How is sustainable transportation defined at ADOT?

Sustainability Process Identification

The most effective use of resources in this day and age is one in which multiple objectives are achieved, and the methods which lead to these outcomes are documentable and repeatable. In order to develop a step ladder approach to the project delivery process, the meticulous progression of identifying and prioritizing what is a reasonable universe of sustainable considerations within ADOT was a necessary conversation to be had. Through the participation of champions, who initiated the open discussion, and executive management, ADOT developed the Milestones Framework, consisting of (13) milestones, ultimately aiding in the sustainable transportation building process and drive the introduction of sustainability inside a state DOT.

ADOT Sustainable Transportation Program Milestones Framework

Net Benefit of the Process

Beyond the preliminary benefit of satisfying the 13 Milestones and the 37 OKAs, the process leads to a series of direct and indirect outcomes.

Concluding Thoughts...

The concept of constructability for highway projects is as old as the engineering, design, and construction process. Over the years many organizations, including ADOT, practiced elements of a constructability program, but did not formalize the process with a name. For almost 100 years ADOT and its predecessor, the Arizona Highway Department, submitted plans for review, conducted field reviews and received construction feedback. What ADOT has attempted to do is evolve this time tested process by encouraging people from diverse cultural backgrounds, with potentially different goals and technical expertise, to work together effectively in an ever-increasing complex world plagued by limited resources and funding availability. ADOT’s Sustainable Transportation Program, now entering its third year of implementation, is evolving into a reflective extension of the above mentioned constructability evolution.

Acknowledgments...

The implementation of this project would not have been possible without assistance from many agencies, contractors, and individuals. ADOT thanks each and every one for making this project possible. ADOT also thanks the following for their assistance with this project:

The ADOT staff and contractors that were instrumental to the success of this project.

Next steps and Potential Program Development...

Through the assessment of the agency and its moving parts, to achieve a new set of sustainable objectives, ADOT continually came across the need to address effects which may result from heat extremes, dust storms, wildfires, flooding, landslide, rock fall incidents and slope failures. In order to manage the ever-growing potential cost of these pressures, ADOT set out to develop a pilot resilience program. Since the Agency has had a long history in considering the balance between predictable asset deterioration curves and the known, often erratic and abrupt incidents of flood, overtopping, system hot spot identification, hydraulic-related failure, and extreme weather impacts, their topics were identified to make up the core of the pilot program. The ADOT Resilience Pilot Program (RPP) would initially approach the below 3 goals:

1. Centralize the concerns encompassing the unknown, erratic and abrupt incidents of flood, overtopping, system hotspots and hydraulic-related failures under one manageable entity to hone efforts.
2. Introduce extreme weather adaptation into agency and engineering design processes, as well as current transportation asset sensitivity to extreme weather incidents.
3. Identify scientifically informed climate data downsampling as it relates to Transportation systems

The pilot project focuses on genuine interest in presenting concrete solutions based on currently available technology, tools and partnerships was key in establishing early success. ADOT recognized the readily available expertise of the Research Board and Academy of Transportation Researchers to help establish the informal partnering opportunity. This has, in turn, lead to the progression of next generation ground based Light Detection and Ranging (LiDAR) - drone based photogrammetry and other data collection platforms used to model characteristics such as magnitude of peak flow, sediment transfer and channel migration to directly influence design and engineering efforts. This on-going partnership has continued to evolve and grow in an effort to promote advancement in the transportation field.

Operational Focus Areas

Maintaining optimum health and performance
- Physical health and fitness
- Establish policies to mitigate the impacts of roadway operations
- Strategies for maintaining and enhancing workforce health and performance

Sustainable Transportation Program

ADOT’s Sustainability Program

- Comprehensive management of environmental, social and economic factors
- EASPD Award Program
- Sustainable Pavement System Pilot Program
- Sustainable Earthwork Plan
- Comprehensive Internal Sustainability Plan
- Upgraded Standard Specifications
- EASPD Award Program

INVEST OM Scoring Project

ADOT INVEST Project Development

ADOT's Sustainability Process Identification

ADOT’s Sustainability Program

The three primary principles of sustainability revolve around achieving a sustainable, efficient, well-balanced use of economic, social, and environmental resources commonly known as the triple bottom line. In theory, this will allow for proper use of funding while attaining all potential project needs. A sustainable Highway, for example, will not only incorporate the need for mobility and transportation within but also include a sensitive, livable environment, safety, asset management, and environmental protection.

The window of opportunity to fulfill that desire is before a project’s completion requires extensive coordination not only within a core group of individuals delivering the project but also those who are considered stakeholders during the project development process.

Guideline for Sustainability Performance Measurement for Transportation Agencies, “...is the concept of constructability. By focusing on the process rather than the end product, the project team can develop a roadway that is better suited to its environment…"