



Frequently Asked Questions (FAQs): RAMP SIGNALING

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For information about 95
Express including ramp
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Q. What is Ramp Signaling?

A. Ramp Signals are traffic signals strategically located on entrance ramps along highways or interstates, such as I-95. Ramp Signals are important traffic management tools designed to keep traffic flowing on the highways and help reduce crashes. They change from red to green lights (no yellow light) to regulate the rate at which vehicles enter the highway to reduce the disruptions caused by traffic merging at the entrances. Ramp Signals are currently used along several entrance points of Interstate 95 (I-95) in Miami-Dade County, where they are serving to improve traffic flow on the mainline and are helping motorists enter the highway safely and more efficiently. Ramp Signals work based on real-time traffic conditions and are typically activated during the weekday rush-hour period to ease congestion during times of heavy highway use. The operation of Ramp Signals will expand to Broward County beginning in 2019.

Q. Why are Ramp Signals being installed along I-95?

A. Ramp Signals have proven to be an effective traffic management technique in several metropolitan areas around the country. They have proven to improve speeds on the mainline, reduce travel times and reduce accidents. With traffic volumes projected to increase in South Florida, sound management of our transportation system is vital to the movement of people and goods throughout the region. The Florida Department of Transportation (FDOT) is expanding the Ramp Signal System as part of the next phase of the 95 Express construction to reduce traffic congestion during the weekday rush-hour periods along I-95. Ramp Signals are a low-cost alternative to traditional widen-only projects and will provide motorists with a more efficient commute.

Q. Where will the new signals be located?

A. Ramp Signals will be initially installed at all entrance ramps along I-95 within Broward and Palm Beach counties from Hallandale Beach Boulevard to Palmetto Park Road. Installation of this system began in 2018. Activation of the Ramp Signal System will probably be performed in phases and is anticipated to begin in fall of 2019.

Q. When will Ramp Signals be used?

A. Ramp Signals are monitored and controlled by an FDOT Traffic Management Center. They operate at different hours according to real-time traffic conditions. The signals are activated based on the need to prevent ramp traffic from disrupting the mainline, particularly during peak hours (morning and afternoon peak commute hours). However, the signals may also be activated during "off-peak" hours in the case of an incident or special event traffic.

Q. How do Ramp Signals operate?

A. All Ramp Signals essentially operate in the same way as described in the three steps below. Each on-ramp is clearly marked with specific directions and advanced warning signs with flashing beacons to let drivers know if the ramp signals are turned on.

Whenever you use any signalized on-ramp, remember to follow these three basic steps:

1. When the signal is red: Pull up to the marked white line on the pavement before the "Stop Here on Red" sign to activate the ramp signal light.
2. When the signal light turns green: One or two vehicles, as indicated by the signage on the ramp, should proceed and merge onto the interstate.
3. Motorists should remain patient. A short wait on the ramp will help reduce travel times and improve the overall commute along the mainline.

Q. Why are there different time cycles at Ramp Signals?

A. The red-green cycles vary from ramp to ramp. The green light is typically on for two (2) seconds, and the red light may vary anywhere from two (2) to thirteen (13) seconds depending on the level of congestion on the Interstate. Ramp Signals work according to "real-time" traffic conditions and cycle times will be adjusted to control traffic at that moment. Traffic sensors in the pavement indicate how heavy traffic volumes are on the highway. Lighter volumes will typically speed up the red-green cycle to let more cars enter the interstate. Similarly, if the sensors detect heavier traffic on the interstate, the red-green cycles would be adjusted to space out merging traffic.

Q. What is the waiting time on the signalized ramps?

A. Waiting times will vary depending upon how many cars are ahead of you on the ramp. In the slowest situation— a thirteen-second red and a two-second green cycle, four cars each minute would be allowed to enter on a specific ramp. In the fastest situation, 15 cars each minute could enter.

Q. Can Ramp Signals save the commuter time and/or money?

A. Over the years, every ramp signaling project in the United States has been subjected to extensive "before and after" tests. In Miami-Dade County, information gathered by FDOT revealed that the Ramp Signal System increased average travel speeds by 6 mph during the afternoon rush-hour period.

The Ramp Signal System has worked to:

- Increase average travel speeds on the highway
- Reduce travel times during the weekday afternoon rush-hour period
- Decrease the congestion associated with uncontrolled ramp traffic
- Improve merging process for motorists entering the interstate
- Increase overall safety by reducing stop and go traffic along the entrances

Q. Do Ramp Signals make the interstate safer?

A. Studies conducted throughout the United States have offered conclusive evidence that highway crashes are reduced where Ramp Signal Systems are in use. The Minnesota Department of Transportation conducted a study of highway conditions with all 430 ramp signals in the Minneapolis/St. Paul metro area turned off for six weeks in the fall of 2000. With the ramp signals turned off, there was a 26% increase in crashes: rear-end crashes were up by almost 15%, "run off the road" crashes increased by 60%, and sideswipe crashes were up 200%. Research shows that most highway crashes occur during stop-and-go traffic conditions by inattentive drivers. Ramp Signals provides a smoother flow of traffic, which minimizes this condition.

Q. Won't congestion continue to increase at the locations where Ramp Signals are supposed to improve traffic?

A. Traffic congestion will continue to be a problem due to the growing number of motorists in South Florida. However, Ramp Signals help reduce the type of congestion known as "bottlenecking." When ramp traffic enters the highway and then shifts from lane to lane it creates a slowing pattern behind that entrance zone, which leads to an accordion effect on the mainline and increases congestion. Ramp Signals reduce this type of congestion by ensuring that vehicles enter the highway in a spaced and steady manner; separating groups of merging vehicles that create disruptions on the mainline and ensuring there are enough gaps available for each car to fit. This type of traffic control mechanism manages the overall flow of the highway and helps to reduce congestion on the highway.

Q. What about the impact of Ramp Signals along neighboring city streets, do Ramp Signals worsen congestion on city streets?

A. During times of heavy traffic, there is a potential for vehicles queued on the highway on-ramp to backup the feeder roads. To mitigate this, traffic sensors are placed at the beginning of each ramp to prompt the ramp signals to speed up the red-green cycle to avoid back-ups onto the cross-street. Additionally, FDOT staff housed at the Transportation Management Center (TMC) monitor the system visually via Closed Circuit Television cameras and can adjust red-green cycle times if necessary. FDOT staff will work with the Broward County Traffic Engineering Division, who operate the traffic signals throughout the County, to coordinate operations and minimize spillbacks on to cross-streets. It is important to note, however, that if local congestion along city streets already exists, it will not be eliminated by the signals. It is also important to remember that there is often a bit of confusion during the first few days of Ramp Signal implementation, which can cause increased traffic congestion near the ramps and cross-street signalized intersections. As drivers become accustomed to the signals and adjust their travel patterns, this temporary congestion disappears.

Q. How do Ramp Signals located at highway on-ramps improve traffic flow?

A. Generally, many cars try to merge onto the highway all at once. Drivers on the mainline slow down to let the cars enter, and these slower speeds quickly cause backups on the mainline of the highway. If cars enter the highway in a spaced, controlled manner, they merge easier and with less disruption to mainline traffic. A short wait on the ramp allows drivers to increase their average highway speed and shorten their highway travel times. By regulating the flow of traffic entering the highway during peak traffic hours, the overall flow of traffic on the highways will be smoother. This managed flow means that I-95 can accommodate more vehicles per hour on the highway, improve commute times and flow safety.

Q. With concerns about energy usage and air quality, isn't it wasteful and polluting to have cars waiting along the on-ramps?

A. No. Energy and air quality are improved by reducing the stop and go traffic often caused by merging vehicles at the highway entrance points. While vehicles burn some gas waiting on a signalized ramp, the increased travel speeds on the highway makes up for the gas used on the ramps. In terms of air quality, environmental experts have concluded that the Ramp Signal System slightly reduces the quantities of nitrous oxide, carbon monoxide and reactive hydrocarbons - the pollutants in smog.

Q. What about the people who violate the traffic signals on the signalized on-ramp?

A. The ramp signals are considered traffic control devices and motorists who fail to obey a traffic control device are subject to penalties and fines in accordance with the applicable Florida Statutes.



For more information about 95 Express Phase 3, please visit the FDOT District 4 website at www.d4fdot.com or contact Andrea Pacini, Construction Community Outreach Specialist, at **954-299-6561** or via email at APacini@corradino.com.