Culvert AOP workshop still has open seats

By: Erik Brenna, MnDOT Bridge Office

There are still seats available for the Culvert Design for Stream Connectivity and Aquatic Organism Passage (AOP) virtual workshop! This online workshop will help culvert designers efficiently and consistently develop public waters culvert projects with respect to aquatic organism passage (AOP) and stream connectivity. Attendees will learn how to apply best practices and appropriate calculations, starting from the basis of field-identified stream metrics.

The free workshop will begin with a self-paced learning component, available to participants for two weeks, followed by an instructor-led interactive online session. The self-paced learning will feature a series of short video presentations totaling approximately four hours, including virtual field data collection. The instructor-led session will provide an opportunity for discussion, questions, and review of work completed in the self-paced training.

There is still some availability in the May and June 2021 sessions. More information is available here.

Very important: It is a two-step registration process, be sure to sign up in the link provided above and log in and sign up for a specific section within the U of M’s Canvas platform. If you do not do both steps the U’s registration system won’t recognize that you wish to attend.

For questions about course content feel free to contact myself or Matt Hernick at hern0122@umn.edu. For registration questions contact Katherine Stanley at sell0146@umn.edu.

2020 MnDOT Spec Book on HOLD

By: Elisa Bottos, Project Delivery Engineer

MnDOT has put the 2020 Standard Specifications for Construction on hold. Once a new publisher is secured, the new release date will be established. The original date for implementation for local agency projects was September 2021, however that will have to be re-evaluated and communicated once the Spec Book is published. State Aid plans to give local agencies as much notice as possible for implementing the new Spec Book.
Legislative update—bonding bill

By: Marc Briese, State Aid Programs Engineer

The House passed the bonding and supplemental finance bill on Wednesday, October 14 and the Senate followed suit the following day on Thursday. And I’m happy to report that the Governor signed the bill into law on Wednesday, October 21, 2020!

The bill provides substantial funding for local projects, including $75 million in Local Road Improvement Program (LRIP) funds for a competitive solicitation, $30 million for the Local Bridge Replacement Program (LBRP), and $3 million for the Safe Routes to School Program (SRTS). It also includes more than $166 million in legislatively selected projects (earmarks) to 26 local road and bridge projects across the state. Below is a brief summary of each category of funding along with anticipated timelines.

Local Road Improvement Program

- The bonding bill that was signed into law includes $75 million for the competitive LRIP program. The solicitation was released on December 2, 2020, with applications due on March 3, 2021. Note that, based on direction from the LRIP advisory committee, the maximum grant award has been increased to $1,250,000 for counties, state aid cities, non-state aid cities, and townships.

  A reminder to potential applicants: we once again will require counties to sponsor projects in townships and non-state aid cities. So townships and small cities should be in contact with their county engineer on potential applications.

  See the LRIP Program webpage for the 2020 solicitation guide and application, and LRIP PowerPoint for more general information.

- The bonding bill includes another $166 million in legislatively selected (earmarked) LRIP and LBRP projects. The Programs section sent “selection letters” to each earmark recipient with more information on suggested next steps, including a kick-off meeting and info on demonstration of full funding to MMB.

Local Bridge Replacement Program

- The bonding bill includes $30 million for LBRP. When combined with the Motor Vehicle Lease Sales Tax (MVLST) funds that were made available to State Aid in August, we will have roughly $41.2 million. The waiting list contains more requests than that, so we may not be able to fund all of those projects. Patti Loken is working on prioritizing projects for funding now, and will continue to be in touch with DSAEs and local agencies.

  See the LBRP Program webpage and LBRP PowerPoint for more information.

Safe Routes to School

- The bonding bill includes $3 million for SRTS infrastructure projects. The State Aid Programs section will work cooperatively with the MnDOT Safe Routes to School Coordinator from the Office of Transit and Active Transportation to develop a solicitation. More information will be forthcoming in the weeks and months to come.

  See the SRTS Program webpage and SRTS PowerPoint for more information on the SRTS program.
New Plan Review Checklists

By: Rollin Larson, Construction Specialist

The plan review submittal checklists for state aid and federal aid projects have been newly updated. These submittal checklists are for cities, counties and firms to complete when turning in plans for review and approval. Previously three checklist options were available (State Aid/Federal Aid/Bridge, State Aid only – no bridge, and State Aid only with bridge). Now there will only be two checklists for plan turn-in, a Federal Aid Plan Review Checklist and a State Aid Plan Review Checklist. Both checklists will have an option for bridge information (if applicable). These will replace all previous versions of plan review checklists.

The new checklists were updated and reorganized to be more straightforward and were formatted to work better for electronic usage, as much of our work is being completed this way. These updates make it easier to fill out, save, and submit electronically. However, you will still have the option (if desired) to print and fill them out by hand.

Plan review and turn-in should be improved in the following areas:

- Only two checklists, a Federal Aid Plan Checklist for projects with federal funds, and a State Aid Plan Checklist for all other projects
- Checklists have a simpler top-down approach
- Improved Design Standards section to clarify Minnesota Rule requirements
- Improved funding sections to clarify project funding requirements
- Updated Bridge Eligibility requirements
- Updated Signature requirements
- Updated list of plan submittal documents

Hopefully these new comprehensive checklists will be a benefit to you as project developers. With them, we hope to better give you the tools to identify areas that may need to be addressed earlier in the process, as you review and verify your plan contents before submittal to State Aid.

The new checklists are available on Plan, Design & Preparation Forms webpage. Please remember not to save an electronic version in your personal files, always go to the website for the most current versions.

State Aid Rules stakeholder input process

By: Mao Yang, Assistant Operations Engineer

State Aid Operation has been working with local agencies to take a fresh look that the process, tools and resource associated with Chapter 8820, know more commonly as the “rules”. The rules were established in 1957 and helped provide a consistent framework in the form of minimum standards and financial guidance for the operation, construction, and maintenance of the State Aid system.

This effort includes the creation of the State Aid Design Advisory Committee. We are so thankful for all the time, knowledge and insight of our local agency volunteers, State Aid staff and consultant team. This group is providing valuable guidance, feedback and input on improving the process, tools and resources on the rules with the goal of being more responsive to inquiries from partners and when environmental, social, economic, or engineering conditions change.

If you would like to know more, check out the MnDOT State Aid Rules webpage.

For more information about State Aid Rules, you can contact Mao Yang at mao.yang@state.mn.us or 651-366-3840.

PathWeb services update

By: Bill Meinholz, Assistant Project Development Engineer

The 2020 season of pavement testing has been completed. To say it was easy would be an understatement. The season was delayed significantly due to COVID-19 and testing with two drivers was not approved until July 1, 2020. Even with the delay, only four counties did not get tested this year. They have been contacted and will be moved to the top of the list for 2021.

The counties that have completed testing and have data for are being processed and reports will be out as soon as possible. Thank you to Melissa Cole and the pavement group at MnDOT for their assistance. For more information on PathWeb please visit the SALT_Pavement webpage for information and how to request an account.
LPP D7 project Highlight

By: Mao Yang, Assistant Operations Engineer

The Local Partnership Program (LPP) continues to provide partnership opportunities for local agencies and MnDOT to make improvements that benefit all users on both the local and trunk highway system. An example where communities can see the benefits of this program is on the Highway 14 and Riverfront Drive LPP project.

Blue Earth County, the City of Mankato, and MnDOT District 7 are leveraging $1.1 million LPP funds with $1.3 million local funds to make improvements at the interchange of Highway 14 and County Road 57/ Riverfront Drive in the City of Mankato. Blue Earth County is leading the project and is working towards addressing traffic flow and functionality concerns on the interchange with two proposed roundabouts at the intersections. The project also includes trail connections and pedestrian improvements. Additional information about the project can be found on the Hwy14-Riverfront Drive webpage.

For more information about LPP in District 7 and future opportunities to participate, contact Lisa Bigham at lisa.bigham@state.mn.us or 507-304-6105.

Reminder - MnDOT materials testing software

By: Nicole Madison, Construction/Materials Project Data

MnDOT is in the process of implementing a new software program (AASHTOWare) to better store, manage, and integrate information. We are currently working on the component that will be used for all the materials testing (including testing performed for cities and counties). Currently MnDOT’s Central Lab (Maplewood) is documenting admixture and cementitious samples in AASHTOWare. MnDOT will be incorporating additional materials and labs into AASHTOWare as the software is developed.

One of the basic requirements of AASHTOWare will be that everyone that submits a sample will be required to be entered in the system. To ease the transition, MnDOT is requesting at this time that you provide the names, phone numbers, and email addresses of any people that you anticipate will be submitting samples or managing projects (samplers, inspectors, engineers, etc.) before construction.

Complete form for each separate individual using this link.

Important information to note about your submission:
- Each individual from your company only needs to be entered once
- If there is a consultant that is used by more than one agency, MnDOT will check for duplication if it comes in from multiple sources
- You are not bound or limited to these people and people can be added later using the same form
- If a person leaves an agency in the future, the same form can be used to remove the person from the system
- This is not a one-time chance to get people in the system, however please be proactive by submitting those names

MnDOT desires to continue to provide you with quality and timely testing of the materials on your projects. Thank you so much for your assistance.

For questions, contact AASHTO-MaterialsSupport.DOT@state.mn.us.
The Federal Highway Administration (FHWA) conducts mandatory reviews of federal aid project payments, to determine whether the payments were properly or improperly made. In many cases, the questions include a review of partial pay quantity documentation. This article describes the three mandatory types of reviews that you might encounter on your federal aid projects.

### Proper Payment:

1. Is made for the correct amount,
2. in accordance with Federal laws, regulations, and the contract,
3. to the correct recipient,
4. for eligible and authorized work, and
5. properly documented.

### Compliance Assessment Program (CAP Reviews):
The purpose of the CAP is to help provide reasonable assurance that federal aid highway projects comply with key federal requirements. The CAP assesses a statistically valid sample of projects to inform the FHWA of the degree of compliance nationally. In Minnesota, each year’s sample consists of approximately 55 projects, half of which are LPA projects.

### Improper Payments Elimination and Recovery Improvement (IPERIA, or “Improper Payment” Reviews):
In Minnesota, we are assigned two projects per year, three pay line items and 12-15 questions each. Minnesota’s findings are similar to the nationwide results. For examples of pay documentation and recent review results, see the complete Partial Pay Quantities Review presentation [here](#).

### Office of the Chief Financial Officer (HCF Reviews):
These reviews are part of FHWA Headquarters oversight to address identified risks from previous IPERIA reviews. The IPERIA results are statistically extrapolated to the overall population of federal aid projects. By statute, the maximum allowable national total is $100 million in improper payments. In 2018, the extrapolated total was almost $1 billion. HCF reviews evaluate targeted risk areas, system control weaknesses and identify improvements.

If you have project specific questions about partial payment documentation, please find the appropriate State Aid specialist. MnDOT’s 2020 contract administration manual can be found [here](#).

---

**What is Connected and Automated Vehicles (CAV)?**

By: Rashmi Brewer, Programs Support Engineer

I am Rashmi Brewer, new to SALT with a wealth of intelligent transportation systems (ITS) and CAV experience, serving as your SALT Traffic Safety CAV key expert. This introduction to connected and automated vehicles is the beginning of a series of CAV related (ITS, state, industry, etc.) articles you will find here and in future E-Scene issues.

As LPA’s plan for their future transportation infrastructure investments, it is important to understand Minnesota’s needs of CAV technologies, their benefits and how to prepare for CAVs in the short term of 5 to 10 years.

CAV technologies hold the potential to result in many safety, mobility, and environmental benefits for the users and operators of the Minnesota’s transportation system. CAV technologies include vehicle-to-infrastructure (V2I) and vehicle-to-vehicle (V2V) technologies, using wireless exchange of data to allow vehicles to communicate between one another and with the roadway infrastructure. The benefits of CAV technologies are expected to be wide ranging and include reduced crash rates and severity, improved mobility, and reduced emissions. CAV technology is a broad term that combines both CV (connected vehicle) and AV (automated vehicle) technology.

(continue on page 6)
Automated vehicles (AV) use information from cameras, radar, lidar (image sensing), Global Positioning System (GPS), odometry, and computer vision to detect their surroundings. Once the environment has been scanned of obstacles and roadway infrastructure, the AV technology reacts as the situation dictates, to take control over some, or all, human driving tasks such as steering, accelerating, and braking with little to no human input. Today, many newer vehicles include safety features that assist drivers in specific circumstances, such as keeping us from drifting out of our lane or helping us stop in time to avoid a crash or reduce its severity.

Connected vehicles use technology to communicate with other vehicles, connect with traffic signals, signs, smartphones, devices and other roadway infrastructure, or obtain data from the cloud. A newer model vehicle is likely already more connected than one realizes. Navigation systems now include CV functionality, such as dynamic route guidance. GPS-based systems receive information on congestion for the road ahead through cellular signals and suggests an alternative route. CV technology is all about supplying useful information to a driver or a vehicle much earlier to help the driver make safer and more informed decisions, providing additional time to react and prevent an incident. Vehicles equipped with CV technology can alert drivers about potentially dangerous situations, diversions or heavy traffic nearby to avoid, thereby improving transportation safety, mobility, and the environment. Hence, a connected vehicle does not make any choices for the driver like an automated vehicle.

"An analogy on how CVs work: Interactions between two connected vehicles are like two humans working together. For the humans to accomplish a goal through communication, they must be able to hear each other (be on the same network), understand each other (speak the same language), and have the same goal (share an application)."

-Rashmi Brewer

The federal government has adopted the Society of Automotive Engineers (SAE) Levels of Automation showing the evolution of automated vehicles. It is expected that our transportation system will have a mixed fleet of both automated and non-automated vehicles for many years to come. Currently, there are vehicles that include connected and automated features which still require a human driver to be actively involved to take over control as needed. In the future, AV technology with a level 5 functionality will require no human intervention, known as autonomous, self-driving or driverless vehicles.

(continue on page 7)
Continued...What is Connected and Automated Vehicles (CAV)?

Levels of Automation. Source: MnDOT CAV-X

Stay tuned for the next E-Scene issue to learn more about CAV, along with a new centralized webpage for easy access to CAV information and resources for our local public agency (LPA) partners. If you have any CAV related LPA questions, please contact Rashmi Brewer at rashmi.brewer@state.mn.us.

Resources for counties and cities:

- Preparing Local Agencies for CAV (PDF) – 2019 Local Road Research Board (LRRB) Report
- Impacts of CAV on State and Local Transportation Agencies (PDF) – Summary of NCHRP Research
- MnDOT Connected and Automated Vehicles (CAV) Strategic Plan (PDF) – 2019 MnDOT CAV-X

A relook at an existing tool

By: Loren Hill, Program Support Engineer

The use of StreetPave as an alternative to MnDOT RigidPave for the design of Concrete pavements on local roads has been a resource to since 2012.

In October 9, 2012, Tech Memo 12-SA-03 was created to allow it’s use on local projects off the Trunk Highway System with the intent to expand the potential use of rigid pavements by allowing for a more equitable service life. This tech memo expired on October 9, 2017.

In preparation for updating the expired Tech Memo, Braun Intertec Corporation was commissioned to do a comparison of the newer design software. The result is the Pavement.Designer.org Evaluation and Comparison to MnPAVE-Rigid, Final Report (PDF) in October, 2019. This report concluded that “it appears PavementDesigner could serve as an alternative design method to MnPAVE-Rigid for the design of city and county roads in Minnesota.”

State Aid for Local Transportation led several conversations with a group of County, City, and MnDOT engineers and industry representatives to review the report findings, industry and MnDOT practice and performance with the goal of determining if the new Pavement.Designer.org software would meet the needs of cities and counties.

City, County and MnDOT Engineers:

- Bruce Hasbargen, Beltrami County, Chair of Pavement Committee
- John Brunhorst, McLeod County
- Scott Holmes, Olmsted County
- Mark Maloney, City of Shoreview
- Tim Anderson, MnDOT Pavement Design Engineer
- Maria Masten, MnDOT Concrete Engineer
- Loren Hill, SALT
- Bill Meinholz, SALT

Consulted with industry representatives:

- Matt Zeller, Executive Director Concrete Paving Association of Minnesota (CPAM)
- John Cunningham, Executive Director, Aggregate and Ready Mix Association of Minnesota (ARM)
- Dave Rettner, President, American Engineering Testing (AET)

After considering the available information it was concluded that Pavement.Designer.org software was a satisfactory alternative to MnPave-Rigid for lower volume local roads. Please check out the new Tech Memo 20-SA-01.

If you have any questions, contact Bill Meinholz at 651-366-3832 or william.meinholz@state.mn.us.
Employee news

We are excited to announce Rachel Broughton as our State Aid Special Programs Engineer. Rachel is replacing Lynnette Roshell, who retired in September. Rachel started on October 28th. Rachel will be taking care of a lot of the fun stuff that Lynnette did, e.g. non-traditional federal aid projects, agreement projects, Federal Land Access Program (FLAP), and Project Development Reports (just to name a few). Rachel graduated from the University of Minnesota Twin Cities with a Bachelor of Civil Engineering. She worked briefly as an energy engineer before starting her civil engineering career at MnDOT as a rotating graduate engineer. After two years of rotations she worked as a design engineer then project manager in the MnDOT Metro District. Before coming to MnDOT State Aid she was a project manager with Ramsey County Public Works.

In addition, we are fortunate to have Lynnette back with State Aid on a PRO (Post Retirement Option) position to help us out and for an easier transition for Rachel.

We are happy to welcome Mitchell Kiecker as our Program Support Engineer (Safe Routes to School Program Coordinator). Mitch is replacing Sara Pflaum, who moved to Metro Districts Transit Unit in September. Mitch started on December 9th. Mitch’s career began at the University of Minnesota where he studied civil engineering. The works of Jane Jacobs, Jeff Speck, and Donald Shoup sparked his interest in a broader study of planning and design, which led him to also spend some time at the Humphrey School of Public Affairs and Rapson School of Architecture. While at the University, Mitch worked at Metro Transit in the Bus Rapid Transit office, and then after graduation in engineering consulting on various bus, rail, roadway, and cycling projects in Minnesota and throughout the country.

Congratulations to Loren Hill! Loren recently was awarded the 2020 TZD Engineering Start Award. This award honors outstanding efforts in the engineering community to reduce traffic fatalities and serious injuries in Minnesota. We thank Loren for his dedication for safety on Minnesota’s roadways.