

2023 Preconstruction Workshop Agenda Descriptions

Wednesday, May 17, 2023

8:30 am – 9:45 am Sessions:

Project Delivery Cliff Notes

Do you find the project delivery process complex and sometimes confusing? Or maybe you haven't had very much time to digest all the components associated with delivering projects? Or are you just curious about how projects are delivered? Then this session is for you! This session will provide a high-level understanding of the preconstruction phase of project delivery. Presenters will describe the main objectives for each project delivery stages (1 through 4), the key deliverables within each stage, and the primary coordination efforts needed to ensure quality projects are delivered on time and on budget. Attendees will walk away knowing important items to consider during each of these stages as well as some common pitfalls to avoid.

IT Tips and Tools for Project Delivery

Overview of recent functional enhancements including the Risk Assessment Worksheet, Submittal Tracker improvements, changes in the Precon Dashboard, and a preview of changes coming soon. Also, useful tips for using SharePoint, including alerting on Announcements and new submittals.

Building a More Resilient Transportation System

The Federal Highway Administration defines resilience as the “ability to anticipate, prepare for and adapt to changing conditions and withstand, respond to and recover rapidly from disruptions.” A resilient North Carolina is a state where our communities, economies and ecosystems are better able to rebound positively adapt to and thrive amid changing conditions and challenges, including disasters and climate change; where we maintain and improve quality of life, healthy growth, and durable systems, while conserving resources for present and future generations.

The N.C. Department of Transportation, in line with its mission of connecting people, products and places safely and efficiently, is committed to building a transportation system designed around resilience and the ability to adapt and recover from a wide array of disruptions. As NCDOT plans for the future of the state's transportation system, the department is incorporating resiliency work into policy development, planning and academic research to meet the ever-changing needs of North Carolina. This session will discuss current resilient activities that affect all aspects of transportation, from the designing and constructing of infrastructure to withstand hurricanes or rockslides, to traffic operations during emergency events, to regular inspection and maintenance of existing networks.

Accounting for Travel Demand from Preliminary Planning Through Project Delivery

An important component of any project is understanding what the traffic demand will be in a project study area. Different stages of a transportation project will require varying levels of traffic analysis to determine the demand on a transportation system/facility. This analysis can range from

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a simple traffic count to detailed traffic forecasts. Understanding how to right-size the level of analysis will assist decision-makers and planners to make appropriate decisions at each stage of project development from long-range planning all the way through successful project delivery. The goal of this session will be to provide an overview of levels of traffic forecasting required in each stage of development of a project.

10:15 am – 11:30 am Sessions:

Advances in ROW Data Management and Cost Estimates.

This session will review the on-going ROW Data Management efforts including an improved cost estimating tool. The session will detail cost estimating considerations along with a review of the tool and workflow. Understanding the status of ROW acquisitions and updates is important for Project Managers, Location and Surveys, Division Engineers and more. During this session, a review of the data being managed and visualized through Smartsheet will be shared.

NCDOT's Implementation of the OpenX Platform/Digital Delivery for Project Design

As NCDOT's current drafting/modeling software (Bentley v8i versions ss2&ss4) has become unsupported and Microsoft 10 becomes unsupported forcing NCDOT to transition to Microsoft 11, NCDOT faces several potential risks including project delivery delays and potential loss of production. To mitigate those risks, NCDOT has assembled a multi-disciplinary steering committee (of both NCDOT and PEF representatives) to implement a supported drafting/modeling software, which the Department has chosen to be the OpenX Platform. The OpenX platform will be fully implemented across all Units, Highway Divisions, and its private engineering firms working on their behalf. This committee has been created and serves in an advisory capacity to the Technical Services Director and Chief's Office to guide NCDOT in implementation of OpenX within the Digital Delivery Roadmap. The Committee will support project delivery teams in this transition through resources such as a decision matrix to determine which projects to transition, scoping assistance to transition a project to OpenX, and guidance for how to minimize risks for projects, among other items.

Digital Delivery focuses on the transition away from traditional paper/pdf plan sets to digital 3d models (digital twins), designs, and asset information. Beyond the plan set and ORD implementation, Digital Delivery focuses on the impacts and value-added benefits of rich design and project data on inspection, asset management, permitting, and all other aspects of project and asset management lifecycle.

Hydraulic Planning, now with Hydroplaning

The presentation will focus on the major elements to include in a hydraulic planning report (which now includes hydroplaning), a Stormwater Management Plan, and a State Floodplain Compliance report, as well as when each is necessary. The hydroplaning assessment tool and mitigation selection guide can be used by planners, designers, and operations staff to understand and mitigate

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hydroplaning hazards. The tool and guide were developed by NCDOT's Hydraulics Unit in collaboration with key stakeholders and ATKINS.

Updated Charts Showing the Safest Feasible Intersection Design, and Arterial Preservation: A Proposed Process to Make Sure That Our New Arterial or Interchange Keeps Flowing Safely and Efficiently

The first presentation will discuss updated charts that show the safest feasible intersection design (SaFID) for any size of four-legged intersection. The original version of the SaFID charts was published in 2020. This presentation will show the latest version of the charts, updated to reflect several important new research results and new calculations on the feasibility of several intersection designs. The latest version shows that all-way stop control, single-lane roundabouts, and median u-turns dominate in their niches. On the other hand, conventional traffic signals and two-way stop control are rarely the safest design in any niche. Dr. Hummer will review an approach where project teams should start their investigations of alternatives with the design that the research shows to be the safest, and then examine other factors that are meaningful in a design decision. If project teams end up choosing an alternative that is not the safest according to the research, they should document why they did that. Starting with consideration of the safest feasible design may mean that project teams end up building safer intersections.

The second presentation will discuss that sometimes after an NCDOT arterial or interchange project is complete, and a ribbon is cut developers arrive and line the new facility with driveways. If the new driveways are of the wrong type, in the wrong places, or of the wrong sizes, the new arterial or interchange may become congested or relatively unsafe well before the design year. Traffic impact analyses can mitigate the effects of individual developments, but do not help at the corridor or area levels. To make sure that NCDOT projects are not subject to overdevelopment, the Mobility and Safety Division engaged a consultant to create an "Arterial Preservation Process". The proposed process would begin during an early stage of preconstruction, when the project team notices that there is the potential for overdevelopment after project completion. The project team would then engage experts to document the vulnerabilities. A key part of the process would be an interagency agreement between the project team, the division and district, the MPO or RPO, and the city or county to be mindful of the vulnerabilities and to stop short of harmful overdevelopment. This presentation will describe the idea of the "Arterial Preservation Process" in some detail.

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1:00 pm – 2:00 pm Sessions:

Environmental Permitting and Utilities Panel Discussion

NCDOT staff will discuss the various issues and opportunities that affect our utility impacts and environmental permitting.

Ingredients for a Quality 100% PS&E Package

The session will cover timelines for 100% PS&E Package turn in as well as the contents of the package. It will also cover the QA/QC expectations of package deliverables.

Using Risk Management Tools on NCDOT Projects

The Value Management Office (VMO) team will provide a brief overview of NCDOT's Risk Management Program. Following the overview, session participants will be broken into smaller groups and review risk for a mock project. The small groups will be led by a facilitator. Groups will discuss the right "size" risk management approach for the mock project and get to use the new Digital Risk Assessment Worksheet to identify, assess, and plan for risks. Following the breakout activity, key takeaways will be shared.

VMO will wrap up the session by sharing tools and data developed by NC State's research team, including risk mitigation strategies and data on what preconstruction risk areas have historically led to the most claims and supplemental agreements later in the project lifecycle. Participants will leave the session with awareness about the current NCDOT risk management resources and processes and how to get support for risk management on their projects and programs moving forward.

NCDOT Complete Streets Implementation Updates

This presentation will provide an overview of the implementation of NCDOT's Complete Streets Policy including updates at the planning, project development, and maintenance levels. Audience members will hear about new and updated tools and data resources that facilitate project review and evaluation for complete streets highway projects, such as the activity estimation tool, facility selection matrix, and new guidance under development to facilitate decision-making for addressing multimodal facility impacts during project development. This presentation will also include input and representation from the project management unit illustrating this process from the PM perspective with tips for action items to help other project managers navigate the Complete Streets evaluation process.

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2:30 pm – 3:30 pm Sessions:

Tools and Tips for KPIs and Budget Management

This session will provide tools and tips to support the project budget management initiative. This session will also review how your office can establish different kinds of KPIs including definitions, what questions need to be considered, and what tools you have at your disposal to establish dashboard visualizations to support analysis of your KPIs. This will include Tableau tips.

S-Line: Developing a Transformational Rail Corridor

This session will focus on the development to date and path forward of this critical rail link connecting Virginia, North Carolina and the entire Southeast. Details on corridor design approach, development of stations (mobility hubs), transit oriented development planning, and community and stakeholder engagement will be shared.

UAS for Environmental Planning

Geospatial Standards (2 separate topics)

With the widespread use of photogrammetry and LiDAR with UAS across the state on NCDOT projects, it is important to understand the accuracy standards set forth by the American Society of Photogrammetry and Remote Sensing for the various geospatial products.

Emerging technologies in Unmanned Aerial Systems and their applications for aiding NCDOT personnel with Natural Resource Investigations, Section 7 Consultations, and improving Monitoring/Stewardship efforts for Mitigation Sites.

ATLAS Map - Crash Test Dummy for Moving NCDOT to the Cloud

Cultural Resources Compliance (2 separate topics)

The new ATLAS Map tool is a combination of the Search and Screening tools functionality into one map application, improving efficiency and value. One feature is the ability to use cloud computing to handle large geospatial files and analysis. This will allow for larger study areas, faster processing, and fewer layer errors.

The new Map tool will also provide the ability to produce standard document figures, new templates, and several other features desired by the ATLAS user base.

The second presentation will show you how to move your projects through the Section 106 process. How and when to engage cultural resources staff and the steps involved.