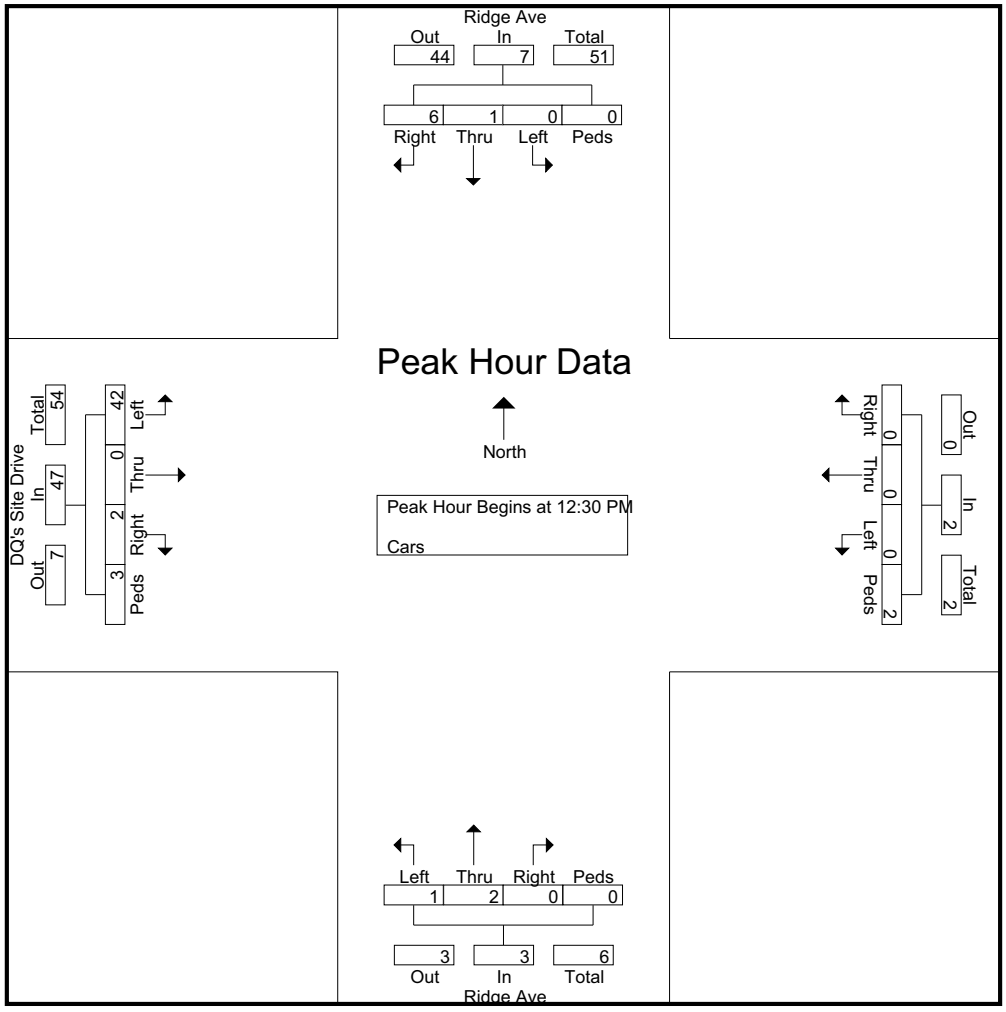


GPI Project #: 2014078.00
Hudson, NH
Client: John DeBarros

Traffic Survey Expedition
106 Sharon Road
N. Quincy, MA 02171
P: 617-448-5686
F: 617-801-8800
www.tsetraffic.com

File Name : Ridge SAT
Site Code : 2
Start Date : 7/12/2014

	Ridge Ave Northbound					Ridge Ave Southbound					DQ's Site Drive Eastbound					Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 12:30 PM																					
12:30 PM	**1**	0	0	0	**1**	0	**1**	1	0	2	**14**	0	0	0	**14**	0	0	0	0	0	**17**
12:45 PM	0	**1**	0	0	1	0	0	**3**	0	**3**	6	0	**2**	0	8	0	0	0	**1**	**1**	13
01:00 PM	0	1	0	0	1	0	0	2	0	2	10	0	0	1	11	0	0	0	1	1	15
01:15 PM	0	0	0	0	0	0	0	0	0	0	12	0	0	**2**	14	0	0	0	0	0	14
Total Volume	1	2	0	0	3	0	1	6	0	7	42	0	2	3	47	0	0	0	2	2	59
% App. Total	33.3	66.7	0	0		0	14.3	85.7	0		89.4	0	4.3	6.4		0	0	0	100		
PHF	.250	.500	.000	.000	.750	.000	.250	.500	.000	.583	.750	.000	.250	.375	.839	.000	.000	.000	.500	.500	.868



Traffic Survey Expedition
106 Sharon Road
N. Quincy, MA 02171
P: 617-448-5686
F: 617-801-8800
www.tsetraffic.com

GPI Project #:2014078.00
Hudson, NH
Client: John DeBarros

Site Code: 2
Station ID: Ridge Ave
North of DQ's Entrance

Start Time	10-Jul-14 Thu	Northbound A.M.	Northbound P.M.	Soundbound A.M.	Soundbound P.M.	Combined A.M.	Combined P.M.	11-Jul- Fri	Northbound A.M.	Northbound P.M.	Soundbound A.M.	Soundbound P.M.	Combined A.M.	Combined P.M.
12:00		1	1	0	1	1	2		1	6	0	0	1	6
12:15		1	3	1	0	2	3		0	3	0	2	0	5
12:30		0	1	0	2	0	3		1	3	0	2	1	5
12:45		1	7	0	0	1	7		0	7	0	0	0	7
01:00		0	4	0	1	0	5		0	10	0	4	0	14
01:15		0	3	0	1	0	4		0	13	0	0	0	13
01:30		0	3	0	0	0	3		2	8	0	1	2	9
01:45		0	7	0	0	0	7		0	10	1	0	1	10
02:00		0	10	0	1	0	11		0	4	0	1	0	5
02:15		0	5	1	0	1	5		0	7	0	0	0	7
02:30		0	2	0	2	0	4		0	3	0	0	0	3
02:45		0	11	0	0	0	11		1	6	1	1	2	7
03:00		2	8	0	0	2	8		0	9	0	1	0	10
03:15		0	4	0	1	0	5		0	9	0	0	0	9
03:30		0	***13***	0	0	0	13		0	5	0	0	0	5
03:45		1	***10***	0	1	1	11		0	10	0	2	0	12
04:00		0	***16***	1	2	1	18		0	6	0	3	0	9
04:15		2	***19***	0	2	2	***21***		0	13	0	10	0	23
04:30		0	11	0	4	0	***15***		2	15	1	7	3	22
04:45		0	10	1	***4***	1	***14***		1	***11***	0	5	1	16
05:00		1	18	0	***6***	1	***24***		0	***16***	0	***5***	0	***21***
05:15		0	15	0	***3***	0	18		1	***21***	0	***9***	1	***30***
05:30		1	10	1	***5***	2	15		1	***18***	0	***6***	1	***24***
05:45		0	14	1	3	1	17		0	8	0	***9***	0	***17***
06:00		3	10	1	3	4	13		4	15	0	3	4	18
06:15		0	16	0	1	0	17		0	5	0	8	0	13
06:30		1	13	0	3	1	16		0	19	0	5	0	24
06:45		***0***	11	0	2	0	13		2	6	0	1	2	7
07:00		***2***	11	1	2	***3***	13		1	9	0	0	1	9
07:15		***4***	8	0	2	***4***	10		***0***	9	2	6	***2***	15
07:30		***2***	8	0	4	***2***	12		***5***	13	0	0	***5***	13
07:45		0	5	1	3	***1***	8		***3***	10	1	1	***4***	11
08:00		0	7	0	1	0	8		***3***	8	0	3	***3***	11
08:15		2	4	2	0	4	4		0	6	0	1	0	7
08:30		1	5	0	1	1	6		1	17	0	3	1	20
08:45		1	4	0	1	1	5		0	11	0	0	0	11
09:00		0	2	0	0	0	2		2	10	1	2	3	12
09:15		1	2	2	0	3	2		2	7	0	0	2	7
09:30		2	3	1	2	3	5		0	11	1	0	1	11
09:45		2	2	0	0	2	2		1	19	0	1	1	20
10:00		0	0	1	0	1	0		4	14	0	1	4	15
10:15		2	4	0	0	2	4		0	6	***0***	0	0	6
10:30		0	2	0	1	0	3		2	1	***3***	1	5	2
10:45		1	2	1	0	2	2		2	0	***0***	2	2	2
11:00		1	0	***1***	0	2	0		1	2	***1***	0	2	2
11:15		3	1	***1***	1	4	2		0	0	0	0	0	0
11:30		0	0	***1***	1	1	1		0	1	1	0	1	1
11:45		0	0	***3***	0	3	0		3	1	1	0	4	1
Total		38	325	22	67	60	392		46	421	14	106	60	527
Day Total		363		89		452			467		120		587	
% Total		8.4%	71.9%	4.9%	14.8%				7.8%	71.7%	2.4%	18.1%		
Peak	-	06:45	03:30	11:00	04:45	07:00	04:15	-	07:15	04:45	10:15	05:00	07:15	05:00
Vol.	-	8	58	6	18	10	74	-	11	66	4	29	14	92
P.H.F.		0.500	0.763	0.500	0.750	0.625	0.771		0.550	0.786	0.333	0.806	0.700	0.767

Traffic Survey Expedition
106 Sharon Road
N. Quincy, MA 02171
P: 617-448-5686
F: 617-801-8800
www.tsetraffic.com

GPI Project #:2014078.00
Hudson, NH
Client: John DeBarros

Site Code: 2
Station ID: Ridge Ave
North of DQ's Entrance

Start Time	12-Jul-14 Sat	Northbound A.M.	Northbound P.M.	Soundbound A.M.	Soundbound P.M.	Combined A.M.	Combined P.M.	13-Jul- Sun	Northbound A.M.	Northbound P.M.	Soundbound A.M.	Soundbound P.M.	Combined A.M.	Combined P.M.
12:00		0	6	1	5	1	11		*	*	*	*	*	*
12:15		0	6	3	3	3	9		*	*	*	*	*	*
12:30		0	11	0	2	0	13		*	*	*	*	*	*
12:45		0	8	0	1	0	9		*	*	*	*	*	*
01:00		0	10	1	2	1	12		*	*	*	*	*	*
01:15		1	10	0	2	1	12		*	*	*	*	*	*
01:30		1	11	2	***4***	3	15		*	*	*	*	*	*
01:45		0	10	0	***3***	0	13		*	*	*	*	*	*
02:00		2	***15***	0	***3***	2	***18***		*	*	*	*	*	*
02:15		1	***8***	0	***5***	1	***13***		*	*	*	*	*	*
02:30		1	***13***	2	2	3	***15***		*	*	*	*	*	*
02:45		1	***13***	0	1	1	***14***		*	*	*	*	*	*
03:00		0	11	0	1	0	12		*	*	*	*	*	*
03:15		0	7	1	0	1	7		*	*	*	*	*	*
03:30		0	9	1	1	1	10		*	*	*	*	*	*
03:45		0	10	0	2	0	12		*	*	*	*	*	*
04:00		0	18	0	0	0	18		*	*	*	*	*	*
04:15		1	5	0	1	1	6		*	*	*	*	*	*
04:30		0	6	1	1	1	7		*	*	*	*	*	*
04:45		0	5	0	0	0	5		*	*	*	*	*	*
05:00		0	9	0	1	0	10		*	*	*	*	*	*
05:15		1	12	0	0	1	12		*	*	*	*	*	*
05:30		0	14	2	0	2	14		*	*	*	*	*	*
05:45		0	9	0	2	0	11		*	*	*	*	*	*
06:00		1	7	0	0	1	7		*	*	*	*	*	*
06:15		1	7	0	1	1	8		*	*	*	*	*	*
06:30		0	9	0	1	0	10		*	*	*	*	*	*
06:45		4	6	1	2	5	8		*	*	*	*	*	*
07:00		0	8	0	0	0	8		*	*	*	*	*	*
07:15		1	11	1	0	2	11		*	*	*	*	*	*
07:30		2	6	0	1	2	7		*	*	*	*	*	*
07:45		1	9	0	0	1	9		*	*	*	*	*	*
08:00		1	5	0	0	1	5		*	*	*	*	*	*
08:15		0	4	1	1	1	5		*	*	*	*	*	*
08:30		3	2	0	0	3	2		*	*	*	*	*	*
08:45		0	2	0	0	0	2		*	*	*	*	*	*
09:00		1	4	1	2	2	6		*	*	*	*	*	*
09:15		0	2	1	0	1	2		*	*	*	*	*	*
09:30		1	1	1	1	2	2		*	*	*	*	*	*
09:45		1	1	0	0	1	1		*	*	*	*	*	*
10:00		0	6	0	0	0	6		*	*	*	*	*	*
10:15		1	4	0	0	1	4		*	*	*	*	*	*
10:30		3	3	1	0	4	3		*	*	*	*	*	*
10:45		3	1	0	0	3	1		*	*	*	*	*	*
11:00		***4***	0	***2***	2	***6***	2		*	*	*	*	*	*
11:15		***8***	2	***2***	0	***10***	2		*	*	*	*	*	*
11:30		***8***	1	***4***	0	***12***	1		*	*	*	*	*	*
11:45		***8***	2	***2***	0	***10***	2		*	*	*	*	*	*
Total		61	339	31	53	92	392		0	0	0	0	0	0
Day Total		400		84		484			0		0		0	
% Total		12.6%	70.0%	6.4%	11.0%				0.0%	0.0%	0.0%	0.0%		
Peak	-	11:00	02:00	11:00	01:30	11:00	02:00	-	-	-	-	-	-	-
Vol.	-	28	49	10	15	38	60	-	-	-	-	-	-	-
P.H.F.		0.875	0.817	0.625	0.750	0.792	0.833							

ADT	ADT 13,698	AADT 13,698

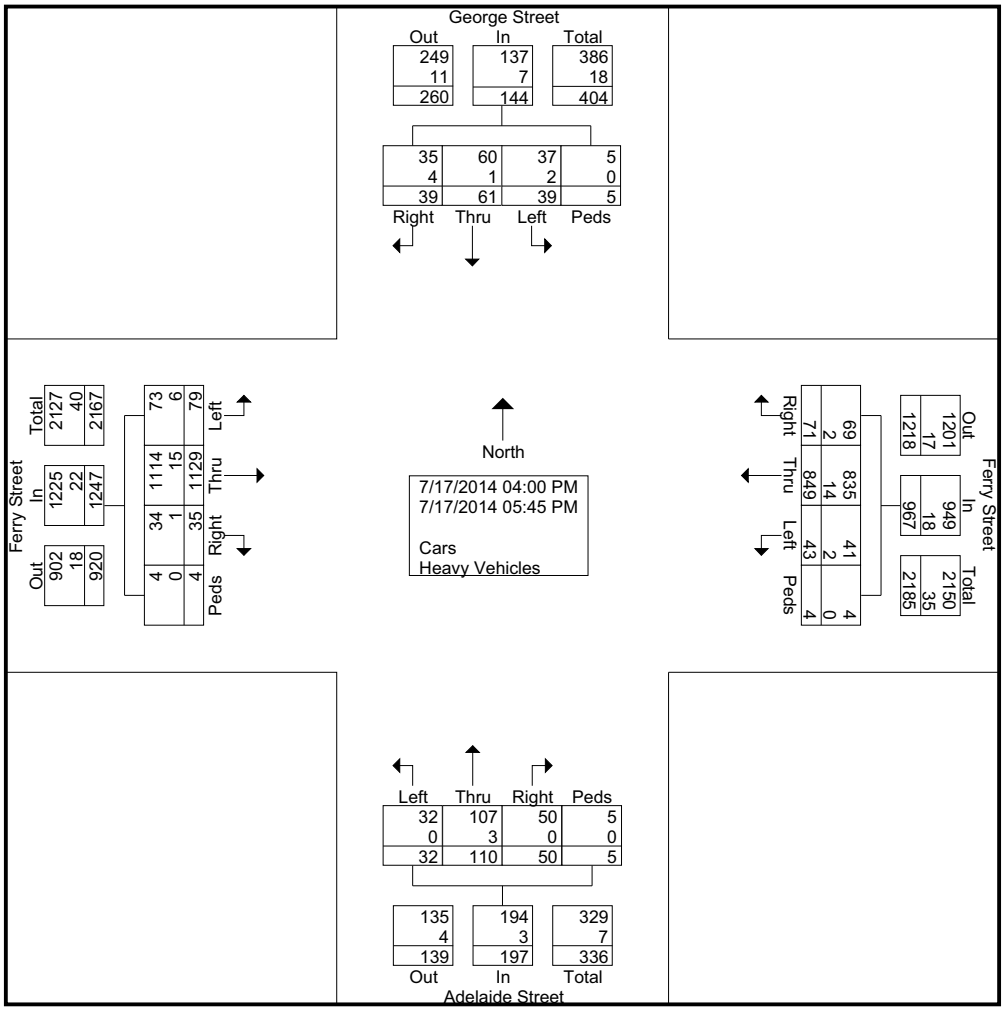
GPI Project #: 2014078.00
Hudson, NH
Client: John DeBarros

Traffic Survey Expedition
106 Sharon Road
N. Quincy, MA 02171
P: 617-448-5686
F: 617-301-8800
www.tsetraffic.com

File Name : PM
Site Code : 1
Start Date : 7/17/2014

Groups Printed- Cars - Heavy Vehicles

	Adelaide Street Northbound					George Street Southbound					Ferry Street Eastbound					Ferry Street Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
04:00 PM	8	8	12	1	29	7	5	4	2	18	16	152	5	0	173	10	108	12	0	130	350
04:15 PM	3	9	4	1	17	2	6	2	0	10	7	147	4	2	160	4	102	6	0	112	299
04:30 PM	4	17	3	0	24	4	5	10	1	20	8	135	6	0	149	4	102	6	3	115	308
04:45 PM	2	13	13	0	28	7	5	5	0	17	10	125	4	1	140	4	112	11	1	128	313
Total	17	47	32	2	98	20	21	21	3	65	41	559	19	3	622	22	424	35	4	485	1270
05:00 PM	5	13	5	2	25	7	8	5	0	20	11	141	6	0	158	6	95	7	0	108	311
05:15 PM	5	23	7	0	35	7	10	5	0	22	10	146	4	0	160	5	111	14	0	130	347
05:30 PM	2	14	2	1	19	2	12	4	1	19	9	142	3	0	154	5	112	7	0	124	316
05:45 PM	3	13	4	0	20	3	10	4	1	18	8	141	3	1	153	5	107	8	0	120	311
Total	15	63	18	3	99	19	40	18	2	79	38	570	16	1	625	21	425	36	0	482	1285
Grand Total	32	110	50	5	197	39	61	39	5	144	79	1129	35	4	1247	43	849	71	4	967	2555
Apprch %	16.2	55.8	25.4	2.5		27.1	42.4	27.1	3.5		6.3	90.5	2.8	0.3		4.4	87.8	7.3	0.4		
Total %	1.3	4.3	2	0.2	7.7	1.5	2.4	1.5	0.2	5.6	3.1	44.2	1.4	0.2	48.8	1.7	33.2	2.8	0.2	37.8	
Cars	32	107	50	5	194	37	60	35	5	137	73	1114	34	4	1225	41	835	69	4	949	2505
% Cars	100	97.3	100	100	98.5	94.9	98.4	89.7	100	95.1	92.4	98.7	97.1	100	98.2	95.3	98.4	97.2	100	98.1	98
Heavy Vehicles																					
% Heavy Vehicles	0	2.7	0	0	1.5	5.1	1.6	10.3	0	4.9	7.6	1.3	2.9	0	1.8	4.7	1.6	2.8	0	1.9	2



GPI Project #: 2014078.00
Hudson, NH
Client: John DeBarros

Traffic Survey Expedition
106 Sharon Road
N. Quincy, MA 02171
P: 617-448-5686
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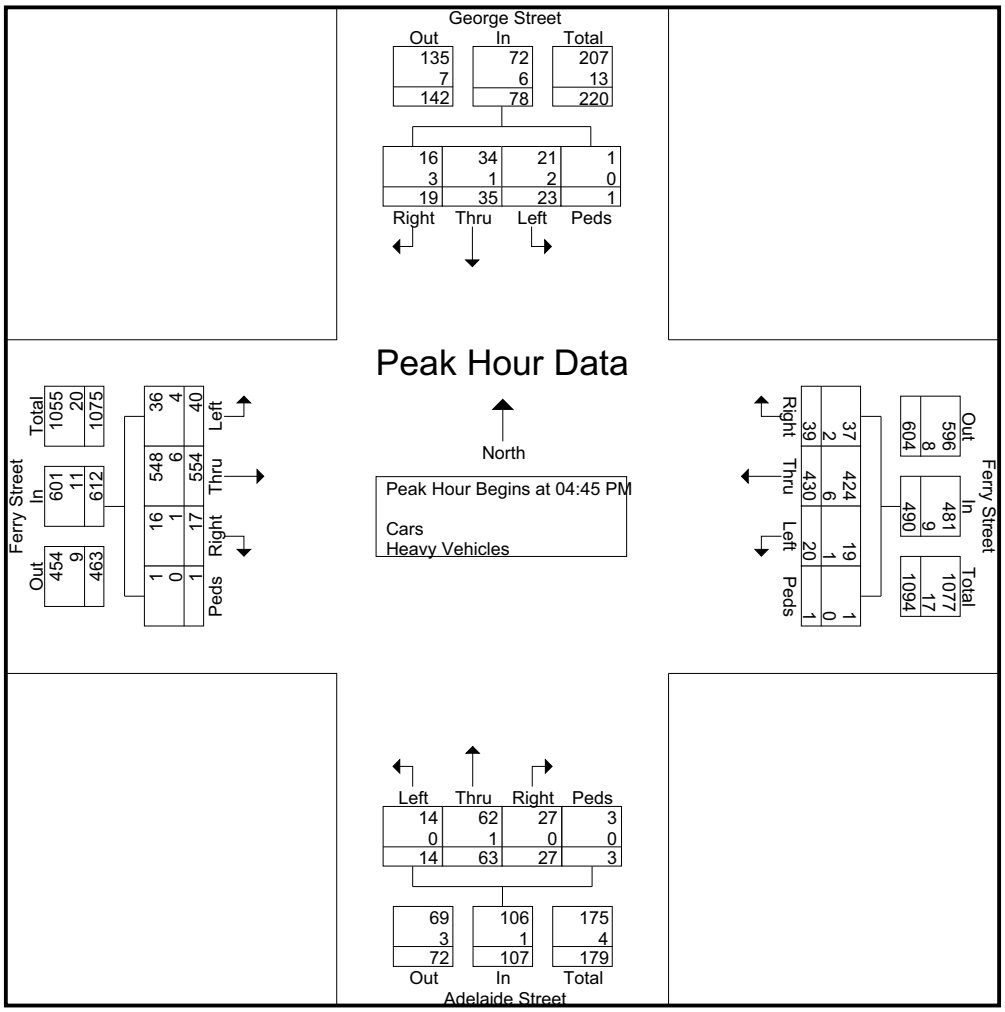
File Name : PM
Site Code : 1
Start Date : 7/17/2014

	Adelaide Street Northbound					George Street Southbound					Ferry Street Eastbound					Ferry Street Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:45 PM																					
04:45 PM	2	13	**13**	0	28	**7**	5	**5**	0	17	10	125	4	**1**	140	4	**112**	11	**1**	128	313
05:00 PM	**5**	13	5	**2**	25	7	8	5	0	20	**11**	141	**6**	0	158	**6**	95	7	0	108	311
05:15 PM	5	**23**	7	0	**35**	7	10	5	0	**22**	10	**146**	4	0	**160**	5	111	**14**	0	**130**	**347**
05:30 PM	2	14	2	1	19	2	**12**	4	**1**	19	9	142	3	0	154	5	112	7	0	124	316
Total Volume	14	63	27	3	107	23	35	19	1	78	40	554	17	1	612	20	430	39	1	490	1287
% App. Total	13.1	58.9	25.2	2.8		29.5	44.9	24.4	1.3		6.5	90.5	2.8	0.2		4.1	87.8	8	0.2		
PHF	.700	.685	.519	.375	.764	.821	.729	.950	.250	.886	.909	.949	.708	.250	.956	.833	.960	.696	.250	.942	.927
Cars	14	62	27	3	106	21	34	16	1	72	36	548	16	1	601	19	424	37	1	481	1260
% Cars	100	98.4	100	100	99.1	91.3	97.1	84.2	100	92.3	90.0	98.9	94.1	100	98.2	95.0	98.6	94.9	100	98.2	97.9
Heavy Vehicles	0	1	0	0	1	2	1	3	0	6	4	6	1	0	11	1	6	2	0	9	27
% Heavy Vehicles	0	1.6	0	0	0.9	8.7	2.9	15.8	0	7.7	10.0	1.1	5.9	0	1.8	5.0	1.4	5.1	0	1.8	2.1



GPI Project #: 2014078.00
Hudson, NH
Client: John DeBarros

Traffic Survey Expedition
106 Sharon Road
N. Quincy, MA 02171
P: 617-448-5686
F: 617-801-8800
www.tsetraffic.com

File Name : PM
Site Code : 1
Start Date : 7/17/2014

Groups Printed- Cars

	Adelaide Street Northbound					George Street Southbound					Ferry Street Eastbound					Ferry Street Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
04:00 PM	8	8	12	1	29	7	5	4	2	18	15	150	5	0	170	10	106	12	0	128	345
04:15 PM	3	9	4	1	17	2	6	2	0	10	7	144	4	2	157	3	100	6	0	109	293
04:30 PM	4	15	3	0	22	4	5	9	1	19	7	133	6	0	146	4	99	6	3	112	299
04:45 PM	2	13	13	0	28	6	5	4	0	15	9	123	4	1	137	4	111	10	1	126	306
Total	17	45	32	2	96	19	21	19	3	62	38	550	19	3	610	21	416	34	4	475	1243
05:00 PM	5	13	5	2	25	7	7	5	0	19	9	139	5	0	153	5	93	7	0	105	302
05:15 PM	5	23	7	0	35	6	10	3	0	19	10	145	4	0	159	5	109	13	0	127	340
05:30 PM	2	13	2	1	18	2	12	4	1	19	8	141	3	0	152	5	111	7	0	123	312
05:45 PM	3	13	4	0	20	3	10	4	1	18	8	139	3	1	151	5	106	8	0	119	308
Total	15	62	18	3	98	18	39	16	2	75	35	564	15	1	615	20	419	35	0	474	1262
Grand Total	32	107	50	5	194	37	60	35	5	137	73	1114	34	4	1225	41	835	69	4	949	2505
Apprch %	16.5	55.2	25.8	2.6		27	43.8	25.5	3.6		6	90.9	2.8	0.3		4.3	88	7.3	0.4		
Total %	1.3	4.3	2	0.2	7.7	1.5	2.4	1.4	0.2	5.5	2.9	44.5	1.4	0.2	48.9	1.6	33.3	2.8	0.2	37.9	

	Adelaide Street Northbound					George Street Southbound					Ferry Street Eastbound					Ferry Street Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 05:00 PM																					
05:00 PM	**5**	13	5	**2**	25	**7**	7	**5**	0	**19**	9	139	**5**	0	153	**5**	93	7	0	105	302
05:15 PM	5	**23**	**7**	0	**35**	6	10	3	0	19	**10**	**145**	4	0	**159**	5	109	**13**	0	**127**	**340**
05:30 PM	2	13	2	1	18	2	**12**	4	**1**	19	8	141	3	0	152	5	**111**	7	0	123	312
05:45 PM	3	13	4	0	20	3	10	4	1	18	8	139	3	**1**	151	5	106	8	0	119	308
Total Volume	15	62	18	3	98	18	39	16	2	75	35	564	15	1	615	20	419	35	0	474	1262
% App. Total	15.3	63.3	18.4	3.1		24	52	21.3	2.7		5.7	91.7	2.4	0.2		4.2	88.4	7.4	0		
PHF	.750	.674	.643	.375	.700	.643	.813	.800	.500	.987	.875	.972	.750	.250	.967	1.00	.944	.673	.000	.933	.928

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:30 PM					05:00 PM					05:00 PM					04:45 PM				
+0 mins.	4	15	3	0	22	**7**	7	**5**	0	**19**	9	139	**5**	0	153	4	**111**	10	**1**	126
+15 mins.	2	13	**13**	0	28	6	10	3	0	19	**10**	**145**	4	0	**159**	**5**	93	7	0	105
+30 mins.	**5**	13	5	**2**	25	2	**12**	4	**1**	19	8	141	3	0	152	5	109	**13**	0	**127**
+45 mins.	5	**23**	7	0	**35**	3	10	4	1	18	8	139	3	**1**	151	5	111	7	0	123
Total Volume	16	64	28	2	110	18	39	16	2	75	35	564	15	1	615	19	424	37	1	481
% App. Total	14.5	58.2	25.5	1.8		24	52	21.3	2.7		5.7	91.7	2.4	0.2		4	88.1	7.7	0.2	
PHF	.800	.696	.538	.250	.786	.643	.813	.800	.500	.987	.875	.972	.750	.250	.967	.950	.955	.712	.250	.947

GPI Project #: 2014078.00
Hudson, NH
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Traffic Survey Expedition
106 Sharon Road
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File Name : PM
Site Code : 1
Start Date : 7/17/2014

Groups Printed- Heavy Vehicles

	Adelaide Street Northbound					George Street Southbound					Ferry Street Eastbound					Ferry Street Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
04:00 PM	0	0	0	0	0	0	0	0	0	0	1	2	0	0	3	0	2	0	0	2	5
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	3	0	0	3	1	2	0	0	3	6
04:30 PM	0	2	0	0	2	0	0	1	0	1	1	2	0	0	3	0	3	0	0	3	9
04:45 PM	0	0	0	0	0	1	0	1	0	2	1	2	0	0	3	0	1	1	0	2	7
Total	0	2	0	0	2	1	0	2	0	3	3	9	0	0	12	1	8	1	0	10	27
05:00 PM	0	0	0	0	0	0	1	0	0	1	2	2	1	0	5	1	2	0	0	3	9
05:15 PM	0	0	0	0	0	1	0	2	0	3	0	1	0	0	1	0	2	1	0	3	7
05:30 PM	0	1	0	0	1	0	0	0	0	0	1	1	0	0	2	0	1	0	0	1	4
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0	1	0	0	1	3
Total	0	1	0	0	1	1	1	2	0	4	3	6	1	0	10	1	6	1	0	8	23
Grand Total	0	3	0	0	3	2	1	4	0	7	6	15	1	0	22	2	14	2	0	18	50
Apprch %	0	100	0	0		28.6	14.3	57.1	0		27.3	68.2	4.5	0		11.1	77.8	11.1	0		
Total %	0	6	0	0	6	4	2	8	0	14	12	30	2	0	44	4	28	4	0	36	

	Adelaide Street Northbound					George Street Southbound					Ferry Street Eastbound					Ferry Street Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:30 PM																					
04:30 PM	0	**2**	0	0	**2**	0	0	1	0	1	1	**2**	0	0	3	0	**3**	0	0	**3**	**9**
04:45 PM	0	0	0	0	0	**1**	0	1	0	2	1	2	0	0	3	0	1	**1**	0	2	7
05:00 PM	0	0	0	0	0	0	**1**	0	0	1	**2**	2	**1**	0	**5**	**1**	2	0	0	3	9
05:15 PM	0	0	0	0	0	1	0	**2**	0	**3**	0	1	0	0	1	0	2	1	0	3	7
Total Volume	0	2	0	0	2	2	1	4	0	7	4	7	1	0	12	1	8	2	0	11	32
% App. Total	0	100	0	0		28.6	14.3	57.1	0		33.3	58.3	8.3	0		9.1	72.7	18.2	0		
PHF	.000	.250	.000	.000	.250	.500	.250	.500	.000	.583	.500	.875	.250	.000	.600	.250	.667	.500	.000	.917	.889

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM					04:30 PM					04:15 PM					04:15 PM				
+0 mins.	0	0	0	0	0	0	0	1	0	1	0	**3**	0	0	3	**1**	2	0	0	**3**
+15 mins.	0	0	0	0	0	**1**	0	1	0	2	1	2	0	0	3	0	**3**	0	0	3
+30 mins.	0	**2**	0	0	**2**	0	**1**	0	0	1	1	2	0	0	3	0	1	**1**	0	2
+45 mins.	0	0	0	0	0	1	0	**2**	0	**3**	**2**	2	**1**	0	**5**	1	2	0	0	3
Total Volume	0	2	0	0	2	2	1	4	0	7	4	9	1	0	14	2	8	1	0	11
% App. Total	0	100	0	0		28.6	14.3	57.1	0		28.6	64.3	7.1	0		18.2	72.7	9.1	0	
PHF	.000	.250	.000	.000	.250	.500	.250	.500	.000	.583	.500	.750	.250	.000	.700	.500	.667	.250	.000	.917

GPI Project #: 2014078.00
Hudson, NH
Client: John DeBarros

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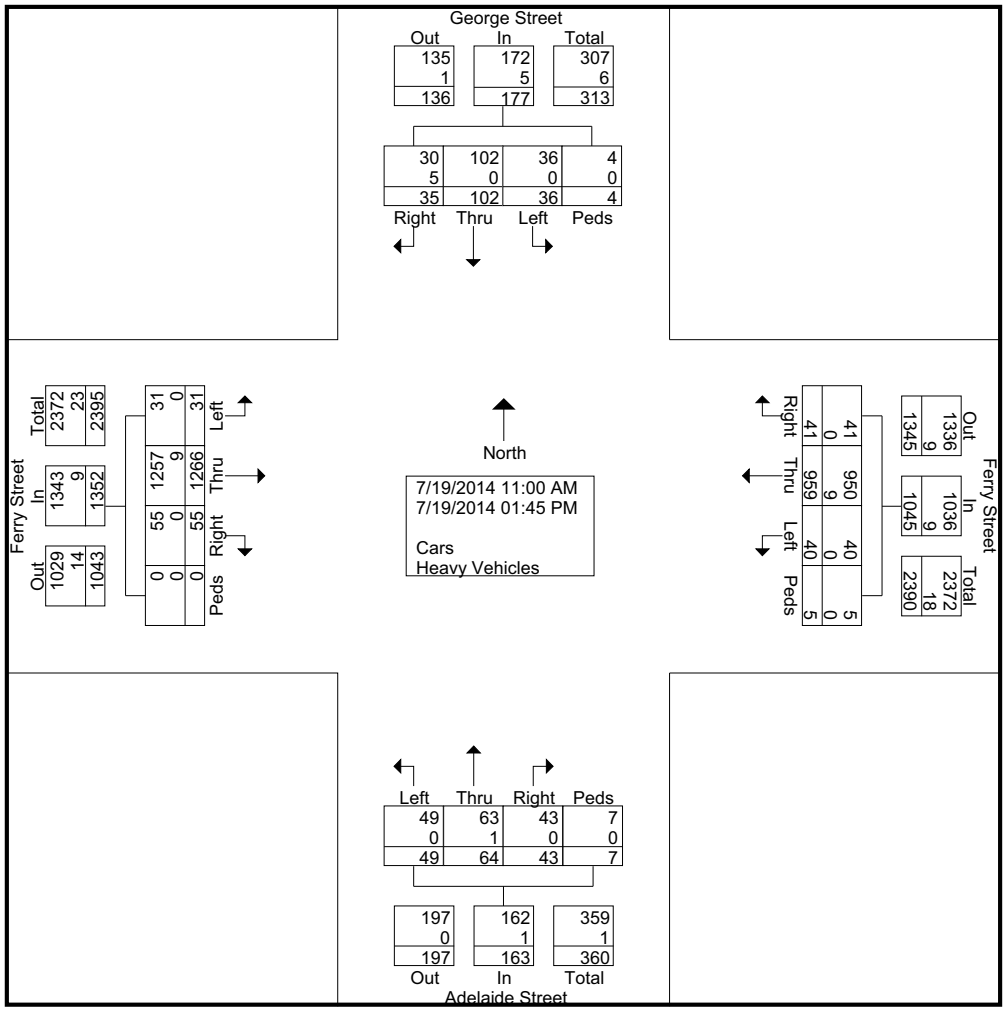
106 Sharon Road
N. Quincy, MA 02171
P: 617-448-5686
F: 617-301-3800
www.tsetraffic.com

File Name : sat
Site Code : 1
Start Date : 7/19/2014

Groups Printed- Cars - Heavy Vehicles

	Adelaide Street Northbound					George Street Southbound					Ferry Street Eastbound					Ferry Street Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
11:00 AM	4	4	4	0	12	3	14	6	1	24	1	93	6	0	100	4	76	5	0	85	221
11:15 AM	7	7	3	0	17	2	8	3	0	13	1	99	3	0	103	4	78	2	0	84	217
11:30 AM	4	5	2	2	13	3	7	2	0	12	2	99	5	0	106	6	79	1	0	86	217
11:45 AM	5	7	4	0	16	3	9	5	0	17	2	111	4	0	117	3	88	2	0	93	243
Total	20	23	13	2	58	11	38	16	1	66	6	402	18	0	426	17	321	10	0	348	898
12:00 PM	5	8	5	0	18	2	5	3	0	10	4	115	5	0	124	4	75	3	0	82	234
12:15 PM	4	5	5	1	15	4	5	2	0	11	2	118	4	0	124	3	91	3	0	97	247
12:30 PM	2	3	2	1	8	3	12	3	1	19	3	122	6	0	131	4	56	3	3	66	224
12:45 PM	5	3	3	2	13	3	9	2	1	15	3	100	5	0	108	3	84	0	0	87	223
Total	16	19	15	4	54	12	31	10	2	55	12	455	20	0	487	14	306	9	3	332	928
01:00 PM	3	4	3	0	10	2	6	5	0	13	4	98	5	0	107	2	80	7	0	89	219
01:15 PM	4	5	2	1	12	1	13	0	0	14	2	110	3	0	115	2	88	6	0	96	237
01:30 PM	5	6	4	0	15	5	6	1	0	12	5	103	6	0	114	5	78	2	0	85	226
01:45 PM	1	7	6	0	14	5	8	3	1	17	2	98	3	0	103	0	86	7	2	95	229
Total	13	22	15	1	51	13	33	9	1	56	13	409	17	0	439	9	332	22	2	365	911
Grand Total	49	64	43	7	163	36	102	35	4	177	31	1266	55	0	1352	40	959	41	5	1045	2737
Apprch %	30.1	39.3	26.4	4.3		20.3	57.6	19.8	2.3		2.3	93.6	4.1	0		3.8	91.8	3.9	0.5		
Total %	1.8	2.3	1.6	0.3	6	1.3	3.7	1.3	0.1	6.5	1.1	46.3	2	0	49.4	1.5	35	1.5	0.2	38.2	
Cars	49	63	43	7	162	36	102	30	4	172	31	1257	55	0	1343	40	950	41	5	1036	2713
% Cars	100	98.4	100	100	99.4	100	100	85.7	100	97.2	100	99.3	100	0	99.3	100	99.1	100	100	99.1	99.1
Heavy Vehicles	0	1	0	0	1	0	0	5	0	5	0	9	0	0	9	0	9	0	0	9	24
% Heavy Vehicles	0	1.6	0	0	0.6	0	0	14.3	0	2.8	0	0.7	0	0	0.7	0	0.9	0	0	0.9	0.9



GPI Project #: 2014078.00
Hudson, NH
Client: John DeBarros

Traffic Survey Expedition
106 Sharon Road
N. Quincy, MA 02171
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F: 617-801-8800
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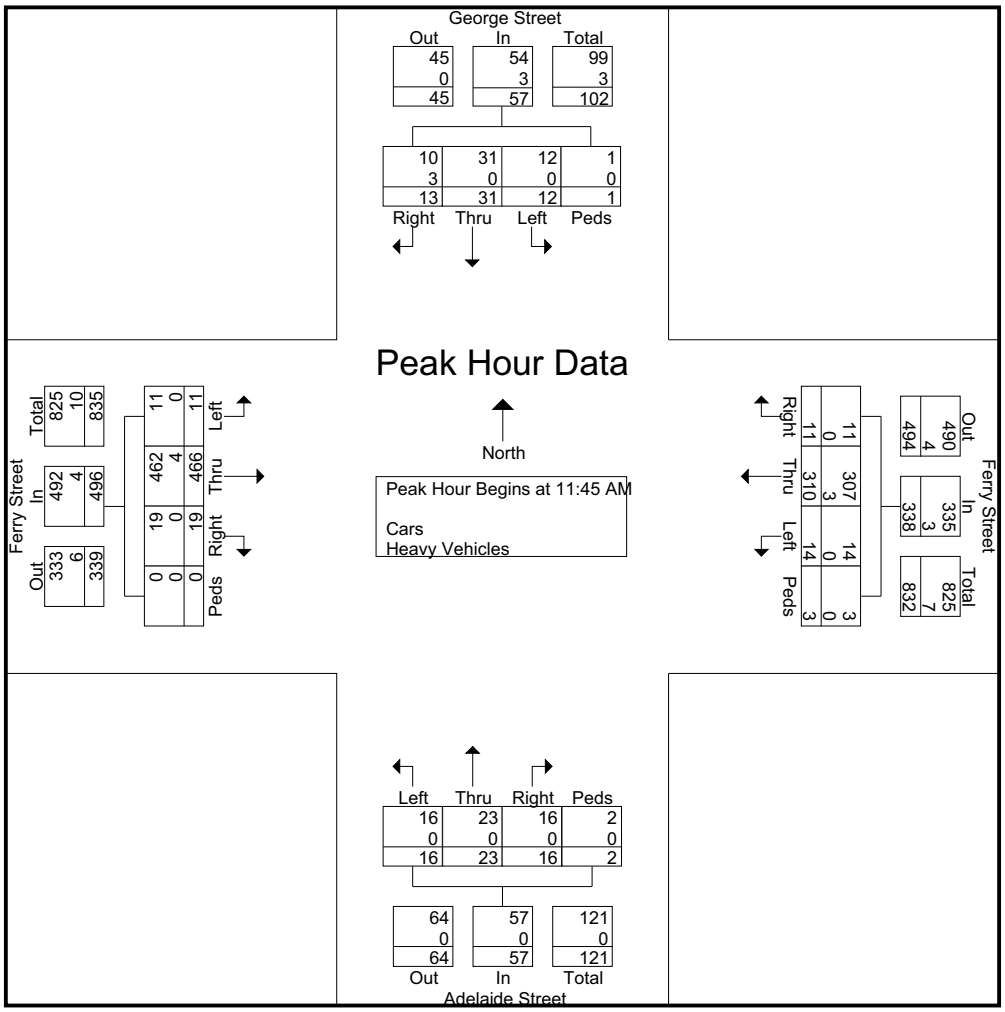
File Name : sat
Site Code : 1
Start Date : 7/19/2014

	Adelaide Street Northbound					George Street Southbound					Ferry Street Eastbound					Ferry Street Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 11:45 AM																					
11:45 AM	**5**	7	4	0	16	3	9	**5**	0	17	2	111	4	0	117	3	88	2	0	93	243
12:00 PM	5	**8**	**5**	0	**18**	2	5	3	0	10	**4**	115	5	0	124	**4**	75	**3**	0	82	234
12:15 PM	4	5	5	**1**	15	**4**	5	2	0	11	2	118	4	0	124	3	**91**	3	0	**97**	**247**
12:30 PM	2	3	2	1	8	3	**12**	3	**1**	**19**	3	**122**	**6**	0	**131**	4	56	3	**3**	66	224
Total Volume	16	23	16	2	57	12	31	13	1	57	11	466	19	0	496	14	310	11	3	338	948
% App. Total	28.1	40.4	28.1	3.5		21.1	54.4	22.8	1.8		2.2	94	3.8	0		4.1	91.7	3.3	0.9		
PHF	.800	.719	.800	.500	.792	.750	.646	.650	.250	.750	.688	.955	.792	.000	.947	.875	.852	.917	.250	.871	.960
Cars	16	23	16	2	57	12	31	10	1	54	11	462	19	0	492	14	307	11	3	335	938
% Cars	100	100	100	100	100	100	100	76.9	100	94.7	100	99.1	100	0	99.2	100	99.0	100	100	99.1	98.9
Heavy Vehicles	0	0	0	0	0	0	0	3	0	3	0	4	0	0	4	0	3	0	0	3	10
% Heavy Vehicles	0	0	0	0	0	0	0	23.1	0	5.3	0	0.9	0	0	0.8	0	1.0	0	0	0.9	1.1



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Hudson, NH
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File Name : sat
Site Code : 1
Start Date : 7/19/2014

Groups Printed- Cars

	Adelaide Street Northbound					George Street Southbound					Ferry Street Eastbound					Ferry Street Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
11:00 AM	4	4	4	0	12	3	14	5	1	23	1	92	6	0	99	4	74	5	0	83	217
11:15 AM	7	7	3	0	17	2	8	3	0	13	1	98	3	0	102	4	77	2	0	83	215
11:30 AM	4	5	2	2	13	3	7	2	0	12	2	99	5	0	106	6	79	1	0	86	217
11:45 AM	5	7	4	0	16	3	9	3	0	15	2	110	4	0	116	3	87	2	0	92	239
Total	20	23	13	2	58	11	38	13	1	63	6	399	18	0	423	17	317	10	0	344	888
12:00 PM	5	8	5	0	18	2	5	3	0	10	4	113	5	0	122	4	74	3	0	81	231
12:15 PM	4	5	5	1	15	4	5	2	0	11	2	118	4	0	124	3	91	3	0	97	247
12:30 PM	2	3	2	1	8	3	12	2	1	18	3	121	6	0	130	4	55	3	3	65	221
12:45 PM	5	3	3	2	13	3	9	2	1	15	3	100	5	0	108	3	84	0	0	87	223
Total	16	19	15	4	54	12	31	9	2	54	12	452	20	0	484	14	304	9	3	330	922
01:00 PM	3	4	3	0	10	2	6	5	0	13	4	97	5	0	106	2	79	7	0	88	217
01:15 PM	4	4	2	1	11	1	13	0	0	14	2	109	3	0	114	2	87	6	0	95	234
01:30 PM	5	6	4	0	15	5	6	1	0	12	5	102	6	0	113	5	77	2	0	84	224
01:45 PM	1	7	6	0	14	5	8	2	1	16	2	98	3	0	103	0	86	7	2	95	228
Total	13	21	15	1	50	13	33	8	1	55	13	406	17	0	436	9	329	22	2	362	903
Grand Total	49	63	43	7	162	36	102	30	4	172	31	1257	55	0	1343	40	950	41	5	1036	2713
Apprch %	30.2	38.9	26.5	4.3		20.9	59.3	17.4	2.3		2.3	93.6	4.1	0		3.9	91.7	4	0.5		
Total %	1.8	2.3	1.6	0.3	6	1.3	3.8	1.1	0.1	6.3	1.1	46.3	2	0	49.5	1.5	35	1.5	0.2	38.2	

	Adelaide Street Northbound					George Street Southbound					Ferry Street Eastbound					Ferry Street Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 11:45 AM																					
11:45 AM	**5**	7	4	0	16	3	9	**3**	0	15	2	110	4	0	116	3	87	2	0	92	239
12:00 PM	5	**8**	**5**	0	**18**	2	5	3	0	10	**4**	113	5	0	122	**4**	74	**3**	0	81	231
12:15 PM	4	5	5	**1**	15	**4**	5	2	0	11	2	118	4	0	124	3	**91**	3	0	**97**	**247**
12:30 PM	2	3	2	1	8	3	**12**	2	**1**	**18**	3	**121**	**6**	0	**130**	4	55	3	**3**	65	221
Total Volume	16	23	16	2	57	12	31	10	1	54	11	462	19	0	492	14	307	11	3	335	938
% App. Total	28.1	40.4	28.1	3.5		22.2	57.4	18.5	1.9		2.2	93.9	3.9	0		4.2	91.6	3.3	0.9		
PHF	.800	.719	.800	.500	.792	.750	.646	.833	.250	.750	.688	.955	.792	.000	.946	.875	.843	.917	.250	.863	.949

Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	11:15 AM					11:00 AM					11:45 AM					01:00 PM				
+0 mins.	**7**	7	3	0	17	**3**	**14**	**5**	**1**	**23**	2	110	4	0	116	2	79	**7**	0	88
+15 mins.	4	5	2	**2**	13	2	8	3	0	13	**4**	113	5	0	122	2	**87**	6	0	**95**
+30 mins.	5	7	4	0	16	3	7	2	0	12	2	118	4	0	124	**5**	77	2	0	84
+45 mins.	5	**8**	**5**	0	**18**	3	9	3	0	15	3	**121**	**6**	0	**130**	0	86	7	**2**	95
Total Volume	21	27	14	2	64	11	38	13	1	63	11	462	19	0	492	9	329	22	2	362
% App. Total	32.8	42.2	21.9	3.1		17.5	60.3	20.6	1.6		2.2	93.9	3.9	0		2.5	90.9	6.1	0.6	
PHF	.750	.844	.700	.250	.889	.917	.679	.650	.250	.685	.688	.955	.792	.000	.946	.450	.945	.786	.250	.953

GPI Project #: 2014078.00
Hudson, NH
Client: John DeBarros

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File Name : sat
Site Code : 1
Start Date : 7/19/2014
Page No : 4 of 4

Groups Printed- Heavy Vehicles

	Adelaide Street Northbound					George Street Southbound					Ferry Street Eastbound					Ferry Street Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
11:00 AM	0	0	0	0	0	0	0	1	0	1	0	1	0	0	1	0	2	0	0	2	4
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	1	0	0	1	2
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	2	0	2	0	1	0	0	1	0	1	0	0	1	4
Total	0	0	0	0	0	0	0	3	0	3	0	3	0	0	3	0	4	0	0	4	10
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0	1	0	0	1	3
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	1	0	1	0	1	0	0	1	0	1	0	0	1	3
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	1	0	1	0	3	0	0	3	0	2	0	0	2	6
01:00 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	1	0	0	1	2
01:15 PM	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	0	1	0	0	1	3
01:30 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	1	0	0	1	2
01:45 PM	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	1
Total	0	1	0	0	1	0	0	1	0	1	0	3	0	0	3	0	3	0	0	3	8
Grand Total	0	1	0	0	1	0	0	5	0	5	0	9	0	0	9	0	9	0	0	9	24
Apprch %	0	100	0	0		0	0	100	0		0	100	0	0		0	100	0	0		
Total %	0	4.2	0	0	4.2	0	0	20.8	0	20.8	0	37.5	0	0	37.5	0	37.5	0	0	37.5	

	Adelaide Street Northbound					George Street Southbound					Ferry Street Eastbound					Ferry Street Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
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																					
11:00 AM	0	0	0	0	0	0	0	1	0	1	0	**1**	0	0	**1**	0	**2**	0	0	**2**	**4**
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	1	0	0	1	2
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	**2**	0	**2**	0	1	0	0	1	0	1	0	0	1	4
Total Volume	0	0	0	0	0	0	0	3	0	3	0	3	0	0	3	0	4	0	0	4	10
% App. Total	0	0	0	0		0	0	100	0		0	100	0	0		0	100	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.375	.000	.375	.000	.750	.000	.000	.750	.000	.500	.000	.000	.500	.625

Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	12:30 PM					11:00 AM					11:15 AM					11:00 AM					
+0 mins.	0	0	0	0	0	0	0	1	0	1	0	1	0	0	1	0	**2**	0	0	**2**	
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	
+30 mins.	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	
+45 mins.	0	**1**	0	0	**1**	0	0	**2**	0	**2**	0	**2**	0	0	**2**	0	1	0	0	1	
Total Volume	0	1	0	0	1	0	0	3	0	3	0	4	0	0	4	0	4	0	0	4	
% App. Total	0	100	0	0		0	0	100	0		0	100	0	0		0	100	0	0		
PHF	.000	.250	.000	.000	.250	.000	.000	.375	.000	.375	.000	.500	.000	.000	.500	.000	.500	.000	.000	.500	

TRAFFIC-VOLUME ADJUSTMENT DATA

TRAFFIC VOLUME ADJUSTMENT FACTORS

Automatic Traffic Recorder Report (2013)

Prepared by the NHDOT Bureau of Transportation Planning

	Nashua NH111 Group 4					
Month	Avg. Weekday	Adj. To Avg.	Adj. To Peak	Avg. Saturday	Adj. To Avg.	Adj. To Peak
January	33,152	*1.061*	*1.128*	26,918	*1.056*	*1.152*
February	33,809	*1.041*	*1.106*	23,019	*1.235*	*1.347*
March	34,114	*1.031*	*1.096*	28,806	*0.987*	*1.077*
April	36,293	*0.970*	*1.030*	30,185	*0.942*	*1.028*
May	37,092	*0.949*	*1.008*	29,226	*0.972*	*1.061*
June	37,397	*0.941*	*1.000*	31,017	*0.916*	*1.000*
July	34,961	*1.006*	*1.070*	27,418	*1.037*	*1.131*
August	35,868	*0.981*	*1.043*	27,566	*1.031*	*1.125*
September	35,667	*0.987*	*1.049*	29,898	*0.951*	*1.037*
October	36,155	*0.973*	*1.034*	30,460	*0.933*	*1.018*
November	34,528	*1.019*	*1.083*	29,091	*0.977*	*1.066*
December	33,215	*1.059*	*1.126*	27,435	*1.036*	*1.131*
Year Avg.	**35,188**			**28,420**		

TRAFFIC VOLUME ADJUSTMENT FACTORS

Automatic Traffic Recorder Report (2013)

Prepared by the NHDOT Bureau of Transportation Planning

	Nashua NH111 Group 4								
Month	Weekday AM Peak	Adj. To Avg.	Adj. To Peak	Weekday PM Peak	Adj. To Avg.	Adj. To Peak	Saturday Midday Peak	Adj. To Avg.	Adj. To Peak
January	2,545	*1.031*	*1.097*	2,731	1.030	*1.074*	2,162	1.016	*1.114*
February	2,622	*1.001*	*1.065*	2,767	1.017	*1.060*	1,818	1.208	*1.325*
March	2,586	*1.015*	*1.080*	2,782	1.011	*1.055*	2,311	0.951	*1.042*
April	2,747	*0.956*	*1.016*	2,911	0.966	*1.008*	2,350	0.935	*1.025*
May	2,756	*0.952*	*1.013*	2,905	0.968	*1.010*	2,160	1.017	*1.115*
June	2,708	*0.969*	*1.031*	2,934	0.959	*1.000*	2,311	0.951	*1.042*
July	2,375	*1.105*	*1.176*	2,810	1.001	*1.044*	2,076	1.058	*1.160*
August	2,578	*1.018*	*1.083*	2,808	1.002	*1.045*	2,045	1.074	*1.178*
September	2,766	*0.949*	*1.009*	2,838	0.991	*1.034*	2,268	0.969	*1.062*
October	2,792	*0.940*	*1.000*	2,902	0.969	*1.011*	2,409	0.912	*1.000*
November	2,624	*1.000*	*1.064*	2,769	1.016	*1.060*	2,260	0.972	*1.066*
December	2,400	*1.094*	*1.163*	2,601	1.082	*1.128*	2,192	1.002	*1.099*
Year Avg.	**2,625**			**2,813**			**2,197**		

Stations =

315039 Nashua, NH 111 EB at Hudson TL
315051 Nashua, NH 111 at Hudson TL
315038 Nashua, NH 111 WB at Hudson TL

Traffic Growth Rate

Hudson, New Hampshire

Station	Location [a]	2006	2007	2008	2009	2010	2011	2012	2013	Average Annual Rate
229032	Highland Street north of Power Street			3,700			3,200			-4.72%
229042	NH 111 (Burnham Rd) north of Central Street		12,000			12,000			12,000	0.00%
229051	NH 111 (Ferry Street) east of Library Street		13,000			11,000			12,000	-1.27%
229053	Central Street east of Adelaide Street	4,800			4,800			4,400		-1.43%
229071	NH 111 west of Kimball Hill Road			18,000			19,000			1.82%

Historical Growth Rate = **-1.12%**

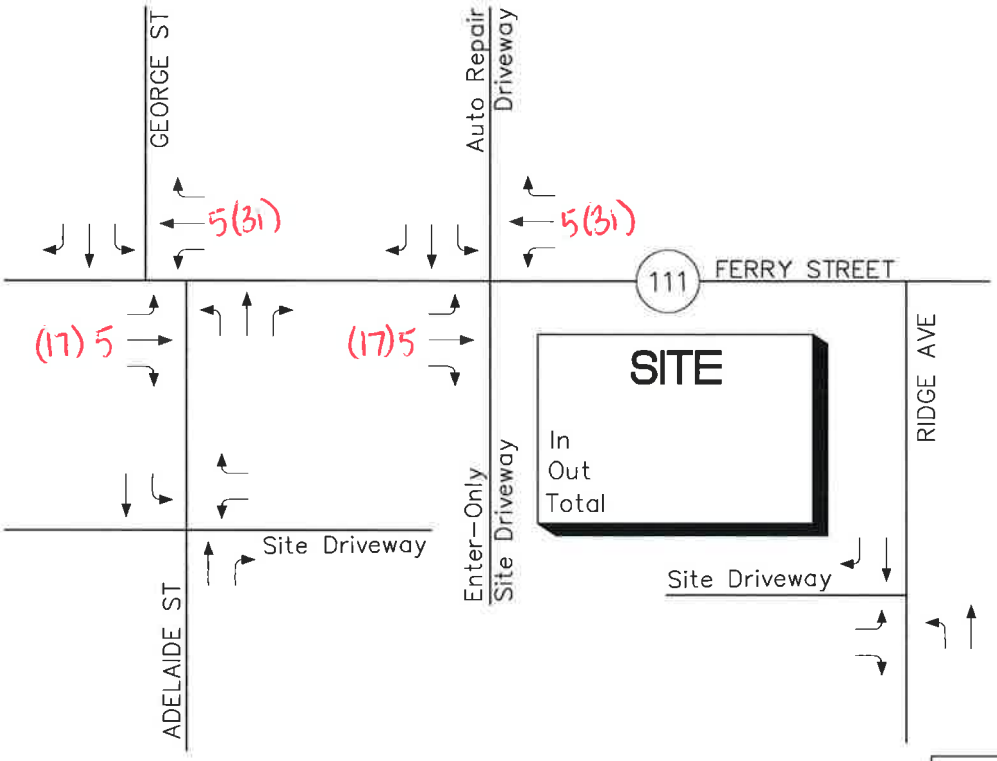
[a] Source: Based upon historical data; New Hampshire DOT 2013 Traffic Volumes

Station	Location [b]	2004	2005	2006	2007	2008	2009	2010	2011	Average Annual Rate
229032	Highland Street north of George Street		4,065			4,111			3,739	-1.37%
229042	NH 111 (Burnham Rd) north of Central Street	13,649			13,420			13,275		-0.46%
229051	NH 111 (Ferry Street) east of Library Street	15,907			14,260			13,254		-2.99%
229053	Central Street east of Adelaide Street			5,489			5,326			-1.00%
229071	NH 111 west of Kimball Hill Road		22,518				19,589		21,361	0.04%

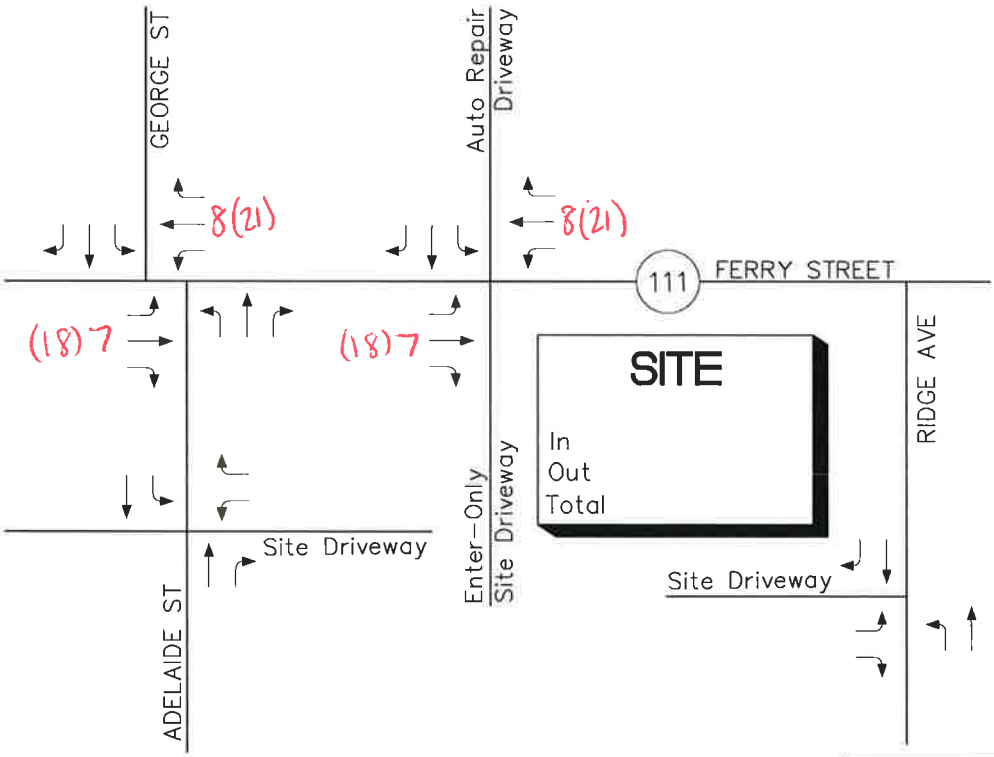
Historical Growth Rate = **-1.16%**

[b] Source: Based upon historical data; Nashua Regional Planning Commission 2012 Traffic Volumes

BACKGROUND DEVELOPMENT DATA



WEEKDAY PM



SATURDAY MIDDAY

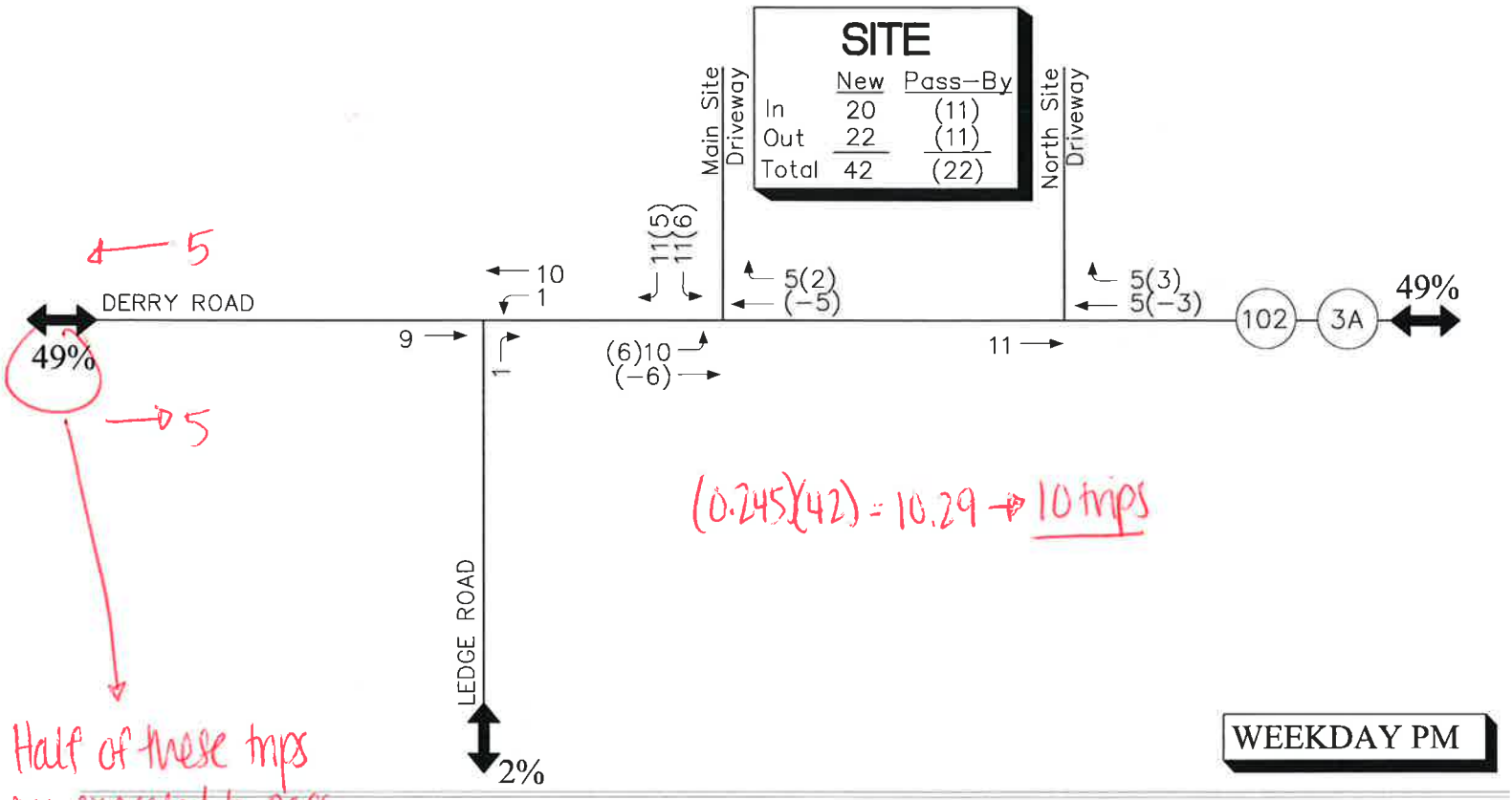
NOT TO SCALE

GPI Greenman-Pedersen, Inc.
Engineering and Construction Services

xx - Hudson Retail
(xx) - Nashua Renaissance Downtown

Background Developments

Peak Hour Traffic Volumes



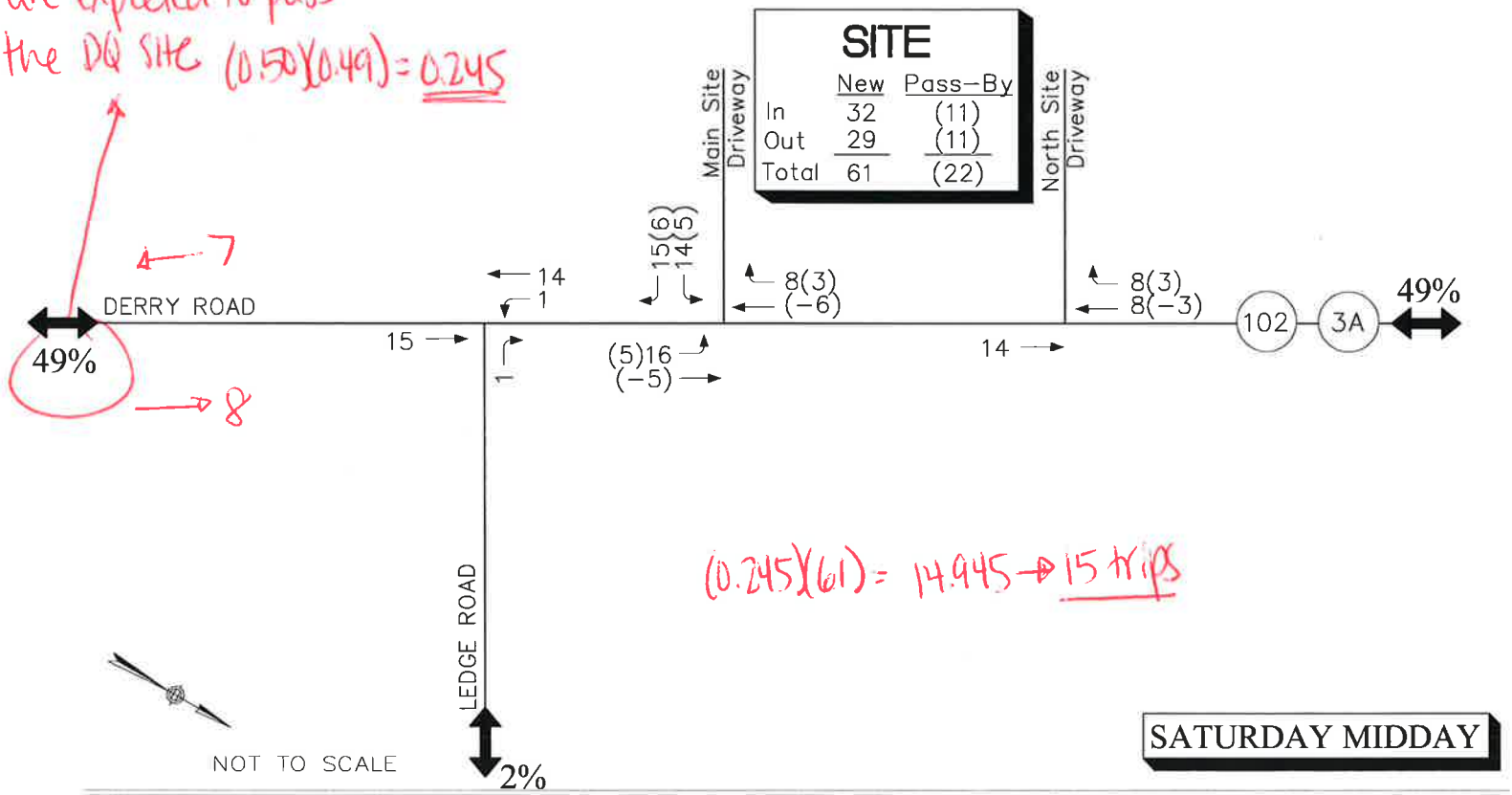


Figure 5

Site Generated
Peak Hour Traffic Volumes

the 3,830 square feet of retail space. All trip-generation data are provided in the Appendix. Based on this information, the traffic generation characteristics of the site are summarized in Table 4.

As studies have shown, not all vehicle trips associated with retail and restaurant developments represent new trips to the site as these site-generated vehicle trips are already on the roadway and represent pass-by trips. Based on Institute of Transportation data[5] the pass-by rate for retail type uses can be as high as 25 percent which reduce the volume of new trips to the site through the study area intersections. However, to provide a conservative analysis, all trips related to the retail and restaurant uses were considered to be new trips to the site and as such will represent new trips through the study area intersections. As shown in Table 4 below, the proposed development is expected to generate 158 *new* vehicle trips (34 entering and 124 exiting) during the weekday AM peak hour and 250 new vehicle trips (157 entering and 93 exiting) during the weekday PM peak hour.

Table 4 – Trip Generation – Phase I

Time Period/Direction	Residential Trips[a]	Restaurant Trips[b]	Retail Trips[c]	Total Trips
Weekday AM Peak Hour				
Enter	30	2	2	34
Exit	121	2	1	124
Total	151	4	3	158
Weekday AM Peak Hour				
Enter	119	24	14	157
Exit	64	12	17	93
Total	183	36	31	250

[a] Land Use Code 220 (Apartments) for 300 units.
[b] Land Use Code 931 (Quality Restaurant) for 4,826 Square Feet.
[c] Land Use Code 814 (Specialty Retail Center) for 3,830 Square Feet.

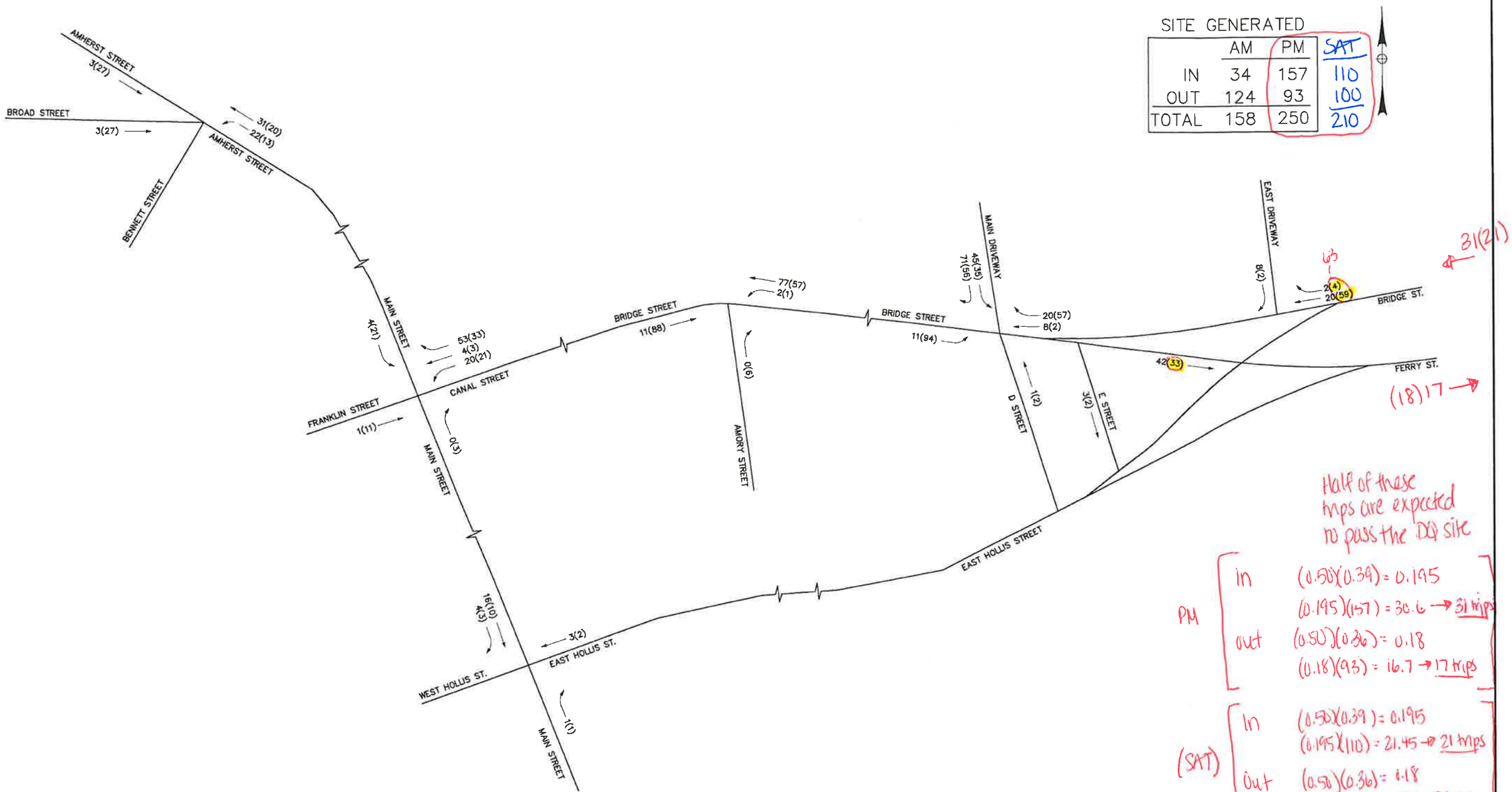
Saturday Midday

71	31	8	110
71	21	8	100
142	52	16	210

Trip Distribution

Having estimated the project generated vehicle trips, the next step is to determine the distribution of project traffic and assign those trips to the study area intersections. The distribution of proposed *new* site-generated traffic is expected to follow observed travel patterns within the vicinity of the site and study area intersections. Based on discussions with the City, the proposed trip distribution should follow the existing flow patterns seen at the Automatic Traffic Recorder located on Bridge Street at the Merrimack River Bridge east of the site. The trip distribution for *new* site traffic within the study area is shown in Figure 9.

[5] Trip Generation Handbook, 1st Edition, Institute of Transportation Engineers, Washington DC, 2001



SITE GENERATED

	AM	PM	SAT
IN	34	157	110
OUT	124	93	100
TOTAL	158	250	210

31(21)

63

2(4)
20(59)

(18)17

Half of these trips are expected to pass the DD site

PM
- in: (0.50)(0.39) = 0.195; (0.195)(157) = 30.6 → 31 trips
- out: (0.50)(0.36) = 0.18; (0.18)(93) = 16.7 → 17 trips

(SAT)
- in: (0.50)(0.39) = 0.195; (0.195)(110) = 21.45 → 21 trips
- out: (0.50)(0.36) = 0.18; (0.18)(100) = 18 → 18 trips

LEGEND

XXXX Weekday AM Peak Hour Volume
(XXXX) Weekday PM Peak Hour Volume

Turning Movements

Volumes between intersections do not balance due to number of driveways and side streets between intersections.

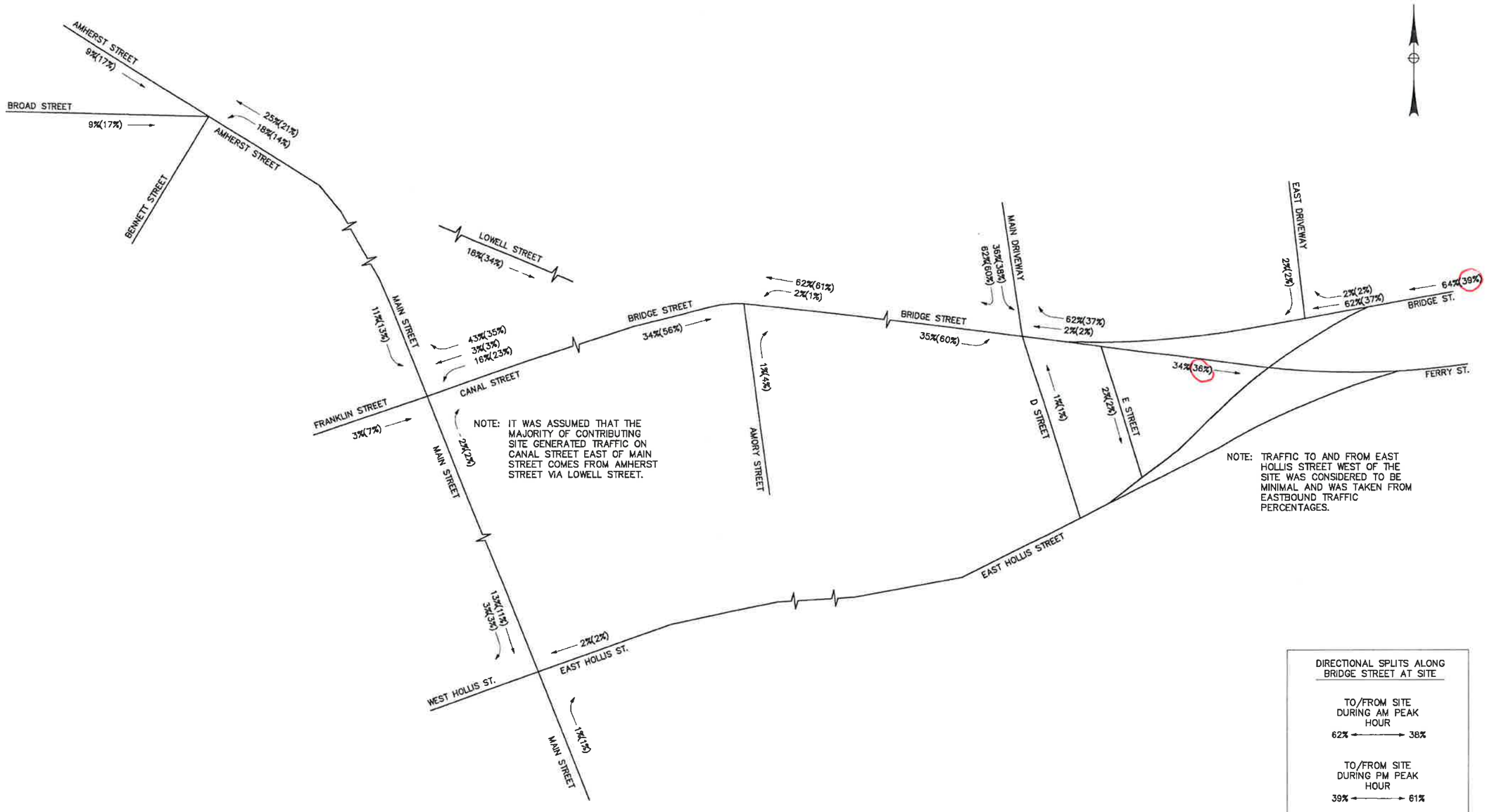
REV	DATE	DESCRIPTION	BY

McFarland Johnson
33 REGIONAL DRIVE, CONCORD, NH 03301-5022
PH: 603-225-2978 FAX: 603-225-0095

Bridge Street Development
Renaissance Downtowns, LLC
Nashua, NH

SITE GENERATED TRAFFIC VOLUMES

SCALE:	N.T.S.	DESIGN:	JWS	SHEET:
DRAWN:	JWS	PROJECT:	17786.01	FIGURE 10
CHECKED:	CPB	DATE:	JAN, 2013	



DIRECTIONAL SPLITS ALONG BRIDGE STREET AT SITE

TO/FROM SITE DURING AM PEAK HOUR

62% ⟷ 38%

TO/FROM SITE DURING PM PEAK HOUR

39% ⟷ 61%

LEGEND

XXXX Weekday AM Peak Percentage
(XXXX) Weekday PM Peak Percentage

Turning Movements

Volumes between intersections do not balance due to number of driveways and side streets between intersections.

REV	DATE	DESCRIPTION	BY

Bridge Street Development
Renaissance Downtowns, LLC
Nashua, NH

TRIP DISTRIBUTION

McFarland Johnson
53 REGIONAL DRIVE, CONCORD, NH 03301-5022
PH: 603-225-2978 FAX: 603-225-0095

SCALE:	N.T.S.	DESIGN:	JWS	SHEET
DRAWN:	JWS	PROJECT:	17786.01	FIGURE 9
CHECKED:	CPB	DATE:	JAN, 2013	

TRIP-GENERATION DATA

Institute of Transportation Engineers (ITE)

Land Use Code (LUC) 934 - Fast-Food Restaurant with Drive-Through Window

Average Vehicle Trips Ends vs: 1,000 Sq. Feet Gross Floor Area
Independent Variable (X): 1.431

AVERAGE WEEKDAY DAILY

T = 496.12 * (X)
T = 496.12 * 1.43
T = 709.95
T = 710 vehicle trips
with 50% (355 vpd) entering and 50% (355 vpd) exiting.

WEEKDAY EVENING PEAK HOUR OF ADJACENT STREET TRAFFIC

T = 32.65 * (X)
T = 32.65 * 1.43
T = 46.72
T = 47 vehicle trips
with 52% (24 vph) entering and 48% (23 vph) exiting.

SATURDAY DAILY

T = 722.03 * (X)
T = 722.03 * 1.43
T = 1,033.22
T = 1,034 vehicle trips
with 50% (517 vpd) entering and 50% (517 vpd) exiting.

SATURDAY MIDDAY PEAK HOUR OF GENERATOR

T = 59.00 * (X)
T = 59.00 * 1.43
T = 84.43
T = 84 vehicle trips
with 51% (43 vph) entering and 49% (41 vph) exiting.

Institute of Transportation Engineers (ITE)

Land Use Code (LUC) 934 - Fast-Food Restaurant with Drive-Through Window

Average Vehicle Trips Ends vs: 1,000 Sq. Feet Gross Floor Area
Independent Variable (X): 2.451

AVERAGE WEEKDAY DAILY

T = 496.12 * (X)
T = 496.12 * 2.45
T = 1,215.99
T = 1,216 vehicle trips
with 50% (608 vpd) entering and 50% (608 vpd) exiting.

WEEKDAY EVENING PEAK HOUR OF ADJACENT STREET TRAFFIC

T = 32.65 * (X)
T = 32.65 * 2.45
T = 80.03
T = 80 vehicle trips
with 52% (42 vph) entering and 48% (38 vph) exiting.

SATURDAY DAILY

T = 722.03 * (X)
T = 722.03 * 2.45
T = 1,769.70
T = 1,770 vehicle trips
with 50% (885 vpd) entering and 50% (885 vpd) exiting.

SATURDAY MIDDAY PEAK HOUR OF GENERATOR

T = 59.00 * (X)
T = 59.00 * 2.45
T = 144.61
T = 145 vehicle trips
with 51% (74 vph) entering and 49% (71 vph) exiting.

Table 5.23
Pass-By Trips and Diverted Linked Trips
Weekday, a.m. Peak Period

Land Use 934—Fast-Food Restaurant with Drive-Through Window

SEATS	SIZE (1,000 SQ. FT. GFA)	LOCATION	WEEKDAY SURVEY DATE	NO. OF INTERVIEWS	TIME PERIOD	PRIMARY TRIP (%)	NON-PASS-BY TRIP (%)	DIVERTED LINKED TRIP (%)	PASS-BY TRIP (%)	ADJ. STREET PEAK HOUR VOLUME	SOURCE
n/a	<5	Chicago suburbs, IL	1987	84	7:00–9:00 a.m.	—	56	—	44	n/a	Kenig, O'Hara, Humes, Flock
88	1.4	Louisville area, KY	1993	n/a	7:00–9:00 a.m.	22	—	16	62	1,407	Barton-Aschman Assoc.
100	3.6	Louisville, KY	1993	n/a	7:00–9:00 a.m.	47	—	21	32	437	Barton-Aschman Assoc.
87	4.2	New Albany, IN	1993	n/a	7:00–9:00 a.m.	23	—	31	46	1,049	Barton-Aschman Assoc.
150	3.0	Louisville area, KY	1993	n/a	7:00–9:00 a.m.	14	—	43	43	2,903	Barton-Aschman Assoc.
n/a	3.3	varies	1996	n/a	6:00–9:00 a.m.	—	32	—	68	n/a	Oracle Engineering

Average Pass-By Trip Percentage: 49

Table 5.24
Pass-By Trips and Diverted Linked Trips
Weekday, p.m. Peak Period

Land Use 934—Fast-Food Restaurant with Drive-Through Window

SEATS	SIZE (1,000 SQ. FT. GFA)	LOCATION	WEEKDAY SURVEY DATE	NO. OF INTERVIEWS	TIME PERIOD	PRIMARY TRIP (%)	NON-PASS-BY TRIP (%)	DIVERTED LINKED TRIP (%)	PASS-BY TRIP (%)	ADJ. STREET PEAK HOUR VOLUME	SOURCE
n/a	~2.6	Minn-St. Paul, MN	1987	50	3:00–7:00 p.m.	27	—	48	25	n/a	n/a
n/a	<5.0	Chicago suburbs, IL	1987	80	3:00–6:00 p.m.	—	62	—	38	n/a	Kenig, O'Hara, Humes, Flock
n/a	<5.0	Chicago suburbs, IL	1987	100	3:00–6:00 p.m.	—	45	—	55	n/a	Kenig, O'Hara, Humes, Flock
n/a	<5.0	Chicago suburbs, IL	1987	159	3:00–6:00 p.m.	—	44	—	56	n/a	Kenig, O'Hara, Humes, Flock
n/a	<5.0	Chicago suburbs, IL	1987	225	3:00–6:00 p.m.	—	52	—	48	n/a	Kenig, O'Hara, Humes, Flock
n/a	<5.0	Chicago suburbs, IL	1987	88	3:00–6:00 p.m.	—	65	—	35	n/a	Kenig, O'Hara, Humes, Flock
n/a	<5.0	Chicago suburbs, IL	1987	84	3:00–6:00 p.m.	—	56	—	44	n/a	Kenig, O'Hara, Humes, Flock
88	1.3	Louisville area, KY	1993	n/a	4:00–6:00 p.m.	22	—	10	68	2,055	Barton-Aschman Assoc.
120	1.9	Louisville area, KY	1993	33	4:00–6:00 p.m.	24	—	9	67	2,447	Barton-Aschman Assoc.
87	4.2	New Albany, IN	1993	n/a	4:00–6:00 p.m.	25	—	19	56	1,632	Barton-Aschman Assoc.
150	3.0	Louisville area, KY	1993	n/a	4:00–6:00 p.m.	31	—	38	31	4,250	Barton-Aschman Assoc.
n/a	3.1	Kissimmee, FL	1995	28	2:00–6:00 p.m.	—	29	n/a	71	n/a	TPD Inc.
n/a	3.1	Apopka, FL	1996	29	2:00–6:00 p.m.	—	62	n/a	38	n/a	TPD Inc.
n/a	2.8	Winter Springs, FL	1995	47	2:00–6:00 p.m.	—	34	—	66	n/a	TPD Inc.
n/a	4.3	Longwood, FL	1994	304	2:00–6:00 p.m.	—	38	—	62	n/a	TPD Inc.
n/a	3.2	Altamonte Springs, FL	1996	202	2:00–6:00 p.m.	39	—	21	40	n/a	TPD Inc.
n/a	2.9	Winter Park, FL	1996	271	2:00–6:00 p.m.	41	—	18	41	n/a	TPD Inc.
n/a	3.3*	several	1996	varies	4:00–6:00 p.m.	—	38	—	62	n/a	Oracle Engineering

* Average of several combined studies.
Average Pass-By Trip Percentage: 50

CAPACITY ANALYSIS METHODOLOGY

CAPACITY ANALYSIS METHODOLOGY

A primary result of capacity analysis is the assignment of levels of service to traffic facilities under various traffic flow conditions. The capacity analysis methodology is based on the concepts and procedures in the *Highway Capacity Manual* (HCM).[8] The concept of level of service (LOS) is defined as a qualitative measure describing operational conditions within a traffic stream and their perception by motorists and/or passengers. A level-of-service definition provides an index to quality of traffic flow in terms of such factors as speed, travel time, freedom to maneuver, traffic interruptions, comfort, convenience, and safety.

Six levels of service are defined for each type of facility. They are given letter designations from A to F, with LOS A representing the best operating conditions and LOS F the worst. Since the level of service of a traffic facility is a function of the traffic flows placed upon it, such a facility may operate at a wide range of levels of service, depending on the time of day, day of week, or period of year. A description of the operating condition under each level of service is provided below:

- *LOS A* describes conditions with little to no delay to motorists.
- *LOS B* represents a desirable level with relatively low delay to motorists.
- *LOS C* describes conditions with average delays to motorists.
- *LOS D* describes operations where the influence of congestion becomes more noticeable. Delays are still within an acceptable range.
- *LOS E* represents operating conditions with high delay values. This level is considered by many agencies to be the limit of acceptable delay.
- *LOS F* is considered to be unacceptable to most drivers with high delay values that often occur, when arrival flow rates exceed the capacity of the intersection.

UNSIGNALIZED INTERSECTIONS

Levels of service for unsignalized intersections are calculated using the operational analysis methodology of the HCM. The procedure accounts for lane configuration on both the minor and major street approaches, conflicting traffic stream volumes, and the type of intersection control (STOP, YIELD, or all-way STOP control). The definition of level of service for unsignalized

[8] *Highway Capacity Manual 2000*, Transportation Research Board; Washington, D.C.; 2000.

intersections is a function of average *control* delay. Control delay includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. The level-of-service criteria for unsignalized intersections are shown in Table A-1.

SIGNALIZED INTERSECTIONS

Levels of service for signalized intersections are also calculated using the operational analysis methodology of the HCM. The methodology for signalized intersections assesses the effects of signal type, timing, phasing, and progression; vehicle mix; and geometrics on average *control* delay. Control delay includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. Table A-1 summarizes the relationship between level of service and average control delay.

Table A-1
LEVEL-OF-SERVICE CRITERIA FOR INTERSECTIONS

Level of Service	**Unsignalized Intersection Criteria** Average Control Delay (Seconds per Vehicle)	**Signalized Intersection Criteria** Average Control Delay (Seconds per Vehicle)
A	≤10	≤10
B	>10 and ≤15	>10 and ≤20
C	>15 and ≤25	>20 and ≤35
D	>25 and ≤35	>35 and ≤55
E	>35 and ≤50	>55 and ≤80
F	>50	>80

Source: *Highway Capacity Manual 2000*, Transportation Research Board; Washington, D.C.; 2000. Pages 10-16 and 17-2.

For signalized intersections, this delay criterion may be applied in assigning level-of-service designations to individual lane groups, to individual intersection approaches, or to the entire intersection. For unsignalized intersections, this delay criterion may be applied in assigning level-of-service designations to individual lane groups or to individual intersection approaches.

CAPACITY AND QUEUE ANALYSIS WORKSHEETS

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	42	681	594	107	61	20
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.95	0.95	0.94	0.94	0.88	0.88
Hourly flow rate (vph)	44	717	632	114	69	23
Pedestrians		2	2		2	
Lane Width (ft)		12.0	12.0		12.0	
Walking Speed (ft/s)		4.0	4.0		4.0	
Percent Blockage		0	0		0	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	748				1498	693
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	748				1498	693
tC, single (s)	4.2				6.4	6.4
tC, 2 stage (s)						
tF (s)	2.3				3.5	3.4
p0 queue free %	95				45	95
cM capacity (veh/h)	824				125	419

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	761	746	92
Volume Left	44	0	69
Volume Right	0	114	23
cSH	824	1700	151
Volume to Capacity	0.05	0.44	0.61
Queue Length 95th (ft)	4	0	81
Control Delay (s)	1.4	0.0	60.2
Lane LOS	A		F
Approach Delay (s)	1.4	0.0	60.2
Approach LOS			F

Intersection Summary			
Average Delay	4.1		
Intersection Capacity Utilization	82.1%	ICU Level of Service	E
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	687	55	21	620	81	28
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.94	0.94	0.74	0.74
Hourly flow rate (vph)	723	58	22	660	109	38
Pedestrians	4			4	4	
Lane Width (ft)	12.0			12.0	12.0	
Walking Speed (ft/s)	4.0			4.0	4.0	
Percent Blockage	0			0	0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			785		1464	760
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			785		1464	760
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			97		20	91
cM capacity (veh/h)			818		137	406

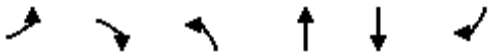
Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	781	682	147
Volume Left	0	22	109
Volume Right	58	0	38
cSH	1700	818	165
Volume to Capacity	0.46	0.03	0.89
Queue Length 95th (ft)	0	2	160
Control Delay (s)	0.0	0.7	98.8
Lane LOS		A	F
Approach Delay (s)	0.0	0.7	98.8
Approach LOS			F

Intersection Summary			
Average Delay	9.3		
Intersection Capacity Utilization	63.4%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	3	683	29	15	640	2	0	0	0	1	0	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.96	0.96	0.96	0.91	0.91	0.91	0.25	0.25	0.25	0.50	0.50	0.50
Hourly flow rate (vph)	3	711	30	16	703	2	0	0	0	2	0	2
Pedestrians		3			4			4			4	
Lane Width (ft)		12.0			12.0			0.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	709			746			1479	1479	735	1478	1493	711
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	709			746			1479	1479	735	1478	1493	711
tC, single (s)	4.4			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.5			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			98			100	100	100	98	100	100
cM capacity (veh/h)	760			871			102	124	422	102	121	434

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	745	722	4
Volume Left	3	16	2
Volume Right	30	2	2
cSH	760	871	166
Volume to Capacity	0.00	0.02	0.02
Queue Length 95th (ft)	0	1	2
Control Delay (s)	0.1	0.5	27.3
Lane LOS	A	A	D
Approach Delay (s)	0.1	0.5	27.3
Approach LOS			D

Intersection Summary				
Average Delay	0.4			
Intersection Capacity Utilization	55.8%	ICU Level of Service	B	
Analysis Period (min)	15			



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	53	1	1	5	7	8
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.59	0.59	0.38	0.38	0.54	0.54
Hourly flow rate (vph)	90	2	3	13	13	15
Pedestrians	2			2		
Lane Width (ft)	12.0			12.0		
Walking Speed (ft/s)	4.0			4.0		
Percent Blockage	0			0		
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	41	24	30			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	41	24	30			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	91	100	100			
cM capacity (veh/h)	972	1054	1594			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	92	16	28
Volume Left	90	3	0
Volume Right	2	0	15
cSH	974	1594	1700
Volume to Capacity	0.09	0.00	0.02
Queue Length 95th (ft)	8	0	0
Control Delay (s)	9.1	1.2	0.0
Lane LOS	A	A	
Approach Delay (s)	9.1	1.2	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	6.3		
Intersection Capacity Utilization	14.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	42	710	636	108	61	20
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.95	0.95	0.94	0.94	0.88	0.88
Hourly flow rate (vph)	44	747	677	115	69	23
Pedestrians		2	2		2	
Lane Width (ft)		12.0	12.0		12.0	
Walking Speed (ft/s)		4.0	4.0		4.0	
Percent Blockage		0	0		0	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	793				1574	738
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	793				1574	738
tC, single (s)	4.2				6.4	6.4
tC, 2 stage (s)						
tF (s)	2.3				3.5	3.4
p0 queue free %	94				38	94
cM capacity (veh/h)	792				112	394

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	792	791	92
Volume Left	44	0	69
Volume Right	0	115	23
cSH	792	1700	136
Volume to Capacity	0.06	0.47	0.68
Queue Length 95th (ft)	4	0	93
Control Delay (s)	1.5	0.0	74.1
Lane LOS	A		F
Approach Delay (s)	1.5	0.0	74.1
Approach LOS			F

Intersection Summary			
Average Delay	4.8		
Intersection Capacity Utilization	83.6%	ICU Level of Service	E
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	716	55	21	662	82	28
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.94	0.94	0.74	0.74
Hourly flow rate (vph)	754	58	22	704	111	38
Pedestrians	4			4	4	
Lane Width (ft)	12.0			12.0	12.0	
Walking Speed (ft/s)	4.0			4.0	4.0	
Percent Blockage	0			0	0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			816		1540	791
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			816		1540	791
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			97		10	90
cM capacity (veh/h)			796		123	390

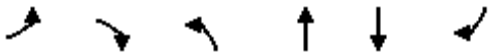
Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	812	727	149
Volume Left	0	22	111
Volume Right	58	0	38
cSH	1700	796	149
Volume to Capacity	0.48	0.03	1.00
Queue Length 95th (ft)	0	2	186
Control Delay (s)	0.0	0.7	131.9
Lane LOS		A	F
Approach Delay (s)	0.0	0.7	131.9
Approach LOS			F

Intersection Summary			
Average Delay	11.9		
Intersection Capacity Utilization	65.7%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	3	712	29	15	682	2	0	0	0	1	0	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.96	0.96	0.96	0.91	0.91	0.91	0.25	0.25	0.25	0.50	0.50	0.50
Hourly flow rate (vph)	3	742	30	16	749	2	0	0	0	2	0	2
Pedestrians		3			4			4			4	
Lane Width (ft)		12.0			12.0			0.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	756			776			1556	1556	765	1555	1570	758
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	756			776			1556	1556	765	1555	1570	758
tC, single (s)	4.4			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.5			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			98			100	100	100	98	100	100
cM capacity (veh/h)	729			849			90	111	405	90	109	408

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	775	768	4
Volume Left	3	16	2
Volume Right	30	2	2
cSH	729	849	148
Volume to Capacity	0.00	0.02	0.03
Queue Length 95th (ft)	0	1	2
Control Delay (s)	0.1	0.5	30.0
Lane LOS	A	A	D
Approach Delay (s)	0.1	0.5	30.0
Approach LOS			D

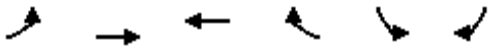
Intersection Summary				
Average Delay	0.4			
Intersection Capacity Utilization	58.0%	ICU Level of Service	B	
Analysis Period (min)	15			



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	53	1	1	5	7	8
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.59	0.59	0.38	0.38	0.54	0.54
Hourly flow rate (vph)	90	2	3	13	13	15
Pedestrians	2			2		
Lane Width (ft)	12.0			12.0		
Walking Speed (ft/s)	4.0			4.0		
Percent Blockage	0			0		
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	41	24	30			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	41	24	30			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	91	100	100			
cM capacity (veh/h)	972	1054	1594			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	92	16	28
Volume Left	90	3	0
Volume Right	2	0	15
cSH	974	1594	1700
Volume to Capacity	0.09	0.00	0.02
Queue Length 95th (ft)	8	0	0
Control Delay (s)	9.1	1.2	0.0
Lane LOS	A	A	
Approach Delay (s)	9.1	1.2	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	6.3		
Intersection Capacity Utilization	14.0%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	47	782	699	120	68	22
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.95	0.95	0.94	0.94	0.88	0.88
Hourly flow rate (vph)	49	823	744	128	77	25
Pedestrians		2	2		2	
Lane Width (ft)		12.0	12.0		12.0	
Walking Speed (ft/s)		4.0	4.0		4.0	
Percent Blockage		0	0		0	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	873				1734	811
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	873				1734	811
tC, single (s)	4.2				6.4	6.4
tC, 2 stage (s)						
tF (s)	2.3				3.5	3.4
p0 queue free %	93				12	93
cM capacity (veh/h)	738				88	357

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	873	871	102
Volume Left	49	0	77
Volume Right	0	128	25
cSH	738	1700	108
Volume to Capacity	0.07	0.51	0.95
Queue Length 95th (ft)	5	0	146
Control Delay (s)	1.8	0.0	145.9
Lane LOS	A		F
Approach Delay (s)	1.8	0.0	145.9
Approach LOS			F

Intersection Summary			
Average Delay	8.9		
Intersection Capacity Utilization	92.0%	ICU Level of Service	F
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	789	61	23	728	91	31
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.94	0.94	0.74	0.74
Hourly flow rate (vph)	831	64	24	774	123	42
Pedestrians	4			4	4	
Lane Width (ft)	12.0			12.0	12.0	
Walking Speed (ft/s)	4.0			4.0	4.0	
Percent Blockage	0			0	0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			899		1694	871
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			899		1694	871
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			97		0	88
cM capacity (veh/h)			741		99	351

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	895	799	165
Volume Left	0	24	123
Volume Right	64	0	42
cSH	1700	741	121
Volume to Capacity	0.53	0.03	1.37
Queue Length 95th (ft)	0	3	277
Control Delay (s)	0.0	0.9	275.8
Lane LOS		A	F
Approach Delay (s)	0.0	0.9	275.8
Approach LOS			F

Intersection Summary			
Average Delay	24.8		
Intersection Capacity Utilization	71.4%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	3	788	29	15	750	2	0	0	0	1	0	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.96	0.96	0.96	0.91	0.91	0.91	0.25	0.25	0.25	0.50	0.50	0.50
Hourly flow rate (vph)	3	821	30	16	824	2	0	0	0	2	0	2
Pedestrians		3			4			4			4	
Lane Width (ft)		12.0			12.0			0.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	830			855			1709	1710	844	1708	1724	832
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	830			855			1709	1710	844	1708	1724	832
tC, single (s)	4.4			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.5			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			98			100	100	100	97	100	99
cM capacity (veh/h)	680			793			70	89	365	71	87	370

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	854	843	4
Volume Left	3	16	2
Volume Right	30	2	2
cSH	680	793	118
Volume to Capacity	0.00	0.02	0.03
Queue Length 95th (ft)	0	2	3
Control Delay (s)	0.1	0.6	36.5
Lane LOS	A	A	E
Approach Delay (s)	0.1	0.6	36.5
Approach LOS			E

Intersection Summary				
Average Delay	0.4			
Intersection Capacity Utilization	61.7%	ICU Level of Service	B	
Analysis Period (min)	15			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	53	1	1	5	7	8
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.59	0.59	0.38	0.38	0.54	0.54
Hourly flow rate (vph)	90	2	3	13	13	15
Pedestrians	2			2		
Lane Width (ft)	12.0			12.0		
Walking Speed (ft/s)	4.0			4.0		
Percent Blockage	0			0		
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	41	24	30			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	41	24	30			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	91	100	100			
cM capacity (veh/h)	972	1054	1594			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	92	16	28
Volume Left	90	3	0
Volume Right	2	0	15
cSH	974	1594	1700
Volume to Capacity	0.09	0.00	0.02
Queue Length 95th (ft)	8	0	0
Control Delay (s)	9.1	1.2	0.0
Lane LOS	A	A	
Approach Delay (s)	9.1	1.2	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	6.3		
Intersection Capacity Utilization	14.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	42	718	644	109	62	20
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.95	0.95	0.94	0.94	0.88	0.88
Hourly flow rate (vph)	44	756	685	116	70	23
Pedestrians		2	2		2	
Lane Width (ft)		12.0	12.0		12.0	
Walking Speed (ft/s)		4.0	4.0		4.0	
Percent Blockage		0	0		0	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	803				1591	747
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	803				1591	747
tC, single (s)	4.2				6.4	6.4
tC, 2 stage (s)						
tF (s)	2.3				3.5	3.4
p0 queue free %	94				36	94
cM capacity (veh/h)	785				109	390

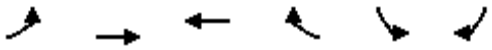
Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	800	801	93
Volume Left	44	0	70
Volume Right	0	116	23
cSH	785	1700	133
Volume to Capacity	0.06	0.47	0.70
Queue Length 95th (ft)	4	0	99
Control Delay (s)	1.5	0.0	79.6
Lane LOS	A		F
Approach Delay (s)	1.5	0.0	79.6
Approach LOS			F

Intersection Summary			
Average Delay	5.1		
Intersection Capacity Utilization	84.1%	ICU Level of Service	E
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	679	101	47	648	105	27
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.94	0.94	0.74	0.74
Hourly flow rate (vph)	715	106	50	689	142	36
Pedestrians	4			4	4	
Lane Width (ft)	12.0			12.0	12.0	
Walking Speed (ft/s)	4.0			4.0	4.0	
Percent Blockage	0			0	0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			825		1565	776
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			825		1565	776
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			94		0	91
cM capacity (veh/h)			790		115	398

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	821	739	178
Volume Left	0	50	142
Volume Right	106	0	36
cSH	1700	790	134
Volume to Capacity	0.48	0.06	1.33
Queue Length 95th (ft)	0	5	285
Control Delay (s)	0.0	1.6	252.6
Lane LOS		A	F
Approach Delay (s)	0.0	1.6	252.6
Approach LOS			F

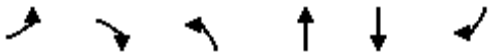
Intersection Summary			
Average Delay	26.6		
Intersection Capacity Utilization	87.7%	ICU Level of Service	E
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	3	703	694	2	1	1
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.96	0.96	0.91	0.91	0.50	0.50
Hourly flow rate (vph)	3	732	763	2	2	2
Pedestrians		3	4		4	
Lane Width (ft)		12.0	12.0		12.0	
Walking Speed (ft/s)		4.0	4.0		4.0	
Percent Blockage		0	0		0	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	769				1510	771
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	769				1510	771
tC, single (s)	4.4				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.5				3.5	3.3
p0 queue free %	100				98	100
cM capacity (veh/h)	720				132	401

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	735	765	4
Volume Left	3	0	2
Volume Right	0	2	2
cSH	720	1700	199
Volume to Capacity	0.00	0.45	0.02
Queue Length 95th (ft)	0	0	2
Control Delay (s)	0.1	0.0	23.5
Lane LOS	A		C
Approach Delay (s)	0.1	0.0	23.5
Approach LOS			C

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	50.3%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	65	1	1	5	7	14
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.59	0.59	0.38	0.38	0.54	0.54
Hourly flow rate (vph)	110	2	3	13	13	26
Pedestrians	2			2		
Lane Width (ft)	12.0			12.0		
Walking Speed (ft/s)	4.0			4.0		
Percent Blockage	0			0		
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	46	30	41			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	46	30	41			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	89	100	100			
cM capacity (veh/h)	965	1047	1579			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	112	16	39
Volume Left	110	3	0
Volume Right	2	0	26
cSH	967	1579	1700
Volume to Capacity	0.12	0.00	0.02
Queue Length 95th (ft)	10	0	0
Control Delay (s)	9.2	1.2	0.0
Lane LOS	A	A	
Approach Delay (s)	9.2	1.2	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	6.3		
Intersection Capacity Utilization	14.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	2	24	108	3	73	75
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.90	0.90	0.74	0.74	0.90	0.90
Hourly flow rate (vph)	2	27	146	4	81	83
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	394	148			150	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	394	148			150	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	97			94	
cM capacity (veh/h)	580	904			1444	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	29	150	164
Volume Left	2	0	81
Volume Right	27	4	0
cSH	867	1700	1444
Volume to Capacity	0.03	0.09	0.06
Queue Length 95th (ft)	3	0	4
Control Delay (s)	9.3	0.0	4.0
Lane LOS	A		A
Approach Delay (s)	9.3	0.0	4.0
Approach LOS	A		

Intersection Summary			
Average Delay	2.7		
Intersection Capacity Utilization	24.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	47	790	707	121	69	22
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.95	0.95	0.94	0.94	0.88	0.88
Hourly flow rate (vph)	49	832	752	129	78	25
Pedestrians		2	2		2	
Lane Width (ft)		12.0	12.0		12.0	
Walking Speed (ft/s)		4.0	4.0		4.0	
Percent Blockage		0	0		0	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	883				1751	820
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	883				1751	820
tC, single (s)	4.2				6.4	6.4
tC, 2 stage (s)						
tF (s)	2.3				3.5	3.4
p0 queue free %	93				9	93
cM capacity (veh/h)	732				86	353

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	881	881	103
Volume Left	49	0	78
Volume Right	0	129	25
cSH	732	1700	105
Volume to Capacity	0.07	0.52	0.98
Queue Length 95th (ft)	5	0	153
Control Delay (s)	1.9	0.0	158.5
Lane LOS	A		F
Approach Delay (s)	1.9	0.0	158.5
Approach LOS			F

Intersection Summary			
Average Delay	9.7		
Intersection Capacity Utilization	92.4%	ICU Level of Service	F
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	752	107	49	714	114	30
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.94	0.94	0.74	0.74
Hourly flow rate (vph)	792	113	52	760	154	41
Pedestrians	4			4	4	
Lane Width (ft)	12.0			12.0	12.0	
Walking Speed (ft/s)	4.0			4.0	4.0	
Percent Blockage	0			0	0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			908		1720	856
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			908		1720	856
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			93		0	89
cM capacity (veh/h)			735		91	358

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	904	812	195
Volume Left	0	52	154
Volume Right	113	0	41
cSH	1700	735	108
Volume to Capacity	0.53	0.07	1.80
Queue Length 95th (ft)	0	6	388
Control Delay (s)	0.0	1.9	461.8
Lane LOS		A	F
Approach Delay (s)	0.0	1.9	461.8
Approach LOS			F

Intersection Summary			
Average Delay	47.8		
Intersection Capacity Utilization	93.4%	ICU Level of Service	F
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	3	779	762	2	1	1
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.96	0.96	0.91	0.91	0.50	0.50
Hourly flow rate (vph)	3	811	837	2	2	2
Pedestrians		3	4		4	
Lane Width (ft)		12.0	12.0		12.0	
Walking Speed (ft/s)		4.0	4.0		4.0	
Percent Blockage		0	0		0	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	844				1664	845
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	844				1664	845
tC, single (s)	4.4				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.5				3.5	3.3
p0 queue free %	100				98	99
cM capacity (veh/h)	672				107	363

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	815	840	4
Volume Left	3	0	2
Volume Right	0	2	2
cSH	672	1700	165
Volume to Capacity	0.00	0.49	0.02
Queue Length 95th (ft)	0	0	2
Control Delay (s)	0.1	0.0	27.4
Lane LOS	A		D
Approach Delay (s)	0.1	0.0	27.4
Approach LOS			D

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	54.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	65	1	1	5	7	14
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.59	0.59	0.38	0.38	0.54	0.54
Hourly flow rate (vph)	110	2	3	13	13	26
Pedestrians	2			2		
Lane Width (ft)	12.0			12.0		
Walking Speed (ft/s)	4.0			4.0		
Percent Blockage	0			0		
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	46	30	41			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	46	30	41			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	89	100	100			
cM capacity (veh/h)	965	1047	1579			

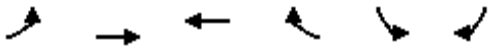
Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	112	16	39
Volume Left	110	3	0
Volume Right	2	0	26
cSH	967	1579	1700
Volume to Capacity	0.12	0.00	0.02
Queue Length 95th (ft)	10	0	0
Control Delay (s)	9.2	1.2	0.0
Lane LOS	A	A	
Approach Delay (s)	9.2	1.2	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	6.3		
Intersection Capacity Utilization	14.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	2	24	120	3	73	83
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.90	0.90	0.74	0.74	0.90	0.90
Hourly flow rate (vph)	2	27	162	4	81	92
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	419	164			166	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	419	164			166	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	97			94	
cM capacity (veh/h)	561	886			1424	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	29	166	173
Volume Left	2	0	81
Volume Right	27	4	0
cSH	848	1700	1424
Volume to Capacity	0.03	0.10	0.06
Queue Length 95th (ft)	3	0	5
Control Delay (s)	9.4	0.0	3.8
Lane LOS	A		A
Approach Delay (s)	9.4	0.0	3.8
Approach LOS	A		

Intersection Summary			
Average Delay	2.5		
Intersection Capacity Utilization	28.2%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	13	585	508	40	50	15
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.95	0.95	0.86	0.86	0.78	0.78
Hourly flow rate (vph)	14	616	591	47	64	19
Pedestrians		1	4		4	
Lane Width (ft)		12.0	12.0		12.0	
Walking Speed (ft/s)		4.0	4.0		4.0	
Percent Blockage		0	0		0	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	641				1265	619
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	641				1265	619
tC, single (s)	4.1				6.4	6.4
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.5
p0 queue free %	99				65	96
cM capacity (veh/h)	950				185	451

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	629	637	83
Volume Left	14	0	64
Volume Right	0	47	19
cSH	950	1700	214
Volume to Capacity	0.01	0.37	0.39
Queue Length 95th (ft)	1	0	43
Control Delay (s)	0.4	0.0	32.2
Lane LOS	A		D
Approach Delay (s)	0.4	0.0	32.2
Approach LOS			D

Intersection Summary			
Average Delay	2.2		
Intersection Capacity Utilization	51.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	577	58	16	502	46	19
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.86	0.86	0.76	0.76
Hourly flow rate (vph)	607	61	19	584	61	25
Pedestrians	2			5	5	
Lane Width (ft)	12.0			12.0	12.0	
Walking Speed (ft/s)	4.0			4.0	4.0	
Percent Blockage	0			0	0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			673		1266	648
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			673		1266	648
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			98		67	95
cM capacity (veh/h)			923		184	470

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	668	602	86
Volume Left	0	19	61
Volume Right	61	0	25
cSH	1700	923	223
Volume to Capacity	0.39	0.02	0.38
Queue Length 95th (ft)	0	2	42
Control Delay (s)	0.0	0.5	30.8
Lane LOS		A	D
Approach Delay (s)	0.0	0.5	30.8
Approach LOS			D

Intersection Summary			
Average Delay	2.2		
Intersection Capacity Utilization	51.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	2	565	29	14	517	1	0	0	0	0	0	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.96	0.96	0.96	0.93	0.93	0.93	0.25	0.25	0.25	0.25	0.25	0.25
Hourly flow rate (vph)	2	589	30	15	556	1	0	0	0	0	0	4
Pedestrians		3			3			2			3	
Lane Width (ft)		12.0			12.0			0.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	560			621			1203	1200	609	1200	1214	562
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	560			621			1203	1200	609	1200	1214	562
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			98			100	100	100	100	100	99
cM capacity (veh/h)	1019			970			158	183	498	160	179	527

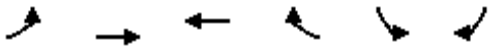
Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	621	572	4
Volume Left	2	15	0
Volume Right	30	1	4
cSH	1019	970	527
Volume to Capacity	0.00	0.02	0.01
Queue Length 95th (ft)	0	1	1
Control Delay (s)	0.1	0.4	11.9
Lane LOS	A	A	B
Approach Delay (s)	0.1	0.4	11.9
Approach LOS			B

Intersection Summary				
Average Delay	0.3			
Intersection Capacity Utilization	48.5%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	42	2	1	2	1	6
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.79	0.79	0.75	0.75	0.58	0.58
Hourly flow rate (vph)	53	3	1	3	2	10
Pedestrians	3			3	3	
Lane Width (ft)	12.0			12.0	12.0	
Walking Speed (ft/s)	4.0			4.0	4.0	
Percent Blockage	0			0	0	
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	18	13	15			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	18	13	15			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	95	100	100			
cM capacity (veh/h)	999	1068	1612			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	56	4	12
Volume Left	53	1	0
Volume Right	3	0	10
cSH	1002	1612	1700
Volume to Capacity	0.06	0.00	0.01
Queue Length 95th (ft)	4	0	0
Control Delay (s)	8.8	2.4	0.0
Lane LOS	A	A	
Approach Delay (s)	8.8	2.4	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	7.0		
Intersection Capacity Utilization	15.2%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	13	616	542	40	50	15
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.95	0.95	0.86	0.86	0.78	0.78
Hourly flow rate (vph)	14	648	630	47	64	19
Pedestrians		1	4		4	
Lane Width (ft)		12.0	12.0		12.0	
Walking Speed (ft/s)		4.0	4.0		4.0	
Percent Blockage		0	0		0	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	681				1337	658
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	681				1337	658
tC, single (s)	4.1				6.4	6.4
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.5
p0 queue free %	99				62	95
cM capacity (veh/h)	918				167	427

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	662	677	83
Volume Left	14	0	64
Volume Right	0	47	19
cSH	918	1700	194
Volume to Capacity	0.01	0.40	0.43
Queue Length 95th (ft)	1	0	49
Control Delay (s)	0.4	0.0	36.8
Lane LOS	A		E
Approach Delay (s)	0.4	0.0	36.8
Approach LOS			E

Intersection Summary			
Average Delay	2.3		
Intersection Capacity Utilization	53.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	608	58	16	536	46	19
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.86	0.86	0.76	0.76
Hourly flow rate (vph)	640	61	19	623	61	25
Pedestrians	2			5	5	
Lane Width (ft)	12.0			12.0	12.0	
Walking Speed (ft/s)	4.0			4.0	4.0	
Percent Blockage	0			0	0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			706		1338	681
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			706		1338	681
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			98		64	94
cM capacity (veh/h)			898		166	450

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	701	642	86
Volume Left	0	19	61
Volume Right	61	0	25
cSH	1700	898	203
Volume to Capacity	0.41	0.02	0.42
Queue Length 95th (ft)	0	2	48
Control Delay (s)	0.0	0.6	34.9
Lane LOS		A	D
Approach Delay (s)	0.0	0.6	34.9
Approach LOS			D

Intersection Summary			
Average Delay	2.3		
Intersection Capacity Utilization	53.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	2	596	29	14	551	1	0	0	0	0	0	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.96	0.96	0.96	0.93	0.93	0.93	0.25	0.25	0.25	0.25	0.25	0.25
Hourly flow rate (vph)	2	621	30	15	592	1	0	0	0	0	0	4
Pedestrians		3			3			2			3	
Lane Width (ft)		12.0			12.0			0.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	597			653			1272	1269	641	1269	1283	599
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	597			653			1272	1269	641	1269	1283	599
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			98			100	100	100	100	100	99
cM capacity (veh/h)	987			943			142	166	477	143	163	503

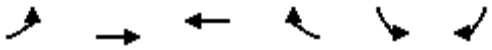
Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	653	609	4
Volume Left	2	15	0
Volume Right	30	1	4
cSH	987	943	503
Volume to Capacity	0.00	0.02	0.01
Queue Length 95th (ft)	0	1	1
Control Delay (s)	0.1	0.4	12.2
Lane LOS	A	A	B
Approach Delay (s)	0.1	0.4	12.2
Approach LOS			B

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	50.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	42	2	1	2	1	6
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.79	0.79	0.75	0.75	0.58	0.58
Hourly flow rate (vph)	53	3	1	3	2	10
Pedestrians	3			3	3	
Lane Width (ft)	12.0			12.0	12.0	
Walking Speed (ft/s)	4.0			4.0	4.0	
Percent Blockage	0			0	0	
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	18	13	15			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	18	13	15			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	95	100	100			
cM capacity (veh/h)	999	1068	1612			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	56	4	12
Volume Left	53	1	0
Volume Right	3	0	10
cSH	1002	1612	1700
Volume to Capacity	0.06	0.00	0.01
Queue Length 95th (ft)	4	0	0
Control Delay (s)	8.8	2.4	0.0
Lane LOS	A	A	
Approach Delay (s)	8.8	2.4	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	7.0		
Intersection Capacity Utilization	15.2%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	15	678	596	45	56	17
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.95	0.95	0.86	0.86	0.78	0.78
Hourly flow rate (vph)	16	714	693	52	72	22
Pedestrians		1	4		4	
Lane Width (ft)		12.0	12.0		12.0	
Walking Speed (ft/s)		4.0	4.0		4.0	
Percent Blockage		0	0		0	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	749				1472	724
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	749				1472	724
tC, single (s)	4.1				6.4	6.4
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.5
p0 queue free %	98				48	94
cM capacity (veh/h)	866				138	391

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	729	745	94
Volume Left	16	0	72
Volume Right	0	52	22
cSH	866	1700	162
Volume to Capacity	0.02	0.44	0.58
Queue Length 95th (ft)	1	0	76
Control Delay (s)	0.5	0.0	53.8
Lane LOS	A		F
Approach Delay (s)	0.5	0.0	53.8
Approach LOS			F

Intersection Summary			
Average Delay	3.4		
Intersection Capacity Utilization	58.9%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	669	65	18	590	51	21
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.86	0.86	0.76	0.76
Hourly flow rate (vph)	704	68	21	686	67	28
Pedestrians	2			5	5	
Lane Width (ft)	12.0			12.0	12.0	
Walking Speed (ft/s)	4.0			4.0	4.0	
Percent Blockage	0			0	0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			778		1473	748
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			778		1473	748
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			98		51	93
cM capacity (veh/h)			844		137	412

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	773	707	95
Volume Left	0	21	67
Volume Right	68	0	28
cSH	1700	844	170
Volume to Capacity	0.45	0.02	0.56
Queue Length 95th (ft)	0	2	72
Control Delay (s)	0.0	0.7	50.1
Lane LOS		A	F
Approach Delay (s)	0.0	0.7	50.1
Approach LOS			F

Intersection Summary			
Average Delay	3.3		
Intersection Capacity Utilization	57.9%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	2	659	29	14	607	1	0	0	0	0	0	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.96	0.96	0.96	0.93	0.93	0.93	0.25	0.25	0.25	0.25	0.25	0.25
Hourly flow rate (vph)	2	686	30	15	653	1	0	0	0	0	0	4
Pedestrians		3			3			2			3	
Lane Width (ft)		12.0			12.0			0.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	657			719			1398	1395	707	1395	1409	659
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	657			719			1398	1395	707	1395	1409	659
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			98			100	100	100	100	100	99
cM capacity (veh/h)	938			892			116	140	438	117	137	465

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	719	669	4
Volume Left	2	15	0
Volume Right	30	1	4
cSH	938	892	465
Volume to Capacity	0.00	0.02	0.01
Queue Length 95th (ft)	0	1	1
Control Delay (s)	0.1	0.4	12.8
Lane LOS	A	A	B
Approach Delay (s)	0.1	0.4	12.8
Approach LOS			B

Intersection Summary				
Average Delay	0.3			
Intersection Capacity Utilization	53.3%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	42	2	1	2	1	6
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.79	0.79	0.75	0.75	0.58	0.58
Hourly flow rate (vph)	53	3	1	3	2	10
Pedestrians	3			3	3	
Lane Width (ft)	12.0			12.0	12.0	
Walking Speed (ft/s)	4.0			4.0	4.0	
Percent Blockage	0			0	0	
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	18	13	15			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	18	13	15			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	95	100	100			
cM capacity (veh/h)	999	1068	1612			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	56	4	12
Volume Left	53	1	0
Volume Right	3	0	10
cSH	1002	1612	1700
Volume to Capacity	0.06	0.00	0.01
Queue Length 95th (ft)	4	0	0
Control Delay (s)	8.8	2.4	0.0
Lane LOS	A	A	
Approach Delay (s)	8.8	2.4	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	7.0		
Intersection Capacity Utilization	15.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	13	625	549	41	51	15
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.95	0.95	0.86	0.86	0.78	0.78
Hourly flow rate (vph)	14	658	638	48	65	19
Pedestrians		1	4		4	
Lane Width (ft)		12.0	12.0		12.0	
Walking Speed (ft/s)		4.0	4.0		4.0	
Percent Blockage		0	0		0	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	690				1355	667
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	690				1355	667
tC, single (s)	4.1				6.4	6.4
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.5
p0 queue free %	98				60	95
cM capacity (veh/h)	911				163	422

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	672	686	85
Volume Left	14	0	65
Volume Right	0	48	19
cSH	911	1700	189
Volume to Capacity	0.02	0.40	0.45
Queue Length 95th (ft)	1	0	52
Control Delay (s)	0.4	0.0	38.6
Lane LOS	A		E
Approach Delay (s)	0.4	0.0	38.6
Approach LOS			E

Intersection Summary			
Average Delay	2.5		
Intersection Capacity Utilization	54.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	573	103	41	526	64	18
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.86	0.86	0.76	0.76
Hourly flow rate (vph)	603	108	48	612	84	24
Pedestrians	2			5	5	
Lane Width (ft)	12.0			12.0	12.0	
Walking Speed (ft/s)	4.0			4.0	4.0	
Percent Blockage	0			0	0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			717		1371	667
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			717		1371	667
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			95		45	95
cM capacity (veh/h)			890		153	458

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	712	659	108
Volume Left	0	48	84
Volume Right	108	0	24
cSH	1700	890	179
Volume to Capacity	0.42	0.05	0.60
Queue Length 95th (ft)	0	4	83
Control Delay (s)	0.0	1.4	51.5
Lane LOS		A	F
Approach Delay (s)	0.0	1.4	51.5
Approach LOS			F

Intersection Summary			
Average Delay	4.4		
Intersection Capacity Utilization	74.2%	ICU Level of Service	D
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	2	589	566	1	0	1
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.96	0.96	0.93	0.93	0.25	0.25
Hourly flow rate (vph)	2	614	609	1	0	4
Pedestrians		3	3		3	
Lane Width (ft)		12.0	12.0		12.0	
Walking Speed (ft/s)		4.0	4.0		4.0	
Percent Blockage		0	0		0	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	613				1233	615
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	613				1233	615
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	99
cM capacity (veh/h)	974				196	492

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	616	610	4
Volume Left	2	0	0
Volume Right	0	1	4
cSH	974	1700	492
Volume to Capacity	0.00	0.36	0.01
Queue Length 95th (ft)	0	0	1
Control Delay (s)	0.1	0.0	12.4
Lane LOS	A		B
Approach Delay (s)	0.1	0.0	12.4
Approach LOS			B

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	43.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	52	2	1	2	1	11
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.79	0.79	0.75	0.75	0.58	0.58
Hourly flow rate (vph)	66	3	1	3	2	19
Pedestrians	3			3	3	
Lane Width (ft)	12.0			12.0	12.0	
Walking Speed (ft/s)	4.0			4.0	4.0	
Percent Blockage	0			0	0	
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	23	17	24			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	23	17	24			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	93	100	100			
cM capacity (veh/h)	993	1062	1600			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	68	4	21
Volume Left	66	1	0
Volume Right	3	0	19
cSH	996	1600	1700
Volume to Capacity	0.07	0.00	0.01
Queue Length 95th (ft)	6	0	0
Control Delay (s)	8.9	2.4	0.0
Lane LOS	A	A	
Approach Delay (s)	8.9	2.4	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	6.6		
Intersection Capacity Utilization	15.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	2	19	63	3	71	73
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.90	0.90	0.76	0.76	0.73	0.73
Hourly flow rate (vph)	2	21	83	4	97	100
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	379	85			87	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	379	85			87	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	98			94	
cM capacity (veh/h)	587	980			1522	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	23	87	197
Volume Left	2	0	97
Volume Right	21	4	0
cSH	921	1700	1522
Volume to Capacity	0.03	0.05	0.06
Queue Length 95th (ft)	2	0	5
Control Delay (s)	9.0	0.0	4.0
Lane LOS	A		A
Approach Delay (s)	9.0	0.0	4.0
Approach LOS	A		

Intersection Summary			
Average Delay	3.2		
Intersection Capacity Utilization	24.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	15	687	603	46	57	17
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.95	0.95	0.86	0.86	0.78	0.78
Hourly flow rate (vph)	16	723	701	53	73	22
Pedestrians		1	4		4	
Lane Width (ft)		12.0	12.0		12.0	
Walking Speed (ft/s)		4.0	4.0		4.0	
Percent Blockage		0	0		0	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	759				1491	733
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	759				1491	733
tC, single (s)	4.1				6.4	6.4
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.5
p0 queue free %	98				46	94
cM capacity (veh/h)	859				134	386

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	739	755	95
Volume Left	16	0	73
Volume Right	0	53	22
cSH	859	1700	158
Volume to Capacity	0.02	0.44	0.60
Queue Length 95th (ft)	1	0	80
Control Delay (s)	0.5	0.0	57.3
Lane LOS	A		F
Approach Delay (s)	0.5	0.0	57.3
Approach LOS			F

Intersection Summary			
Average Delay	3.6		
Intersection Capacity Utilization	59.4%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	634	110	43	580	69	20
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.86	0.86	0.76	0.76
Hourly flow rate (vph)	667	116	50	674	91	26
Pedestrians	2			5	5	
Lane Width (ft)	12.0			12.0	12.0	
Walking Speed (ft/s)	4.0			4.0	4.0	
Percent Blockage	0			0	0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			788		1507	735
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			788		1507	735
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			94		28	94
cM capacity (veh/h)			837		126	419

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	783	724	117
Volume Left	0	50	91
Volume Right	116	0	26
cSH	1700	837	149
Volume to Capacity	0.46	0.06	0.78
Queue Length 95th (ft)	0	5	123
Control Delay (s)	0.0	1.5	84.9
Lane LOS		A	F
Approach Delay (s)	0.0	1.5	84.9
Approach LOS			F

Intersection Summary			
Average Delay	6.8		
Intersection Capacity Utilization	79.0%	ICU Level of Service	D
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	2	652	622	1	0	1
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.96	0.96	0.93	0.93	0.25	0.25
Hourly flow rate (vph)	2	679	669	1	0	4
Pedestrians		3	3		3	
Lane Width (ft)		12.0	12.0		12.0	
Walking Speed (ft/s)		4.0	4.0		4.0	
Percent Blockage		0	0		0	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	673				1359	675
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	673				1359	675
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	99
cM capacity (veh/h)	925				164	455

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	681	670	4
Volume Left	2	0	0
Volume Right	0	1	4
cSH	925	1700	455
Volume to Capacity	0.00	0.39	0.01
Queue Length 95th (ft)	0	0	1
Control Delay (s)	0.1	0.0	13.0
Lane LOS	A		B
Approach Delay (s)	0.1	0.0	13.0
Approach LOS			B

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	46.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	52	2	1	2	1	11
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.79	0.79	0.75	0.75	0.58	0.58
Hourly flow rate (vph)	66	3	1	3	2	19
Pedestrians	3			3	3	
Lane Width (ft)	12.0			12.0	12.0	
Walking Speed (ft/s)	4.0			4.0	4.0	
Percent Blockage	0			0	0	
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	23	17	24			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	23	17	24			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	93	100	100			
cM capacity (veh/h)	993	1062	1600			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	68	4	21
Volume Left	66	1	0
Volume Right	3	0	19
cSH	996	1600	1700
Volume to Capacity	0.07	0.00	0.01
Queue Length 95th (ft)	6	0	0
Control Delay (s)	8.9	2.4	0.0
Lane LOS	A	A	
Approach Delay (s)	8.9	2.4	0.0
Approach LOS	A		

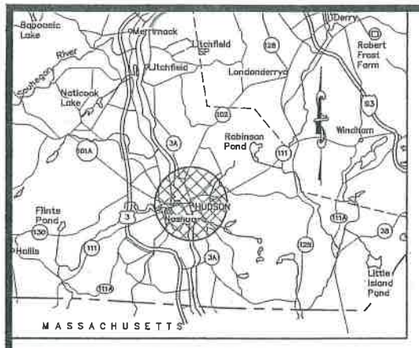
Intersection Summary			
Average Delay	6.6		
Intersection Capacity Utilization	15.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	2	19	70	3	71	82
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.90	0.90	0.76	0.76	0.73	0.73
Hourly flow rate (vph)	2	21	92	4	97	112
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	401	94			96	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	401	94			96	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	98			94	
cM capacity (veh/h)	570	968			1510	

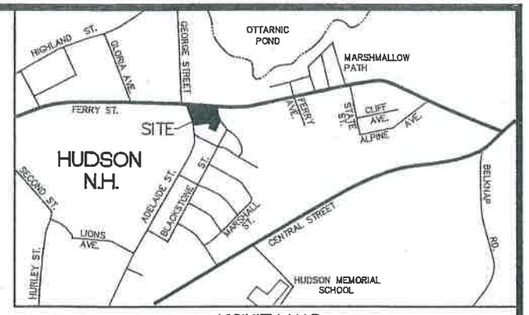
Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	23	96	210
Volume Left	2	0	97
Volume Right	21	4	0
cSH	908	1700	1510
Volume to Capacity	0.03	0.06	0.06
Queue Length 95th (ft)	2	0	5
Control Delay (s)	9.1	0.0	3.8
Lane LOS	A		A
Approach Delay (s)	9.1	0.0	3.8
Approach LOS	A		

Intersection Summary			
Average Delay	3.1		
Intersection Capacity Utilization	24.9%	ICU Level of Service	A
Analysis Period (min)	15		

PACKET 8/27/14



VICINITY PLAN
NOT TO SCALE



VICINITY MAP
SCALE: 1" = 1,000'

NON-RESIDENTIAL SITE PLAN
DAIRY QUEEN
MAP 175; LOT 142
119 FERRY STREET
HUDSON, NEW HAMPSHIRE

HUDSON
AUG 11 2014
COMMUNITY DEVELOPMENT

OWNER OF RECORD/APPLICANT:
LYNN C. & ANN M. WHITE REVOCABLE TRUST
LYNN C. & ANN M. WHITE (TRUSTEES)
2 BRADFORD CIRCLE
HUDSON, NH 03051
H.C.R.D. BK. 7864; PG. 30

PREPARED BY:
KEACH-NORDSTROM ASSOCIATES, INC.
10 COMMERCE PARK NORTH, SUITE 3
BEDFORD, NEW HAMPSHIRE 03110
(603) 627-2881

SHEET TITLE	SHEET No.
MASTER PLAN	1
EXISTING CONDITIONS PLAN	2
DEMOLITION/REMOVALS PLAN	3
NON-RESIDENTIAL SITE LAYOUT PLAN	4
GRADING & DRAINAGE PLAN	5
UTILITY PLAN	6
EROSION CONTROL PLAN	7
LANDSCAPE PLAN	8
LIGHTING PLAN	9
CONSTRUCTION DETAILS	10 - 13

PURSUANT TO THE SITE REVIEW REGULATIONS OF THE HUDSON PLANNING BOARD, THE SITE PLAN APPROVAL GRANTED HEREIN EXPIRES ONE YEAR FROM DATE OF APPROVAL	APPROVED BY THE HUDSON, NH PLANNING BOARD DATE OF MEETING: _____ SIGNATURE _____ DATE _____ SIGNATURE _____ DATE _____ SITE PLANS ARE VALID FOR ONE YEAR FROM THE DATE OF PLANNING BOARD MEETING FINAL APPROVAL. FINAL APPROVAL COMMENCES AT THE PLANNING BOARD MEETING DATE AT WHICH THE PLAN ACHIEVES FINAL APPROVAL.

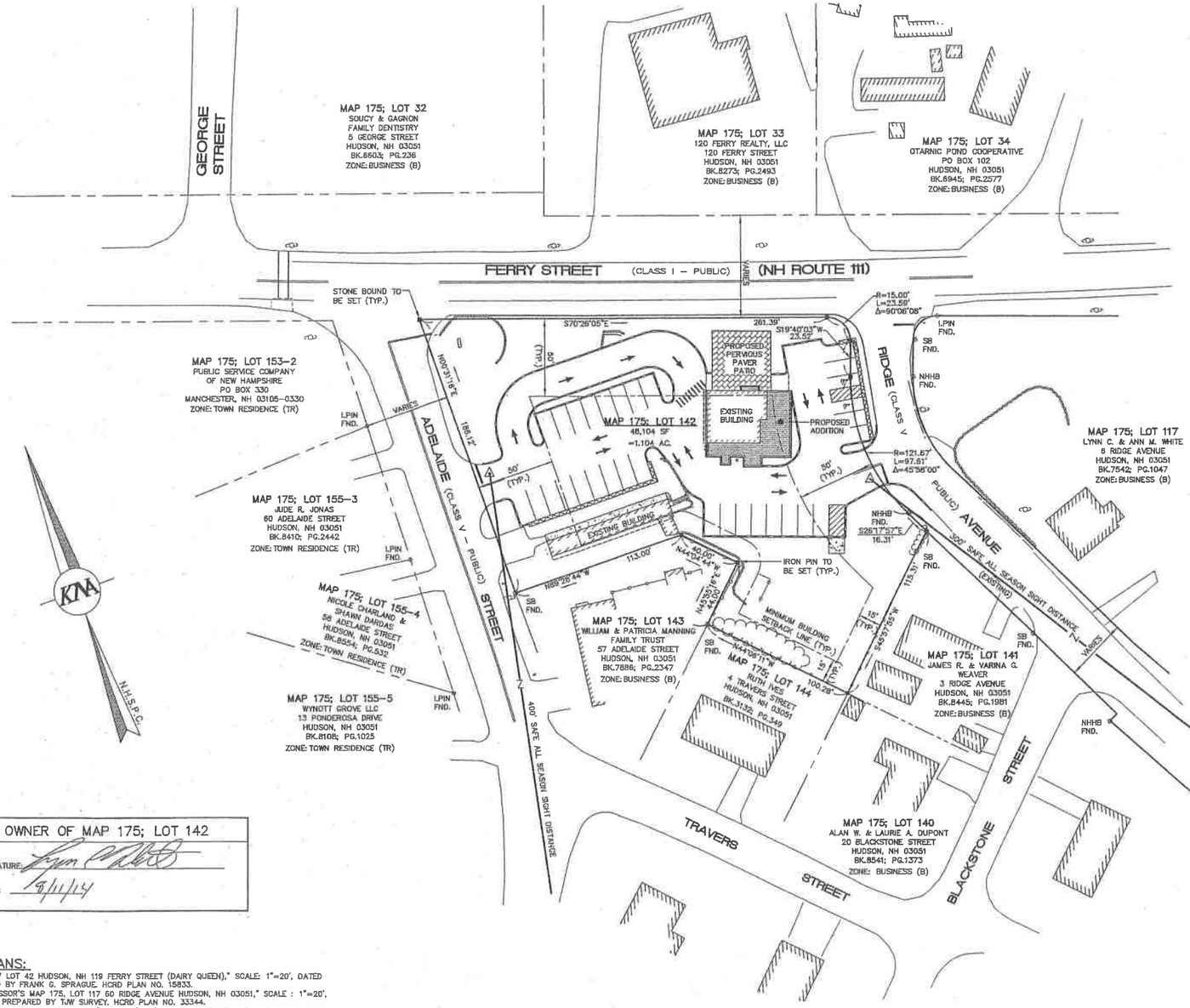
STATE OF NEW HAMPSHIRE — No. 903 — ANTHONY M. BASSO — LICENSED LAND SURVEYOR — 8/1/14

DIG SAFE — 811 — UTILITIES UNDERGROUND PLANT DAMAGE PREVENTION SYSTEM

STATE OF NEW HAMPSHIRE — STEVEN B. KEACH No. 7859 — PROFESSIONAL ENGINEER — 8/1/14

KNA KEACH-NORDSTROM ASSOCIATES, INC.
Civil Engineering Land Surveying Landscape Architecture
10 Commerce Park North, Suite 3B, Bedford, NH 03110 Phone (603) 627-2881

JULY 18, 2014
AUGUST 8, 2014
PROJECT NO. 14-0321-1



VICINITY MAP
SCALE: 1" = 1,000'

NOTES

1. THE PURPOSE OF THIS PLAN IS TO DEPICT THE PROPOSED BUILDING ADDITION AND OTHER SITE IMPROVEMENTS TO THE EXISTING DAIRY QUEEN RESTAURANT ON TOWN OF HUDSON TAX MAP 175; LOT 142.
2. AREA OF PARCELS:
   MAP 175; LOT 142 = 48,104 SF, 1.104 ACRES
3. REFERENCE THIS PARCELS AS TOWN OF HUDSON TAX MAP 175; LOTS 142.
4. PRESENT OWNER OF RECORD:
   MAP 175; LOT 142
   LYNN C. & ANN M. WHITE REVOCABLE TRUST
   LYNN C. & ANN M. WHITE (TRUSTEES)
   119 FERRY STREET
   HUDSON, NH 03051
   H.C.R.D. BK. 7864, PG. 30
5. PRESENT ZONING: BUSINESS (B)
   MINIMUM LOT REQUIREMENTS:
   – LOT AREA 30,000 SF WITH WATER AND SEWER
   – LOT AREA 43,560 SF WITHOUT WATER AND SEWER
   – LOT FRONTAGE 150 FT ARTERIAL/COLLECTOR
   – LOT FRONTAGE 150 FT LOCAL ROAD WITH WATER AND SEWER
   MINIMUM BUILDING SETBACKS: (LOCAL, COLLECTOR, AND ARTERIAL ROADWAYS)
   – FRONT 50 FT
   – SIDE 15 FT
   – REAR 15 FT
6. BOUNDARY AND TOPOGRAPHIC INFORMATION DEPICTED HEREON IS A RESULT OF AN ON GROUND FIELD SURVEY PREPARED BY THIS OFFICE IN APRIL 2014. THERE ARE NO ONSITE JURISDICTIONAL WETLANDS.
7. EXAMINATION OF THE FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA) FLOOD INSURANCE RATE MAP (FIRM) FOR THE TOWN OF HUDSON, NEW HAMPSHIRE, HILLSBOROUGH COUNTY, MAP NUMBER 33011C0518D, PANEL 518 OF 701, EFFECTIVE DATE APRIL 18, 2011 INDICATES THAT THE SUBJECT PARCELS ARE NOT LOCATED WITHIN A DESIGNATED FLOOD HAZARD AREA.
8. SITE IS SERVICED BY MUNICIPAL WATER AND SEWER.
9. THE LOCATION OF ANY UNDERGROUND UTILITY INFORMATION SHOWN ON THIS PLAN IS APPROXIMATE. KEACH–NORDSTROM ASSOCIATES, INC. MAKES NO CLAIM TO THE ACCURACY OR COMPLETENESS OF UTILITIES SHOWN. PRIOR TO ANY EXCAVATION ON SITE, THE CONTRACTOR SHALL CONTACT DIG SAFE AT 811.
10. PARKING CALCULATION:
    REQUIRED:
    2,255 S.F./100 SF = 23 SPACES REQUIRED
    PROVIDED:
    31 SPACES (INCLUDING 2 HANDICAP)
    NO DESIGNATED LOADING SPACE PROVIDED. DELIVERIES OCCUR IN THE MORNING PRIOR TO THE RESTAURANT OPENING.
11. OPEN SPACE:
    REQUIRED: 35%
    EXISTING: 33.7%
    PROPOSED: 34.3%
12. ON JULY 18, 2014, REPRESENTATIVES FROM KEACH–NORDSTROM ASSOCIATES, INC. VERIFIED THAT ADEQUATE SIGHT DISTANCE EXISTS FROM THE PROPOSED DRIVEWAY ALONG ADELAIDE STREET.
13. SITE LIGHTING SHALL BE AS SHOWN ON THE PLAN, DIRECTED ONTO SITE, AND SHALL CONFORM WITH ALL APPLICABLE TOWN OF HUDSON ZONING REGULATIONS.
14. SITE IMPROVEMENTS DEPICTED ON THE PLAN SHALL CONFORM WITH TITLE III OF THE AMERICANS WITH DISABILITIES ACT WITH REGARD TO DIMENSION AND GRADE.
15. IT SHALL BE UNLAWFUL TO MODIFY, CHANGE, OR ALTER ANY STRUCTURE OR USE SHOWN ON THIS SITE PLAN IN ANYWAY WHATSOEVER, OR CONVERT OR ALTER ANY STRUCTURE OR USE SHOWN ON THIS SITE PLAN, OR CHANGE THE ABOVE USE INDICATED ON THE PLAN WITHOUT RECEIVING APPROVAL FROM THE TOWN OF HUDSON PLANNING BOARD.
16. TRASH PICK–UP SHALL NOT OCCUR EARLIER THEN 7:00 AM NOR LATER THAN 7:00 PM, MONDAY THROUGH FRIDAY ONLY.
17. EXTERIOR CONSTRUCTION ACTIVITIES ON THE SITE SHALL BE LIMITED TO BETWEEN 7:00 AM AND 7:00 PM MONDAY THROUGH SATURDAY. NO CONSTRUCTION ACTIVITIES SHALL OCCUR ON SUNDAYS.
18. IF LOT DEVELOPMENT INVOLVES BLASTING AND/OR RAMMING OF BEDROCK MATERIALS, SAID ACTIVITIES SHALL BE LIMITED TO THE HOURS BETWEEN 7:00 AM AND 5:00 PM MONDAY THROUGH FRIDAY ONLY. SAID BLASTING/RAMMING ACTIVITIES SHALL BE PROHIBITED ON WEEKENDS.
19. WAIVERS REQUESTED:
    HTC 275–8(B)12C – RESIDENTIAL BUFFER
    HTC 275–8(B)24 – OPEN SPACE
    HTC 275–9(C) – NOISE STUDY
    HTC 275–9(D) – FISCAL/ENVIRONMENTAL IMPACT STUDY
    HTC 275–8(B)22 – FRONT YARD GREEN SPACE
20. A VARIANCE WAS GRANTED BY THE HUDSON ZONING BOARD OF ADJUSTMENT (CASE NO. 175–142–000) ON JUNE 19, 2014 TO ALLOW A BUILDING WITHIN TO 50 FOOT FRONT SETBACK
21. PLOWED SNOW FROM THE FACILITIES, DRIVEWAY, PARKING LOTS AND SIDEWALK SHALL BE STORED IN THE DESIGNATED AREAS SHOWN IN THIS PLAN SET. WHEN THE SNOW STORAGE AREAS ARE AT CAPACITY, SUBSEQUENT SNOW SHALL BE HAULED OFF–SITE AND DISPOSED OF IN AN ENVIRONMENTALLY SOUND FASHION AND IN ACCORDANCE WITH ALL LOCAL, STATE AND FEDERAL REGULATIONS.
22. ONSITE DRAINAGE SYSTEM SHALL BE CONSTRUCTED AND MAINTAINED IN COMPLIANCE WITH NHDES REQUIREMENTS FOR SUCH SYSTEMS.

OWNER OF MAP 175; LOT 142

SIGNATURE: _____

DATE: 8/11/14

REFERENCE PLANS:

1. "SITE PLAN – MAP 57 LOT 42 HUDSON, NH 119 FERRY STREET (DAIRY QUEEN)," SCALE: 1"=20', DATED JUNE 1983, PREPARED BY FRANK G. SPRAGUE. HCRD PLAN NO. 15833.
2. "PLAN OF LAND ASSESSOR'S MAP 175, LOT 117 60 RIDGE AVENUE HUDSON, NH 03051," SCALE : 1"=20', DATED AUGUST 2004, PREPARED BY TJW SURVEY. HCRD PLAN NO. 33344.
3. "BOUNDARY PLAN RIDGE AVENUE HUDSON, NH," SCALE:1"=20', DATED NOVEMBER 1979, PREPARED BY A.E. MAYNARD. HCRD PLAN NO. 12765.
4. "PINE RIDGE IN HUDSON, N.H.," SCALE: 1"=40', DATED NOVEMBER 12, 1914, PREPARED BY C.W. HOBBS, SURVEYOR. HCRD PLAN NO. 325.
5. "PROPOSED REVISIONS DEARBORN LAND HUDSON, NH," SCALE: 1"=50', DATED OCTOBER 1981, PREPARED BY NED SPAULDING. HCRD PLAN NO. 2240.
6. HOUSELOTS IN HUDSON, N.H.," SCALE: 1"=200'. HCRD PLAN NO 202–1A.

GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)
1 inch = 40 ft.

PURSUANT TO THE SITE REVIEW REGULATIONS OF THE HUDSON PLANNING BOARD, THE SITE PLAN APPROVAL GRANTED HEREIN EXPIRES ONE YEAR FROM DATE OF APPROVAL	APPROVED BY THE HUDSON, NH PLANNING BOARD DATE OF MEETING: _____ SIGNATURE _____ DATE _____ SIGNATURE _____ DATE _____ SITE PLANS ARE VALID FOR ONE YEAR FROM THE DATE OF PLANNING BOARD MEETING FINAL APPROVAL. FINAL APPROVAL COMMENCES AT THE PLANNING BOARD MEETING DATE AT WHICH THE PLAN ACHIEVES FINAL APPROVAL.

LEGEND

- STONE BOUND FOUND
- IRON PIN FOUND
- UTILITY POLE
- ABUTTER LINE
- PROPERTY LINE
- STOCKADE FENCE
- TREELINE
- RETAINING WALL
- EDGE OF PAVEMENT
- STONEWALL
- SETBACK
- BITUMINOUS CURB

NOTES (CONTINUED)

23. THE APPLICANT'S ENGINEER AND/OR CONTRACTOR SHALL CONTACT THE TOWN OF HUDSON TO SCHEDULE A PRECONSTRUCTION MEETING, WHICH WILL BE HELD WITH STAFF PRIOR TO STARTING CONSTRUCTION.
24. ALL STIPULATIONS OF APPROVAL SHALL BE INCORPORATED INTO THE DEVELOPMENT AGREEMENT, WHICH SHALL BE RECORDED AT THE HILLSBOROUGH COUNTY REGISTRY OF DEEDS, TOGETHER WITH THE SITE PLAN–OF–RECORD.
25. PRIOR TO THE PLANNING BOARD ENDORSEMENT OF THE SITE PLAN, THE DEVELOPMENT AGREEMENT AND ALL EASEMENT DOCUMENTS, INCLUDING DRAINAGE, SHARED DRIVEWAYS AND SHARED PARKING, SHALL BE FAVORABLY REVIEWED AND RECOMMENDED BY THE TOWN COUNSEL.
26. ALL IMPROVEMENTS SHOWN ON THE SITE PLAN–OF–RECORD, INCLUDING NOTES 1–27, SHALL BE COMPLETED IN THEIR ENTIRETY AND AT THE EXPENSE OF THE APPLICANT OR HIS ASSIGNS.
27. THIS APPROVAL SHALL BE SUBJECT TO FINAL ENGINEERING REVIEW.

STATE OF NEW HAMPSHIRE
STEVEN B. KEACH
No. 7858
LICENSED PROFESSIONAL ENGINEER

DIG SAFE
811
CALL BEFORE YOU DIG
UTILITIES UNDERGROUND PLANT DAMAGE PREVENTION SYSTEM

CERTIFICATION:

THIS PLAN AND THE SURVEY UPON WHICH IT IS BASED WAS MADE ON THE GROUND UNDER MY DIRECTION AND SUPERVISION IN APRIL 2014 IN ACCORDANCE WITH THE RULES AND REGULATIONS OF THE STATE OF NEW HAMPSHIRE AND THE CITY/TOWN WITHIN WHICH IT IS LOCATED WITH A TRAVERSE ERROR OF CLOSURE BETTER THAN 1 PART IN 10,000. THE SURVEY PERFORMED IS CLASSIFIED AS AN URBAN STANDARD SURVEY, (CATEGORY 1, CONDITION 1) AS DEFINED IN THE NEW HAMPSHIRE LAND SURVEYORS ASSOCIATION ETHICS AND STANDARDS.

8/11/14
DATE

MASTER PLAN
DAIRY QUEEN
TAX MAP 175; LOT 142
119 FERRY STREET
HUDSON, NEW HAMPSHIRE
HILLSBOROUGH COUNTY

OWNER OF RECORD / APPLICANT
LYNN C. & ANN M. WHITE
REVOCABLE TRUST
LYNN C. & ANN M. WHITE (TRUSTEES)
2 BRADFORD CIRCLE
HUDSON, NH 03051
H.C.R.D. BK.7864; PG.30

KNA KEACH–NORDSTROM ASSOCIATES, INC.
Civil Engineering Land Surveying Landscape Architecture
10 Commerce Park North, Suite 3B, Bedford, NH 03110 Phone (603) 627–2881

STATE OF NEW HAMPSHIRE
NO. 903
ANTHONY M. BASSO
LICENSED LAND SURVEYOR
SIGNATURE

REVISIONS

No.	DATE	DESCRIPTION	BY
1	08/08/2014	PER TOWN COMMENTS	BJC

DATE: JULY 18, 2014 SCALE: 1" = 40'
PROJECT NO: 14–0321–1 SHEET 1 OF 13

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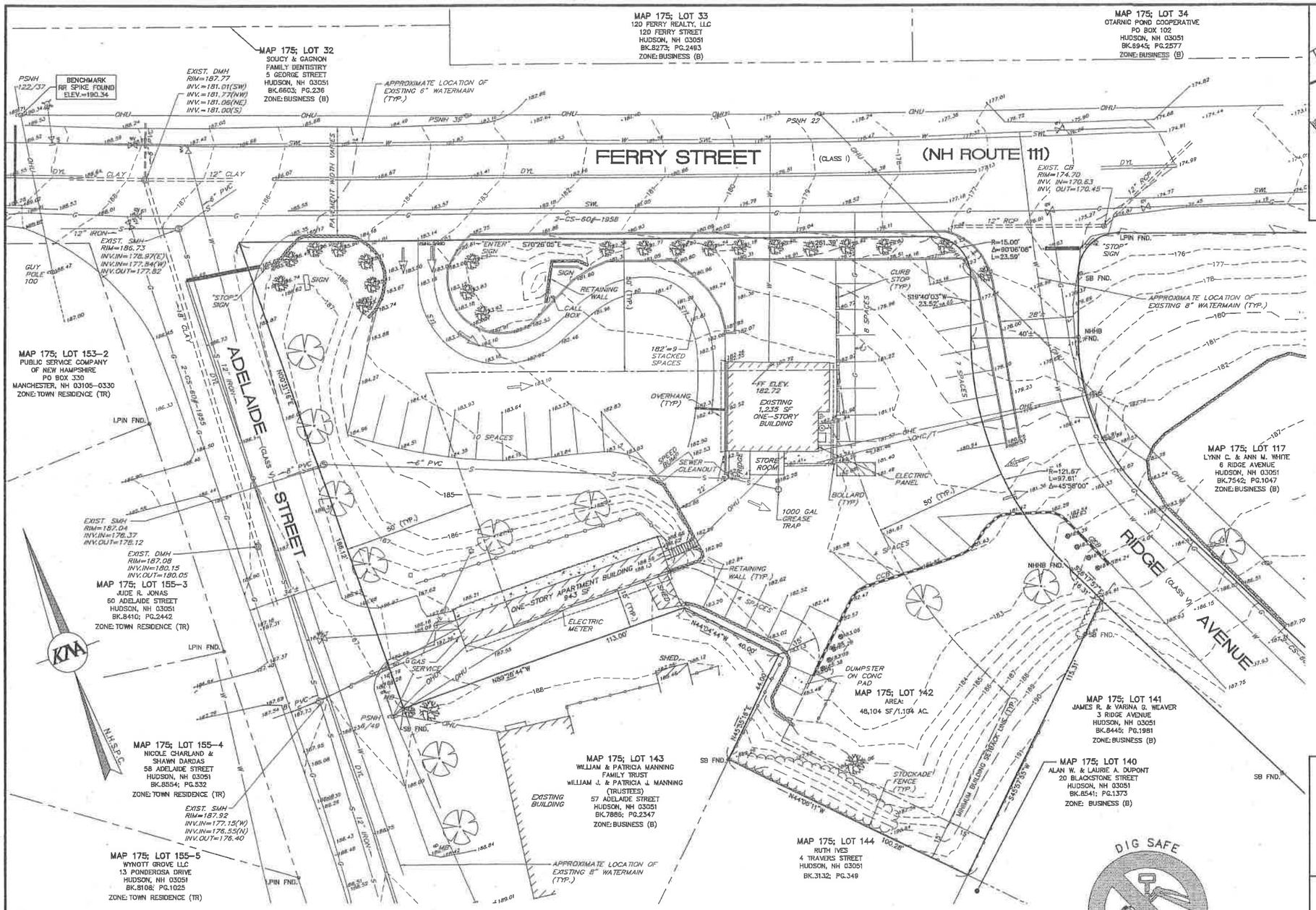

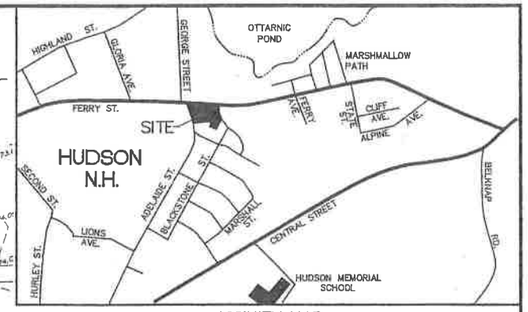

VICINITY MAP
SCALE: 1" = 1,000'

NOTES:

1. THE PURPOSE OF THIS PLAN IS TO DEPICT THE EXISTING CONDITIONS PRESENT ON TAX MAP 175, LOT 142.
2. MAP 175; LOT 142 INDICATES TOWN OF HUDSON TAX ASSESSORS MAP AND LOT NUMBER.
3. PRESENT OWNERS OF RECORD:
   LYNN C. & ANN M. WHITE REVOCABLE TRUST
   LYNN C. & ANN M. WHITE (TRUSTEES)
   119 FERRY STREET
   HUDSON, NH 03051
   HCRD BK.7864; PG. 30
4. THE AREA OF THE SUBJECT PARCEL IS AS FOLLOWS:
   48,104 SQUARE FEET OR 1.104 ACRES
5. PRESENT ZONING: BUSINESS (B)
   MINIMUM LOT REQUIREMENTS:
   - LOT AREA 30,000 SF (WITH TOWN WATER AND SEWER)
   - LOT FRONTAGE 150 FT (ARTERIAL/COLLECTOR)
   MINIMUM BUILDING SETBACKS: (ARTERIAL/COLLECTOR)
   - FRONT 50 FT
   - SIDE 15 FT
   - REAR 15 FT
6. BOUNDARY AND TOPOGRAPHIC INFORMATION DEPICTED ON THIS PLAN IS BASED ON A FIELD SURVEY PERFORMED BY THIS OFFICE IN APRIL, 2014.HORIZONTAL DATUM NEW HAMPSHIRE STATE PLANE COORDINATES. VERTICAL DATUM IS NGVD 29.
7. EXAMINATION OF THE FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA) FLOOD INSURANCE RATE MAPS (FIRM) FOR THE TOWN OF HUDSON, NEW HAMPSHIRE, HILLSBOROUGH COUNTY, MAP NUMBER 33011C0518D, PANEL NUMBER 518 OF 701, EFFECTIVE DATE SEPTEMBER 25, 2009 INDICATES THAT THE SUBJECT PREMISES IS NOT LOCATED WITHIN A DESIGNATED FLOOD HAZARD AREA.
8. THE LOCATION OF ANY UNDERGROUND UTILITY INFORMATION SHOWN ON THIS PLAN IS APPROXIMATE. KEACH-NORDSTROM ASSOCIATES, INC. MAKES NO CLAIM TO THE ACCURACY OR COMPLETENESS OF UTILITIES SHOWN. PRIOR TO ANY EXCAVATION ON SITE THE CONTRACTOR SHALL CONTACT DIG SAFE AT 811.

REFERENCE PLANS:

1. "SITE PLAN – MAP 57 LOT 42 HUDSON, NH 119 FERRY STREET (DAIRY QUEEN)," SCALE: 1"=20', DATED JUNE 1983, PREPARED BY FRANK G. SPRAGUE. HCRD PLAN NO. 15833.
2. "PLAN OF LAND ASSESSOR'S MAP 175, LOT 117 60 RIDGE AVENUE HUDSON, NH 03051," SCALE : 1"=20', DATED AUGUST 2004, PREPARED BY TJW SURVEY. HCRD PLAN NO. 33344.
3. "BOUNDARY PLAN RIDGE AVENUE HUDSON, NH," SCALE:1"=20', DATED NOVEMBER 1979, PREPARED BY A.E. MAYNARD. HCRD PLAN NO. 12765.
4. "PINE RIDGE IN HUDSON, N.H.," SCALE; 1"=40', DATED NOVEMBER 12, 1814, PREPARED BY C.W. HOBBS, SURVEYOR. HCRD PLAN NO. 325.
5. "PROPOSED REVISIONS DEARBORN LAND IN HUDSON, NH," SCALE: 1"=50', DATED OCTOBER 1961, PREPARED BY NED SPAULDING. HCRD PLAN NO. 2240.
6. HOUSELOTS IN HUDSON, N.H.," SCALE: 1"=200'. HCRD PLAN NO 202-1A.

LEGEND

STONE BOUND FOUND	DRAINAGE MANHOLE
IRON PIN FOUND	CATCH BASIN
DRILL HOLE	ABUTTER LINE
UTILITY POLE	PROPERTY LINE
SIGN	STOCKADE FENCE
LIGHT	POST & RAIL FENCE
GAS VALVE	OVERHEAD UTILITIES
WATER VALVE	TREELINE
HYDRANT	RETAINING WALL
WATER SHUT OFF	EDGE OF PAVEMENT
WELL	STONEWALL
SEWER MANHOLE	SETBACK
	SEWER LINE
	WATER LINE

ZONING NOTE

THE ZONING/BUILDING SETBACKS DEPICTED ON THIS PLAN ARE THOSE WE HAVE INTERPRETED FROM THE LATEST ZONING ORDINANCE OF THE MUNICIPALITY AND, AS SUCH, ARE ONLY OPINIONS EXPRESSED BY KEACH-NORDSTROM ASSOCIATES, INC. THE FINAL INTERPRETATION OF THE ORDINANCE CAN ONLY BE MADE BY THE APPROPRIATE ZONING AUTHORITY. SINCE BUILDING ORIENTATION, PROPOSED USES, AND OTHER FACTORS CAN AFFECT THE SETBACKS, PRIOR TO ANY DEVELOPMENT OF THIS PROPERTY THE BUILDER/OWNER MUST CONSULT WITH THE TOWN/CITY TO INSURE THE CORRECT APPLICATION OF THE ZONING ORDINANCE.

UTILITY NOTE

THE UNDERGROUND UTILITIES DEPICTED HEREON HAVE BEEN LOCATED FROM FIELD SURVEY INFORMATION AND PLOTTED FROM EXISTING DRAWINGS. THE SURVEYOR MAKES NO GUARANTEES THAT THE UNDERGROUND UTILITIES DEPICTED COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN SERVICE OR ABANDONED. THE SURVEYOR FURTHER DOES NOT WARRANT THAT THE UNDERGROUND UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED ALTHOUGH THEY ARE LOCATED AS ACCURATELY AS POSSIBLE FROM THE INFORMATION AVAILABLE. THE SURVEYOR HAS NOT PHYSICALLY LOCATED THE UNDERGROUND PORTIONS OF THE UTILITIES.

PURSUANT TO THE SITE REVIEW REGULATIONS OF THE HUDSON PLANNING BOARD, THE SITE PLAN APPROVAL GRANTED HEREIN EXPIRES ONE YEAR FROM DATE OF APPROVAL

APPROVED BY THE HUDSON, NH PLANNING BOARD
DATE OF MEETING: _____

SIGNATURE _____ DATE _____

SIGNATURE _____ DATE _____

SITE PLANS ARE VALID FOR ONE YEAR FROM THE DATE OF PLANNING BOARD MEETING FINAL APPROVAL. FINAL APPROVAL COMMENCES AT THE PLANNING BOARD MEETING DATE AT WHICH THE PLAN ACHIEVES FINAL APPROVAL.

DIG SAFE
811
IT'S FREE & IT'S THE LAW
UNDERGROUND PLANT DAMAGE PREVENTION SYSTEM

EXISTING CONDITIONS PLAN
DAIRY QUEEN

TAX MAP 175; LOT 142
119 FERRY STREET
HUDSON, NEW HAMPSHIRE
HILLSBOROUGH COUNTY

OWNER OF RECORD / APPLICANT
LYNN C. & ANN M. WHITE REVOCABLE TRUST
LYNN C. & ANN M. WHITE (TRUSTEES)
2 BRADFORD CIRCLE
HUDSON, NH 03051
H.C.R.D. BK.7864; PG.30

KNA KEACH-NORDSTROM ASSOCIATES, INC.
Civil Engineering Land Surveying Landscape Architecture
10 Commerce Park North, Suite 3B, Bedford, NH 03110 Phone (603) 627-2881

CERTIFICATION:
THIS PLAN AND THE SURVEY UPON WHICH IT IS BASED WAS MADE ON THE GROUND UNDER MY DIRECTION AND SUPERVISION IN APRIL 2014 IN ACCORDANCE WITH THE RULES AND REGULATIONS OF THE STATE OF NEW HAMPSHIRE AND THE CITY/TOWN WITHIN WHICH IT IS LOCATED WITH A TRAVERSE ERROR OF CLOSURE BETTER THAN 1 PART IN 10,000. THE SURVEY PERFORMED IS CLASSIFIED AS AN URBAN STANDARD SURVEY. (CATEGORY 1, CONDITION 1) AS DEFINED IN THE NEW HAMPSHIRE LAND SURVEYORS ASSOCIATION ETHICS AND STANDARDS.

9/11/14
DATE

LICENSED LAND SURVEYOR
No. 915
ANTHONY M. BASSO
SIGNATURE

REVISIONS

No.	DATE	DESCRIPTION	BY
1	08/08/2014	PER TOWN COMMENTS	BJC

DATE: JULY 18, 2014 | SCALE: 1" = 20'
PROJECT NO: 14-0321-1 | SHEET 2 OF 13

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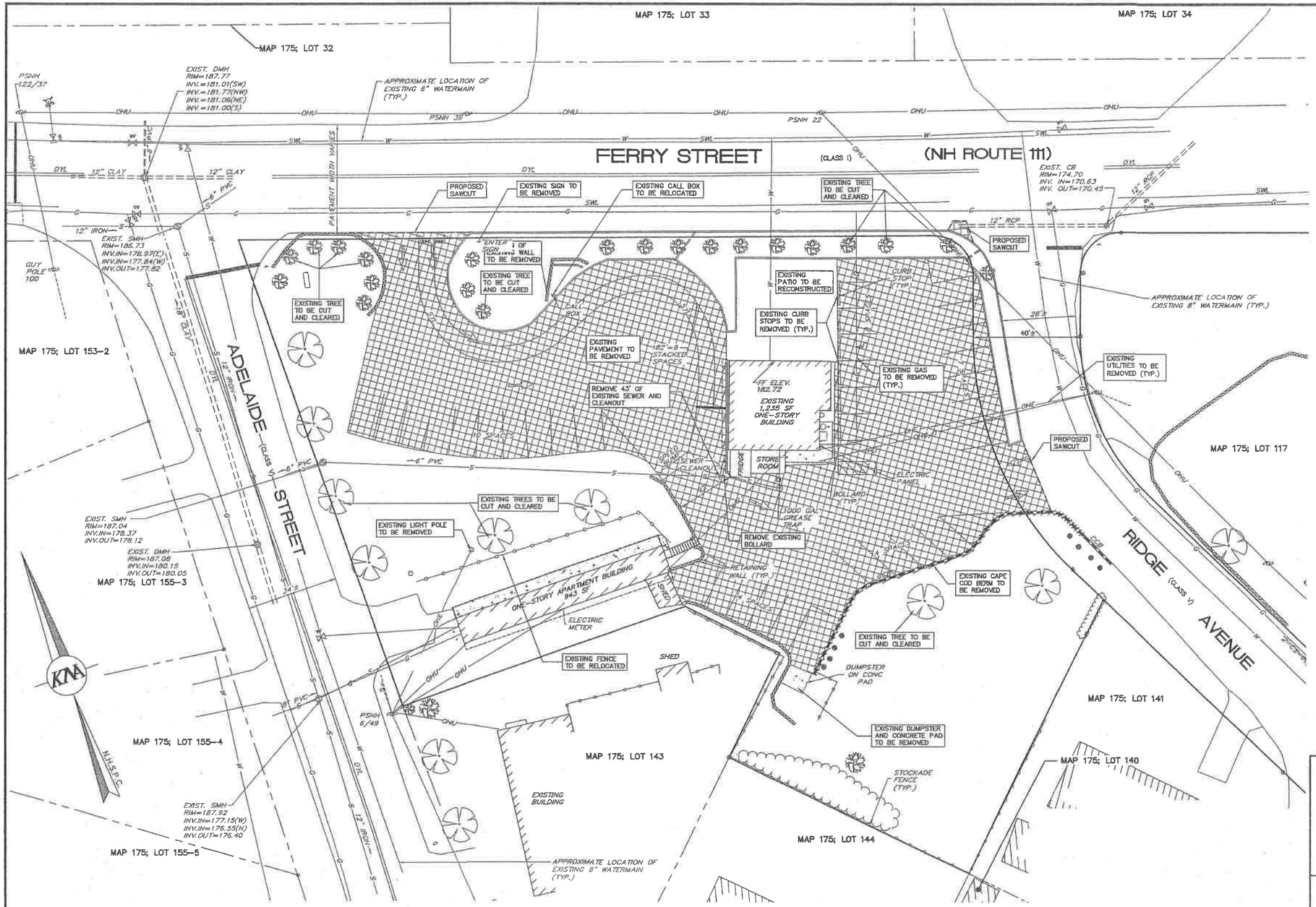


GRAPHIC SCALE

(IN FEET)
1 inch = 20 ft.

PURSUANT TO THE SITE REVIEW REGULATIONS OF THE HUDSON PLANNING BOARD, THE SITE PLAN APPROVAL GRANTED HEREIN EXPIRES ONE YEAR FROM DATE OF APPROVAL	APPROVED BY THE HUDSON, NH PLANNING BOARD DATE OF MEETING: _____ SIGNATURE _____ DATE _____ SIGNATURE _____ DATE _____ SITE PLANS ARE VALID FOR ONE YEAR FROM THE DATE OF PLANNING BOARD MEETING FINAL APPROVAL. FINAL APPROVAL COMMENCES AT THE PLANNING BOARD MEETING DATE AT WHICH THE PLAN ACHIEVES FINAL APPROVAL.

LEGEND

STONE BOUND FOUND	DRAINAGE MANHOLE
IRON PIN FOUND	CATCH BASIN
DRILL HOLE	ABUTTER LINE
UTILITY POLE	PROPERTY LINE
SIGN	STOCKADE FENCE
LIGHT	POST & RAIL FENCE
GAS VALVE	OVERHEAD UTILITIES
WATER VALVE	TREELINE
HYDRANT	RETAINING WALL
WATER SHUT OFF	EDGE OF PAVEMENT
WELL	STONEWALL
SEWER MANHOLE	SETBACK

DIG SAFE
811
CALL TOLL FREE
UTILITIES LOCATION AND PLANT DAMAGE PREVENTION SYSTEM

GENERAL NOTES:

1. THE PURPOSE OF THIS PLAN IS TO SHOW EXISTING FEATURES ON SITE TO BE REMOVED, SALVAGED OR REPLACED.
2. ITEMS TO BE REMOVED AND DISPOSED OF IN ACCORDANCE WITH THE TOWN OF HUDSON REQUIREMENTS, UNLESS OTHERWISE SHOWN HEREON OR DIRECTED BY OWNER.
3. REMOVE AND SALVAGE ALL STREET SIGNS, POSTS AND LIGHT POLES WITHIN THE WORK AREA AND DELIVER THEM TO PLANT OPERATIONS DEPARTMENT (603) 589-2780 FOR REUSE. INSTALL NEW SIGNS ON NEW POSTS AS SPECIFIED HEREON.
4. THE CONTRACTOR SHALL CONTROL ALL DUST GENERATED DURING THE REMOVAL PHASE AND CONSTRUCTION PHASE SO THAT NO DUST LEAVES THE SITE.
5. ANY MONUMENTS DISTURBED DURING CONSTRUCTION SHALL BE RESET BY A NEW HAMPSHIRE LICENSED LAND SURVEYOR AT THE SITE CONTRACTORS EXPENSE.

DEMOLITION/REMOVALS PLAN

DAIRY QUEEN

TAX MAP 175; LOT 142
119 FERRY STREET
HUDSON, NEW HAMPSHIRE
HILLSBOROUGH COUNTY

OWNER OF RECORD / APPLICANT
LYNN C. & ANN M. WHITE
REVOCABLE TRUST
LYNN C. & ANN M. WHITE (TRUSTEES)
2 BRADFORD CIRCLE
HUDSON, NH 03051
H.C.R.D. BK.7864; PG.30

KEACH-NORDSTROM ASSOCIATES, INC.
Civil Engineering Land Surveying Landscape Architecture
10 Commerce Park North, Suite 3B, Bedford, NH 03110 Phone (603) 627-2881

STATE OF NEW HAMPSHIRE
STEVEN B. KEACH No. 7658 LICENSED PROFESSIONAL ENGINEER
08/11/14

REVISIONS			
No.	DATE	DESCRIPTION	BY
1	08/08/2014	PER TOWN COMMENTS	BJC

DATE: JULY 18, 2014 | SCALE: 1" = 20'
PROJECT NO: 14-0321-1 | SHEET 3 OF 13

MAP 175; LOT 32
SOUCY & GAGNON FAMILY DENTISTRY
5 GEORGE STREET
HUDSON, NH 03051
BK.6603; PG.236
ZONE: BUSINESS (B)

MAP 175; LOT 33
120 FERRY REALTY, LLC
120 FERRY STREET
HUDSON, NH 03051
BK.8273; PG.2493
ZONE: BUSINESS (B)

MAP 175; LOT 34
OTARNIC POND COOPERATIVE
PO BOX 102
HUDSON, NH 03051
BK.8945; PG.2577
ZONE: BUSINESS (B)

BENCHMARK
RR SPIKE FOUND
ELEV.=190.34

FERRY STREET (CLASS I) (NH ROUTE 111)

PROPOSED STONE BOUND TO BE SET (TYP.)

PROP. GRANITE CURB TO ABUT EXISTING TIMBER CURB AND LANDSCAPE WALL

PAVEMENT WIDTH VARIES

PROPOSED CATCH BASIN (TYP.)

PROPOSED SNOW STORAGE (TYP.)

PROPOSED PERVIOUS PAVER PATIO

PROPOSED POLE MOUNTED LIGHT FIXTURE (TYP.)

FURNISH & INSTALL (2) "HANDICAP PARKING ONLY" & "VAN ACCESSIBLE" SIGNS

PROPOSED MODULAR BLOCK RETAINING WALL W/ FORCE PROTECTION DESIGNED BY OTHERS

184' = 9 STACKED CARS

8 SPACES

PROPOSED "DO NOT ENTER" SIGN

PROPOSED CROSSWALK

PROPOSED DRIVE THRU SIGN

EXISTING DRIVE-THRU WINDOW

EXISTING 1,235 SF ONE-STORY BUILDING

PROPOSED 1,020 SF BUILDING ADDITION

PROPOSED COOLER

PROPOSED BOLLARD (TYP.)

PROPOSED FREEZER

PROPOSED BITUMINOUS CURB (TYP.)

RETAINING WALL (TYP.)

8 SPACES

PROPOSED DUMPSTER PAD WITH ENCLOSURE

PROPOSED RELOCATED FENCE

9 SPACES

ONE-STORY APARTMENT BUILDING 943 SF

SHED

PROP. MODULAR BLOCK RETAINING WALL DESIGNED BY OTHERS

STOCKADE FENCE (TYP.)

PROPOSED IRON PIN TO BE SET (TYP.)

EXISTING BUILDING

MINIMUM BUILDING SETBACK LINE (TYP.)

ADELAIDE STREET (CLASS V)

RIDGE AVENUE (CLASS V)

PROPOSED 18" THERMOPLASTIC STOP BAR AND R1-1 "STOP" SIGN

PROPOSED 18" THERMOPLASTIC STOP BAR AND R1-1 "STOP" SIGN

S70°26'05"E 261.39'

R=15.00'
Δ=90°05'08"
L=23.59'

S19°40'03"W 23.62'

R=121.67'
L=97.61'
Δ=45°58'00"

N44°06'44"W 40.00'

N89°26'44"W 113.00'

N44°06'11"W 100.28'

N45°53'16"E 43.00'

S45°53'35"W 115.31'

S68°57'47"E 116.31'

MAP 175; LOT 153-2
PUBLIC SERVICE COMPANY OF NEW HAMPSHIRE
PO BOX 330
MANCHESTER, NH 03105-0330
ZONE: TOWN RESIDENCE (TR)

MAP 175; LOT 155-3
JUDE R. JONAS
60 ADELAIDE STREET
HUDSON, NH 03051
BK.8410; PG.2442
ZONE: TOWN RESIDENCE (TR)

MAP 175; LOT 155-4
NICOLE CHARLAND & SHAWN DARDAS
58 ADELAIDE STREET
HUDSON, NH 03051
BK.8554; PG.532
ZONE: TOWN RESIDENCE (TR)

MAP 175; LOT 155-5
WYNDTT GROVE LLC
13 PONDEROSA DRIVE
HUDSON, NH 03051
BK.8108; PG.1025
ZONE: TOWN RESIDENCE (TR)

MAP 175; LOT 142
AREA:
48,104 SF/1.104 AC.

MAP 175; LOT 143
WILLIAM & PATRICIA MANNING FAMILY TRUST
WILLIAM J. & PATRICIA J. MANNING (TRUSTEES)
57 ADELAIDE STREET
HUDSON, NH 03051
BK.7886; PG.2347
ZONE: BUSINESS (B)

MAP 175; LOT 144
RUTH IVES
4 TRAVERS STREET
HUDSON, NH 03051
BK.3132; PG.349

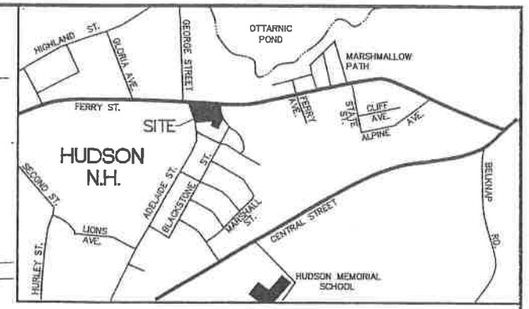
MAP 175; LOT 140
ALAN W. & LAURIE A. DUPONT
20 BLACKSTONE STREET
HUDSON, NH 03051
BK.8541; PG.1373
ZONE: BUSINESS (B)

MAP 175; LOT 141
JAMES R. & VARINA G. WEAVER
3 RIDGE AVENUE
HUDSON, NH 03051
BK.8445; PG.1981
ZONE: BUSINESS (B)

MAP 175; LOT 117
LYNN C. & ANN M. WHITE
6 RIDGE AVENUE
HUDSON, NH 03051
BK.7542; PG.1047
ZONE: BUSINESS (B)

I.PIN FND.
SB FND.
NHHB FND.

VICINITY MAP
SCALE: 1" = 1,000'



SEE SHEET 1 FOR NOTES

GRAPHIC SCALE

(IN FEET)
1 inch = 20 ft.

PURSUANT TO THE SITE REVIEW REGULATIONS OF THE HUDSON PLANNING BOARD, THE SITE PLAN APPROVAL GRANTED HEREIN EXPIRES ONE YEAR FROM DATE OF APPROVAL	APPROVED BY THE HUDSON, NH PLANNING BOARD DATE OF MEETING: _____ SIGNATURE _____ DATE _____ SIGNATURE _____ DATE _____ SITE PLANS ARE VALID FOR ONE YEAR FROM THE DATE OF PLANNING BOARD MEETING FINAL APPROVAL. FINAL APPROVAL COMMENCES AT THE PLANNING BOARD MEETING DATE AT WHICH THE PLAN ACHIEVES FINAL APPROVAL.

LEGEND

STONE BOUND FOUND	DRAINAGE MANHOLE
IRON PIN FOUND	CATCH BASIN
DRILL HOLE	ABUTTER LINE
UTILITY POLE	PROPERTY LINE
SIGN	STOCKADE FENCE
LIGHT	POST & RAIL FENCE
GAS VALVE	OVERHEAD UTILITIES
WATER VALVE	TREELINE
HYDRANT	RETAINING WALL
WATER SHUT OFF	EDGE OF PAVEMENT
WELL	STONEWALL
SEWER MANHOLE	SETBACK
	BITUMINOUS CURB
	GRANITE CURB

DIG SAFE
811
UTILITY UNDERGROUND PLANT DAMAGE PREVENTION SYSTEM

NON-RESIDENTIAL SITE LAYOUT PLAN

DAIRY QUEEN

TAX MAP 175; LOT 142
119 FERRY STREET
HUDSON, NEW HAMPSHIRE
HILLSBOROUGH COUNTY

OWNER OF RECORD / APPLICANT
LYNN C. & ANN M. WHITE
REVOCABLE TRUST
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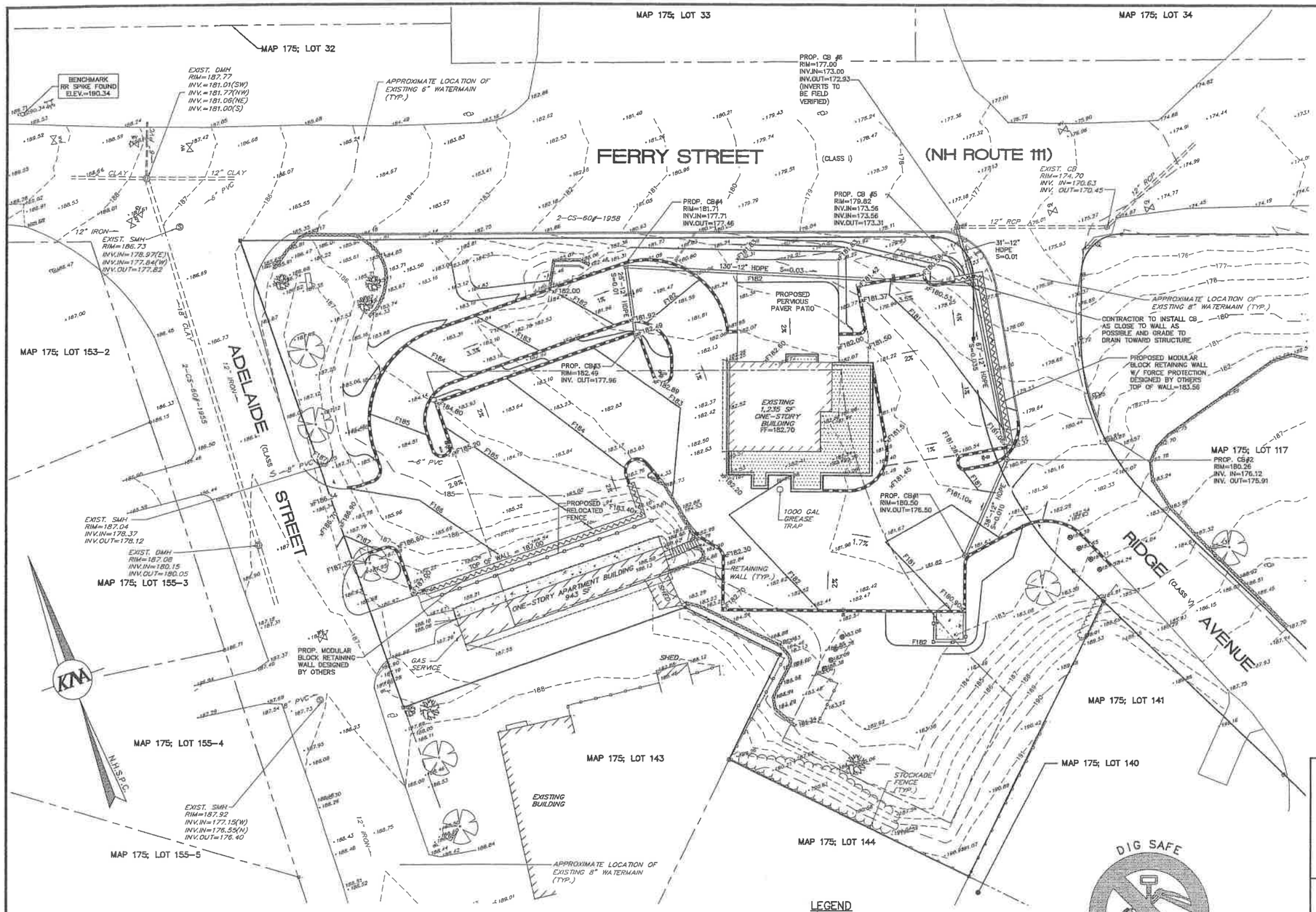
STATE OF NEW HAMPSHIRE
STEVEN B. KEACH
No. 9669
LICENSED PROFESSIONAL ENGINEER
08/11/14

REVISIONS

No.	DATE	DESCRIPTION	BY
1	08/08/2014	PER TOWN COMMENTS	BJC

DATE: JULY 18, 2014
SCALE: 1" = 20'
PROJECT NO: 14-0321-1
SHEET 4 OF 13



CONSTRUCTION NOTES:

1. ALL WORK SHALL CONFORM TO THE APPLICABLE REGULATIONS AND STANDARDS OF THE TOWN OF HUDSON, AND SHALL BE BUILT IN A WORKMANLIKE MANNER IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS. THE STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, STATE OF NEW HAMPSHIRE, DEPARTMENT OF TRANSPORTATION, APPROVED AND ADOPTED 2010 ARE HEREBY INCORPORATED BY REFERENCE.
2. ROAD AND DRAINAGE CONSTRUCTION SHALL CONFORM TO THE TYPICAL SECTIONS AND DETAILS SHOWN ON THE PLANS, AND SHALL MEET THE REQUIREMENTS AND SPECIFICATIONS FOR ROAD CONSTRUCTION, PUBLIC WORKS DEPARTMENT, HUDSON, NEW HAMPSHIRE. ALL DRAINAGE PIPES SHOWN SHALL BE HDPEP. CATCH BASINS SHALL BE TYPE B, AND HAVE 3' SUMPS UNLESS OTHERWISE NOTED.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING AND DETERMINING THE LOCATION, SIZE AND ELEVATION OF ALL EXISTING UTILITIES, SHOWN OR NOT SHOWN ON THESE PLANS, PRIOR TO THE START OF ANY CONSTRUCTION. THE ENGINEER SHALL BE NOTIFIED IN WRITING OF ANY UTILITIES FOUND INTERFERING WITH THE PROPOSED CONSTRUCTION, AND APPROPRIATE REMEDIAL ACTION TAKEN BEFORE PROCEEDING WITH THE WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING "DIG SAFE" AT 811 AT LEAST 72 HOURS BEFORE DIGGING.
4. ALL DRAINAGE PIPE SHALL BE INSTALLED FOLLOWING MANUFACTURER'S INSTALLATION INSTRUCTIONS.
5. SEE DETAILS FOR SPECIFIC CONSTRUCTION INFORMATION.
6. CB'S 1-5 TO BE DEEP SUMP CATCH BASINS WITH SNOUT OIL AND DEBRIS STOP. SEE DETAILS ON SHEET 12.

AUGER PROBE #1

LOGGED BY JAN
DATE: 7/7/2014
IMPERVIOUS LAYER: NONE TO 42"
WATER ENCOUNTERED: NONE TO 42"

2"	SHREDDED BARK MULCH
8"	10YR 5/6, WEK GRANULAR, FRIABLE, GRAVELLY (ROAD BASE MATERIAL)
10"	2.5 7/3, LOOSE, MEDIUM GRAIN, SAND
42"	BOTTOM OF HOLE

LOAM & SEED ALL DISTURBED AREAS (TYP.)

GRAPHIC SCALE

20 0 10 20 40 60

(IN FEET)
1 inch = 20 ft.

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LEGEND

STONE BOUND FOUND	DRAINAGE MANHOLE
IRON PIN FOUND	CATCH BASIN
DRILL HOLE	ABUTTER LINE
UTILITY POLE	PROPERTY LINE
SIGN	STOCKADE FENCE
LIGHT	POST & RAIL FENCE
GAS VALVE	OVERHEAD UTILITIES
WATER VALVE	TREELINE
HYDRANT	RETAINING WALL
WATER SHUT OFF	EDGE OF PAVEMENT
WELL	STONEWALL
SEWER MANHOLE	SETBACK
	SEWER LINE
	WATER LINE
	PROPOSED BITUMINOUS CURB
	GRANITE CURB

DIG SAFE 811

GRADING & DRAINAGE PLAN
DAIRY QUEEN

TAX MAP 175; LOT 142
119 FERRY STREET
HUDSON, NEW HAMPSHIRE
HILLSBOROUGH COUNTY

OWNER OF RECORD / APPLICANT
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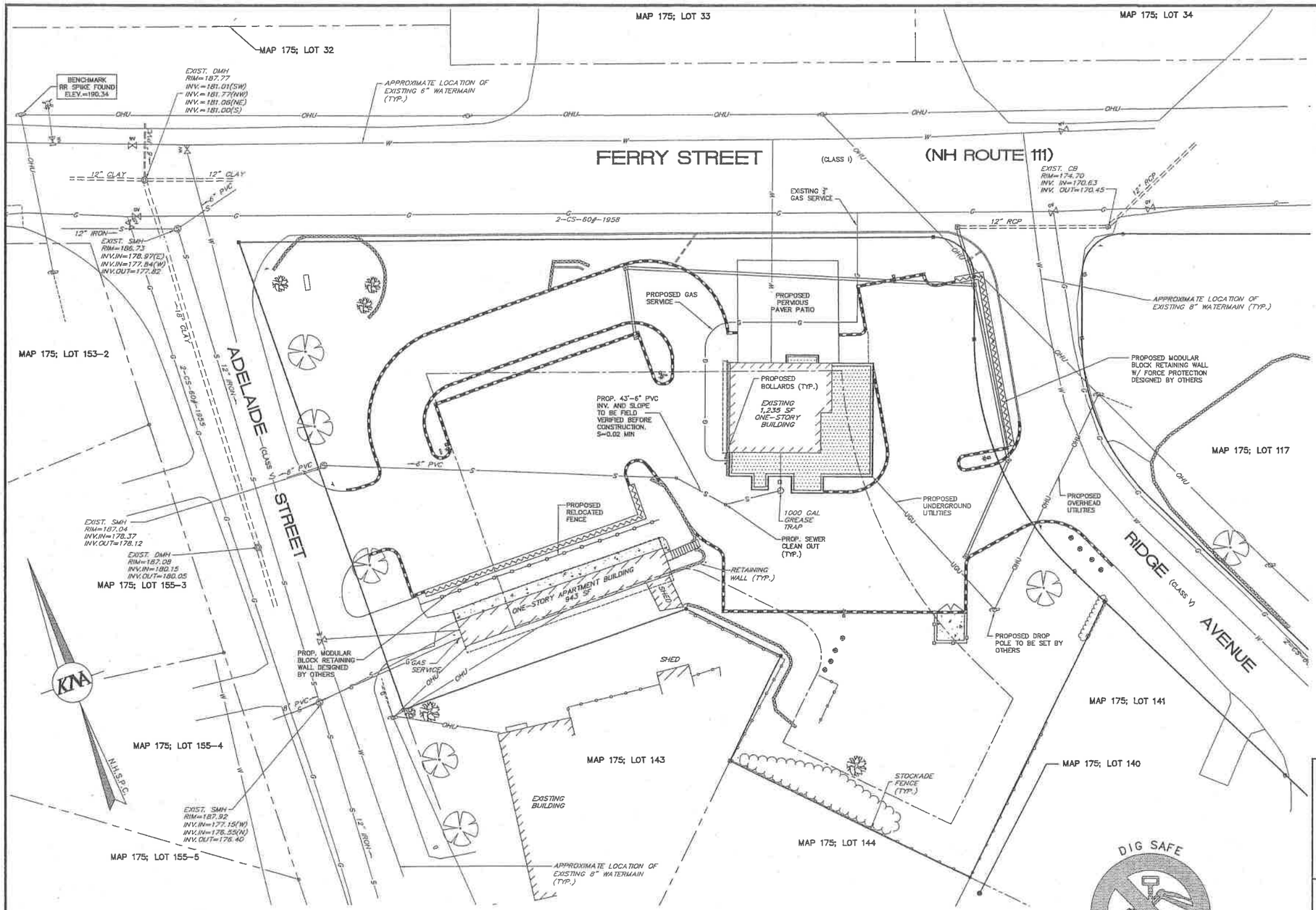
STATE OF NEW HAMPSHIRE
STEVEN B. KEACH No. 7659
LICENSED PROFESSIONAL ENGINEER

REVISIONS

No.	DATE	DESCRIPTION	BY
1	08/06/2014	PER TOWN COMMENTS	SJC

DATE: JULY 18, 2014 | SCALE: 1" = 20'
PROJECT NO: 14-0321-1 | SHEET 5 OF 13



CONSTRUCTION NOTES:

1. ALL WORK SHALL CONFORM TO THE APPLICABLE REGULATIONS AND STANDARDS OF THE TOWN OF HUDSON, AND SHALL BE BUILT IN A WORKMANLIKE MANNER IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS. THE STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, STATE OF NEW HAMPSHIRE, DEPARTMENT OF TRANSPORTATION, APPROVED AND ADOPTED 2010 ARE HEREBY INCORPORATED BY REFERENCE.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING AND DETERMINING THE LOCATION, SIZE AND ELEVATION OF ALL EXISTING UTILITIES, SHOWN OR NOT SHOWN ON THESE PLANS, PRIOR TO THE START OF ANY CONSTRUCTION. THE ENGINEER SHALL BE NOTIFIED IN WRITING OF ANY UTILITIES FOUND INTERFERING WITH THE PROPOSED CONSTRUCTION, AND APPROPRIATE REMEDIAL ACTION TAKEN BEFORE PROCEEDING WITH THE WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING "DIG SAFE" AT 811 AT LEAST 72 HOURS BEFORE DIGGING.
3. CONTRACTOR TO COORDINATE WITH PSNH AND FAIRPOINT REGARDING DROP POLE AND TRANSFORMER LOCATIONS.
4. LIBERTY UTILITIES SHALL SIZE AND INSTALL PROPOSED GAS SERVICES.

LEGEND

- STONE BOUND FOUND
- UTILITY POLE
- SIGN
- GAS VALVE
- WATER VALVE
- HYDRANT
- WELL
- SEWER MANHOLE
- DRAINAGE MANHOLE
- CATCH BASIN
- ABUTTER LINE
- PROPERTY LINE
- WETLAND
- WIRE FENCE
- OVERHEAD UTILITIES
- GAS LINE
- WATER LINE
- SEWER LINE
- DRAINAGE LINE
- TREELINE
- RETAINING WALL
- EDGE OF PAVEMENT
- BUILDING SETBACK
- EXISTING EASEMENT
- PROPOSED EDGE OF PAVEMENT
- PROPOSED BITUMINOUS CURB
- PROPOSED DRAINAGE LINE
- PROPOSED OVERHEAD UTILITIES
- PROPOSED UNDERGROUND UTILITIES
- PROPOSED GAS LINE
- PROPOSED WATER LINE
- PROPOSED SEWER LINE

LOAM & SEED ALL DISTURBED AREAS (TYP.)

DIG SAFE
811
UTILITIES UNDERGROUND PLANT DAMAGE PREVENTION SYSTEM

GRAPHIC SCALE
20 0 10 20 40 80
(IN FEET)
1 inch = 20 ft.

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UTILITY PLAN
DAIRY QUEEN

TAX MAP 175; LOT 142
119 FERRY STREET
HUDSON, NEW HAMPSHIRE
HILLSBOROUGH COUNTY

OWNER OF RECORD / APPLICANT
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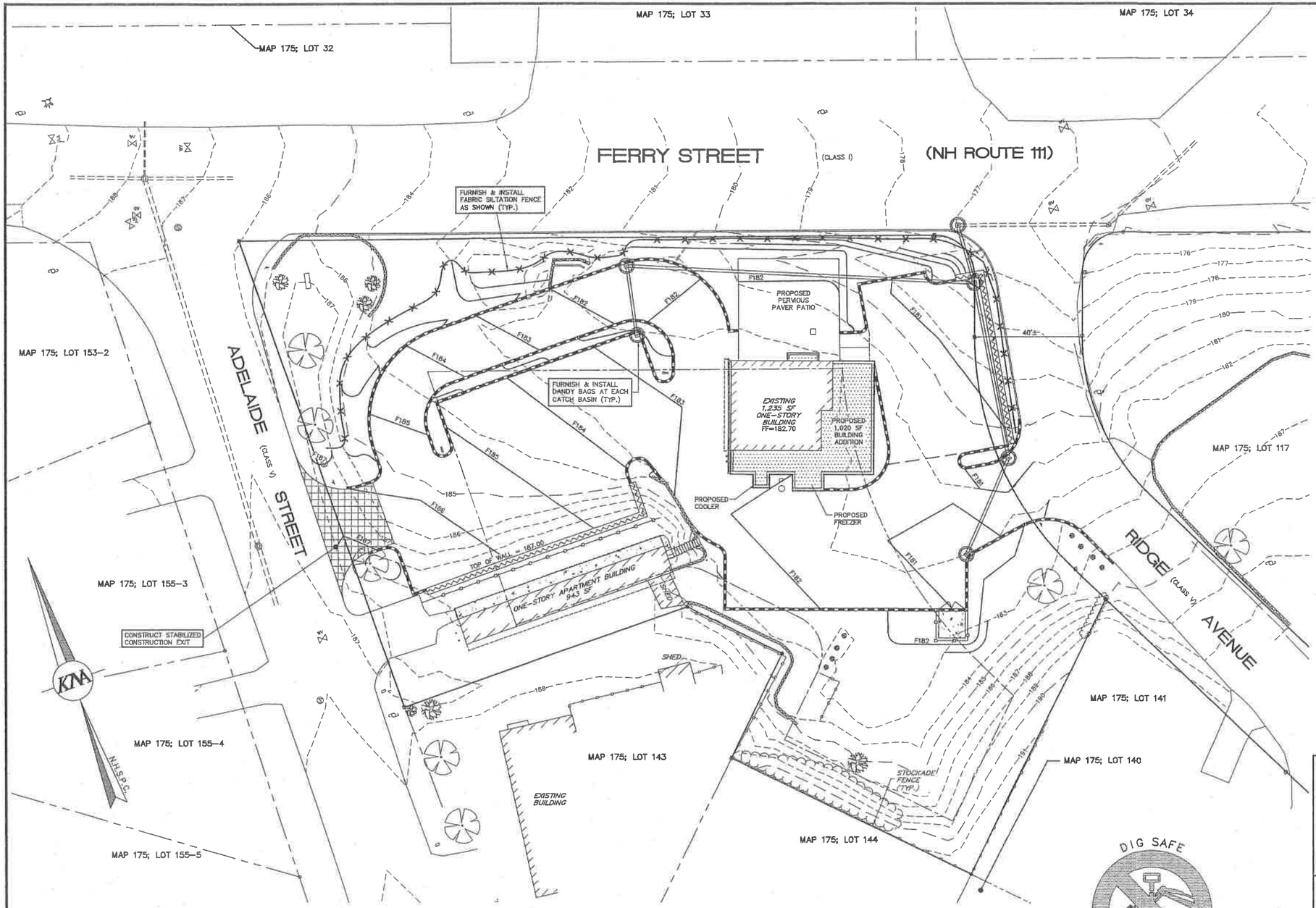
STATE OF NEW HAMPSHIRE
STEVEN B. KEACH No. 7918 LICENSED PROFESSIONAL ENGINEER

REVISIONS

No.	DATE	DESCRIPTION	BY

DATE: AUGUST 5, 2014 SCALE: 1" = 20'
PROJECT NO: 14-0321-1 SHEET 6 OF 13



CONSTRUCTION NOTES:

1. THE PURPOSE OF THIS PLAN IS TO DEPICT THE REQUIRED ONSITE TEMPORARY CONSTRUCTION EROSION CONTROL MEASURES AS WELL AS THE PERMANENT EROSION CONTROL MEASURES.
2. ALL MEASURES IN THE PLAN SHALL MEET AS A MINIMUM THE BEST MANAGEMENT PRACTICES SET FORTH IN VOLUME 3 OF THE NEW HAMPSHIRE STORMWATER MANUEL TITLED "EROSION AND SEDIMENT CONTROLS DURING CONSTRUCTION," DATED DECEMBER 2010, AS AMENDED FROM TIME TO TIME.
3. WHENEVER PRACTICAL, NATURAL VEGETATION SHALL BE RETAINED, PROTECTED OR SUPPLEMENTED. THE STRIPPING OF VEGETATION SHALL BE DONE IN A MANNER THAT MINIMIZES SOIL EROSION.
4. APPROPRIATE EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSTALLED PRIOR TO LAND DISTURBANCE.
5. THE AREA OF DISTURBANCE SHALL BE KEPT TO A MINIMUM. DISTURBED AREAS REMAINING IDLE FOR MORE THAN 30 DAYS SHALL BE STABILIZED.
6. MEASURES SHALL BE TAKEN TO CONTROL EROSION WITHIN THE PROJECT AREA. SEDIMENT IN RUNOFF WATER SHALL BE TRAPPED AND RETAINED WITHIN THE PROJECT AREA USING APPROVED MEASURES. WETLAND AREAS AND SURFACE WATERS SHALL BE PROTECTED FROM SEDIMENT.
7. OFFSITE SURFACE WATER AND RUNOFF FROM UNDISTURBED AREAS SHALL BE DIVERTED AWAY FROM DISTURBED AREAS WHERE FEASIBLE OR CARRIED NON-EROSIVELY THROUGH THE PROJECT AREA. INTEGRITY OF DOWNSTREAM DRAINAGE SYSTEMS SHALL BE MAINTAINED.
8. ALL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES SHALL BE MAINTAINED IN FUNCTIONING CONDITION UNTIL FINAL SITE STABILIZATION IS ACCOMPLISHED.
9. ALL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES SHALL BE REMOVED AFTER FINAL SITE STABILIZATION. TRAPPED SEDIMENT AND OTHER DISTURBED SOIL AREAS RESULTING FROM THE REMOVAL OF TEMPORARY MEASURES SHALL BE PERMANENTLY STABILIZED WITHIN 30 DAYS UNLESS CONDITIONS DICTATE OTHERWISE.
10. THE TOWN OF HUDSON SHALL RESERVE THE RIGHT TO REQUIRE FURTHER EROSION CONTROL PRACTICES DURING CONSTRUCTION SHOULD THEY FIND IT NECESSARY.
11. SNOW ACCUMULATED DURING THE WINTER CONSTRUCTION CONDITIONS SHOULD BE STORED IN THE STAGING & STOCKPILE AREA DETERMINED BY THE CONTRACTOR, SURROUNDED BY SILT FENCE.

EROSION & SEDIMENT CONTROL LEGEND

- TEMPORARY DANDY BAGS AT ALL CATCH BASINS
- SILT FENCE
- STABILIZED CONSTRUCTION EXIT

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
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LEGEND

STONE BOUND FOUND	DRAINAGE MANHOLE
IRON PIN FOUND	CATCH BASIN
DRILL HOLE	ABUTTER LINE
UTILITY POLE	PROPERTY LINE
SIGN	STOCKADE FENCE
LIGHT	POST & RAIL FENCE
GAS VALVE	OVERHEAD UTILITIES
WATER VALVE	TREELINE
HYDRANT	RETAINING WALL
WATER SHUT OFF	EDGE OF PAVEMENT
WELL	STONEWALL
SEWER MANHOLE	SETBACK
	PROPOSED BITUMINOUS CURB
	GRANITE CURB

DIG SAFE
811 or 1-888-DIGSAFE
UTILITIES UNDERGROUND PLANT DAMAGE PREVENTION SYSTEM

EROSION CONTROL PLAN
DAIRY QUEEN

TAX MAP 175; LOT 142
119 FERRY STREET
HUDSON, NEW HAMPSHIRE
HILLSBOROUGH COUNTY

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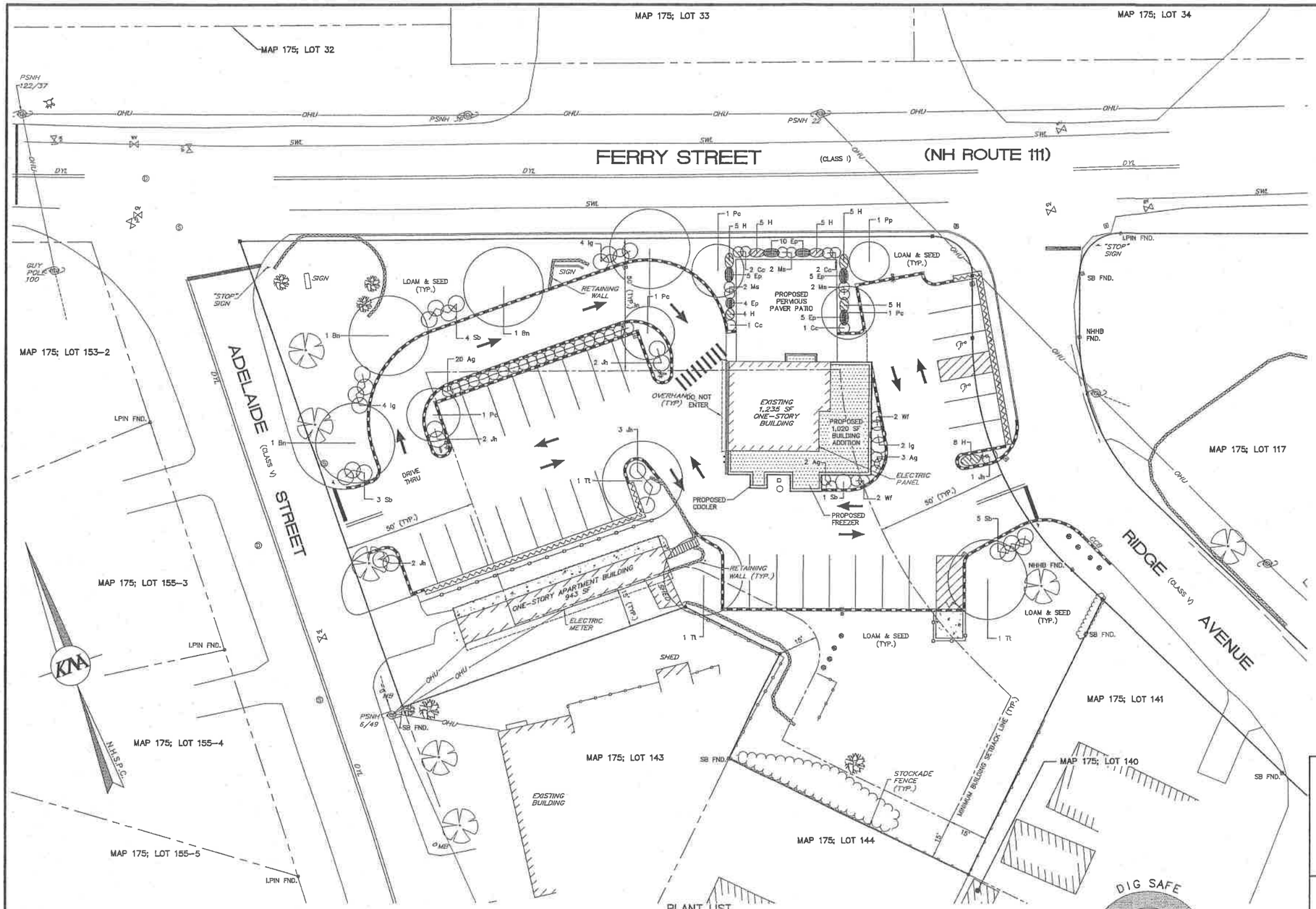
STATE OF NEW HAMPSHIRE - STEVEN B. KEACH No. 7626 LICENSED PROFESSIONAL ENGINEER

REVISIONS

No.	DATE	DESCRIPTION	BY
1	08/08/2014	PER TOWN COMMENTS	BJC

DATE: JULY 18, 2014 SCALE: 1" = 20'
PROJECT NO: 14-0321-1 SHEET 7 OF 13



LANDSCAPE NOTES:

1. THE PURPOSE OF THIS PLAN IS TO SHOW THE PROPOSED SITE LANDSCAPE WHICH PROVIDES CLIMATIC RELIEF AND AESTHETIC APPEAL.
2. ALL PLANT MATERIALS USED SHALL BE NURSERY STOCK AND SHALL BE GUARANTEED FOR A PERIOD OF ONE (1) YEAR FROM DATE OF INSTALLATION. ANY MATERIAL WHICH DIES OR DOES NOT SHOWN HEALTHY APPEARANCE WITHIN THIS TIME SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE; WITH SAME WARRANTY REQUIREMENTS AS THE ORIGINAL. WARRANTIES TYPICALLY DO NOT COVER LOSS DUE TO INSECT INFESTATION OR MECHANICAL DAMAGE (I.E. SNOW STORAGE).
3. IF THE SOIL CONDITIONS ARE EXTREMELY SANDY, ALL TREES SHALL HAVE A 6" LAYER OF COMPACTED TOPSOIL PLACED IN THE BASE OF THE PLANT PIT AS A MOISTURE RETENTION LAYER. THE PLANT PIT SIDEWALLS SHALL BE OVER EXCAVATED BY AN ADDITIONAL 12" BEYOND THE NORMAL OUTSIDE RADIUS OF THE HOLE. A TOPSOIL MIXTURE SHALL BE USED TO BACKFILL THE HOLE AS FOLLOWED; ORGANIC TOPSOIL, AMENDED WITH 10% WOOD ASH, 10% MANURE, 30% PEATMOSS AND A GRANULAR HYDROGEL TO ABSORB AND RETAIN WATER.
4. PLANTING BEDS AND SAUCERS SHALL RECEIVE A 4" MINIMUM THICKNESS OF PINE/HEMLOCK BARK MULCH OVER A 5oz. POLYPROPYLENE WEED CONTROL FABRIC.
5. PAVEMENT AND ROAD BASE MATERIAL ENCOUNTERED IN ANY LAWN OR PLANTING BED SHALL BE REMOVED AND DISPOSED OF BY THE CONTRACTOR AND SUITABLE AMENDED SOIL INSTALLED AS SPECIFIED IN THE TURF ESTABLISHMENT SCHEDULE.

LANDSCAPE CALCULATIONS

REQUIRED PARKING LOT INTERIOR LANDSCAPE AREA:

PROPOSED PARKING AREA PAVED:	12,898 SF
10% REQUIRED LANDSCAPE AREA:	1,290 SF
PROVIDED LANDSCAPE AREA:	1,308 SF

REQUIRED PARKING LOT SHADE TREES AND SHRUBS:

PROPOSED PAVED AREA:	23,329 SF
SHADE TREES REQUIRED (12,898/1,600):	8 TREES REQUIRED
(OR 1 TREE/5 PARKING SPACES)	6 TREES REQUIRED
SHADE TREES PROVIDED:	12 TREES PROPOSED
SHRUBS REQUIRED (12,898/200):	65 SHRUBS, OR
(OR 1.6 x 32 PARKING SPACES)	51 SHRUBS REQUIRED
SHRUBS PROVDED:	68 SHRUBS PROPOSED

LEGEND

⊙	STONE BOUND FOUND	Ⓓ	DRAINAGE MANHOLE
●	IRON PIN FOUND	Ⓒ	CATCH BASIN
⊕	DRILL HOLE		ABUTTER LINE
Ø	UTILITY POLE		PROPERTY LINE
⊡	SIGN		STOCKADE FENCE
☼	LIGHT		POST & RAIL FENCE
G	GAS VALVE	OHU	OVERHEAD UTILITIES
W	WATER VALVE		TREELINE
⊠	HYDRANT		RETAINING WALL
S	WATER SHUT OFF		EDGE OF PAVEMENT
◎	WELL		STONEWALL
Ⓢ	SEWER MANHOLE		SETBACK
			BITUMINOUS CURB
			GRANITE CURB

PLANT LIST

SYMBOL	QUANTITY	BOTANICAL NAME	COMMON NAME	SIZE
TREES				
Bn	4	BETULA NIGRA 'DURA HEAT'	DURA HEAT RIVER BIRCH	10–12' B&B MULT.
Pc	4	PYRUS CALLERYANNA 'CHANTICLEER'	CHANTICLEER FLOWERING PEAR	2–2.5" CAL.
Pp	1	PICEA PUNGENS 'AVATAR'	AVATAR BLUE SPRUCE	5–6' B&B
Tl	3	TILIA TOMENTOSA 'STERLING'	STERLING LINDEN	2–2.5" CAL
SHRUBS				
Ag	25	AZALEA 'GIRARD'S RENEE MICHELE'	RENEE MICHELE GIRARD'S AZALEA	18–24"
Cc	6	CARYOPTERIS CLANDONENSIS 'DARK KNIGHT'	DARK KNIGHT SPIREA	15–18"
Ig	10	ILEX GLABRA 'COMPACTA'	COMPACT INKBERRY	2–2.5'
Jh	10	JUNIPERUS HORIZONTALIS 'BAR HARBOR'	BAR HARBOR JUNIPER	18–24"
Sb	13	SPIRAEA BUMALDA 'ANTHONY WATERER'	ANTHONY WATERER SPIREA	18–24"
Wf	4	WEIGELA FLORIDA 'DARK HORSE'	DARK HORSE WEIGELA	18–24"
PERENNIALS				
Ep	29	ECHINACEA PURPUREA	PURPLE CONEFLOWER	#2
H	37	HEMEROCALLIS FULVA	ORANGE DAYLILY	#2
Ms	6	MISCANTHUS SINENSIS 'ADAGIO'	DWARF MAIDEN GRASS	#3

PURSUANT TO THE SITE REVIEW REGULATIONS OF THE HUDSON PLANNING BOARD, THE SITE PLAN APPROVAL GRANTED HEREIN EXPIRES ONE YEAR FROM DATE OF APPROVAL	APPROVED BY THE HUDSON, NH PLANNING BOARD DATE OF MEETING: _____ SIGNATURE _____ DATE _____ SIGNATURE _____ DATE _____ SITE PLANS ARE VALID FOR ONE YEAR FROM THE DATE OF PLANNING BOARD MEETING FINAL APPROVAL. FINAL APPROVAL COMMENCES AT THE PLANNING BOARD MEETING DATE AT WHICH THE PLAN ACHIEVES FINAL APPROVAL.

DIG SAFE 811

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

LANDSCAPE PLAN
DAIRY QUEEN

TAX MAP 175; LOT 142
119 FERRY STREET
HUDSON, NEW HAMPSHIRE
HILLSBOROUGH COUNTY

OWNER OF RECORD / APPLICANT
LYNN C. & ANN M. WHITE
REVOCABLE TRUST
LYNN C. & ANN M. WHITE (TRUSTEES)
2 BRADFORD CIRCLE
HUDSON, NH 03051
H.C.R.D. BK.7864; PG.30

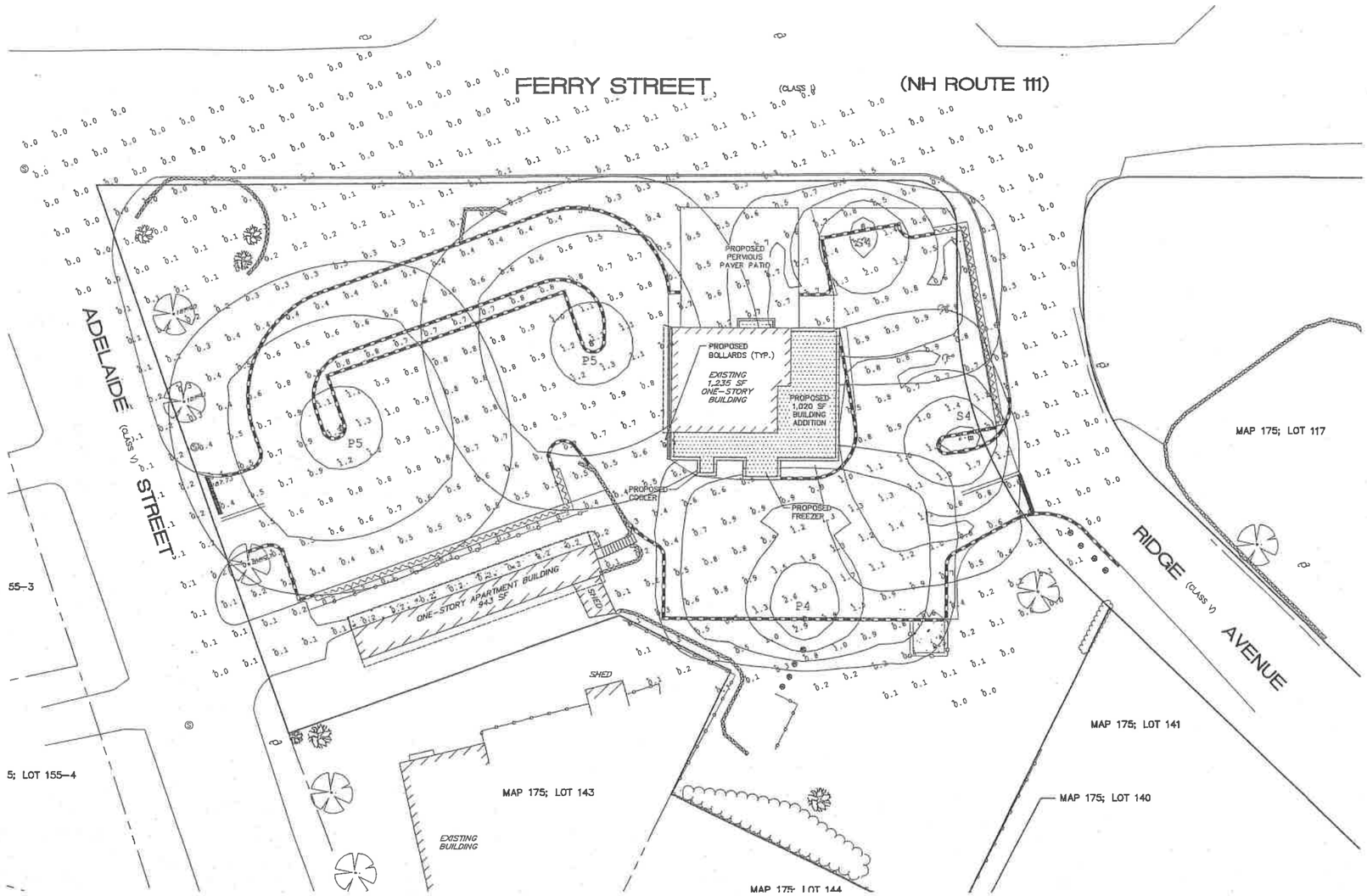
KEACH-NORDSTROM ASSOCIATES, INC.
Civil Engineering Land Surveying Landscape Architecture
10 Commerce Park North, Suite 3B, Bedford, NH 03110 Phone (603) 627-2881

LICENSED LANDSCAPE ARCHITECT — JAMES M. MAURER — 685 — STATE OF NEW HAMPSHIRE

REVISIONS

No.	DATE	DESCRIPTION	BY
1	08/08/2014	PER TOWN COMMENTS	BJC

DATE: JULY 18, 2014 | SCALE: 1" = 20'
PROJECT NO: 14-0321-1 | SHEET 8 OF 13



GRAPHIC SCALE

(IN FEET)
1 inch = 20 ft.

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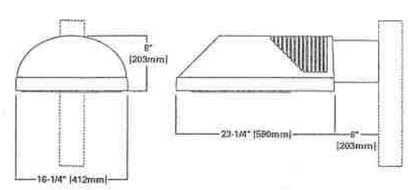
CONSTRUCTION NOTES:

1. PROVIDE NEW WIRE FROM PANELS TO NEW AND EXISTING LIGHTS IN SCHEDULE 80 ELECTRICAL CONDUIT, 1" MINIMUM.
2. PROVIDE PHOTO CELL AND TIME CLOCK CONTROL.
3. SEE ELECTRICAL PLANS FOR ADDITIONAL INFORMATION REGARDING LIGHT INSTALLATION AND WIRING REQUIREMENTS.



TALON MEDIUM LED
NOT TO SCALE

StatArea
DRIVES AND PARKING AREAS
Illuminance (Fc)
Average = 0.86
Maximum = 3.0
Minimum = 0.4
Avg/Min Ratio = 2.15
Max/Min Ratio = 7.50

Luminaire Schedule				
Symbol	Qty	Label	Arrangement	Description
	1	P4	SINGLE	TLM-B03-LED-E1-SL4/ 20' AFG
	2	P5	SINGLE	TLM-B03-LED-E1-SWQ/ 20' AFG
	2	S4	SINGLE	TLM-B02-LED-E1-SL4/ 20' AFG

DIG SAFE
811

IN ASSOCIATION WITH:

CHARRON INCORPORATED
P.O. BOX 4550
MANCHESTER, NH 03108
(603) 624-4627
FAX (603) 624-9784

LIGHTING PLAN
DAIRY QUEEN

TAX MAP 175; LOT 142
119 FERRY STREET
HUDSON, NEW HAMPSHIRE
HILLSBOROUGH COUNTY

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STATE OF NEW HAMPSHIRE
STEVEN B. KEACH No. 7859
LICENSED PROFESSIONAL ENGINEER

REVISIONS

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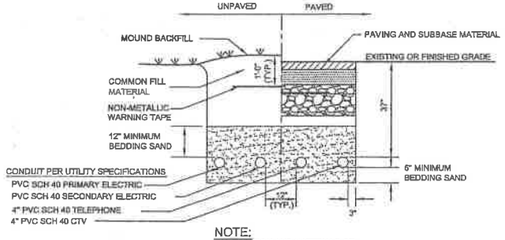
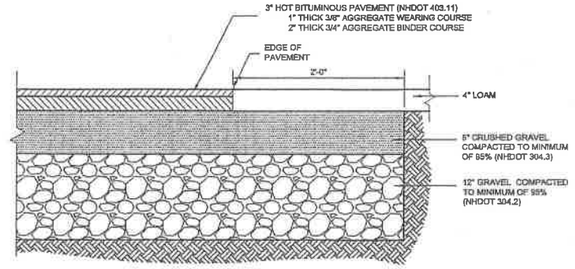
PROJECT NO: 14-0321-1 | SHEET 9 OF 13



NOTE:
INSTALLATION AND MATERIALS OF UNDERGROUND UTILITIES SHALL CONFORM TO LOCAL UTILITY COMPANY SPECIFICATIONS.

UTILITY TRENCH DETAIL
NOT TO SCALE
(MARCH 2008)



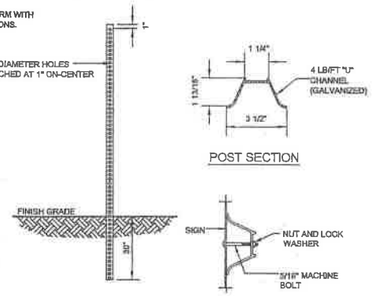
DRIVEWAY AND PARKING LOT SECTION
NOT TO SCALE
(MARCH 2008)

TRAFFIC SIGN NOTES:
1. ALL TRAFFIC SIGN FACES AND SHAPES SHALL CONFORM WITH THE MUTCD.
2. ALL SIGN POST MOUNTS SHALL CONFORM WITH THE AASHTO AND NHDOT SPECIFICATIONS.

R1-1
30" x 30"

STOP SIGN DETAIL
NOT TO SCALE
(MARCH 2008)

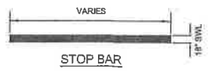
R5-1
30" x 30"



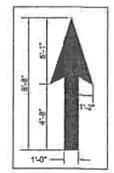
NOTE:
POST SHALL CONFORM TO NHDOT 615.2.5.3

STEEL SIGN POST DETAIL
NOT TO SCALE
(MARCH 2008)

STRIPING NOTES:
1. ALL PAVEMENT MARKINGS SHALL BE IN CONFORMANCE WITH THESE STANDARDS AND THE CURRENT EDITION OF MUTCD.
2. WIDTH OF LINES SHALL VARY NO MORE THAN ± 1/4 INCH FROM THAT SPECIFIED.
3. THE WET FILM THICKNESS OF A PAINTED LINE SHALL BE A MINIMUM OF 15 MILS THROUGHOUT THE ENTIRE WIDTH AND LENGTH OF LINE SPECIFIED.
4. OVERSPRAY SHALL BE KEPT TO AN ABSOLUTE MINIMUM.



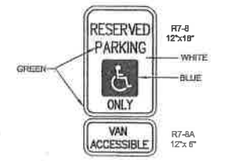
STOP BAR



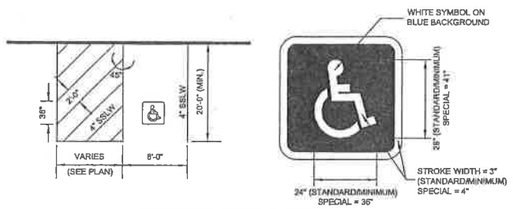
THROUGH (STRAIGHT) ARROW

R7-8
12"x18"

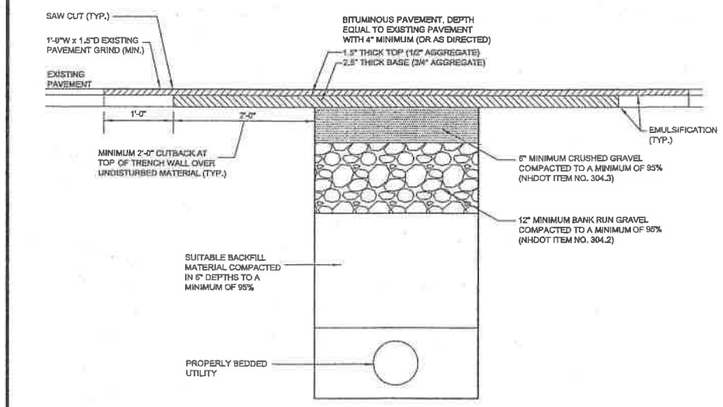
HANDICAP PARKING SIGN DETAIL
NOT TO SCALE
(MARCH 2008)

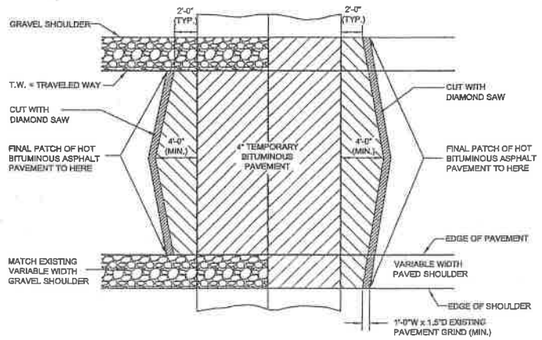


VAN ACCESSIBLE HANDICAP PARKING SIGN DETAIL
NOT TO SCALE
(MARCH 2008)

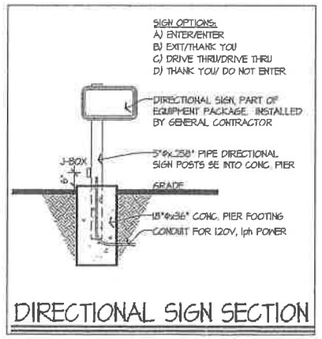


HANDICAP STRIPING DETAIL
NOT TO SCALE
(MARCH 2012)

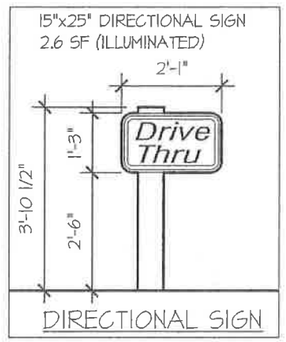




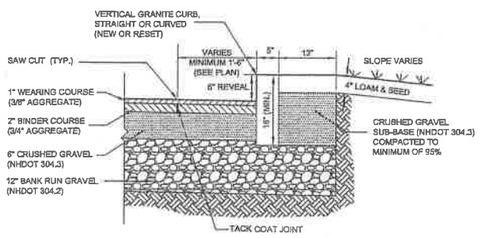
PERMANENT PAVEMENT REPAIR
NOT TO SCALE
(MARCH 2008)



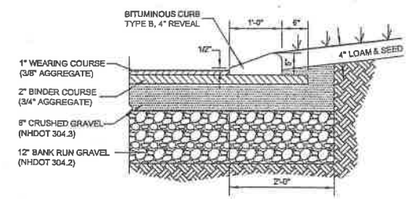
DIRECTIONAL SIGN SECTION



DIRECTIONAL SIGN



VERTICAL GRANITE CURB DETAIL
NOT TO SCALE
(MARCH 2008)



BITUMINOUS CURB TYPE B DETAIL
NOT TO SCALE
(MARCH 2008)

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DAIRY QUEEN
TAX MAP 175; LOT 142
119 FERRY STREET
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STATE OF NEW HAMPSHIRE
STEVEN B. KEACH No. 7858
LICENSED PROFESSIONAL ENGINEER

REVISIONS

No.	DATE	DESCRIPTION	BY
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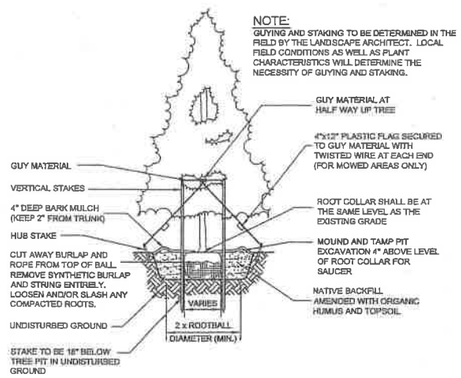
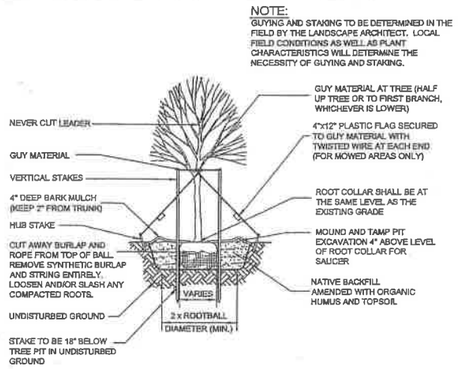
DATE: JULY 18, 2014 SCALE: NONE
PROJECT NO: 14-0321-1 SHEET 10 OF 13



EVERGREEN TREE PLANTING DETAIL

NOT TO SCALE

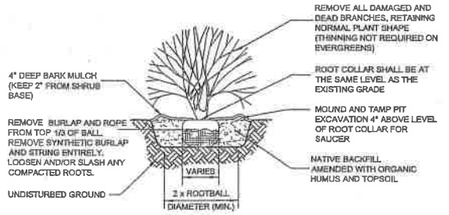
(JANUARY 2012)



DECIDUOUS TREE PLANTING DETAIL

NOT TO SCALE

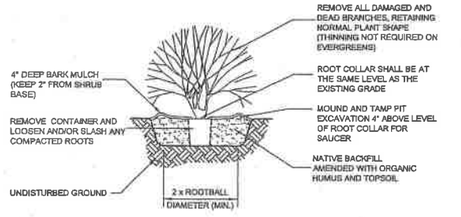
(JANUARY 2012)



BALLED & BURLAP SHRUB PLANTING DETAIL

NOT TO SCALE

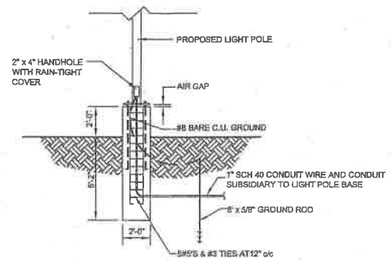
(JANUARY 2012)



CONTAINER SHRUB PLANTING DETAIL

NOT TO SCALE

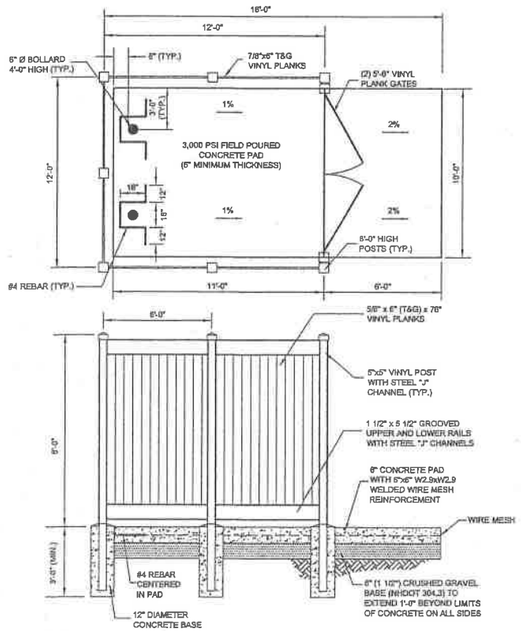
(JANUARY 2012)



CONCRETE LIGHT POLE BASE DETAIL

NOT TO SCALE

(MARCH 2008)

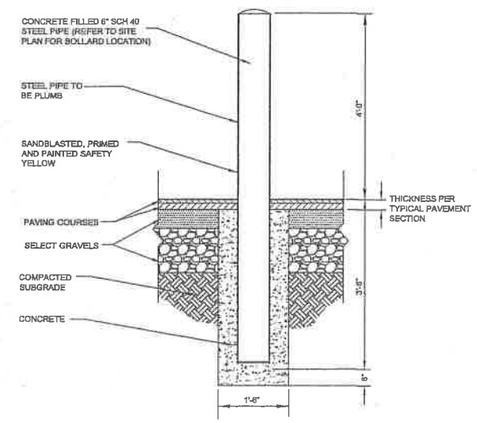


NOTE:
THIS DUMPSTER ENCLOSURE WILL ACCOMMODATE MOST 2, 4, 6 AND 8 CY DUMPSTERS.

VINYL TRASH ENCLOSURE DETAIL

NOT TO SCALE

(MARCH 2008)



BOLLARD DETAIL

NOT TO SCALE

(MARCH 2008)

TURF ESTABLISHMENT SCHEDULE

PURPOSE:

TO ESTABLISH AND MAINTAIN PERMANENT AND TEMPORARY TURF AREAS, RESTORE GROWTH TO EXISTING TURF AREAS DISTURBED DURING CONSTRUCTION AND CONTROL SOIL EROSION.

PREPARATION AND EXECUTION:

1. RAKE THE SUBGRADE OF ALL AREAS TO BE LOAMED AND SEEDED TO REMOVE RUBBISH, STICKS, ROOTS AND STONES LARGER THAN 1 INCH.
2. PLACE LOAM OVER AREAS TO BE SEEDED AND SPREAD.
3. FINE GRADE SURFACE AND SUPPLEMENT WITH SUITABLE LOAM WHERE NEEDED TO CREATE A UNIFORM SURFACE ACCORDING TO THE FINISH GRADES INDICATED; TOP AND BOTTOM OF SLOPES SHALL BE ROUNDED. NO LOAM SHALL BE SPREAD IF THE SUBGRADE IS EXCESSIVELY WET OR FROZEN.
4. APPLY LIME EVENLY OVER LOAM SURFACE AND THOROUGHLY INCORPORATE LIME INTO THE LOAM BY HEAVY RAKING TO AT LEAST ONE-HALF THE DEPTH OF THE LOAM.
5. APPLY FERTILIZER AND MIX WITH THE UPPER 2 INCHES OF LOAM.
6. DETERMINE APPROPRIATE MIXTURE FOR AREA TO BE SEEDED BASED ON EXAMINATION OF PROJECT PLANS. UNIFORMLY SPREAD THE SEED BY BROADCASTING OR HYDROSEEDING. IF BROADCASTING, LIGHTLY RAKE INTO THE PREPARED SURFACE AND ROLL. IF HYDROSEEDING, USE 4 TIMES THE RECOMMENDED RATE OF INOCULANT. AFTER SEED IS SPREAD, WATER THOROUGHLY WITH A FINE SPRAY.
7. SEEDING FOR PERMANENT COVER SHALL OCCUR BETWEEN SEPTEMBER 15 AND OCTOBER 15 AND BETWEEN APRIL 15 AND JUNE 15. SEEDING SHALL NOT BE DONE DURING WINDY WEATHER, WHEN THE GROUND IS FROZEN OR EXCESSIVELY WET OR OTHERWISE UNTILLABLE.
8. WITHIN 24 HOURS AFTER SEEDING OPERATION, UNIFORMLY MULCH THE AREA WITH HAY. ANCHOR MULCH ON ALL SLOPES EXCEEDING 3 : 1 USING MULCH NETTING INSTALLED IN ACCORDANCE WITH THE MANUFACTURER.
9. PROTECT AND PREVENT AGAINST WASHOUTS, ANY WASHOUTS WHICH OCCUR SHALL BE PROMPTLY REGRADED AND RESEEDED.
10. WHEN IT IS IMPRACTICAL TO ESTABLISH PERMANENT GROWTH ON DISTURBED EARTH BY OCTOBER 15, A TEMPORARY SEED MIXTURE SHALL BE USED. WHEN TEMPORARY SEEDING CANNOT ESTABLISH VISIBLE GROWTH, THE DISTURBED AREA SHALL BE COVERED WITH SIX INCHES OF MULCH FOR THE WINTER.

MAINTENANCE:

ALL SEEDED AREAS SHALL BE KEPT WATERED AND IN GOOD CONDITION. RESEED AS NECESSARY TO ESTABLISH HEALTHY UNIFORM GROWTH OVER THE ENTIRE SEEDED AREA. MAINTAIN SEEDED AREAS IN AN APPROVED CONDITION UNTIL FINAL ACCEPTANCE. MAINTENANCE SHALL INCLUDE REPAIRS FOR DAMAGE CAUSED BY EROSION.

APPLICATION RATES:

1. LOAM SHALL BE APPLIED AT A MINIMUM COMPACTED THICKNESS OF 4 INCHES.
2. LIME SHALL BE APPLIED AT A RATE OF 75 TO 100 POUNDS PER 1,000 S.F.
3. FERTILIZER SHALL BE APPLIED AT A RATE OF 30 POUNDS PER 1,000 S.F.
4. SEED MIXTURE FOR LAWN AREAS SHALL BE APPLIED AT A RATE OF AT LEAST 80 POUNDS PER ACRE OR 2 POUNDS PER 1,000 S.F.
5. TEMPORARY SEED MIXTURE SHALL BE APPLIED AT A RATE OF 2 POUNDS PER 1,000 S.F.
6. SEED MIXTURE FOR SLOPE AREAS SHALL BE APPLIED AT A RATE OF 80 POUNDS PER ACRE OR 2 POUNDS PER 1,000 S.F.
7. SEED MIXTURE FOR STORMWATER MANAGEMENT AREAS SHALL BE APPLIED AT A RATE OF 70 POUNDS PER ACRE OR 1.5 POUNDS PER 1,000 S.F.
8. MULCH SHALL BE APPLIED AT A RATE OF 90 POUNDS PER 1,000 S.F.

MATERIALS:

1. LOAM USED FOR TOPSOIL SHALL BE FRIABLE, FERTILE, NATURAL FREE-DRAINING LOAM; FREE OF ROOTS, GRASS, STICKS, WEEDS, CLAY, SOD LUMPS, DEBRIS AND STONES LARGER THAN 1 INCH IN ANY DIMENSION. SOIL SHALL NOT BE EXCESSIVELY ACID OR ALKALINE AND CONTAIN NO TOXIC MATERIALS.
2. LIME SHALL BE GROUND LIMESTONE CONTAINING NO LESS THAN 95% CALCIUM AND MAGNESIUM CARBONATES.
3. FERTILIZER SHALL BE 10-20-20 COMMERCIAL GRADE.
4. SEED MIXTURE FOR LAWN AREAS SHALL BE 98% PURE LIVE SEED AND CONSIST OF THE FOLLOWING:

   25% CREEPING RED FESCUE
   25% KENTUCKY BLUEGRASS
   25% REDTOP
   25% MANHATTAN PERENNIAL RYEGRASS

5. TEMPORARY SEEDING MIXTURE SHALL BE AN APPROVED CONSERVATION MIX OR CONSIST OF THE FOLLOWING:

   15% BLACKWELL OR SHELTER SWITCHGRASS
   30% NIAGRA OR KAW BIG BLUESTEM
   30% CAMPER OR BLAZE LITTLESTEM
   15% NE-27 OR BLAZE SAND LOVEGRASS
   10% VIKING BIRDSFOOT TREFOIL

   INOCULUM SPECIFIC TO BIRDSFOOT TREFOIL MUST BE USED WITH THIS MIXTURE. IF SEEDING BY HAND, A STICKING AGENT SHALL BE USED. IF SEEDING WITH A HYDROSEEDER, USE FOUR TIMES THE RECOMMENDED AMOUNT OF INOCULUM.

6. SEED MIXTURE FOR SLOPE AREAS SHALL BE 98% PURE LIVE SEED AND SHALL CONSIST OF THE FOLLOWING:

   30% CREEPING RED FESCUE
   40% PERENNIAL RYE GRASS
   15% REDTOP
   15% BIRDSFOOT TREFOIL
   *IN ADDITION TO THE MIX SPECIFIED ABOVE, CROWN VETCH SHALL BE USED ON ALL SLOPES STEEPER THAN 3 : 1. CROWN VETCH SHALL BE APPLIED AT A RATE OF 10 POUNDS PER ACRE AND INOCULUM SPECIFIC TO CROWN VETCH MUST BE USED.

7. SEED MIXTURE FOR STORMWATER MANAGEMENT AREAS, INCLUDING DETENTION BASINS AND VEGETATED TREATMENT SWALES SHALL CONSIST OF THE FOLLOWING:

   25% CREEPING RED FESCUE
   15% SWITCH GRASS
   15% FOX SEDGE
   15% CREEPING BENTGRASS
   10% FLATPEA
   20% WILDFLOWER VARIETY

8. HAY USED FOR MULCH SHALL CONSIST OF MOWED AND PROPERLY CURED GRASS OR LEGUME MOWINGS, FREE FROM WEEDS, TWIGS, DEBRIS OR OTHER DELETERIOUS MATERIAL AND ROT OR MOLD.

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DAIRY QUEEN

TAX MAP 175; LOT 142
119 FERRY STREET
HUDSON, NEW HAMPSHIRE
HILLSBOROUGH COUNTY

OWNER OF RECORD / APPLICANT
LYNN C. & ANN M. WHITE
REVOCABLE TRUST
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KNA KEACH–NORDSTROM ASSOCIATES, INC.
Civil Engineering Land Surveying Landscape Architecture
10 Commerce Park North, Suite 3B, Bedford, NH 03110 Phone (603) 627-2881

STATE OF NEW HAMPSHIRE – STEVEN B. KEACH No. 7625 LICENSED PROFESSIONAL ENGINEER – 08/06/14

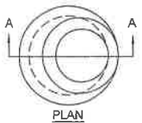
REVISIONS

No.	DATE	DESCRIPTION	BY
1	08/06/2014	PER TOWN COMMENTS	BJC

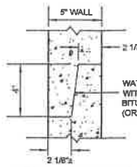
DATE: JULY 18, 2014 SCALE: NONE
PROJECT NO: 14-0321-1 SHEET 11 OF 13

NOTES:

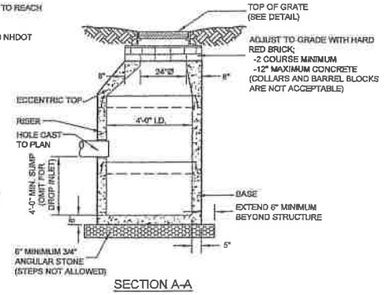
1. ALL SECTIONS SHALL BE CONCRETE CLASS AA(4000 PSI). CIRCUMFERENTIAL REINFORCEMENT SHALL BE 0.12 SQUARE INCH PER LINEAR FOOT IN ALL SECTIONS AND SHALL BE PLACED IN THE CENTER THIRD OF THE WALL.
2. THE TONGUE OR GROOVE OF THE JOINT SHALL CONTAIN ONE LINE OF CIRCUMFERENTIAL REINFORCEMENT EQUAL TO 0.12 SQUARE INCH PER LINEAR FOOT.
3. RISER OF 1', 2', 3' & 4' CAN BE USED TO REACH DESIRED DEPTH.
4. MATERIALS AND CONSTRUCTION TO NHDOT STANDARDS.



PLAN

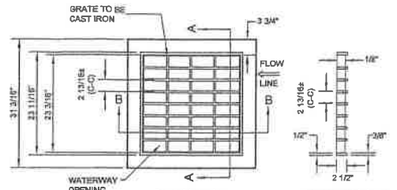


DETAIL OF TONGUE AND GROOVE JOINT



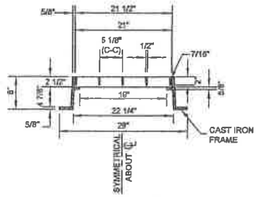
SECTION A-A

PRECAST REINFORCED CATCH BASIN
NOT TO SCALE
(MAY 2012)



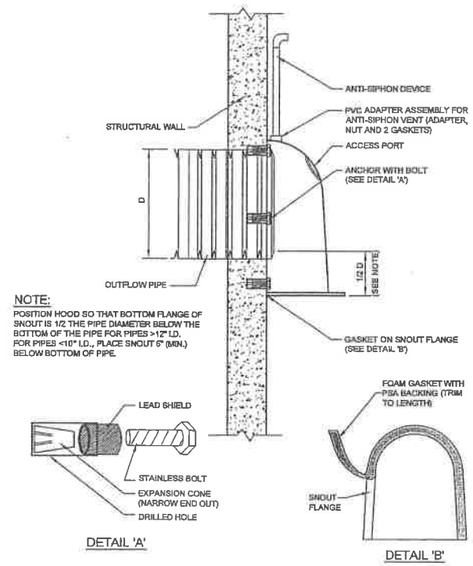
PLAN VIEW (SINGLE GRATE)

SECTION A - A



SECTION B - B

TYPE B FRAME & GRATE DETAIL
NOT TO SCALE
(MARCH 2008)

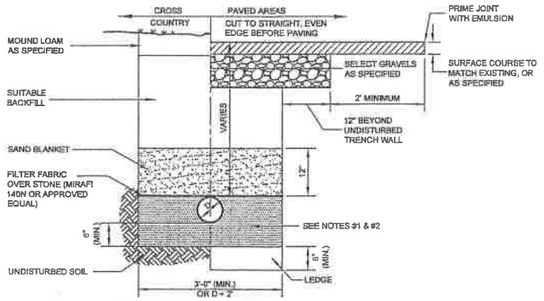


NOTE:
POSITION HOOD SO THAT BOTTOM FLANGE OF SNOUT IS 1/2 THE PIPE DIAMETER BELOW THE BOTTOM OF THE PIPE FOR PIPES >12" I.D. FOR PIPES =<10" I.D., PLACE SNOUT 6" (MIN.) BELOW BOTTOM OF PIPE.

DETAIL 'A'

DETAIL 'B'

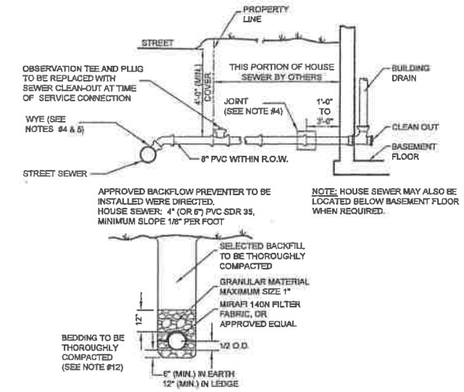
SNOUT OIL AND DEBRIS STOP DETAIL (OR EQUAL)
NOT TO SCALE
(MARCH 2009)



NOTES

1. THOROUGHLY COMPACTED SCREENED GRAVEL FOR RCP PIPE. SCREENED GRAVEL TO EXTEND TO SELECT FILL LINE.
2. FOR HDPE OR PVC PIPE, BEDDING SHALL BE 3/4" STONE TO THE TOP OF THE PIPE.

STORM DRAINAGE TRENCH DETAIL
NOT TO SCALE
(MARCH 2008)

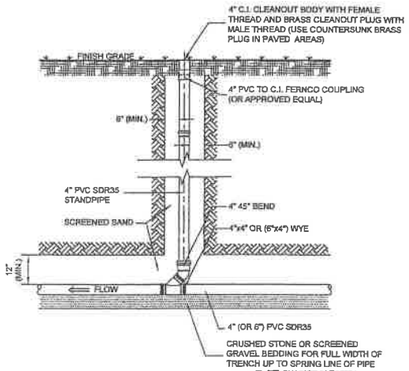


APPROVED BACKFLOW PREVENTER TO BE INSTALLED WERE DIRECTED.
HOUSE SEWER: 4" (OR 6") PVC SDR 35, MINIMUM SLOPE 1/8" PER FOOT

NOTE: HOUSE SEWER MAY ALSO BE LOCATED BELOW BASEMENT FLOOR WHEN REQUIRED.

TRENCH CROSS-SECTION

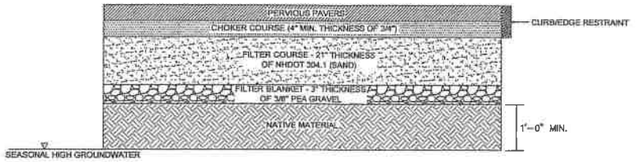
SANITARY SEWER SERVICE DETAIL
NOT TO SCALE
(MARCH 2011)



TYPICAL SEWER SERVICE CLEANOUT
NOT TO SCALE
(AUGUST 2011)

NOTES:

1. MINIMUM SIZE PIPE FOR COMMERCIAL SERVICE SHALL BE 6 INCHES.
2. PIPE AND JOINT MATERIALS:
   A. DUCTILE IRON PIPE AND FITTINGS SHALL CONFORM TO THE FOLLOWING STANDARDS OF THE AMERICAN WATER WORKS ASSOCIATION (AWWA):
      1. AWWA C151/A21.51-02 - FOR DUCTILE IRON PIPE, CENTRIFUGALLY CAST IN METAL OR SAND-LINED MOLDS, FOR WATER OR OTHER LIQUIDS;
      2. AWWA C150/A21.50-02 - FOR THICKNESS DESIGN OF DUCTILE IRON PIPE AND WITH ASTM A536-84 (2004) DUCTILE IRON CASTINGS;
      3. JOINTS SHALL BE MECHANICAL, PUSH-ON OR BALL-AND-SOCKET TYPE.
   B. PLASTIC GRAVITY SEWER PIPE AND FITTINGS SHALL COMPLY WITH THE FOLLOWING STANDARDS:
      1. ASTM D3034-04A - PVC, SOLID WALL;
      2. AT LEAST 46 PSI AT 5% PIPE DIAMETER DEFLECTION, AS MEASURED IN ACCORDANCE WITH ASTM D2412-02 DURING MANUFACTURING; AND
      3. JOINT SEALS FOR PVC PIPE SHALL BE OIL RESISTANT COMPRESSION RINGS OF ELASTOMERIC MATERIAL CONFORMING TO ASTM D3212-96A(2003)E1 AND SHALL BE PUSH-ON OR BELL-AND-SPIGOT TYPE.
3. DAMAGED PIPE SHALL BE REJECTED AND REMOVED FROM THE JOB SITE.
4. JOINTS SHALL BE DEPENDENT UPON PROPER MATERIALS (SEE NOTE #2) FOR WATER TIGHTNESS, AND ALL JOINTS SHALL BE PROPERLY MATCHED WITH THE PIPE MATERIALS USED. WHERE DIFFERING MATERIALS ARE TO BE CONNECTED, AS AT THE STREET SEWER WYE OR AT THE FOUNDATION WALL, APPROPRIATE MANUFACTURED ADAPTERS SHALL BE USED.
5. ALL NEW CONSTRUCTION SERVICE CONNECTIONS SHALL USE TEE OR WYE FITTINGS. IN EXISTING CONSTRUCTION WHERE A TEE OR WYE IS NOT AVAILABLE, THE APPROPRIATE CONNECTION SHALL BE MADE, FOLLOWING THE MANUFACTURERS INSTRUCTIONS USING A BOLTED, CLAMPED OR EPOXY-CEMENTED SADDLE TAPPED INTO A SMOOTHLY DRILLED OR SAWN OPENING IN THE SEWER. THE PRACTICE OF BREAKING AN OPENING WITH A SLEDGE HAMMER, APPLYING MORTAR TO HOLD THE CONNECTION OR ANY OTHER SIMILAR CRUDE PRACTICES WILL NOT BE PERMITTED. SADDLE CONNECTIONS SHALL BE CONCRETE ENCASED IF DIRECTED BY THE AUTHORITY HAVING JURISDICTION (AHJ).
6. PIPE INSTALLATION:
   A. THE PIPE SHALL BE HANDLED, PLACED AND JOINTED IN ACCORDANCE WITH INSTALLATION GUIDES OF THE APPROPRIATE MANUFACTURER.
   B. PIPES SHALL BE CAREFULLY BEDDED ON A 4 INCH LAYER OF CRUSHED STONE AND/OR GRAVEL.
   C. BEDDING AND RE-FILL, FOR A DEPTH OF 12 INCHES ABOVE THE TOP OF THE PIPE, SHALL BE CAREFULLY AND THOROUGHLY TAMPED BY HAND OR WITH THE APPROPRIATE MECHANICAL DEVICES.
   D. THE PIPE SHALL BE LAID AT A CONTINUOUS AND CONSTANT GRADE FROM THE STREET SEWER CONNECTION TO THE HOUSE FOUNDATION AT A GRADE OF NOT LESS THAN 1/8 INCH PER FOOT.
   E. PIPE JOINTS MUST BE MADE UNDER DRY CONDITIONS. IF WATER IS PRESENT, ALL NECESSARY STEPS SHALL BE TAKEN TO DEWATER THE TRENCH.
7. TESTING: THE COMPLETED HOUSE SEWER SHALL BE SUBJECTED TO A LEAKAGE TEST IN ANY OF THE FOLLOWING MANNERS: (PRIOR TO BACKFILLING)
   A. AN OBSERVATION TEE SHALL BE INSTALLED AS SHOWN AND WHEN READY FOR TESTING, AN INFLATABLE BLADDER OR PLUG SHALL BE INSERTED JUST UPSTREAM FROM THE OPENING IN THE TEE. AFTER INFLATION, WATER SHALL BE INTRODUCED INTO THE SYSTEM ABOVE THE PLUG TO A HEIGHT OF 5 FEET ABOVE THE LEVEL OF THE PLUG.
   B. THE PIPE SHALL BE LEFT EXPOSED AND LIBERALLY HOSED WITH WATER TO SIMULATE, AS NEARLY AS POSSIBLE, WET TRENCH CONDITIONS OR, IF THE TRENCH IS WET, THE GROUND WATER SHALL BE PERMITTED TO RISE IN THE TRENCH OVER THE PIPE. INSPECTIONS FOR LEAKS SHALL BE MADE THROUGH THE CLEAN OUT WITH A FLASHLIGHT.
   C. DRY FLUORESCENCIE DYE SHALL BE SPRINKLED INTO THE TRENCH OVER THE PIPE. IF THE TRENCH IS DRY, THE PIPE SHALL BE LIBERALLY HOSED WITH WATER, OR IF THE TRENCH IS WET, GROUND WATER SHALL BE PERMITTED TO RISE IN THE TRENCH OVER THE PIPE. OBSERVATION FOR LEAKS SHALL BE MADE IN THE FIRST DOWNSTREAM MANHOLE.
   D. LEAKAGE OBSERVED IN ANY OF THE ABOVE TESTS SHALL BE CAUSE FOR NON-ACCEPTANCE AND THE PIPE SHALL BE DUG-UP, IF NECESSARY, AND RE-LAID SO AS TO ASSURE WATER-TIGHTNESS.
8. ILLEGAL CONNECTIONS: NOTHING BUT SANITARY WASTE FLOW FROM TOILETS, SINKS, LAUNDRY, ETC. SHALL BE PERMITTED. ROOF LEADERS, FOOTING DRAINS, SUMP PUMPS OR ANY OTHER SIMILAR CONNECTION CARRYING RAIN WATER, DRAINAGE OR GROUND WATER, SHALL NOT BE PERMITTED.
9. WATER SERVICE SHALL NOT BE LAID IN THE SAME TRENCH AS THE SEWER SERVICE, UNLESS NECESSARY AND APPROVED BY THE AHJ. WHEN NECESSARY, THE WATER SERVICE SHALL BE PLACED ABOVE AND TO ONE SIDE OF THE SEWER SERVICE, AS SHOWN.
10. LOCATION: THE LOCATION OF THE WYE SHALL BE RECORDED AND FILED IN THE MUNICIPAL RECORDS. IN ADDITION, A FERROUS MATERIAL ROD OR PIPE SHALL BE PLACED OVER THE WYE TO AID IN LOCATING THE BURIED PIPE WITH A DIP NEEDLE OR PIPE FINDER.
11. CHIMNEY CONNECTIONS ARE ONLY PERMITTED IF ALLOWED BY THE AHJ. ANY VERTICAL RISE GREATER THAN 4 FEET SHALL BE PROVIDED WITH ADDED SUPPORT BY ENCASING THE FITTING AND RISER IN A PRECAST CONCRETE CHIMNEY. UP TO 12 FEET OF VERTICAL RISE CAN ALSO BE SECURED BY PROPER MEANS AS LONG AS IT CONSISTS OF A BELL-ON-BELL CONNECTION PROPERLY PROTECTED AGAINST PIPE PENETRATION AND IF IT IS ALLOWED BY THE AHJ.
12. UNLESS OTHERWISE NOTED, ALL GRANULAR MATERIAL SHALL BE PLACED IN 12" MAXIMUM LIFTS AND COMPACTED TO 95% OF THE MODIFIED PROCTOR TEST DENSITY.



PERVIOUS PAVER DETAIL
NOT TO SCALE

NOTES:
PAVERS TO BE A 45° HERRIBONE PATTERN BY IDEAL OR EQUAL.

PURSUANT TO THE SITE REVIEW REGULATIONS OF THE HUDSON PLANNING BOARD, THE SITE PLAN APPROVAL GRANTED HEREIN EXPIRES ONE YEAR FROM DATE OF APPROVAL	APPROVED BY THE HUDSON, NH PLANNING BOARD DATE OF MEETING: _____ SIGNATURE _____ DATE _____ SIGNATURE _____ DATE _____ SITE PLANS ARE VALID FOR ONE YEAR FROM THE DATE OF PLANNING BOARD MEETING FINAL APPROVAL. FINAL APPROVAL COMMENCES AT THE PLANNING BOARD MEETING DATE AT WHICH THE PLAN ACHIEVES FINAL APPROVAL.

CONSTRUCTION DETAILS

DAIRY QUEEN

TAX MAP 175; LOT 142
119 FERRY STREET
HUDSON, NEW HAMPSHIRE
HILLSBOROUGH COUNTY

OWNER OF RECORD / APPLICANT
LYNN C. & ANN M. WHITE
REVOCABLE TRUST
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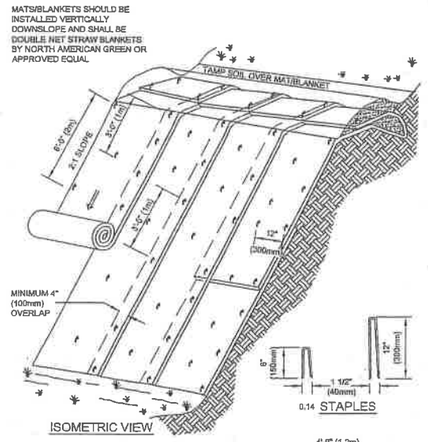
STATE OF NEW HAMPSHIRE
STEVEN B. KEACH
No. 7859
LICENSED PROFESSIONAL ENGINEER
8-11-14

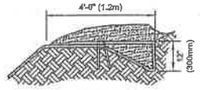
REVISIONS			
No.	DATE	DESCRIPTION	BY
1	08/08/2014	PER TOWN COMMENTS	BJC

DATE: JULY 18, 2014 SCALE: NONE
PROJECT NO: 14–0321–1 SHEET 12 OF 13



NOTES:

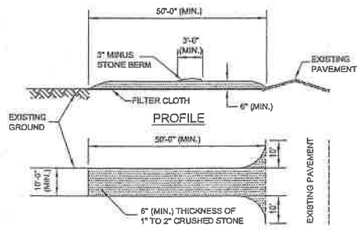
1. SLOPE SURFACE SHALL BE FREE OF ROCKS, CLODS, STICKS AND GRASS. MATS/ BLANKETS SHALL HAVE GOOD SOIL CONTACT.
2. APPLY PERMANENT SEEDING BEFORE PLACING BLANKETS.
3. LAY BLANKETS LOOSELY AND STAKE OR STAPLE TO MAINTAIN DIRECT CONTACT WITH THE SOIL. DO NOT STRETCH.



EROSION CONTROL BLANKETS - SLOPE INSTALLATION

NOT TO SCALE

(AUGUST 2011)



PLAN VIEW

STABILIZED CONSTRUCTION EXIT DETAIL

NOT TO SCALE

(MARCH 2008)

MAINTENANCE:

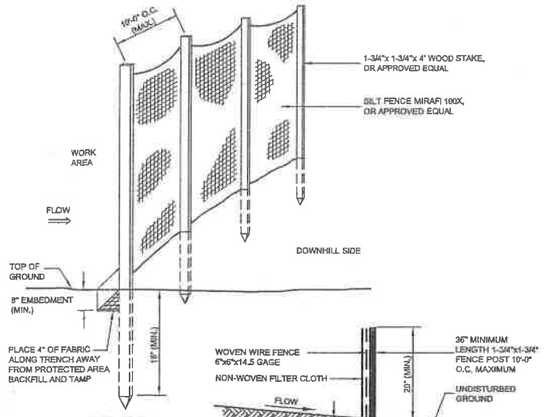
MUD AND SOIL PARTICLES WILL EVENTUALLY CLOG THE VOIDS IN THE CRUSHED STONE AND THE EFFECTIVENESS OF THE CRUSHED STONE PAD WILL NOT BE SATISFACTORY. WHEN THIS OCCURS, THE PAD SHOULD BE TOPDRESSED WITH NEW CRUSHED STONE OR COMPLETE REPLACEMENT OF THE PAD MAY BE NECESSARY WHEN THE PAD BECOMES COMPLETELY CLOGGED.

IF WASHING FACILITIES ARE USED, THE SEDIMENT TRAPS SHOULD BE CLEANED OUT AS OFTEN AS NECESSARY TO ASSURE THAT ADEQUATE TRAPPING EFFICIENCY AND STORAGE VOLUME IS AVAILABLE. VEGETATIVE FILTER STRIPS SHOULD BE MAINTAINED TO INSURE A VIGOROUS STAND OF VEGETATION AT ALL TIMES.

CONSTRUCTION SPECIFICATIONS:

1. STONE FOR A STABILIZED CONSTRUCTION EXIT SHALL BE 1 TO 2 INCH STONE. RECLAIMED STONE OR RECYCLED CONCRETE EQUIVALENT.
2. THE LENGTH OF THE STABILIZED EXIT SHALL NOT BE LESS THAN 50 FEET, EXCEPT FOR A SINGLE RESIDENTIAL LOT WHERE A 30 FOOT MINIMUM LENGTH WOULD APPLY.
3. THE THICKNESS OF THE STONE FOR THE STABILIZED EXIT SHALL NOT BE LESS THAN 6 INCHES.
4. THE WIDTH OF THE EXIT SHALL NOT BE LESS THAN THE FULL WIDTH OF THE AREA WHERE INGRESS OR EGRESS OCCURS OR 10 FEET, WHICHEVER IS GREATER.
5. GEOTEXTILE FILTER CLOTH SHALL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING THE STONE. FILTER CLOTH IS NOT REQUIRED FOR A SINGLE FAMILY RESIDENCE LOT.
6. ALL SURFACE WATER THAT IS FLOWING TO OR DIVERTED TOWARD THE CONSTRUCTION EXIT SHALL BE PIPED BENEATH THE EXIT. IF PIPING IS IMPRACTICAL, A BERM WITH 5:1 SLOPES THAT CAN BE CROSSED BY VEHICLES MAY BE SUBSTITUTED FOR THE PIPE.
7. THE EXIT SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. THIS MAY REQUIRE PERIODIC TOPDRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND AND REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, WASHED OR TRACKED ONTO PUBLIC RIGHT-OF-WAY MUST BE REMOVED PROMPTLY.
8. WHEELS SHALL BE CLEANED TO REMOVE MUD PRIOR TO ENTRANCE ONTO PUBLIC RIGHTS-OF-WAY. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH STONE WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.

PURSUANT TO THE SITE REVIEW REGULATIONS OF THE HUDSON PLANNING BOARD, THE SITE PLAN APPROVAL GRANTED HEREIN EXPIRES ONE YEAR FROM DATE OF APPROVAL	APPROVED BY THE HUDSON, NH PLANNING BOARD DATE OF MEETING: _____ SIGNATURE _____ DATE _____ SIGNATURE _____ DATE _____ SITE PLANS ARE VALID FOR ONE YEAR FROM THE DATE OF PLANNING BOARD MEETING FINAL APPROVAL. FINAL APPROVAL COMMENCES AT THE PLANNING BOARD MEETING DATE AT WHICH THE PLAN ACHIEVES FINAL APPROVAL.



SILT FENCE DETAIL

NOT TO SCALE

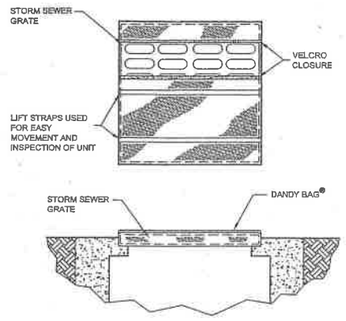
(MARCH 2008)

CONSTRUCTION SPECIFICATIONS:

1. THE GEOTEXTILE FABRIC SHALL MEET THE DESIGN CRITERIA FOR SILT FENCES.
2. THE FABRIC SHALL BE EMBEDDED A MINIMUM OF 8 INCHES INTO THE GROUND AND THE SOIL COMPACTED OVER THE EMBEDDED FABRIC.
3. WOVEN WIRE FENCE SHALL BE FASTENED SECURELY TO THE FENCE POSTS WITH WIRE TIE OR STAPLES WHERE NOTED OR AS DIRECTED BY DESIGN ENGINEER.
4. FILTER CLOTH SHALL BE FASTENED SECURELY TO THE WOVEN WIRE FENCE WITH TIES SPACED EVERY 24 INCHES AT THE TOP, MIDSECTION AND BOTTOM.
5. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER, THEY SHALL BE OVERLAPPED BY 6 INCHES, FOLDED AND STAPLED.
6. FENCE POSTS SHALL BE A MINIMUM OF 36 INCHES LONG AND DRIVEN A MINIMUM OF 16 INCHES INTO THE GROUND. WOOD POSTS SHALL BE OF SOUND QUALITY HARDWOOD AND SHALL HAVE A MINIMUM CROSS SECTIONAL AREA OF 3.0 SQUARE INCHES.
7. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND MATERIAL REMOVED WHEN "BULGES" DEVELOP IN THE SILT FENCE.

MAINTENANCE:

1. SILT FENCES SHALL BE INSPECTED IMMEDIATELY AFTER EACH RAINFALL AND AT LEAST DAILY DURING PROLONGED RAINFALL. ANY REPAIRS THAT ARE REQUIRED SHALL BE MADE IMMEDIATELY.
2. IF THE FABRIC ON A SILT FENCE SHOULD DECOMPOSE OR BECOME INEFFECTIVE DURING THE EXPECTED LIFE OF THE FENCE, THE FABRIC SHALL BE REPLACED PROMPTLY.
3. SEDIMENT DEPOSITS SHOULD BE INSPECTED AFTER EVERY STORM EVENT. THE DEPOSITS SHOULD BE REMOVED WHEN THEY REACH APPROXIMATELY ONE-HALF THE HEIGHT OF THE BARRIER.
4. SEDIMENT DEPOSITS THAT ARE REMOVED OR LEFT IN PLACE AFTER THE FABRIC HAS BEEN REMOVED SHALL BE GRADED TO CONFORM WITH THE EXISTING TOPOGRAPHY AND VEGETATED.



HI-FLOW DANDY BAG® (SAFETY ORANGE)

MECHANICAL PROPERTIES	TEST METHOD	UNITS	MARV
GRAB TENSILE STRENGTH	ASTM D 4632	kN (lbs)	1.62 (355) x 0.89 (200)
GRAB TENSILE ELONGATION	ASTM D 4632	%	24 x 10
PUNCTURE STRENGTH	ASTM D 4833	kN (lbs)	0.40 (90)
MULLEN BURST STRENGTH	ASTM D 3786	kPa (psi)	3097 (450)
TRAPEZOID TEAR STRENGTH	ASTM D 4533	kN (lbs)	0.51 (115) x 0.33 (75)
UV RESISTANCE	ASTM D 4355	%	90
APPARENT OPENING SIZE	ASTM D 4751	Mm (US Std Sieve)	0.425 (40)
FLOW RATE	ASTM D 4491	l/min/m² (gallmin/ft²)	5907 (145)
PERMITTIVITY	ASTM D 4491	Sec⁻¹	2.1

DANDY BAG®

NOT TO SCALE

(APRIL 2010)

NOTES:

FINAL RETAINING WALL STRUCTURAL DESIGN BY OTHERS. ENGINEER TO APPROVE SHOP DRAWINGS PRIOR TO CONSTRUCTION

1. THE STAMPED SHOP DRAWINGS AND CALCULATIONS FOR THE ACTUAL RETAINING WALL MUST BE PROVIDED FOR REVIEW AND APPROVAL AT OR PRIOR TO THE PROJECT'S REQUIRED PRE CONSTRUCTION MEETING.
2. THE PROVIDED PLANS AND SUPPORTING CALCULATIONS MUST ADDRESS THE FOLLOWING CRITERIA:
   - 2.a. DESIGN CALCULATIONS STAMPED BY QUALIFIED PE LICENSE IN NH
   - 2.b. STABILITY CALCULATIONS (INCLUDING BEARING CAPACITY, GLOBAL STABILITY, OVERTURNING & SLIDING, IMPACT)
   - 2.c. GEOGRID PULLOUT AND OTHER PERTINENT DATA & ELEVATIONS
   - 2.d. CONSTRUCTION INSTALLATION SPECIFICATION
   - 2.e. LATERAL EARTH PRESSURE COEFFICIENT
   - 2.f. SURCHARGE LOAD, EMBEDMENT DEPTH
   - 2.g. BOTH A PLAN AND PROFILE OF EACH WALL SECTION

MODULAR BLOCK(REDI-ROCK OR EQUAL) RETAINING WALL

NOT TO SCALE

(AUGUST 2011)

WINTER CONSTRUCTION NOTES:

1. ALL PROPOSED POST-DEVELOPMENT VEGETATED AREAS WHICH DO NOT EXHIBIT A MINIMUM OF 85% VEGETATIVE GROWTH BY OCTOBER 15TH, OR WHICH ARE DISTURBED AFTER OCTOBER 15TH, SHALL BE STABILIZED BY SEEDING AND INSTALLING EROSION CONTROL BLANKETS ON SLOPES GREATER THAN 4:1, AND SEEDING AND PLACING 3 TO 4 TONS OF MULCH PER ACRE, SECURED WITH ANCHORED NETTING, ELSEWHERE. THE PLACEMENT OF EROSION CONTROL BLANKETS OR MULCH AND NETTING SHALL NOT OCCUR OVER ACCUMULATED SNOW OR ON FROZEN GROUND AND SHALL BE COMPLETED IN ADVANCE OF THAW OR SPRING MELT EVENTS.
2. ALL DITCHES OR SWALES WHICH DO NOT EXHIBIT A MINIMUM OF 85% VEGETATIVE GROWTH BY OCTOBER 15TH, OR WHICH ARE DISTURBED AFTER OCTOBER 15TH, SHALL BE STABILIZED WITH STONE OR EROSION CONTROL BLANKETS APPROPRIATE FOR THE DESIGN FLOW CONDITIONS.
3. AFTER NOVEMBER 15TH, INCOMPLETE ROAD OR PARKING SURFACES SHALL BE PROTECTED WITH A MINIMUM OF 3 INCHES OF CRUSHED GRAVEL PER NHDOT ITEM 304.3 OR, IF CONSTRUCTION IS TO CONTINUE THROUGH THE WINTER SEASON, BE CLEARED OF ANY ACCUMULATED SNOW AFTER EACH STORM EVENT.
4. AN AREA SHALL BE CONSIDERED STABLE IF ONE OF THE FOLLOWING HAS OCCURRED:
   - A. BASE COURSE GRAVELS ARE INSTALLED IN AREAS TO BE PAVED;
   - B. A MINIMUM OF 85% VEGETATED GROWTH HAS BEEN ESTABLISHED;
   - C. A MINIMUM OF 3" OF NON-EROSIVE MATERIAL SUCH AS STONE OR RIP RAP HAS BEEN INSTALLED; OR
   - D. EROSION CONTROL BLANKETS HAVE BEEN PROPERLY INSTALLED.

CONSTRUCTION SEQUENCE

1. FIRST CUT AND CLEAR TREES AND BRUSH ONLY WITHIN DESIGNATED LIMITS OF CLEARING AS NECESSARY TO FACILITATE PROPOSED CONSTRUCTION. ALL TREES, BRANCHES AND OTHER VEGETATIVE MATERIALS SHALL BE PROPERLY DISPOSED OF OFF SITE BY THE CONTRACTOR. THIS PROJECT IS MANAGED TO MEET THE REQUIREMENTS AND INTENT OF RSA 430:53 AND AGR 3800 RELATIVE TO INVASIVE SPECIES.
2. PRIOR TO COMMENCEMENT OF ANY EARTHMOVING OPERATIONS, ALL APPLICABLE TEMPORARY EROSION CONTROL MEASURES, INCLUDING SPECIFIED PERIMETER SILTATION FENCING AND STABILIZED CONSTRUCTION EXIT SHALL BE IN PLACE AS SHOWN ON THE PROJECT PLANS.
3. COMPLETE GRUBBING OPERATIONS. ALL STUMPS AND SIMILAR ORGANIC DEBRIS SHALL BE PROPERLY DISPOSED OF BY THE CONTRACTOR. NATIVE ORGANIC SOIL MATERIALS SUITABLE FOR USE AS TOPSOIL SHALL BE STOCKPILED WITHIN AREAS OUT OF THE WAY OF OTHER CONSTRUCTIONS ACTIVITIES AND DRAINAGE FLOW. STOCKPILES SHALL BE TEMPORARILY SEEDED WITH WINTER RYE AND BE SURROUNDED WITH HAY BALES AND/OR FABRIC SILTATION FENCE IN ORDER TO PREVENT LOSS DUE TO EROSION.
4. BEGIN EARTHMOVING OPERATIONS, COMMENCING WITH WORK NEEDED TO BALANCE SITE AND FACILITATE BUILDING FOUNDATION AND RETAINING WALL CONSTRUCTION. PERMANENT DOWNSLOPE WORK SHALL BE PROTECTED FROM UPGRADIENT STORMWATER FLOW BY THE CONSTRUCTION OF TEMPORARY EARTHEN DIKES OR EXCAVATED SWALES.
5. ONCE BUILDING FOUNDATION WORK IS UNDERWAY, CONTINUE EARTHMOVING OPERATIONS UNTIL DESIGN SUBGRADE IS ACHIEVED.
6. INSTALL DRAINAGE SYSTEMS AND OTHER UTILITIES WORKING FROM LOW TO HIGH. INCOMPLETE WORK SHALL BE PROTECTED FROM SILTATION BY THE USE OF SILTATION BARRIERS AROUND SWALES UNTIL THE SITE HAS BECOME FULLY STABILIZED.
7. PLACE GRAVEL AND CRUSHED GRAVEL OVER PROPOSED DRIVEWAY, WALKS AND PARKING AREAS AND COMPACT IN SPECIFIED LIFT THICKNESS.
8. COMPLETE EXCAVATION/STABILIZATION GRADING ACTIVITIES. WHEN COMPLETE, IMMEDIATELY BEGIN TOPSOILING PROPOSED TURF AREAS USING STOCKPILED LOAM SUPPLEMENTED WITH BORROW LOAM, IF NECESSARY, TO LEAVE A THICKNESS OF 4 INCHES OF FRIABLE LOAM.
9. FINE GRADE ALL FUTURE TURF AREAS AND HYDROSEED WITH THE SPECIFIED SEED MIXTURE IMMEDIATELY AFTER FINE GRADING IS COMPLETED. ALL AREAS SHALL BE STABILIZED WITHIN 72 HOURS OF ACHIEVING FINISH GRADE.
10. INSTALL THE BINDER COURSE OF PAVEMENT OVER ALL DESIGNATED AREAS.
11. CONTINUE TO MONITOR AND RECTIFY MINOR SITE AND SLOPE EROSION UNTIL ENTIRE SITE APPEARS TO BE COMPLETELY STABILIZED AND VEGETATED WITH A HEALTHY STAND OF TURF OR GROUND COVER. MAINTAIN SPECIFIED SILTATION/EROSION CONTROL MEASURES THROUGH ONE WINTER.
12. INSTALL THE SPECIFIED WEARING COURSE OF PAVEMENT OVER THE BINDER COURSE.
13. COMPLETE INSTALLATION OF LANDSCAPING, SIGNAGE AND OTHER SITE AMENITIES.

EROSION CONTROL NOTES

1. EXPOSED EARTHWORK SHALL BE CONFINED TO AS LIMITED AN AREA AS IS PRACTICAL AT ANY GIVEN TIME THROUGHOUT THE CONSTRUCTION SEQUENCE. AT NO TIME SHALL MORE THAN FIVE (5) ACRES OF SITE AREA BE IN AN UNSTABLE CONDITION. NO GIVEN AREA OF THE SITE SHALL BE LEFT IN AN UNSTABILIZED CONDITION FOR A PERIOD OF TIME EXCEEDING THIRTY (30) CALENDAR DAYS.
2. TEMPORARY EROSION CONTROL MEASURES SHALL BE INSTALLED IN STRICT ACCORDANCE WITH PROJECT PLANS. IN ADDITION, SIMILAR MEASURES SHALL BE INSTALLED WHERE AND WHEN THE FIELD CONDITION, OR FIELD OPERATION OF THE INDIVIDUAL SITE CONTRACTOR, MAY WARRANT. ALL TEMPORARY EROSION CONTROL MEASURES USED SHALL BE INSPECTED WEEKLY AND WITHIN 24 HOURS AFTER 0.25" OF RAINFALL OR MORE. THEY SHALL BE CLEANED AND MAINTAINED AND OTHERWISE KEPT IN AN EFFECTIVE OPERATING MANNER THROUGHOUT THE CONSTRUCTION PERIOD.
3. ALL DISTURBED AREAS DESIGNATED TO BE TURF, SHALL RECEIVE A MINIMUM APPLICATION OF 4 INCHES OF LOAM (COMPACTED THICKNESS), PRIOR TO FINAL SEEDING AND MULCHING.
4. ALL SWALES AND DITCHLINES SHALL BE PERIODICALLY CLEANED OF DEPOSITED SEDIMENT SO AS TO MAINTAIN AN EFFECTIVE GRADE AND CROSS SECTION. ALL SWALES AND DITCHLINES SHALL BE FULLY STABILIZED PRIOR TO HAVING STORMWATER DIRECTED TOWARDS THEM.
5. IN THE EVENT THAT, DURING CONSTRUCTION OF ANY PORTION OF THIS PROJECT, A WINTER SHUTDOWN IS NECESSARY, THE CONTRACTOR SHALL STABILIZE ALL INCOMPLETE WORK AND PROVIDE FOR SUITABLE METHODS OF DIVERTING RUNOFF IN ORDER TO ELIMINATE SHEET FLOW ACROSS FROZEN SURFACES.
6. AN AREA SHALL BE CONSIDERED STABLE IF ONE OF THE FOLLOWING HAS OCCURRED:
   - A. BASE COURSE GRAVELS ARE INSTALLED IN AREAS TO BE PAVED;
   - B. A MINIMUM OF 85% VEGETATED GROWTH HAS BEEN ESTABLISHED;
   - C. A MINIMUM OF 3" OF NON-EROSIVE MATERIAL SUCH AS STONE OR RIP RAP HAS BEEN INSTALLED; OR
   - D. EROSION CONTROL BLANKETS HAVE BEEN PROPERLY INSTALLED.
7. DUST SHALL BE CONTROLLED BY THE USE OF WATER AS NECESSARY THROUGHOUT THE CONSTRUCTION PERIOD, IN ACCORDANCE WITH ENV-A 1000.
8. IN NO WAY ARE THOSE TEMPORARY EROSION CONTROL MEASURES INDICATED ON THESE PLANS TO BE CONSIDERED ALL INCLUSIVE. THE CONTRACTOR SHALL USE JUDGEMENT IN INSTALLING SUPPLEMENTARY EROSION CONTROL MEASURES WHERE AND WHEN SPECIFIC SITE CONDITIONS AND/OR CONSTRUCTION METHODOLOGIES MAY WARRANT.
9. AREAS HAVING FINISH GRADE SLOPES OF 3 : 1 OR STEEPER, SHALL BE STABILIZED WITH JUTE MATTING WHEN AND IF FIELD CONDITIONS WARRANT, OR IF SO ORDERED. JUTE MATTING INSTALLED TO CONFORM WITH THE RECOMMENDED BEST MANAGEMENT PRACTICE OUTLINED IN VOLUME 3 OF THE NEW HAMPSHIRE STORMWATER MANUAL "EROSION AND SEDIMENT CONTROLS DURING CONSTRUCTION."
10. ALL DETENTION PONDS AND TREATMENT SWALES SHALL BE CONSTRUCTED PRIOR TO ANY EARTH MOVING ACTIVITIES THAT WILL INFLUENCE STORMWATER RUNOFF.
11. ALL ROADWAYS AND PARKING AREAS SHALL BE STABILIZED WITHIN 72 HOURS OF ACHIEVING FINISHED GRADE.
12. ALL CUT AND FILL SLOPES SHALL BE SEEDED AND MULCHED WITHIN 72 HOURS OF ACHIEVING FINISHED GRADE.

CONSTRUCTION DETAILS

DAIRY QUEEN

TAX MAP 175; LOT 142
119 FERRY STREET
HUDSON, NEW HAMPSHIRE
HILLSBOROUGH COUNTY

OWNER OF RECORD / APPLICANT
LYNN C. & ANN M. WHITE
REVOCABLE TRUST
LYNN C. & ANN M. WHITE (TRUSTEES)
2 BRADFORD CIRCLE
HUDSON, NH 03051
H.C.R.D. BK.7864; PG.30

KEACH–NORDSTROM ASSOCIATES, INC.
Civil Engineering Land Surveying Landscape Architecture
10 Commerce Park North, Suite 3B, Bedford, NH 03110 Phone (603) 627-2881

STATE OF NEW HAMPSHIRE – STEVEN B KEACH No. 7900 LICENSED PROFESSIONAL ENGINEER

REVISIONS

No.	DATE	DESCRIPTION	BY
1	08/06/2014	PER TOWN COMMENTS	BJC

DATE: JULY 18, 2014 SCALE: NONE
PROJECT NO: 14-0321-1 SHEET 13 OF 13

Packet: 08/27/2014

FY2016 Capital Improvements Program (CIP)

Staff Report
August 27, 2014

This item is on the agenda in order to finalize the Planning Board's efforts, together with those of the CIP Committee, on the FY2016 CIP. In this regard, there are 3 tables pertaining to Capital Improvement financing that remain pending as of this writing. These tables will be completed in time for Wednesday night's meeting, including the appropriate DRAFT MOTION to approve the CIP in its entirety -- so that this document can be forwarded to the BOS and Budget Committee for their consideration, relative to preparing the FY2016 Town Budget.

In regard to the FY2016 CIP, not including the subject 3 tables, each board member already has a copy of same, which was included in the Planning Board's July 9, 2014 Meeting Packet, as well as the E-Packet for that meeting. In this regard, and in preparation for Wednesday night's meeting, please refer to same if you have questions or concerns regarding what capital improvement projects were voted by the Capital Improvements Committee, as well as the specific CIP proposals submitted by Town departments.

DRAFT MOTION: will be provided at Wednesday night's meeting.