Crushed inside a concrete manhole—Insp # 1671601 Woods Construction Services, LLC

A 22 year old male employee was crushed inside a concrete manhole which collapsed the cone section of the manhole when it was struck by a front-end loader.

The victim was part of a three-man work crew that was preparing to install concrete spacer rings for the manhole. The spacer rings were of the same inside diameter and outside diameter as the manhole, and either four inches tall or six inches tall. The victim was working on the inside of the concrete manhole.

According to the operator of the front-end loader, he placed three spacers and some rolls of tar strip seals in the bucket of the front-end loader from the material staging area at the construction site. He drove the front-end loader towards the manhole and parked the front-end loader 20 feet to 25 feet away from the manhole. He shut off the engine and exited the front-end loader. He said when he walked to the manhole to help the laborers who were working at the manhole he turned around and saw the front-end loader start to roll down towards the manhole and hit the manhole. He said he got back in the front-end loader, started it, backed it up, and parked it. He said he never had any problems operating the front-end loader, and never had any problems with the brakes.

On the morning of the incident, another employee operated the front- end loader for approximately 1 ½ hours at the construction site moving materials. He said he did not have a single problem with the front-end loader. He said about 30-40 minutes after he was finished operating the front-end loader, the foreman started operating it. The employee informed the CSHO that daily checks are completed on the front-end loader.

During an interview with the Foreman, it was stated that he makes sure the front-end loader is checked every day. They check all fluid levels, tires, and the general operation of the front-end loader, including the brakes. He stated he has never had any problems with the front-end loader, nothing mechanical, electrical, hydraulic, etc., and has never had any problems operating the front-end loader, driving forward, driving reverse, moving equipment and materials. He has never had any problems with the service brake or the park brake; that the park brake automatically engages when the engine is shut off. He said he has never had an issue where the park brake failed to automatically engage when he shut the engine off. He added when the front-end loader or the excavator is shut down, they make sure the bucket is on the ground.

During the inspection, the front-end loader was satisfactorily operated on the construction site including both the service & park brake and revealed no problems. The front-end loader was parked at approximately the same place where the operator parked it just before the incident occurred. The service brake was applied, and the transmission of the front-end loader was placed in neutral. When the service brake was release, and the front-end loader immediately started moving down the slight decline towards the manhole. The slight decline of approximately two feet over the distance to the manhole, between 20 feet to 25 feet, was approximately 13 degrees. When the service brake was applied, the front-end loader stopped moving. The front-end loader was moved to level ground and was tested again. All the results were the same as when it was tested at approximately the same place where the operator parked it just before the incident occurred. The only exception being the front-end loader did not move because it was on level ground and not on a slight decline.

According to photographs taken by the Arlington Fire Department, the blade of the bucket struck the concrete cone section of the manhole; strike marks were gouged into the outer surface of the concrete. The strike marks in the cone section were approximately 18 inches to 24 inches above the surface of the ground, and approximately parallel to the surface of the ground. The photographs also show no marks in the ground (e.g.: gouges in the dirt from the blade of the bucket; a smooth pathway in the dirt from the body of the bucket) leading towards the manhole that would indicate the bucket was not on the ground when it was parked.

The company has a rule that the bucket is on the ground when equipment is shut down. However, based on the information obtained during the inspection, it is believed that the bucket of the front-end loader was not placed on the ground when parked on the incline near the manhole allowing it to roll into and striking the manhole.

Citation(s) as Originally Issued

A complete inspection was conducted at the accident scene. Some of the items cited may not directly relate to the fatality.

Citation 1 Item 1 **Type of Violation: Serious** **$4,000**

TCA 50-3-105(1): The employer did not furnish to each of his employee's conditions of employment and a place of employment free from recognized hazards that are causing or likely to cause death or serious physical harm to his employees.

In that employees were exposed to a struck by hazard when the bucket of the John Deere 624 P-tier, Gen-A 4WD Loader was not placed on the ground when it was parked approximately 20-25 feet away from the manhole.

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