MAI-2012-09

UNITED STATES
DEPARTMENT OF LABOR
MINE SAFETY AND HEALTH ADMINISTRATION
Metal and Nonmetal Mine Safety and Health

REPORT OF INVESTIGATION

Surface Nonmetal Mine
(Limestone)

Fatal Powered Haulage Accident
June 21, 2012

T H Kinsella Incorporated
Kinsella Quarry & Mill
Fayetteville, Onondaga County, New York
ID No. 30-01279

Investigators

Matthew H. Mattison
Mine Safety and Health Inspector

Kevin G. Forgette
Mine Safety and Health Inspector

Jonathan Hall
Mechanical Engineer

Eugene Hennen
Mechanical Engineer

Kenneth Chamberlain
Mine Safety and Health Specialist

Originating Office
Mine Safety and Health Administration
North East District
178 Thorn Hill Rd. Suite 100
Warrendale, PA 15086
(724) 772-2334
Donald J. Foster, Northeast District Manager

OVERVIEW

Terry C. Johnson, Customer Truck Driver, age 49, was killed on June 21, 2012. He was operating a loaded dump truck, descending a decline on a paved roadway between the quarry loading point and scale house, when the truck's brakes failed. The truck left the roadway, partially climbed a tree-covered embankment, and came to rest facing the opposite direction.

Johnson jumped from the truck but was run over by the moving vehicle. Jeffrey Jones, a passenger in the truck, also jumped out of the truck. Jones received medical treatment at a hospital and was released.

The accident occurred when the truck's brakes failed and Johnson attempted unsuccessfully to shift to a lower gear, causing the truck's speed to increase. Mine operators are required to provide hazard training to customer truck drivers. A sign warning mobile equipment operators of a steep decline was not placed in a position along the roadway to effectively warn them to reduce speed by shifting into a lower gear before descending the decline. If the sign had been placed at the top of the decline, the operator could have shifted into a lower gear. Management failed to establish policies and procedures ensuring the control of traffic on the mine's roadways.

GENERAL INFORMATION

Kinsella Quarry and Mill, a surface limestone mine, owned and operated by T H Kinsella Incorporated, is located in Fayetteville, Onondaga County, New York. Thomas Kinsella, President, and Allen Curtis, Vice-President are the principal operating officials. The mine normally operates one shift, 8 hours a day, 5 days per week. Total employment is 12 persons.

Limestone is drilled, blasted, and loaded into haul trucks that transport the material to an adjacent processing facility. The material is crushed at the primary jaw crusher and transported by belt conveyor to the secondary crushing facility for resizing and stockpiling. The finished product is sold for use in the construction industry.

MSHA completed the last regular inspection at this operation on April 2, 2012.

DESCRIPTION OF ACCIDENT

On the day of the accident, June 21, 2012, Gary Terpstra, Owner of Gary Terpstra Sewer and Drain, located in Manlius, New York, asked Terry C. Johnson (victim) to take Terpstra's dump truck to the mine to pick up a load of stone. Terpstra asked Jeffrey Jones (passenger) to accompany Johnson. Terpstra purchased stone from the quarry, as needed, for use in his business. Johnson and Jones were friends of Terpstra and occasionally delivered stone for Terpstra using his truck. This was Johnson's third trip to the quarry.

At approximately 11:00 a.m., Johnson arrived at the mine and traveled directly to the quarry to be loaded, bypassing the scales. Douglas Eaton, Loader Operator, loaded a partial bucket, approximately four tons of material, in the dump bed of the truck.

About 11:10 a.m., Johnson traveled to the scales to weigh the truck. At that time, he lost control of the braking system on the truck and unsuccessfully attempted to shift into a lower gear to slow the truck down. This action caused the truck to pick up speed.

Johnson told Jones the truck lost its brakes and they should jump out. Both men then jumped out of the truck. Jones slid on the road on his back. The truck ran over Johnson.

About 11:12 a.m., Gary L. Whitmeyer, Mechanic, heard Jones shouting. Whitmeyer went to the area and saw the truck on the embankment. He immediately contacted the office over the loud speaker to call for help. At 11:14 a.m., Jeffery Kinsella, Secretary, called for Emergency Medical Services (EMS) who arrived at 11:21 a.m. Dr. Joseph Markham arrived on the scene with the Fayetteville, New York Fire and EMS Squad and pronounced the victim dead. Dr. Markham attributed the death from multiple blunt force injuries.

INVESTIGATION OF THE ACCIDENT

MSHA was notified of the accident on June 21, 2012, at 11:28 a.m. by a telephone call to the National Call Center from Aaron Howard, Office Manager. The National Call Center notified Dennis Yesko, Assistant District Manager, and an investigation started the same day. In order to ensure the safety of all persons, MSHA issued an order pursuant to Section 103(j) of the Mine Act. Upon arrival of the first Authorized Representative (AR), MSHA modified the order to section 103(k) of the Mine Act.

MSHA's accident investigation team traveled to the mine, conducted a physical examination of the accident scene, interviewed employees, and reviewed documents and work procedures relative to the accident. MSHA conducted the investigation with the assistance of mine management, mine employees, Gary Terpstra, and the Manlius, New York Police Department.

DISCUSSION

Location of the Accident

The accident occurred along a paved roadway from the quarry to the scale house. The distance from the quarry to the scale house is approximately 3,700 feet.

Physical Factors

The Manlius Police Department conducted the initial investigation of the accident. The truck was towed to their impoundment lot for inspection where MSHA investigators conducted an independent inspection of the vehicle.

1) Dump Truck

The dump truck involved in the accident is a single axle, dual wheel, Studebaker "Transtar" dump truck manufactured in 1957. The odometer read 80,971 miles. The truck has a name plate weight of 18,000 lbs. and a registered gross vehicle weight rating (GVWR) of 17,500 lbs. The truck's registered empty weight is 8,700 lbs.

It is equipped with a manual transmission with 5 forward speeds and 1 reverse, plus a 2 speed rear end. The truck is equipped with single circuit power assisted hydraulic service brakes and a band type transmission mounted parking brake.

2) Seat Belt

The truck is not equipped with seat belts.

3) Service Brake System

The truck is equipped with service and parking brake systems. The service brake system, operated by a foot pedal, uses brake fluid from the master cylinder, augmented by a vacuum power assist, to apply drum brakes to all four wheels. The service brake system is controlled by the foot pedal through the master cylinder with power assist that splits to each wheel. A single hydraulic circuit supplies pressure to all four wheel ends. Consequently, if a brake line or component anywhere in the system fails, all service brake

capacity is lost.

4) Parking/ Emergency Brake System

The truck is equipped with a band type parking brake controlled by a lever mounted on the floor of the cab next to the transmission shifter. When pulling the lever, a cam tightens a metal band around brake shoes mounted on an exposed circular portion of the transmission.

5) Brake System Evaluation and Tests

a) External Visual Checks

Investigators conducted a visual inspection of the truck's brake system before testing or disassembling any component. No defects were observed regarding the condition of the parking brake band and visible portions of the parking brake shoes. Some of the brake lines appeared to have been recently replaced and showed only mild weathering. Other brake lines showed signs of corrosion. A section of wet brake line above the rear axle and the surrounding portion of the truck frame was also wet. This brake line and frame section is shown in Illustration 1. Note the rough corroded appearance of the brake line.

Illustration 1: Wet brake line and frame.

The inside surface of the right rear wheel assembly showed signs of fluid leakage. The master cylinder, located below the operator's compartment of the truck and

accessed through a hole in the floor, did not have a cover at the time of the accident. Dirt and residue around the rim of the opening where the cover was supposed to be attached indicated the cover had been missing for some period of time. The master cylinder had no visible level of clean brake fluid in it but contained a wet muddy looking fluid. Illustration 2 shows the master cylinder.

Illustration 2: Master Cylinder top and inside seen through truck floor.

b) Operational Tests

Due to accident damage, no attempts were made to start the truck. When pressed, the brake pedal moved freely with little resistance and went to the floor. When brake fluid was added to the master cylinder, the amount of brake pedal resistance increased, but the rear brakes did not apply. The brake line running from the power assist unit (located under the bed of the truck) was disconnected and compressed air fed into it. This compressed air revealed a hole in the brake line. Soapy water was sprayed onto the outside of the brake line, making the compressed air escaping through the hole visible, as shown in Illustration 3.

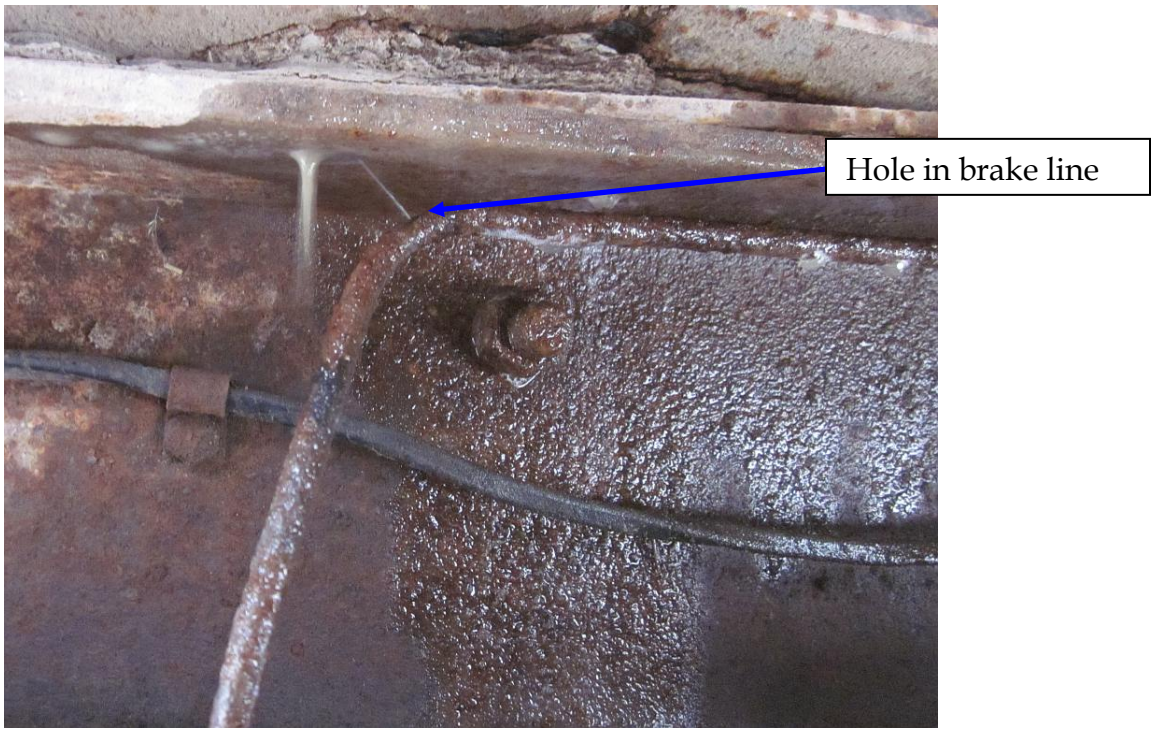


Illustration 3: Leaking brake line

c) Disassembly and Internal Examinations

The truck was raised on jack stands and the wheels and drum on both sides of the rear axles removed. Each wheel on this truck had 2 brake shoes operated by separate wheel cylinders and with separate adjusters. The brake shoes and internal components were coated with oil inside the right rear drum (passenger side). This is the same wheel previously noted showing signs of leakage when viewed from underneath the truck. Investigators could not determine if this oil leakage existed prior to the accident, caused by the accident, or resulted from towing the truck to the police impoundment lot. Illustration 4 shows the oil on the right rear wheel brake components. The grease like substance is a mixture of oil with brake dust or dirt. The inside of the left rear wheel (driver's side) was clean with no evidence of oil contamination.


Illustration 4: Oil inside right rear wheel end

6) Steering

The steering system was non-operational due to accident damage. The tie rod ends and ball joints were inspected with no defects found.

7) Accident Damage

Full operation of the steering and front brake condition could not be checked due to accident damage. The front wheels were jammed against the body making it unsafe to jack up the front of the truck to remove the front wheels. The front axle was not perpendicular to the front suspension at the time of inspection. The passenger side front leaf suspension was missing several leafs and the U bolts on the driver side front leaf suspension were torn and partially detached.

No attempt was made to start the engine. When the hood was forced open, the battery was found across the engine compartment from the battery holder. One battery terminal was attached to the battery but disconnected from its wire.

8) Road and Traffic Control

The decline of the access road is about 1,400 feet long and varies between 5 and 9 degrees (8% and 14 %) in the direction of travel. A sign indicating a steep grade requiring the use of low gear was found placed approximately 700 feet past the point where the decline began. Illustration 5 shows the approximate locations of the existing sign and the start of the decline.

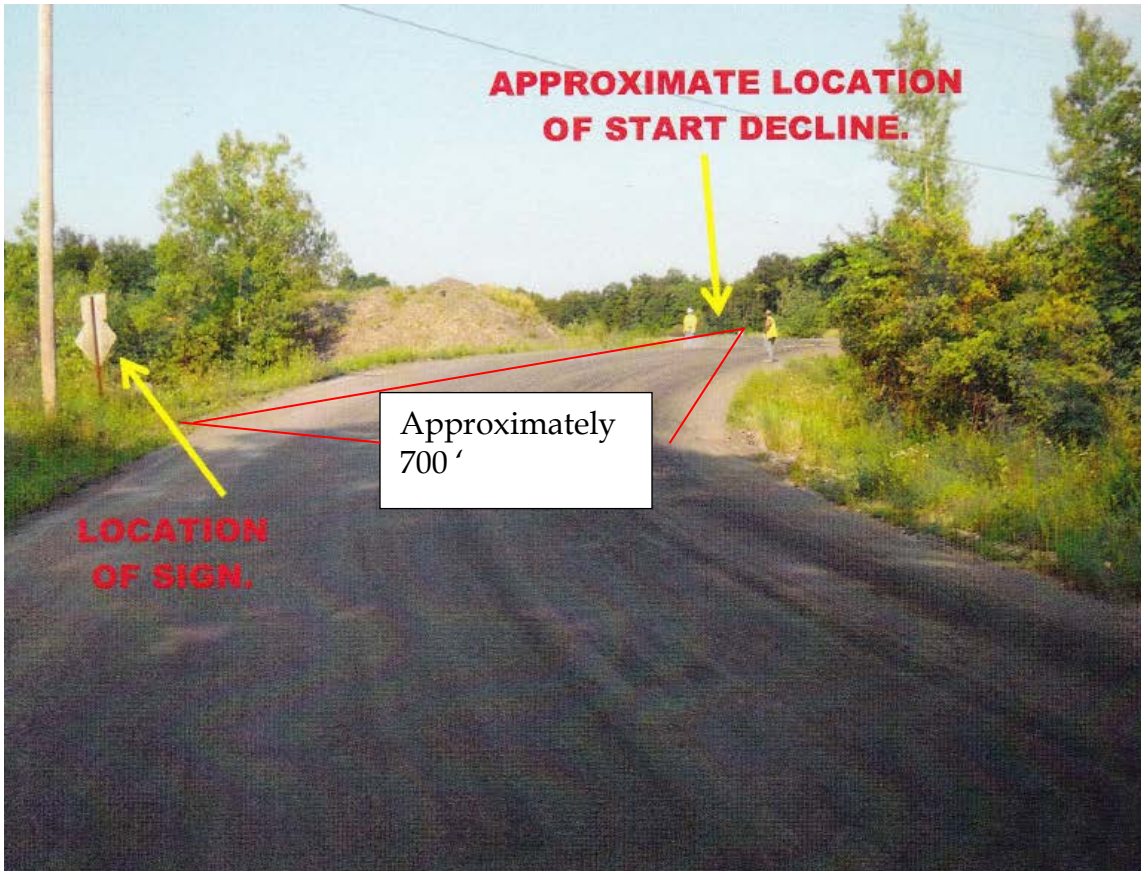


Illustration 5: Approximate locations of the existing sign and the start of the decline

Summary

1. A brake line in the truck hydraulic brake system leaked. Since this truck is a single circuit brake system, all service brake capacity was lost.

2. Rear brake linings on both rear wheels were adequate at the time of the accident. No brake fluid leaks were observed and the wheel cylinders of both wheels were in good condition and appeared to have been replaced recently.

3. Oil was observed on the linings of the brake shoes on the right rear wheel. Investigators could not determine if this contamination occurred during recovery of the truck or if it was a preexisting condition.

4. The steering was tight and intact.

5. Traffic control devices did not warn mobile equipment operators of the approaching decline in the roadway.

Weather Conditions

The weather on the day of the accident consisted of clear skies with a high temperature of 95 degrees Fahrenheit. Weather was not considered a contributing factor in the accident.

Training and Experience

Terry Johnson, victim, had no mining experience. He had made two previous trips to pick up stone at this operation. A representative of MSHA's Educational Field Services staff conducted an in-depth review of the mine operator's training records. Johnson did not receive site-specific hazard awareness training prior to being exposed to the hazards of the mine. A non-contributory citation was issued for a violation of 30 CFR 46.11(b) (4).

ROOT CAUSE ANALYSIS

Investigators conducted a root cause analysis and identified the following root cause:

Root Cause: The access road from the quarry to the scale house is a decline starting at approximately 5 degrees increasing to approximately 9 degrees. When the truck's brakes failed while descending the decline, the operator was unable to shift to a lower gear. The sign at the top of the decline is placed approximately 700 feet from the crest of the hill. The sign was not placed in a position along the roadway to effectively warn mobile equipment operators to reduce speed or shift to a lower gear before descending the decline. In addition, the operator's methods for ensuring that all visitors receive site - specific hazard awareness training was not adequate.

Corrective Action: Management placed a sign at the crest of the hill prior to the start of the decline to effectively warn mobile equipment operators to reduce speed or shift to a lower gear before descending the decline. Management also posted a sign in plain view that contained all required site-specific hazard awareness information.

CONCLUSION

The accident occurred when the truck's brakes failed and Johnson attempted unsuccessfully to shift to a lower gear, causing the truck's speed to increase. Mine operators are required to provide hazard training to customer truck drivers. A sign warning mobile equipment operators of a steep decline was not placed in a position along the roadway to effectively warn them to reduce speed by shifting into a lower gear before descending the decline. If the sign had been placed at the top of the decline, the operator could have shifted into a lower gear. Management failed to establish policies and procedures ensuring the control of traffic on the mine's roadways.

ENFORCEMENT ACTIONS

Issued to T H Kinsella Incorporated

Order No. 8659781 was issued on June 21, 2012, under the provisions of Section 103(j) of the Mine Act:

A fatal accident occurred at this operation on June 21, 2012, at approximately 11:12 a.m. This order is being issued, under Section 103(j) of the Federal Mine Safety and Health Act of 1977, to prevent the destruction of any evidence which would assist in investigating the cause or causes of the accident. It prohibits all activity on the road area until MSHA has determined that it is safe to resume normal mining operations in this area. This order was initially issued orally to Allen Curtis, Vice President, at 12:10 p.m. and has now been reduced to writing.

MSHA subsequently modified the order to Section 103(k) after an AR arrived at the mine. The AR terminated this order on June 22, 2012, after conditions that contributed to the accident no longer existed.

Citation No. 8706305 - Issued on July 9, 2012, under the provisions of 104(a) of the Mine Act for a violation of 30 CFR 56.9100(b):

On June 21, 2012, a truck driver was killed and a passenger was injured when the driver lost control of the truck while traveling down a steep decline on the mine's main roadway. The operator did not install signs or signals at an appropriate location on the roadway to alert drivers of the decline ahead.

Approved by, Donald D Foster

Date: October 18, 2012

Donald J. Foster
District Manager

List of Appendices

APPENDIX A

Persons Participating in the Investigation

T H Kinsella Incorporated

Thomas Kinsella..... President
Allen Curtis..... Vice-President
Douglas Eaton..... Loader Operator
Jeffery Kinsella..... Scale House Attendant/Secretary

Manlius Police Department

Brian Ackerman..... Captain
Kevin Schafer..... Captain
Jeff Peckins..... Sergeant
Jeremy Reynolds..... Police Officer
Mark Buzzard..... Police Officer
Steve Watkins..... Police Officer

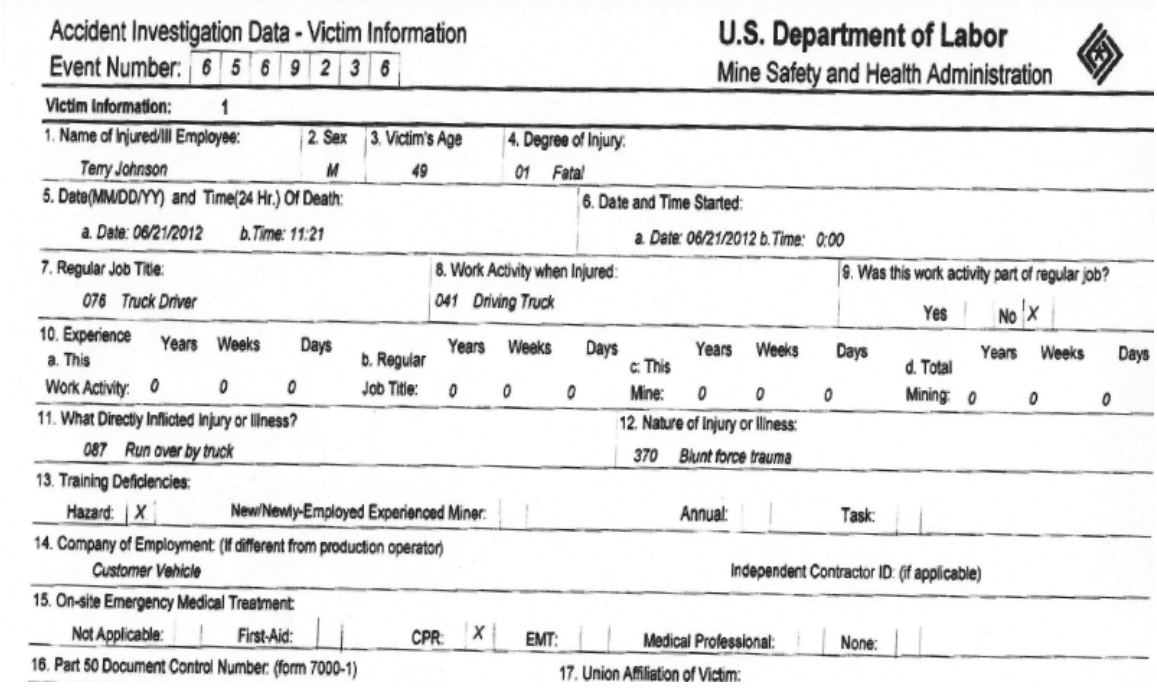
Onondaga County Medical Examiner's Office

Ronald A Brunelli..... Forensic Investigator

Mine Safety and Health Administration

Matthew H. Mattison..... Mine Safety and Health Inspector
Kevin G. Forgette..... Mine Safety and Health Inspector
Jonathan Hall.....Mechanical Engineer
Eugene Hennen.....Mechanical Engineer
Kenneth Chamberlain…..Mine Safety and Health Specialist

Appendix B



Accident Investigation Data - Victim Information

Event Number: 6 5 6 9 2 3 6

U.S. Department of Labor
Mine Safety and Health Administration

Victim Information: 1

1. Name of Injured/Ill Employee:	2. Sex	3. Victim's Age	4. Degree of Injury:
Terry Johnson	M	49	01 Fatal

5. Date(MM/DD/YY) and Time(24 Hr.) Of Death:
a. Date: 06/21/2012 b.Time: 11:21

6. Date and Time Started:
a. Date: 06/21/2012 b.Time: 0:00

7. Regular Job Title:
076 Truck Driver

8. Work Activity when Injured:
041 Driving Truck

9. Was this work activity part of regular job?
Yes | No X

10. Experience

	a. This Work Activity:	b. Regular Job Title:	c: This Mine:	d. Total Mining:
Years	0	0	0	0
Weeks	0	0	0	0
Days	0	0	0	0

11. What Directly Inflicted Injury or Illness?
087 Run over by truck

12. Nature of Injury or Illness:
370 Blunt force trauma

13. Training Deficiencies:
Hazard: X | New/Newly-Employed Experienced Miner: | Annual: | Task:

14. Company of Employment: (If different from production operator)
Customer Vehicle

Independent Contractor ID: (if applicable)

15. On-site Emergency Medical Treatment:
Not Applicable: | First-Aid: | CPR: X | EMT: | Medical Professional: | None:

16. Part 50 Document Control Number: (form 7000-1)

17. Union Affiliation of Victim:

Appendix C


APPROXIMATE LOCATION WHERE TRUCK STOPPED
APPROXIMATE LOCATION WHERE TRUCK EXITED ROADWAY
GATE
APPROXIMATE ENDING OF YAW MARKS IN ROADWAY
APPROXIMATE BEGINING OF YAW MARKS IN ROADWAY
APPROXIMATE LOCATION END OF FLUID STREAM IN ROADWAY
APPROXIMATE LOCATION WHERE BRAKES FAILED FLUID STREAM IN ROADWAY
CLEAN OFF RACK