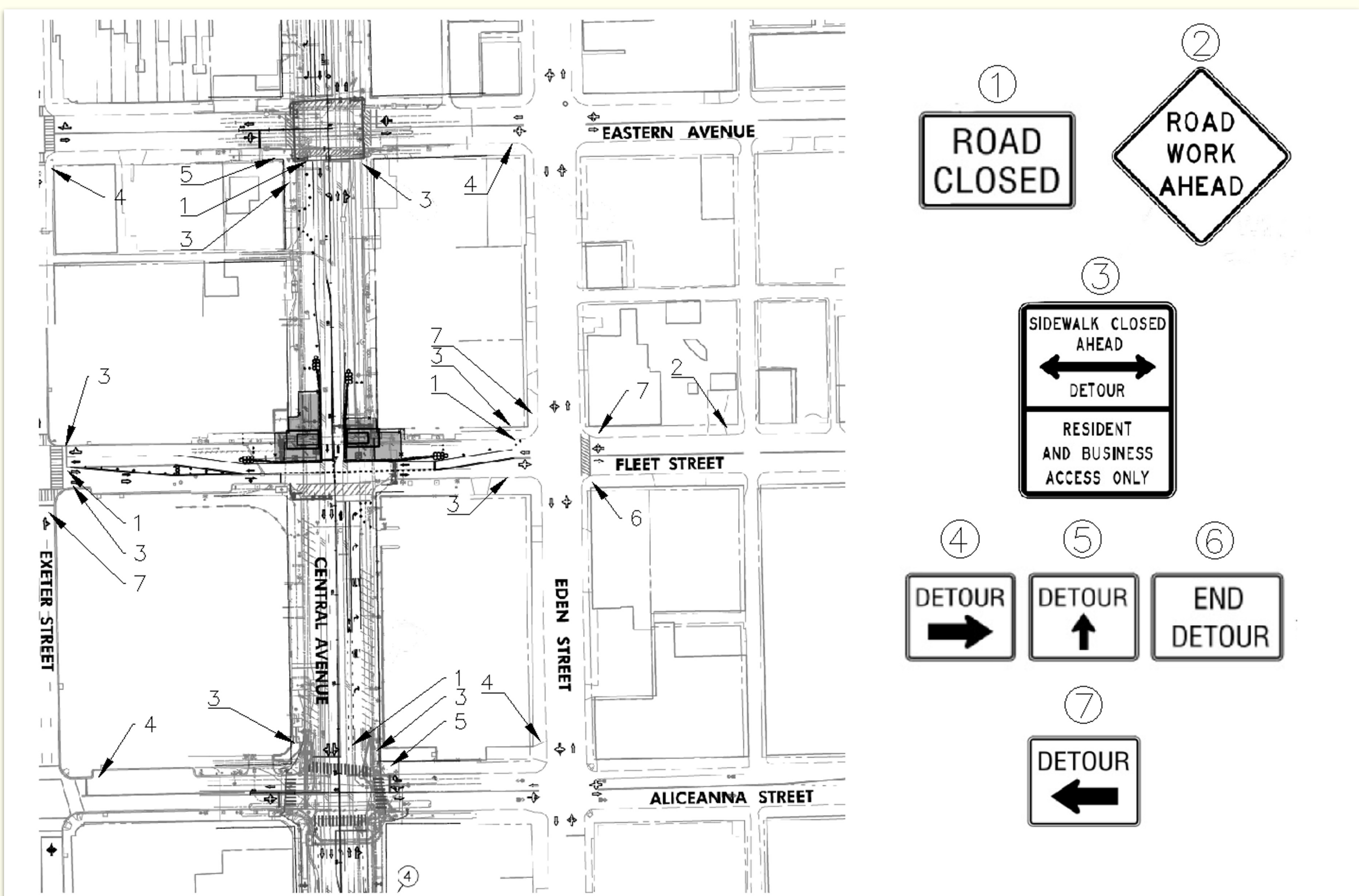


Project Description

The Central Avenue Project was a large-scale public project involving the construction of a bridge connecting Harbor Point to Harbor East and the complete redevelopment of nine city blocks between the new bridge and Baltimore St. along S. Central Ave. in Baltimore, MD. Allan Myers constructed this project with the restriction that one lane in each direction must always remain open. However, AM argues that this restriction significantly impacted the project's completion. We analyzed how implementing a detour and a full intersection shut down would impact the project. We chose to focus on the Fleet St/Central Ave intersection as the restriction impacted this location significantly, and its activities make up around 10% of the project's cost and schedule. Our project goal was to improve the quality of the project using value engineering principles, and the objectives were to create a conceptual project design for the Fleet St/Central Ave intersection that reduced the cost and duration of the project by 20%.

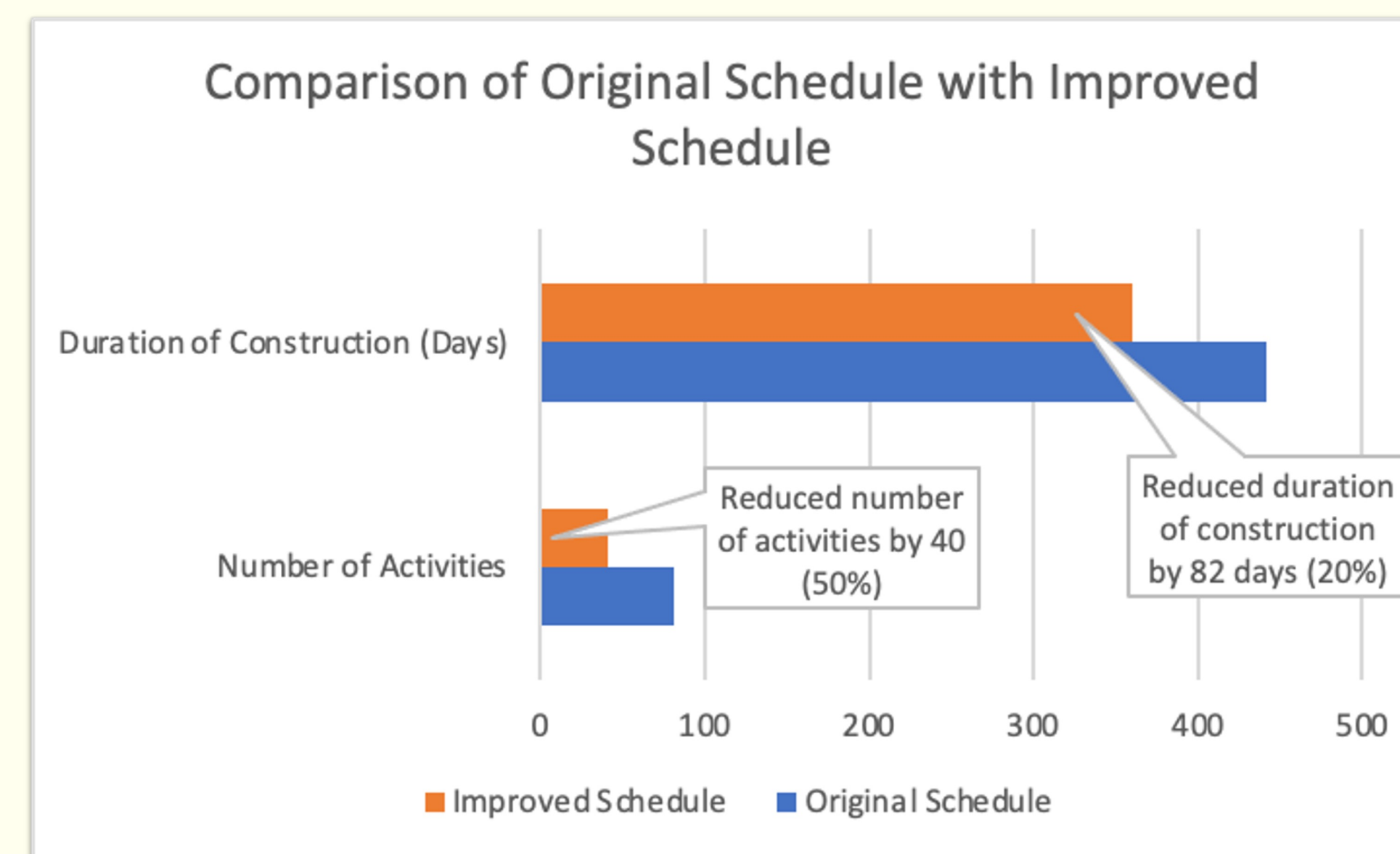
MOT/Detour Plans

We reviewed nearby street segments that could have served as a detour and quantified the costs and efficiency of these possible routes. After we established the optimal detour, we modeled it using PTV Vissim, obtaining estimated travel times. We then used Civil3D to create updated MOT and detour plans.



Schedule

Due to the MOT restriction, AM ran the project using a left-center-right activity approach. However, closing an intersection entirely would have allowed them to merge many of the three separate activities into one, shortening the project's length. We updated this intersection's schedule to reflect this change in method using Primavera P6 and found that it reduced the length of construction by 82 days, or 20%.

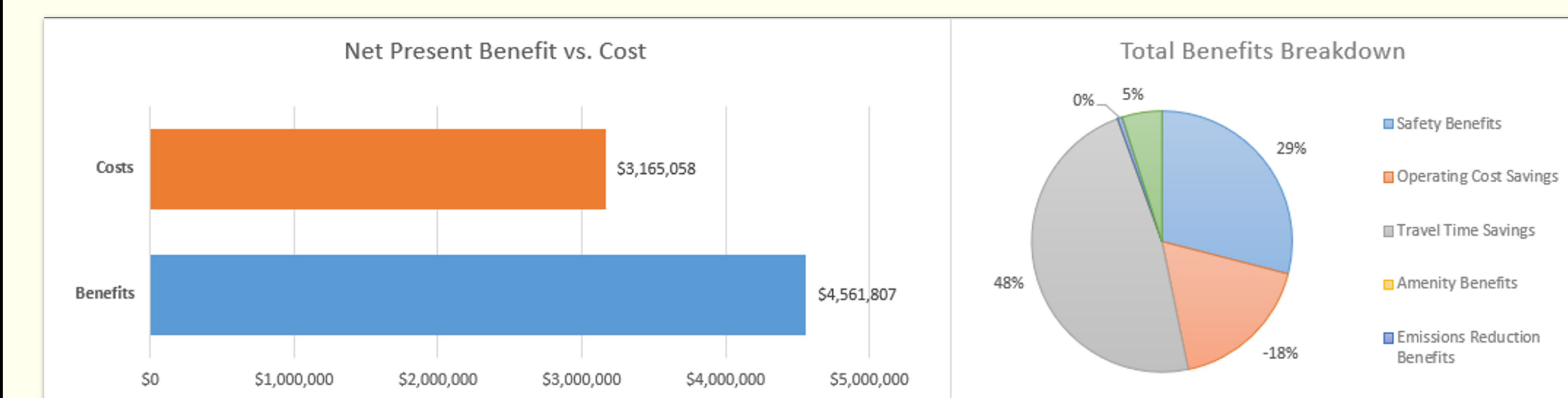


Benefit Cost Analysis

We conducted a Benefit-Cost Analysis to assess the detour around the Fleet St/Central Ave intersection, considering benefits and reduced construction costs. These benefits included:

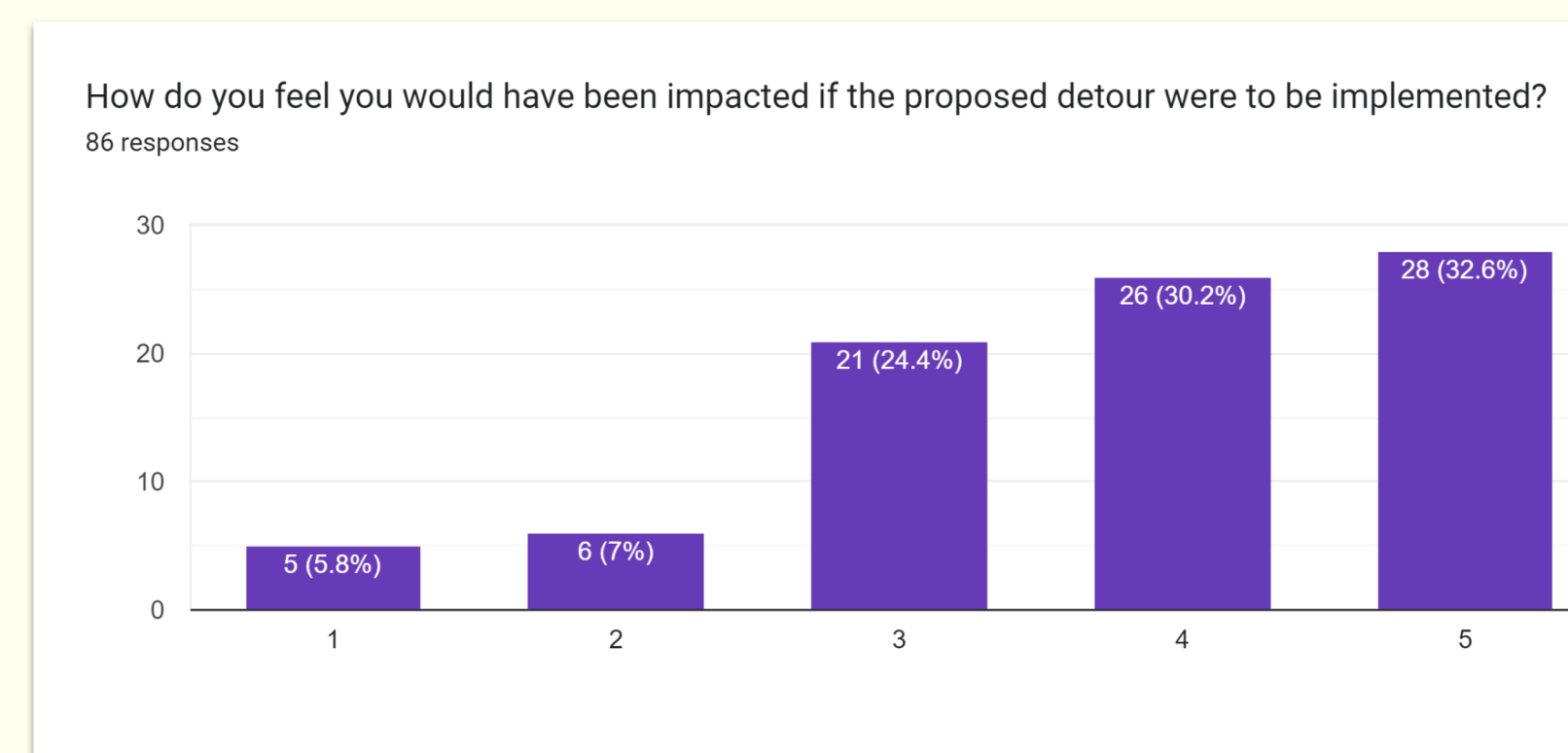
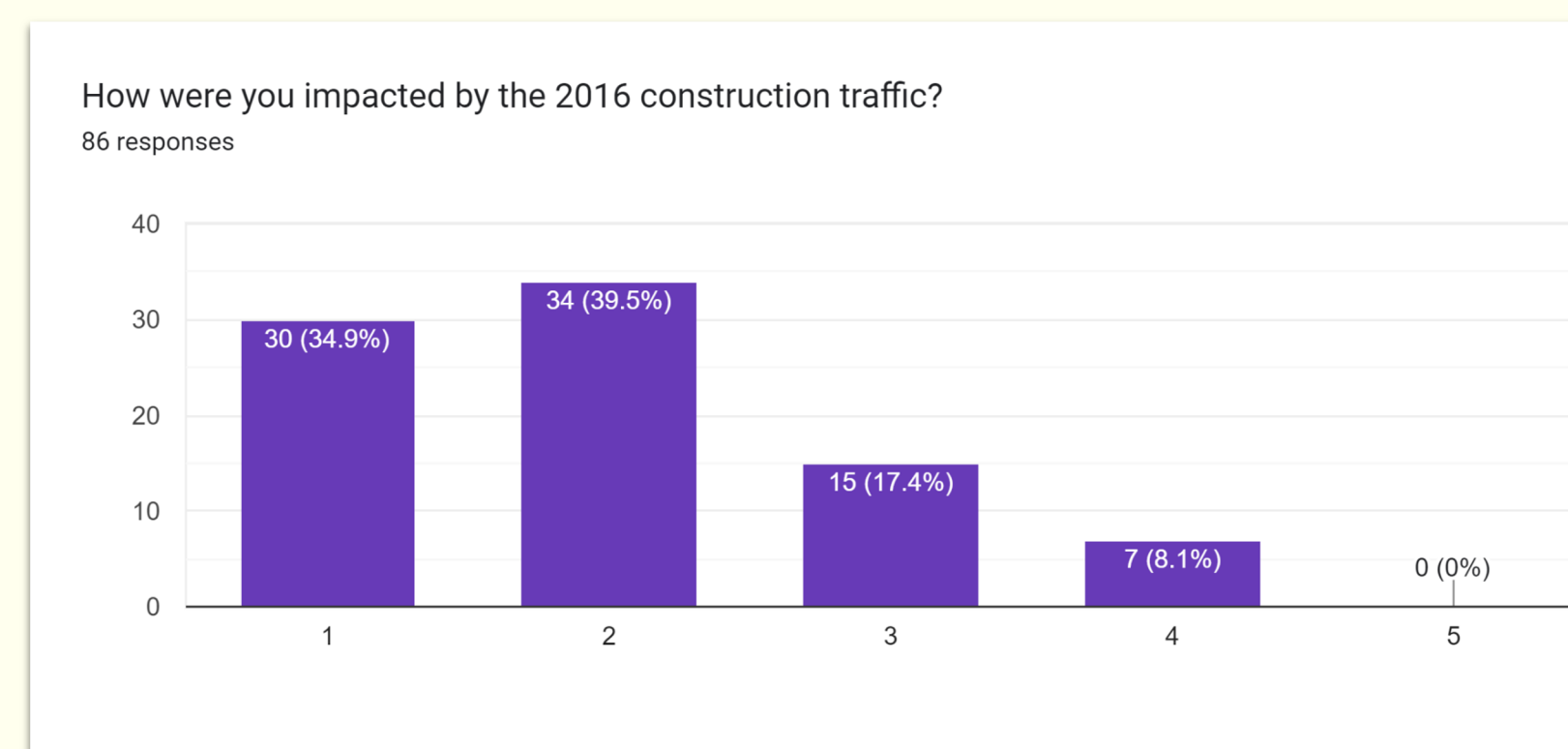
- Safety, due to fewer injury accidents occurring in the detour
- Travel time savings, due to a reduction in travel time from construction delays
- Environmental, due to the shorter construction time resulting in fewer emissions (NO_x, SO_x, and CO₂) from construction equipment.

The shortened schedule also created \$373,600 of savings, calculated using project cost data provided by AM. We found the BC ratio to be equal to 1.44.



Public Relations

We created a survey informed by our detour analysis and updated schedule to gauge the impact of the project's new design. We conducted this survey in Baltimore around the project location, and found an 89% increase in project reception.



1 = Extremely Negatively and 5 = Extremely Positively

Net Present Benefit vs. Cost	
Benefits	\$4,561,807
Costs	\$3,165,058
Total Benefits Breakdown	
Safety Benefits	\$1,918,285
Operating Cost Savings	(\$1,176,209)
Travel Time Savings	\$3,155,710
Amenity Benefits	\$0
Emissions Reduction Benefits	\$40,793
Schedule Reduction Savings	\$326,317