

New York State Police
Collision Reconstruction Report

(Number of pages excluding this cover sheet – 18)

NEW YORK STATE POLICE

TROOP "G" Loudonville, N.Y.

Collision Reconstruction Report

Reconstruction Case # : G991021
Case # Schoharie County Sheriff's Dept. (997423)
Location : Intersection of ST-30A and ST-7
T/Schoharie
Date: October 21, 1999

By: Trooper Timothy P. Bonnier

Control Station NYSP Loudonville		T/Z/S G145	Blotter Entry G991021
Accident Date 10/21/99	Time of Accident 10:20 AM	C/T/V of Accident T/Schoharie	County Schoharie
Location Intersection of ST-30A and ST-7			

Vehicle 1	Last, First, MI COOK, EDWARD, N	<input type="checkbox"/> Deceased <input checked="" type="checkbox"/> Injured	Vehicle 2	Last, First, MI TREACY, WILLIAM, J	<input type="checkbox"/> Deceased <input type="checkbox"/> Injured
	Last, First, MI HAZZARD, DWIGHT	<input type="checkbox"/> Deceased <input type="checkbox"/> Injured		Last, First, MI	<input type="checkbox"/> Deceased <input type="checkbox"/> Injured
	Last, First, MI	<input type="checkbox"/> Deceased <input type="checkbox"/> Injured		Last, First, MI	<input type="checkbox"/> Deceased <input type="checkbox"/> Injured
	Last, First, MI	<input type="checkbox"/> Deceased <input type="checkbox"/> Injured		Last, First, MI	<input type="checkbox"/> Deceased <input type="checkbox"/> Injured

Vehicle 3	Last, First, MI	<input type="checkbox"/> Deceased <input type="checkbox"/> Injured	Other	Last, First, MI	<input type="checkbox"/> Deceased <input type="checkbox"/> Injured
	Last, First, MI	<input type="checkbox"/> Deceased <input type="checkbox"/> Injured		Last, First, MI	<input type="checkbox"/> Deceased <input type="checkbox"/> Injured
	Last, First, MI	<input type="checkbox"/> Deceased <input type="checkbox"/> Injured		Last, First, MI	<input type="checkbox"/> Deceased <input type="checkbox"/> Injured
	Last, First, MI	<input type="checkbox"/> Deceased <input type="checkbox"/> Injured		Last, First, MI	<input type="checkbox"/> Deceased <input type="checkbox"/> Injured

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Submitted By: (Name & Rank) Timothy P. Bonnier Trooper	Shield 3134	Station Loudonville	Case No# G991021	Date 02/10/00	Reviewed By:
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INTRODUCTION

On October 21, 1999 writer was contacted by Lieutenant David Salmon, NYSP Loudonville, regarding a Dump Truck - School Bus serious personal injury collision. Lt. Salmon advised the collision was being investigated by the Schoharie County Sheriff's Department and they requested assistance by the Troop G Collision Reconstruction Unit. The collision occurred at approximately 10:20 AM on 10/21/99 at the intersection of ST-7 and ST-30A in the Town of Schoharie, Schoharie County, New York. Writer immediately responded to the scene to assist with the investigation.

Writer arrived at the scene of the collision approximately two hours after it occurred. Several members from the New York State Police and the Schoharie County Sheriff's Department were on the scene upon arrival. Trooper John Dinneen (Troop C - Collision Reconstruction Unit) and Sergeant James Halvorsen (Division Traffic Collision Reconstructionist) assisted with the on scene reconstruction. Photographs documenting the collision scene as initially observed were taken by Trooper Dinneen. Measurements of the collision scene were secured by the above reconstructionists utilizing the Sokkia Total Station, Model 4000, serial # 62355.

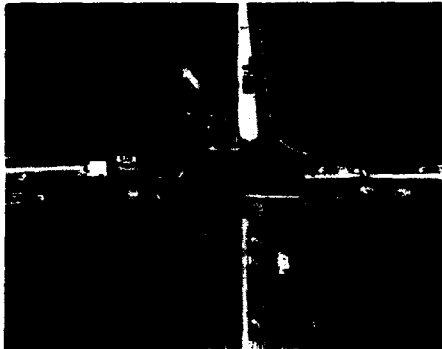
Vehicle one (V-1), a white, 1987, Mack, three axle dump truck, bearing NY registration (DH1720), hauling a 1988, three axle, Interstate, flatbed trailer, NY registration (51727R) was operated by EDWARD N. COOK of Berne NY.

Vehicle two (V-2), a yellow, 1997 International School Bus, NY registration (BE4338) was operated by WILLIAM J. TREACY of Menands NY.

The purpose of the collision reconstruction is to document all physical evidence, complete a scaled diagram, and determine causation.

SCENE DESCRIPTION

Aerial Views



Southerly View



Southwest View



Approaching the intersection from the south on ST-30A.



Approaching the intersection from the east on ST-7.

ST-30A, ST-7, and Zicha Road (County Route 70) all meet to form a four way intersection. ST-30A is a two lane highway that runs generally in a north/south direction and intersects ST-7 from the south. Zicha Road is also a two lane highway that runs in a north/south direction and intersects ST-7 from the north. ST-7 is a two-lane, individual flow roadway that runs in an east/west direction.

Approximately 150 feet south of the intersection the northbound lane of ST-30A expands and divides into two lanes, providing a left turning lane. The north and south lanes are separated by two solid yellow lines that are further separated by a center median island all indicating a no passing zone. ST-30A measures approximately 59 feet in width inclusive of the shoulders. The two lanes are complimented with nine foot wide paved shoulders and are separated by solid white fog lines. In the area of the intersection the east shoulder is protected by single rail, steel guiderail system. The roadway is constructed of asphalt and appears to have a normal crown.

SCENE DESCRIPTION CONTINUED

As ST-30A approaches ST-7, the roadway is generally level with no noticeable grade in either direction. Northbound traffic on ST-30A has a sight distance of approximately 3/10 of a mile on the approach to the intersection. A diamond shaped yellow caution sign (**STOP AHEAD**) is located off the east shoulder approximately 1/10 of a mile south of the ST-7 intersection. An oversized STOP sign is located off the east shoulder just south of the intersection controlling the northbound traffic. At the intersection, both the northbound lanes (on roadway surface) of ST-30A are marked with an 18 inch solid white stop bar and a set of five foot white letters spelling "STOP". In addition to the stop sign and surface markings, there are two overhead flashing red lights controlling northbound traffic on ST-30A and the southbound traffic on Zicha Road.

Approximately 150 feet east of the intersection, the westbound lane of ST-7 expands and divides into two lanes, providing a left turning lane. The eastbound lane also expands and divides into two lanes on the opposite side of the intersection. The east and west lanes of ST-7 are separated by two solid yellow lines and are further separated by a center median island, all indicative of a no passing zone. ST-7 measures approximately 61 feet in width, inclusive of the shoulders. The two lanes are complimented with nine foot wide paved shoulders and are separated by solid white fog lines. In the intersection, the north shoulder of ST-7 is protected by the same style guiderail that is located on ST-30A. ST-7 is also constructed of asphalt. The grade is generally level throughout the intersection. Westbound traffic on ST-7 has a sight distance of approximately 2,112 feet (4/10 of a mile) on the approach to the intersection. A yellow diamond shaped caution sign indicating a four-way intersection ahead, is located off the north shoulder approximately 2/10 of a mile east of the intersection. There are two flashing yellow caution lights that control both the east and westbound traffic at the intersection.

Zicha Road intersects ST-7 from the north directly in line with ST-30A. This completes a perpendicular intersection between the three roadways. Zicha Road measures approximately 46 feet in width, inclusive of the shoulders. The north and south lanes are complimented with five foot wide paved shoulders and are separated by solid white fog lines. The two lanes are separated by two solid yellow lines and a center median island indicating a no passing zone. Southbound traffic approaching the intersection is controlled by a "STOP" sign and the same type roadway surface markings found on the northbound lanes of ST-30A.

Pavement markings throughout the intersection are plainly visible and in good condition, including the area of collision. No pavement defects were located at or around the scene. Both ST-30A and ST-7 are posted at the New York State speed limit of 55 mph. The closest mile post markers to the intersection are 30A-9501-1111 and 7-9504-1888. On the date and time of the collision, the roadway surface was clear and dry. Traffic flow was light. The weather was partly cloudy and the temperature was approximately 60 degrees.

COLLISION PHASES

Vehicle One (V-1) - 1987 Mack Dump Truck towing a 1988 Flatbed Trailer

Vehicle Two (V-2) - 1997 International School Bus

PRE-IMPACT PHASE

V-1 was traveling west on ST-7 heading towards the previously mentioned intersection. Approximately 148 feet east of the area of impact the operator of V-1 locks up his brakes. V-1 skids towards the right entry side of V-2.

V-2 traveling north on ST-30A towards the intersection. The operator of V-2 travels north and enters the intersection straight, without turning, towards Zicha Road. This initiates the impact phase.

IMPACT PHASE

V-1 enters the intersection skidding in a westerly direction, and strikes the right rear of V-2, behind the rear axle. This concludes the impact phase and initiates the post-impact phase.

POST-IMPACT

Once V-1 penetrated the right rear of V-2 and reached maximum engagement, the two vehicles began to separate and travel towards final rest. The forces of the impact immediately changed the direction of travel of V-2. V-1's forward momentum was transferred to V-2 causing V-2 to rotate clockwise. V-2 rotated approximately 145 degrees over a very short distance before losing its rotational momentum. At this point V-2 was facing southeast and rolled backward on to the west shoulder of Zicha Road. V-2 comes to an uncontrolled final rest off the roadway approximately 11 ½ feet from the paved west shoulder of Zicha Road.

After impact, the operator of V-1 loses control and goes into post collision skid, rotating in a clockwise direction. This action continues until V-1 exits the north shoulder of ST-7, just west of the intersection, and strikes a power pole with its left rear. V-1 came to an uncontrolled final rest just off the north shoulder up against this power pole. The pole is one of the two supports of the flashing lights located above the intersection. The trailer portion of V-1 remained attached to V-1 and came to final rest in a jackknifed position in the westbound lane of ST-7.

VEHICLE DAMAGE ANALYSIS

Vehicle # 1



V-1 was identified as a white, 1987 Mack Dump Truck bearing NY registration (DH1720), VIN (1M2P198C7HA001114). V-1 was hauling a grey, 1988, 27 ½ foot, Interstate, flatbed trailer bearing NY registration (51727R), VIN (1JK0DA339JA220001). Both the truck and trailer were registered to MVF Construction Co. Inc. of Schoharie NY.

V-1's entire front end sustained extensive contact damage after striking the right rear of V-2. V-1 sustained contact and induced damage to the following areas: front bumper; front light assemblies; hood; radiator; windshield; steering column and frame. The dump bed of V-1 struck the power pole and sustained minor contact damage to the left side. There was no apparent damage to the trailer.

Vehicle # 2



V-2 was identified as a yellow, 1997 International 66 passenger school bus bearing NY registration (BE4338), VIN (1HVBBABN7VH514240). The bus was registered to Kinnicutt Bus Inc. of Menands NY.

VEHICLE DAMAGE ANALYSIS CONTINUED

When V-1 struck the right rear of V-2, V-2 sustained an extensive amount of contact damage to its entry side. The sheet metal in the area of contact was pushed forward into the passenger compartment. The floor and the passenger seats were forced towards the left or the driver's side of the bus. There were seven windows damaged on the entry side rear and three at the rear of V-2. Induced damage was evident throughout V-2. Some examples of the induced damage were the buckling sheet metal, damaged engine hood, bent and twisted frame, and shifting of the main body of the bus from the frame.

V-1 and V-2 went through additional inspections that were performed by the New York State Department of Transportation and the New York State Police Troop -G Commercial Vehicle Enforcement Unit.

SPECIAL TOPICS

Restraint Examinations

Vehicle # 1 - Both the driver and passenger lap belts of V-1 were examined with nothing remarkable noted. No evidence of stress or other damage was observed. Information provided to the writer through post-collision interviews state that both the driver and passenger of V-1 were apparently wearing their lapbelts.

Vehicle # 2 - While inspecting the interior of V-2, lapbelts were observed throughout the passenger seats of V-2. Examinations of the individual passenger lapbelts were not performed. The operators shoulder harness/lapbelt was examined with nothing remarkable noted. Post-collision information was also provided stating the operator of V-1 was apparently wearing his lapbelt.

OCCUPANT KINEMATICS

Vehicle # 1 - The principal direction of force applied to V-1 during impact was from the front to the rear. The forces of the collision would cause the driver and passenger to be propelled forward towards the steering column and dashboard areas.

Vehicle # 2 - The principal direction of force applied to V-2 during impact was from the entry side rear to the driver's side rear. The collision forces were greatest in the area of direct contact at the right rear. The passengers in this area were propelled rapidly to the right side of the bus towards V-1. The passengers located towards the front of the bus were also projected towards the right side, but with lesser force than the passengers in the rear. After the initial impact, the passengers would have been subjected to a sudden clockwise rotation forward and to the right.

OCCUPANT KINEMATICS CONTINUED

Passengers seated closest to the area of direct contact probably suffered the most serious injuries. Due to the large number of passengers and the lack of any available seating chart, exact seating positions are undetermined at this time.

MATHEMATICAL ANALYSIS

In order to determine the velocities of the two vehicles just prior to contact, conservation of momentum must be applied to the collision. Conservation of momentum was unable to be used due to the fact that V-1 is an articulated vehicle (truck-trailer combination), and the post-collision departure angle of V-2 could not be accurately measured. No speed analysis was able to be performed for either V-1 or V-2 based on the collision scenario.

INVESTIGATIVE ANALYSIS

Based upon an interpretation of the scene evidence and vehicle examinations the following conclusions were drawn.

V-1 was traveling west on ST-7 in the Town of Schoharie approaching ST-30A. V-2 was traveling north on ST-30A approaching ST-7. Approximately 148 feet east of the area of impact the operator of V-1 locks his brakes and skidded towards the intersection. V-2 traverses the intersection into the path of V-1 while approaching Zicha Road. V-1 strikes the entry side rear of V-2 and forces V-2 into a clockwise rotation. V-2 rotates approximately 145 degrees and then rolls backwards off the west shoulder of Zicha Road. V-2 comes to an uncontrolled final rest 11 ½ feet from the shoulder facing southeast. V-1 continues west, sliding through the intersection, slides off the north shoulder of ST-7 and comes to an uncontrolled final rest up against a power pole facing northeast.

The pre-crash tire marks left on the roadway surface identified the path of V-1 prior to impact. The area of impact was identified as the dark tire smears, scuffs and scratches left on the surface of the roadway by both V-1 and V-2. The point of contact between the two vehicles occurred in the northeast portion of the intersection in the westbound travel lane of ST-7. Post collision scuff marks and fluid debris determined the path of V-1 and V-2.

The collision scene evidence, collision dynamics and damage profiles of V-1 and V-2 indicate that there was no excessive speed on the part of either vehicle.

INVESTIGATIVE ANALYSIS CONTINUED

The sight distance was tested at the scene. Results concluded that an operator of an automobile positioned at the intersection stop bar in the northbound lane of ST-30A, would have approximately 1,712 feet of sight distance looking east on ST-7.

The following mathematical data is provided to show a correlation between the sight distance and the amount of time a vehicle is in view. The following time values indicate how long a vehicle would be in view of someone looking east and positioned at the intersection stop bar in the northbound lane of ST-30A. A range of arbitrary speeds was used to represent the speed of a vehicle traveling in a westerly direction towards the intersection. The arbitrary speeds do not represent the speeds of the vehicles involved in this collision.

- 1) 45 mph = 65.97 feet per second
- 2) 55 mph = 80.63 feet per second
- 3) 65 mph = 95.29 feet per second

In order to determine the time to travel a known distance the distance has to be divided by the velocity.

$$\text{Time} = \text{Distance}/\text{Velocity}$$

- 1) $T = 1712 \text{ ft} / 65.97 \text{ fps} = 25.95 \text{ seconds}$
- 2) $T = 1712 \text{ ft} / 80.63 \text{ fps} = 21.23 \text{ seconds}$
- 3) $T = 1712 \text{ ft} / 95.29 \text{ fps} = 17.96 \text{ seconds}$

The above time values indicate how long a westbound vehicle would be in view of a motor vehicle operator positioned at the stop bar at the ST-30A intersection.

CONCLUSION

Based on the collision investigation the cause of the collision between V-1 and V-2 was determined that the operator of V-2 failed to yield right of way to V-1. The operator of V-2 was required to stop before entering the intersection and was responsible for yielding to both the east and westbound traffic on ST-7.

SCHOOL BUS DRIVER AND OCCUPANTS

Occupants of V-2 - 1997 International School Bus - The Driver and 52 Passengers are arranged alphabetically.

Driver V-1 William J. Treacy

Passenger 1) Agle, Richard	Passenger 27) Mahar, Cameron
Passenger 2) Beatty, MaKish	Passenger 28) Mahar, Meghan
Passenger 3) Bennekin, Alec	Passenger 29) Mergel, Paul
Passenger 4) Bennett, Judith	Passenger 30) Milner, Jalahd
Passenger 5) Buckley, Dylan	Passenger 31) Miranda, Kristina
Passenger 6) Clark, Deb	Passenger 32) Montalvo, Christopher
Passenger 7) Delamater, Nichole	Passenger 33) Morris, Chynessa
Passenger 8) Edwards, Joanie	Passenger 34) Myrick, Vasjheran
Passenger 9) Erazo, Lizbeth	Passenger 35) Ochoa, Kari
Passenger 10) Feliciano, Amanda	Passenger 36) Pasqualino, Francesca
Passenger 11) Fiacco, Andrew	Passenger 37) Perkins, Arkim
Passenger 12) Fields, Miyono	Passenger 38) Richards, Taisha
Passenger 13) Fowler, Susan	Passenger 39) Roman, Bianca
Passenger 14) Graham, Isis	Passenger 40) Saker, Mark
Passenger 15) Griffin, Yahmanie	Passenger 41) Sanchez, Hector
Passenger 16) Haggray, Nyjew	Passenger 42) Sass, Tyler
Passenger 17) Harkins, Justin	Passenger 43) Stover, Douglas
Passenger 18) Harrington, Joseph	Passenger 44) Thomas, Isiah
Passenger 19) Herring, Jamel	Passenger 45) Thompson, Elijah
Passenger 20) Holton, Emmanuel	Passenger 46) Torres, Jocelyn
Passenger 21) Jimenez, Joanna	Passenger 47) Torres, Lydiana
Passenger 22) Johnson, Kimberly	Passenger 48) Townsend, Gregg
Passenger 23) Kisse, Davone	Passenger 49) Wetter, Nicole
Passenger 24) Lacy, Shaquinta	Passenger 50) Wilson, Shaquea
Passenger 25) Lownes, Yaminah	Passenger 51) Wright, Cassandra
Passenger 26) Lyons, Deb	Passenger 52) VanDollen, Dawn

The driver of V-2 was not injured. The 52 passengers were transported to four area hospitals.

The breakdown is as follows:

40 - Bassett Hospital of Schoharie County

8 - Albany Medical Center

2 - Ellis Hospital

2 - St. Peters Hospital

Three of the passengers were airlifted via Helicopter Medflight to Albany Medical Center. The degree of injuries varied in severity. The injuries ranged from serious to none present.

PRE-CRASH PHASE



ZICHA RD.

Telephone Pole
Power Pole
Stop Sign

Road Sign
Telephone Pole

Skidmarks
(Truck and Trailer)

Shoulder

Area of Impact

Shoulder

ST - 7

55 MPH Speed
Limit Sign
Light Pole
Power Pole
Stop Sign

0 10 20 30 40 50 60 70 80 90 100



ST - 30A

DUMP TRUCK / SCHOOL BUS
SERIOUS PERSONAL INJURY
INTERSECTION ST-30A AND ST-7
SCHOHARIE CO.
OCTOBER 21, 1999
SCHOHARIE CO. SHERIFF DEPT.
DRAWN BY TPR. T.P. BONNIER

A RD.

Sign

STOP

2

Road Sign

Telephone Pole

Guiderail

Skidmarks
(Truck and Trailer)

Area of Impact

STOP STOP

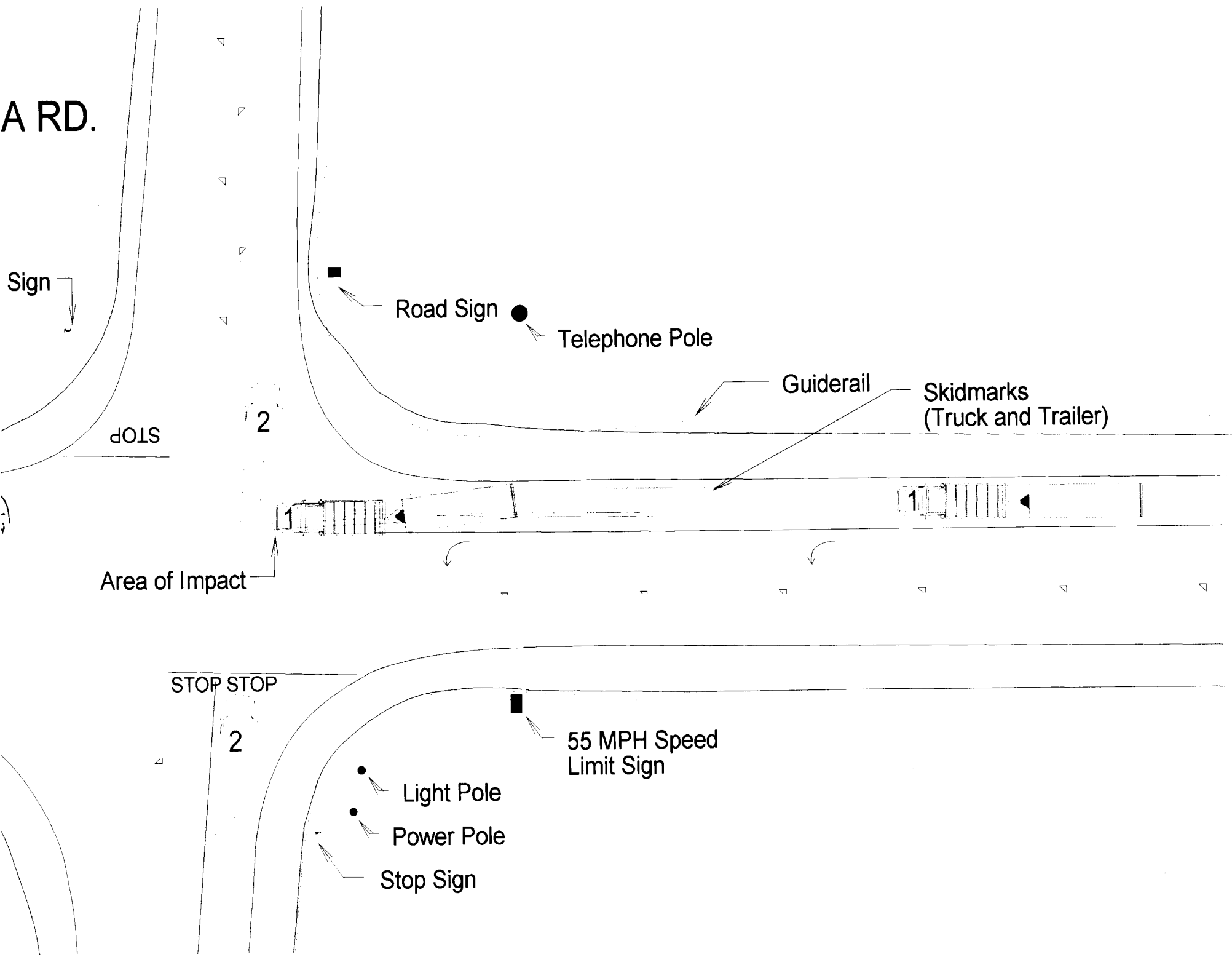
2

55 MPH Speed
Limit Sign

Light Pole

Power Pole

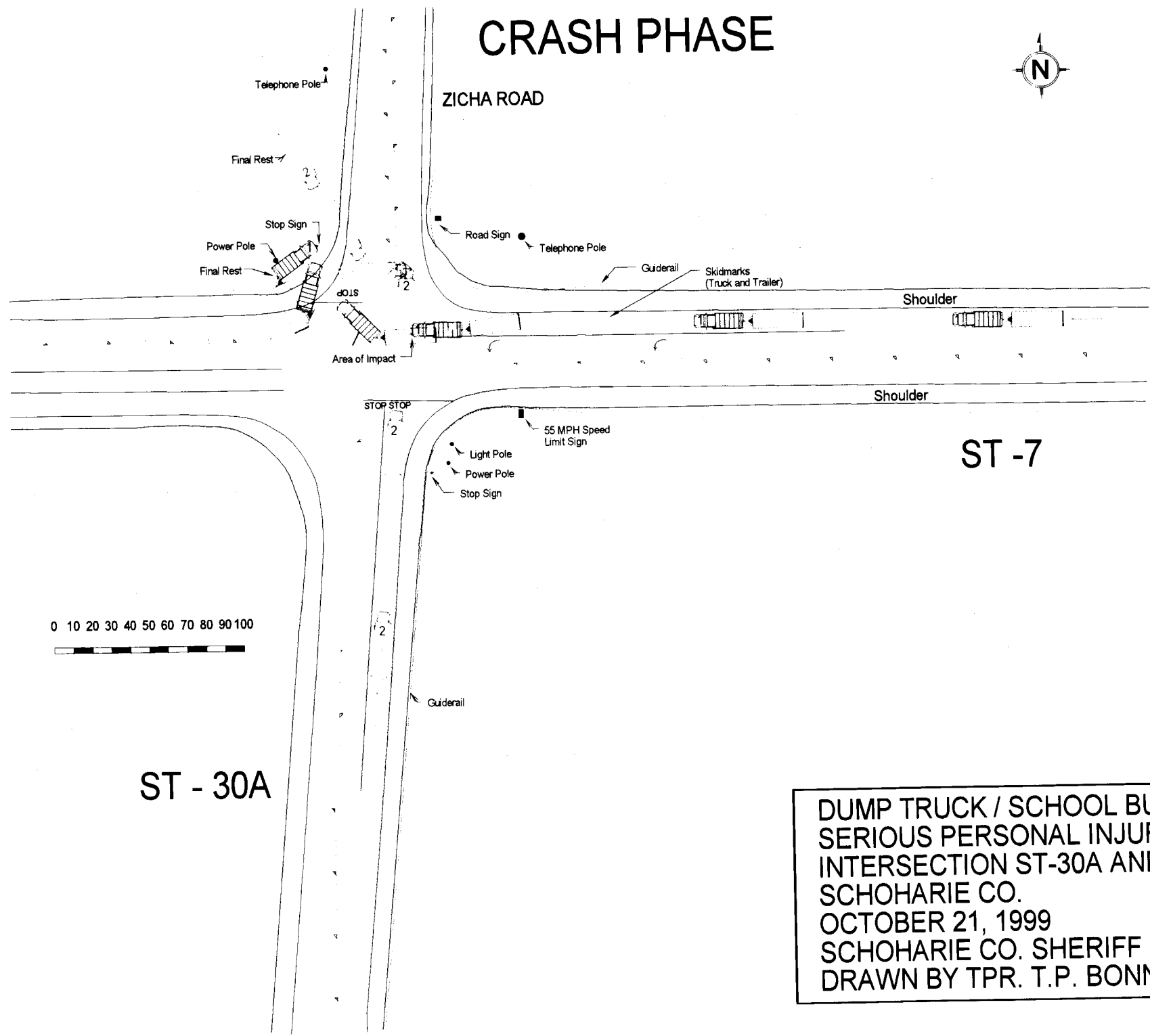
Stop Sign



CRASH PHASE



ZICHA ROAD



Shoulder

Shoulder

ST - 7

0 10 20 30 40 50 60 70 80 90 100

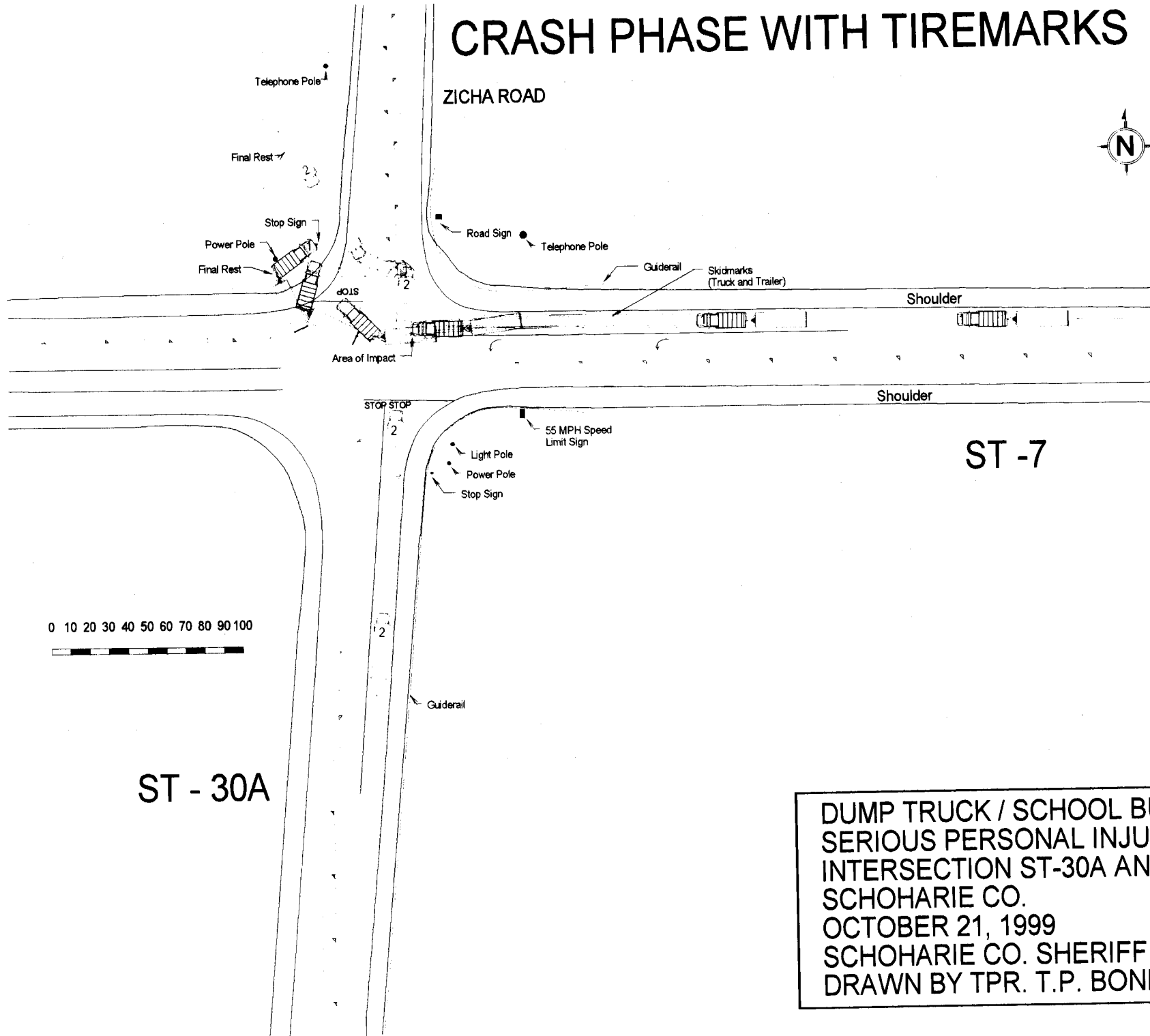


ST - 30A

DUMP TRUCK / SCHOOL BUS
SERIOUS PERSONAL INJURY
INTERSECTION ST-30A AND ST-7
SCHOHARIE CO.
OCTOBER 21, 1999
SCHOHARIE CO. SHERIFF DEPT.
DRAWN BY TPR. T.P. BONNIER

CRASH PHASE WITH TIREMARKS

ZICHA ROAD



Telephone Pole
Final Rest

Stop Sign
Power Pole
Final Rest

Road Sign
Telephone Pole

Skidmarks
(Truck and Trailer)

Shoulder

Area of Impact

Shoulder

ST - 7

STOP STOP
55 MPH Speed
Limit Sign
Light Pole
Power Pole
Stop Sign

0 10 20 30 40 50 60 70 80 90 100

Guideway

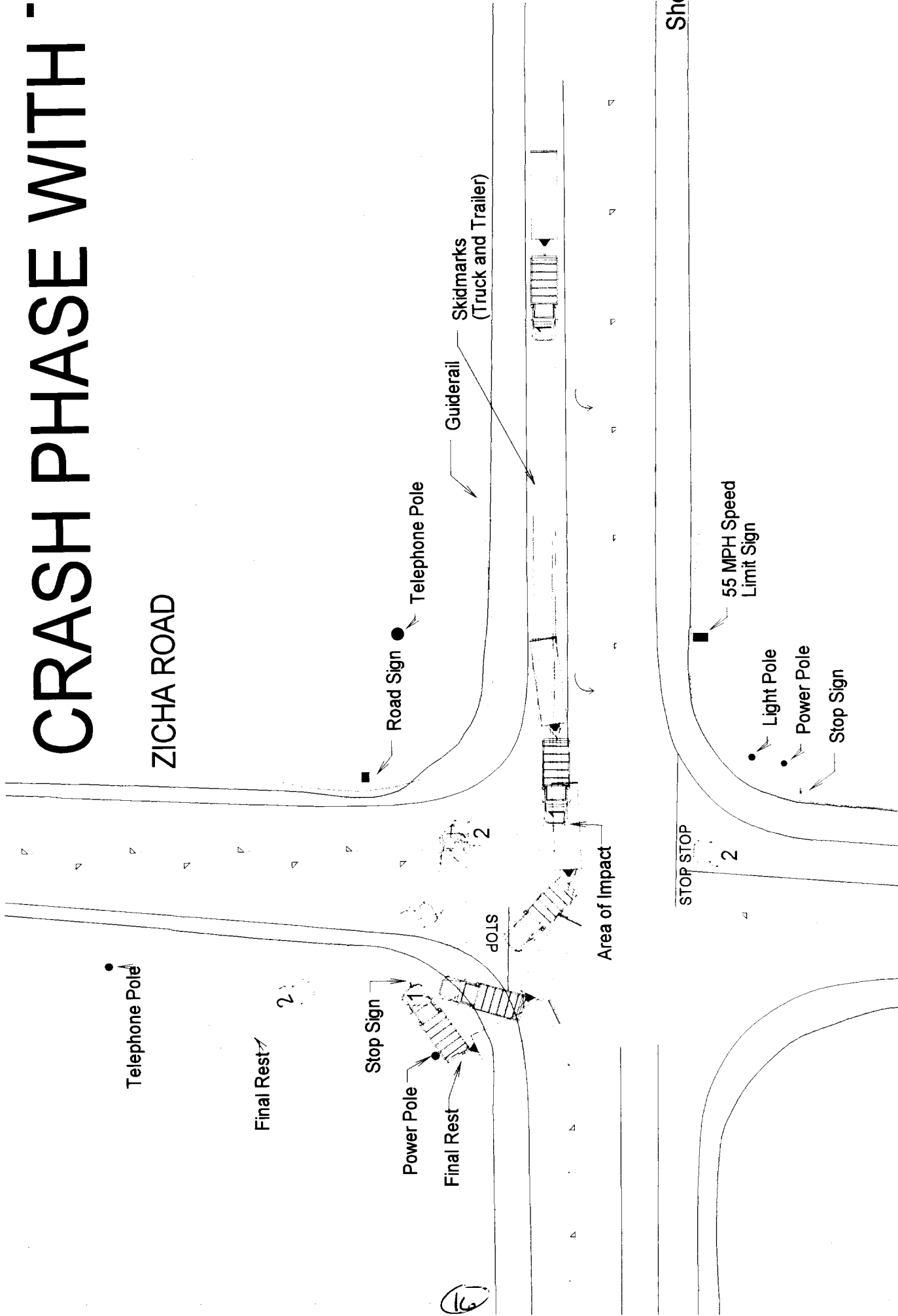
ST - 30A

DUMP TRUCK / SCHOOL BUS
SERIOUS PERSONAL INJURY
INTERSECTION ST-30A AND ST-7
SCHOHARIE CO.
OCTOBER 21, 1999
SCHOHARIE CO. SHERIFF DEPT.
DRAWN BY TPR. T.P. BONNIER

(15)

CRASH PHASE WITH

ZICHA ROAD



FINAL REST



Telephone Pole

2

Stop Sign

Power Pole

Road Sign

Telephone Pole

Skid Marks (Bus)

Guiderail

Skid Marks (Truck)

Shoulder

Shoulder

ST - 7

STOP STOP

55 MPH Speed
Limit Sign

Light Pole

Power Pole

Stop Sign

Guiderail

ST - 30A

DUMP TRUCK / SCHOOL BUS
SERIOUS PERSONAL INJURY
INTERSECTION ST-30A AND ST-7
SCHOHARIE CO.
OCTOBER 21, 1999
SCHOHARIE CO. SHERIFF DEPT.
DRAWN BY TPR. T.P. BONNIER

0 10 20 30 40 50 60 70 80 90 100



(17)

FINAL REST

