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TRAFFIC SIGNAL ARM FATIGUE

The 2013 and 2015 AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals require that cantilevered and non-cantilevered support structures shall be designed for infinite fatigue life to resist wind-load-induced stresses.

In general, fatigue categories are chosen based on the associated risk factors related to public safety as it applies to the location of the structure. Risk factors include: a) The volume of traffic on the roadway, b) The posted speed limits, c) Mast arm length or structure height and d) Known problematic wind areas.

AASHTO defines 3 Fatigue Categories; Fatigue Category I, Category II and Category III, where Category I is the most stringent and Category III the least stringent. To point out the contrast between the 3 different Fatigue Categories; Category II would be 65% of Category I and Category III would be 30% of Category I, for the fatigue galloping loads of a cantilevered traffic signal mast arm structure. To choose the appropriate Fatigue Category, AASHTO recommends the following guidelines:

Fatigue Category I:

- AASHTO Recommends that all Structures without effective mitigation devices on roadways with a speed limit in excess of 35 mph and ADT exceeding 10,000, or ADTT exceeding 1,000 be designed to Fatigue Category I.
- Cantilevered sign structures without mitigation devices with a span in excess of 50 feet be designed to Fatigue Category I.
- Large sign structures, both cantilevered and non-cantilevered, including variable message signs, without mitigation devices be designed to Fatigue Category I.
- Structures without mitigation devices located in an area that is known to have wind conditions that are conducive to vibrations be designed to Fatigue Category I.
- Structures classified as Category I should be designed to resist rarely occurring wind loading and vibration phenomena

The Valmont TR1 damper has been specifically to effectively reduce the daily vibration stress range of the sign or light structure.

Chris Mack of Valmont will be presenting. Mr. Mack has a BS in Civil Engineering from the University of Nebraska and has been at Valmont over 9 years. Mr. Mack is currently a Technical Sales Engineer and is licensed in multiple states.

For PDH purposes, the presentation will be a Western Illinois University in Moline. A link will be provided for those not requiring a PDH.

President's Message

Leadership – This word has meaning beyond its literal definition: the action of leading a group of people or an organization. This seems like a straightforward definition. In practice, leadership is much more complex. Wikipedia provides broader context: leadership...encompasses the ability of an individual, group, or organization to “lead” (influence or guide other individuals, teams, organizations to a result).

Leadership takes many forms and leaders have a diversity of personalities and traits. In general leaders have some common traits including a passion or drive for the goal, ability to organize and empower people, and a talent to motivate and inspire the team to achieve the goal.

Our ASCE Quad City Section offers individuals to develop leadership skills through participation on the Section's leadership team consisting of Past President, President, Vice President, Secretary, and Treasurer. The Section's leadership team is one interface between our Section members and ASCE national. The leadership team also is responsible for timely communications to Section members, periodic technical learning opportunities for our members, coordination with other area professional societies, and participation in multiple technical volunteer opportunities.

Our section leadership is all volunteer with volunteers elected by membership vote. Each officer position comes up annually for a vote. As such the leadership team is in constant need of members to step up and contribute to our profession by serving on the leadership team. While every position is open for a new volunteer, our Section leadership team needs a Vice President Candidate. This individual would participate in virtual monthly leadership meetings, Section programs and activities, and perform various duties for the good of the Section. After a year, this individual would stand for election to President and lead the Section for that year.

This is a great opportunity for developing career-building leadership skills. I encourage you to strongly consider this chance to develop the leader within you, forge new professional relationships, and gain the reward of leading a volunteer organization.

Respectfully

Jay Brady

2021-22 President



Calendar and Upcoming Events

The Quad City Section leadership is working on a full slate of section meetings and tours to advance our members and the profession. The following Section calendar indicates activities currently in planning.

Date	Time	Topic	Speakers	Location
October 19, 2022	12 Noon to 1:00 PM	Traffic Signal Mast Arm Attenuation	Valmont	TEAMS Presentation at Western Illinois
Nov. 23, 2022	12 Noon to 1:00 PM	Iowa DNR PERMT	Iowa DNR	TEAMS Presentation at Western Illinois
Dec. 7, 2022	5:30 PM to 7:00 PM	CP RR Merger	Drew Wilson	Presentation at Western Illinois University
Jan. 18, 2022	12 Noon to 1:00 PM	Roadway Fabrics		Materials to Improve the Outcome in Roadway Construction Projects
Feb. 15, 2022	12 Noon to 1:00 PM	Tensar		An Introduction to Tensar Grids

ELECTION ANNOUNCEMENT

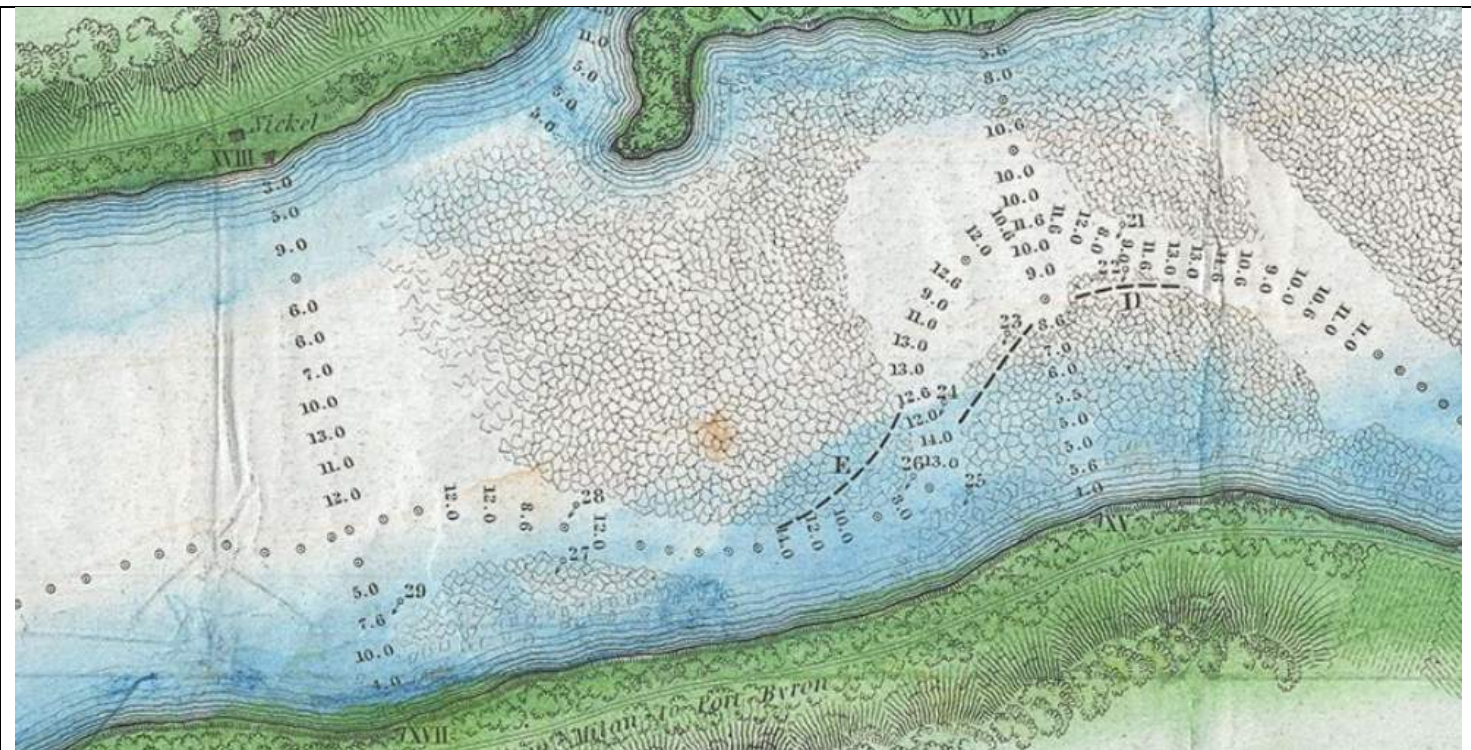
An e-mail providing directions for the election of new Officers will be distributed shortly. First and foremost, please vote. But, also, please consider serving for a term as an Officer. The same Engineers have been providing direction to this Chapter several years running now. Unless new blood steps in, when the existing Officers tire of their "Forever" appointments, this Chapter of the American Society of Civil Engineers will become inactive.

ENGINEERING 101 FOR ANY QC CIVIL ENGINEER

Since my arrival in the Quad Cities, I have not met one native civil engineer who does not understand the purpose of Lock and Dam 14 and 15, the engineering that occurred prior to these, as well as navigation hazards, that was required to move river traffic through the area. But, being I am a transplant, I was not aware of this. So, humor me.

The history of urban settlements in the Quad Cities was driven by easy access to the Mississippi River. For the stretch of the Mississippi between LeClaire and Rock Island, the Mississippi flowed across a series of finger like rock projections protruding from both banks. These rock projections formed rapids that made it very difficult to navigate steamboats through this area. As river traffic increased so did concerns for navigating this area.

A minor industry grew in the area to meet the needs of the steamboat navigation and their transport needs. Boat crews needed rest areas to stop before encountering the rapids, places to hire expert pilots, such as Phillip Suiter, who was the first licensed pilot on the upper Mississippi River, to guide the boat through the rocky waters, or, when the water was low, places where goods could be removed and transported by wagon on land past the Rock Island Rapids.



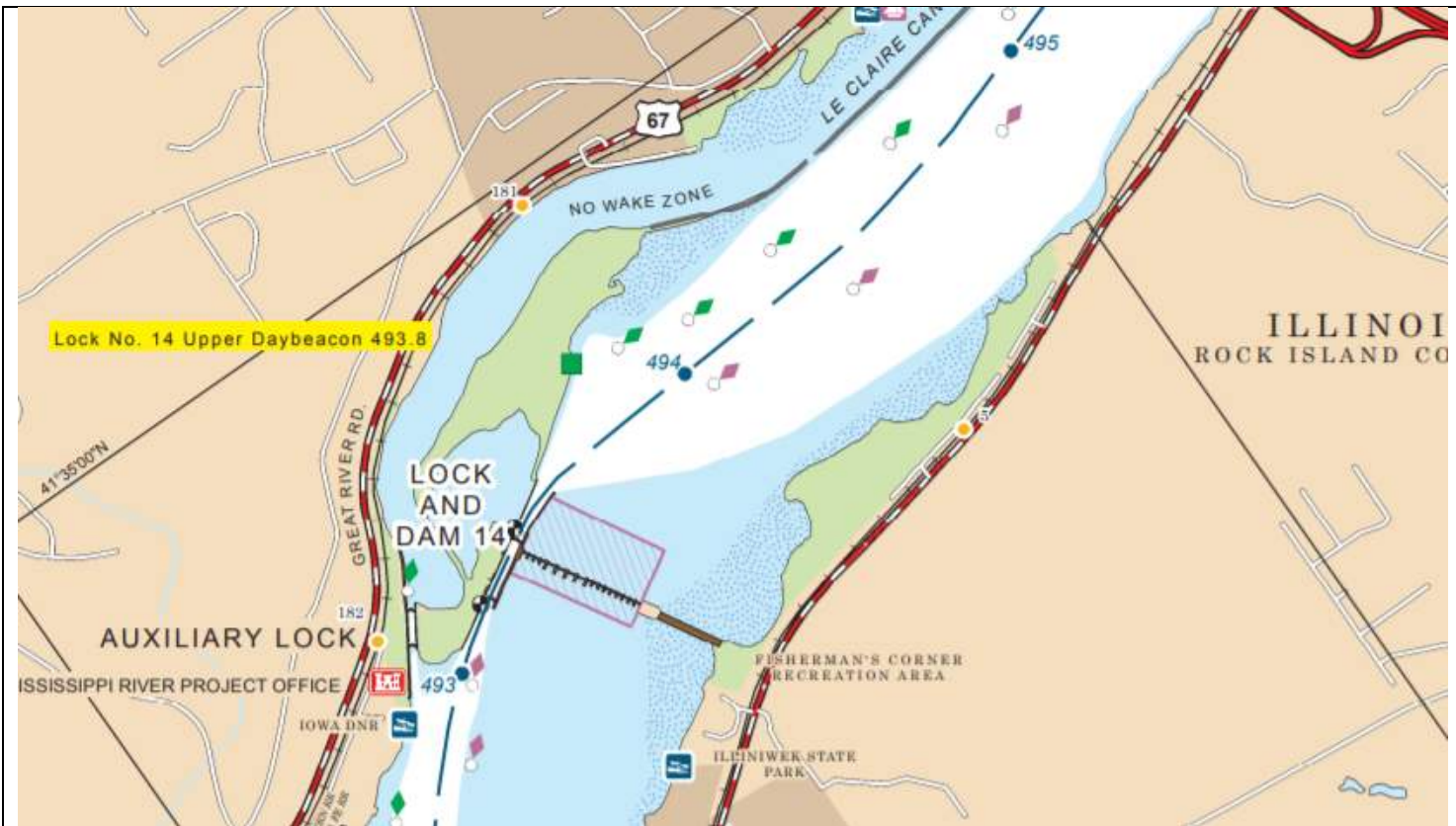
A portion of the 1837 Rock Island Rapids navigation channel map prepared by then Army Corps Engineer, First Lieutenant Robert E. Lee.

This portion of the map shows the navigation channel in the area of the current Lock and Dam 14. The entire map covered from Fort Armstrong on Rock Island to the town of LeClaire.

In 1907, in the first attempt to tame this section of the Mississippi, the Moline lock was built on the north east side of Arsenal Island. If you look across the river to the Illinois side, you can still see what remains of this lock today.

This lock was built on the downstream end of a long man-made wall. This wall divided the river and created a deeper channel for boats to pass around the rapids rather than having to pass through them. The lock was only 325 feet long and 80 feet wide, but it had a depth of 6 feet which was what the steamboats needed.

In the early 1930's, the Moline lock and steamboat canal were abandoned with the construction of the existing lock and dam system, built by the U.S. Army Corps of Engineers, to maintain a 9-foot depth year-round. This system backed up the water to the minimum 9-foot depth, making navigation possible outside of the Moline canal. Since the Moline lock and canal were no longer needed, the lock gates were removed, and the canal area became an open passageway used mostly by recreational boats today.



Today's navigation chart of the area of Lock and Dam 14 shows a straightforward route for watercraft to travel. Gone is the sinuous path of travel earlier boats had to travel to get through the area.

In order to reduce expenses, the Quad City Section sends its newsletters in electronic format only. If you are aware of a fellow Quad City Section Member that does not receive the newsletter, it means that ASCE National does not have their email address. To receive the newsletter, members must keep their email information current by contacting ASCE at 800.548.2723 or by visiting the Members Only section of the ASCE website at <http://www.asce.org/membersonly>. The Quad City Section does not sell email information to anyone. ASCE's Privacy Statement is available on the ASCE website.