



STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS

Rhode Island Department of Transportation
ENGINEERING DIVISION

Two Capitol Hill, Rm. 226
Providence, RI 02903-1124
PHONE 401-222-2023
FAX 401-222-3006; TDD 401-222-4971

August 22, 2012

Jonathan J. Reiner, AICP
Director of Planning and Community Development
Town of North Kingstown
55 Brown Street
North Kingstown, Rhode Island 02852

Subject: **North Kingstown—Route 2/102/Oatleys**
Highway Safety Improvement Program
R.I. Contract No. 2006-ET-006

Dear Mr. Reiner:

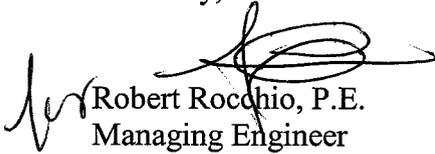
We are writing to you in regard to the proposed safety improvement project in the Town of North Kingstown at South County Trail (RI 2) at Ten Rod Road (RI 102)/Oatleys. This project is included in the Highway Safety Improvement Program (HSIP) for the Rhode Island Department of Transportation (RIDOT).

At our meeting on August 7, 2012 with Town officials, we discussed that the project would be presented to the Town Council at a future meeting. We agreed to transmit to you a project summary with technical project information for distribution to Council members in advance of the meeting. This project summary is attached for your use.

We would be pleased to present this project for review before the Town Council. Our preferred dates for Council presentation are September 24, October 1 or October 22. Please let us know which date works best for the Council.

If you have any questions or need further information please contact the Project Manager, Jeff Freudberg at 222-2694 ext. 4212.

Sincerely,

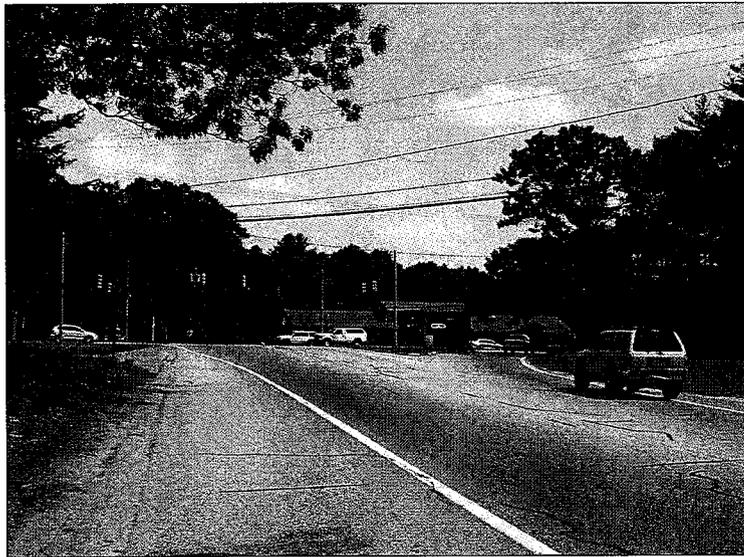

Robert Rocchio, P.E.
Managing Engineer
Traffic Engineering

RR/JGF

cc: Farhoumand, Smith, Traffic; file
Phil Bergeron, DPW Director

PROJECT SUMMARY

Rhode Island Department of Transportation
Highway Safety Improvement Program
High Hazard Intersections Contract 6 South
RIC/PTS; 2006 -ET-006



**South County Trail (RI 2 West Junction) At Ten Rod Road (RI 102) / Oatley's
North Kingstown, Rhode Island**

Prepared For
Rhode Island Department Of Transportation
Two Capitol Hill
Providence, RI 02903

Prepared By



GM2 Associates, Inc.
115 Glastonbury Blvd.
Glastonbury, CT 06033
Phone: 860-659-1416 / Fax: 860-657-2926

August, 2012

Project Summary
Route 102 at Route 2 and Oatley's Driveway
North Kingstown, Rhode Island

The Rhode Island Department of Transportation has in place a process for identifying and reviewing High Hazard Intersections. In 2005 RIDOT developed several study projects with multi-locations. GM2 was selected to analyze 15 locations as part of project 2006-ET-006 which was one of the several High Hazard study projects awarded in 2006. The intersection of Route 102 at Route 2 and Oatley's driveway was one of the locations.

GM2 obtained traffic counts, reviewed the accident experience from January 1 2003 to December 31 2005, obtained existing roadway plans, conducted field reviews, developed several concepts, analyzed the capacity and safety of the different concepts and recommended that a roundabout be constructed at the subject location to improve safety and traffic carrying capacity.

RIDOT discussed the preliminary roundabout concept with town officials, where there was agreement that because of the accident experience, some corrective action should be taken. GM2 proceeded to the design phase of the project and a Preliminary Design has been developed by GM2 and forwarded to RIDOT for review.

During this process, the owner of the property where Oatley's now stands has proposed a multiuse development with an access on the proposed roundabout. The proposal has not been through the formal Town approval process, however, a concept plan has been developed and a traffic study prepared by the developer's traffic engineer.

GM2 has reviewed the traffic report and reevaluated the capacity of the proposed roundabout based on the projected volumes from the development and the projected increase in background traffic.

RIDOT also requested GM2 to review more recent accident experience to determine if recent changes at the signalized intersection have resulted in an improvement in safety.

In summary:

- A significant number of accidents continue to occur at the subject location.
- A roundabout will significantly reduce the number of accidents occurring at the subject location.
- The proposed geometry of the roundabout can geometrically accommodate the proposed driveway to the development.
- The proposed roundabout can accommodate future background traffic volumes on Route 2 and Route 102 and the proposed traffic from the development.

Attached are the following:

- Collision Diagram from 1/1/2003 to 12/31/2005
- Collision Diagram from 7/1/2009 to 7/13/2012
- Crash Analysis July 2009 to July 2012
- Volume diagram AM peak
- Volume diagram PM peak
- Capacity analysis for different conditions
- Preliminary plan of the proposed geometry superimposed over an aerial image of the area.



OATLEY'S DRIVE

HOUSE DRIVE

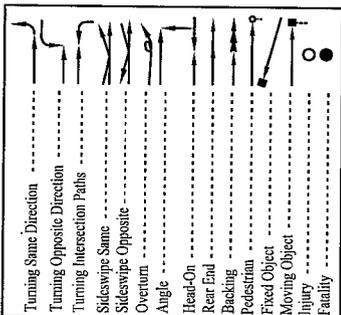
DRIVE/
PARKING LOT

RI 102 & RI 2

5/25/03 11:46a Sun Daylight Dry
 2/01/04 07:57a Tue Daylight Dry
 7/28/03 06:10p Mon Daylight Dry
 11/05/03 12:05p Wed Daylight Wet
 12/07/04 06:58a Tue Dawn Wet
 3/18/04 08:00a Thu Daylight Wet
 10/27/04 06:48a Wed Dawn Dry
 12/17/04 10:18a Sat Daylight Ice
 6/07/03 10:36a Sat Daylight Dry
 2/27/03 08:33p Thu Daylight Dry
 3/03/03 06:19p Mon Dark (Light) Dry
 6/01/03 01:43p Sun Daylight Wet
 6/20/03 10:43a Fri Daylight Dry
 11/04/03 02:45p Tue Daylight Dry
 8/22/03 12:00p Fri Daylight Dry
 12/05/03 07:22p Fri Dark (Light) Snow or Sli
 5/14/05 12:58p Sat Daylight Dry
 8/23/05 08:25a Thu Daylight Wet
 6/20/05 02:45p Mon Daylight Dry
 8/29/05 07:18a Mon Daylight Wet
 2/04/05 05:24p Fri Dark Wet
 2/10/05 02:50p Thu Daylight Dry
 5/07/05 08:40p Sat Dark (NL) Wet
 10/03/03 04:04p Fri Daylight Dry
 1/31/04 11:02a Sat Daylight Dry
 8/29/04 01:12p Sun Daylight Dry
 3/15/03 06:23p Sat Dark (NL) Dry
 1/30/03 07:45a Thu Daylight Snow or Sli
 8/29/04 01:12p Sun Daylight Dry

TEN ROD ROAD (102)

5/30/05 11:54a Mon Daylight Dry
 6/27/03 03:46p Fri Daylight Dry
 6/29/03 04:28p Sun Daylight Dry
 7/24/03 05:22p Thu Daylight Dry
 1/30/03 11:30a Thu Daylight Wet
 7/23/04 05:14p Fri Daylight Dry
 9/04/05 11:57a Sun Daylight Dry
 10/16/05 02:23p Sun Daylight Dry



DRAWING NOT TO SCALE

SOUTH COUNTRY TRAIL (RI 2)
 11/17/03 2:37a Mon Dark Dry
 3/09/03 08:00a Sun Daylight Wet
 11/00/03 11:00a Thu Daylight Snow or Sli
 7/10/03 11:00a Thu Daylight Snow or Sli
 11/00/03 11:00a Thu Daylight Snow or Sli
 11/00/03 11:00a Thu Daylight Snow or Sli

CRASH SUMMARY

TOTAL CRASHES	48
PROPERTY DAMAGE	31
INJURY	17
FIXED OBJECT	4
PEDESTRIAN	0
DRY ROAD	16
WET / ICY ROAD	15
DAY TIME	22
DAWN / DUSK	2
NIGHT TIME	7
FIXED OBJECT	0
PEDESTRIAN	0
DRY ROAD	15
WET / ICY ROAD	2
DAY TIME	15
DAWN / DUSK	1
NIGHT TIME	1

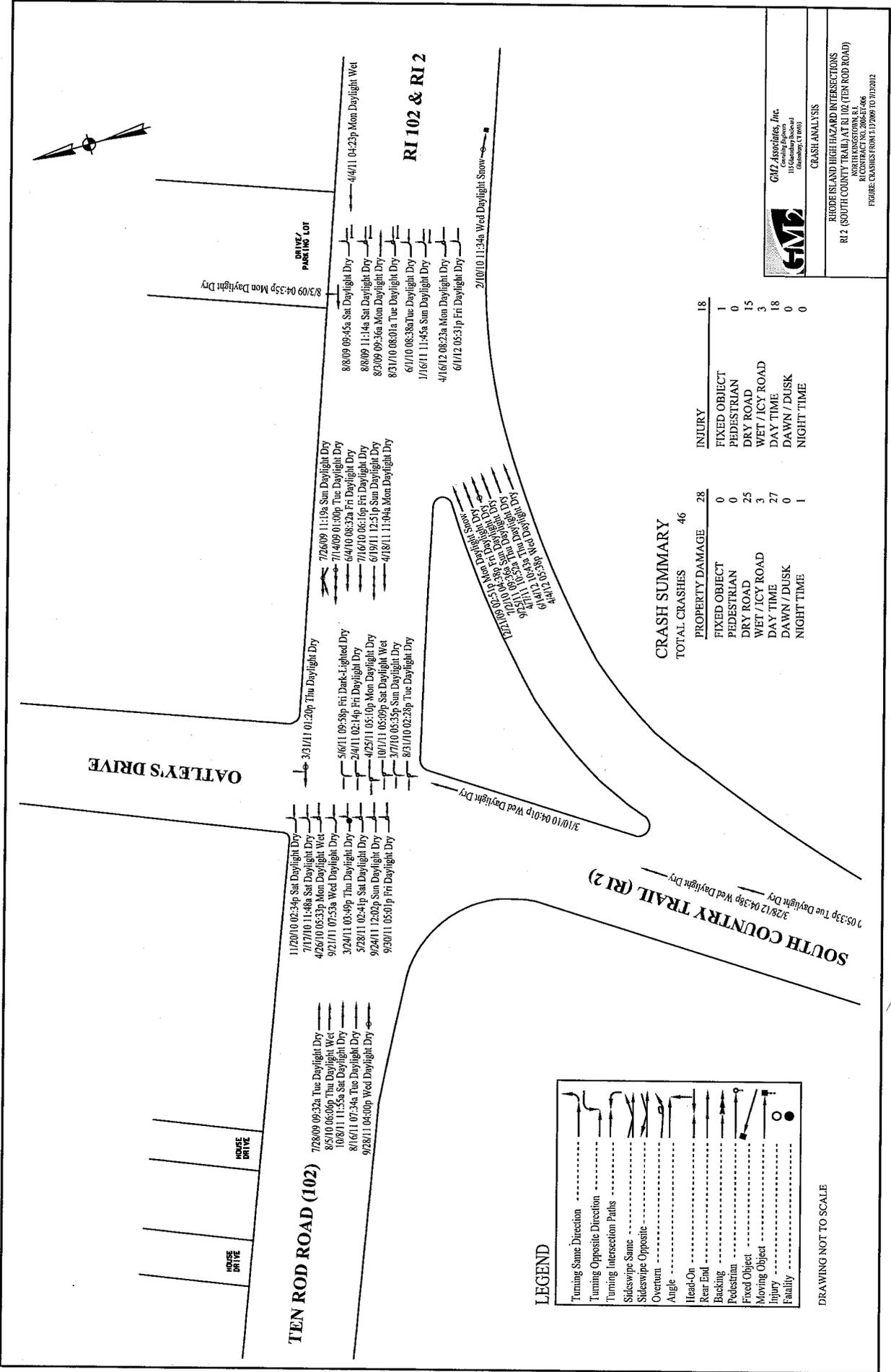


GMD Associates, Inc.
 Consulting Engineers
 115 Glastonbury Boulevard
 Glastonbury, CT 06033

CRASH ANALYSIS

RHODE ISLAND HIGH HAZARD INTERSECTIONS
 RI 2 (SOUTH COUNTRY TRAIL) AT RI 102 (TEN ROD ROAD)
 NORTH HAVEN, CONNECTICUT
 RI CONTRACT NO. 2006-ET-006

FIGURE: CRASHES FROM 1/1/2003 TO 12/31/2005



TEN ROD ROAD (102)

- 728/09 09:32a Tue Daylight Dry
- 8/5/10 06:00p Thu Daylight Wet
- 10/8/11 11:35a Sat Daylight Dry
- 8/16/11 07:34a Tue Daylight Dry
- 9/28/11 04:00p Wed Daylight Dry

- 11/20/10 02:34p Sat Daylight Dry
- 7/17/10 11:48a Sat Daylight Dry
- 4/26/10 05:33p Mon Daylight Wet
- 9/21/11 07:53a Wed Daylight Dry
- 3/24/11 08:49p Thu Daylight Dry
- 5/28/11 02:41p Sat Daylight Dry
- 9/28/11 12:00p Sun Daylight Dry
- 9/30/11 05:50p Fri Daylight Dry

- 3/31/11 01:20p Thu Daylight Dry
- 5/6/11 09:58p Fri Dark-Lighted Dry
- 2/4/11 02:14p Fri Daylight Dry
- 4/25/11 05:10p Mon Daylight Dry
- 10/1/11 05:09p Sat Daylight Wet
- 3/7/10 05:35p Sun Daylight Dry
- 8/31/10 02:28p Tue Daylight Dry

- 7/26/09 11:09p Sun Daylight Dry
- 7/14/09 01:50p Tue Daylight Dry
- 6/4/10 08:32a Fri Daylight Dry
- 7/16/10 06:10p Fri Daylight Dry
- 6/19/11 12:51p Sun Daylight Dry
- 4/18/11 11:04a Mon Daylight Dry

- 8/8/09 09:45a Sat Daylight Dry
- 8/8/09 11:44a Sat Daylight Dry
- 8/2/09 09:36a Mon Daylight Dry
- 8/31/10 08:01a Tue Daylight Dry
- 6/7/10 08:38a Tue Daylight Dry
- 1/16/11 11:45a Sun Daylight Dry
- 4/16/12 08:23a Mon Daylight Dry
- 6/1/12 05:31p Fri Daylight Dry

- 2/1/10 11:34a Wed Daylight Snow
- 1/21/09 02:51p Mon Daylight Dry
- 7/10/10 06:38p Fri Daylight Dry
- 7/10/10 06:38p Fri Daylight Dry
- 9/15/11 08:22a Thu Daylight Dry
- 6/14/12 10:43a Wed Daylight Dry
- 6/14/12 05:35p Wed Daylight Dry
- 4/14/12 05:35p Wed Daylight Dry

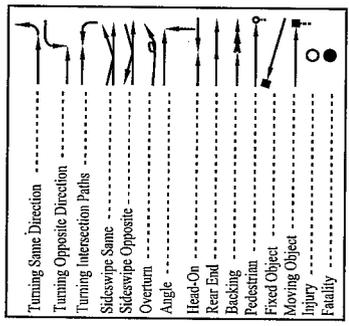
- 3/10/10 04:01p Wed Daylight Dry
- 3/28/12 04:38p Wed Daylight Dry
- 7/05/30p Tue Daylight Dry

RI 102 & RI 2

CRASH SUMMARY

TOTAL CRASHES	46
PROPERTY DAMAGE	28
INJURY	18
FIXED OBJECT	0
PEDESTRIAN	0
DRY ROAD	25
WET / ICY ROAD	3
DAY TIME	27
DAWN / DUSK	0
NIGHT TIME	1

LEGEND



DRAWING NOT TO SCALE



GMI Associates, Inc.
115 Clarendon Boulevard
Claremont, CT 06030

CRASH ANALYSIS

RHODE ISLAND HIGH HAZARD INTERSECTIONS
RI 2 (SOUTH COUNTRY TRAIL) AT RI 102 (TEN ROD ROAD)

CONTRACT NO. 2006-47-006
FIGURE: CRASHES FROM 1/17/2009 TO 7/13/2012

Crash Analysis
RI 2 (Old County Trail) at RI 102 (Ten Rod Road) and Oatley's Driveways

RIDOT provided crash experience from July 2009 to July 2012 for RI 2 at RI 102 and Oatley's Driveway. This information is summarized below.

All Crashes

Study Period	Property Damage	Injury	Fatality	Total
7/13/09 – 12/31/09	5	3		8
1/1/10 – 12/31/10	10	4		14
1/1/11 – 12/31/11	9	9	1	19
1/1/12 - 7/13/12	4	1		5

1/1/03- 12/31/05 The three year crash experience in the original study had 48 crashes total. The above crash experience totals 46 crashes.

Crashes associated Oatley's Drives

Study Period	West Drive	East Drive	Total
7/13/09 – 12/31/09	0	4	4
1/1/10 – 12/31/10	3	2	5
1/1/11 – 12/31/11	6*	1	7
1/1/12 - 7/13/12	0	2	2

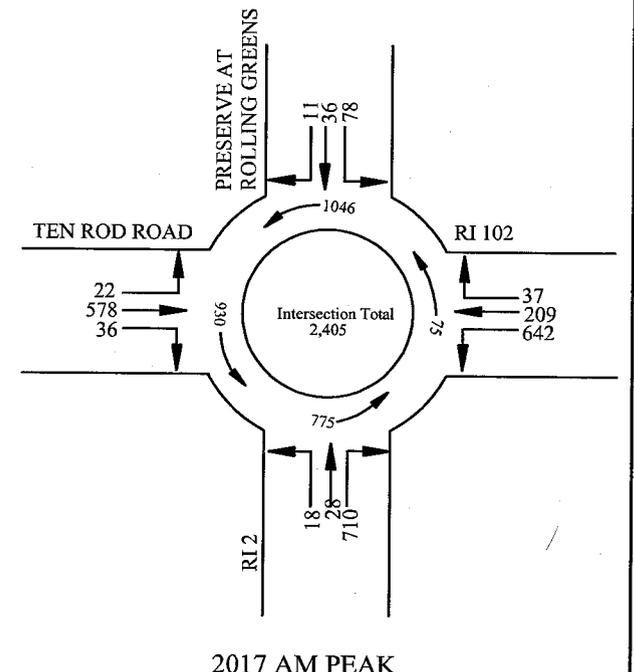
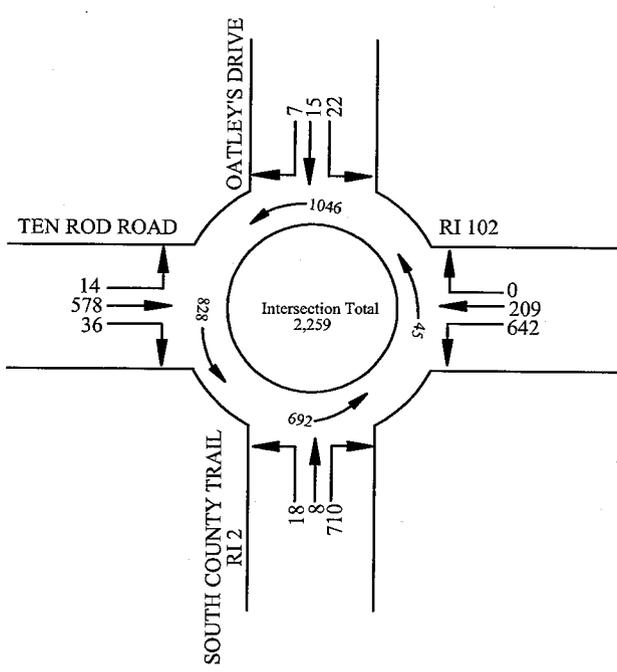
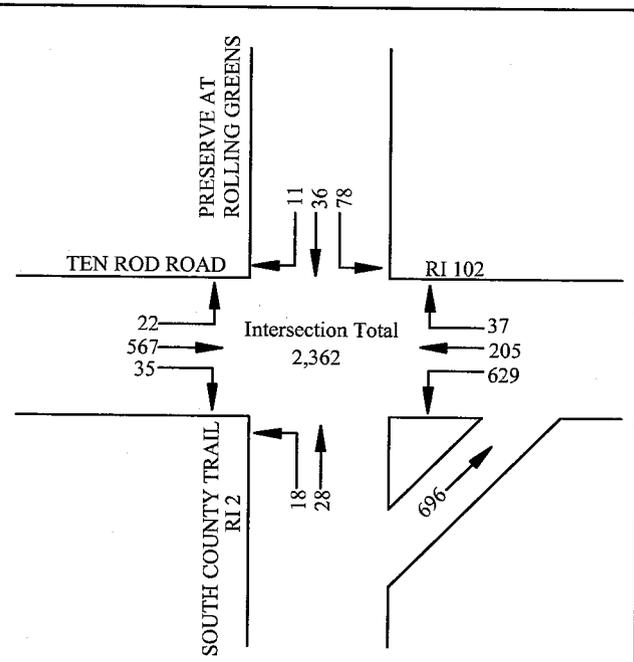
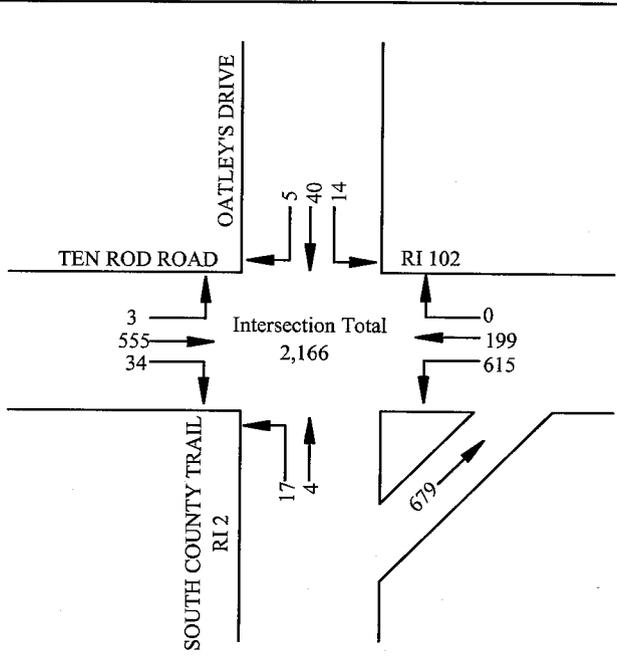
*Fatality 3/24/11

Left Turn Crashes from westbound to southbound

Study Period	Property Damage	Injury	Fatality	Total
7/13/09 – 12/31/09	0	0	0	0
1/1/10 – 12/31/10	1	1	0	2
1/1/11 – 12/31/11	1	3	0	4
1/1/12 - 7/13/12	0	0	0	0

Crash Trends

- There has been an overall increase in crashes in the study period.
- There has been an overall increase in injury crashes in the study period.
- There has been an overall increase in crashes associated with Oatley's driveways in the study period.
- There has been an overall increase in left turning crashes in the study period.



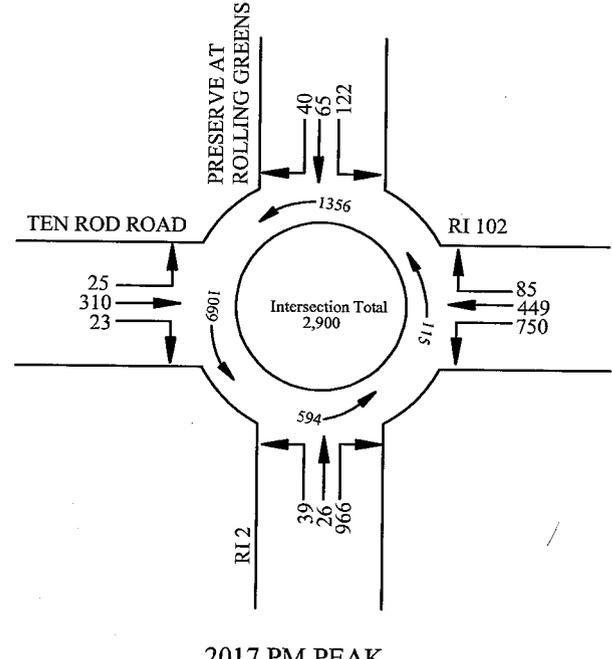
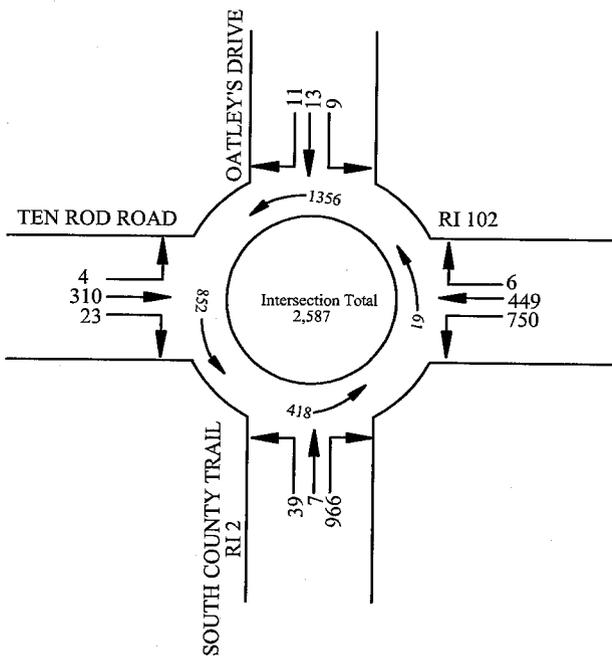
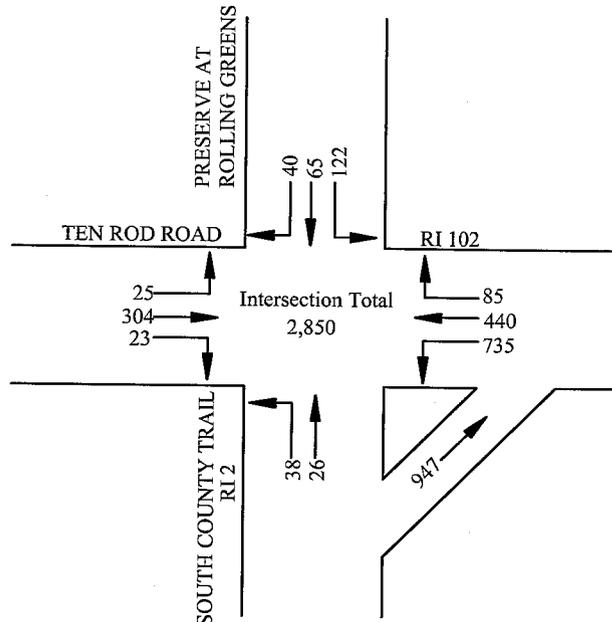
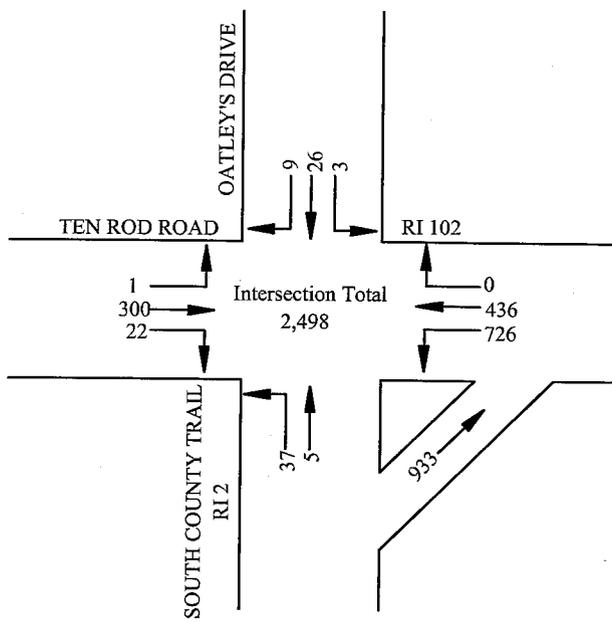
DRAWING NOT TO SCALE

VOLUME DIAGRAM: AM PEAK



GM2 Associates, Inc.
 Consulting Engineers
 730 Hebron Avenue
 Glastonbury, CT 06033

RHODE ISLAND HIGH HAZARD INTERSECTIONS
 RI 2 & RI 102
 R.I. CONTRACT NO. 2006-ET-006
 N. Kingstown Rhode Island



DRAWING NOT TO SCALE

VOLUME DIAGRAM: PM PEAK



GM2 Associates, Inc.
 Consulting Engineers
 730 Hebron Avenue
 Glastonbury, CT 06033

RHODE ISLAND HIGH HAZARD INTERSECTIONS
 RI 2 & RI 102

R.I. CONTRACT NO. 2006-ET-006

N. Kingstown

Rhode Island

**Ten Rod Road (RI 2/RI102) at South County Trail (RI 2)
AM Peak Hour – LOS (Delay) Summary**

Approach	2012 Existing (Signalized) without Development	2015 No Build (Signalized) with Development*	2017 Build (Roundabout) without Development	2017 Build (Roundabout) with 1 lane out of Development	2017 Build (Roundabout) with 2 lanes out of Development
Overall Intersection	D (44.2)	D (53.2)	B (13.2)	C (15.1)	B (14.9)
Ten Rod Rd Eastbound	C (26.8)	C (28.3)	C (16.7)	C (19.8)	C (19.8)
Ten Rod Rd Westbound	E (57.7)	E (74.5)	A (9.0)	A (9.8)	A (9.8)
South County Trail Northbound	C (32.4)	C (33.6)	C (15.7)	C (18.6)	C (18.6)
Oatley's or Preserve at Rolling Greens Southbound	C (34.0)	D (36.8)	A (8.2)	B (11.3)	A (9.1)

*Results from Traffic Impact Study report prepared by Bryant Associates, Inc. prepared for ML Hawk Realty, LLC dated October 2010 (revised May 2012).

**Ten Rod Road (RI 2/RI102) at South County Trail (RI 2)
PM Peak Hour – LOS (Delay) Summary**

Approach	2012 Existing (Signalized) without Development	2015 No Build (Signalized) with Development*	2017 Build (Roundabout) without Development	2017 Build (Roundabout) with 1 lane out of Development	2017 Build (Roundabout) with 2 lanes out of Development
Overall Intersection	B (18.4)	C (30.0)	B (13.7)	C (19.9)	C (18.7)
Ten Rod Rd Eastbound	C (25.3)	C (29.2)	B (11.3)	C (15.1)	C (15.1)
Ten Rod Rd Westbound	B (15.3)	C (28.9)	B (12.0)	C (15.2)	C (15.2)
South County Trail Northbound	C (33.0)	C (33.7)	C (16.7)	D (25.1)	D (25.1)
Oatley's or Preserve at Rolling Greens Southbound	C (25.6)	D (35.2)	B (10.1)	D (29.4)	C (15.8)

*Results from Traffic Impact Study report prepared by Bryant Associates, Inc. prepared for ML Hawk Realty, LLC dated October 2010 (revised May 2012.).

**Highway Capacity Manual 2010 Level of Service (LOS) Criteria for
Vehicles in Roundabout**

Control Delay (s/veh)	LOS*
0-10	A
>10-15	B
>15-25	C
>25-35	D
>35-50	E
>50	F

* LOS = F if volume to capacity ratio of a lane exceeds 1.0 regardless of the control delay.

**Highway Capacity Manual 2010 Level of Service (LOS) Criteria for
Vehicles at a Signalized Intersection**

Control Delay (s/veh)	LOS*
≤10	A
>10-20	B
>20-35	C
>35-55	D
>55-80	E
>80	F

* LOS = F if volume to capacity ratio of a lane exceeds 1.0 regardless of the control delay.

