



**Safety Risk Assessment Guide:
Transit Agencies Contemplating Installing Barriers to Mitigate Risk to Operators and Public
April 22, 2020**

Background

In response to the COVID-19 pandemic, FDOT recognizes that agencies are taking proactive steps to protect operators and passengers. Before implementing any protective measures, each agency should conduct a Hazard Risk Analysis to determine their best course of action. Current CDC recommendations for protecting against spread of COVID-19 should be considered in any potential action as well as any actual or potential hazards that may be introduced by the action.

FDOT recognizes that some agencies are using barriers to protect their drivers. FDOT is providing transit agencies with information to assist with effectively navigating the decision to install barriers to minimize the spread of Covid-19, while continuing to ensure operator and passenger safety.

FDOT Guidance

Prior to constructing and or installing any type of driver barrier agencies must conduct a safety risk assessment consistent with a safety management systems (SMS) approach. More information on SMS, specifically, safety risk management, can be found here:

https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/regulations-and-guidance/safety/public-transportation-agency-safety-program/133521/ptasp-safety-risk-management_0.pdf

The safety risk assessment must consider the operating environment, existing procedures and training, equipment, and human factors; as well as barrier configuration, placement, ease of use, and suitability of materials.

Assessing Hazards

An agency should consider and document these factors and index the probability/likelihood and severity of events that would require an emergency evacuation of a vehicle. The three tables from Military Standards 882C and 882E set forth a method of assessing probability and severity together:



**Safety Risk Assessment Guide:
Transit Agencies Contemplating Installing Barriers to Mitigate Risk to Operators and Public
April 22, 2020**

SEVERITY CATEGORIES		
Description	Severity Category	Mishap Result Criteria
Catastrophic	1	Could result in one or more of the following: death, permanent total disability, irreversible significant environmental impact, or monetary loss equal to or exceeding \$10M.
Critical	2	Could result in one or more of the following: permanent partial disability, injuries or occupational illness that may result in hospitalization of at least three personnel, reversible significant environmental impact, or monetary loss equal to or exceeding \$1M but less than \$10M.
Marginal	3	Could result in one or more of the following: injury or occupational illness resulting in one or more lost work day(s), reversible moderate environmental impact, or monetary loss equal to or exceeding \$100K but less than \$1M.
Negligible	4	Could result in one or more of the following: injury or occupational illness not resulting in a lost work day, minimal environmental impact, or monetary loss less than \$100K.

PROBABILITY LEVELS			
Description	Level	Specific Individual Item	Fleet or Inventory
Frequent	A	Likely to occur often in the life of an item.	Continuously experienced.
Probable	B	Will occur several times in the life of an item.	Will occur frequently.
Occasional	C	Likely to occur sometime in the life of an item.	Will occur several times.
Remote	D	Unlikely, but possible to occur in the life of an item.	Unlikely, but can reasonably be expected to occur.
Improbable	E	So unlikely, it can be assumed occurrence may not be experienced in the life of an item.	Unlikely to occur, but possible.
Eliminated	F	Incapable of occurrence. This level is used when potential hazards are identified and later eliminated.	Incapable of occurrence. This level is used when potential hazards are identified and later eliminated.



**Safety Risk Assessment Guide:
Transit Agencies Contemplating Installing Barriers to Mitigate Risk to Operators and Public
April 22, 2020**

RISK ASSESSMENT MATRIX				
SEVERITY \ PROBABILITY	Catastrophic (1)	Critical (2)	Marginal (3)	Negligible (4)
Frequent (A)	High	High	Serious	Medium
Probable (B)	High	High	Serious	Medium
Occasional (C)	High	Serious	Medium	Low
Remote (D)	Serious	Medium	Medium	Low
Improbable (E)	Medium	Medium	Medium	Low
Eliminated (F)	Eliminated			

Below are examples of hazards that an agency should consider. This is not an all-inclusive list. Each agency must identify and assess the hazards unique to their specific circumstances.

- Potential or actual operator sight obstruction(s) or hearing obstruction. Any material placed in the operator’s line of sight must be clear and should not limit or diminish their ability to safely operate the vehicle. Consider all circumstances or conditions such as adverse weather, glare, use of mirrors and possible effects depending on day or night driving.
- Distraction to operator, from lack of ability to see, hear, or interact with passengers. Consider passenger needs and the operators need to react or interact, or aid as needed.
- Operator’s comfort and ease of movement in the operator area. Efforts should be made to minimize noise or vibration during normal on road operation to eliminate driver distraction.
- Barrier design and materials used to construct and install the barrier. The barrier should be designed and installed to reduce the possibility of infection without introducing unacceptable or unintended hazards. Be cognizant of sharp edges, pinch points, and trip hazards. Also consider how the barrier may be affected in the event of a vehicle crash. Materials used should not create sharp edges, projectiles, or create an extraction issue. All fasteners used on the safety barrier shall be of a safe design to prevent injury to the bus operator or passengers



**Safety Risk Assessment Guide:
Transit Agencies Contemplating Installing Barriers to Mitigate Risk to Operators and Public
April 22, 2020**

- Air circulation issues for the Operator and passengers. Air flowing from vents to operator and passengers should not be restricted. Return air should not be blocked and the defroster may not work properly if air is blocked or diverted causing a driver visibility issue.
- Blocked ingress/egress for operators or first responders- Operators may not be able to navigate an exit in an emergency, first responder may have difficulties excavating operators in an emergency.
- Consider use and operation of ancillary equipment installed on the bus such as APC, and surveillance equipment. Blocked view of installed cameras and other equipment should be avoided or kept to an acceptable level. Also consider adherence to ADA or other accessibility standards such as aisle clearance.

Risk Acceptance

Once an agency completes the assessment, the agency must make a methodical decision as to whether the risks are acceptable. If they are, the agency must prepare and maintain a written rationale that supports the decision. Any mitigations should be tracked to ensure that they are working as intended.

FDOT is aware that agencies may have already implemented a process that has been vetted. The purpose of this document is to provide minimum items for consideration during the vetting process based on the most recent CDC COVID -19, Federal, State, and local guidelines.