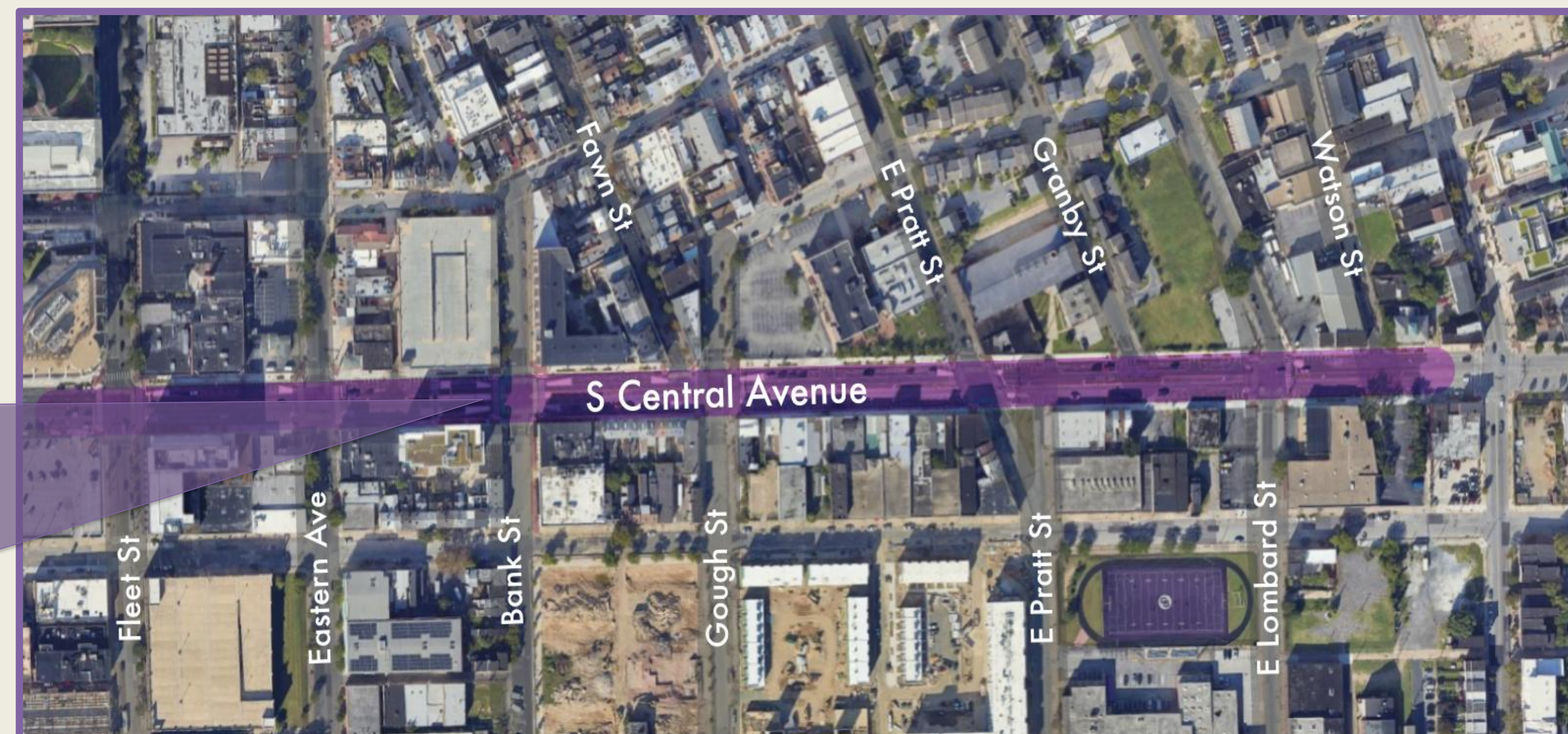


Project Description

The Central Avenue Design-Build project in Baltimore consisted of the beautification of the streetscape and the construction of a connector bridge to Harbor Point. A major facet of the project involved the upgrade of the City of Baltimore's existing conduit system, which houses and protects underground cabling for electrical, communication, and signaling systems. The current conduit system was deemed outdated and incapable of supporting the demands of the area's expanding infrastructure. From its genesis, the project faced significant obstacles: the quickly deteriorating existing system, a lack of clarity in Baltimore City RFPs and utility plans, and the operational limitations set by the City. The original approach upgraded the existing system; the proposed approach considers leaving the current system as is and adding a new addition capable of facilitating current and future utility needs. The resulting report serves as a case study for future municipal conduit projects and provide insight as to the feasibility, economics, and continued viability of alternate approaches.



Original Condition of Baltimore City Conduit Section



Map of Central Avenue Project Location and Extents

Methods

Primary components of importance for the case study include creating new layout plans, conduit designs and a comparative cost analysis of the approach implemented by the City of Baltimore and our proposed alternative

New Layout Plans:

Development of new layout was created by referencing the as-built documents provided by Allan Myers to ensure the modifications could be constructed feasibly

Conduit Designs:

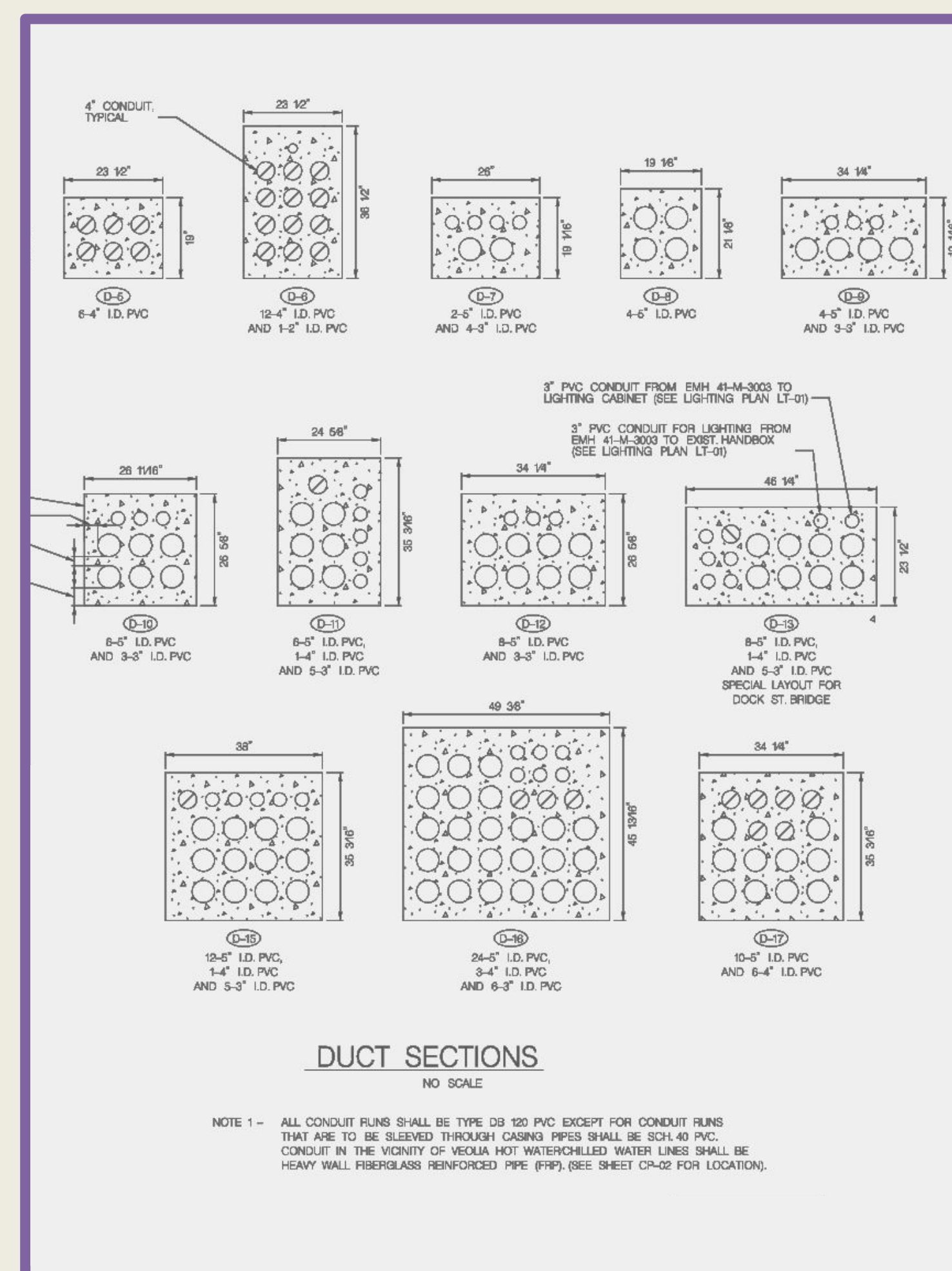
- Upsizing or merging of conduit duct banks as to fulfill the contractually specified capacity with a 20% or greater increase
- Deviations from the implemented plans occurred at the following instances:
 - Upsized conduits needed to be rerouted
 - Deep connection (steel-cased sections)
 - Special instances that required additional accommodation such as the expansion of a manhole

Comparative Cost Analysis:

Cost estimation of the quantity and installation of the conduit duct banks for the entire span of Central Avenue

Unique Project Elements

Though the resulting case study is intended to be used as a general guide for future conduit redevelopment projects, the Harbor Point Streetscape project had idiosyncrasies which distinguish it from similar projects. Unlike many cities where utility companies own the conduit, Baltimore City retained ownership of the system and charged a fee to users such as BGE. Both the design-build method of the project and the contract disputes surrounding the unclear RFPs represented departures from the typical municipal conduit project which need to be considered when applying this case study.



Duct Section Profiles provided by Allan Myers

Cost Estimation

Construction Activity	Man Hour Costs	Material Costs
Deep Connections	\$139,993	\$482,747
Total Conduit	\$2,322,059	\$1,213,291
Manholes	\$0	\$609,900
Concrete Slabs	\$57,807	\$27,366
Shoring	\$257,200	\$185,378
Brick Adjustments	\$18,698	\$31,000
Jack and Bore	\$818,006	\$4,771,536
Spoils Removal	\$0	\$380,000
Total	\$3,613,764	\$7,701,219
Overall Cost	\$11,314,983	

Cost Estimation Table for Proposed Conduit System

Cost Estimate Assumptions

- These cost estimates were based off of 2018 price points.
- There is a 7% increase in all cost calculations to account for material waste and varying man hours.

Conclusion

The newly proposed approach is more favorable due to the slight adjustments made which increased system capacity at no additional cost. We recommend in future cases to construct a supplementary system instead of updating an existing and outdated system.

Acknowledgements

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