State Transportation Innovation Council (STIC)
STIC Business Meeting

MEETING DATE: Wednesday, July 26, 2023

TIME: 9 a.m. – 12 p.m.

LOCATION: Central Penn College, Harrisburg, Pa. (remote option via Webex)

ATTENDANCE: Refer to Attendance List

Welcome and Introductory Remarks

Anja Walker, Pennsylvania Department of Transportation (PennDOT) Bureau of Innovations (BOI), welcomed attendees and thanked them for attending the STIC Business Meeting. Ms. Walker reminded attendees that the session is being recorded. Ms. Walker introduced STIC Co-Chairs, PennDOT Secretary Mike Carroll and Federal Highway Administration (FHWA) PA Division Administrator Alicia Nolan for their opening remarks.

Secretary Carroll said it is a high honor and significant responsibility to hold the position as the Secretary of Transportation. He shared that PennDOT is populated with unbelievable talent, and has wonderful partners starting with FHWA, which was on full display to help with the I-95 project. Secretary Carroll said that projects like this do not happen without full and complete support from FHWA. Secretary Carroll thanked FHWA PA Division Administrator Alicia Nolan and all those associated with FHWA for their support. Secretary Carroll also thanked the consultants who are equally as important and have done a perpetual job in Philadelphia, and in Bucks County as a result of the flooding on SR 32 and SR 532, as well as the Antietam Creek in Berks County. He said these are just a few examples of the wonderful coordination and talent that exists in the consulting and contracting world.

One of the challenges Secretary Carroll was given by Governor Shapiro is to increase the available funds in the Motor License Fund by the preservation of the money that gets shifted to the State Police. Governor Shapiro's proposal is to preserve $100 to $125 million each year for the next four to five years to bring that number down to zero. There seems to be broad support for this initiative, and hopefully a budget will be approved soon. Secretary Carroll concluded by stating that he is 100% certain that, if there was a bridge collapse anywhere in Pennsylvania, a capable and efficient response, just like in Philadelphia, would happen in any other county in Pennsylvania due to the wonderful talent within and outside PennDOT. Secretary Carroll acknowledged that the Recycled Foam Glass Aggregate used to create the temporary bridge structure was a STIC innovation several years ago. It took 8 million recycled glass bottles to fill the underpass and bring it up to surface level. Secretary Carroll said that while Recycled Foam Glass Aggregate will not replace traditional aggregate, the innovation is being used in other areas of Pennsylvania. He said this proves that innovation matters as it provides alternatives for PennDOT and practical uses.

Administrator Nolan thanked everyone for being at the meeting and dedicating their time, efforts, and ideas. She said the PA STIC is leading the nation in terms of creating a culture of innovation. She said that it has been proven time and time again, with some of the opportunities made available through the STIC, as well as being able to use innovation when appropriate, and trying to do things more efficiently, which is what innovation is all about. Administrator Nolan said that trying to do something different, a change from what we are doing is so important, particularly embracement of the

technologies and innovation is critical, and I-95 is a great example. The reason the STIC is so important is because we do bring a cross-section of stakeholders together to share ideas.

Ms. Walker thanked Secretary Carroll and Administrator Nolan for their remarks.

General STIC Updates

Ms. Walker introduced Jaclyn Huss. Ms. Huss is the new STIC Manager, who joined BOI in March 2022. Ms. Walker also acknowledged and thanked the outgoing STIC members for their dedication and service and welcomed the incoming STIC members.

FHWA Update

Ms. Walker introduced Yathi Yatheepan, P.E., FHWA Innovation and Research Coordinator, to provide FHWA updates. Mr. Yatheepan thanked PennDOT for its active involvement in Every Day Counts Round 7 (EDC-7) and signing up to champion five out of the seven EDC-7 Innovations. Mr. Yatheepan announced the availability of a Targeted Overlay Pavement Solutions (TOPS) workshop, which is an EDC-6 innovation. He emphasized that EDC is not only for state agencies, but all transportation agencies are eligible to participate. Mr. Yatheepan also confirmed that FHWA Headquarters Office is processing the 2023 STIC Incentive Program funding allocation memo. He also said that there is a Notice of Funding Opportunity (NOFO) for Advanced Digital Construction Management Systems (ADCMS), which provides $34 million, and all states are able to apply. Mr. Yatheepan said that this is a competitive, discretionary grant program focusing on the adaptation of technology that may be applied throughout the construction life cycle.

FHWA Every Day Counts 7 (EDC-7) Update

Ms. Walker introduced Brian Walter, P.E., to provide an EDC-7 innovations update. PennDOT selected five innovations as part of this EDC round.

- **Nighttime Visibility for Safety** – This innovation promotes traffic control devices and properly designed lighting to improve safety for all. The champions are Kathryn Fink, PennDOT District 11 and Nate Reis, PennDOT District 8.
- **Next Generation Traffic Incident Management (TIM): Technology for Saving Lives** – This innovation aims to increase traveler and responder safety, transforming response operations from routine to extraordinary. The champion is Ben Devore, PennDOT District 11.
- **Enhancing Performance with Internally Cured Concrete (EPIC^2)** – This innovation requires a lower water to cement ratio, and provides moisture internally to reduce shrinkage and cracks, which increases the strength and durability of the concrete. The champions are Shane Szalankiewicz, PennDOT District 11 and Catherine Daniels, PennDOT District 4.
- **Environmental Product Declarations (EPDs) for Sustainable Project Delivery** – This innovation helps states support procurement decisions and quantify embodied carbon reductions using life cycle assessments for sustainable pavements. The champions are Kevin Gnegy, PennDOT Bureau of Construction and Materials and Dean Schmitt, Bureau of Maintenance.
- **Strategic Workforce Development** – This innovation seeks to build the workforce through effective solutions, proven training, and customizable outreach. The champion is Daryl St. Clair, PennDOT Highway Administration Deputate.

Ms. Walker mentioned if anyone has any questions regarding these innovations, to please contact her, and she will connect them with the project champion of that innovation.

2023 STIC Incentive Program Project Recipients

Ms. Walker announced that the 2023 STIC Incentive Program funding will be awarded to two projects. Each project will be awarded $50,000. The first project, the Teen Driver Work Zone Safety Course, will use the funding in partnership with PennDOT, the Pennsylvania Turnpike Commission (PTC), and the American Traffic Safety Services Association (ATSSA), for the development and implementation of a Pennsylvania-specific Teen Driver Work Zone Safety Course. Based on a free national course, the training will help teens better understand common types of work zone crashes and which driving habits can be used to better prevent these incidents.

The second project that will be funded is Construction CMS Queue Protection Corridor Integration. The project will use the funding to purchase and install PennDOT-owned 4G cell modems and/or SIM cards into contractor project work zone Portable Changeable Message Signs (PCMS). This will allow Regional Traffic Management Centers to view and change the work zone signs, and the work zone signs to be added to the corridor management tool in PennDOT's Advanced Transportation Management System (ATMS). The signs can then be set up to operate as a queue detection system. There are several projects where this technology could be used.

Ms. Walker mentioned if anyone has any questions regarding these innovations, to please contact her, and she will connect them with the project champions of these innovations.

2022 STIC Incentive Program Project Update: Radio Frequency Identification (RFID) Tags

Ms. Walker introduced John Myler, assistant construction manager, PennDOT District 11, to present on the RFID Pilot Project, which received $100,000 in STIC Incentive Program funding in 2022.

Mr. Myler first introduced his team, James Hontz, and Dean Poletti, P.E. from PennDOT District 11, Phil Petrina, Bureau of IT Project Development and Delivery, and a consultant team from WSP, including Lou Ruzzi, P.E., Chris Mills, RCDD and Bill Fabrizi, P.E.

Mr. Myler shared that the RFID Pilot Project is about 60% to 70% completed. He provided an overview of the pilot project and shared how the use of RFID tags to track assets aligns with other initiatives PennDOT is currently pursuing, including e-Construction and Partnering and Digital Delivery Directive 2025, and the need to capture and leverage a large amount of data moving forward.

Mr. Myler discussed the two types of RFID tags – passive and active. Passive tags require no battery and are powered to read at short ranges via magnetic fields. The tag contains electronically stored information that can be read up to several feet away. Since a passive RFID tag does not have a power source, an RFID reader within range is needed. Active RFID tags are continuously operating, battery-powered sensors that gather and transmit data to a reading device. Unlike a passive tag, an active RFID tag has an onboard, long-lasting battery that enables the tag to transmit data continuously, regardless of whether it's in the field range of a reader. For the purposes of the pilot project, Myler and his project team are using passive RFID tags. Each tag has a unique identifying number that correlates to the information being stored about the asset in a backend database.

Since RFID is a mature technology and has been used a lot of different ways in a lot of different places, Myler and the project team began their evaluation by conducting outreach to other states and industry partners to collect and build upon lessons learned and eventually customized the technology to fit PennDOT's needs.

The team also evaluated the RFID tags and readers to see how they would perform in a variety of conditions. Mr. Mills said there are seven factors looked at when evaluated the RFID tags – frequency range, environment, mounting services, size, attachment method, reading range, and memory storage. For example, the tags were put under water, in concrete and asphalt, and baked in an asphalt oven at 320 degrees, none of which damaged the tags. Mr. Myler said this shows the quality and the ruggedness of the tags and that they can have a long-life span and used in many different instances on a construction site.

The RFID readers were also evaluated to ensure inspectors have a device that won't break if it falls, and is Ingress Protection (IP) rated, which means it is effectively sealed from the elements. The team also tested reading capabilities of the tags through walls and evaluated Bluetooth and Wi-Fi connections to ensure secure data transmission and access to asset information.

Through the evaluation, the team noted some limitations that prevented reading some of the tags. For example, most tags cannot be read through steel; although, there are some tags that have a metallic side and when placed on a sign, it uses the steel of the sign to amplify the signal. Mr. Myler said that it requires learning what these different RFID tags are used for and understanding the limitations each one has versus another. He said all tags have benefits depending on how you intend to use them. Some tags can be recycled and reused, some can be read without seeing them, and most are durable and can last over time.

According to Myler, next steps include procurement of RFID tags and readers for each PennDOT district and central office; development of a program management initiative for RFID statewide implementation; development of standard operating procedures for the RFID program; development of a user manual for the RFID program; development of training procedures for application of tags and use of readers, and data management; and develop RFID tag options for varied use cases.

Mr. Myler also shared that the STIC Incentive Program funding is being utilized to purchase two RFID readers for each PennDOT district. Along with the readers, each district will receive a handful of RFID tags and guidance on how to connect the reader to Bluetooth. The team is also working on getting the applications approved within the PennDOT app catalog, so employees can access this software on department devices. The hope is that eventually PennDOT partners, including local governments, can benefit from this technology as well.

He noted that with these types of technology solutions, it's beneficial to take very small steps. We want to make sure there is a good return on our investment and that it's a program that makes sense. We want this to be good for PennDOT and our partners.

Ms. Walker asked if there were any concerns with the tags? Mr. Myler answered that there are no concerns. The information in the tags is only available to someone with credentials to access the information. The security risk is very minimal.

Mr. Ron Seybert asked what consideration of the technology benefits to local governments were evaluated or is this is only a PennDOT initiative. Mr. Myler said that there will be potential benefits to local partners as well; however, it is too soon to determine how PennDOT will make that connection. He said that local governments could potentially have access to the same software or materials.

STIC New Innovation: Cold Central Plant Recycle (CCPR) for High Volume Routes

Ms. Walker introduced Mary Robbins, Ph.D., P.E., Director of Technical Services, Pennsylvania Asphalt Pavement Association (PAPA) to present on Cold Central Plant Recycle (CCPR) for High Volume Routes, a new innovation being introduced by the Construction and Materials TAG. The asphalt industry is looking at ways to reduce carbon emissions and

the National Asphalt Pavement Association (NAPA) has embarked on the Road Forward initiative, which aims to reduce carbon emissions to net zero by 2050. There are two easy and effective ways to reduce carbon emissions as it relates to asphalt pavements. One is to increase the use of reclaimed asphalt pavement (RAP) by putting more RAP into the mix. The second is to reduce the temperatures that are used to mix it.

Dr. Robbins suggests one option is to add more RAP into the mix, but the other is to look at cold recycling. She said that cold recycling mixes use a hundred percent RAP, and there's no added heat in the process. The only heat in the mix comes from the liquid, and the liquid asphalt emulsion is about 148 to 150 degrees Fahrenheit. Dr. Robbins said that cold recycling mixes utilize the RAP material to create a new flexible asphalt base that provides almost the same structural capacity as a hot mix asphalt base.

Dr. Robbins said that CCPR is great for pavements that are in fair condition, being the pavement structure has moderate to severe distresses, but is not quite at the end of life, and the underlying materials are considered to still be in good condition. CCPR takes RAP that is either milled from the project site and back to the yard or RAP that has been stockpiled previously and it is mixed at the plant with a liquid, such as asphalt emulsion or foamed asphalt, and a small amount of cement. The process uses 100% RAP. Since there's a small amount of cement added, there is a little bit of a cure time, a couple days, to allow that reaction to happen to add the strength and to drive off the water. It is not meant to be a final wearing surface, so while it might be open to traffic during construction, it should be topped with an asphalt overlay or surface treatment.

CCPR is similar to a traditional asphalt mix in the sense that it's a design mix. It’s still going through a mixed design process to determine the optimal liquid content. This process still requires oversight, meaning a job mix formula that has been approved by PennDOT. The properties and variation of the RAP are still accounted for just like with the aggregate or the asphalt. It is then hauled to the site, paved with pavers and compacted with rollers. The main difference is that it is cold and there is no heat added. A cold central plant is smaller and off site, meaning the material is hauled back to the project site and paved, but the plant itself can be moved from yard to yard.

CCPR addresses some of those deeper distresses. Instead of doing a mill and fill, which takes two inches off and puts two inches back, but does not address the underlying materials, CCPR is more cost-effective and provides a longer life than doing a band-aid fix. Dr. Robbins reiterated that one of the reasons to consider CCPR, is it uses all this excess RAP. She said that compared to a two-inch overlay, which uses 153 tons of RAP on a project of one lane mile, CCPR, which is a structural rehabilitation, is going to use nine and a half times more RAP.

CCPR is already in PennDOT Publications 408 and 242, but it is limited to lower volume routes, with less than 15,000 vehicles per day. The largest quantity of RAP is stockpiled in the urban areas, such as District 6 and 8, with low-volume routes, and Dr. Robbins said it is not economical to move the RAP from an urban area to a rural area.

CCPR can be used on high volume routes and Virginia DOT has had great experience using CCPR on Interstates. It was placed on I-81 in 2011, which has an average daily traffic (ADT) volume of 23,000 vehicles, with 25% of those being trucks. Dr. Robbins said it has performed really well on this Interstate. Virginia also saw cost savings between $7.9 to $70 million in comparison to the alternatives, and the sections were constructed in a much shorter time than their traditional alternatives.

Dr. Robbins also noted that Virginia did full depth reclamation, which resulted in the cost savings and much of that was attributed to the CCPR. From 2018 to 2021, Virginia DOT also reconstructed parts of I-64 and widened it using CCPR. The cross sections have six inches of CCPR, but they also did 12 inches of full depth reclamation and a 12-inch layer with recycled material. This section of road sees 43,000 vehicles per day, and Virginia DOT saw a cost savings of $10 million.

Segment two used 180,000 tons of stockpiled RAP. Dr. Robbins said that this shows CCPR can be used on Interstates and higher volume routes. The hope is that this STIC innovation will show that CCPR is cost effective and sustainable and that the TAG will be able to perform some pilot projects on high volume routes in Pennsylvania.

Nathan Bragunier, Pennsylvania Municipal League, shared that he thinks the base repairs are more cost effective versus CCPR on a municipal level. Dr. Robbins responded that it may depend on project size because mobilization of the plant is needed. Depending on how many lane miles the municipality is working with, it might be more cost effective do base repairs. She said that from an overall lifecycle standpoint, there won't be the same long-term performance than if they would remove the existing base material and replace it with CCPR.

Mr. Ruzzi asked how many years the roads in Virginia have lasted. Dr. Robbins said that the I-81 RAP was placed in 2011 and those same cross sections were replicated at the National Center for Asphalt Technology (NCAT). The replications at the NCAT test track received 10 million equivalent single axle loads (ESAL) in a 2-year period. It's an accelerated pavement testing and one of the cross sections, which included CCPR, lasted for 30 million ESALs and performed exceedingly well. Thirty million ESALs is about 25 years of traffic. Dr. Robbins said that another study was conducted after using CCPR on I-81 and replicated it in the 2012 test track cycle. After this experiment, Virginia DOT was so pleased with the performance at the test track that they proceeded with I-64 in 2018. It has been 12 years since the installation on I-81 and five years since installation on I-64.

STIC Innovation Update: Snow Plow Cameras and Automated Vehicle Locator (AVL)

Ms. Walker introduced Matthew Burkett, Assistant District Executive for Maintenance in PennDOT District 10 and Maintenance TAG Leader, to present on the Snow Plow Cameras and AVL innovation.

The TAG started this innovation with the intent of some expected benefits, including: an enhanced AVL system with integration of plow cameras to provide a screenshot from a dashcam on the trucks windshield; enhanced traveler information on 511PA providing another perspective on road conditions to motorists; increased real-time situational awareness for districts, counties, area command, and Pennsylvania Emergency Management Agency staff to more consistently determine if restrictions need to be placed, such as speed restrictions or lane restrictions; and reduction in payouts for paint claims as cameras could capture vehicles driving through paint lines and ignoring wet paint signs.

Currently, 70 vehicles in the fleet have these cameras. The cameras have been installed in 40 plow trucks – 20 in District 10 and 20 in District 11. Cameras were also installed in three paint trucks – two in District 11 and one in District 10. Twenty-seven cameras were installed in the Assistant Highway Maintenance Manager vehicles in District 10 and District 11.

Mr. Burkett shared that the total cost to install cameras in the plow trucks is $665 a truck along with a $20 monthly fee in order to access the data feed remotely. He said the total costs to install cameras in paint trucks is approximately $1,000 a truck, along with the $20 recurring monthly fee. The Innovation Development Team is looking at tort liability and whether having cameras in the paint trucks can help document instances where drivers disregard the message boards and drive over wet paint lines. PennDOT districts receive several claims from saying they did not see the signs and complain of paint damage to their vehicles. Mr. Burkett said that having camera footage will hopefully help defend some of those paint claims and lower the tort liability.

Mr. Burkett said that some of the additional accessories needed are replacement mounting adhesive pads and side mirror mounting brackets. There are also two different size memory cards needed. The team is still working to determine how much video to keep and how long to retain the data. Spare memory cards are needed to preserve footage in case of a major incident and to ensure no important footage is being overwritten. If a truck is involved in an incident, the operator

can physically pull that memory card and insert the spare card, so the truck can go right back out and continue to record information.

Mr. Burkett thanked Dean Poletti, P.E., PennDOT District 11 and previous Maintenance TAG Leader, who has been extremely instrumental in getting this innovation started.

A question was asked if data is being collected through the cloud or just on the memory cards and whether the Innovation Development Team has considered using artificial intelligence to go through all the video to be able to do sign inventory, identify garbage on the road, or complete similar tasks. Mr. Poletti said not all data is being retained during the pilot phase, but there are a lot of benefits to it. At this point, the team is mainly looking at this for situational awareness, primarily winter operations. All the data does go through the cloud to our AVL system. The team can request the video from a truck remotely through the cloud as well, but when requesting a large amount of data, for example a whole day's worth, it is quicker to get the memory card off the truck and download it.

A remote attendee commented that the price for the 250 GB card seems expensive. Mr. Burkett responded by saying that it is not like a memory card you can buy at Walmart. The cards are specific to the cameras being utilized and are needed to ensure there are no glitches within the software. The camera and card need to be compatible.

Another question asked is how long it takes to go through the 250 GB card. Mr. Burkett said that it can hold about three days' worth of video or approximately 40 hours. The Innovation Development Team wanted to make sure to have enough capacity to not overwrite something and have time to go back and review the footage. Through the pilot, the team has had conversations with the Office of Chief Council and the timeframe is going to be adjusted accordingly based on the standard decided on at the end of the pilot.

Innovation in Motion: I-579 Urban Space Cap Project

Ms. Walker introduced Bob Byrnes, P.E., PennDOT District 11, the PennDOT project manager on the project for the City of Pittsburgh, and Nick Burdette, P.E., HDR Inc., design consultant on the project, who presented on the I-579 Urban Open Space Cap Project in Pittsburgh. This project received the grand prize in the National 2022 American Transportation Award competition.

Mr. Byrnes provided an overview of the project to build a bridge over a PennDOT highway and build a park on top of the bridge. The focus was to reconnect downtown Pittsburgh to one of the most important minority communities in Pittsburgh, the Hill District, which was disconnected when the highway was built in the 1950s. According to Burdette, the Hill District community was a thriving cultural center in the 1930s and 40s. This changed in the 1950s when 100 acres were taken to build the Mellon Arena site, resulting in 8,000 people being displaced.

Agencies involved in the project were the Sports and Exhibition Authority – Lead Design Agency, Visionary and Funding Source; City of Pittsburgh – Owner; PennDOT District 11- Oversight; FHWA – Review, Approval and Funding; and HRD, Inc. – Lead Designer.

As plans emerged about redeveloping this site, the task was to figure out how to fill in the space between two existing roadway bridges with a 3-acre park to make it easy for pedestrians to access downtown. The project received a $19 million Transportation Investment Generating Economic Recovery (TIGER) Grant.

Several innovative design and construction ideas were used as part of this project. With the community skeptical of development, comprehensive public outreach was done to determine what the community wanted for this space, particularly above the structure. What worked well was providing images of the concept from other parks and open spaces around the country and world. Six themes emerged from these public outreach meetings – water, green, destination,

music, seating and connection. Mr. Burdette said that residents essentially became part of the design team, which really helped to build trust.

Site specific criteria was established to ensure the structure was properly design for proposed uses. Since this was a unique site, the design team needed to determine that structural configuration, which required working through a lot of alternates to determine how to best fill in the space. It was decided to build three separate structures that are adjacent to each other and connected with innovative waterproof joints and 126 unique beams. In addition, the overhangs were removed on the old structures, then the new structures were built, the soil was added, green walls, and the overhangs. The goal was to ensure that anyone could walk across all four sides and the topography matched.

Since water and structures do not mix well and putting saturated soil on top of a bridge is not the first choice, waterproofing was another important aspect to consider. The following methods were used for this project: 8-inch structural concrete deck with longitudinal lap joints and water-stops; robust waterproofing membrane layers; fiber-reinforced 4-inch concrete protective/waterproofing slab; and a continuous aggregate drainage layer due to the slope of the structure, and underdrains to collect water on the low side of the structure. Additionally, lightweight fill was used to fill in the space where 5 feet of soil was not needed.

Working on a project in any urban area can be challenging and this project was no different. Twelve different traffic phases were used over the course of the project. Additionally, when construction activities were suspended in March 2020 due to the COVID-19 pandemic, the initial impact caused a postponement in the footer placement. Since the shutdown lasted six weeks, there were also delays in building crane pads, suppliers and fabricators, and beam deliveries. Due to lower volumes of traffic in summer 2020, PennDOT worked with the PennDOT Turnpike Commission to waive several restrictions, such as being able to deliver beams on Saturdays, to gain back time that was lost during the shutdown. District 11 allowed for earlier start times, which provided more hours to work on the project and get it back on track. The team was able to accelerate mixes and abutments, since the curing time wasn't as long, and the roads do not see heavy traffic like other roads.

Since the supplier could not achieve the requirements in the special provision for the Lightweight Cellular Concrete that the team wanted to use on the project, Foam-Control Geofoam blocks were approved for use as an alternative. Additionally, a concrete projection slab was placed during the project to waterproof the deck.

To build the park, PennDOT used 1,700 lf of site wall, and instead of typical highway lighting, installed special architectural light poles. An outdoor classroom was created with seat drums, chimes, and an auditorium feel for events, and story walls were created to highlight local Pittsburgh activists. Trench drains, which are spiraled, were used to carry the water down to rain gardens with a wide variety of plants and more ornate walls, such as the gabion walls that have steel seat plates. Each seat plate has an artistic element or quote. Architectural walls and wayfinding signs are also displayed throughout the park.

Mr. Ruzzi asked how trees were selected? Mr. Burdette said that trees only needing a few feet of soil were placed on the structure. All other large trees were planted off the structure, so their roots could go down further.

Danielle Klinger-Grumbine, PennDOT BOI, commented that the geofoam block used on the project was a STIC Innovation a few years ago and it is neat to see that it was used on this project. Ms. Klinger-Grumbine asked if pervious pavement, another STIC innovation, was considered for this project. Mr. Burdette said it was considered; however, the event lawn is created to maintain 6 inches of water, so it was determined that pervious pavement was not necessary in this project. Ms. Klinger-Grumbine's asked about the public's sentiment now that this portion of the project is completed. Mr. Burdette shared that there hasn't been an official follow-up survey at this point; however, there are still 28 acres that need to be developed and that they may conduct a survey after the project is fully completed.

Another meeting attendee asked who is maintaining the event space in the park. Mr. Burdette said that the City of Pittsburgh is responsible for renting space.

Mr. Yatheepan noted that he didn't see any noise walls on the pictures shown and wondered if noise is a problem, since the park is close to the freeway. Mr. Burdette responded that the highway is about 600 ft. under the structure, and because of the existing bridges and the abundance of soil, it is remarkably quiet in the park.

A remote attendee asked if there are any more ideas for green space around the city. Mr. Burdette believes that since this project was such a success, and awards were won, the City of Pittsburgh will want to do more projects of a similar nature. There is a section south of the City of Pittsburgh that is raised and separates two neighborhoods. They are looking at options to lower the highway or possibly creating more access underneath.

Ms. Walker asked if other states have reached out to PennDOT regarding this project. Mr. Byrnes said FHWA reached out to PennDOT regarding a group that was interested in what worked, what didn't, and how to obtain funding. He believes that they are working on best practices for this project to share with other states. Mr. Ruzzi mentioned that before beginning this project, there were 16 other similar projects around the state. Mr. Burdette mentioned this isn't just a Pittsburgh problem. There are a lot of cites that have communities divided by highways.

Innovation in Motion: I-70 and Route 51 Emergency Bridge Repair

Ms. Walker introduced Jeremy Hughes, P.E., District 12 Bridge Engineer, who presented on the Emergency Bridge Repair on State Route (SR) 51 over Interstate 70, which won PennDOT's George McAuley Innovation Award in 2022. The 3-span steel bridge, built in 1954 and rehabbed in 1989, was severely damaged when a tractor trailer hit one of the bridge beams. Mr. Hughes noted that this bridge and intersection will be replaced with a Diverging Diamond Interchange in a few years.

Mr. Hughes reviewed the different steps taken to determine the damage and subsequent course of action to address the bridge hit and complete the emergency bridge repair in a shorter timeframe. The district used emergency procurement procedures and their on-demand maintenance contract to expedite the repair process despite encountering several roadblocks along the way, including supply chain issues.

The design was done in house with assistance by HDR (structure) and Gannett Fleming (MPT) using existing agreements. The contractor select by District 12 was Amelie with a construction estimate of $1 million.

Forty-three days from incident, work began with supporting the damaged area with a temporary beam. The cut beam was supported through the deck. Since the bridge was hit in the middle, both lanes on the Interstate needed to be closed and traffic was detoured through SR 51.

Mr. Hughes highlighted the importance of having all-staff progress meetings, including contractors, consultants, design staff, and communications staff, to ensure that everybody is looped into the project from the start. Additional best practices identified included having capacity to respond with staff as well as bring in consultants, standing procedures, and the ability to quickly engage consultants and contractors through mechanisms like on-demand maintenance contracts and other available agreements. The accident occurred on Dec. 28, 2021, and the project was completed on March 16, 2022, a total of 78 days from start to finish. The final cost was $650,621.49.

A meeting attendee asked if this was the first time this bridge was hit. Mr. Hughes said it was the first time it was hit hard enough to tear the beam in half. There were approximately three prior hits that required bridge repair.

Another meeting attendee asked if over height protection has been considered. Mr. Hughes said no, since this bridge will be replaced in three years.

Ms. Walker asked if best practices have been shared with the other districts. Mr. Hughes stated that he has spoken to the bridge engineers in the other districts, and by now all districts have an on-demand maintenance contract, which is useful for this type of project.

STIC Communications Update

Ms. Walker encouraged attendees to participate in the STIC *Innovation in Motion* webinar series, which is open to PennDOT employees, partners, and local municipalities. The two remaining webinars for this year are scheduled for Sept. 12 and Dec. 12 and will focus on the topics of Leveraging Technology to Transform the Customer Experience and PennDOT's Digital Transformation, respectively. Recordings of previous webinars can be found on PennDOT's website. Previous webinars focused on the topics of Transformational Transportation Technologies and Tools of the Traffic Trade.

Mr. Alfred Uzokwe, Pennsylvania Department of Conservation and Natural Resources, asked if there is a database that tracks previous innovations. Ms. Walker shared that all current innovations are tracked in the Innovation Status Tracker, which is included in the STIC Business Meeting booklet. In addition, the STIC website lists all STIC innovations that are deployed or currently in development.

Ms. Walker thanked all meeting presenters and participants for attending. The next STIC Business Meeting will be held on Wednesday, Nov. 15 at the Hershey Lodge. The meeting adjourned at approximately 12 p.m. No follow-up tasks were identified.

Attendance List

- Drew Ames, PennDOT
- Ryan Anderson, PennDOT (Remote)
- Zachary Appleby, PennDOT
- Marisa Balanda, PennDOT (Remote)
- Bill Beaumariage, P.E., PennDOT (Remote)
- John M. Becker, P.E., ACPA/PA, PennDOT
- Michael Bender, P.E., PennDOT (Remote)
- Rodney Bender, P.E., PUC, PennDOT
- Steven Bolt, P.E., RVE
- Nathan Bragunier, PA Municipal League
- Matt Briggs, PennDOT (Remote)
- Nicholas Burdette, P.E., ACEC/PA
- Matthew Burkett, PennDOT
- Robert Byrnes, P.E., PennDOT
- Stan Caldwell, Carnegie Mellon University
- John Caperilla, EIT, ASHE (Remote)
- Marcie Carr, PennDOT
- Tim Carr, P.E., PennDOT (Remote)
- Mike Carroll, PennDOT
- Jim Casilio, P.E., PACA
- Michael Castellano, P.E., Pennoni (Remote)
- Steve Chizmar, PennDOT
- Matthew Clouser, P.E., PennDOT
- Chris de Leon, PennDOT (Remote)
- Rex Eberly, PAAMA
- Bill Fabrizi, P.E., WSP
- Steven Fantechi, P.E., PennDOT
- Carrie Fischer, Meng, P.E., WTS
- Melissa Gates, CCAP
- Dale Good, PennDOT (Remote)
- JT Graupensperger, PAEP
- Ron Grutza, PSAB
- Anthony Hennen, The Center Square (Remote)
- Derrick Herrmann, P.E., PennDOT
- Jeremy Hughes, P.E., PennDOT
- Jaclyn Huss, PennDOT
- Kevin Keefe, P.E., PennDOT
- Patrick Kelly, P.E., JMT (Remote)
- Danielle Klinger-Grumbine, PennDOT
- William Kovach, P.E., PennDOT (Remote)
- Katie Lizza, PSATS
- Tom McClelland, P.E., PennDOT (Remote)
- Chris Mills, PennDOT
- Joel Morris, PennDOT
- Lori Musto, PennDOT (Remote)
- John Myler, PennDOT
- Mark Nicholson, P.E., PennDOT (Remote)
- Alicia Nolan, FHWA
- Phil Petrina, PennDOT
- Dean Poleti, P.E., PennDOT
- Tom Prestash, P.E., PennDOT
- Shane Rice, PennDOT (Remote)
- Mary Robbins, Ph.D., P.E., PAPA (Remote)
- Rich Roman, P.E., PennDOT (Remote)
- Lou Ruzzi, P.E., WSP
- Ken Sanoski, P.E., PennDOT (Remote)
- Gus Scheerbaum, P.E., City of Philadelphia
- Doug Seeley, P.E., PennDOT (Remote)
- Ron Seybert, P.E., APWA (Remote)
- Larry Shifflet, PennDOT
- Cheryl Moon-Sirianni, P.E., PennDOT (Remote)
- Christine Spangler, P.E., PennDOT
- Bree McDonald-Stewart, PennDOT (Remote)
- Joseph Szczur, P.E., University of Pittsburgh (Remote)
- Lisa Tarson, PennDOT (Remote)
- Doug Tomlinson, P.E., PennDOT
- Nicole Tyler, PennDOT (Remote)
- Alfred Uzokwe, P.E., DCNR
- Scott Vottero, P.E., PennDOT (Remote)
- Anja Walker, PennDOT
- J Brian Walter, P.E., PennDOT
- Justina Wentling, P.E., PA Turnpike Commission
- Gerald Wertz, P.E., PennDOT
- Yathi Yatheepan, P.E., FHWA