The Florida Senate

BILL ANALYSIS AND FISCAL IMPACT STATEMENT

(This document is based on the provisions contained in the legislation as of the latest date listed below.)

Prepared By: The Professional Staff of the Appropriations Subcommittee on Transportation, Tourism, and Economic Development

BILL:	CS/SB 522
INTRODUCER:	Transportation Committee and Senator Soto and others
SUBJECT:	Traffic Safety on State Roads
DATE:	January 22, 2016
REVISED:	

	ANALYST	STAFF DIRECTOR	REFERENCE	ACTION
1.	Price	Eichin	TR	**Fav/CS**
2.	Sneed	Miller	ATD	**Pre-meeting**
3.			AP	

Please see Section IX. for Additional Information:

PLEASE MAKE SELECTION

I. Summary:

CS/SB 522, cited as "Chloe's Law,"[1] requires the Florida Department of Transportation (FDOT), by June 30, 2018, to install roadside barriers to shield water bodies contiguous with state roads where a death due to drowning resulted from a motor vehicle accident in which a vehicle departed the adjacent state road during the period between July 1, 2006, and July 1, 2016.

The bill also requires the FDOT to review all such motor vehicle accidents, using reconciled crash data received from the Department of Highway Safety & Motor Vehicles (DHSMV), and submit a report, providing recommendations regarding any necessary changes to state laws and to the FDOT's rules to enhance traffic safety.

The FDOT estimates the installation of the additional guardrails at $2.4 million. However, the cost is expected to increase for those sites that require a different type of roadside barrier.

The bill takes effect July 1, 2016.

[1] Chloe Arenas was a 21-year old UCF student who died on June 28, 2015, when her car left the road and went into a bordering pond. *See* the Central Florida Future article: http://www.centralfloridafuture.com/story/news/2015/07/09/friends-family-petition-chloes-law-to-protect-drivers/29930455/. Last visited January 13, 2016.

II. Present Situation:

Florida reportedly leads the nation in drowning deaths associated with motor vehicle accidents. This result may be partly explained by the larger number of miles of road with water frontage in Florida relative to other states. Nonetheless, according to one newspaper's review of federal crash data during the five-year period from 2008 to 2012, 49 people drowned inside vehicles in Florida. Texas followed with 18 deaths, 14 in Indiana, and 10 each in Louisiana and Arizona.[2]

While current law does not appear to specifically address guardrail installations, the FDOT does adhere to published engineering principles with respect to "canal hazards." Whether these standards apply to water bodies that do not fit the definition of a canal hazard is unclear.

Existing FDOT Requirements

Research reveals no current statutory provision relating to guardrail installation along water bodies that are contiguous with state roads. However, the FDOT's 2016 Plans Preparation Manual (PPM)[3] does define "canal hazard" as follows:

> A canal hazard is defined as an open ditch parallel to the roadway for a minimum distance of 1000 feet and with a seasonal water depth in excess of 3 feet for extended periods of time (24 hours or more).[4]

The PPM also addresses "clear zones," which are defined as the amount of recoverable area provided beyond the traveled way, and which include shoulders and bike lanes. A clear zone is intended to provide "an opportunity for an errant vehicle to safely recover." The PPM generally prohibits aboveground fixed objects, water bodies, and non-traversable slopes[5] in the clear zone.[6] The required clear zone is dependent upon the type of roadway facility and the design speed.[7]

The FDOT advises that water bodies greater than three feet deep are treated as roadside hazards and must be outside the clear zone, if possible.[8]

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[2] See the Orlando Sentinel article: http://www.orlandosentinel.com/news/os-cars-crash-into-lakes-20141108-story.html. Last visited January 16, 2016.
[3] The PPM recites that it "sets forth geometric and other design criteria, as well as procedures, for Florida Department of Transportation (FDOT) projects. The information contained herein applies to the preparation of contract plans for roadways and structures." *See* the FDOT's website, heading "Introduction": http://www.dot.state.fl.us/rddesign/PPMManual/2016PPM.shtm. Last visited January 13, 2016.
[4] *See* the FDOT's website, heading "Chapter 4," subheading "4.3.2:" http://www.dot.state.fl.us/rddesign/PPMManual/2016PPM.shtm. Last visited January 13, 2016.
[5] A non-traversable slope is classified as a slope that is rough, obstructed, or slopes steeper than a 1:3 ratio. *Supra* note 4, subheading "4.2.2" and "4.2.3."
[6] *Supra* note 4, subheading "4.2.2" and "4.2.3."
[7] *See* the FDOT's SB 522 bill analysis, July 1, 2016, at p. 2. (On file in the Senate Transportation Committee.)
[8] *Supra* note 6.

The PPM contains special lateral offset[9] requirements that apply to canal hazards that exceed standard clear zone distances. Generally, the minimum required distances are:

- Not less than 60 feet for flush shoulder roadways with design speeds of 50 mph or greater.
- Not less than 50 feet for flush shoulder roadways with design speeds less than 50 mph.
- Not less than 50 feet for curb or curb and gutter roadways.[10]

If a canal hazard cannot be located outside the required clear zone, the canal hazard must be shielded.[11] The PPM provides the following instructions in such cases:

> Shield the canal hazard with an approved roadside barrier when the required minimum lateral offset cannot be met. Locate barrier as far from the travel way as practical. When shielding canal hazards locate the barrier outside of the clear zone where possible. Locate guardrail no closer than 6 feet from the canal front slope and place high tension cable barrier no closer than 15 feet from the canal front slope.[12]

The FDOT's Previous Study and Conclusions

The FDOT advises[13] the canal hazard criteria contained in the PPM were incorporated following a study conducted between February 2013 and July 2014, based on crash data from 2003 to 2011.[14] The study included cost-benefit analyses of shielding parallel water bodies of various lengths and offset distances from the roadway for selected roadway types and traffic volumes, the findings of which "show that shielding water bodies based on FDOT's current offset clearance requirements in most cases is cost beneficial and/or results in a reduction in societal crash costs."[15]

The FDOT concluded that its criteria for shielding canal hazards are reasonable.[16] Further, the FDOT concluded:

> A benefit cost analysis shows that increasing the clearance requirement from 60 feet to 80 feet on limited access roadways may be cost beneficial. However, such an increase may not be warranted given the following:
> - Actual crash experience does not indicate increasing the clearance requirement will result in significant benefit.
> - Increasing the clearance requirement in certain cases may result in higher crash costs due to the presence of additional barriers.

[9] A canal hazard lateral offset is the distance from the edge of the travel lane, auxiliary lane, or ramp to the top of the canal side slope nearest the road. *Supra* note 2.
[10] *Supra* note 3.
[11] *Supra* note 6.
[12] *Supra* note 3.
[13] *Supra* note 6
[14] *See* the FDOT documentation, "*A Re-examination of FDOT Criteria for Shielding Canal Hazards."* (On file in the Senate Transportation Committee.) The document reflects an extensive review of the history of the FDOT's design criteria since it was first established in 1965.
[15] *Id.*, at "Task 5 – Benefit Cost Analysis."
[16] *Id.*, at "Task 6 – Conclusions and Recommendations."

- None of the four states interviewed in this study (Texas, Louisiana, Minnesota, and Michigan) have clearance requirements as stringent as Florida's current requirements.

The 1000' length definition should be retained.

- A cost benefit analysis indicates shielding parallel lengths shorter than 1000' is generally not cost beneficial. The exception is on high speed volume limited access roadways. Yet these type roadways had no fatal crashes into parallel water bodies less than 1000' in length from 2007 through 2011.
- Applying the criteria to water bodies less than 1000' may result in higher crash costs due to the presence of additional barriers.[17]

Barrier Type Selection

The FDOT indicates that guardrails are not the only potential way to shield water hazards.[18] A number of different types of barriers are reflected in the FDOT's PPM. The PPM instructs as follows:

> The evaluation of numerous factors is required to ensure that the appropriate barrier type is selected for a given application. Provide consideration for the following factors when evaluating each particular site:
> 1. Barrier Placement requirements (see Section 4.4.6);
> 2. Traffic characteristics (e.g. vehicles types/percentages, volume, and growth);
> 3. Site characteristics (e.g. terrain, alignment, geometry, access facility type, access locations, design speed, etc.);
> 4. Expected frequency of impacts;
> 5. Initial and replacement/repair costs;
> 6. Ease of maintenance;
> 7. Exposure of workers when conducting repairs/maintenance; and
> 8. Aesthetics[19]

Further, the PPM provides the following guidance:

> The evaluation of Roadside Safety is highly dependent on site specific conditions and constraints which are unique to a given situation. Therefore the determination as to when shielding is warranted for [a] given roadside feature must be made on a case-by-case basis, and generally requires engineering judgment. It should be noted that the installation of roadside barriers presents a hazard in and of itself, and as such, the designer must

[17] *Id.*
[18] *Supra* note 6, at p. 4. (On file in the Senate Transportation Committee.)
[19] *Supra* note 3, subheading "4.4.5."

analyze whether or not the installation of a barrier presents a greater risk than the feature it is intended to shield.[20]

Application to Water Bodies Other Than Canal Hazards

As previously noted, whether the provisions of the PPM applicable to canal hazards, and shielding of such hazards, are also applicable to other water bodies, such as ponds, is unclear. To illustrate, in the evaluation of roadside hazards, the PPM recommends barriers "when hazards exist within the clear zone, hazards cannot be cost effectively eliminated or corrected, and collisions with the hazards are more serious than collisions with the barriers."[21]

When listing conditions within the clear zone that are normally considered more hazardous than a roadside barrier, "canals, ponds, and other bodies of water (*other than parallel ditches*)"[22] are included. Thus, it appears that water bodies may exist that do not meet the definition of a canal hazard, defined in part as an "open ditch parallel to the roadway."

III. Effect of Proposed Changes:

The bill creates s. 335.085, F.S., requiring the FDOT, by June 30, 2018, to install roadside barriers to shield water bodies contiguous with state roads at locations where a death due to drowning resulted from a motor vehicle accident in which a vehicle departed the adjacent state road between July 1, 2006, and July 1, 2016. This provision appears to require barrier installation, as specified, along water bodies that do not necessarily meet the FDOT's definition of a "canal hazard." However, because crash reports do not always reflect that a death was due to drowning, the FDOT is unable to definitively identify all locations where such deaths occurred in the period of time identified in the bill.

The bill also provides that the barrier installation requirement does not apply to any location at which the FDOT's chief engineer determines, based on engineering principles, that installation of a barrier would increase the risk of injury to motorists traveling on the adjacent

In addition, the bill requires the FDOT to review all motor vehicle accidents that resulted in death due to drowning in a water body contiguous with a state road which occurred during the same period. The FDOT must use reconciled[23] crash data from the DHSMV and submit a report to the President of the Senate and Speaker of the House by January 3, 2017, providing recommendations for any necessary changes to state laws and the FDOT's rules to enhance traffic safety.

[20] *Supra* note 4, subheading "4.4.7."
[21] *Supra* note 4, subheading "4.4.7.1."
[22] Emphasis added.
[23] The process of reconciling involves ensuring the data taken from fatality crash reports and included in the DHSMV's crash database is accurate. *See* DHSMV email to committee staff, January 20, 2016. On file in the Senate Transportation Committee.

IV. Constitutional Issues:

A. Municipality/County Mandates Restrictions:

None.

B. Public Records/Open Meetings Issues:

None.

C. Trust Funds Restrictions:

None.

V. Fiscal Impact Statement:

A. Tax/Fee Issues:

None.

B. Private Sector Impact:

Indeterminate.

C. Government Sector Impact:

The FDOT provided a spreadsheet attachment to its SB 522 analysis which appears to identify deaths between 2006 and 2015 reported on specified crash report form numbers, as well as costs associated with additional *guardrail* installation at the identified locations. The spreadsheet reflects that whether drowning was the cause of each death is, in some cases, undetermined. These locations, with limited exception, do not appear to be anticipated as candidates for additional guardrail installation. However, the spreadsheet does indicate, "for cases where nearly identical water hazard scenarios were present in the vicinity, the proposals [add] guardrail for shielding all water hazards seen nearby (with the exception of interchange approaches, as explained in the comments []."

Aside from this information, the FDOT provided the following estimate based on the bill's language, as filed, requiring guardrail installation, as opposed to roadside barriers:

> Assuming [] the addition of varying feet of guardrail at each location, the bill would result in the addition of 132,845 linear feet of guardrail at a cost of approximately $17 per foot for a total estimated cost of $2,381,614. New installation locations will be added to existing inventory and maintained at an additional [unspecified] cost.[24]

[24] *Supra* note 6, at p. 3. *See* also the spreadsheet attached to the FDOT's bill analysis for information on specific identified locations for additional shielding.

VI. Technical Deficiencies:

None.

VII. Related Issues:

None.

VIII. Additional Information:

A. Committee Substitute – Statement of Changes:
(Summarizing differences between the Committee Substitute and the prior version of the bill.)

CS by Transportation on January 20, 2016:
The CS modifies the bill by:

- Requiring installation of roadside *barriers*, rather than erection of *guardrail*, by June 30, 2018.
- Providing that such installation does not apply to any location at which the FDOT's chief engineer determines, based on engineering principles, that installation of a barrier would increase the risk of injury to motorists traveling on the adjacent state road.
- Requiring the FDOT to use DHSMV reconciled data for the purpose of conducting the required review of accidents and for providing its recommendations.

B. Amendments:

None.