

COLLISION ANALYSIS AND RECONSTRUCTION REPORT



Incident No.: 2010-R87-NE
Incident Date: April 20, 2010

Location: USH-41 / Memorial Dr.
Village of Howard
Brown County, Wisconsin

Prepared By:

Trooper Jeremy VerGowe
Wisconsin State Patrol Academy – Technical Reconstruction Unit

June 16, 2010
608-265-2500

TABLE OF CONTENTS

SYNOPSIS	3
OBJECTIVE	3
CRASH LOCATION	3
SCENE DOCUMENTATION	4
VEHICLE EXAMINATIONS	5
• 1999 FORD F-250:	5
• HOMEMADE FLATBED TRAILER:	6
• 1999 MERCURY MYSTIQUE:	9
COLLISION SEQUENCE	10
SPEED ANALYSIS	13
ENVIRONMENTAL FACTORS	14
WEATHER:	14
SUN POSITION	15
ROADWAY	16
INVESTIGATION SUMMARY	17
INFORMATION REVIEWED FOR REPORT PREPARATION	19
• PRINTED MATERIAL(S) AND POLICE REPORTS	19
1. WISCONSIN STATE PATROL REPORTS	19
2. WITNESS / DRIVER STATEMENTS	19
3. VEHICLE DATA	19
• COMPUTER SOFTWARE/DATA	20
1. COMPUTER PROGRAMS	20
2. INFORMATIONAL WEBSITES	20
• GEODIMETER TOTAL STATION MAPPING	20
1. SCENE MAPPING	20
2. VEHICLE MAPPING	20
• PHOTOGRAPHS	21
APPENDIX	21

SYNOPSIS

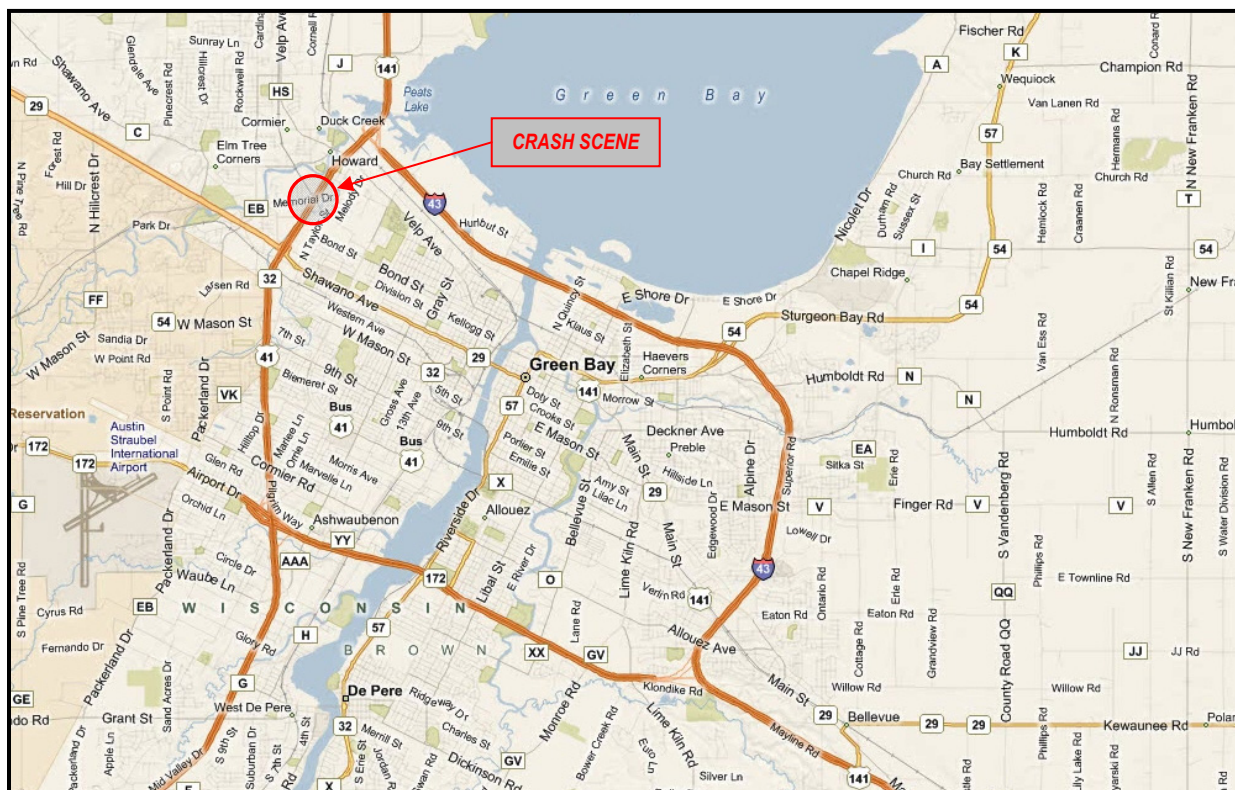
On April 20, 2010 at approximately 3:09 P.M. a utility trailer detached from its power unit, crossed a grass median, and impacted the driver's side of a passenger car approaching from the opposite direction of travel. The driver of the passenger car sustained fatal injuries as a result of the collision.

OBJECTIVE

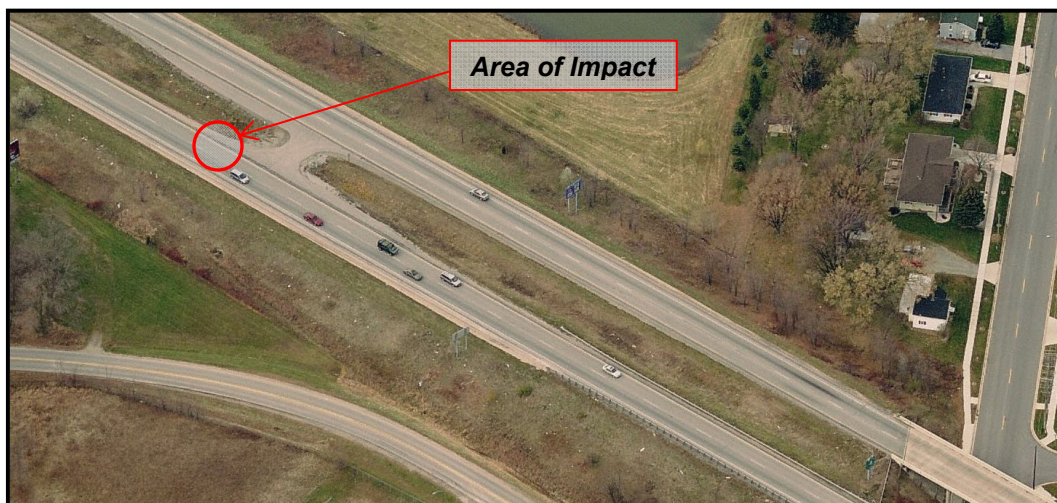
An analysis of the collision was completed using the available physical evidence collected from the scene of the crash. The objective of the analysis was to establish the speed and positioning of the involved vehicles through the collision sequence. A review of any other highway, human, vehicle, or environmental factors that may have contributed to the collision was also performed.

CRASH LOCATION

The collision occurred on USH-41 approximately one tenth of a mile south of the Memorial Drive overpass, within the Village of Howard, Brown County, WI. USH-41 is a four-lane divided highway that runs predominately in the north/south direction. Access to and from the highway is fully controlled by exit/entry ramps. The highway is regulated with a 65-mph speed limit.



The two northbound lanes are separated from the two southbound lanes by a grassy median that is approximately 40 feet wide. The northbound and southbound lanes are similarly configured. The individual traffic lanes are about 12 feet wide and are divided by a dashed white lane-line. The median shoulders consist of approximately 4 feet of pavement and an additional 4 feet of gravel. The median shoulders are separated from the median travel lanes by solid yellow edge lines. The paved surfaces of the outside traffic lanes extend past solid white edge lines for approximately 7 feet before giving way to roughly 4 foot wide gravel shoulders. Grassy terrain slopes downward towards a wire fence as it extends out from the outside shoulders. In the immediate area of the collision, the paved traffic lanes are elevated approximately 10 to 12 feet from the adjacent grassy areas alongside the highway.



This aerial photograph obtained from Bing Maps provides an overview of USH-41 just south of the Memorial Drive overpass (right edge of photo). The photo illustrates the general design and setting of the highway in the immediate area of the crash. The photograph was not taken on the day of the crash and is not intended to depict the conditions at that time.

SCENE DOCUMENTATION

A Geodimeter Total Station was used to map the collision scene. A total station is an electronic instrument composed of three primary components. The unit contains a theodolite (angle measuring system), an EDM (electronic distance measuring system), and a data collector (electronic memory). The two measuring systems allow the user to collect accurate three-dimensional data on points of interest. The measurements are stored in the unit's data collector, along with descriptive tags, until they can be downloaded into a computer system for further analysis. A prism (reflector), usually mounted to a pole, is used to mark evidentiary points so that they can be measured by the instrument.



The available physical evidence was mapped on April 20, 2010 at approximately 5:15 P.M. by Troopers Jeremiah Winscher and David Fowles. The instrument was used to document the position of such things as tire marks, scrape marks, gouges, furrows, and vehicle final resting positions. In addition, the profile of the applicable portion of the highway was mapped. A total

station was also used to map the profiles of the involved collision vehicles on April 26, 2010. The data was initially stored in the unit's data collector and was later downloaded for the creation of a scaled scene drawing, which was used to complete the collision analysis.

VEHICLE EXAMINATIONS

The collision vehicles were examined and photographed in order to document collision damage. The damage profiles were mapped with the total station. This information was used along with scene evidence to complete the collision analysis.

- **1999 Ford F-250:**

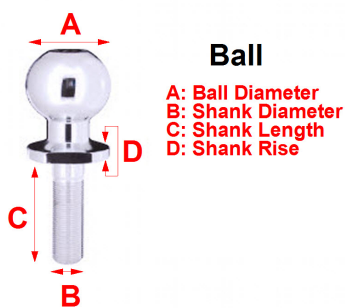
The Ford F-250 super duty pickup truck that was pulling the utility trailer was configured with an extended cab and a standard wheelbase. It was powered by a 7.3 liter diesel engine that contained 8-cylinders. The power was delivered to the wheels through an automatic transmission. The truck did have 4-wheel drive capabilities.



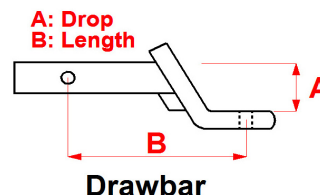
FIGURE 1

This photo shows the 2 inch hitch receiver and electrical socket mounted at the rear of the Ford F-250. The socket was wired for trailer lighting and electronically controlled trailer braking.

The hitch receiver was securely mounted to the rear frame of the truck and did not exhibit any significant damage or deterioration. The unit did have some surface rust and contained some light scratch marks in the area where safety chains are generally attached. In addition, the step bumper displayed some small cuts in the area directly above the receiver. An electrical link up was also mounted at the rear of the vehicle (See Figure 1). There was a common 4-way flat connector and a socket for a round 7-pole RV connector. A 7-pole connector, allowing for trailer lighting functions and electronic trailer brakes, was being used at the time of the collision. The driver had an electronic trailer brake controller hooked up inside the cab of the truck. However, the trailer brakes would have stopped functioning once the trailer completely separated from the truck and the electronic connection was severed.



A 11.5 inch drawbar, with a 3 inch ball drop, was secured in the receiver with a 5/8 inch receiver pin and an accompanying cotter pin. The drawbar contained a pintle hook that did not appear to be in use at the time of the collision, as it was pinned in the upward position. A 2-5/16 inch diameter ball was bolted tightly to the end of the drawbar. The ball's shank had a 1 inch diameter and was 2-1/4 inches in length. The shank rise was 1/4 inch.



- ***Homemade Flatbed Trailer:***

The homemade trailer involved in the collision had a total length of approximately 17.5 feet and was about 8 feet wide. The tongue of the trailer extended out approximately 64 inches from the front of the cargo bed. The main framework of the trailer was constructed with steel and had expanded steel sides. The cargo bed was primarily made from wood. The trailer rode upon tandem axles and had a tandem rocker spring suspension. At the time of the crash, the trailer was loaded with a floor jack and a few small tree branches (See **Figure 2**). The trailer also had a toolbox mounted in front of the cargo bed that contained miscellaneous items. The overall weight of the trailer was determined to be approximately 2,780 pounds.



FIGURE 2

During the collision with the passenger car, the front of the tongue was torn from the rest of the trailer's framework. The trailer's coupler was found inside the passenger compartment of the Mercury Mystique following the collision (See **Figure 3**). The weld connecting the coupler to the tongue was still intact. The end of the tongue had torn away from the rest of trailer approximately 10 inches behind the coupler (See **Figure 4**).



FIGURE 3



FIGURE 4

Figure 3 shows the passenger compartment of the Mercury Mystique. The red arrow points to the trailer coupler that was found wedged alongside the front passenger door. Figure 4 is a photo of the coupler after it was removed from the vehicle. The arrow points to the weld attaching the coupler to the portion of the steel tongue that was torn from the trailer.

While the coupler did not have any identifying marks from a manufacturer, the design of the latching system did appear to be somewhat similar to an Atwood 80131. The Atwood 80131 is a straight tongue coupler that mounts to 3 inch channel steel. The coupler is designed to accept a 2-5/16 inch ball. The ball is secured in the coupler by a plunger with a curved end that slides into place and "hugs" the contour of the ball when the actuator assembly is latched. A portion of the actuator assembly has a "barb" on it which inserts into a small cutout in the top of the coupler. The "barb" locks the plunger in place so that it can't slide back from the ball (See Figure 5).

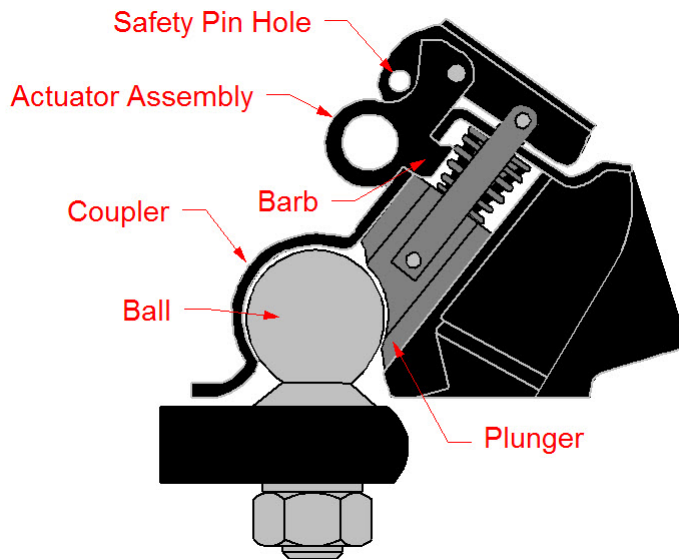


FIGURE 5

Figure 5 is intended to give a general idea of how the latching system works on the Atwood 80131 coupler. The system is very similar to that which was used by the coupler involved in the collision being investigated.

The coupler from the collision was consistent in size with the 2-5/16 inch ball that was mounted on the F-250's drawbar. The coupler did sustain damage as a result of the collision. The latching system was stuck in the unlatched position due to the bending of the metal that attaches the actuator assembly to the plunger. The metal forming the small cutout that accepts the barb from the actuator assembly appeared to exhibit some deformation (See Figure 6). In addition, the normally round safety pin holes on the actuator assembly appeared to be "ovaled" to some extent. It should be noted that there was no safety pin present in the corresponding holes on the actuator assembly when the unit was located at the crash site.

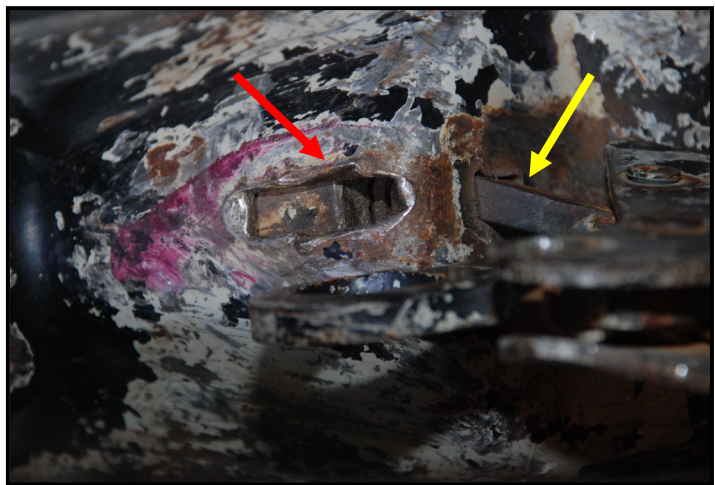


FIGURE 6

This is a close up view of the top of the coupler in the area of the actuator assembly. The red arrow points to the deformed metal surrounding the small cutout in which the barb on the actuator inserts to lock the plunger down. The yellow arrow points to the bent metal arm which connects the actuator to the plunger.

The coupler was transported to the University of Wisconsin-Milwaukee so that it could be examined by Mr. Benjamin Church. Mr. Church is an assistant professor who specializes in materials within the University's College of Engineering and Applied Science. Mr. Church indicated that the metal forming the cutout for the barb appeared to be pulled upward. He also noted that based on the appearance of the safety pin holes, the "ovaling" likely did not occur from something such as the repeated jostling of a safety pin, but rather a single jarring force. His observations seem to suggest that the coupler may have been latched and pinned when the trailer came unhitched. The barb from the actuator assembly may have been forced out of the cutout at an angle due to collision forces encountered when the tongue of the trailer struck the passenger car. This could potentially explain the manner in which the metal cutout was deformed. It would also seem possible that a safety pin was jarred and snapped as a result of the impact. The jarring of a safety pin could have created the "ovaling" deformation of the safety pin holes.



FIGURE 7

This photo illustrates the "ovaling" of the safety pin hole on one side of the actuator assembly. The "ovaling" on the opposite side is near the bottom of the hole.

The appearance of the coupler suggested that it had been in service for some time as it did exhibit wear from usage. In particular, the end of the plunger appeared to be somewhat worn and did not have much of a curved shape to it. Based on the visual appearance of the plunger, it would seem possible that it did not "cup" the bottom of the ball sufficiently enough to prevent the ball from "popping" out of the coupler under the right circumstances (such as a jolt experienced as the vehicle combination traveled over a rough portion of roadway) even if the actuator assembly was latched. Since the manufacturer of this particular coupler is unknown, no comparisons can be made to determine the actual extent of the wear to the latching system's components. In addition, the coupling capability cannot be checked due to collision damage.



FIGURE 8

This photo shows the portion of the coupler that receives the ball. It can be seen that the end of the plunger appears to be relatively flat. In the area that the arrow is pointing, the bottom lip of the plunger seems to be worn flatter than the surrounding areas.



FIGURE 9

For comparison purposes, this photo shows the components of a coupler repair kit for an Atwood 80131 coupler. The end of the plunger appears much more slanted than the one from the coupler involved in the collision. This geometry would appear to allow the end of the plunger to be more effective in "cupping" the ball when compared to the one from the collision.

The truck/trailer combination was using a single safety chain at the time of the collision. The safety chain was wrapped around the tongue of the trailer in a manner which allowed both ends of the chain to be attached to the towing vehicle (**See Figure 10**). The 1/4 inch chain had 79 links and was approximately 97 inches long. Each end of the chain had a 7/16" x 4-3/4" carabiner clip attached via a double clevis mid link. The chain links appeared to be in relatively good condition. There was some relatively minor surface rust in various areas, but the links did not exhibit any signs of failure. The mid links also appeared to be in good condition. The carabiner clips both exhibited significant bending which allowed them to release from the towing vehicle (**See Figure 11**).



FIGURE 10

The single safety chain was wrapped around the tongue just behind the area where two steel support channels were welded to the tongue. A nut and bolt were used to create two ends of equal length that could be attached to the towing vehicle.



FIGURE 11

Figure 11 shows the bent carabiner clips that were used to attach the safety chain to the truck. It can be seen that they were the weak link in the secondary safety linkage.

- **1999 Mercury Mystique:**

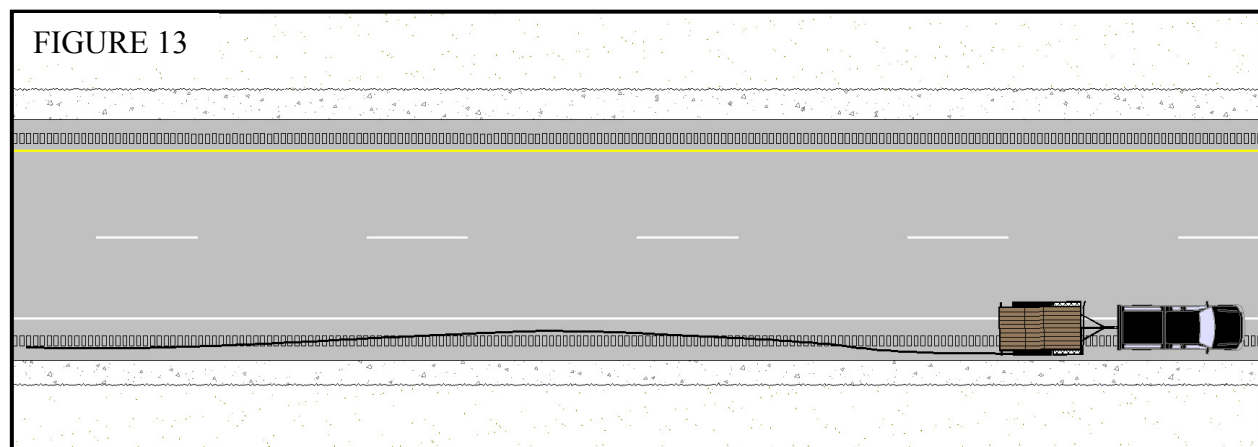
The Mercury Mystique was a 4-door sedan powered by a 2.0 Liter, 4-cylinder engine. The power was provided at the front wheels through an automatic transmission. The vehicle sustained very severe damage as a result of the collision with the trailer. The damage indicates that the front of the trailer overrode the driver side rocker panel and intruded well into the passenger compartment of the vehicle. This is evident by the displacement of the vehicle's roof and left side support pillars. The contact damage began at the front left fender in front of the axle and extended back along nearly the entire left side of the car (**See Figure 12**).



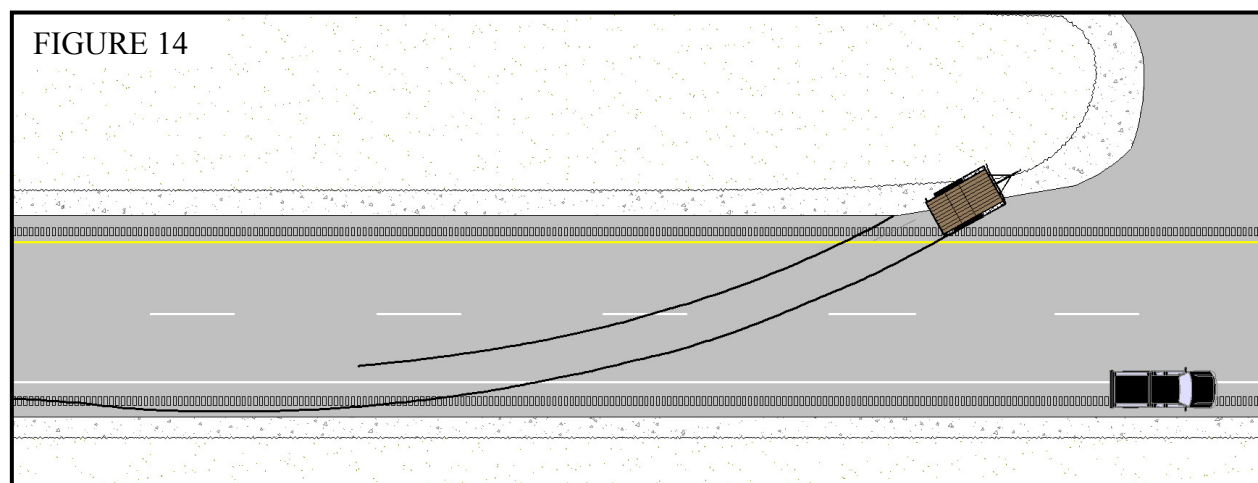
FIGURE 12

COLLISION SEQUENCE

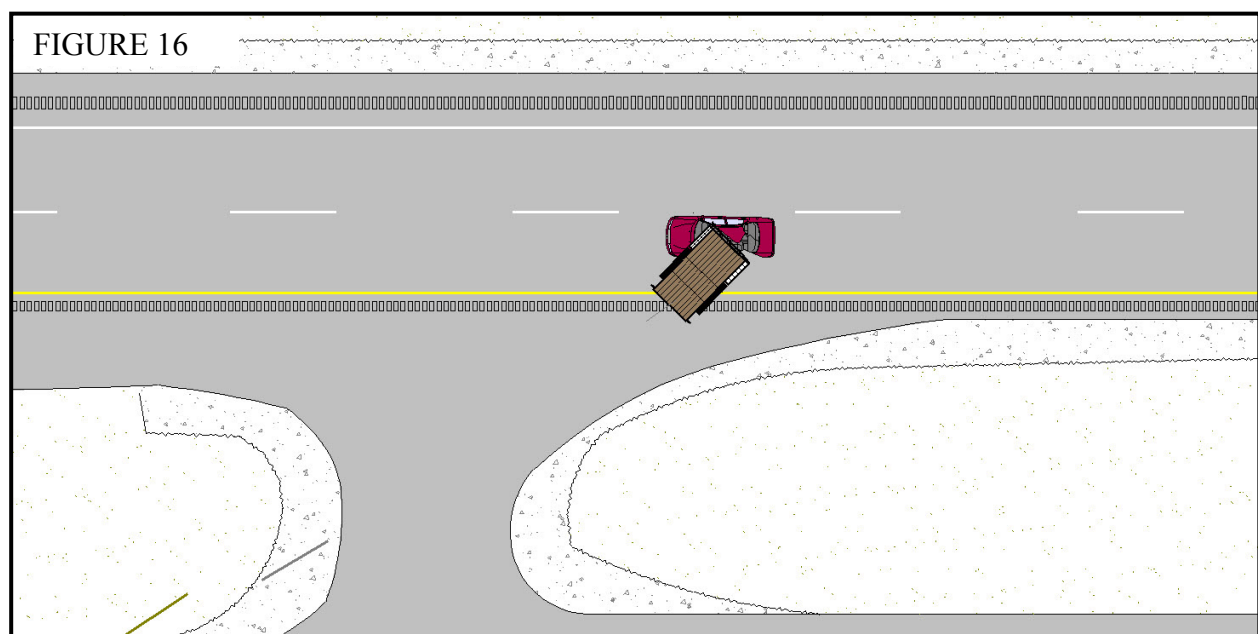
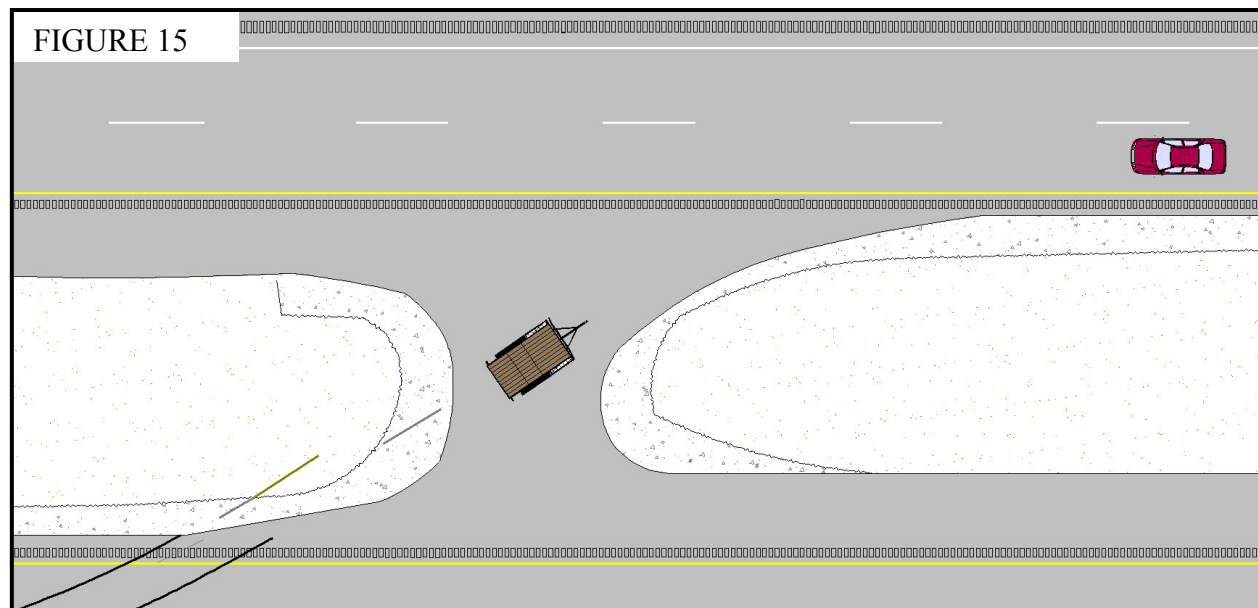
A 1999 Ford F-250 pickup truck, pulling a flat bed utility trailer, was approaching the Memorial Drive overpass on southbound USH-41 using the outside traffic lane. In the general area of the overpass, the trailer's coupler released from the coupler ball mounted on the truck. Following the unhitching, the trailer remained attached to the truck by means of a safety chain for a relatively short period of time. A wavy tire mark located on the outside paved shoulder of southbound USH-41 suggests that the driver began to move onto the outside shoulder as the trailer began swaying back and forth (**See Figure 13**). The driver of the truck, James McDermid, made statements that were consistent with this evidence. He indicated that he felt a "jolt" as he traveled over Memorial Drive. He also noted that the trailer began to sway soon after.



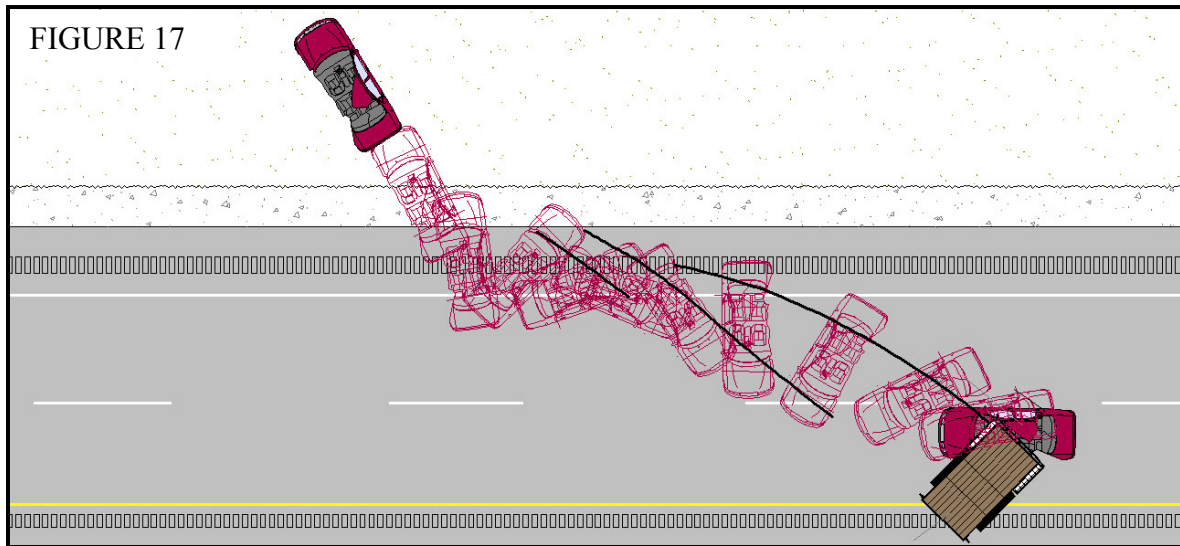
After traveling approximately 300 feet south of the Memorial Drive overpass, the safety chain separated from the truck. This allowed the trailer to begin to swerve across the southbound traffic lanes from the outside shoulder. This is evident by the fact that the previously mentioned tire mark ceased its wavy pattern and veered across both southbound traffic lanes. The start of a second mark was also located in this area. The second mark also veered across the southbound traffic lanes and ran parallel with the previously mentioned mark (**See Figure 14**). The distance between the two marks was consistent with the track width of the trailer.



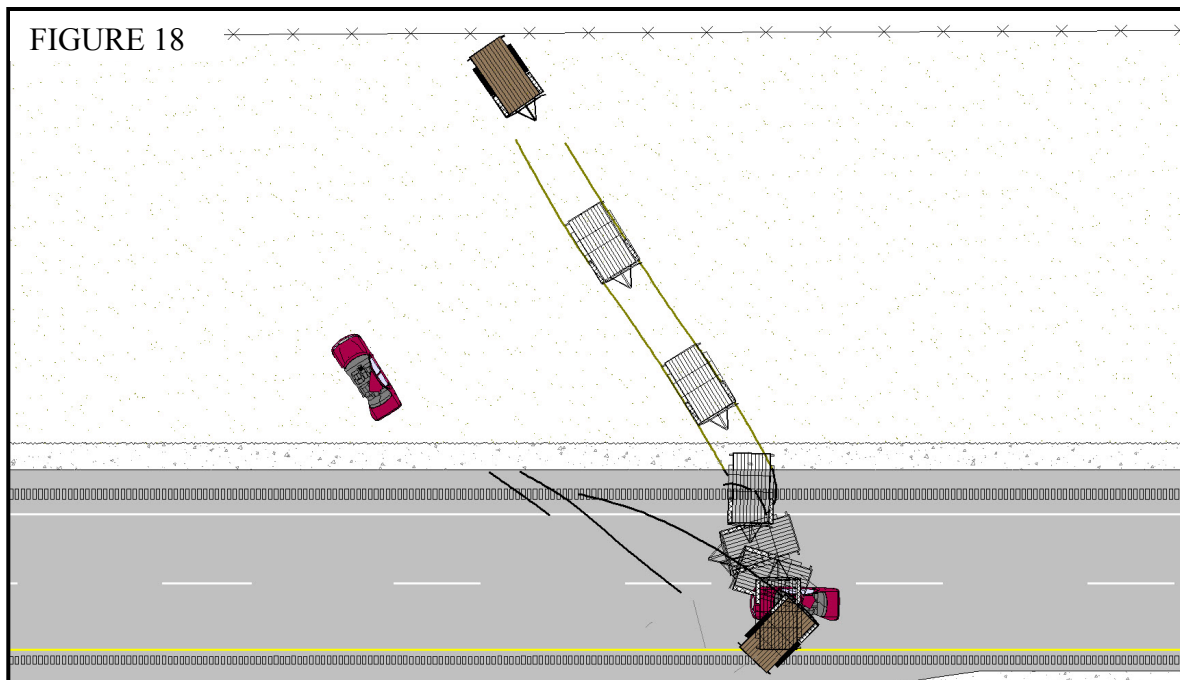
The trailer initially entered the median approximately 30 feet to the north of a paved cross-over designed for use by highway maintenance and emergency vehicles. As the trailer began crossing the median, the left side wheels of the trailer dropped down into the grassy median which was slightly lower in elevation than the gravel shoulder that the right side wheels passed over. As a result, the front of the trailer's tongue gouged the extension of the gravel shoulder which passed between the grassy median and the paved cross-over. As the left side of the trailer exited from the lower elevation, the tongue of the trailer likely gained some lift as the left side wheels rode up the relatively small, sharp embankment between the grassy median and the cross-over (See **Figure 15**). Shortly after, the trailer finished crossing the median by traveling through the cross-over. The front of the trailer then entered into the northbound lanes of USH-41 and impacted the driver's side of a 1999 Mercury Mystique which was approaching from the south in the median traffic lane (See **Figure 16**).



Following the collision, the Mystique began to rotate counterclockwise and departed northeast towards the outside shoulder of the northbound traffic lanes. The car traveled approximately 85 feet from impact before coming to rest on the grassy slope adjacent to the outside shoulder. The vehicle was facing primarily towards the east and was approximately 10 feet from the outside pavement edge (**See Figure 17**).



The trailer also rotated counterclockwise following the collision, but departed relatively straight towards the outside shoulder of northbound USH-41. The trailer left the paved portion of the roadway facing primarily towards the west and rolled backwards down the grassy slope. The trailer eventually came to a stop at the wire fence located at the bottom of the sloped terrain. The trailer traveled approximately 105 feet from impact to final rest (**See Figure 18**).



SPEED ANALYSIS

The *Principle of the Conservation of Momentum* approach was used to estimate the impact speeds of the vehicles involved in this collision. The method is dependant upon the approach angles, departure angles, weights, and post impact speeds of the involved vehicles. The approach and departure angles are determined from the damage profiles of the vehicles and the physical evidence left at the scene of the crash. The physical evidence often consists of such things as tire marks, scrape marks, gouges, and fluid trails. A vehicle's post impact speed is dependant upon the distance the vehicle traveled from impact to final rest, and the drag factor assigned to the vehicle for the particular surface(s) that it traveled over.

Using the *Conservation of Momentum* approach, the impact speed of the Mercury Mystique was estimated to be approximately 56 to 61-mph. The utility trailer was estimated to be traveling approximately 38 to 45-mph at impact. The speed ranges are based upon a sensitivity analysis of the input variables. It should be noted that the determination of the trailers post-impact speed was somewhat problematic due to the manner in which it came to a stop. It would appear that the trailer lost some post-impact energy due to interaction with some scrub vegetation and a wire fence at the very end of its post impact movement. The fence did not exhibit any significant damage so the energy loss would appear to be minimal. Nonetheless, the post-impact speed used for the momentum calculations, and thus the impact speed estimates, are considered to be conservative.

There was no evidence of pre-impact braking for the Mercury Mystique. However, the lack of tire mark evidence does not preclude the possibility of some pre-impact speed reduction by the vehicle's operator. After its unhitching, the trailer likely lost some travel speed as it veered across the southbound traffic lanes due to rolling resistance and lateral frictional forces at the tire/road interface. In addition, some energy would have been lost when the trailer interacted with the small embankment between the grassy median and the paved cross-over. However, the amount of speed loss that could be expected would not indicate any excessive travel speed for the trailer at the time of its unhitching.

- Intentionally Left Blank -

ENVIRONMENTAL FACTORS

Weather:

Historical weather data recorded at a nearby airport indicates the sky was clear with no precipitation around the time of the crash. The atmospheric conditions were clear and should not have caused any visibility problems. The temperature was approximately 65 °F with southern winds blowing at approximately 5 to 10-mph (See Figure 9).

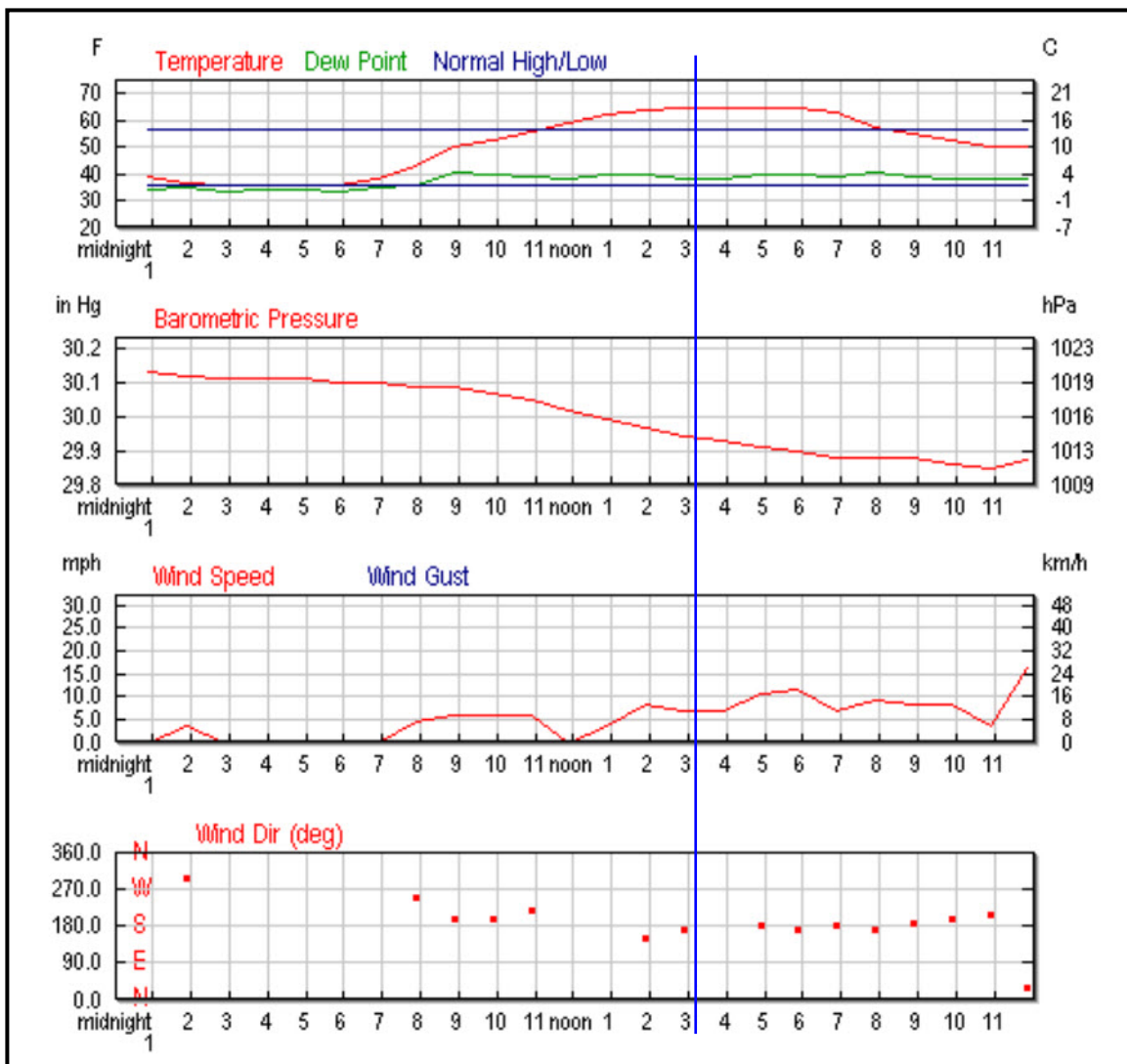
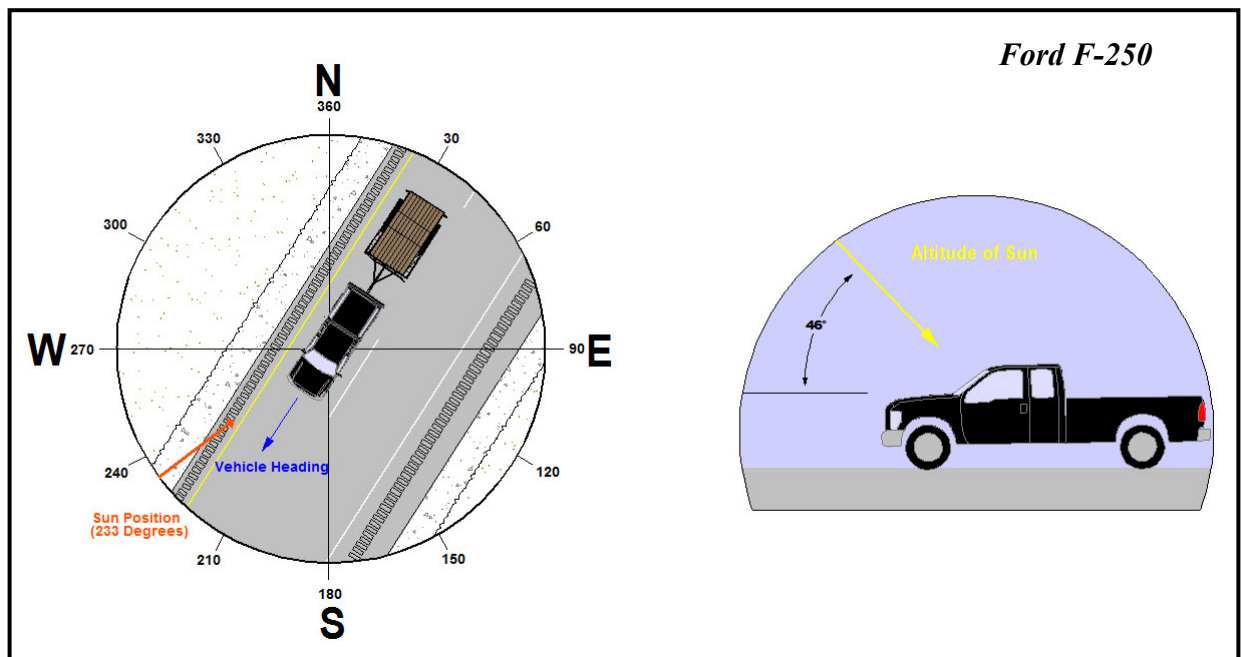
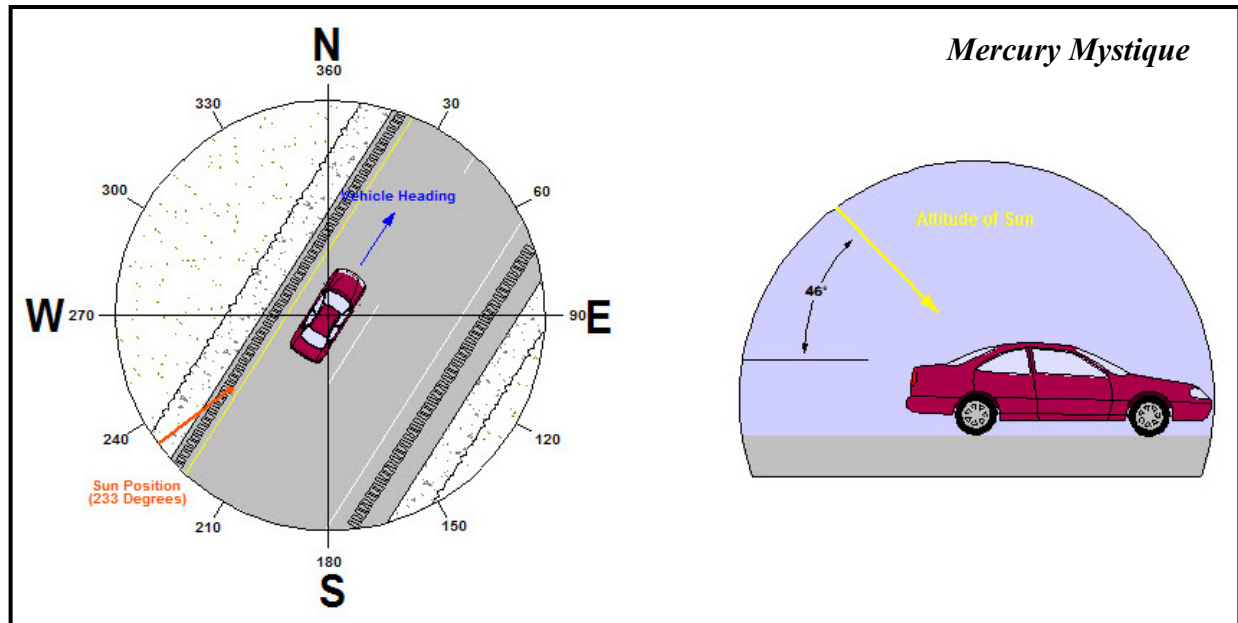


FIGURE 9

Figure 9 charts the weather conditions in the Green Bay area throughout the day of the crash. The data was recorded at the Austin Straubel Airport and was obtained from www.weatherunderground.com. The blue line represents the approximate time of the crash.

Sun Position

According to records kept by the United States Naval Observatory, the sun was positioned approximately 46 degrees above the horizon primarily in the southwest sky around the time of the crash. The sun's location and relatively high position should not have caused any visibility problems for either driver.



Roadway

USH-41 was composed of bituminous concrete. The paved surface was dry and should have provided good traction. The highway had a downward grade of approximately 2% as it extended to the south from the Memorial Drive overpass. The centerlines and edge lines were visible and did not exhibit any extensive fading in the collision area. There was no evidence of any significant deformities or debris in the roadway around the time of the crash. There is some relatively minor roughness encountered by southbound vehicles as they pass over the ends of the Memorial Drive overpass. While it is possible that this segment of roadway contributed to the unhitching of the coupler from the ball as the truck and trailer passed over, the unevenness did not seem to be in excess of what one might normally expect when traversing these types of areas.

- Intentionally Left Blank -

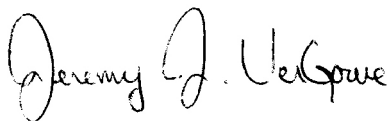
INVESTIGATION SUMMARY

The following statements are based on information and evidence reviewed by the author as of this writing. They are believed to be true and accurate and are based on a reasonable degree of scientific probability.

- The weather conditions were relatively good around the time of the crash. The temperature was approximately 65 °F and there was no precipitation.
- The atmospheric conditions were clear and the sun was elevated. There were no apparent visibility problems for either driver.
- The roadway was composed of bituminous concrete. The surface was dry and appeared to be in relatively good condition.
- The collision occurred within the median lane of northbound USH-41. The physical evidence indicates that the front of the utility trailer impacted the driver's side of the Chevrolet Cavalier, primarily between the front and rear axle, at an acute angle.
- The Mercury Mystique was estimated to be traveling approximately 56 to 61-mph at impact. There was no physical evidence of any pre impact braking.
- The impact speed of the trailer was estimated to be approximately 38 to 45-mph.
- Particular areas of metal deformation found on the coupler may have resulted from the coupler being latched and pinned when the trailer collided with the passenger car.
- The coupler from the trailer exhibited wear from usage. Based on the probable collision damage sustained by the coupler and the exhibited wear, it would appear possible that the ball could have released from a latched coupler if the hitch was jolted by rough spots in the roadway.
- A wavy tire mark located on the outside shoulder of southbound USH-41 suggests that the trailer began to sway, as it remained attached to the towing unit by a safety chain, for a relatively short distance following the uncoupling of the hitch.

- A single 1/4 inch coil steel welded safety chain was looped around the tongue of the trailer and then attached to the towing unit at both ends. The chain did not exhibit any signs of failure.
- The safety chain was connected to the towing unit by two 7/16" x 4-3/4" carabiner clips. The carabiners bent open after the unhitching and allowed the trailer to completely separate from the truck. Trans 308.12(3) requires the means of attachment to have a longitudinal strength that is at least equal to the total gross towed weight.
- It is recommended that a review be conducted of current governmental statutes and regulations referring to safety chains and their attachment devices for towing operations. Such a review could help better define approved devices to aid the consumer in selection and use, and could also assist law enforcement and other regulatory personnel in ensuring compliance.

Respectfully Submitted,



Jeremy J. VerGowe
Reconstruction Specialist
WSP Technical Reconstruction Unit
WSP Academy
95 South 10th Avenue, Gate 15
Fort McCoy, WI 54656-5000
(608)269-2500



INFORMATION REVIEWED FOR REPORT PREPARATION

- ***Printed Material(s) and Police Reports***

In completing the offered objective, several police reports and published references were consulted. These items of information that were reviewed include the following:

1. Wisconsin State Patrol Reports
 - a. Wisconsin Motor Vehicle Accident Report (MV4000E) completed by Trooper Jamie Kahkola ~ 07-21-08 (7) pages.
 - b. Narrative Report by Trooper Jeremiah Winscher ~ 04/29/10 (1) page.
 - c. Narrative Report by Inspector Ken Cook ~ 04/21/10 (1) page.
2. Witness / Driver Statements
 - a. Driver Interview of James McDermid by Trooper Jamie Kahkola ~ 04/20/10
 - b. Driver Statement by James McDermid (Brown County Sheriff's Dept.) ~ 04/20/10
 - c. Driver Statement by James McDermid ~ 04/21/10
 - d. Voluntary Statement by Wayne Reimer (Brown County Sheriff's Dept.) ~ 04/20/10
 - e. Voluntary Statement by Ryder Joyce ~ 04/20/10
 - f. Voluntary Statement by David Mazur ~ 04/20/10
 - g. Voluntary Statement by Kirk Stecker ~ 04/20/10
3. Vehicle Data
 - a. Vehicle identification data for the 1999 Mercury Mystique and the 1999 Ford F250 from the VINassist (Ver. 1.34LE) computer program
 - b. Vehicle specification data for the 1999 Mercury Mystique and the 1999 Ford F250 from the Expert Autostats (Ver. 5.0.1) computer program

- ***Computer Software/Data***

The following computer software programs or professional websites were utilized or consulted in preparing this report:

1. Computer Programs

- a. Crash Zone Ver. 8.3.1 – Professional Drawing Software
- b. Microsoft Office Word 2007 – Word Processing Software
- c. REC-TEC Platinum Professional Version 20100603 – Crash Reconstruction Software
- d. VIN Assist Version 1.34LE – Vehicle Identification Number Decoding Software
- e. Expert Autostats Version 5.0.1 – Vehicle Dimensions and Specifications Software
- f. MathCAD 14.0 – Mathematical Application Software

2. Informational Websites

- a. Historical Weather Data, www.weatherunderground.com
- b. Sun and Moon Position Data, Astronomical Applications Department of the U.S. Naval Observatory, <http://www.usno.navy.mil/USNO>
- c. Aerial Photograph of the collision area, <http://www.bing.com/maps>

- ***Geodimeter Total Station Mapping***

The following forensic mapping data was used to complete the reconstruction analysis:

1. Scene Mapping

- a. Forensic Mapping of the Collision Scene by Trooper Jeremiah Winscher and Trooper David Fowels, Wisconsin State Patrol (04-20-10)

2. Vehicle Mapping

- a. Vehicle Profile Measurements of the 1999 Mercury Mystique by Trooper Jeremy VerGowe, Wisconsin State Patrol (04-26-10)
- b. Vehicle Profile Measurements of the homemade utility trailer by Trooper Jeremy VerGowe, Wisconsin State Patrol (04-26-10)

- ***Photographs***

The following digital photographs were reviewed while completing the analysis:

1. 150 Scene Photographs by Trooper Jeremy VerGowe, Wisconsin State Patrol (04-20-10)
2. 82 Vehicle Photographs by Trooper Jeremy VerGowe, Wisconsin State Patrol (04-26-10 & 05/04/10)
3. 8 Safety Chain Clip Photographs by Trooper Jeremy VerGowe, Wisconsin State Patrol (05-19-10)

APPENDIX

The following items will be appended to this report:

1. Trooper Jeremiah Winscher's Narrative Report
2. Inspector Ken Cook's Narrative Report
3. Post-Collision Scaled Drawing



TECHNICAL CRASH / INCIDENT REPORT

WISCONSIN STATE PATROL NORTHEAST REGION

CASE NUMBER: 10-017652

RECON NUMBER: 2010-87-NE

REPORTING INVESTIGATOR: Trooper J. Winscher



INITIAL CONTACT:

On 4-20-10 at approximately 3:30pm, I, Trooper Winscher, was contacted by State Patrol Dispatch and advised to assist at the scene of a fatal crash in Brown County on highway 41 northbound near Shawano Avenue. It was also requested that I go to the Appleton Police Department to retrieve State Patrol's total station to map the scene of the crash. I was assigned to Winnebago County that day and proceeded to travel to the Appleton Police Department from Winnebago County. I did obtain the total station from APD and then traveled north to the scene of the crash to assist in mapping the crash scene. While en route to the scene, I observed that highway 41 northbound had been completely shut down in Brown County south of the crash location and traffic was being detoured off of the highway by a number of Brown County Deputies and Brown County Highway Department vehicles.

INITIAL OBSERVATIONS:

At approximately 4:31pm, I arrived at the scene of the crash and observed what appeared to be a Mercury Mystique in the east ditch area on highway 41 northbound. The vehicle was facing northeast and appeared to have sustained serious damage during the crash on the passenger side, front and over the top of the entire vehicle. I also observed a black or dark colored trailer in the east ditch which was facing southwest in direction resting against a wood post and wire fence. There were impressions in the grassy portion of the ditch which indicated to me that the trailer had entered the ditch from the highway.

I was met on scene by Sgt. Jones, Trooper Schneider and Inspector Cook who explained what they believed had occurred and informed me that WSP would be investigating and reconstructing the incident. I also noted that there was a Highway Department supervisor, a Brown County Sheriff's Deputy, Brown County Sheriff's Sergeant and a Brown County Sheriff's Department Captain on scene speaking with Sgt. Jones. I observed multiple tire marks, skids and scrapes on the northbound paved portion of highway 41 which appeared to have originated from some tire marks starting on the southbound side of highway 41 and traveled through a paved turn-around area in the median. There was a lot of gravel scattered over the highway with various pieces of vehicle parts and glass. I also noticed a long fluid trail which started in the northbound lanes of traffic and ended in the east ditch area. There appeared to be a brake reservoir which was from the Mercury at the end of the fluid trail. The weather conditions at the time I arrived were dry and clear.

FORENSIC MAPPING:

After evaluating the scene I decided that the best location to set up the total station was just to the north of the incident location on the east shoulder. I obtained the total station from my cruiser and began to set it up just north of the incident scene on the east shoulder of highway 41 northbound. I was assisted in setting up the total station by Trooper Fowles. During the initial set up I was unable to get the total station which I had brought with me to power on. Due to the unknown issue, Trooper VerGowe obtained his total station which we then set up in the same location. Once the total station was set up for operation, I performed the roll of total station operator and Trooper Fowles was the staff operator. A control point and backsight was noted and taken and then Trooper Fowles and I proceeded to map the incident scene with the total station. While mapping the scene, Trooper Fowles and I communicated over WSP Statewide radio frequency. Trooper VerGowe took photographs of the scene and also assisted in the roll of a second staff operator. Trooper Cook performed an inspection of the trailer and the vehicle which had towed the trailer prior to the crash. After all necessary measurements and notes had been taken from the northbound portion of the scene and Trooper VerGowe had completed photographing the scene, the northbound lanes of highway 41 were opened to traffic. Trooper VerGowe, Trooper Fowles and I then took measurements of the tire marks on the southbound side of highway 41. When all necessary measurements had been taken, I then closed out the total station and powered it off. I proceeded to take down the total station and then turned it over to Trooper VerGowe for his reconstruction.

Respectfully submitted,

Jeremiah M. Winscher
Trooper, Wisconsin State Patrol
Northeast Region



Division of State Patrol
Northeast Region, Fond du lac Post
Fond du lac, WI 54936-0984

Jim Doyle, Governor
Frank J. Busalacchi, Secretary
Internet: www.dot.wisconsin.gov

Telephone: 920-929-3700
Facsimile (FAX): 920-929-7666
email: david.pichette@dot.wi.gov

Post Crash Narrative Report

Report Number: 10-017652

Investigating Agency: Wisconsin State Patrol

Reconstructionist: Vergowe

Post Crash Inspector: Cook

Inspection Report Number:

Date of Activity: 4-20-2010

INITIAL CONTACT:

The trailer unit was positioned in the northbound ditch at the bottom of the sloped hill. The incident was described as the trailer becoming detached from the truck, traveling through the median and striking the vehicle northbound. The towing vehicle was already removed from the scene. It was taken to Kozloski towing secured lot.

INITIAL OBSERVATIONS:

Safety Inspection:

The trailer unit was a black dual axle that had the front tongue broke off from the trailer. There was electric wiring leading to all four wheel ends and the brake components showed a shining consistent to brake action on the trailer. There was no emergency breakaway brake system for the trailer. The front portion of the trailer tongue was located in the passenger side of the crash vehicle.

The ball and hitch system used is a 2 5/16" ball and socket where the locking mechanism is a spring loaded lock. The locking system pushes the ball forward in the socket to secure the ball from separating from the socket. The lock and release lever was bent to the left which appears to have been caused by the impact of the crash. A test of the system being able to lock could not be done at the scene. The locking release lever for the ball socket was in the open position and the way it locks into the socket system, it could not be determined if the locking lever was fully locked into locking position and it could not be verified if there was a safety pin used.

Inspection of the safety chains in use, showed the chain linkage was adequate for the size of the trailer. There was no indications of stress on any of the chain links. There was extensive stress on the metal C-clamp hooks used to secure the chain to the tow vehicle.

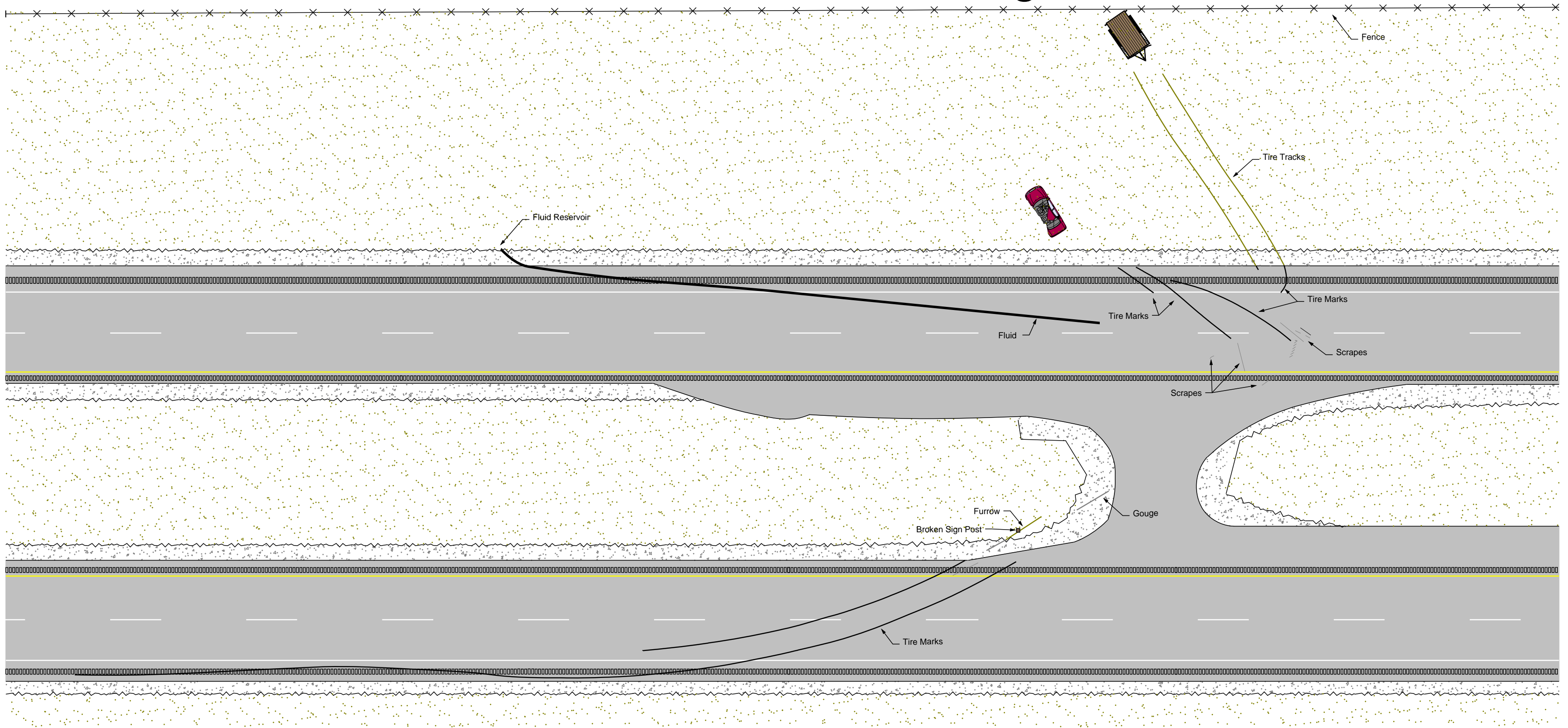
Date of Incident:

FOLLOWUP ACTIVITIES:

An Inadequate type of C-clamp in use, from the chain to the towing vehicle.<347.47(3)> Under the MCSAP regulations, this type of C-clamp is unsuitable for all applications.

US DOT and CVSA guidelines state the aggregate working load limit (W.L.L) of the tiedown assemblies used to secure an article against movement in any direction must be equal to at least 1/2 times the weight of the article.

Post-Collision Drawing



Incident #: 2010-R87-NE

Collision Date: April 20, 2010 3:09 P.M.

Location: USH-41 1/10 Mile South of Memorial Dr.
Village of Howard
Brown County, WI

Surveyed By: Trooper Jeremiah Winscher
Trooper David Fowles

Drawn By: Trooper Jeremy VerGowe



SCALE

