

About Turino Group

We've been providing professional project management services to government agencies and private corporations across New England since 1996. We've become a leader in our industry because our team brings their firsthand experience in construction to each and every project. This past perspective—whether as an owner, general contractor, architect, prime consultant, project manager, engineer, scheduler or designer—allows us to understand the intricacies that can arise throughout a project. Our company is built around one philosophy: You need to have lived the construction world in order to consult in the construction world. Our strong reputation in the industry, combined with the experience and reputation of all our staff members, has allowed us to provide program management, construction and engineering management as well as state-of-the-art software systems for projects ranging from \$1,000 to \$300 million for the past 17 years. We look forward to continuing to build a legacy of outstanding results for clients for years to come.

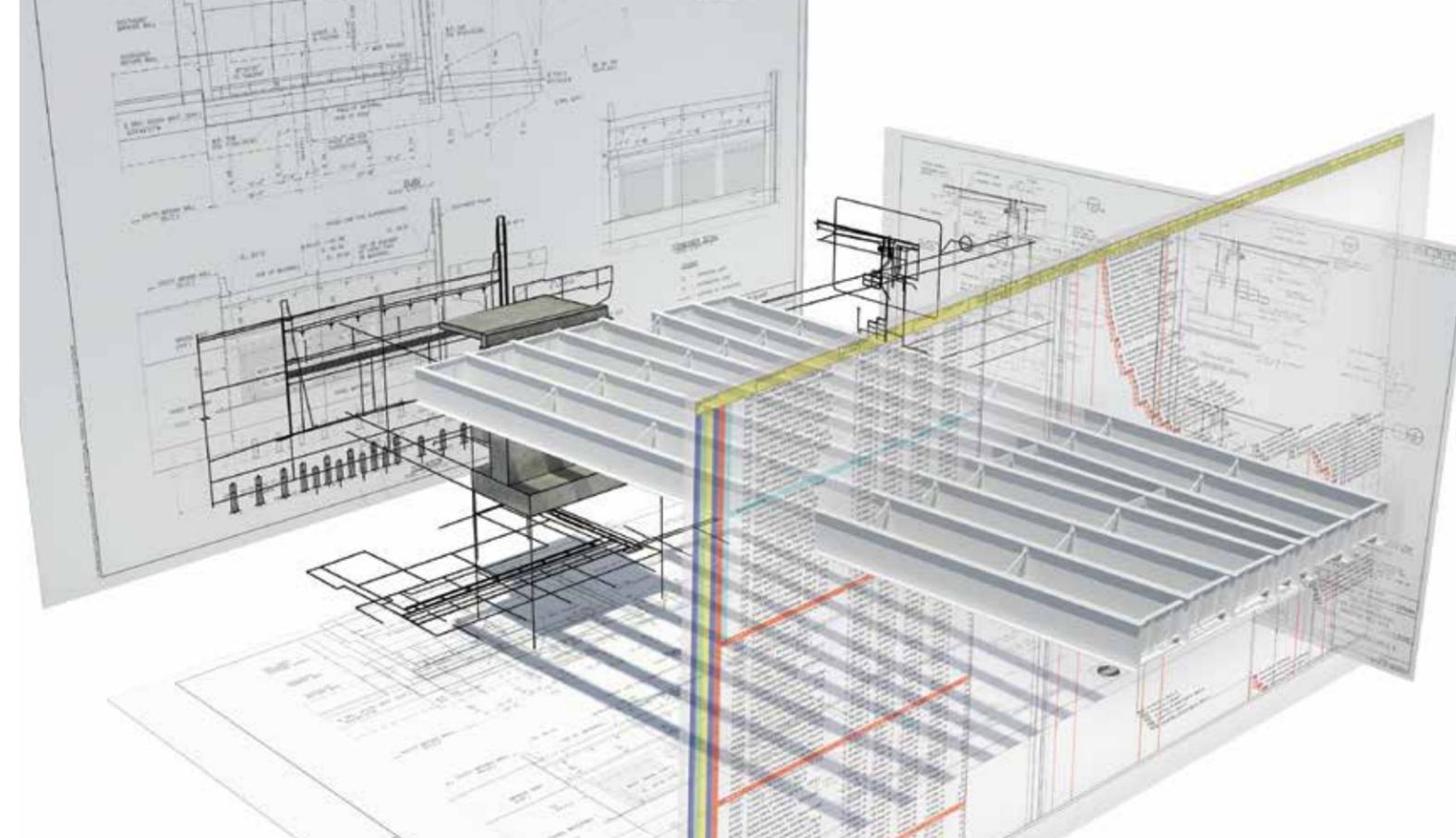
Solution-Oriented & Results-Focused

Our certifications and credentials include Primavera, the Project Management Institute (PMI), Construction Specifications Institute (CSI), Association for the Advancement of Cost Engineering (AACE), and others. We'll use this expertise to proactively address complicated issues and guide you in determining the best approach to your project's scope of work, as well as the management of delays and claims. Our core competencies include:

- Critical Path Method (CPM) Schedule Preparation & Review
- Pre-Construction Planning/Constructability Reviews
- 4D Scheduling & BIM
- Program/Project Oversight & Analysis
- Submittal & RFI Systems
- Bidding Systems & Software
- Change Order & Time Impact Evaluation
- Claim Avoidance, Preparation & Defense
- Cost & Damages Analysis
- Expert Reports, Exhibits & Testimony
- Productivity Loss, Disruption & Inefficiency Analysis
- Time Extension/Delay/Acceleration Analysis

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Microsoft
CERTIFIED
Partner



4D SCHEDULES

Minimize the Risk in Complex Projects

Turino helps you minimize the risk in complex projects by taking Project Management and CPM Scheduling to the next level.

Turino's unique combination of Building Information Modeling (BIM) and CPM Scheduling expertise allows us to offer true 4D simulations (3D models linked to actual construction schedules) to show every member of the project team exactly how the schedule represents the sequence of construction events. A visual of the entire project sequence allows us to optimally manage projects — no matter the complexity — as well as provide an easy-to-understand graphical representation for a not-so-schedule-savvy audience.

Three-dimensional (3D) modeling in transportation construction is a mature technology that serves as the building block for the

modern-day digital jobsite. The technology allows for faster, more accurate and more efficient planning and construction. As the benefits are more widely recognized, many in the U.S. highway industry will transition to 3D modeling over the traditional two-dimensional (2D) design process.

With 3D and 4D systems, design and construction teams can connect virtually to develop, test and alter project designs throughout the design and construction phases. Intricate design features can be viewed geospatially, or in a 3D view, from multiple perspectives, and simulations can be run to detect potential issues and enhancements before construction begins.

What is 4D Scheduling?

In 4D Scheduling, we link every object in the model with its corresponding schedule activity to create an accurate simulation of the construction process. Due to the length and extensive nature of the construction process this vastly enhances the planning and scheduling process.



With 4D Scheduling, a project manager, owner and contractor are able to see graphical representations of pre-construction, baseline, and actual schedules, helping them quickly identify any issues that may hinder the completion of the project.

Visit www.turinogroup.com/services/4d-scheduling to see an example of a 4D Schedule.

Our 4D Scheduling Services Include:

- 4D Simulations
- 3D Models
- Baseline Schedules
- Collaborative Stakeholder Meetings
- Schedule Updates
- Planned vs. Actual
- Logistics Planning
- Marketing & Public Relations
- What-If Scenarios
- Visuals for Claims & Arbitration

Our Approach Defined

We take a four-step approach to 4D Scheduling:

- 1. Create:** Using existing 2D CAD drawings we create 3D models and a CPM schedule.
- 2. Verify:** Using 3D models, we verify the construction documents for any inconsistent or missing representations of work.
- 3. Link:** We then combine the 3D models with the construction schedule to increase the stakeholders understanding of project logistics.
- 4. Refine:** Using the 4D Schedule we analyze the time and budget constraints as well as identify any opportunities to improve the project.

Benefits of 4D

- Bridge the gap between the planned schedule and how it is built.
- Enhance an existing good design while minimizing the risk in managing complex projects.
- Provide an easily interpreted schedule for all stakeholders.
- Visually identify design and sequencing issues before the project leaves the design phase.
- Inform the public on what to expect during the length of the project.

Recent Projects

Turino has been able to provide 4D scheduling (BIM) at a cost effective service. Our clients are seeing that costs saved are substantially more than the costs of creating a 4D schedule. Recent projects enhanced by Turino's 4D Schedules include:

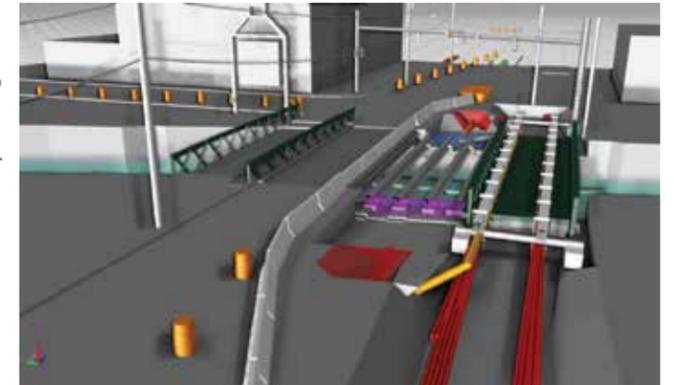
Providence Viaduct Bridge 578

An \$80 million, three-year Highway/Bridge Reconstruction on Interstate I-95, this project is a traditional Design Bid Build Project that was advertised for bid this October, 31 2012. The Rhode Island Department of Transportation (RIDOT) team utilized 4D to assess an optimum completion date, phasing, and constructability. The 4D enhanced the use of CPM and provided a great tool to communicate and facilitate project decisions. The videos of the 4D Schedule were distributed to the contractors as part of the bid documents to help aid in the understanding of the project. It is estimated that the use of the 4D Schedule has already saved RIDOT over 10x the cost of services in design enhancements and additional savings in resolving potential design/constructability issues.



Atwells Avenue Bridge

A \$4 million project consisting of multiple phases and traffic shifts, this project is a traditional Design Bid Build Project and is slated to be advertised for construction in 2013. As part of the 90% design submission RIDOT asked Turino to quickly develop a 4D schedule. Turino took the 2D AutoCAD drawings, converted them into a full 3D model. Simultaneously, Turino created a CPM Schedule of the proposed construction and linked it to the 3D model, creating a 4D schedule. The end result was project enhancements with estimated savings of over 10x the cost of services, shortened construction duration and fewer construction phases.



Magnolia Street Bridge Demolition and Highway Relocation

This \$8 million project consists of multiple phases and traffic shifts and is a traditional Design Bid Build Project slated to be advertised for construction in 2013. As part of the 90% design submission RIDOT asked Turino to quickly develop a 4D schedule. Similar to the Atwells Avenue Bridge project, Turino took the 2D AutoCAD drawings and converted them into a full 3D model while simultaneously creating a CPM schedule of the proposed construction. It was then linked to the 3D model, creating a 4D schedule. RIDOT realized project modifications with estimated savings of 15x the cost of services due to shortening the construction duration, using fewer construction phases, enhancing design and resolving constructability issues.

