## APPENDIX

MOTOR VEHICLE CRASH DATA
GROWTH RATE WORKSHEET
BACKGROUND PROJECT WORKSHEETS
TRIP GENERATION DATA
SIGHT DISTANCE WORKSHEETS

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 Reg \# VT518 Reg Type MCV Reg State MA
 Operator BRADY, ROBERT $\underset{\text { Firisi }}{J}$ Endorsement

$\qquad$

 Midale City GROVEI_AND State MA Zip 01834-2307
Insurance Company COMMERCE INSURANCE

| Piease fill out for operator and all occupants involved |  |
| :---: | :---: |
| Naddress |  |
| Operator | See Above |
|  |  |

_
Crash Diagram: $\rightarrow$ Direction

Crash Narrative:





## Crash Narrative:

Vehicle 1 , approaching $S$-curve and small intersecting roadways, slowed to use caution. Vehicle 2, struck V1 from behind (inattention). V1 sustained significant damage to rear, v2, minor damage to front.

```
No injuries, no tows.
```

| Witnesses: |  |  |  |  |
| :--- | :--- | :--- | :--- | :--- |
| Name (Last,First,Middle) | Address |  |  |  |
|  |  | Phone \# |  |  |
|  |  |  |  |  |
|  |  |  |  |  |




[^0]

| V2 traveling southbound on Lafayette Rd within the designated lane. V1 was traveling |
| :--- |
| northbound on Lafayette Rd. V1 crossed completely over the painted centerline into the |
| path of v2 resulting in head-on collision. Heavy front end damage sustained to both |
| vehicles. Both operators transported with non-life threatening injuries. V1 stated sun |
| glare was issue that resulted in collision. |
| Both operators transported. Both vehicles towed. | | Three named witnesses observed erratic operation of V1 prior to and at time of collision. |
| :--- | | Refer to 16-438-AR. |
| :--- |
| Witnesses: |
| Name(Last.FirstMidde) |
| WENDELL TRENTON |
| BROWN IISA |


| Property Damage: |  |  |  |  |  |  |  |  |
| :--- | :--- | :--- | :--- | :--- | :--- | :---: | :---: | :---: |
| Owner (Last,First,Middle) | Address | Phone \# | 41-Type | Description of Damaged Property |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |

Truck and Bus Information: Registration \#___ (From Vehicle Section)


| PATROLMAN PATRICK I SZYMKOWSKI-105 | SZYP | Salisbury Police Department | 08/04/2016 |  |  |
| :--- | :--- | :--- | :--- | :--- | :--- |
| Police Officer Name (Please Print) | Signature | D/Badge $\#$ | Deparment | Precinct/Barracks | Date |

[^1]


| Property Damage: |  |  |  |  |
| :--- | :--- | :--- | :--- | :--- | :--- |
| Owner (Last,First,Middle) | Address | Phone \# | 41-Type | Description of Damaged Property |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

Truck and Bus Information: Registration \# $\qquad$ (From Vehicle Section)

Carrier Name $\qquad$ Bus Use



## Hazmat Information:




[^2]

Crash Narrative:

V2, traveling south on Lafayette Rd, was turning left on Gerrish Rd. V1 did not stop in time and rear ended V2. There was minor damage to both vehicles.

Operator of V2 complained of head and neck pain but refused treatment at the scene, but stated that she would seek treatment on her own. Operator of V1 believed that her brakes malfunctioned and had her vehicle towed by AAA, as she felt unsafe driving it further.




Crash Narrative:
ON 01/01/17 AT 14:09 HRS, THIS OFFICER RESPONDED TO A REPORT OF MOTOR VEHICLE CRASH @ LAFAYETTE ROAD AND GERRISH ROAD. M/V \# 1 HEADING SOUTH BOUND LAFAYETTE ROAD, TURNING LEFT ONTO GERRISH ROAD. M/V \# 2 HEADING SOUTH BOUND LAFAYETTE ROAD STRUCK M/V \# 1 FROM BEHIND. BOTH M/V'S HAD DAMAGE, NO TOW, NO INJURY.

| Witnesses: |
| :--- |
| Name (Last,First,Middle) |




## Crash Narrative:

On 05/23/17 I was dispatched to Gerrish Rd. and Lafayette Rd. for a reported two car motor vehicle accident, no injuries reported. When I arrived both vehicles were pulled off to the soft shoulder on Gerrish Rd. I spoke with both operators and they confirmed that there were no injuries. I first spoke to the operator of V1 (Horvitz) who stated that he was traveling on Gerrish Rd., stopped at the stop sign, and that v2 took the corner to sharp and struck the front end of his vehicle. I then spoke to the operator of V2, who stated that V1 had pulled out past the stop line, almost into the roadway and was slowly rolling forward as he was making the left turn. He stated that due to VI rolling and not at a complete stop V1 struck him. The initital investigation was unfounded and could not determine clear fault. I checked for any independant witnesses and none were in the area. At this time it is only the recollection of events from both

## Witnesses:

| Name (Last,First,Middle) | Address | Phone \# | Statement |
| :--- | :--- | :--- | :---: |
|  |  |  |  |
|  |  |  |  |





Vehicle 1 was exiting driveway of 2 Forest Rd. Vehicle 1 did not see Vehicle 2 traveling south on Forrest Rd., possibly because of a hedge at the end of the driveway. Vehicle 1 drove into the side of Vehicle 2 as it attempted to pull out of the driveway and turn south.
-No injuries were reported on scene
-No vehicle were towed from the scene

| Witnesses: |  |  |  |  |
| :--- | :--- | :--- | :--- | :--- | :--- |
| Name (Last,First,Middie) | Address |  |  |  |
|  |  | Phone \# |  |  |
|  |  |  |  |  |
|  |  |  |  |  |




[^3]

ON 12/09/2017 AT 12:40 HRS, RESPONDED TO M/V CRASH @ TRUE ROAD, AND LAEAYETTE ROAD. M/V \#1 HEADING SOUTH BOUND LAFAYETTE ROAD. M/V \# 2 TURNING LEFT FROM TRUE RD, ONTO LAFAYETTE RD. OPERATOR OF M/V \# 2 STATED UNKNOWN M/V WAS TURNING RIGHT INTO TRUE RD, WHEN M/V \# 1 WENT AROUND UNKNOWN M/V. BOTH M/V'S WERE DAMAGED AND TOWED FROM SCENE. NO INJURY, NO TRANSPORT. NOTE SNOW STORM WAS IN EFEECT AT THIS TIME.

| Witnesses: |  |  |  |
| :---: | :---: | :---: | :---: |
| Name (Last,First,Middie) | Address | Phone \# | Statement |
|  |  |  |  |
|  |  |  |  |







Crash Narrative:

| V1 had right of way traveling north on Lafayette Rd approaching Gerrish Road. V2 was |
| :--- |
| traveling west on Gerrish Road and either at or approaching Stop Sign at intersection of |
| Iafayette Road. V2 either failed to stop, or failed to identify V1 approaching. V2 |
| drove into path of V1 resulting in collision. Both vehicles sustained moderate / heavy |
| damage and were towed. Operator v2 was transported by EMS and clearly sustained |
| concussion as result of impact. |

$\qquad$

| Witnesses: |  |  |  |  |  |
| :--- | :--- | :--- | :--- | :--- | :--- |
| Name (Last,First,Middie) |  | Address |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |


| Property Damage: |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| Owner (Last,First,Middle) | Address | Phone \# | 41- Type | Description of Damaged Property |
|  |  |  |  |  |
|  |  |  |  |  |

Truck and Bus Information: Registration \#____ (From Vehicle Section)



[^4]

## Crash Narrative:

Vehicle\#1 Operator states he was traveling eastbound on True Rd, when he drove through a curve area, his right tires drove on top of wet leafs and sand propmpting him to loose control of his vehicle. Due to lost of control operator crashed into a tree.

| Witnesses: |  |  |  |  |
| :--- | :--- | :--- | :--- | :--- |
| Name (Last,First,Middle) | Address | Phone \# | Statement |  |
|  |  |  |  |  |
|  |  |  |  |  |


| Property Damage: |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| Owner (Last,First,Middle) | Address | Phone \# | 41-7ype | Description of Damaged Property |
|  |  |  |  |  |
|  |  |  |  |  |


| Truck and Bus Information: | (From Vehicle Section) |
| :---: | :---: |
| Carrier Name__ B__ |  |




Form No. 10364 CRA- $6509 / 18$


Vehicle 1 was travelling southbound on Lafayette Rd. Vehicle 2 was stopped at the intersection of True and Lafayette. Vehicle 2 attempted to turn left on to the northbound lane of Lafayette Road. The operator of vehicle 2 stated they did not see vehicle one coming because it did not have headlights on. When the operator of vehicle 2 realized vehicle one was oming he attempted to swerve to the right to avoid a collision. Vehicle 2 left front struck the right front of vehicle 1 . Both vehicles sustained significant damage. Vehicle 1 was towed from the scene. Vehicle 2 was parked in a private driveway to await a private tow. All parties declined medical treatment

| Witnesses: |  |  |  |
| :--- | :--- | :--- | :--- | :---: |
| Name (Last,First,Middle) | Address |  |  |
|  |  | Phone \# | Statement |
|  |  |  |  |


| Property Damage: |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| Owner (Last,First,Middle) | Address | Phone \# | 41-Type: | Description of Damaged Property |
|  |  |  |  |  |
|  |  |  |  |  |

Truck and Bus Information: Registration \#____ (From Vehicle Section)


 Operator WIIKINSON, ROBERT HENRY V Address 217 PAII EACTORY RD City TEMPIETON StateMA Zip 01468-1532 Insurance Company GREEN MOUNTAIN INS Vehicle Travel Direction: $X \mathbf{S}|\mathbf{E}| \mathbf{W}$ Responding to Emergency? 2 Citation \# (If Issued) $\qquad$ | Viol. 1: $\mathrm{Ch} / \mathrm{Sec} / \mathrm{Sub} \ldots$ | Viol. 2: $\mathrm{Ch} / \mathrm{Sec} / \mathrm{Sub}$ |
| :--- | :--- |
| Viol. 3: $\mathrm{Cb} / \mathrm{Sec} / \mathrm{Sub}$ |  |

| Please fill out for operator and all occupants involved |  |
| :---: | :---: |
| Name (Lass Firss Madile) | Address |
| Operator | See Above |
| SUSAN WILKINSON | 217 PAIL FACTORY RD TEMPIETON, MA 01468 |
|  |  |
|  |  |

License \# S26920647 Sex M Lic. Class $\square^{19}{ }^{19}$ St MA

$$
1
$$

$\square$ $\begin{aligned} & \text { Please Select One } \\ & \text { of the Following: }\end{aligned}$ Vehicle $21 \quad$ \#Occupants $\square$ Non-Motorist A
 $\underset{\text { Endors }}{\mathrm{CDL}}$ Endorsement Address 4 IINCOIN AVE City SALISBURY State MA Zip 01952

Insurance Company GOVI EMPLOYEE INS
Vehicle Travel Direction: NXE| Responding to Emergency? 2 Citation \# (If Issued) R8177087
Viol. 1: Ch/Sec/Sub 89 $89 \quad$ A

Viol. 3: $\mathrm{Ch} / \mathrm{Sec} / \mathrm{Sub}$
Piease fill out for operator/non-motorist and all occupants involved

| Neme (Last Fist Midde) | Address |
| :---: | :---: |
| Operator/Non-Motorist | See Above |


| Reg \#PPRENO |  |
| :---: | :---: |
| Veh Year 2016 |  |
| Owner WILKINSON, ROBERT |  |
|  |  |
| Address 217 PAII EACTORY |  |
| City TEMPLETON |  |
| Vehicle Action Prior to Crash | 1.22 |
|  |  |
| Most Harmful Event $1 .{ }^{24}$ |  |
| Driver Contributing Code 1.25 |  |
| Driver Distracted by 0.2 |  | Reg Type PC Reg State MA $1^{12}$ $1^{13}$



Crash Narrative:
ON 07/25/2019 @ 14:06 HRS, RESPONDED TO M/V CRASH LAFAYETTE RD AND GERRISH ROAD. MV \# 1 HEADING NORTH BOUND LAFAYETTE RD. M/V \# 2 HEADING SOUTH BOUND LAFAYETTE RD. M/V \# 2 OPERATOR CROSSED CENTER LINE, STATED HE EELL ASLEEP. OPERATOR M/V \# 1 SAW M/V \# 2 CROSS THE CENTER LANE AND VEERED BACK INTO PROPER LANE. OPERATOR OF M/V \# 1 FELT A THUMP AND STATED HE WIIL WASH HIS M/V TO SEE IF DAMAGED. THIS OFFICER ISSUED CITATION \# R8177087 TO OPERATOR OF M/V \# 2 MR. BELL. BOTH M/V'S LEFT THE SCENE, NO TRANSPORT, NO TOW.

| Witnesses: |  |  |  |  |  |  |  |  |
| :--- | :--- | :--- | :--- | :--- | :---: | :---: | :---: | :---: |
| Name (Last,First,Middle) | Address | Phone \# | Statement |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |


| Property Damage: |  |  |  |  |  |
| :--- | :--- | :--- | :--- | :--- | :--- |
|  |  | Address |  | Phone \# | 41-Type |
| Owner (Last,First,Middle) |  |  | Description of Damaged Property |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |




Fom No. 10364 CRA-65 09/18


## Crash Narrative:

ON 10/17/2019 AT 14:20 HRS, RESPONDED TO M/V CRASH @ TRUE ROAD AND LAFAYETTE ROAD. M/V \#
HEADING NORTH BOUND LAFAYETTE, TURNING LEFT ONTO TRUE ROAD. M/V \# 2 HEADING NORTH BOUND
LAFAYETTE STRUCK M/V \# 1 FROM BEHIND. BOTH M/V'S HAD DAMAGE FROM CRASH, NO INJURY, NO TOW

| Witnesses: |  |  |  |  |
| :--- | :--- | :--- | :--- | :---: |
| Name (Last,First,Middle) | Address | Phone \# | Statement |  |
|  |  |  |  |  |
|  |  |  |  |  |





Crash Narrative:
ON 11/04/2019 @ 10:54 HRS, RESPONDED TO M/V CRASH AT LAFAYETTE ROAD, AND TRUE ROAD. M/V \# 2 HEADING NORTH ON LAFAYETTE ROAD, TURNING LEFTI ONTO TRUE ROAD. M/V \# 1 HEADING NORTH LAFAYETTE ROAD, STRUCK M/V \# 2 FROM BEHIND CAUSING DAMAGE TO BOTH M/V'S. NO TRANSPORT, NO INJURY, M/V \# 2 WAS TOWED EROM SCENE BY NEWBURYPORT TOW.

| Witnesses: |  |  |  |
| :--- | :--- | :--- | :--- | :---: |
| Name (Last,First,Middle) | Address |  |  |
|  |  | Phone \# | Statement |
|  |  |  |  |


| Property Damage: |  |  |  |  |  |
| :--- | :--- | :--- | :--- | :--- | :--- |
| Owner (Last,First,Middle) |  | Address | Phone \# | 41-Type | Description of Damaged Property |
|  |  |  | 4 |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |




[^5]

## Crash Narrative:

V1 was turning left from Gerrish Road onto Lafayette Road. V2 was travelling with the right of way north on Lafayette Road. In the process of turning, V1 crossing into the pat $/$ right of way of $V 2$ resulting in the collision. Both vehicles sustained moderate damage.
Operator of V2 sustained unknown injuries and was transported to AJH. Operator and
passenger of V1 refused treatment.
Both vehicles towed.

| Witnesses: |  |  |  |
| :--- | :--- | :--- | :--- | :---: |
| Name (Last,First,Middle) | Address | Phone \# |  |
|  |  |  |  |
|  |  |  | Statement |




Form No. 10364 CRA-6S $1 / 13$


If Crash Did NotOccur on a Public Way:
$\square$ Off-Street Parking Lot
$\square$ Garage
[] Mall/Shopping Center
$\square$ Other Private Way

Indicate North by Arrow


Crash Narrative:

Vehicle \#1 traveling east on Gerrish Rd taking a left turn onto Seabrook Rd. The operator lost control and struck a rock wall in the front yard of 27 Gerrish Rd causing minor damage to the wall, and minor damage to the vehicle. Vehicle then pulled to the side of the road at the edge of the property line of 27 Gerrish to attempt to change the tire. Minor damage to vehicle to the front right tire and right front end
$\qquad$
$\qquad$

## Witnesses:

| Name (Last,First,Middle) | Address | Phone \# | Statement |
| :--- | :--- | :--- | :--- | :--- | :--- |
| MFiRRILI, RUSSEILL P | 27 GERRISH RD SALISEURY MA 01952 | $603-427-3079$ |  |
|  |  |  |  |


| Property Damage: |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
|  | Address | Phone \# | 41-1ype | Description of Damaged Property |
| MERRIIL RUSSEIL P | 27 gerrisa kd salisbury ma 01952 | 603-427-3079 | $4$ | ROCK WAL工 |
|  |  |  |  |  |




Form No. 10364 CRA-65 09/18


## Crash Narrative:

On 07/09/19 units responded for a reported minor two car mve on Forest Rd. When units arrived vehicles 1 and 2 were both pulled to the shoulder of the roadway. V1 had damage to the front left side and front corner, v2 had damage on the left rear and bumper area. v1 operator stated that she swerved out of her lane to avoid a couple pedestrian walking on the edge of the roadway and struck v2, which she described as being parked. v2 operato stated he observed vi veer off into his lane to go around the pedestrians and he pulled over as far to the right as possible, however, vi struck the rear of his vehicle. It woul appear that $v 2$ was not in fact parked as there were no skid marks from the vehicle being moved and the vehicles final resting position was not consistent with the angle it was struck.

## Witnesses:

| Name (Last,First,Middle) | Address | Phone \# |  |
| :--- | :--- | :--- | :--- | :--- |
|  |  |  |  |
|  |  |  |  |



Crash Diagram: $\rightarrow=$ Direction

## Crash Narrative:

Single vehicle crash - operator stated he was turning left when the vehicle began sliding on slush and snow. Operator was unable to recover and slid off the right shoulder coming to rest on two large boulders. There was approximately 1-2 inch of slush/ice covering th roadway. There was no apparent property damage at the time.


| Property Damage: |  |  |  |  |
| :--- | :--- | :--- | :--- | :--- | :--- |
| Owner (Last,First,Middie) | Address | Phone \# | 41-Type | Description of Damaged Property |
|  |  |  | \% |  |
|  |  |  |  |  |
|  |  |  |  |  |

Truck and Bus Information: Registration \#___ (From Vehicle Section)


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GROWTH RATE WORKSHEET

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Salisbury, MA Growth Rate

| Location ID | Location | Year | AADT | Projection |  | Rate |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 240897 | Route 1 over Merrimack River | 2016 | 17189 | 2016-2019 | 0.9652 | Negative Growth |
|  |  | 2017 | 16169 | 2017-2019 | 0.9777 | Negative Growth |
|  |  | 2018 | 17085 | 2018-2019 | 0.9046 | Negative Growth |
|  |  | 2019 | 15455 |  |  |  |
| 257581 | Route 1 north of Interstate 95 Connector | 2006 | 9000 | 2006-2016 | 0.9927 | Negative Growth |
|  |  | 2016 | 8361 |  |  |  |
| 225926 | Route 1 south of Toll Road Exit | 2006 | 13400 | 2006-2016 | 0.9858 | Negative Growth |
|  |  | 2016 | 11613 |  |  |  |
| 257581 | Route 1 north of Interstate 95 Connector | 2013 | 9635 | 2013-2017 | 0.9930 | Negative Growth |
|  |  | 2017 | 9368 |  |  |  |
| 3372837 | Route 1 north of Gardner Street | 2019 | 12388 |  |  |  |
|  |  |  |  | Say <br> Use | $\begin{aligned} & \text { 0.00\% per } \\ & \text { AADT = } 12 \end{aligned}$ | $\begin{aligned} & \text { year } \\ & , 388 \end{aligned}$ |

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BACKGROUND PROJECT WORKSHEETS

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## Proposed Single-Family Houses, Salisbury, MA

9 Gerrish Road, Salisbury, MA
Land Use Code (LUC) 210 - Single-Family Detached Housing
Source: Institute of Transportation Engineers (ITE) - 10th Edition
Average Vehicle Trips Ends vs: Dwelling units
Independent Variable (X): 10

## WEEKDAY DAILY

$\operatorname{Ln} T=0.92 \operatorname{Ln}(X)+2.71 \quad \mathrm{R}^{2}=0.95$
$\operatorname{Ln} T=0.92 \operatorname{Ln}(10 \quad)+2.71$
$\mathrm{Ln} \mathrm{T}=4.83$
$\mathrm{T}=125.01$
$\mathrm{T}=126 \quad$ vehicle trips
with $50 \%$ ( 63 vpd) entering and $50 \% ~(63 \quad$ vpd) exiting.

## WEEKDAY MORNING PEAK HOUR OF ADJACENT STREET TRAFFIC

$\mathrm{T}=0.71 *(\mathrm{X})+4.80$
$\mathrm{R}^{2}=0.89$
$\mathrm{T}=0.71$ * ( $\quad 10$ ) +4.80
$\mathrm{T}=11.90$
$\mathrm{T}=12 \quad$ vehicle trips
with $25 \%$ ( $3 \quad \mathrm{vph}$ ) entering and $75 \% ~(~ 9 \quad v p h) ~ e x i t i n g . ~$

## WEEKDAY MORNING PEAK HOUR OF GENERATOR

```
\(\operatorname{Ln} \mathrm{T}=0.91 \operatorname{Ln}(\mathrm{X})+0.20\)
\(\mathrm{R}^{2}=0.89\)
\(\operatorname{Ln} T=0.91 \operatorname{Ln}(10 \quad)+0.20\)
\(\operatorname{LnT}=2.30\)
    \(\mathrm{T}=9.93 \quad\) vehicle trips
    \(\mathrm{T}=10\)
    with 26\% ( \(3 \quad \mathrm{vph}\) ) entering and \(74 \% ~\left(\begin{array}{lll}7 & \mathrm{vph}\end{array}\right)\) exiting.
```


## WEEKDAY EVENING PEAK HOUR OF ADJACENT STREET TRAFFIC

```
\(\operatorname{Ln} \mathrm{T}=0.96 \mathrm{Ln}(\mathrm{X})+0.20\)
    \(R^{2}=0.92\)
\(\operatorname{Ln} T=0.96 \operatorname{Ln}(10 \quad)+0.20\)
\(\mathrm{Ln} \mathrm{T}=2.41\)
\(\mathrm{T}=11.14\)
\(\mathrm{T}=11 \quad\) vehicle trips
with 63\% ( \(7 \quad \mathrm{vph}\) ) entering and \(37 \% ~(4 r r)\) vph) exiting.
```


## WEEKDAY EVENING PEAK HOUR OF GENERATOR

$\operatorname{Ln} T=0.94 \operatorname{Ln}(X)+0.34$
$R^{2}=0.92$
$\operatorname{Ln} T=0.94 \operatorname{Ln}(10 \quad)+0.34$
$\mathrm{Ln} \mathrm{T}=2.50$
$\mathrm{T}=12.24$
$\mathrm{T}=12 \quad$ vehicle trips
with $64 \% ~\left(\begin{array}{llll}8 & \mathrm{vph}\end{array}\right)$ entering and $36 \% ~\left(\begin{array}{ll} & \mathrm{vph}\end{array}\right)$ exiting.

## Proposed Single-Family Houses, Salisbury, MA

9 Gerrish Road, Salisbury, MA
Land Use Code (LUC) 210 - Single-Family Detached Housing
Source: Institute of Transportation Engineers (ITE) - 10th Edition
Average Vehicle Trips Ends vs: Dwelling units
Independent Variable (X): 10

## SATURDAY DAILY

$\operatorname{Ln~T}=0.94 \operatorname{Ln}(\mathrm{X})+2.56 \quad \mathrm{R}^{2}=0.91$
$\operatorname{Ln} T=0.94 \operatorname{Ln}(10)+2.56$
$\operatorname{Ln} \mathrm{T}=4.72$
$\mathrm{T}=112.67$
$\mathrm{T}=112 \quad$ vehicle trips
with $50 \%$ ( 56 vpd$)$ entering and $50 \%$ ( 56 vpd) exiting.

## SATURDAY MIDDAY PEAK HOUR OF GENERATOR

$\mathrm{T}=0.84 *(\mathrm{X})+17.99$
$\mathrm{R}^{2}=0.87$
$\mathrm{T}=0.84 *(10 \quad)+17.99$
$\mathrm{T}=26.39$
$\mathrm{T}=26 \quad$ vehicle trips
with $54 \% ~(14 \mathrm{vph})$ entering and $46 \% ~(12 \quad \mathrm{vph})$ exiting.

## SUNDAY DAILY

$$
\begin{aligned}
& \mathrm{T}=8.87 *(\mathrm{X})-65.12 \quad \mathrm{R}^{2}=0.94 \\
& \mathrm{~T}=8.87 *(10)-65.12 \\
& \mathrm{~T}=23.58 \\
& \mathrm{~T}=24 \quad \text { vehicle trips } \\
& \text { with } 50 \% \text { ( } 12 \mathrm{vpd}) \text { entering and } 50 \% \text { ( } 12 \mathrm{vpd} \text { ) exiting. }
\end{aligned}
$$

## SUNDAY PEAK HOUR OF GENERATOR

```
\(\mathrm{T}=0.79 *(\mathrm{X})+11.02\)
\(\mathrm{R}^{2}=0.91\)
\(\mathrm{T}=0.79 *(10)+11.02\)
\(\mathrm{T}=18.92\)
\(\mathrm{T}=19 \quad\) vehicle trips
    with \(53 \%\) ( 10 vpd) entering and \(47 \% ~(9 \quad v p d) ~ e x i t i n g . ~\)
```


## Proposed Single-Family Houses, Salisbury, MA

15 Forest Road, Salisbury, MA
Land Use Code (LUC) 210 - Single-Family Detached Housing
Source: Institute of Transportation Engineers (ITE) - 10th Edition
Average Vehicle Trips Ends vs: Dwelling units
Independent Variable (X): 3

## WEEKDAY DAILY

$\operatorname{Ln~} \mathrm{T}=0.92 \operatorname{Ln}(\mathrm{X})+2.71 \quad \mathrm{R}^{2}=0.95$
$\operatorname{Ln} T=0.92 \operatorname{Ln}(3)+2.71$
$\operatorname{LnT}=3.72$
$\mathrm{T}=41.29$
$\mathrm{T}=42 \quad$ vehicle trips
with 50\% ( 21 vpd ) entering and $50 \% ~(21 \mathrm{vpd})$ exiting.

## WEEKDAY MORNING PEAK HOUR OF ADJACENT STREET TRAFFIC

$\mathrm{T}=0.71 *(\mathrm{X})+4.80$
$\mathrm{R}^{2}=0.89$
$\mathrm{T}=0.71 *(\quad 3 \quad)+4.80$
$\mathrm{T}=6.93$
$\mathrm{T}=7 \quad$ vehicle trips
with $25 \%$ ( 2 vph ) entering and $75 \% ~\left(\begin{array}{ll}5 & \mathrm{vph}) ~ e x i t i n g . ~\end{array}\right.$

## WEEKDAY MORNING PEAK HOUR OF GENERATOR

$\operatorname{Ln} \mathrm{T}=0.91 \operatorname{Ln}(\mathrm{X})+0.20$
$\mathrm{R}^{2}=0.89$
$\operatorname{Ln} T=0.91 \operatorname{Ln}(3)+0.20$
$\operatorname{Ln} \mathrm{T}=1.20$
$\mathrm{T}=3.32 \quad$ vehicle trips
$\mathrm{T}=4$
with $26 \%$ ( $1 \quad \mathrm{vph}$ ) entering and $74 \% ~\left(\begin{array}{lll} & \mathrm{vph}\end{array}\right)$ exiting.

## WEEKDAY EVENING PEAK HOUR OF ADJACENT STREET TRAFFIC

$\operatorname{Ln} \mathrm{T}=0.96 \operatorname{Ln}(\mathrm{X})+0.20$
$\mathrm{R}^{2}=0.92$
$\operatorname{Ln} T=0.96 \operatorname{Ln}(3)+0.20$
$\operatorname{Ln} \mathrm{T}=1.25$
$\mathrm{T}=3.51$
$\mathrm{T}=4 \quad$ vehicle trips
with 63\% ( $3 \quad \mathrm{vph}$ ) entering and $37 \% ~(1 \quad \mathrm{vph})$ exiting.

## WEEKDAY EVENING PEAK HOUR OF GENERATOR

$\operatorname{Ln} \mathrm{T}=0.94 \operatorname{Ln}(\mathrm{X})+0.34$
$R^{2}=0.92$
$\operatorname{Ln} T=0.94 \operatorname{Ln}\left(\begin{array}{ll}3\end{array}\right)+0.34$
$\operatorname{LnT}=1.37$
$\mathrm{T}=3.95$
$\mathrm{T}=4 \quad$ vehicle trips
with 64\% ( 3 vph ) entering and $36 \% ~(1 \quad \mathrm{vph})$ exiting.

## Proposed Single-Family Houses, Salisbury, MA

15 Forest Road, Salisbury, MA
Land Use Code (LUC) 210 - Single-Family Detached Housing
Source: Institute of Transportation Engineers (ITE) - 10th Edition
Average Vehicle Trips Ends vs: Dwelling units
Independent Variable (X): 3

## SATURDAY DAILY

$$
\operatorname{Ln} \mathrm{T}=0.94 \operatorname{Ln}(\mathrm{X})+2.56 \quad \mathrm{R}^{2}=0.91
$$

$\operatorname{Ln} T=0.94 \operatorname{Ln}(3)+2.56$
Ln T=3.59

$$
\mathrm{T}=36.33
$$

$\mathrm{T}=36 \quad$ vehicle trips
with 50\% ( 18 vpd ) entering and $50 \% ~(18 \mathrm{vpd})$ exiting.

## SATURDAY MIDDAY PEAK HOUR OF GENERATOR

$$
\begin{aligned}
& \mathrm{T}=0.84 *(\mathrm{X})+17.99 \quad \mathrm{R}^{2}=0.87 \\
& \mathrm{~T}=0.84 \text { * ( } 3 \text { ) + } 17.99 \\
& \mathrm{~T}=20.51 \\
& \mathrm{~T}=21 \quad \text { vehicle trips } \\
& \text { with 54\% ( } 11 \mathrm{vph} \text { ) entering and 46\% ( } 10 \mathrm{vph} \text { ) exiting. }
\end{aligned}
$$

## SUNDAY DAILY

$$
\begin{aligned}
& \mathrm{T}=8.87 \text { * } \mathrm{X} \text { ) - } 65.12 \quad \mathrm{R}^{2}=0.94 \\
& \mathrm{~T}=8.87 \text { * ( } 3 \text { ) - } 65.12 \\
& \mathrm{~T}=-38.51 \\
& \mathrm{~T}=-39 \quad \text { vehicle trips } \\
& \text { with } 50 \% \text { ( }-20 \mathrm{vpd} \text { ) entering and } 50 \%(-19 \mathrm{vpd}) \text { exiting. }
\end{aligned}
$$

## SUNDAY PEAK HOUR OF GENERATOR

```
\(\mathrm{T}=0.79 *(\mathrm{X})+11.02 \quad \mathrm{R}^{2}=0.91\)
\(\mathrm{T}=0.79\) * ( 3 ) + 11.02
\(\mathrm{T}=13.39\)
\(\mathrm{T}=13 \quad\) vehicle trips
```



ENGINEERING

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## Proposed Townhouses, Salisbury, MA

Land Use Code (LUC) 220 - Multifamily Housing (Low-Rise)_
Source: Institute of Transportation Engineers (ITE) - 10th Edition
Average Vehicle Trips Ends vs: Dwelling units
Independent Variable (X): 76

## AVERAGE WEEKDAY DAILY

| $\mathrm{T}=7.56 *(\mathrm{X})-40.86$ | 29 Studies, Avg size $=168$ units |
| :--- | :--- |
| $\mathrm{T}=7.56 *\left(\begin{array}{ll}\text { ( }\end{array} \mathrm{m}\right)-40.86$ | $\mathrm{R} 2=0.89 \mathrm{AR}=7.32$ |
| $\mathrm{~T}=533.70$ |  |
| $\mathrm{~T}=534$ | vehicle trips |

with 50\% ( 267 vpd ) entering and 50\% ( 267 vpd ) exiting.

## WEEKDAY MORNING PEAK HOUR OF ADJACENT STREET TRAFFIC

$\operatorname{LnT}=0.95 \operatorname{Ln}(\mathrm{X})-0.51$
$\operatorname{Ln} T=0.95 \operatorname{Ln}(76)-0.51$
$\mathrm{Ln} \mathrm{T}=3.60$
$\mathrm{T}=36.75$
$\mathrm{T}=37 \quad$ vehicle trips
with $23 \%$ ( $9 \quad \mathrm{vph})$ entering and $77 \% ~\left(\begin{array}{lll}28 & \mathrm{vph}) \text { exiting. }\end{array}\right.$ 0.120 .37

## WEEKDAY MORNING PEAK HOUR OF GENERATOR

Ln T $=0.94 \operatorname{Ln}(\mathrm{X})-0.29 \quad 36$ Studies, Avg size $=161$ units
$\operatorname{LnT}=0.94 \operatorname{Ln}(\quad 76)-0.29 \quad R^{2}=0.91 \mathrm{AR}=0.56$
$\operatorname{LnT}=3.78$
$\mathrm{T}=43.86$
$\mathrm{T}=44 \quad$ vehicle trips
with $28 \%$ ( 12 vph ) entering and $72 \%(32 \mathrm{vph})$ exiting.

$$
\begin{array}{ll}
0.16 & 0.42
\end{array}
$$

## WEEKDAY EVENING PEAK HOUR OF ADJACENT STREET TRAFFIC

$\operatorname{Ln} \mathrm{T}=0.89 \operatorname{Ln}(\mathrm{X})-0.02$
$\operatorname{Ln} T=0.89 \operatorname{Ln}(76)-0.02$
$\mathrm{Ln} \mathrm{T}=3.83$
$\mathrm{T}=46.26$
$\mathrm{T}=46 \quad$ vehicle trips
with 63\% ( 29 vph ) entering and 37\% ( 17 vph$)$ exiting. $0.38 \quad 0.22$

WEEKDAY EVENING PEAK HOUR OF GENERATOR

| $\mathrm{T}=0.66$ ( X$)+1.41$ |  | 35 Studies, Avg size $=146$ units |
| :---: | :---: | :---: |
| $\mathrm{T}=0.66$ * ( | $76)+1.41$ | $\mathrm{R}^{2}=0.94 \mathrm{AR}=0.67$ |
| $\mathrm{T}=51.57$ |  |  |
| $\mathrm{T}=52 \quad$ vehicle trips |  |  |
| with $59 \%$ | $31 \mathrm{vph}) \mathrm{e}$ | nd $41 \%$ ( $21 \quad \mathrm{vph})$ exiting. |
|  | 0.41 | 0.28 | 0.41

## Proposed Townhouses, Salisbury, MA

Land Use Code (LUC) 220 - Multifamily Housing (Low-Rise)_
Source: Institute of Transportation Engineers (ITE) - 10th Edition
Average Vehicle Trips Ends vs: Dwelling units Independent Variable (X): 76

## SATURDAY DAILY

$$
\left.\begin{array}{rlr}
\mathrm{T} & =14.01 *(\mathrm{X})-521.69 & 5 \text { Studies, Avg size }=89 \text { units } \\
\mathrm{T} & =14.01 *\left(\begin{array}{lll}
76
\end{array}\right)-521.69 & \mathrm{R}^{2}=0.93 \mathrm{AR}=8.14
\end{array}\right)
$$

SATURDAY MIDDAY PEAK HOUR OF GENERATOR
$\left.\begin{array}{rll}\mathrm{T} & =1.08 *(\mathrm{X})-33.24 & 5 \text { Studies, Avg size }=89 \text { units } \\ \mathrm{T} & =1.08 *\left(\begin{array}{ll}76\end{array}\right)-33.24 & \mathrm{R}^{2}=0.92 \mathrm{AR}=0.70\end{array}\right)$
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## Sight Distance Calculations

Forest Road and Proposed Site Driveway, Salisbury, MA

## Inputs

Posted Speed Limit $=30 \mathrm{mph}$ NB \& SB
Direction $1=\quad$ Forest Road Northbound
Direction $2=\quad$ Forest Road Southbound


SSD = Reaction Distance + Braking Distance

Reaction Distance $=1.47 \times \mathrm{V} \times \mathrm{t}$
Braking Distance $=\mathrm{V}^{2} /(30 \times((\mathrm{a} / 32.2)+\mathrm{G}))$

$$
\mathrm{ISD}=1.47 \times \mathrm{V} \mathrm{t}_{\mathrm{g}}
$$

Where $\quad t=$ reaction time (sec)
$t_{g}=$ time gap for minor road vehicle to enter the major road
$\mathrm{V}=$ travel speed (mph)
G= roadway grade
$\mathrm{a}=$ deceleration rate $\left(\mathrm{ft} / \mathrm{s}^{2}\right.$ )

## Calculations

|  | Reaction Distance (ft) | Brake <br> Distance (ft) | $\underline{S S D}(\mathrm{ft})$ |
| :---: | :---: | :---: | :---: |
| Forest Road Northbound | 110.3 | 86.3 | 197 |
| Forest Road Southbound | 110.3 | 86.3 | 197 |
| For | 30 mph : |  |  |
| Left Turn ISD = | 331 | ft |  |
| Right Turn ISD = | 287 | ft |  |
| For | 30 mph : |  |  |
| Left Turn ISD = | 331 | ft |  |
| Right Turn ISD $=$ | 287 | ft |  |

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[^0]:    Form No. 10364 CRA-65 1/13

[^1]:    CDP1 11-24-00

[^2]:    Form No. t0364 CRA-65 $1 / 13$

[^3]:    Form No. 10364 CRA-65 1/II

[^4]:    Form No. 10364 CRA-65 1/13

[^5]:    Form No. 10364 CRA-65 $09 / 18$

