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Accident Reconstruction
and
Traffic Engineering

August 30, 2022

Chairman Angelo Caputo
Members of the Pequannock Township Planning Board
Municipal Courtroom
530 Newark-Pompton Turnpike
Pompton Plains, NJ 07444-1799

Re: **TRAFFIC IMPACT ASSESSMENT**
Proposed Cannabis Cultivation Facility
30 Hillview Road
Block 3803, Lot 20
Block 4201, Lots 1 & 2
Pequannock Township, NJ
JDA No. 7387-22

Dear Chairman Caputo and Members of the Pequannock Township Planning Board:

John Desch Associates, Inc., (JDA here-in) has completed its traffic impact analysis for the above referenced project. As part of our analysis we have reviewed the existing traffic conditions, site access, traffic generation projections, and traffic impact(s) related to aspects of the proposed development. The project proposed by the Applicant, Hillview Med, is for the redevelopment of an existing garden center, nursery and greenhouse(s) into a cannabis cultivation facility. This letter documents the findings of our study.

Site Plans

Plans prepared by Darmofalski Engineering Associates, Inc., dated July 15, 2022, were reviewed as part of our analysis. The project site is located at property #30 Hillview Road in Pequannock Township, Morris County, New Jersey. This property is further identified as Block 3803, Lot 20 and Block 4201, Lots 1 & 2. This site is located along Hillview Road, approximately 0.7 miles south of Jacksonville Road (CR-504) and approximately 1.4 miles north of US Route 202.

The Applicant is proposing to redevelop the approximately $\pm 120,000$ sf of existing garden center, nursery and greenhouse(s) space into an approximately $\pm 204,029$ sf cannabis cultivation facility. This facility will be comprised of a cultivation space (173,122 sf),

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warehouse (13,973 sf), office (9,439 sf) and utility building (7,495 sf). Access to the facility is proposed via two (2) existing site driveways located along the north and south sides of the property.

2022 Existing Conditions

Hillview Road

There is no New Jersey Department of Transportation (NJDOT) Straight Line Diagram available for the portion of Hillview Road within Pequannock Township. However, we were able to glean some information for the portion of the roadway segment within Lincoln Park Borough, identified as Beaver Brook Road, for which a diagram is available. This Straight Line Diagram (*last inventoried November 2013*) identifies the roadway as an "Urban Major Collector" under the municipal jurisdiction. Per the Straight Line Diagram and our field observations, the roadway has a posted speed limit of 40 MPH. This asphalt roadway has a general north-south orientation. One (1) travel lane is provided in each direction along the site frontage, providing for a minimum pavement width of approximately 24 feet. No shoulder lanes are present in the study area and guiderail is present throughout both sides of the roadway segment. At its intersection with Jacksonville Road, Hillview Road serves as the minor approach and is governed by STOP Control.

Jacksonville Road (CR-504)

Per the available New Jersey Department of Transportation (NJDOT) Straight Line Diagram (*last inventoried June 2012*), Jacksonville Road is classified as an "Urban Minor Arterial" roadway under the jurisdiction of Morris County. Per the Straight Line Diagram, the posted speed limit is 40 mph. This asphalt roadway has a general east-west orientation. Jacksonville Road provides one (1) travel lane in each direction, and a minimum pavement width of 24 feet. At the STOP Controlled intersection with Hillview Road, Jacksonville Road forms eastbound and westbound legs of a T-intersection and is considered the major approach.



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2022 Existing Traffic Volumes

In order to better understand the existing traffic conditions along the adjacent roadway network and intersection(s), our office conducted manual turning movement counts (MTMC) for the Weekday AM and PM Peak Periods, as requested by the Board's Engineer. Traffic data was collected at the intersection created by Hillview Road and the north site driveway for the existing land use and at the STOP Controlled T-intersection of Hillview Road & Jacksonville Road, located north of the site. Data collection was not performed at the south site driveway as this access point is only utilized by larger wheelbase vehicles unable to use the north driveway and may be gated off as needed. These weekday traffic counts were performed between the hours of 7:00 a.m. to 9:00 a.m. and 4:00 p.m. to 6:00 p.m., on Wednesday, August 17, 2022. Based upon the data collected, we observed an AM Peak Hour of 8:00 a.m. to 9:00 a.m. and a PM Peak Hour of 4:30 p.m. to 5:30 p.m. at the intersection formed by the north site driveway and Hillview Road. At the intersection of Hillview Road & Jacksonville Road we observed the PM Peak Hour was 15-minutes later than the north site driveway, at 4:45 p.m. to 5:45 p.m. The AM Peak Hour was the same for both count locations. The traffic count printouts are attached in the Appendix.

Tables 1 & 2 on the following page provide a summary of our peak hour volume data:



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Table 1

2022 Weekday Peak Hour Volumes - Hillview Road & Site Driveway

	Hillview Road - SB				#30 Hillview Road North Dwy - WB				Hillview Road - NB				#325 Hillview Road Dwy - EB			
Time	L	T	R	Ped	L	T	R	Ped	L	T	R	Ped	L	T	R	Ped
8:00	0	33	0	0	0	0	0	0	0	26	0	0	0	0	0	0
8:15	0	33	0	0	0	0	0	0	0	18	0	0	0	0	0	0
8:30	0	33	0	0	0	0	0	0	0	13	0	0	0	0	0	0
8:45	0	46	0	0	0	0	1	0	0	29	0	0	0	0	0	0
Mvmt Tot	0	145	0	0	0	0	1	0	0	86	0	0	0	0	0	0
App Tot	145				1				86				0			
16:30	1	28	0	0	0	0	0	0	1	48	0	0	0	0	1	0
16:45	0	40	0	0	1	0	1	0	0	55	0	0	0	0	0	0
17:00	2	19	0	0	0	0	0	0	0	72	0	0	0	0	0	0
17:15	0	32	0	0	0	0	2	0	0	64	0	0	0	0	0	0
Mvmt Tot	3	119	0	0	1	0	3	0	1	239	0	0	0	0	1	0
App Tot	122				4				240				1			

L = Left T = Thru R = Right Ped = Pedestrian

Table 2

2022 Weekday Peak Hour Volumes - Hillview Road & Jacksonville Road

	No Approach - SB				Jacksonville Road - WB				Hillview Road - NB				Jacksonville Road - EB			
Time	L	T	R	Ped	L	T	R	Ped	L	T	R	Ped	L	T	R	Ped
8:00	0	0	0	0	28	37	0	0	9	0	15	0	0	35	8	0
8:15	0	0	0	0	21	44	0	0	4	0	14	0	0	34	9	0
8:30	0	0	0	0	22	33	0	0	4	0	9	0	0	35	13	0
8:45	0	0	0	0	32	30	0	0	4	0	24	0	0	55	18	0
Mvmt Tot	0	0	0	0	103	144	0	0	21	0	62	0	0	159	48	0
App Tot	0				247				83				207			
16:45	0	0	0	0	28	53	0	0	20	0	38	0	0	50	16	0
17:00	0	0	0	0	15	39	0	0	14	0	55	0	0	61	11	0
17:15	0	0	0	0	27	45	0	0	18	0	51	0	0	47	15	0
17:30	0	0	0	0	26	54	0	0	14	0	35	0	0	45	16	0
Mvmt Tot	0	0	0	0	96	191	0	0	66	0	179	0	0	203	58	0
App Tot	0				287				245				261			

L = Left T = Thru R = Right Ped = Pedestrian



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Additional research was performed using the NJDOT Roadway Information and Traffic Monitoring System Program to see if there were any historic counts available adjacent to the project site along Hillview Road. We did not observe any additional data points utilizing this reference.

Trip Generation

The number of vehicular trips that may be expected to be generated by a proposed facility are typically based on data contained in the Institute of Transportation Engineers (ITE), *Trip Generation Manual, 11th Edition*. The data contained in this publication is derived from studies of trips generated by similar facilities throughout the country. It is our understanding that the proposed site will be occupied by an approximately $\pm 204,029$ sf cannabis cultivation facility, comprised of a cultivation space (173,122 sf), warehouse (13,973 sf), office (9,439 sf) and utility building (7,495 sf). In order to provide as conservative analysis as reasonable, we examined each land use proposed on site separately, providing trip generation figures for each. Realistically, the site would not function in this manner as all uses on site are ancillary to the cannabis cultivation facility. Trip generation projections are shown in the tables below along with the trip rates for the existing land use for comparison. We have also included trip generation figures from both the past and current property owner(s) for comparison with the ITE rates.

Table 3
Trip Generation Figures - Existing Conditions

EXISTING CONDITIONS				
PEAK HOUR PERIOD		LUC 817: Nursery (Garden Center); 120.0 ksf [ITE]	LUC 818: Nursery (Wholesale); 120.0 ksf [ITE]	Nursery (Garden Center) 120.0 ksf [GroRite Data]
AM	ENTER	146	145	35
	EXIT	146	144	35
	TOTAL	292	289	70
PM	ENTER	417	315	35
	EXIT	416	314	35
	TOTAL	833	629	70



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We gleaned two potential uses from the ITE Reference, shown above, which would provide suitable trip generation figures for the existing land use. Both sets of figures are presented for reference, however, it is our opinion that LUC 817: Nursery (Garden Center) would be most applicable to the existing conditions as the previous operation provided both wholesale service and was open to the general public.

The data provided by GroRite is based upon one (1) work shift on Monday through Thursday, from 8 a.m. to 6 p.m., with an average of fifty (50) employees on shift. During this period of time, the former operator indicated that the site may see up to four (4) tractor-trailers per day, eight (8) box trucks per day, and an average of three-hundred (300) customers per weekday. Based upon these figures, we conservatively estimated a 10% distribution of the daily volume to the AM and PM Peak Hours, as exhibited in Table 3 above. This distribution is based upon the ten (10) hours of operation from 8 a.m. to 6 p.m. Realistically, this estimate may be high as employee and delivery vehicles typically arrive and depart outside of peak hours.

Table 4
Trip Generation Figures – Proposed Conditions

PROPOSED CONDITIONS						
PEAK HOUR PERIOD		LUC 190: Marijuana Cultivation and Processing Facility; 173.13 ksf [ITE]	LUC 150: Warehousing; 13.98 ksf [ITE]	LUC 712: Small Office; 9.44 ksf [ITE]	LUC 170: Utility; 7.5 ksf [ITE]	Hillview Medical Data; 204.0 ksf [Hillview Data]
AM	ENTER	111	10	13	15	21
	EXIT	8	5	3	2	2
	TOTAL	119	15	16	17	23
PM	ENTER	31	3	7	3	6
	EXIT	80	8	13	13	17
	TOTAL	111	11	20	16	23

Table 4 shows the projected traffic volumes for the proposed use. We elected to utilize the peak hour rates for the peak of the adjacent street traffic as these figures represent the highest traffic volumes which would be expected during “rush hour.” Additionally, in



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order to be conservative, we examined each land use separately providing trip generation figures for each even though all uses on site are ancillary to the cannabis cultivation facility.

Similarly, the data provided by Hillview Med is based upon one (1) work shift per weekday, from 8 a.m. to 4 p.m., with an average of eighty-five (85) employees on shift. During this period of time, the operator indicated that the site may expect up to two (2) tractor-trailers per day, two (2) box trucks per day, and five (5) transit vans per day. This facility would not be open to the public and thus would not see any additional vehicles outside of employees or other outside parties by appointment. Based upon these figures, we conservatively estimated a 12.5% distribution of the daily volume to the AM and PM Peak Hours, as exhibited in Table 4 above. This distribution is based upon the eight (8) hours of operation from 8 a.m. to 4 p.m. As stated above for the GroRite facility, this estimate may also be high as employee and delivery vehicle arrival and departure would typically occur outside of peak hours. Additionally, when considering the AM and PM Peak Hours observed from our traffic volumes and the facility's proposed hours of operation, the majority of traffic to the site would arrive prior to the AM Peak Hour and be leaving the site just prior to the beginning of the PM Peak Hour.

Table 5
Trip Generation Figures – Comparison of ITE Figures

COMPARISON: EXISTING V. PROPOSED (ITE FIGURES)				
PEAK HOUR PERIOD		EXISTING	PROPOSED	Difference (Δ)
AM	TOTAL	292	167	-125
PM	TOTAL	833	158	-675

Table 6
Trip Generation Figures – Comparison of End-User Figures

COMPARISON: EXISTING V. PROPOSED (End-User FIGURES)				
PEAK HOUR PERIOD		EXISTING	PROPOSED	Difference (Δ)
AM	TOTAL	70	23	-47
PM	TOTAL	70	23	-47



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We note from Tables 5 & 6 above that when comparing either the ITE figures or the figures provided by the property owner/operator, that a reduction in trips generated by the site may be expected from the existing to the proposed conditions.

Sight Distance

The American Association of State Highway and Transportation Officials (AASHTO) provides designers, planners and engineers with guidelines for sight distance in order to help reduce conflicts and improve the efficiency and safety of traffic along roadways and through intersections. Stopping Sight Distance may be defined as the measure of distance provided along an approach, to an approaching driver, where the driver is provided an unobstructed view of the traffic conditions ahead. AASHTO further indicates that as long the sight distance provided to a driver entering an intersection from the minor street approach is at least equal to the appropriate stopping sight distance for the major street approach, then drivers are considered to have sufficient sight distance to avoid or anticipate a collision. In some instances, it may be required for the vehicle on the major street approach to slow or stop in order to accommodate a vehicle entering the roadway.

AAHSTO guidelines indicate that for a design speed of 45 mph a minimum stopping sight distance of 360 feet is desirable. The provided site plans indicate within the Sight Distance Exhibit on sheet 31 that a minimum distance of 360 feet would be provided for a stopped left turning vehicle at the existing site driveways, looking both north and south along Hillview Road.

Conclusions

Based on the foregoing analysis, it is the professional opinion of John Desch Associates, Inc., to a reasonable degree of engineering certainty, that the introduction of traffic generated by the proposed project will not impact the continuity of traffic flow along Hillview Road or at the STOP Controlled intersection of Hillview Road & Jacksonville

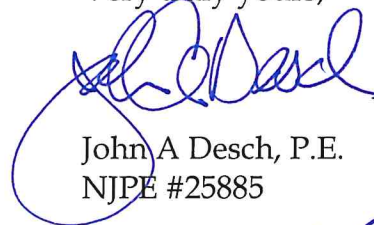


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Road, and will likely provide a reduction in trips generated by the site. Access to the site would be provided via two (2) existing site driveways, which provide ample geometry for the vehicles expected to access the site, as well as suitable sight distance.

We will be available to testify before the Board regarding our analysis and report.

Very truly yours,



John A. Desch, P.E.
NJPE #25885



Gary K. Anderson, P.E.
NJPE #45110

GKA/JDR/gt

Attachments: Site Location Map
Aerial Image
Traffic Count Printouts
NJDOT Straight Line Diagrams
ITE Trip Generation References
Curriculum Vitae of Report Authors

cc: Thomas A. Boorady, P.E.
Chris Carbone



SITE LOCATION MAP

SITE LOCATION

Greenview
Park



30 Hillview Rd,
Pequannock Township...

Beaverbrook Rd

Greenview Dr

East Ditch



JOHN DESCH ASSOCIATES, INC.
ACCIDENT RECONSTRUCTION AND
TRAFFIC ENGINEERING

SITE LOCATION MAP

STREET LOCATION
30 HILLVIEW ROAD

TOWN AND STATE
PEQUANNOCK, NEW JERSEY

MAP SCALE
"NTS"

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AERIAL IMAGE



JOHN DESCH ASSOCIATES, INC.
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AERIAL IMAGE

STREET LOCATION
30 HILLVIEW ROAD

TOWN AND STATE
PEQUANNOCK, NEW JERSEY

MAP SCALE
"NTS"

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TRAFFIC COUNT PRINTOUTS

Date	TOTAL															15-Min Tot	Hr Tot	PHF		
	Hillview Road - SB					#30 Hillview Road North Dwy - WB					Hillview Road - NB								#325 Hillview Road Dwy - EB	
Time	U	L	T	R	P	U	L	T	R	P	U	L	T	R	P	U	L	T	R	P
7:00	0	1	19	0	0	0	0	0	0	0	0	0	9	0	0	0	0	0	0	0
7:15	0	1	21	0	0	0	0	0	0	0	0	0	21	0	0	0	0	0	0	0
7:30	0	0	23	0	0	0	1	0	1	0	0	0	19	1	0	0	0	0	0	0
7:45	0	1	34	1	0	0	1	0	3	0	0	0	20	0	0	0	0	0	0	0
8:00	0	0	33	0	0	0	0	0	0	0	0	0	26	0	0	0	0	0	0	0
8:15	0	0	33	0	0	0	0	0	0	0	0	0	18	0	0	0	0	0	0	0
8:30	0	0	33	0	0	0	0	0	0	0	0	0	13	0	0	0	0	0	0	0
8:45	0	0	46	0	0	0	0	0	1	0	0	0	29	0	0	0	0	0	0	0
Mvmt Tot	0	3	242	1	0	0	2	0	5	0	0	0	155	1	0	0	0	0	0	0
App Tot			246				7		156											
8/17/2022	16:00	0	2	44	0	0	0	0	0	0	0	0	51	0	0	0	0	0	0	0
	16:15	0	0	32	0	0	1	0	1	0	0	0	40	2	0	0	0	0	0	0
	16:30	0	1	28	0	0	0	0	0	0	0	1	48	0	0	0	0	1	0	0
	16:45	0	0	40	0	0	1	0	1	0	0	0	55	0	0	0	0	0	0	0
	17:00	0	2	19	0	0	0	0	0	0	0	0	72	0	0	0	0	0	0	0
	17:15	0	0	32	0	0	0	0	2	0	0	0	64	0	0	0	0	0	0	0
	17:30	0	0	32	0	0	0	0	0	0	0	0	42	0	0	0	0	0	0	0
	17:45	0	0	38	0	0	0	0	0	0	0	1	44	0	0	0	0	0	0	0
	Mvmt Tot	0	5	265	0	0	2	0	4	0	0	0	416	2	0	0	0	1	0	0
	App Tot			270			6		420									1		

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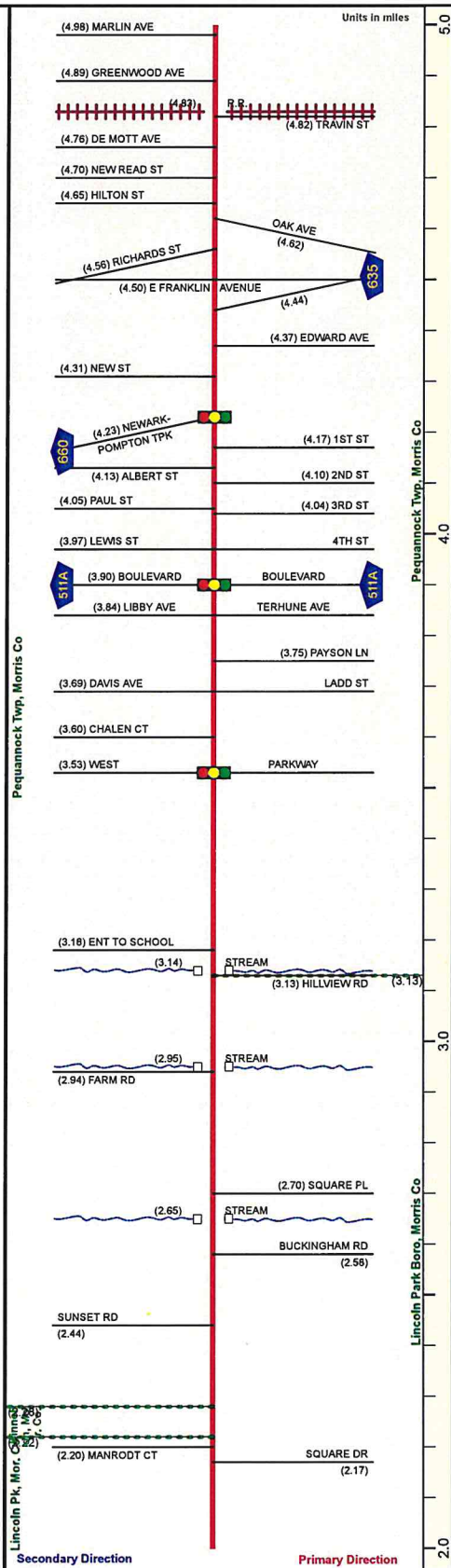
Date	PEAK HOURS																					
	Hillview Road - SB						#30 Hillview Road North Dwy - WB						Hillview Road - NB				#325 Hillview Road Dwy - EB					
	Time	U	L	T	R	P	U	L	T	R	P	U	L	T	R	P	U	L	T	R	P	
8/17/2022	8:00	0	0	33	0	0	0	0	0	0	0	0	0	0	26	0	0	0	0	0	0	0
	8:15	0	0	33	0	0	0	0	0	0	0	0	0	0	18	0	0	0	0	0	0	0
	8:30	0	0	33	0	0	0	0	0	0	0	0	0	0	13	0	0	0	0	0	0	0
	8:45	0	0	46	0	0	0	0	0	1	0	0	0	0	29	0	0	0	0	0	0	0
	Mvmt Tot	0	0	145	0	0	0	0	0	1	0	0	0	0	86	0	0	0	0	0	0	0
	App Tot			145					1						86				0			
8/17/2022	16:30	0	1	28	0	0	0	0	0	0	0	0	1	48	0	0	0	0	0	1	0	0
	16:45	0	0	40	0	0	0	0	1	0	0	0	0	55	0	0	0	0	0	0	0	0
	17:00	0	2	19	0	0	0	0	0	0	0	0	0	72	0	0	0	0	0	0	0	0
	17:15	0	0	32	0	0	0	0	0	2	0	0	0	64	0	0	0	0	0	0	0	0
	Mvmt Tot	0	3	119	0	0	0	0	1	0	3	0	0	1	239	0	0	0	0	1	0	0
	App Tot			122					4						240				1			

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Date	Time	No Approach - SB					TOTAL Jacksonville Road - WB					Hillview Road - NB					Jacksonville Road - EB					15-Min Tot	Hr Tot	PHF
		U	L	T	R	P	U	L	T	R	P	U	L	T	R	P	U	L	T	R	P			
8/17/2022	7:00	0	0	0	0	0	0	11	32	0	0	0	4	0	7	0	0	0	30	7	0	91	451	
	7:15	0	0	0	0	0	0	15	26	0	0	0	5	0	11	0	0	0	20	6	0	83	492	
	7:30	0	0	0	0	0	0	18	34	0	0	0	5	0	20	0	0	0	42	15	0	134	535	
	7:45	0	0	0	0	0	0	26	41	0	0	0	7	0	18	0	0	0	40	11	0	143	517	
	8:00	0	0	0	0	0	0	28	37	0	0	0	9	0	15	0	0	0	35	8	0	132	537	0.824
	8:15	0	0	0	0	0	0	21	44	0	0	0	4	0	14	0	0	0	34	9	0	126	405	
	8:30	0	0	0	0	0	0	22	33	0	0	0	4	0	9	0	0	0	35	13	0	116	279	
	8:45	0	0	0	0	0	0	32	30	0	0	0	4	0	24	0	0	0	55	18	0	163	163	
	Mvmt Tot	0	0	0	0	0	0	173	277	0	0	0	42	0	118	0	0	0	291	87	0			
	App Tot	0					450					160					378							
8/17/2022	16:00	0	0	0	0	0	0	35	42	0	0	0	12	0	48	0	0	0	40	18	0	195	719	
	16:15	0	0	0	0	0	0	21	41	0	0	0	15	0	29	0	0	0	37	15	0	158	719	
	16:30	0	0	0	0	0	0	19	44	0	0	0	17	0	24	0	0	0	45	12	0	161	764	
	16:45	0	0	0	0	0	0	28	53	0	0	0	20	0	38	0	0	0	50	16	0	205	793	0.967
	17:00	0	0	0	0	0	0	15	39	0	0	0	14	0	55	0	0	0	61	11	0	195	758	
	17:15	0	0	0	0	0	0	27	45	0	0	0	18	0	51	0	0	0	47	15	0	203	563	
	17:30	0	0	0	0	0	0	26	54	0	0	0	14	0	35	0	0	0	45	16	0	190	360	
	17:45	0	0	0	0	0	0	21	44	0	0	0	20	0	26	0	0	0	38	21	0	170	170	
	Mvmt Tot	0	0	0	0	0	0	192	362	0	0	0	130	0	306	0	0	0	363	124	0			
	App Tot	0					554					436					487							

Date	Time	No Approach - SB										PEAK HOURS										Hillview Road - NB										Jacksonville Road - EB									
							Jacksonville Road - WB										Hillview Road - NB										Jacksonville Road - EB														
		U	L	T	R	P	U	L	T	R	P	U	L	T	R	P	U	L	T	R	P	U	L	T	R	P															
8/17/2022	8:00	0	0	0	0	0	0	28	37	0	0	0	9	0	15	0	0	0	35	8	0																				
	8:15	0	0	0	0	0	0	21	44	0	0	0	4	0	14	0	0	0	34	9	0																				
	8:30	0	0	0	0	0	0	22	33	0	0	0	4	0	9	0	0	0	35	13	0																				
	8:45	0	0	0	0	0	0	32	30	0	0	0	4	0	24	0	0	0	55	18	0																				
	Mvmt Tot	0	0	0	0	0	0	103	144	0	0	0	21	0	62	0	0	0	159	48	0																				
	App Tot	0					247					83					207																								
8/17/2022	16:45	0	0	0	0	0	0	28	53	0	0	0	20	0	38	0	0	0	50	16	0																				
	17:00	0	0	0	0	0	0	15	39	0	0	0	14	0	55	0	0	0	61	11	0																				
	17:15	0	0	0	0	0	0	27	45	0	0	0	18	0	51	0	0	0	47	15	0																				
	17:30	0	0	0	0	0	0	26	54	0	0	0	14	0	35	0	0	0	45	16	0																				
	Mvmt Tot	0	0	0	0	0	0	96	191	0	0	0	66	0	179	0	0	0	203	58	0																				
	App Tot	0					287					245					261																								

NJDOT STRAIGHT LINE DIAGRAMS



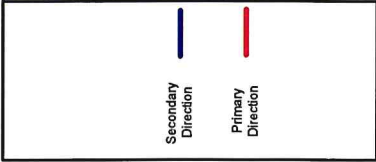
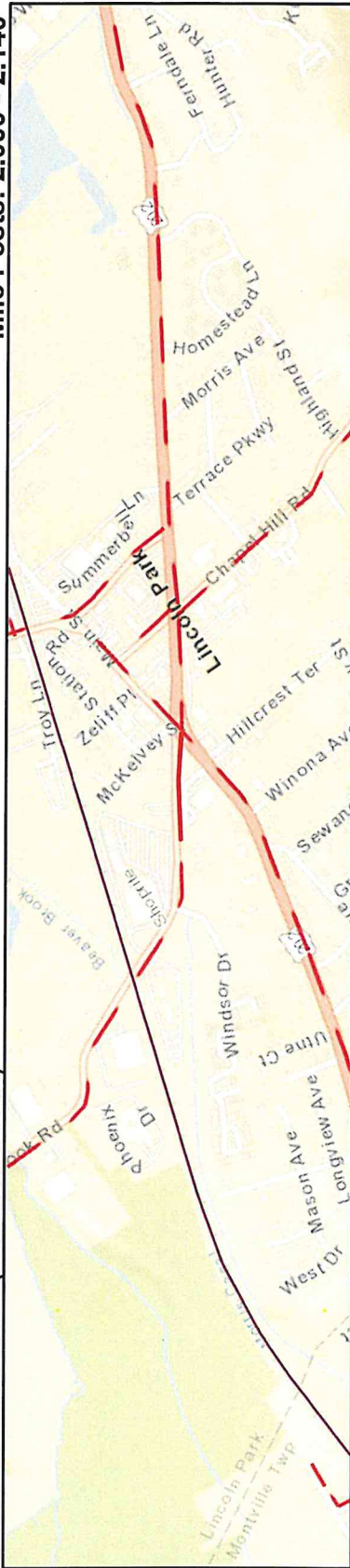
Street Name	Jacksonville Road				Newark Pompton Turnpike			
Jurisdiction								
Functional Class	Urban Minor Arterial							
Federal Aid - NHS Sys	STP							
Control Section								
Speed Limit	40						35	
Number of Lanes	2							
Med. Type	None							
Med. Width								
Pavement	24			34		30		38
Shoulder	1							
Traffic Volume								
Traffic Sta. ID								
Structure No.								
Enlarged Views								

SRI = 00000504

Date last inventoried: June 2012

BEAVER BROOK RD (North to South)

Mile Posts: 2.000 - 2.140



Pavement	
Shoulder	
Number of Lanes	
Speed Limit	
Street Name	
Interstate Route	Lincoln Pk, Mor. Co.
US Route	22
NJ Route	33
County Road	683
Interchange Number	2
Grade	
Separated Interchange	
Traffic Signal	
Traffic Monitoring Sites	
Road Underpass	
Road Overpass	
Dyn Msg Sign	
Street Name	Beaver Brook Road
Jurisdiction	Municipal
Functional Class	Urban Major Collector
Federal Aid - NHS Sy	STP
Control Section	
Speed Limit	40
Number of Lanes	2
Med. Type	None
Med. Width	
Pavement	40
Shoulder	
Traffic Volume	
Traffic Sta. ID	
Structure No.	
Enlarged Views	

Units in miles	0.0	1.0	2.0	3.0	4.0	5.0
Street Name	Beaver Brook Road					
Jurisdiction	Municipal					
Functional Class	Urban Major Collector					
Federal Aid - NHS Sy	STP					
Control Section						
Speed Limit	40					
Number of Lanes	2					
Med. Type	None					
Med. Width						
Pavement	40					
Shoulder						
Traffic Volume						
Traffic Sta. ID						
Structure No.						
Enlarged Views						

SRI = 14161183

Date last inventoried: November 2013

ITE TRIP GENERATION REFERENCES

NAME Nursery (Garden Center)
LUC 817
INTENSITY **120** KSF

AM PEAK HOUR (ADJ)
FORMULA $T=2.43(x)$
DIST. 50 IN, 50 OUT

IN	OUT	TOT
146	146	292

PM PEAK HOUR (ADJ)
FORMULA $T=6.94(x)$
DIST. 50 IN, 50 OUT

IN	OUT	TOT
417	416	833

NAME Nursery (Wholesale)
LUC 818
INTENSITY **120** KSF

AM PEAK HOUR
FORMULA $T=2.41(x)$
DIST. 50 IN, 50 OUT

IN	OUT	TOT
145	144	289

PM PEAK HOUR
FORMULA $T=5.24(x)$
DIST. 50 IN, 50 OUT

IN	OUT	TOT
315	314	629

NAME Marijuana Cultivation and Processing Facility

LUC 190

INTENSITY **173.13** KSF

AM PEAK HOUR (ADJ)

FORMULA $T=0.69(x)$

DIST. 93 IN, 7 OUT

IN	OUT	TOT
111	8	119

PM PEAK HOUR (ADJ)

FORMULA $T=0.64(x)$

DIST. 28 IN, 72 OUT

IN	OUT	TOT
31	80	111

NAME Small Office Building

LUC 712

INTENSITY **9.44** KSF

AM PEAK HOUR (ADJ)

FORMULA $T=1.67(x)$

DIST. 82 IN, 18 OUT

IN	OUT	TOT
13	3	16

PM PEAK HOUR (ADJ)

FORMULA $T=2.16(x)$

DIST. 34 IN, 66 OUT

IN	OUT	TOT
7	13	20

NAME Warehousing

LUC 150

INTENSITY **13.98** KSF

AM PEAK HOUR (ADJ)

FORMULA $T=1.08(x)$

DIST. 65 IN, 35 OUT

IN	OUT	TOT
10	5	15

PM PEAK HOUR (ADJ)

FORMULA $T=0.92(X)-1.63$

DIST. 25 IN, 75 OUT

IN	OUT	TOT
3	8	11

NAME Utility

LUC 170

INTENSITY **7.5** KSF

AM PEAK HOUR (ADJ)

FORMULA $T=2.33(x)$

DIST. 87 IN, 13 OUT

IN	OUT	TOT
15	2	17

PM PEAK HOUR (ADJ)

FORMULA $T=2.16(x)$

DIST. 18 IN, 82 OUT

IN	OUT	TOT
3	13	16

CURRICULUM VITAE OF REPORT AUTHORS

CURRICULUM VITAE

EDUCATION:

University of Dayton, Dayton, Ohio, B.S. in Civil Engineering, 1972
Northwestern University, Traffic Institute, Evanston, Illinois, 1988
Certificate in Traffic Accident Reconstruction
University of North Florida, Institute of Police Technology Management,
Seminars in Accident Reconstruction

ACCREDITATION:

State of New Jersey Professional Engineer, P.E. #25885
State of New York Professional Engineer, P.E. #082213
State of Pennsylvania Professional Engineer, P.E. #071482
State of Ohio Professional Engineer, P.E. #70630
Former Construction Official, Building Subcode Official and Building Inspector
I.C.S. License #001384
Full Accreditation: Accreditation Commission for Traffic Accident Reconstructionists
(ACTAR #46)

PROFESSIONAL SOCIETIES:

Society of Automotive Engineers
National Society of Professional Engineers
Institute of Transportation Engineers
National Association of Traffic Accident Reconstructionists & Investigators
New Jersey Association of Accident Reconstructionists
Human Factors and Ergonomics Society

EXPERIENCE:

Self-employed Traffic Consultant and Accident Reconstructionist, 1988 to Present
Instructor in Accident Investigation Programs
Director of Municipal Services, Storch Engineers, 1983 - 1988
Borough Engineer, Lincoln Park, New Jersey, 1983 - 1988
Director of Public Works and Township Engineer, Clark, New Jersey, 1981 - 1983
Principal Engineer and Traffic Engineer, Wayne, New Jersey, 1976 - 1981
Captain, United States Army Reserve, Corps of Engineers

MISCELLANEOUS:

Expert witness before numerous public review boards as well as administrative law, criminal and civil courts with respect to knowledge and experience in the science of engineering as it relates to municipal and traffic engineering and accident reconstruction.

Served as expert commentator for live Court TV programs regarding accident reconstruction trials.



SPECIALIZED ACCIDENT RECONSTRUCTION TRAINING
John A. Desch, P.E.

1. Special Problems in Accident Reconstruction, University of North Florida, IPTM
 Jacksonville, Florida March 27-30, 1983
 Jacksonville, Florida April 25-29, 1984
 Jacksonville, Florida April 9-12, 1985
 Jacksonville, Florida April 25-29, 1988
2. Microcomputer Workshop for the Police Manager, University of North Florida, IPTM
 Jacksonville, Florida April 15-17, 1985
3. Inspection of Commercial Vehicles, University of North Florida, IPTM
 Jacksonville, Florida February 9-10, 1987
4. Investigation of Commercial Vehicle Accidents, University of North Florida, IPTM
 Jacksonville, Florida February 11-13, 1987
5. Investigation of Motorcycle Accidents, University of North Florida, IPTM
 Jacksonville, Florida April 1-3, 1987
6. Traffic Accident Reconstruction I, Northwestern University, Traffic Institute
 Evanston, Illinois June 13-24, 1988
7. Traffic Accident Reconstruction II, Northwestern University, Traffic Institute
 Evanston, Illinois June 24-July 1, 1988
8. The Investigation of Pedestrian Accidents and Human Factors, University of North Florida, IPTM
 Jacksonville, Florida August 14-18, 1989.
9. NATARI – NAPARS – MdataI – NJAAR - NYSTARS Combined Conference
 Baltimore, MD October 21-22, 1989
 Atlantic City, NJ October 11-12, 1990
 Atlantic City, NJ October 24-26, 1991
 Philadelphia, PA October 8-10, 1992
 Ocean City, MD October 14-16, 1993
 Atlantic City, NJ October 19-21, 1994
 Lancaster, PA October 4-7, 1995
 Atlantic City, NJ October 1-3, 1997
 Waldorf, MD September 30-October 2, 1998
 Allentown, PA October 6-8, 1999
 College Station, TX September 24-29, 2000
 Albany, NY October 3-5, 2001
 Ocean City, MD September 11-13, 2002
 Atlantic City, NJ October 1-3, 2003
 Ocean City, MD October 6-8, 2004
 Houston, TX September 17-21, 2006
 Binghamton, NY October 24-26, 2007
 Atlantic City, NJ October 15-17, 2008
 Ocean City, MD October 6-9, 2009
10. Society of Accident Reconstructionists, Annual Conference
 Denver, CO 1985 Los Angeles, CA 1986
 Miami, FL 1987 Charlottesville, VA 1995



11. TAARS-SOAR-WATAI Combined Conference
College Station, Texas A&M June 14-16, 1990
Orlando, FL October 12-14, 1991
Charlottesville, VA August 24-26, 1995
12. NYSTARS – Seminar
 - Vehicle Dynamics during Braking/Cornering, Pedestrian Vehicle Collisions, Occupant Motion in Rear End Collisions
Yorktown Heights, NY March 2, 2000
13. WREX 2000 Combined Conference (22 Hosting Organizations)
(TAARS - NJAAR – NYSTARS – SOAR – NATARI – NAPARS – MdATAI – IAARS – CATAIR – CAARS, etc.)
 - Crash Protocol, Coefficient of Friction Testing, Tractor Trailer Air Brake Testing, Motorcycle to Barrier Crash Testing and Vehicle-to-Vehicle High Speed Crash Testing, Total Station Crush Dimensioning, Forensic Mapping, Lamp Examination, Vehicle Restitution, Alcohol Involvement, Trailer Underride Conspicuity and Human Factors, Driver's Detection and Response Process, Highway Liability.
College Station, Texas A&M September 24-29, 2000
14. 2006 F³T² Combined Conference (12 Hosting Organizations)
(CATAIR – MdATAI – PSFM – SEARS – IAARS – NAPARS – SCAARS – SOARS - NYSTARS – SATAI – WATAI, etc.)
 - Crash Tests, Dynamic Deceleration Testing, Tire-Road Friction Related to Drag Sleds, Applicability of Crush Analysis Formulas, Nighttime Perception/Reaction Test, Highway Sightlines for Accident Reconstruction.
Houston, TX September 17-21, 2006
15. 2007 Combined Conference/Investigating Eccentric Collisions
(NYSTARS – NJAAR – NAPARS – NATARI – MdATAI)
 - Occupant Kinematics in a Rotational Collision, Injury Patterns, Crash Data Retrieval (CDR) Up-dates, Eccentric Crash Testing.
Binghamton, NY October 24-26, 2007
16. 2008 Combined Conference (5 Hosting Organizations)
(NJAAR – NYSTARS – NAPARS – NATARI – MdATAI)
 - Issues in lateral pole collisions, commercial vehicle event data recorders, critical speed yaw special situations, alcohol/cannabis/stimulants/opiates and driving, airborne analysis, lateral pole crash testing and test data review.
Atlantic City, NJ October 15-17, 2008
17. 2009 Combined Conference (6 Hosting Organizations)
(NAPARS – NATARI – MdATAI – NJAAR - NYSTARS - PSFM)
 - Heavy vehicle crash reconstruction, commercial motor vehicle electronic data sources and data extraction techniques, analysis of Detroit Diesel (DDDL) reports and MCSAP Internet resources, Conservation of Linear Momentum restrictions regarding heavy vehicles versus passenger vehicle collisions, air brake adjustment and stopping ability of heavy trucks, combining aerial photograph and forensic mapping data, tractor-trailer crash testing.
Ocean City, MD October 7-9, 2009
18. Microcomputer Application Programs in Traffic Accident Reconstruction
Northwestern University, Traffic Institute.
Evanston, IL March 13-22, 1991

19. Stapp Car Crash Conference, Society of Automotive Engineers
35th - San Diego, California, November 18-20, 1991
40th - Albuquerque, New Mexico, November 4-6, 1996
42nd - Tempe, Arizona, November 2-4, 1998
20. Injuries, Anatomy, Biomechanics and Federal Regulation, SAE - Costa Mesa, CA 1992
21. Tire Damage Analysis, Monmouth County Traffic Officers Association
Presented by Michelin Tire Corporation - 1994
22. Road Work Safety, October 1988
23. Work Zone Safety Management, NJDOT, April 20-22, 1993
24. Sokkia Electronic Total Station Forensic Mapping Training - 1997
25. Analysis of Low Speed Collisions, TEEX, December 1-5, 1997
26. 2010 Combined Conference (6 Hosting Organizations)
(MdataI - NAPARS - NJAAR - NYSTARS - NATARI - PSFM)
 - "Trailer Underride Collision Reconstruction": Side Underride Analysis, Commercial Vehicle Conspicuity System Requirements - Federal MCSAP Regulations, Investigation and Documenting Conspicuity in Side Underride Crashes, Principles of Headlights, Sudden Acceleration Incidents - A Mechanical Perspective, CDR Update Information, Truck Rollover Investigation and Reconstruction, Equivalent Barrier Speed - Kinetic Energy Equivalent Speed - Delta-v and The First Law of Thermodynamics, Reconstructing a Nighttime Crash, Low Light Forensic Photography - Documentation of Evidence at Night, Applications of Aerial and Satellite Imagery in Traffic Accident Reconstruction, Mapping and Diagramming.
Ocean City, MD October 6-8, 2010
27. 2011 Detroit Diesel DDEC Reports Training Seminar
Hosted by John Desch Associates for all associates and state and local police departments.
 - Detroit Diesel factory certified training of DDEC Reports and DDDL for accident investigation and accident reconstruction provided by Tactical Training Strategies.Topics covered: Hard brake events, last stop, trip history, fault codes and freeze frame data, special vehicle handling precautions, output shaft speed parameter settings, final drive, Horsepower rating changes, ECM clock timing, proper connection techniques, proper software settings, and data available from Mercedes-Benz engines. ACTAR Approved.
Lincoln Park, NJ August 22, 2011
28. 2011 Combined Conference (5 Hosting Organizations)
(MdataI - NAPARS - NJAAR - NYSTARS - NATARI)
"Pedestrian and Bicycle Accident Investigations"
 - The Anatomy and Analysis of a Typical Pedestrian or Bicycle Crash Event, presented by Mike Reade.
 - Pedestrian and Cyclist Impacts - A Look at Injuries and Impact Kinematics, presented by Tony Becker.
 - 360 Momentum: A Single Equation Approach, presented by Gregory Russell. Overall Throw Distance
 - Formulae on Low Friction Surfaces, presented by Greg A. Sullenberger.
 - The effects of vertical height differences between takeoff and touchdown, the roadway slope, and the vehicle/pedestrian weights, speed loss upon ground impact and pedestrian carry distance before airborne commences.



- Pedestrian dummy crash testing performed by Tulsa University Crash Reconstruction Research Consortium. Data and results presented by Andy Rich.
Harrisburg, PA October 5-7, 2011
29. 2012 Combined Conference (5 Hosting Organizations)
(MdATAI – NAPARS – NJAAR – NYSTARS – NATARI)
- NYSTARS hosted the 2012 Joint Conference with a focus on “Motorcycle Collisions.”
- Testing was conducted for:
 - a.) Crash involving a 4 to 1 speed ratio of a motorcycle into the side of a moving car, under controlled parameters.
 - b.) Motorcycle broadside into stationary automobiles.
 - c.) Acceleration and deceleration testing of ATVs.
 - Motorcycle nomenclature, at scene evidence and bike evidence, presented by Al Baxter.
 - Establishing Driver-Rider designees, based on injuries sustained and at scene evidence, presented by Dennis Toasperm.
 - Review of crash test procedures and results conducted by IPTM, presented by Wade Bartlett.
 - Design parameters and operating characteristics of various motorcycle and automobile tires when utilized on motorcycles, presented by John Frackelton.
 - Human response to controlled automobile and motorcycle operation activities, presented by Jeff Muttart.
 - Physics of Rotational Mechanics and its implementation in the analysis of vehicular collisions, presented by Andrew Rich.
 - Review of crash testing results, presented by Jeremy Daily.
Fishkill, NY October 16-19, 2012
30. 2013 Combined Conference (5 Hosting Organizations)
(NJAAR – NAPARS – MdATAI – NYSTARS – NATARI)
- NJAAR hosted the 2013 Joint Conference on Collision Investigation and Reconstruction, with a focus on “Basic and Advanced Concepts Using Conservation of Linear Momentum”.
- Accident Reconstruction for Cases Involving Injuries, presented by Alan Cantor.
 - The Engineering of Human Injury Reconstruction, presented by Brian Benda.
 - Basics of Momentum/Secondary Slap Impacts within the “Collision Circle”; Conservation of Linear Momentum, presented by Wade Bartlett.
 - Driving Under the Influence of Drugs and Alcohol, presented by Dr. John Brick.
 - Crash Avoidance Technology, presented by Mercedes Benz.
 - Effects of Tire Composition and Design on Performance, presented by Anthony Galuppo.
 - Coefficient of Friction; Tire/Surfaces, presented by Wade Bartlett
 - Advanced Momentum Concepts, presented by Andy Rich.
Atlantic City, NJ October 9-11, 2013
31. 2014 Combined Conference (Hosted by NAPARS)
(Participating Organizations: NJAAR – MdATAI – NYSTARS – NATARI)
- NAPARS hosted the 2014 Joint Conference on “Crash Damage Energy” and the use of crash damage and energy in reconstructing traffic crashes, from the early days of Crash3 to the present use of computer damage analysis.
- Crash Damage and Energy, presented by Ray & Brian McHenry.
 - Vehicle Stiffness Coefficients and issues in utilizing crush to determine speed, by Daniel W. Vomhof, III.
 - Utilizing Crush Damage, Delta-v & Momentum in accident reconstruction, by George H. Meinschein, P.E.
 - Digital Forensics of Heavy Vehicle ECMs (*Electronic Control Modules*), by Dr. Jeremy Daily.

- Study on the utility of Small UAVs (*Unmanned Aerial Vehicles*) at vehicle crash scenes, by Drew Jurkofsky.
- Memory Formation and Recall, by Dr. Shari R. Berkowitz.
- Mobile Forensics – Recovery of Evidence from Mobile Devices, by Buddy Tidwell.
- Full scale/full speed vehicle crash testing and analysis.

Portland, Maine

September 10-12, 2014

32. 2015 Combined Conference (5 Hosting Organization)
(NJAAR – NAPARS – MdATAI – NYSTARS – NATARI)

MdATAI hosted the 2015 Joint Conference on “The Basics of Crash Reconstruction” and how to incorporate various components of scene and vehicle evidence into the analysis and evaluation of vehicle crash reconstruction, including emphasis on:

- Discovery: A discussion about evidence, search warrants and successful prosecution of cases, as presented by Maryland Assistant State’s Attorney Andrew Rappaport, Esq.
- Crash Data Retrieval (CDR) Update: Review and interpretation of the latest information concerning the capabilities of CDR software Level 16.2, as presented by Rick Ruth.
- Momentum & Angles: Center of Gravity (CG) location tracking via drones – Unmanned Aerial Vehicles (UAV) – and the utilization of this latest technology in live crash testing and analysis of these collision events, as presented by Greg Russell.
- Sometimes the Obvious Isn’t: A case study on collision scene & vehicle evidence, while not initially deemed applicable or consistent, proved to be both upon closer examination and evaluation.
- Expert Witness Testimony & CV Preparation: Insights from the legal side on construction of a CV and tips on presenting testimony at trial and depositions, as presented by Kathleen E. Smith, Esq.

Ocean City, MD

October 14-16, 2015

33. 2016 Combined Conference - WREX 2016 World Reconstruction Exposition – (Hosted by 21 crash associations from the United States, Canada and around the world) (ASPACI – CA2RS – CATAIR – IAARS – IACAI – IATAI – APTM – ITAI – MATAI – MdATAI – NAPARS – NATARI – NJAAR – OTARA – PCARS – PSFM – SATAI – SCARS – SOAR – TAARS – WATAI)

WREX was the largest training event for crash investigators that has ever been held. This weeklong event included world class speakers, a full day of high speed crash testing, interactive field testing, along with classroom training in the breakout fields of:

- Using limited vehicle data to estimate time/distance/speed relationships.
- Vehicle velocity extraction from witness video.
- Investigation of emergency vehicle crashes.
- Heavy vehicle speed analysis.
- Motorcycle and speed estimation methods.
- Speedometers and collision reconstruction.
- Commercial vehicle air brake systems – air brake inspection and analysis.
- Traffic signals and accident reconstruction.
- Autonomous vehicle systems.
- EDR data - SDM (sending diagnostic module) - Survivability.
- Human factors in nighttime crashes.
- Motorcycle collision reconstruction.
- Pedestrian/bicyclist accident reconstruction.
- Crash data retrieval update.
- Distracted driving investigations.
- Digital forensics and heavy vehicle collision reconstruction.



- Rollover crashes.
 - Tire failure analysis; tire factor performance and collision reconstruction.
 - Human factors and the anatomical blind spot.
 - The effect of alcohol and cannabis on driving.
 - Air disc brakes; inspection & analysis.
 - Heavy vehicle crash reconstruction.
 - Event data recorder (EDR) anomalies & limitations.
 - Video analysis of traffic collisions.
- Orlando, Florida May 2-6, 2016
34. 2017 ITE Northeastern District Annual Meeting
- Bicycle Crash Analysis
 - Railway Highway Grade Crossing Traffic Controls
 - Urban Parking Analysis
 - Traffic Management
 - Roadway System Information/Networks
 - Autonomous/Connected Vehicle Technology
 - Trip Generation
 - NJDOT Safety Voyager
- Vernon, New Jersey May 10-12, 2017
35. 2018 Human Factors in Traffic Crashes Seminar, IDRR Training, Crash Safety Solutions
- Middletown, CT June 25-29, 2018
36. 2018 Combined Conference (5 Hosting Organizations)
(NJAAR – NAPARS – MdATAI – NYSTARS – NATARI)
NYSTARS hosted the 2018 Conference on “Investigating Pedestrian Collisions” including staged surrogate pedestrian impacts and instrumentation/measurements associated with such collisions and analysis of this testing, with emphasis on:
- Review of crash test objectives.
 - Evaluation of eye tracking software.
 - Medical perspective/pedestrian injury patterns.
 - Perception response time.
 - Nighttime perception.
 - Formulas (Searle, Appel, Collins): Preferred and Problematic.
- Lake George, NY October 17-19, 2018
37. 2019 Combined Conference (5 Hosting Organizations)
(NJAAR – NAPARS – MdATAI – NYSTARS – NATARI)
NJAAR hosted the 2019 Conference on “Human Factors” with emphasis on:
- Event Data Recorder (**EDR**) update.
 - Cell Phones & Infotainment Consoles – Distractions and Data Content.
 - Effects & Limitations of Emergency Vehicle Audible Devices on Civilian Drivers.
 - Naturalistic Driver Studies/Drowsiness – Methodology and Analysis.
 - **NTSB** - Driver Distraction/Driver Fatigue – Investigative Findings.
 - Driver Fatigue – Case Study.
 - Sleep Disorders, Medical Issues and Circadian Rhythms.
 - Occupant Kinematics in Vehicular Collisions - Case Studies.
 - Driver Behavior Monitoring Using Cell Phones.
- Atlantic City, NJ October 7-11, 2019

38. 2020 Combined Conference (5 Hosting Organizations)
(NAPARS – NJAAR – MdataI – NYSTARS – NATARI)
NAPARS hosted 2020 Conference on:
- Investigating Rollover Crashes
Virtual Presentation October 6, 2020
39. 2021 Combined Conference (5 Hosting Organizations)
(NJAAR – NAPARS – MdataI – NYSTARS – NATARI)
MdataI hosted the 2021 Joint Conference on “Back to Basics” and how to incorporate various components of scene and vehicle evidence into the analysis and evaluation of vehicle crash reconstruction, including emphasis on:
- Human Factors: Introduction to Perception-Reaction Times - One Number Doesn’t Fit All, presented by Swaroop Dinakar, B.E., M.S., Crash Safety Research Center, LLC.
 - Notes on Energy Methods for Crash Reconstruction, presented by John Daily, M.S.M.E., Jackson Hole Scientific Investigations, Inc.
 - Conservation of Linear Momentum, presented by Greg Russell, Accident Analysis & Reconstruction, Inc.
 - Tire Failure in Accident Reconstruction, presented by T.J. Tennent, Tennent & Associates.
 - CDR Update, presented by Brad Muir, Crash Data Specialists.
 - Critical Speed Yaw: Theory & Special Situations, presented by Wade Bartlett, P.E.
 - Scene Documentation, presented by Adam Hyde, Commander of the Lake County Major Crash Assistance Team (MCAT).
 - Live vehicle crash testing and analysis.
Ocean City, MD October 6-8, 2021

GARY K. ANDERSON, P.E.

CURRICULUM VITAE

EDUCATION:

Stevens Institute of Technology, Hoboken New Jersey
Bachelor of Engineering in Civil Engineering - 1999

CERTIFICATIONS:

State of New Jersey Professional Engineer, P.E. #45110
Fully Accredited Traffic Accident Reconstructionist,
Accreditation Commission for Traffic Accident Reconstruction, A.C.T.A.R. #2227
State of New Jersey Building Inspector R.C.S. #009624
Commonwealth of Pennsylvania, Residential Building Inspector #005714

PROFESSIONAL SOCIETIES:

ASCE American Society of Civil Engineers
ITE Institute of Transportation Engineers
NSPE National Society of Professional Engineers
NJAAR New Jersey Association of Accident Reconstructionists
ICC International Code Council
NYSTARS New York Statewide Traffic Accident Reconstruction Society

EXPERIENCE:

Civil Engineer, URS Corporation, 1999-2003
Civil Engineer and Accident Reconstructionist, John Desch Associates, Inc.,
an Accident Reconstruction and Traffic Engineering Firm, 2003-Present

TRAINING:

McTrans
Highway Capacity Software Training, 2003
New Jersey Department of Transportation
Context Sensitive Design Training, 2001
American Society of Civil Engineers
Roadside Design Training, 2000
Trafficware
Synchro and SimTraffic Training, 2004
County College of Morris
Building Inspector R.C.S. Course, 2006
Bergen Community College
Construction Sub-Code Official Course, 2007



2006 F³T² Combined Conference (12 Hosting Organizations)

(CATAIR – MDATAI – PSFM – SEARS – IAARS – NAPARS – SCAARS – SOARS – NYSTARS –SATAI – WATAI, etc.)

- Crash Tests, Dynamic Deceleration Testing, Tire-Road Friction Related to Drag Sleds, Applicability of Crush Analysis Formulas, Nighttime Perception/Reaction Test, Highway Sightlines for Accident Reconstruction
Houston, Texas- September 17-21, 2006.

2007 Combined Conference/Investigating Eccentric Collisions

[NYSTARS – NJAAR – NAPARS – NATARI – MDATAI]

- Occupant Kinematics in a Rotational Collision, Injury Patterns, Crash Data Retrieval (CDR) Up-dates, Eccentric Crash Testing
Binghamton, New York – October 24-26, 2007.

2008 Combined Conference (5 Hosting Organizations)

(NJAAR – NYSTARS – NAPARS – NATARI – MDATAI)

- Issues in lateral pole collisions, commercial vehicle event data recorders, critical speed yaw special situations, alcohol/cannabis/stimulants/opiates and driving, airborne analysis, lateral pole crash testing and test data review.

Atlantic City, New Jersey – October 15-17, 2008.

2009 Combined Conference (6 Hosting Organizations)

(NAPARS – NATARI – MDATAI – NJAAR – NYSTARS – PSFM)

- Heavy vehicle crash reconstruction, commercial motor vehicle electronic data sources and data extraction techniques, analysis of Detroit Diesel (DDDL) reports and MCSAP Internet resources, Conservation of Linear Momentum restrictions regarding heavy vehicles versus passenger vehicle collisions, air brake adjustment and stopping ability of heavy trucks, combining aerial photograph and forensic mapping data, tractor-trailer crash testing

Ocean City, Maryland – October 7-9, 2009.

Northwestern University Center for Public Safety

Accident Investigation I and II, 2009

Northwestern University Center for Public Safety

Traffic Accident Reconstruction I, 2009

2010 Combined Conference (6 Hosting Organizations)

(MdataI – NAPARS – NJAAR – NYSTARS – NATARI – PSFM)

“Trailer Underride Collision Reconstruction”

- Side Underride Analysis, Commercial Vehicle Conspicuity System Requirements – Federal MCSAP Regulations, Investigation and Documenting Conspicuity in Side Underride Crashes, Principles of Headlights, Sudden Acceleration Incidents – A Mechanical Perspective, CDR Update Information, Truck Rollover Investigation and Reconstruction, Equivalent Barrier Speed – Kinetic Energy Equivalent Speed – Delta-v and The First Law of Thermodynamics, Reconstructing a Nighttime Crash, Low



Light Forensic Photography – Documentation of Evidence at Night,
Applications of Aerial and Satellite Imagery in Traffic Accident
Reconstruction, Mapping and Diagramming.

Ocean City, Maryland – October 6-8, 2010.

2011 Detroit Diesel DDEC Reports Training Seminar

Hosted by John Desch Associates for all associates and state and local police departments.

- Detroit Diesel factory certified training of DDEC Reports and DDDL for accident investigation and accident reconstruction provided by Tactical Training Strategies.

Topics covered: Hard brake events, last stop, trip history, fault codes and freeze frame data, special vehicle handling precautions, output shaft speed parameter settings, final drive, Horsepower rating changes, ECM clock timing, proper connection techniques, proper software settings, and data available from Mercedes-Benz engines. ACTAR Approved.

Lincoln Park, NJ – August 22, 2011.

2011 Combined Conference (5 Hosting Organizations)

(MDATAI – NAPARS – NJAAR – NYSTARS – NATARI)

“Pedestrian and Bicycle Accident Investigations”

- The Anatomy and Analysis of a Typical Pedestrian or Bicycle Crash Event by Mike Reade. Pedestrian and Cyclist Impacts – A Look at Injuries and Impact Kinematics by Tony Becker. 360 Momentum: A Single Equation Approach, by Gregory Russell. Overall Throw Distance Formulae on Low Friction Surfaces by Greg A. Sullenberger.
- The effects of vertical height differences between takeoff and touchdown, the roadway slope, and the vehicle/pedestrian weights, speed loss upon ground impact and pedestrian carry distance before airborne commences.
- Provided technical assistance for the pedestrian dummy crash testing performed by Tulsa University Crash Reconstruction Research Consortium. Data and results presented by Andy Rich.

Harrisburg, PA – October 5-7, 2011.

Crash Data Specialists, LLC

- Crash Data Retrieval Analysis and Applications Update Course
Yorktown, NY- May 7-8, 2012

U.S. Department of Transportation, Federal Highway Administration

- Transportation Management Plan Workshop
Trenton, NJ – June 7-8, 2012

New Jersey State Safety Council, Safety and Health Training Institute

- Occupational Safety and Health Administration (OSHA), 10-Hour General Industry in OSHA Standards Course
Cranford, NJ - July 25-26, 2012

Society of Automotive Engineers International

- Accessing and Interpreting Heavy Vehicle Event Data Recorders
Oxnard CA – October 23-26, 2012



New Jersey Department of Community Affairs, Bureau of Code Services, Education Unit

New Jersey Barrier-Free Subcode Seminar, June 19, 2009
New Jersey Advanced Barrier-Free Subcode Seminar, April 22, 2010
New Jersey Rehabilitation Subcode Seminar, March 24, 2011
Significant Changes to the IBC – 2012 Edition Seminar, April 23, 2013
Significant Changes to the NJ IRC – 2012 Edition Seminar, June 18, 2013
Hotel, Motel and Multiple Dwelling Seminar, June 16, 2016
New Jersey Barrier Free Subcode Seminar, June 27, 2016
New Jersey Rehabilitation Subcode Seminar, April 25, 2017

2013 Combined Conference (5 Hosting Organizations)

(NJAAR – NAPARS – MdataI – NYSTARS – NATARI)

NJAAR hosted the 2013 Joint Conference on Collision Investigation and Reconstruction, with a focus on “Basic and Advanced Concepts Using Conservation of Linear Momentum”.

- Accident Reconstruction for cases Involving Injuries, presented by Alan Cantor.
- The Engineering of Human Injury Reconstruction, presented by Brian Benda.
- Basics of Momentum/Secondary Slap Impacts within the “Collision Circle”; Conservation of Linear Momentum, presented by Wade Bartlett.
- Driving Under the Influence of Drugs and Alcohol, presented by Dr. John Brick.
- Crash Avoidance Technology, presented by Mercedes Benz.
- Effects of Tire Composition and Design on Performance, presented by Anthony Galuppo.
- Coefficient of Friction; Tire/Surfaces, presented by Wade Bartlett
- Advanced Momentum Concepts, presented by Andy Rich.

Atlantic City, NJ

October 9-11, 2013

Bendix Spicer Foundation Brake – Heavy Duty Vehicle Air Brake operation and maintenance. South Plainfield, N.J. November 11-13, 2014.

Advanced Commercial Vehicle Crash Investigation – Institute of Police Technology and Management, University of North Florida. Jacksonville, Florida, November 17-21, 2014.

2015 Combined Conference (5 Hosting Organization)

(NJAAR – NAPARS – MdataI – NYSTARS – NATARI)

MdataI hosted the 2015 Joint Conference on “The Basics of Crash Reconstruction” and how to incorporate various components of scene and vehicle evidence into the analysis and evaluation of vehicle crash reconstruction, including emphasis on:

- Discovery: A discussion about evidence, search warrants and successful prosecution of cases, as presented by Maryland Assistant State’s Attorney Andrew Rappaport, Esq.



- Crash Data Retrieval (**CDR**) Update: Review and interpretation of the latest information concerning the capabilities of CDR software Level 16.2, as presented by Rick Ruth.
- Momentum & Angles: Center of Gravity (**CG**) location tracking via drones – Unmanned Aerial Vehicles (**UAV**) – and the utilization of this latest technology in live crash testing and analysis of these collision events, as presented by Greg Russell.
- Sometimes the Obvious Isn't: A case study on collision scene & vehicle evidence, while not initially deemed applicable or consistent, proved to be both upon closer examination and evaluation.
- Expert Witness Testimony & CV Preparation: Insights from the legal side on construction of a CV and tips on presenting testimony at trial and depositions, as presented by Kathleen E. Smith, Esq.

Ocean City, MD

October 14-16, 2015

2016 Combined Conference - WREX 2016 World Reconstruction Exposition – (Hosted by 21 crash associations from the United States, Canada and around the world) (ASPACI – CA2RS – CATAIR – IAARS – IACAI – IATAI – APTM – ITAI – MATAI – MdATAI – NAPARS – NATARI – NJAAR – OTARA – PCARS – PSFM – SATAI – SCARS – SOAR – TAARS – WATAI)

WREX was the largest training event for crash investigators that has ever been held. This weeklong event included world class speakers, a full day of high speed crash testing, interactive field testing, along with classroom training in the breakout fields of:

- Using limited vehicle data to estimate time/distance/speed relationships.
- Vehicle velocity extraction from witness video.
- Investigation of emergency vehicle crashes.
- Heavy vehicle speed analysis.
- Motorcycle and speed estimation methods.
- Speedometers and collision reconstruction.
- Commercial vehicle air brake systems – air brake inspection and analysis.
- Traffic signals and accident reconstruction.
- Autonomous vehicle systems.
- EDR data - SDM (sending diagnostic module) - Survivability.
- Human factors in nighttime crashes.
- Motorcycle collision reconstruction.
- Pedestrian/bicyclist accident reconstruction.
- Crash data retrieval update.
- Distracted driving investigations.
- Digital forensics and heavy vehicle collision reconstruction.
- Rollover crashes.
- Tire failure analysis; tire factor performance and collision reconstruction.
- Human factors and the anatomical blind spot.
- The effect of alcohol and cannabis on driving.
- Air disc brakes; inspection & analysis.
- Heavy vehicle crash reconstruction.



- Event data recorder (EDR) anomalies & limitations.
- Video analysis of traffic collisions.

Orlando, Florida

May 2-6, 2016

2016 EDC Reconstruction Course

- HVE (Human Vehicle Environment) & HVE-2D System Overview; Using EDCRASH (Engineering Dynamics Corporation Reconstruction of Accident Speeds on the Highway);

Coral Gables, Florida

October 24-28, 2016

2017 ITE Northeastern District Annual Meeting

- Autonomous/Connected Vehicle Technology
- Trip Generation
- NJDOT Safety Voyager
- Bus Transit Technology

Vernon, New Jersey

May 10-12, 2017

BOSCH Crash Data Retrieval (CDR) Tool Technician Training - Institute of Police Technology and Management, University of North Florida.

- Collect EDR data using the Bosch© CDR Tool
- Troubleshoot data collection issues
- Prevent spoliation of EDR data
- Legal considerations

Online

January 9, 2018

2018 Combined Conference (5 Hosting Organizations)

(NJAAR – NAPARS – MdATAI – NYSTARS – NATARI)

NYSTARS hosted the 2018 Conference on “Investigating Pedestrian Collisions” including staged surrogate pedestrian impacts and instrumentation/measurements associated with such collisions and analysis of this testing, with emphasis on:

- Review of crash test objectives.
- Evaluation of eye tracking software.
- Medical perspective/pedestrian injury patterns.
- Perception response time.
- Nighttime perception.
- Formulas (Searle, Appel, Collins): Preferred and Problematic.

Lake George, NY

October 17-19, 2018

2019 EDR (Event Data Recorder) Summit.

This Summit focused on Event Data Recorder research, collection and analysis for vehicle crash investigation. The Summit included instruction on the future of safety systems within vehicles on the road today, how they work and how the data collected can be used to assist in crash investigation. Individual presentations focused on EDR data found in light trucks, passenger cars, SUVs, motorcycles, heavy commercial vehicles, active safety systems, autonomous driving and vehicle infotainment systems.

Houston, TX

March 4 – 6, 2019



2019 Combined Conference (5 Hosting Organizations)

(NJAAR – NAPARS – MdATAI – NYSTARS – NATARI)

NJAAR hosted the 2019 Conference on “Human Factors” with emphasis on:

- Event Data Recorder (**EDR**) update.
- Cell Phones & Infotainment Consoles – Distractions and Data Content.
- Effects & Limitations of Emergency Vehicle Audible Devices on Civilian Drivers.
- Naturalistic Driver Studies/Drowsiness – Methodology and Analysis.
- **NTSB** - Driver Distraction/Driver Fatigue – Investigative Findings.
- Driver Fatigue – Case Study.
- Sleep Disorders, Medical Issues and Circadian Rhythms.
- Occupant Kinematics in Vehicular Collisions - Case Studies.
- Driver Behavior Monitoring Using Cell Phones.

Atlantic City, NJ

October 7-11, 2019

2020 Combined Conference (5 Hosting Organizations)

(NAPARS – NJAAR – MdATAI – NYSTARS – NATARI)

NAPARS hosted 2020 Conference on:

- Motorcycle Turning
- PRT in Different Crash Types
- Considering Tires in your Investigation

Virtual Presentation

October 5-13, 2020

2021 Combined Conference (5 Hosting Organizations)

(NJAAR – NAPARS – MdATAI – NYSTARS – NATARI)

MdATAI hosted the 2021 Joint Conference on “Back to Basics” and how to incorporate various components of scene and vehicle evidence into the analysis and evaluation of vehicle crash reconstruction, including emphasis on:

- Human Factors: Introduction to Perception-Reaction Times - One Number Doesn't Fit All, presented by Swaroop Dinakar, B.E., M.S., Crash Safety Research Center, LLC.
- Notes on Energy Methods for Crash Reconstruction, presented by John Daily, M.S.M.E., Jackson Hole Scientific Investigations, Inc.
- Conservation of Linear Momentum, presented by Greg Russell, Accident Analysis & Reconstruction, Inc.
- Tire Failure in Accident Reconstruction, presented by T.J. Tennent, Tennent & Associates.
- CDR Update, presented by Brad Muir, Crash Data Specialists.
- Critical Speed Yaw: Theory & Special Situations, presented by Wade Bartlett, P.E.
- Scene Documentation, presented by Adam Hyde, Commander of the Lake County Major Crash Assistance Team (MCAT).
- Live vehicle crash testing and analysis.

Ocean City, MD

October 6-8, 2021

