Vessel Collision Warning System
User Manual

09 December 2025

Prepared By:
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Executive Summary

In response to recent NTSB recommendations, Roebling Labs developed a prototype vessel collision warning system.

An example deployment for the Chesapeake Bay Bridge in Maryland is (linked here). The User Manual herein provides screenshots with explanations of how to use the software.

Roebling Labs is actively working to advance the system from its existing prototype stage towards becoming operational. This is a proof-of-concept effort; the system will not yet be connected to traffic control systems or used to make operational decisions during the pilot period.

Roebling Labs protects bridge users from vessel collision using real-time transponder (AIS) tracking and computer vision.

We combine vessel trajectory forecasting with AASHTO bridge impact analysis to continuously assign a threat level to each vessel within 30 nautical miles of the site.

Bridge Owner Needs

On 18 November 2025, the NTSB board meeting on the contact of containership Dali with the Francis Scott Key Bridge voted on and passed the following motion:

> To: Bridge owners of the 68 listed potentially vulnerable bridges:
>
> "15. As part of your short-term bridge risk reduction and mitigation strategies to protect the traveling public, evaluate the need for and, if appropriate, incorporate motorist warning systems capable of activating when a threat is identified and immediately warn and stop motorists from entering the bridge." (Reference: 4hr 11min 35 seconds)

Proposed Solution

Roebling Labs protects bridge users from vessel collision using real-time transponder (AIS) tracking and computer vision. We combine vessel trajectory forecasting with AASHTO bridge impact analysis to continuously assign a threat level to each vessel within 30 nautical miles of the site.

Roebling Labs has developed a prototype Vessel Collision Warning System specifically for the Chesapeake Bay Bridges, available for MDTA review and comment now at: https://chesapeake-bay-bridge-eastbound-ship.streamlit.app/

The vessel data for this prototype is pulled daily from AISStream.io for demonstration purposes.

For operational deployments, we will install hardware onto the bridges, including an AIS transponder, computer vision system, and wireless modem. Our hardware will be enclosed in waterproof boxes with a size and weight that can be carried by a single person. It will require electricity from a standard 120-volt receptacle.

Roebling Labs is actively working to advance this existing prototype system towards an operational system that meets the needs of MDTA while complying with AASHTO, FHWA, and NTSB guidance.

Prototype Vessel Collision Warning System

Please see annotated screenshots from the prototype system below and on the following pages.

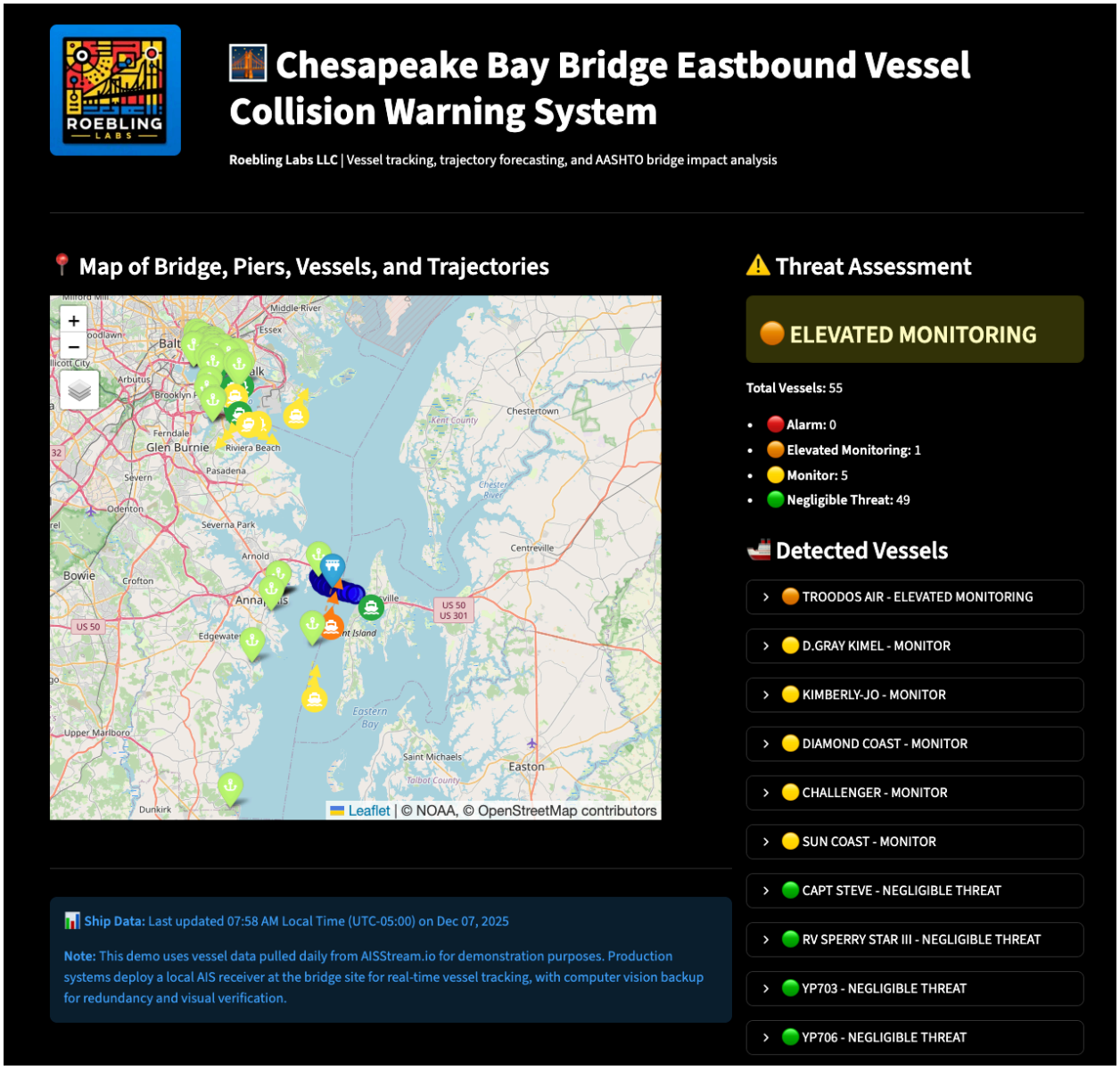


Figure 1 - Screenshot of the opening screen. The map shows the bridge and piers in dark blue at the center. Vessels are marked on the map and colored according to their threat rating. Vessels that aren't moving show an anchor icon. Vessels that are moving have a ship icon and arrow representing their forecasted location in 5, 10, and 15 minutes from now.

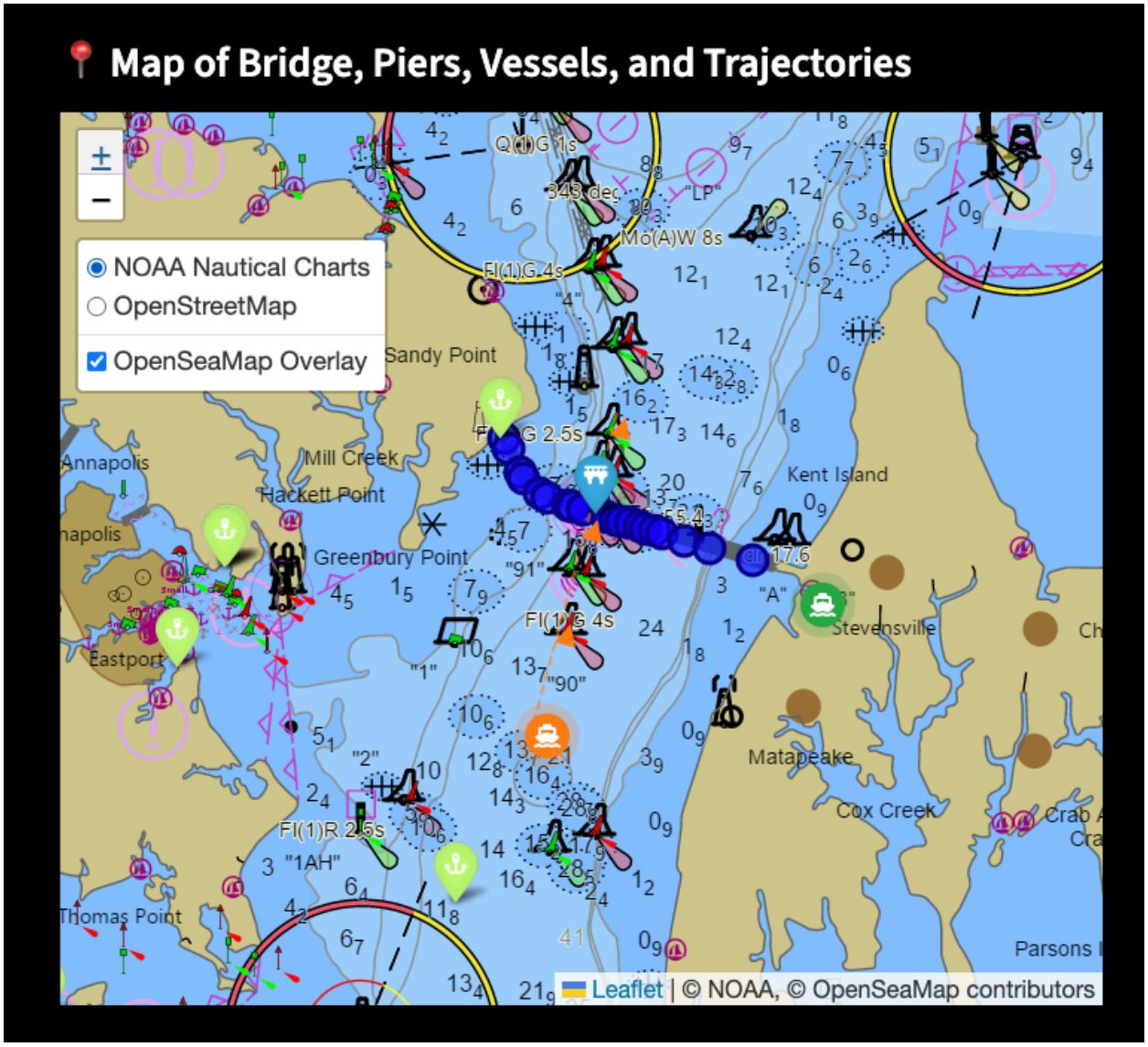


Figure 2 - The base map may be switched between OpenStreetMap (default) and NOAA Nautical Charts (shown above). The OpenSeaMap overlay may be selected or deselected. Zoom in or out.

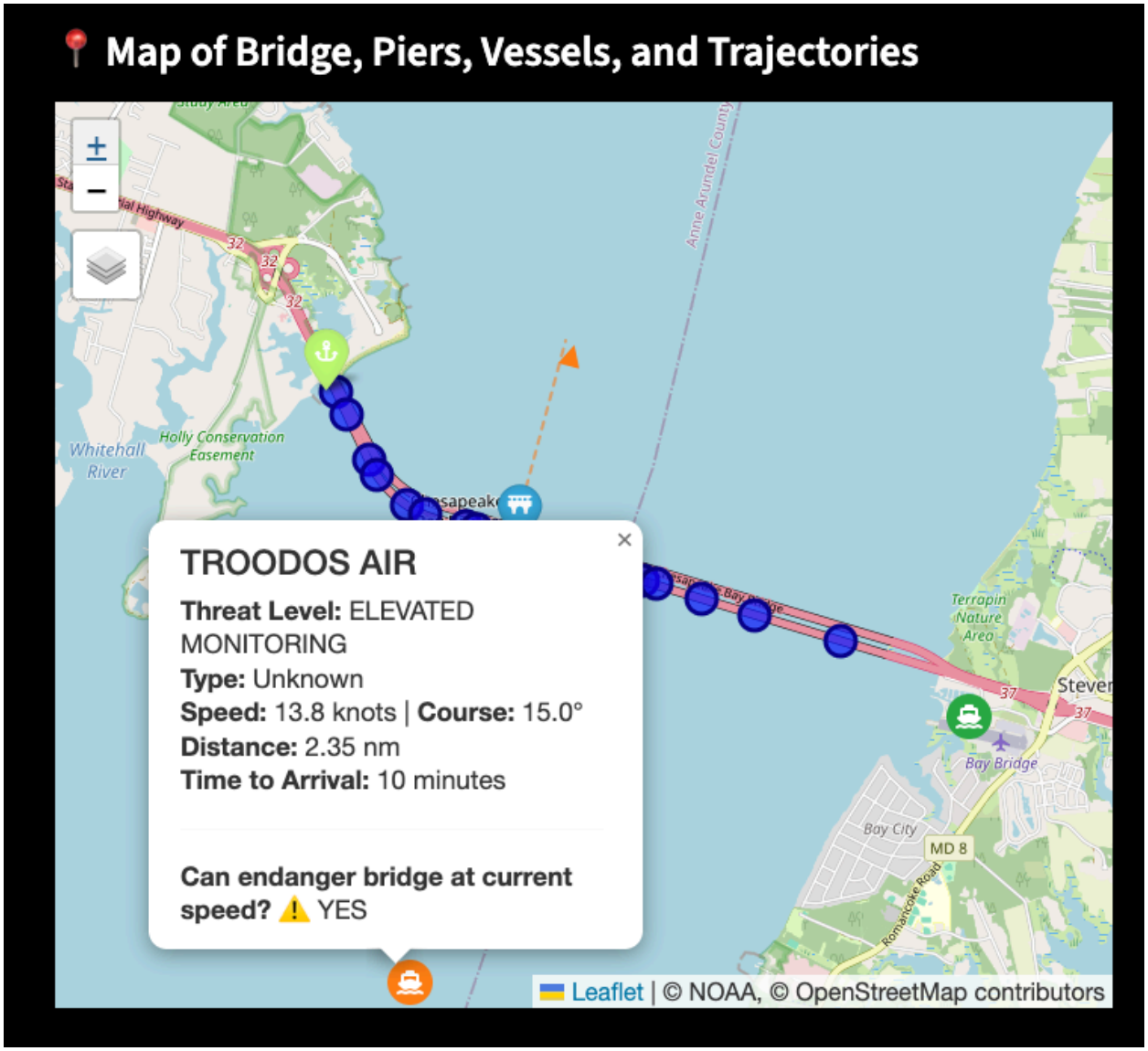


Figure 3 - Click on a vessel marker to see relevant details. Note that, for example, the vessel Troodos Air would endanger the bridge if it impacted a pier at its current speed. It is currently on a course that is approaching the bridge at a speed of 13.8 knots from a distance of 2.35 nautical miles. It is expected to arrive at the bridge in 10 minutes.

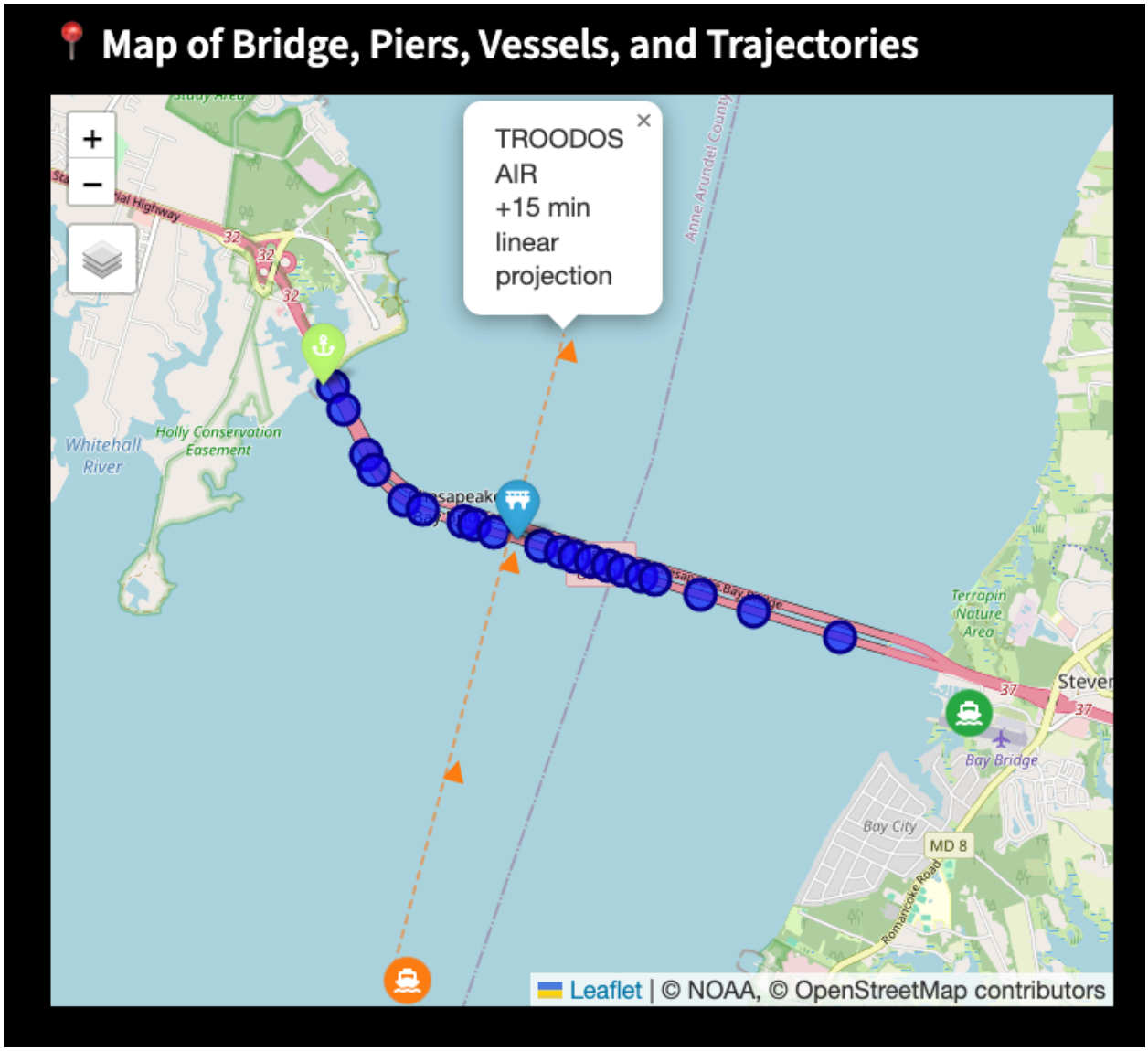


Figure 4 - Click on a triangular arrow emanating from a moving vessel and you will see the vessel's forecasted location at 5, 10, and 15 minutes into the future. The forecast is a linear projection of the vessel's current speed and course.

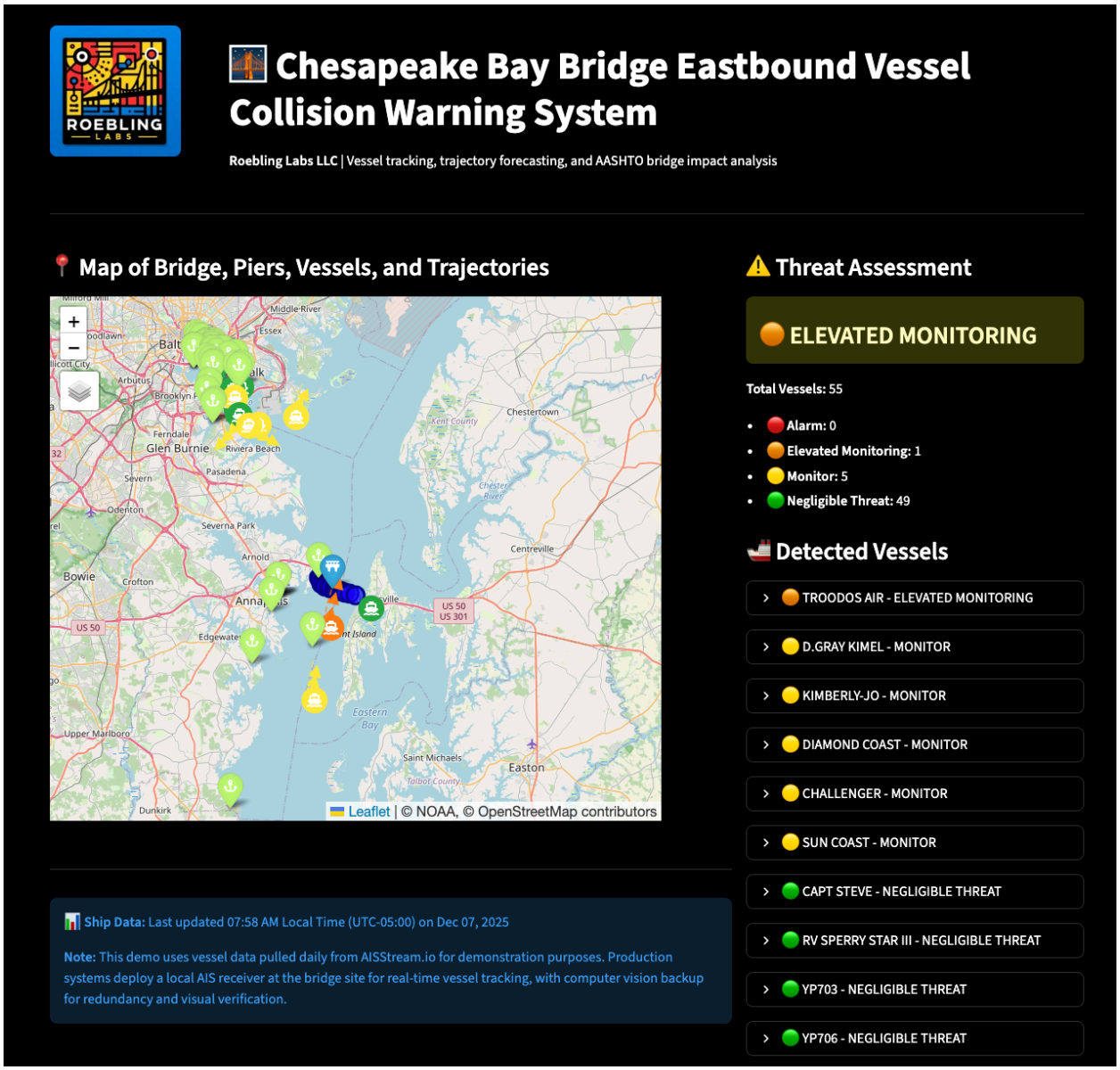


Figure 1 (purposefully repeated from above) - To the right of the map, see the threat assessment summary and a list of detected vessels. The overall threat rating is “Orange: Elevated Monitoring” because there is one vessel, Troodos Air, in the “Orange: Elevated Monitoring” category and no vessels currently in the highest threat category. There are 5 vessels in the area that are rated “Yellow: Monitor” and 49 vessels in the area rated “Green: Negligible Threat” at the moment. The detected vessels are listed in descending order with the highest rated threat at the top.

Photo 1 - For reference, above is an archival photo of the Troodos Air vessel that our system currently provides a Threat Assessment rating of “Orange: Elevated Monitoring” as it is approaching the bridge at 13 knots.

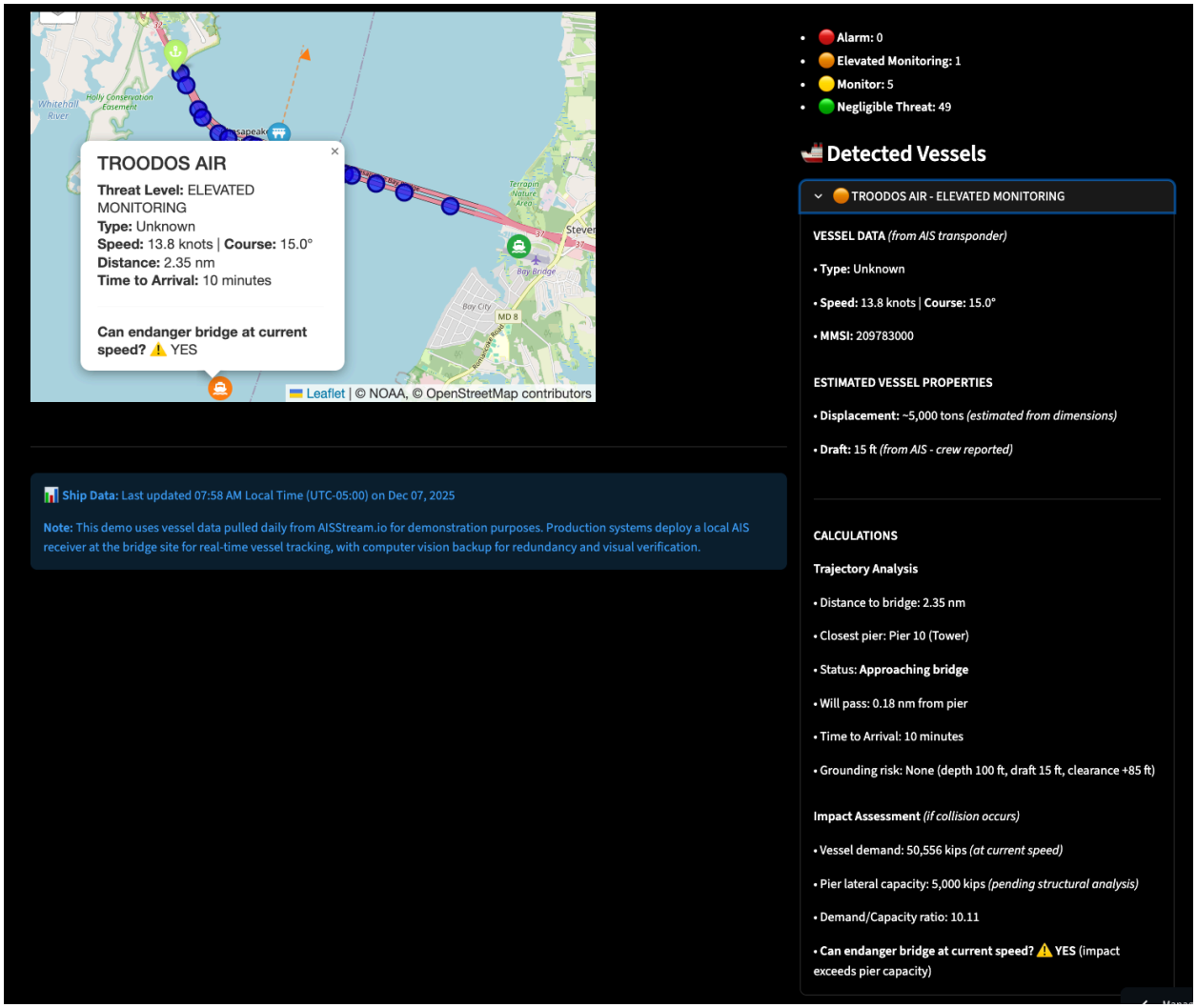


Figure 5 - Click on a vessel name to the right of the map and a window will expand with details on that vessel. In this example, we clicked on the vessel Troodos Air. The window shows the factual data, estimates, and calculated values that inform the threat rating for this vessel. The trajectory analysis informs the probability of a vessel collision. The impact assessment informs the consequences of a vessel collision, if it was to occur. When the Demand/Capacity ratio is above 1, as it is for the vessel Troodos Air (Demand/Capacity ratio: 10.1), it indicates that a collision of this vessel at its current speed would exceed the capacity of a bridge pier.

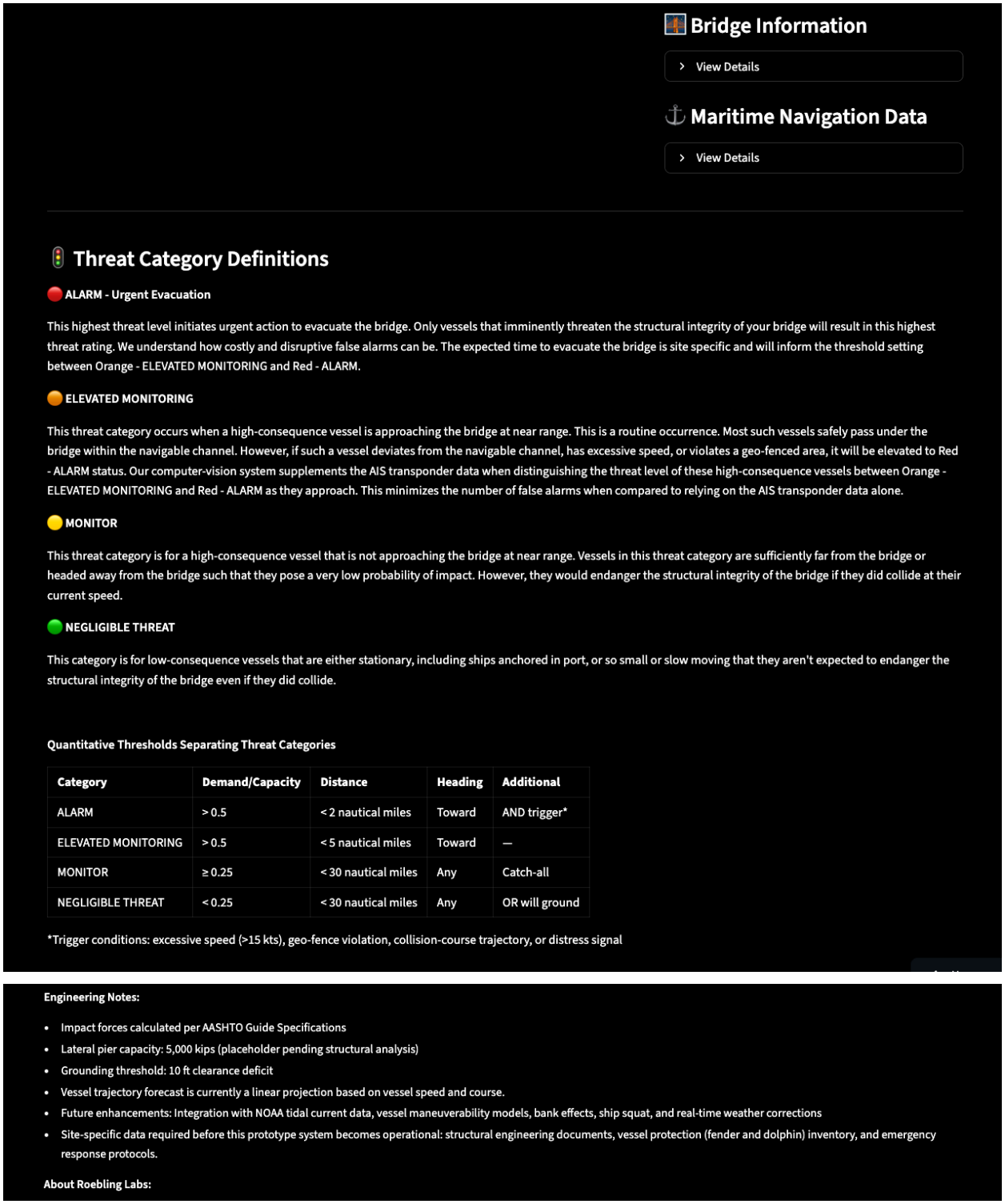


Figure 6 - After scrolling past the list of detected vessels to the bottom of the app, find sections including: bridge information, maritime navigation data, threat category definitions, engineering notes, and about Roebling Labs. Each section will be discussed more below.

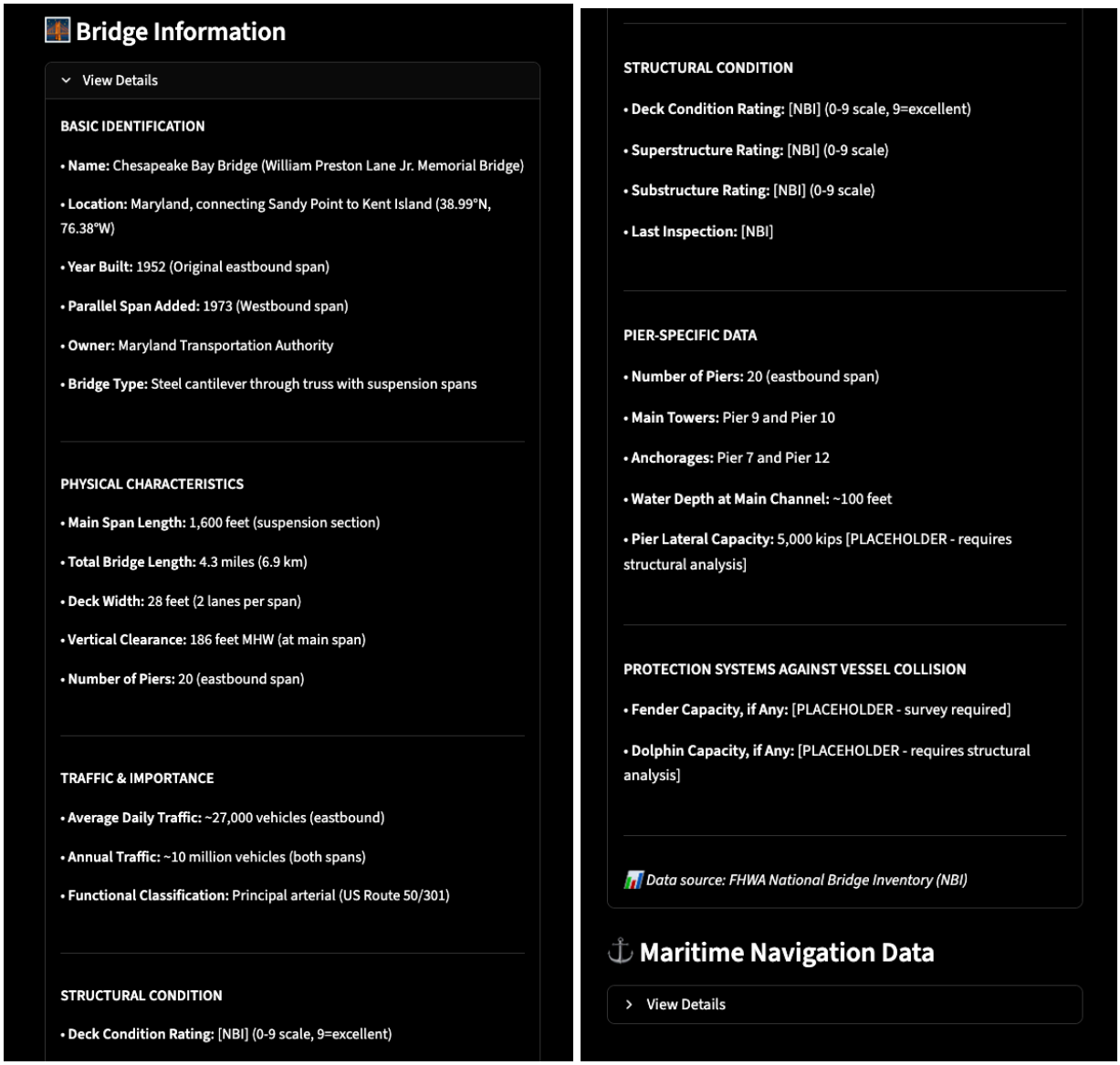


Figure 7 - Under “Bridge Information”, click on the “View Details” tab to see data pulled from the FHWA National Bridge Inventory (NBI). Structural analysis results regarding the lateral impact capacity of the bridge piers and vessel protection elements, such as fenders and dolphins, will be added here as the prototype system becomes operational.

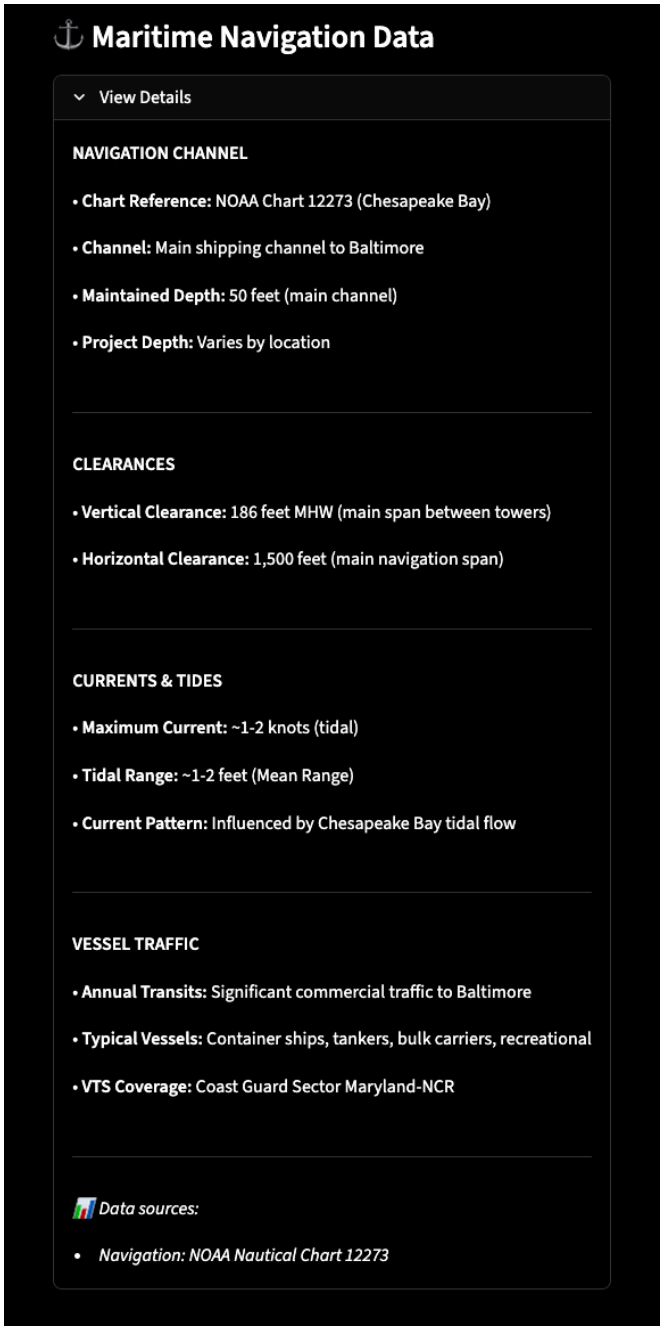
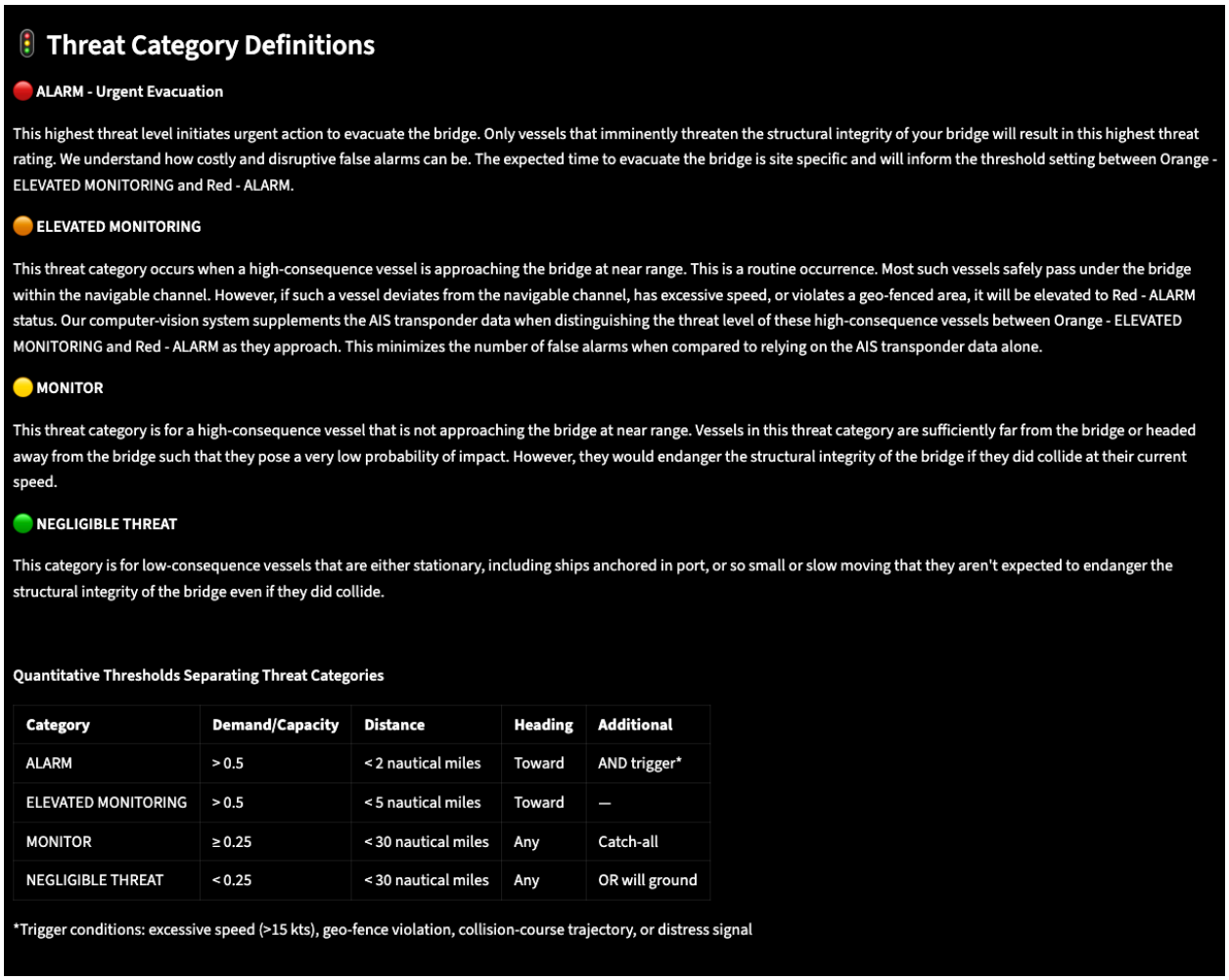


Figure 8 - Under “Maritime Navigation”, click on the “View Details” tab to see maritime navigational information pulled from the local NOAA nautical chart. Local knowledge regarding the navigational environment can be added here as the prototype system becomes operational.



Threat Category Definitions

ALARM - Urgent Evacuation

This highest threat level initiates urgent action to evacuate the bridge. Only vessels that imminently threaten the structural integrity of your bridge will result in this highest threat rating. We understand how costly and disruptive false alarms can be. The expected time to evacuate the bridge is site specific and will inform the threshold setting between Orange - ELEVATED MONITORING and Red - ALARM.

ELEVATED MONITORING

This threat category occurs when a high-consequence vessel is approaching the bridge at near range. This is a routine occurrence. Most such vessels safely pass under the bridge within the navigable channel. However, if such a vessel deviates from the navigable channel, has excessive speed, or violates a geo-fenced area, it will be elevated to Red - ALARM status. Our computer-vision system supplements the AIS transponder data when distinguishing the threat level of these high-consequence vessels between Orange - ELEVATED MONITORING and Red - ALARM as they approach. This minimizes the number of false alarms when compared to relying on the AIS transponder data alone.

MONITOR

This threat category is for a high-consequence vessel that is not approaching the bridge at near range. Vessels in this threat category are sufficiently far from the bridge or headed away from the bridge such that they pose a very low probability of impact. However, they would endanger the structural integrity of the bridge if they did collide at their current speed.

NEGLIGIBLE THREAT

This category is for low-consequence vessels that are either stationary, including ships anchored in port, or so small or slow moving that they aren't expected to endanger the structural integrity of the bridge even if they did collide.

Quantitative Thresholds Separating Threat Categories

Category	Demand/Capacity	Distance	Heading	Additional
ALARM	> 0.5	< 2 nautical miles	Toward	AND trigger*
ELEVATED MONITORING	> 0.5	< 5 nautical miles	Toward	—
MONITOR	≥ 0.25	< 30 nautical miles	Any	Catch-all
NEGLIGIBLE THREAT	< 0.25	< 30 nautical miles	Any	OR will ground

*Trigger conditions: excessive speed (>15 kts), geo-fence violation, collision-course trajectory, or distress signal

Figure 9 - See the Threat Category Definitions with two sections. The upper section of text qualitatively explains the logic that drives the threat assessment for each vessel. The lower section provides a table with the quantitative thresholds that differentiate each threat category.

This pilot project serves as an opportunity to test and refine the logic and thresholds so that it becomes operational and vetted.

Roebling Labs expects the qualitative threat logic to be universal between bridge sites. Quantitative thresholds can be site-specific, however.

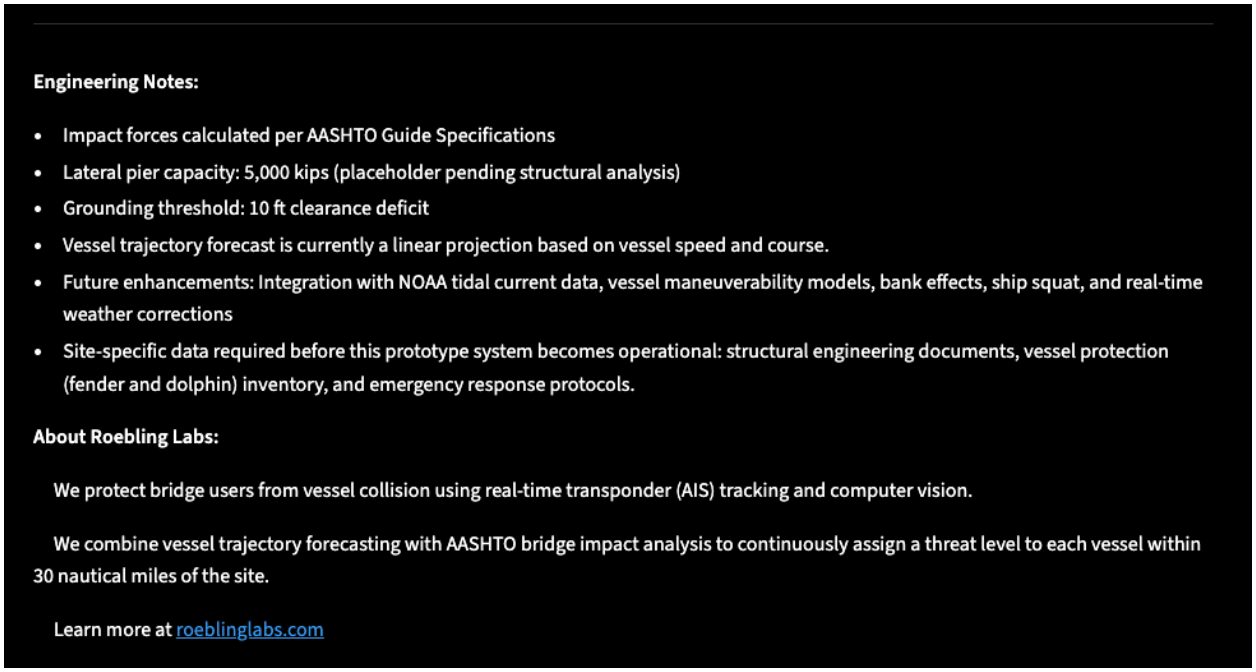


Figure 10 - Scroll down to the bottom of the app to see the sections engineering notes and “About Roebling Labs.” Engineering Notes documents items that can move this prototype system to become operational.

Risk Management

Roebling Labs maintains commercial general liability insurance with $2,000,000 per occurrence and $4,000,000 aggregate limits. Certificates of insurance will be provided upon request.

The purpose of this pilot project is to demonstrate the feasibility of a vessel collision warning system. The system will not be connected to traffic control systems or used to make operational decisions during the pilot period.

The prototype system herein uses only information that is readily publicly available.

Any sensitive documents and data shared by bridge owners with Roebling Labs will be stored on encrypted systems with access limited to authorized Roebling Labs personnel. Roebling Labs complies with bridge owner data security policies and executes non-disclosure agreements upon request.

About Roebling Labs

Roebling Labs protects bridge users from vessel collision using real-time transponder (AIS) tracking and computer vision. We combine vessel trajectory forecasting with AASHTO bridge impact analysis to continuously assign a threat level to each vessel within 30 nautical miles of the site.

Company History

Roebling Labs was founded by Scott Snelling in 2023 with personal “bootstrap” seed capital and a grant from the BUild Lab startup ecosystem at Boston University. Our founding mission was to build innovative bridge assessment tools.

Our initial products included developing the “Bridge Vibration Tool” smartphone app and a user dashboard for crowdsense bridge monitoring. We published an article entitled “Emerging Technologies in Structural Monitoring” in Bridge Design & Engineering Magazine and hosted a panel discussion of the same name at the 2024 International Bridge Conference.

Following these successes, Bentley Systems, the maker of Microstation CADD software, provided additional seed capital by investing in Roebling Labs. We completed a project to integrate our Smart Bridge in a Box™ computer vision system into Bentley’s iTwin digital twin platform.

In 2025, Roebling Labs was accepted to become a resident company at The Engine. The Engine is a non-profit startup incubator that was “Built by MIT” to “accelerate early-stage Tough Tech companies.” In this context, Tough Tech is defined as “transformational technology that solves the world’s most important challenges through a convergence of breakthrough science, engineering, and entrepreneurship.”

Roebling Labs offices are located within The Engine at 750 Main Street in Cambridge, MA where we are co-located with other Tough Tech startups and venture capital firms.

In response to recent NTSB recommendations resulting from the Francis Scott Key Bridge collapse, Roebling Labs is fully committed to leading the bridge industry in developing vessel collision warning systems that will protect the traveling public.

Team and Partners

Scott Snelling serves as the product manager / project manager and primary point of contact on behalf of Roebling Labs for deployments of our vessel collision warning system.

The Roebling Labs team includes an MIT-trained software engineer and a computer vision specialist. We are partnered with an Internet-of-Things company that has designed and deployed numerous devices in the field - including a network of solar-powered devices across a rainforest that identify birds from their calls for a scientific research customer. We have established advisory relationships with senior bridge industry professionals. Roebling Labs maintains access to technical resources through The Engine's network of Tough Tech companies.

Resume

Scott A. Snelling
CEO
Roebling Labs LLC
Mobile: 917-443-2692; Email: scott@roeblinglabs.com
LinkedIn: @snellingscottpe

Years of Experience
25 (2 with Roebling Labs, 23 with others)

Education
Boston University, Masters in Business Administration, M.B.A., 2023
Columbia University in the City of NY, Structural Engineering, M.S., 2005
Rose-Hulman Institute of Technology, Mechanical Engineering, B.S., 2000, Honor Key

Certifications
Notre Dame of Maryland University, Risk Management, Graduate Certificate, 2020
Project Management Professional (PMP), 2024
Structural Health Monitoring, Universidad Lusofona, Lisbon, Portugal 2024
Remote Pilot Certification (Commercial Drone Pilot), FAA, 2025
Bentley Accredited iTwin Software Developer, 2024
Certified Bridge Inspector, Federal Highways Administration, 2017

Professional Affiliations
American Society of Civil Engineers*; Society of Professional Rope Access Technicians; Heavy Movable Structures*; Engineers Without Borders; Bridges to Prosperity;
University of Minnesota – Structural Seminar (Board of Directors)*

Professional Engineer (P.E.) Registrations
Washington, 2007 (43339); New York, 2006 (083666*); Minnesota, 2006 (44641*); Oregon, 2012 (86995PE*); Louisiana, 2013 (38378*); New Jersey (24GE05161800*); National Council of Examiners for Engineering and Surveying (49706*), * - indicates inactive

Employment History (Selected Projects Only)

Roebling Labs LLC, Cambridge, MA
Chief Executive Officer, 11/2023 to Currently

Roebling Labs detects threats to bridges by monitoring with computer vision.
Scott has led the creation of the following solutions:

- Vessel allision warning system for bridges, in response to NTSB findings
- Smartbridge in a Box™ and Smartbridge on a Tripod™ video monitoring
- “Bridge Vibration Tool” smartphone app
- User dashboard for crowdsensed bridge monitoring
- Integrated Roebling Lab’s computer vision technology into Bentley System’s iTwin digital twin platform

Techstars, Portland, ME
Business Development Associate, 11/2021 to 12/2022
Supervisor: Santi Zindel, 561-452-7884 may be contacted

Techstars is a venture capital firm and startup accelerator. Scott assisted the pre-seed startups that Techstars financed with customer discovery and market research.

Scott simultaneously attended Boston University for his M.B.A. 11/2021 to 11/2023.

US Army Corps of Engineers, St. Paul District, MN
Mechanical and Structural Engineer and Technical Lead, 11/2015 to 11/2021
Grade: GS12/13
Supervisor: Jim Sentz (retired), Duane Perkins at 651-295-3785 may be contacted

Mechanical and structural engineer and technical lead focused on the design, inspection, and risk assessment of locks, dams, bridges, and disaster response. Led the risk assessment and periodic assessment of locks and dams. Developed and supervised the development of scope of work documents, schedules, budgets, contract documents, and technical reports. Presented technical issues to stakeholders and district leadership.

Florida International University Bridge Collapse: Structural lead for the review of the collapse of a signature pedestrian bridge that caused the death of six people. Scott led the USACE team to advise the U.S. Department of Transportation – Office of Inspector General in order to better understand that context and causes of the collapse.

Scott served as the technical lead for the St. Paul District to inspect and construct Alternative Care Facilities in response to the COVID-19 pandemic in 2020.

Scott served a developmental assignment as Executive Assistant (GS13) to the Commander for the St. Paul District in 2018.

Travelling Mooring Bitt and Rail Rehabilitation, Mississippi Valley Division: Scott served as technical lead. Approximately $1 Million construction cost per site. The design solution will be applied to many sites. Scott conducted a forensic engineering study to identify the causes of multiple previous structural failures of travelling mooring bitts (a.k.a. kevels and mules) and their associated rails and supports. Calculated a structural overload of 400% and identified an associated safety risk to onsite staff. Identified that the system was originally designed in 1958 (or earlier) based upon the 40 kip breaking strength of doubled two-inch diameter manila rope. In comparison, the two-inch synthetic rope currently in usage has a breaking strength of 160 kips when doubled. Led the design team to develop innovative designs to withstand the increased loads on the structure, including the use of new, continuous rails to be custom fabricated of steel forgings and weldments. As an alternative, Scott also proposed ideas to reduce the loads on the structure. Led discussions with district leadership, the Inland Navigation Design Center (INDC), the Operational Condition Assessment (OCA) cadre, and the Risk Management Center (RMC). Scott is a key member of the INDC team that is creating new technical guidance and design standards for the travelling mooring bitts within the engineering manuals (EM).

Upper Saint Anthony Falls Tainter Gate Rehabilitation, Minneapolis, Minnesota: $3.5 Million construction cost. Serving as the technical lead responsible for supervising the design aspects of this multi-disciplinary project. Prepared the structural preliminary designs as part of a value-based design charette. Drafted the scope of work, government cost estimate, and participated in the negotiations to hire an architectural & engineering (AE) firm to complete the design by preparing contract documents. As technical lead, Scott also performed project management roles, including monitoring the AE firm's performance with regards to technical quality, schedule, and budget. Briefed district leadership on project status.

Periodic Assessment and Risk Assessment, Lock and Dam No 2: Led a multi-disciplinary team of engineer specialists and consequence evaluators to develop a risk assessment for this lock and dam site on the Mississippi River. The risk assessment related to life loss potential and economic loss potential, as well as probability of occurrence. Project features included earthen dams, levees, concrete dams, steel movable dams, locks, and mechanical and electrical operation systems.

Periodic Assessment, Pokegama Dam: Structural lead for the risk assessment of this control structure in the headwaters of the Mississippi River.
Periodic Inspections of Lock and Dam 1, Lock and Dam 9, Red Lake Dam, and Sandy Lake Dam: Performed periodic inspections of navigation and flood control dams, including the roles of inspection team leader, structural team leader, and structural engineer. Prepared and supervised the preparation of engineering estimates for project formulation and project planning purposes.

Agency Technical Reviews (ATR) of Civil Works projects, including:

- Kanopolis Service Gates, Kansas City, Missouri
- North Landing Bridge, Virginia
- Deep Creek Rolling-Lift Bascule Bridge, Virginia
- Port Monmouth Control Structure with Sector Gates, Staten Island, New York

Performed technical reviews of design plans and specifications addressed potential structural and safety problems. Drafted comments to provide technical guidance and assistance. For example, identifying fatigue sensitive details on the tread plates of the Deep Creek Bridge. Scott was selected to perform these reviews due to his expertise and experience with movable structures.

Miter Gate Replacement for Lock and Dam No. 2 – Scott served as the structural lead for the design and installation of new miter gates.

Chittenden Locks, Replacement of Culvert Valves, Seattle, WA: $10 Million construction cost. Drafted structural specifications for inclusion in the contract documents. Contributed to the value-based design charette to develop the preliminary design. Innovative design concepts included greatly simplifying the fabrication and erection of the valve guides, innovative slide materials, and hydraulic shaping of the valve to resolve a vibration problem. Performed field inspections and peer review of the structural design.

Illinois Waterway, Replacement of Culvert Valves: Approximately $1 Million fabrication project. Led a structural team to design new culvert valves, including preparing plans, specifications, and design documentation reports (DDR). The design includes the use of innovative low-friction slides, instead of traditional steel rollers which often have problems with seizing. The design also improved the connection with the hydraulic operating machinery.

Design Process Improvement Team, St. Paul District: Participate in an internal review of the district design process, under the guidance of a Lean Six Sigma Black-belt facilitator. Discuss complex organizational issues to document the current design process and propose improvements to the organizational guidance. For example, Scott proposed a checklist to guide project delivery and shared a "Project Management Checklist" that he had developed while previously employed with an architecture and engineering (AE) firm.

Fargo Moorhead Flood Control Project, Inlet Diversion Structure, North Dakota: $2 Billion construction project. Performed structural design, analysis, and checking of various structural components including the concrete pedestrian tunnels through the piers and baffle blocks.

Guidance Update and Modification Program (GUMP) for Engineering Manual 1110-2-3200, "Wire Rope Selection": Drafted new technical guidance language. Scott was selected for this task due to his expertise and experience in specifying wire ropes.

World Association for Waterborne Transport Infrastructure (PIANC), Working Group Report 173, "*Movable Bridges and Rolling Gates – Design, Maintenance, and Control Lessons Learned from Experience*": Composed Chapter 10, "Movable Bridges General Design and Discussion" and edited other chapters of this publication to provide technical guidance for lock and bridge owner agencies around the world. Participated in field visits and meetings attended by engineers of many different disciplines and nationalities.

Scott deployed to Puerto Rico in response to Hurricane Maria in 2017. Scott served on a FEST team in the role of structural and mechanical engineer performing emergency assessments of public infrastructure, including primary focus on school buildings.

WSP | Parsons Brinckerhoff, One Penn Plaza, New York, NY 10119
Structural and Mechanical Engineer, Complex Structures Dept. 10/2010 to 11/2015
Grade: Supervising Engineer (Equivalent to GS12/13),
Supervisors: Mike Abrahams (Technical Director - Structures), 212-465-5185,
Debra Moolin (NY Structures Department Manager), 212-465-5443; may be contacted
Clients: Duane Stone (WSDOT Movable Bridge Manager) 360-570-2576;

Supervising engineer focused on the design, inspection, research, and drafting of technical guidance documents for bridges, movable bridges, tunnels, ferry terminals, and other transportation infrastructure. Developed and supervised the development of project proposals, schedules, budgets, contract documents, and technical reports. Established and maintained client relationships. Presented technical issues to clients and at industry conferences.

National Academy of Sciences (NAS) Project 149/Task 08 and National Cooperative Highway Research Program (NCHRP) Project 20-07/348 *Review of the AASHTO LRFD Movable Highway Bridge Design Specifications for future updates*: $100,000 research project cost. As Deputy Investigator, Scott supervised the writing of the technical and complex research report recommending revisions to design standards for movable bridges in the United States. Recommended an approach to incorporate probability and reliability-based design methodology for structural, mechanical, and traffic/marine safety systems into movable bridge design codes.

National Cooperative Highway Research Program (NCHRP), Project 14-32, *Revisions to the AASHTO Movable Bridge Inspection, Evaluation, and Maintenance Manual*: $210,000 research

project cost. As Deputy Investigator, Scott supervised the re-writing of a key, national movable bridge guidance document. Drafted new chapters to apply element-level inspection to structural, mechanical, electrical, and traffic/marine safety systems.

Tacoma Narrows Bridge East, Washington: $8 Million construction cost project. Led the multi-disciplinary design of this rehabilitation project for a major suspension bridge. Served as project manager, project engineer, and structural Engineer of Record through the full project life cycle from condition inspection, type study, preliminary design, final design, and construction management. Worked closely with the bridge owner, WSDOT, and supervised the design team to create a new under-bridge maintenance traveler design that met the unique needs of the owner and the site. Identified and resolved safety issues with the existing traveler, including lack of interlocks, wear, and use of many non-standard parts. Due to existing structural overloading, the new traveler was designed to be lighter while providing increased functionality, working room, and safety. The new traveler was designed for seismic loads.

Snohomish River Bridge West, Washington: $3 Million construction cost project. Led the multi-disciplinary design of this emergency rehabilitation project for a vertical lift bridge. Served as project manager, project engineer, and structural and mechanical Engineer of Record through the full project life cycle from non-destructive condition inspection, type study, preliminary design, final design, and construction management. The emergency rehabilitation was necessitated by our team's discovery of advanced fatigue cracks in the sheave shafts. Supervised the design of temporary supports for the two 400 kip counterweights above the active roadway, including analyzing the existing bridge structure for new, increased loading.

Seattle Ship Canal Crossing Study, Seattle, Washington: $100,000 engineering study. Prepared a type study for a new light rail movable bridge on a new alignment in a prominent urban location.

Pelham Bay Bridge, Bronx, New York: $250 thousand engineering study. Led the condition inspection and preliminary design for replacement of this Amtrak-owned railroad rolling-lift bascule bridge.

Bridge 6 East and West, St. Catharines, Ontario: $300 Thousand engineering study. Led the Residual Life Analysis of two rail single-leaf rolling-lift bascule spans over the Welland Canal, as well as the fixed approach spans. Supervised structural and mechanical inspections, load rating, maintenance and rehabilitation recommendations, risk analysis, constructability review and construction cost estimates.

Bayonne Bridge, New York City: $1.5 Billion construction project to rehabilitate this long-span suspended-deck type arch bridge by raising the roadway 60 feet to allow larger New Panamax vessels to access New York Harbor. Designed the steel connection between the new floorbeams, new wind bracing, and the existing arch members. Scott was selected for this task due to its complexity.

Second Avenue Subway, New York City: $4.45 Billion construction project. Reviewed design calculations and inspected temporary structural supports for a gas main during excavation of the 94th Street station and subway tunnel. Identified structural deficiencies, safety issues, and recommended repairs. Composed technical letter reports to explain the issue to stakeholders.

Governor's Island Slip 7, New York: Approximately $1 Million construction project. Led construction engineering tasks for the replacement and rehabilitation of this historic ferry

transfer span. Developed construction sequences and procedures. Developed methods for measuring and adjusting span balance.

Capacity Building Initiative, New York Office: Led this multi-disciplinary, research and development group with goals of improving 1) the project delivery process and 2) the firm's capabilities to win new projects. As an example, Scott led the creation of a "Project Management Checklist".

Hardesty & Hanover, 1501 Broadway, New York, NY 10036
Structural and Mechanical Engineer, 10/2006 to 10/2010
Grade: ASCE IV (Equivalent to GS11)
Supervisor: Steve Mikucki (Manager, Chief Engineer), 475-238-6209, may be contacted
Clients: Duane Stone (WSDOT Movable Bridge Manager) 360-570-2576;

Port River Expressway Bridges, Adelaide, Australia: $AU 170 Million construction project. Provided on-site construction support services during the construction of two single-leaf bascule spans, one highway and one freight rail. Performed preliminary design. Represented the design firm and served as liaison with the Contractor to resolve design issues during construction.

Buffalo Harbor Bridge, Buffalo, New York: Approximately $200,000 engineering study. Drafted a livability position paper to support the application for a TIGER Grant for competitively awarded federal funds for this project including a proposed new bascule bridge and approaches on a new alignment in downtown Buffalo.

Inner Harbor Pedestrian Bridge, Copenhagen, Denmark: mechanical project engineer for the design of the operating machinery for this novel double-leaf retractile pedestrian bridge. Partnered with Michel Virlogeux, a prominent French bridge architect.

Xizhonghuan Bridge, Tianjin, China: performed conceptual design of the trunnions and hydraulic operating system for this 295-foot-long (90-meter-long) single leaf bascule span. The scope included design concepts, calculations, and technical description.

New York City College of Technology, 300 Jay Street, Brooklyn, NY 11201
Adjunct Professor, 08/2007 to 12/2007
Grade: Adjunct Professor
Supervisor: Gerarda M. Shields, Ph.D.

Taught the class "Statics and Strengths of Materials II" to civil engineering students.

Parsons Brinckerhoff, One Penn Plaza, New York, NY 10119
Structural and Mechanical Engineer, 03/2001 to 10/2006
Grade: Senior Engineer P10 (Equivalent to GS10)
Supervisor: Mike Abrahams, 212-465-5185, may be contacted

Lake Shore Drive Bridge, Chicago, Illinois: Approximately $100,000 engineering study. Prepared a study of seven alternatives for widening this major, six lane, double decked trunnion bascule bridge in a prominent urban location. Prepared conceptual design drawings and cost estimates for each alternative.

Grand Central Terminal, New York City: Approximately $10 Million construction project. Prepared and checked structural finite element models for time-history analysis of trucks crashing into structural components for a security related project.

Number 7 Line Subway Extension, New York City: $1.1 Billion construction project. Prepared and checked structural finite element analysis models of concrete tunnel liners.

Pell Newport Bridge, Newport, Rhode Island: Vulnerability assessment for this prominent suspension bridge, conducted in the wake of the September 11, 2001 terrorist attacks. Our qualitative threat assessment considered vessel collision risks.

Awards

Civilian Award for Humanitarian Service, U.S. Army, 2017 & 2020
Meritorious participation in emergency response to Hurricane Maria and COVID 19 planning for temporary hospital design & construction

Frontiers of Engineering, National Academy of Engineering, 2014
"Demonstrated accomplishment in engineering research and technical work with recognizable contributions to advancing the frontiers of engineering."

Young Engineer of the Year, by the New York Society of Professional Engineers, 2010.

Publications & Presentations

"*Emerging Technologies in Structural Monitoring,* Bridge Design & Engineering magazine, 2023

Authored "But Why?" [Root Cause Analysis of the Collapse of the FIU Pedestrian Bridge], Bridge Design and Engineering magazine, 2020

Presented "Travelling Mooring Bitt Rehabilitation" at Mechanical CoP Meeting, U.S. Army Corps of Engineers, 2018 and 2020.

Co-Authored the book "Engineering for Sustainable Communities", chapter 28 "Chari Chari Bridge", to be published by ASCE in 2017

Co-Authored the article "Traveling Light", Bridge Design and Engineering magazine, 2016

Presented "Infrastructure Inspection – Case Studies from the Field" by invitation, Los Alamos National Laboratory, Engineering Lecture Series, 2014

Co-Authored the book "Bridge Engineering Handbook, 2nd Edition", chapter "Movable Bridges", published by CRC Press, 2014

Co-Authored the technical paper “Sheave Trunnion Fatigue and Replacement at Snohomish River Bridge in Everett, Washington”, Heavy Movable Structures 15th Biennial Symposium, 2014

Co-Authored the book “Infrastructure Sustainability and Design”, chapter “Sustainable Transportation Infrastructure”, published by Routledge, 2012

Presented “Sustainability Rating of Bridge Projects” by invitation, at Second Symposium of Bridges and Viaducts, Eskisehir, Turkey

Authored the article “Going Green”, Bridge Design and Engineering magazine, 2009

Co-Authored the technical paper “East Half Replacement – Hood Canal Bridge”, presented at Heavy Movable Structures Symposium, 2004

Authored the technical paper “Design of Pamunkey Bridge”, presented at Heavy Movable Structures Symposium, 2004

Photo 2 - Scott Snelling
CEO
Roebling Labs LLC

Next Steps

If you are a bridge owner that is interested in deploying the Roebling Labs vessel collision warning system, Roebling Labs can sign a Non-Disclosure Agreement before discussing sensitive information regarding the threats and vulnerabilities of your site.

Contact scott@roeblinglabs.com to discuss your project needs.