

AMERICAN SOCIETY OF HIGHWAY ENGINEERS

National Project of the Year Award

OFFICIAL ENTRY FORM

AWARD CATEGORY (Check One):

□ Under \$20 Million

X Over \$20 Million

SPONSORING REGION (Check One):

X Northeast

- □ Mid-Atlantic
- □ Southeast

- Great LakesNorth Central
- \Box South Central

- □ Northwest
- □ Rocky Mountain
- \Box Southwest

CONTACT INFORMATION FOR SUBMITTING REGION:

 Contact Name:
 Scott R. Eshenaur
 ASHE Region Position:
 Judging Committee Chairperson

 Phone (Office):
 717.790.9565
 Phone (Mobile):
 717.580.8426
 E-Mail Address:
 sreshenaur@modjeski.com

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PROJECT INFORMATION:

 ENTERING AGENCY/COMPANY'S NAME:
 CDR Maguire, Inc.

 PROJECT NAME:
 Southern Beltway US 22 to 179

 TYPE:
 New Highway

 PROJECT LOCATION:
 Washington and Allegheny Counties, Pennsylvania

 CITY:
 Multiple

 COUNTY:
 Washington/Allegheny Counties

 STATE:
 Pennsylvania

 FINAL CONSTRUCTION COST:
 \$716,000,000

 BUDGETED CONSTRUCTION COST:
 \$677,500,00 (Awarded Construction Value)

PROJECT COMPLETION DATE: October 15, 2021

PROJECT ASHE SECTION: Southwest Penn

ASHE SECTION CONTACT NAME: Jonathan C. Balko, PE PHONE (OFFICE): 724.238.4138

PHONE (MOBILE): 724.433.2670 E-MAIL: jbalko@markosky.com

PROJECT TEAM:

PROJECT OWNER:Pennsylvania Turnpike CommissionSTREET ADDRESS:Western Regional Office 2200 North Center AveCITY:New StantonSTATE:PAZIP:15672PHONE:412.779.6390CONTACT PERSON: Steven Hrvoich, PE

E-MAIL ADDRESS: shrovich@paturnpike.com

PROJECT DESIGN FIRM: Because of the project's large scope (spanning two counties & two PennDOT Districts), there is a large group of key participants. Please refer to the key participant page attached.

STREET ADDRESS: CITY:	STATE:	ZIP:
CONTACT PERSON:	PHONE:	
	E-MAIL ADDRESS:	
PRIME CONTRACTOR:		
STREET ADDRESS:		
CITY:	STATE:	ZIP:
CONTACT PERSON:	PHONE:	
	E-MAIL ADDRESS:	

Entry Form Completed By: Laurie Kolich Date: February 2, 2023

Southern Beltway Firms

Section	Design Manager	Designer	Contractor	Construction Manager	Inspection Firms		
55A1	Michael Baker	Mackin Engineering Company	Independence Excavating Inc.	CDR Maguire Engineering	L.R. Kimball (TranSystems Corp.) / Greenman-Pedersen, Inc.		
55A1-1	Michael Baker	Mackin Engineering Company	Mosites Construction Company	CDR Maguire Engineering	L.R. Kimball (TranSystems Corp.) / PTC Staff		
55A2	Michael Baker	AECOM	Trumbull Corporation	CDR Maguire Engineering	L.R. Kimball (TranSystems Corp.) / Greenman-Pedersen, Inc.		
55B	Michael Baker	Stantec	JB Fay	CDR Maguire Engineering	L.R. Kimball (TranSystems Corp.) / Greenman-Pedersen, Inc.		
55C1-1	Michael Baker	Parsons-Brinkerhoff (WSP)	Beaver Excavating Company	CDR Maguire Engineering	Management Engineering Corporation / Larson Design Group		
55C1-2	Michael Baker	Parsons-Brinkerhoff (WSP)	Trumbull Corporation	CDR Maguire Engineering	Management Engineering Corporation / Larson Design Group		
55C2-1	Michael Baker	ms consultants, inc.	Walsh Construction	CDR Maguire Engineering	Management Engineering Corporation / Larson Design Group / L.R. Kimball (TranSystems Corp.)		
55C2-2	Michael Baker	ms consultants, inc.	Independence Excavating Inc.	CDR Maguire Engineering	Management Engineering Corporation / Larson Design Group		
55S	Michael Baker	Markosky Engineering	Power Contracting, Inc.	CDR Maguire Engineering	L.R. Kimball / Management Engineering Corporation		
55T	Michael Baker	Stantec	Allison Park Contractors	CDR Maguire Engineering	Larson Design Group / L.R. Kimball (TranSystems Corp.) / PTC Staff		
55W	Michael Baker	ms consultants, inc.	Cast & Baker Corporation	CDR Maguire Engineering	L.R. Kimball (TranSystems) / PTC Staff		
54ABC	Michael Baker	Stantec	Golden Triangle Construction	CDR Maguire Engineering	PTC Staff		
55M General	Michael Baker	AE Works	Nello Construction	CDR Maguire Engineering	Management Engineering Corporation / TRC Solutions		
55M Electrical	Michael Baker	AE Works	Schultheis Electric	CDR Maguire Engineering	Management Engineering Corporation / TRC Solutions		
55M Plumbing	Michael Baker	AE Works	Wayne Crouse, Inc.	CDR Maguire Engineering	Management Engineering Corporation / TRC Solutions		
55M HVAC	Michael Baker	AE Works	McKamish, Inc.	CDR Maguire Engineering	Management Engineering Corporation / TRC Solutions		

1. Complexity

When Pittsburgh's thriving steel industry came to a screeching halt in the late 1970s, the southwestern Pennsylvania region experienced economic and social hardships. Planning efforts refocused with the intent that better highway access and mobility would help redevelopment efforts. PA Act 61 of 1985 and Act 26 of 1991 allowed the Pennsylvania Turnpike Commission (PTC) to begin development of roadway expansions in Southwest PA. Hence, the Southern Beltway Project was conceived.

Completion of the Mon/Fayette Expressway and Southern Beltway projects creates approximately 98 miles of new limited-access highways south and west of Pittsburgh. CDR|M was the Pennsylvania Turnpike Commission's (PTC's) Construction Manager for the Turnpike 576 (Southern Beltway, State Route 22 to PA Interstate 79) project in Allegheny and Washington Counties, PA, with a construction value of \$716 million. The project is divided into twelve (12) construction contracts within two PennDOT Engineering Districts (11-0 and 12-0).

The Southern Beltway project sections:

- > 55A1-1 US Route 22 Bridges
- > 55A1 US Route 22 to Quicksilver Road
- > 55A2 US Route 22 to Quicksilver Road to Panhandle Trail
- > 55B Panhandle Trail to Cecil Reissing Road
- > 55C1-1 Cecil Reissing Road to State Route 50
- > 55C1-2 State Route 50 to Coal Pit Road
- > **55C2-1** State Route 50 to I-79
- > **55C2-2** Morganza/Morgan Road Improvements
- 55M Maintenance Facility
- 55S Signing and Pavement Markings
- 55T Cashless Tolling Facilities
- 55W Wetland Mitigation Site

Overall, the project includes thirteen (13) miles of mainline roadway, five (5) new interchanges, electronic cashless tolling, eight (8) pairs of mainline bridges, four (4) bridges on I-79, and seven (7) local bridges. Construction value - \$716M. Construction started January 2014 Opened October 15, 2021, with restrictions at I-79 70 mph speed limit

25M+ CY of Excavation

Each section offered intriguing coordination and engineering challenges including construction utilizing mine void grouting and stone columns; encountering and properly disposing of pickle liquor sludge, an industrial byproduct from the steelmaking process; plugging dozens of abandoned oil and gas wells; complicated topography, coordination with railways, and extensive traffic control for the eastern connection with Interstate

79, which also included three (3) miles of third lane widening while maintaining two (2) lanes of traffic in each direction

2. New Application of Existing Techniques/Originality/Innovation

This complex construction project utilized a variety of innovative techniques during construction, including mine void grouting, stone columns, plugging of abandoned oil and gas wells in the historic McDonald Oilfield and specialized worker health and safety procedures due to the COVID-19 Pandemic. Project construction included permanent preformed patterned reflective pavement markings, high speed electronic cashless tolling, and a soil nail wall was used on I79 to provide temporary support of excavation for bridge construction under live traffic.

Collaboration and proactive partnering strategies were key tools in the successful resolution of engineering and construction challenges. With skillful teamwork, communication, and negotiation, the team delivered this project on time and within budget, even with the temporary shutdown of construction due to COVID-19. The project utilized Long-Life Concrete Pavement which uses an optimized aggregate gradation and cement content that maximizes the interlock between aggregates. This results in a dense concrete that minimizes infiltration of moisture and deicing salts with an intended 40-year service life.

3. Social, economic, and sustainable development considerations

Coal and coke production in the area surrounding the project played a key role in Pittsburgh's steel industry. When this industry faltered, communities throughout the entire region were impacted. Initial expressway planning in the 1960s was to serve Southwestern Pennsylvania's world-ranked industries of coal and coke, and hence steel. After the 1970's, planning efforts were refocused with the intent that better highway access and mobility would help redevelopment efforts.

The history of the region provided unique engineering challenges that required development of sustainable solutions. Over 2,000 abandoned gas and oil wells existed within the McDonald Oil Field, which was the highest yielding oil field in the world in 1891 and 1892. Twenty-eight (28) of these undocumented oil and gas wells were plugged during highway construction.

Public benefits from the Southern Beltway include a limited access tollway that will alleviate congestion along the I-376 corridor by providing another travel option to the Pittsburgh International Airport. This more straightforward commute decreases fuel emissions as vehicles will not be traveling as far nor idling in congested traffic. Along with commuters, safety and emergency vehicles now have quicker, safer access to those in need instead of using rural, two-lane roads. The region will benefit from future redevelopment of the area through all the benefits new infrastructure brings – jobs, increased tax revenue, growth, and community connection.

4. Safety

In addition to the existing strip and deep coal mines located in the area and the excavation of 25 million cubic yards of material, the team had to navigate the peripheral life around the project – the McDonald Sportsman Association and individuals bicycling on the multiple rail-trails. Life continued safely around the peripheral edges of the project thanks to the efforts of the entire team who negotiated construction efforts, heavy equipment, environmental hazards and a pandemic.

The team not only had to maintain a safe working environment, but there was also a mandatory shut down due to the unprecedented COVID pandemic. When workers returned, they did so with new safety practices that included masks, social distancing, and electronic paperwork procedures. Section 55C2-1 was one of the first projects in the State to resume operations following the shutdown. The team adapted to their new environment and managed to deliver the project safely and on time, despite the temporary shutdown.

The new corridor provides improved access and new connector roads for residents for safer, more efficient travel, and the public benefits from a highway that alleviates congestion along the I-376 corridor by providing another travel option to the Pittsburgh International Airport.

5. Aesthetics and Sustainable Features

Consideration was given to the National Cemetery of the Alleghenies (NCOTA) as the eastern most interchange was designed specifically to reduce the visual impact of the new Beltway from the adjacent NCOTA site. Aesthetic stains and architectural surface treatments of bridge abutments and parapets were selected to match existing features of the NCOTA facility. All structures on the project to have a similar aesthetic look, the piers are reinforced concrete with architecturally aesthetic hammerhead shapes in accordance with geometric guidelines provided by the PTC. White cement concrete was used in all mainline bridge parapets and lead-in barriers to improve visibility and safety.

The team worked closely with the PaDEP to achieve unprecedented sustainable vegetative cover throughout the entire project, which included almost 400,000 pounds of seed. Another environmental consideration included mitigating acid mine discharge from an abandoned deep coal mine utilizing an anoxic lime drainage collection system. Storm water management basins were designed and constructed to improve discharge water quality throughout the Beltway corridor. The Turnpike constructed a state-of-the-art maintenance facility utilizing geothermal technology, open lighting design, and a rainwater harvest system for vehicle maintenance and washing to reduce reliance on the public water system. The team's successful coordination of all the differing facets of the project has resulted in a quality project that will positively impact Southwestern Pennsylvania.

6. Meeting and Exceeding Owner's/Client's Needs

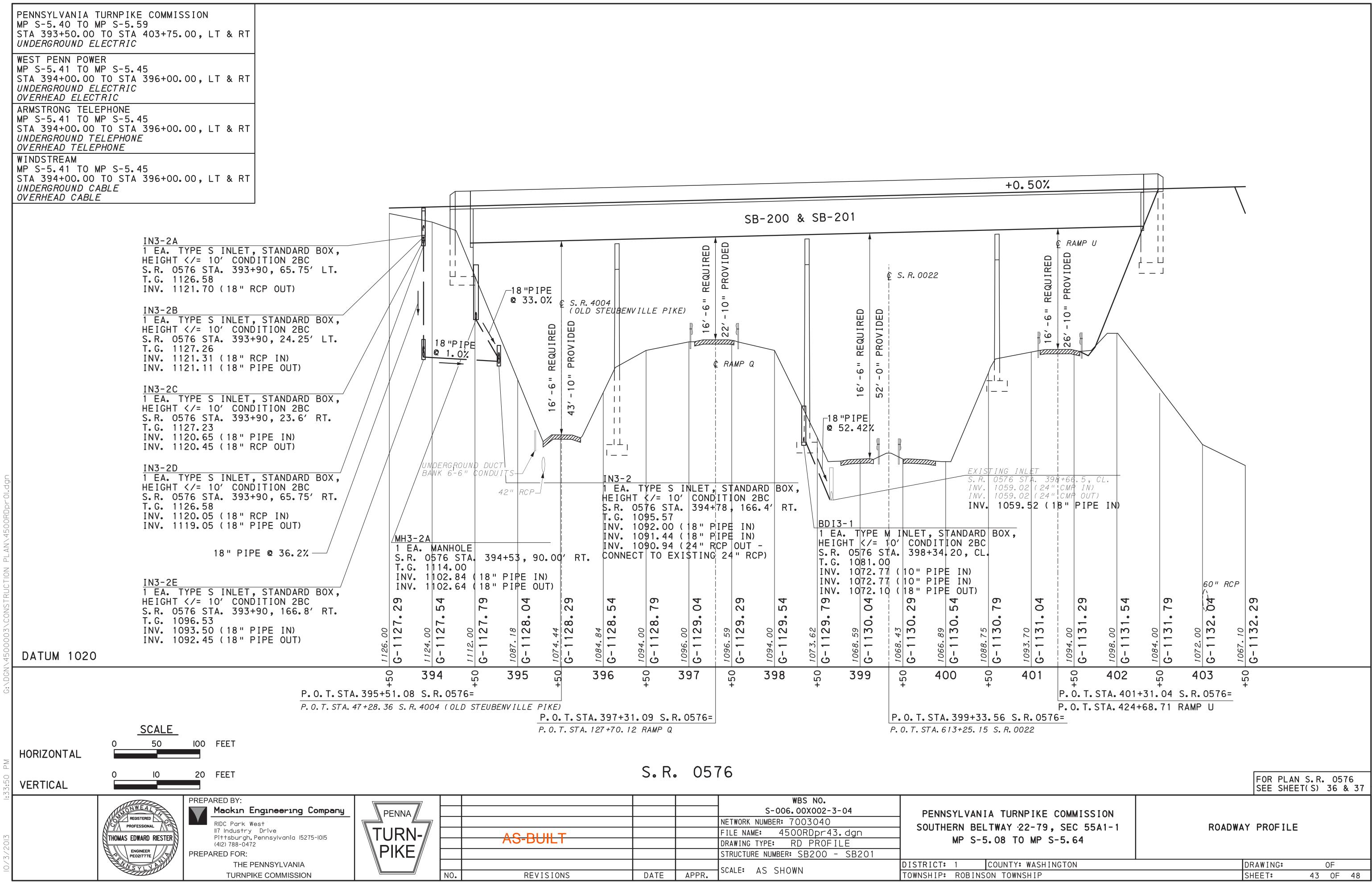
The Southern Beltway from SR22 to I79 had to consider multiple alternatives that were challenging in design for multiple reasons. Highly variable topography had to be considered along with abandoned gas and oil wells and abandoned coal mines, along with working around the Town of McDonald and minimizing property takes as the corridor was finalized. Multiple designers were involved with the final alignment and the

Pennsylvania Turnpike Commission sought to minimize costs, environmental impacts, and property impacts to the extent possible.

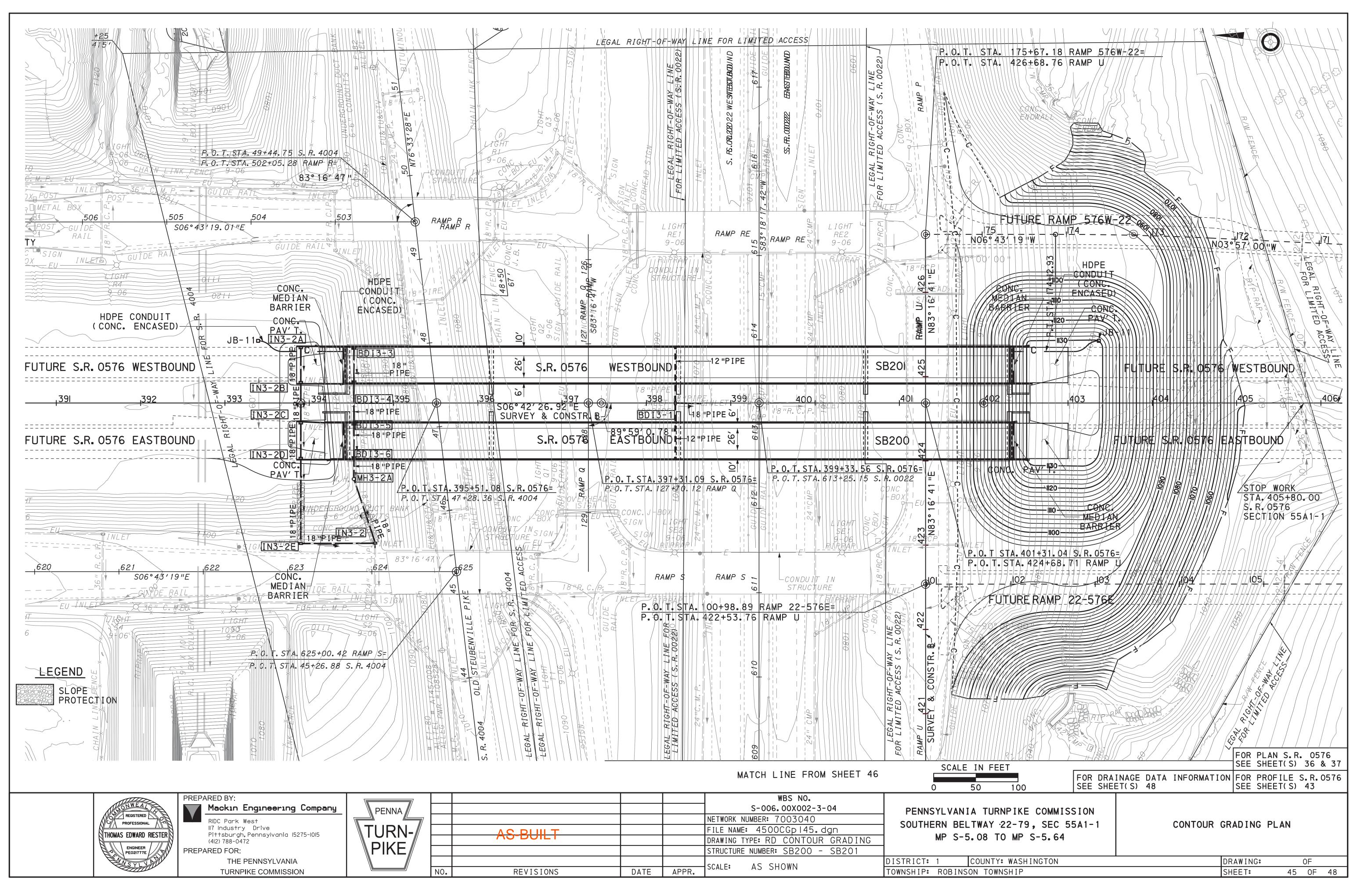
The original budget estimate for the project construction was \$750M. Following opening of the Southern Beltway from SR22 to I-79 in October 2021, and completion of 99% of all contract work by October 2022, the final costs for construction (as of November 2022) total approximately \$687M. Due in part to the COVID-19 pandemic, the project was not completed fully in 2021 but was opened to traffic in October 2021.

At the ribbon cutting, Secretary of Transportation Yasmin Gramian, called Southern Beltway a "Generational project" and stated "At this event, we commemorate this section's completion. With tomorrow's opening, it will ease congestion and create economic opportunities... Investment in transportation has historically paid for itself in greater prosperity and thriving communities."

"Without a doubt, the Southern Beltway will serve as an economic catalyst for the Greater Pittsburgh region," affirmed PA Turnpike CEO Mark Compton." Compton's comment solidifies that the original concept of the Southern Beltway from SR 22 to I-79 accomplishes the intent of the original concept by completing a leg of a new high-capacity/high speed project to move vehicular traffic around Pittsburgh and connecting to Pittsburgh International Airport, thus spurring economic growth and development in the area and supporting previously isolated struggling communities. This development creates jobs and provides increased tax revenue, fostering growth in this region deprived of a once thriving reginal steel industry.



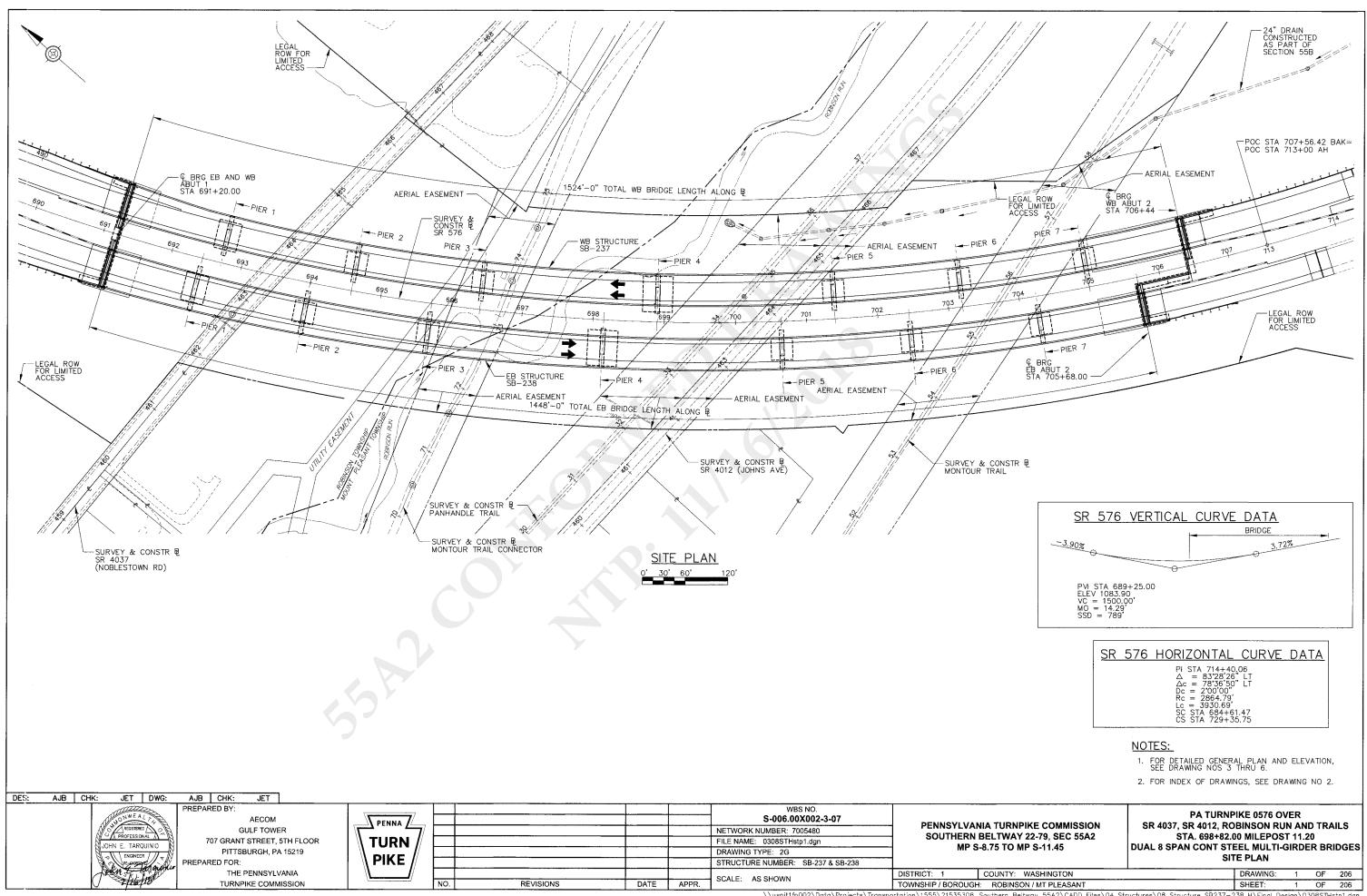
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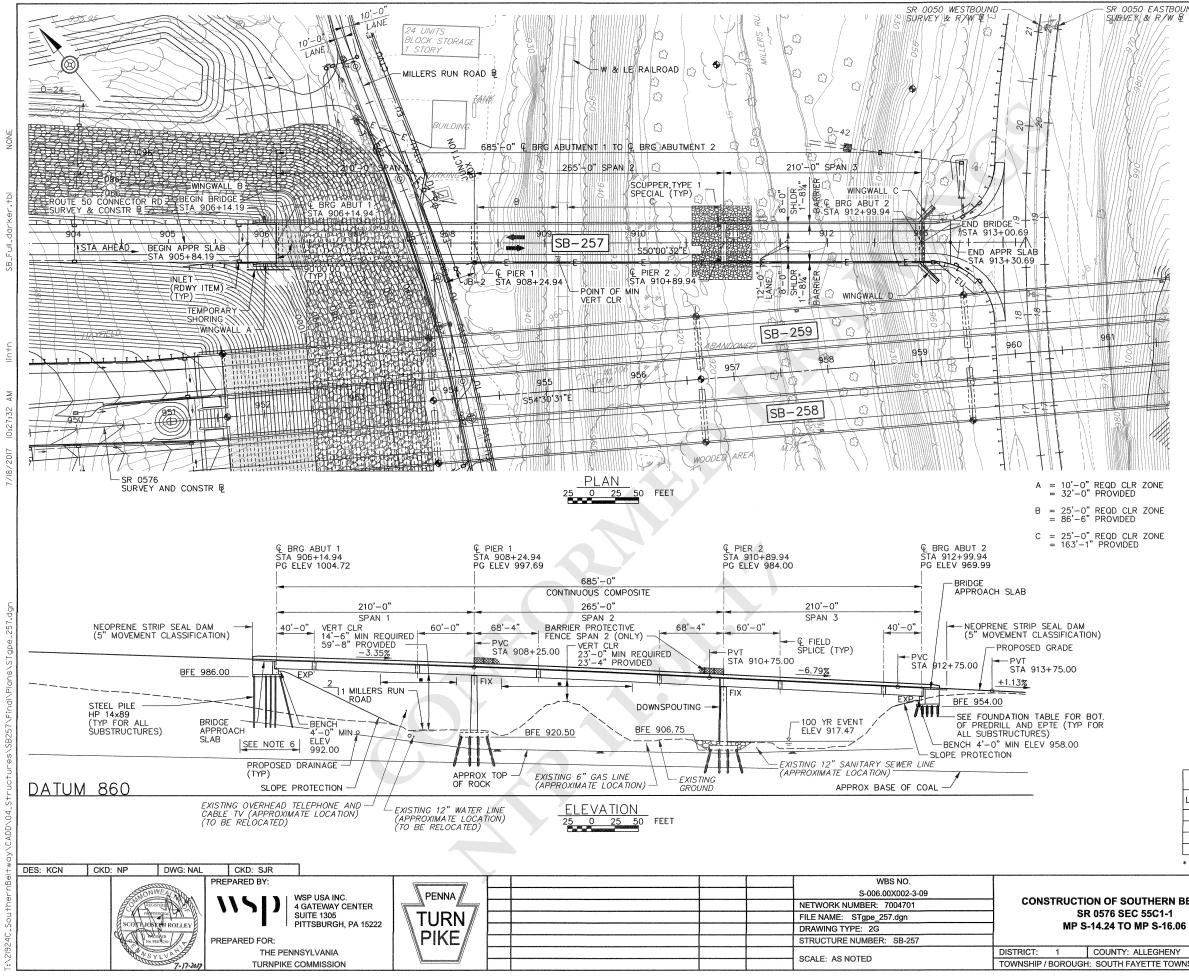
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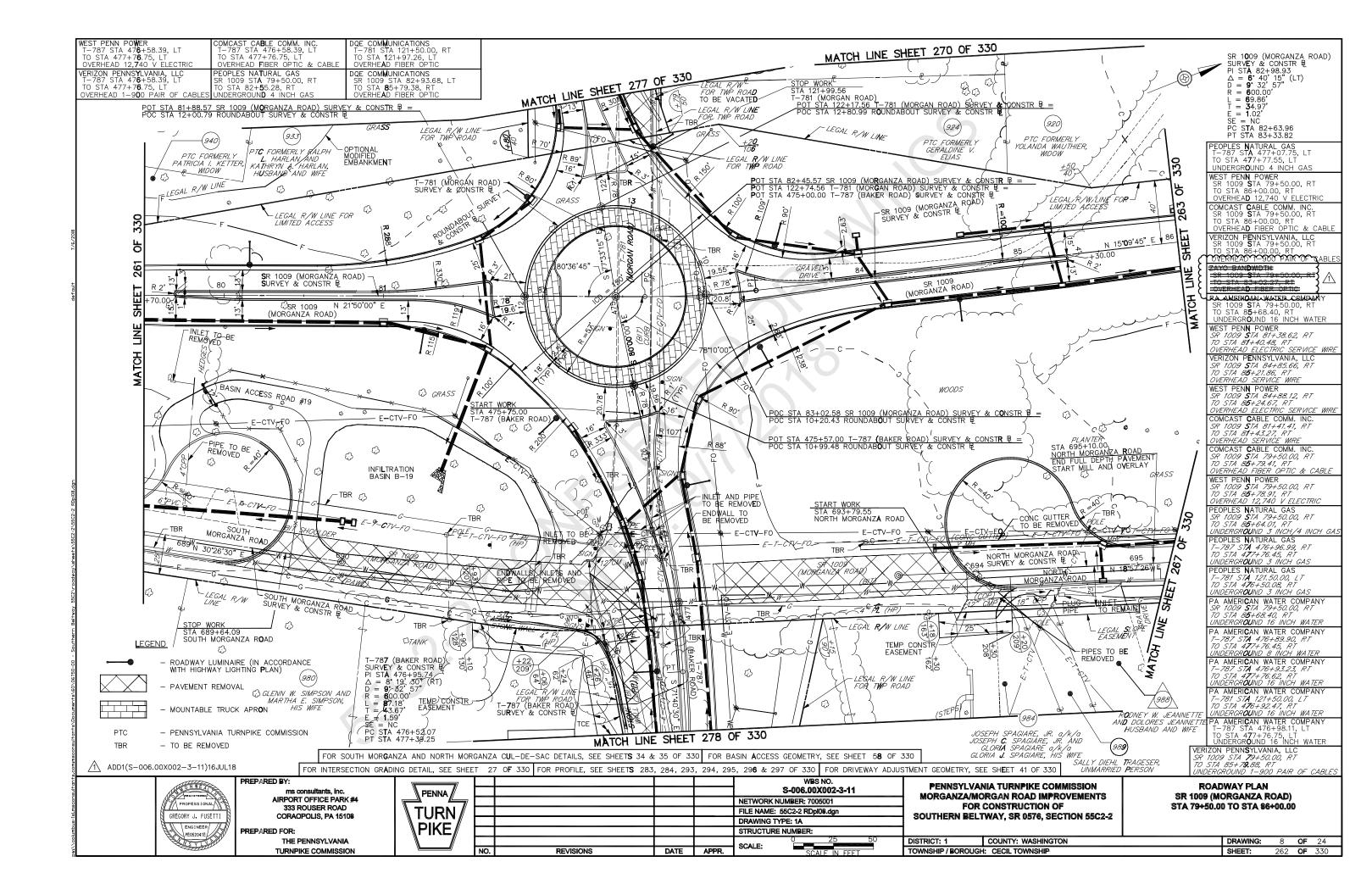
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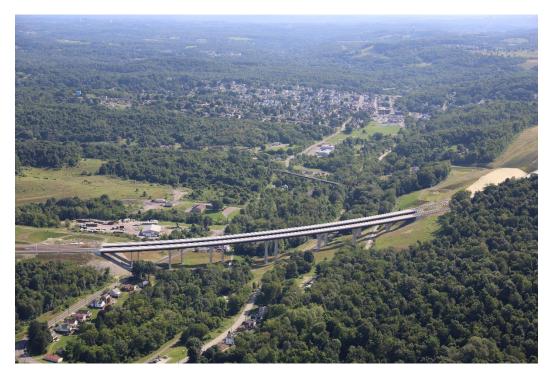


Photo 1 - Completed SB 234.23



Photo 2 - Beam Erection



Photo 3 – Gas Well Plugging



Photo 4 – Aerial View of Completed Interchange and Maintenance Facility



Photo 5 – Aerial View of Completed Interchange with I-79 and Morganza Road

CDR Maguire Inc. • Southern Beltway • Projects over \$20M in Construction Cost • Page 3



Memorandum

To:	ASHE
From:	Stephen Shadle, P.E.
Date:	February 6, 2023
RE:	Opening of the Southern Beltway SR22 to I-79

To Whom it May Concern,

The U.S. Route 22 to I-79 project is the middle section of the Southern Beltway project and begins at the southern terminus of the Findlay Connector at the U.S. Route 22 Interchange and proceeds 13 miles southeast to an interchange with I-79 and a local connection at Morganza Road near the Allegheny/Washington County line.

The Record of Decision (granting environmental clearance) was issued for the project in September 2008. Funding for the U.S. Route 22 to I-79 project came in 2013 with the passing of Act 89 legislation. Estimated cost for this 13-mile section is approximately \$800 million. The U.S. Route 22 to I-79 section links to the Findlay Connector creating 19 miles of the Southern Beltway, an all-electronic tolling highway.

Due to the complexity of building a new 13-mile roadway, the Route 22 to I-79 project had been divided into nine construction sections, which are now complete. Details related to each section's project limits, schedule, roadway alignment, and contact information can be accessed on the Turnpike website.

The Southern Beltway was opened to traffic on October 15, 2021 with restrictions at I-79. Those restrictions were lifted with the final opening which was completed on June 24, 2022. All connections with I-79 opened in June 2022.

Please contact me at 412-235-9476 if you have any questions.

Thanks. Star. In Steve

Cc: Laurie Kolich File

Statement of Commitment that one Representative will attend Awards Presentation.

February 3, 2023

At least one representative from our Team will attend the Awards Presentation.

Sincerely,

tipe A. Shall

Stephen P Shadle, PE Vice President, Mid-Atlantic Region Director of Project Management and CM/CI Services