



ASHE National Project of the Year Award Northeast Region Southern Beltway PA Turnpike 576 SR 22-PA I-79 Over \$20 Million in Construction January 10, 2024





2024 National Project of	the Year – NE Region -	- Southern Beltway	over \$20 Million
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AMERICAN SOCIETY OF HIGHWAY ENGINEERS

National Project of the Year Award

OFFICIAL ENTRY FORM

AWARD CATEGORY (Check	One):	☐ Under \$20 Million	☑ Over \$20 Million
SPONSORING REGION (Ch	eck One):		
✓ Northeast		Great Lakes	□ Northwest
☐ Mid-Atlantic		North Central	☐ Rocky Mountain
☐ Southeast		South Central	☐ Southwest
CONTACT INFORMATION	N FOR	SUBMITTING REGI	ON:
Contact Name: Scott R. Eshenaur			egion Position: NPY Chairperson
Phone (Office): 717-790-9565	Pho	ne (Mobile): 717-580-8426	E-Mail Address:
DDO IECT INEODMATION			
PROJECT INFORMATION ENTERING AGENCY/COMPANY'S NA		Maguire, Inc.	
PROJECT NAME: Southern Beltway PA Turnpike	576 SR 22-		TYPE: New Highway
PROJECT LOCATION: Allegheny & Washington	n Counties		1112.
CITY:		COUNTY: Allegheny & Washington	STATE: Pennsylvania
FINAL CONSTRUCTION COST: \$780,000	0,000		RUCTION COST: \$677,500,000
PROJECT COMPLETION DATE: October 2			
PROJECT ASHE SECTION: Southwest PA		_ ASHE SECTION CONTACT N	NAME: Jason Zang, PE
PROJECT ASHE SECTION: Southwest PA PHONE (OFFICE): 412.429.5007	_ PHONI	E (MOBILE): E-M	A∐Zang@pa.gov
PROJECT TEAM:			
PROJECT OWNER: Pennsylvania Turnpike Com	nmission		
STREET ADDRESS: Western Regional Office	e 2200 Nor	th Center Drve	
CITY: New Stanton		STATE: PA	ZIP: 15672
CONTACT PERSON: Steve Hrvoich, PE		PHONE: 724.555.5186	
		E-MAIL ADDRESS: shrovich@p	paturnpike.com
PROJECT DESIGN FIRM: Please see attache	d sheet		
STREET ADDRESS:			
CITY:		STATE:	ZIP:
CONTACT PERSON:		DITCO IN	
		E-MAIL ADDRESS:	
PRIME CONTRACTOR: Please see attache	ed sheet		
STREET ADDRESS:			
CITY:		STATE:	ZIP:
CONTACT PERSON:		DIJONE.	
Entry Form Completed By: Laurie Ko	olich		Date: January 8, 2024



Key Participants:

Michael Baker International: Design Manager

CDRIM: Construction Manager

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PTC

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WSP (Parsons-Brinkerhoff) 11 Stanwix St Suite 9 Pittsburgh, PA 15222 www.wsp.com

ms consultants, Inc.
300 Corporate Center Drive, Suite 200
Moon Twp, PA 15108
www.msconsultants.com

The Markosky Engineering Group 4000 Hempfield Plaza, Suite 913 Greensburg, PA 15106 www.markosky.com

AE Works 418 Beaver Street Sewickley, PA 15148 www.aeworks.com

Independence Excavating Inc. 3934 45th Street
Pittsburgh, PA 15201
www.indexc.com

Mosites Construction Company 400 Mosites Way, Suite 100 Pittsburgh, PA 15205 www.mosites.com

PJ Dick-Trumbull 225 North Shore Drive Pittsburgh, PA 15212 www.pjdick.com

S&B USA Construction (JB Fay) 1 Allegheny Square 301 Pittsburgh, PA 15212 www.shikunusa.com Beaver Excavating Company PO Box 6059 Canton, OH 44706 www.beaverexcavating.com

Walsh Construction Company 4 Penn Center Blvd Pittsburgh, PA 15276 www.walshconstruction.com

Power Contracting Company 61 Arch Street Suite 201 Carnegie, PA 15106 www.powerllc.com

Allison Park Contractors, Inc. 4383 Gibsonia Rd Gibsonia, PA 15046 www.allisonparkcontractors.com

Cast & Baker Corporation 2241 Washington Rd Canonsburg, PA 15317 www.castandbaker.com

Nello Construction Company 230 E Main Street Carnegie, PA 15106 www.nelloconstructionco.com

Schultheis Electric 304 Sanford St Latrobe, PA 15650 www.tsbinc.net

Wayne Crouse, Inc. 3370 Stafford Street Pittsburgh, PA 15204 www.waynecrouse.com

McKamish, Inc. 50 55th Street Pittsburgh, PA 15201 www.mckamish.com

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 \$780 million. The project is divided into twelve (12) construction contracts within two PennDOT Engineering Districts (11-0 and 12-0).

The Southern Beltway includes the following project sections:

- > 55A1-1 Route 22 Bridges
- > 55A1 Route 22 to Quicksilver Road
- > 55A2 Route 222 to Quicksilver Road to Panhandle Trail
- > 55B Panhandle Trail to Cecil Reissing Rd
- > **55C1-1** Cecil Reissing Rd to State Route 50
- > 55C1-2 State Route 50 to Coal Pit Road
- > **55C2-1** Route 50 to 179
- > 55C2-2 Morganza/Morgan Road Improvements
- > 55M Maintenance Facility
- > 55\$ 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 - \$780M.

Construction started January 2014
Opened October 15, 2021, with restrictions at I-79
99% Completion October 2022
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. Successful fulfillment of client/owner needs

Secretary of Transportation Yassmin Gramian called the Southern Beltway a "Generational project" and stated: "We commemorate this section's completion. ... [I]t will ease congestion and create economic opportunities... Investment in transportation has historically paid for itself in greater prosperity and thriving communities."

"... [T]he Southern Beltway will serve as an economic catalyst for the Greater Pittsburgh region," affirmed PA Turnpike CEO Mark Compton. "It will provide better access to sites being developed along the Energy Commerce & Innovation Corridor (ECIC) which is 52 miles of largely untapped private, commercial and industrial lands near the Pittsburgh International Airport. This ... will support new employment...."

Steven Hrvoich, PTC Construction Engineering Manager, stated: "The success of this complex section of the Southern Beltway was the result of effective partnering by the project team. CDR Maguire, as the Construction Manager, led the partnering effort. ... We commend the entire project team...."

Despite the aggressive construction schedule and unforeseen challenges, the project was opened on time and within budget.

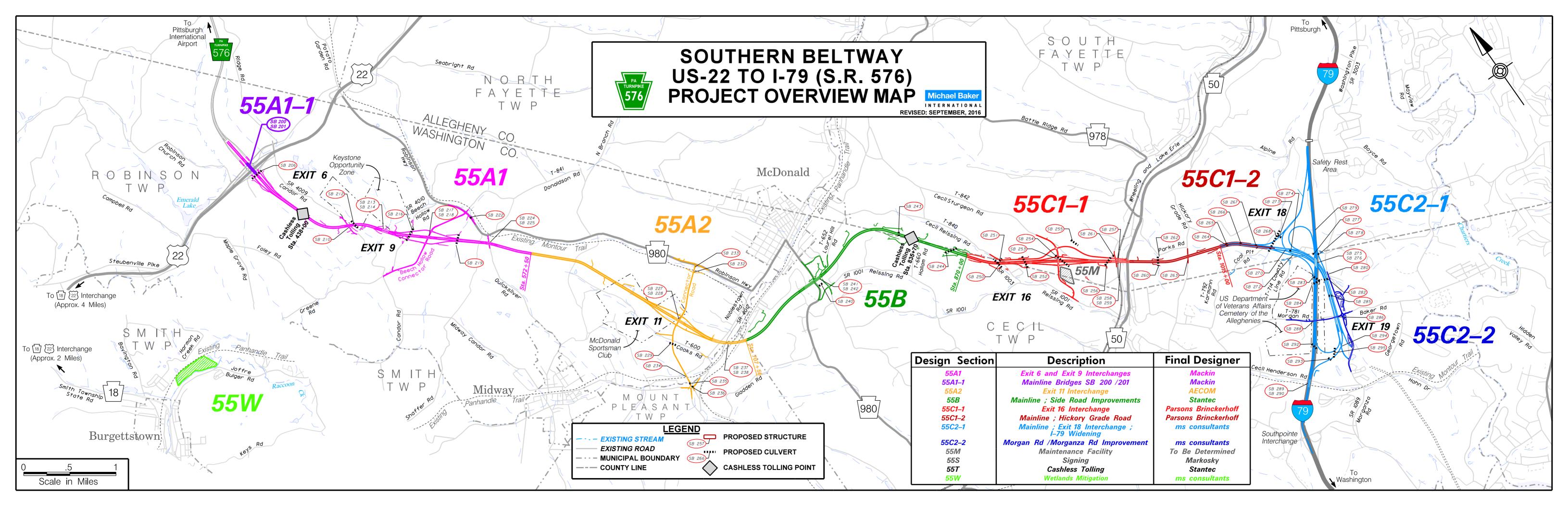
Roles of Consultants:

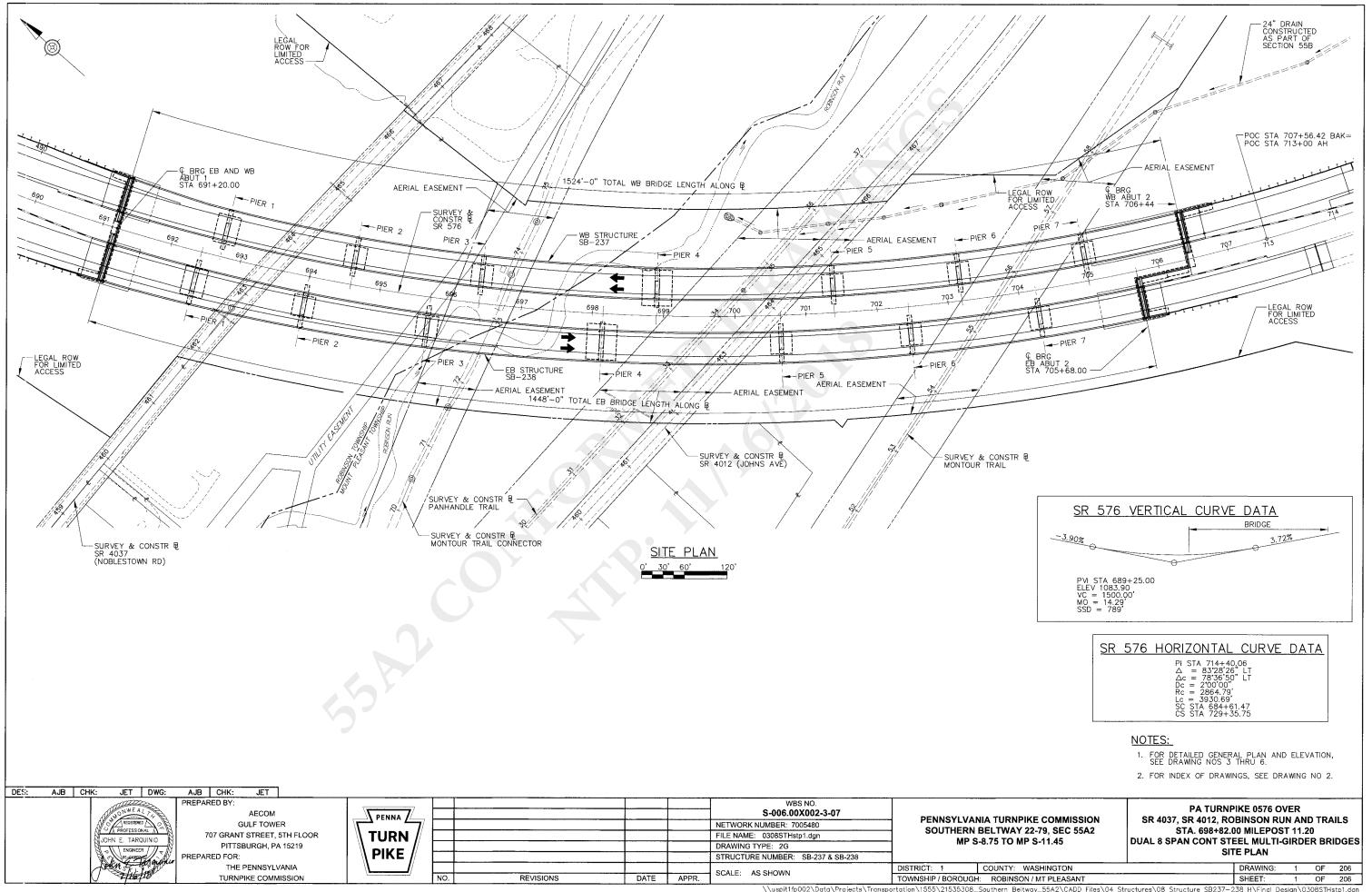
Michael Baker International: Design Manager

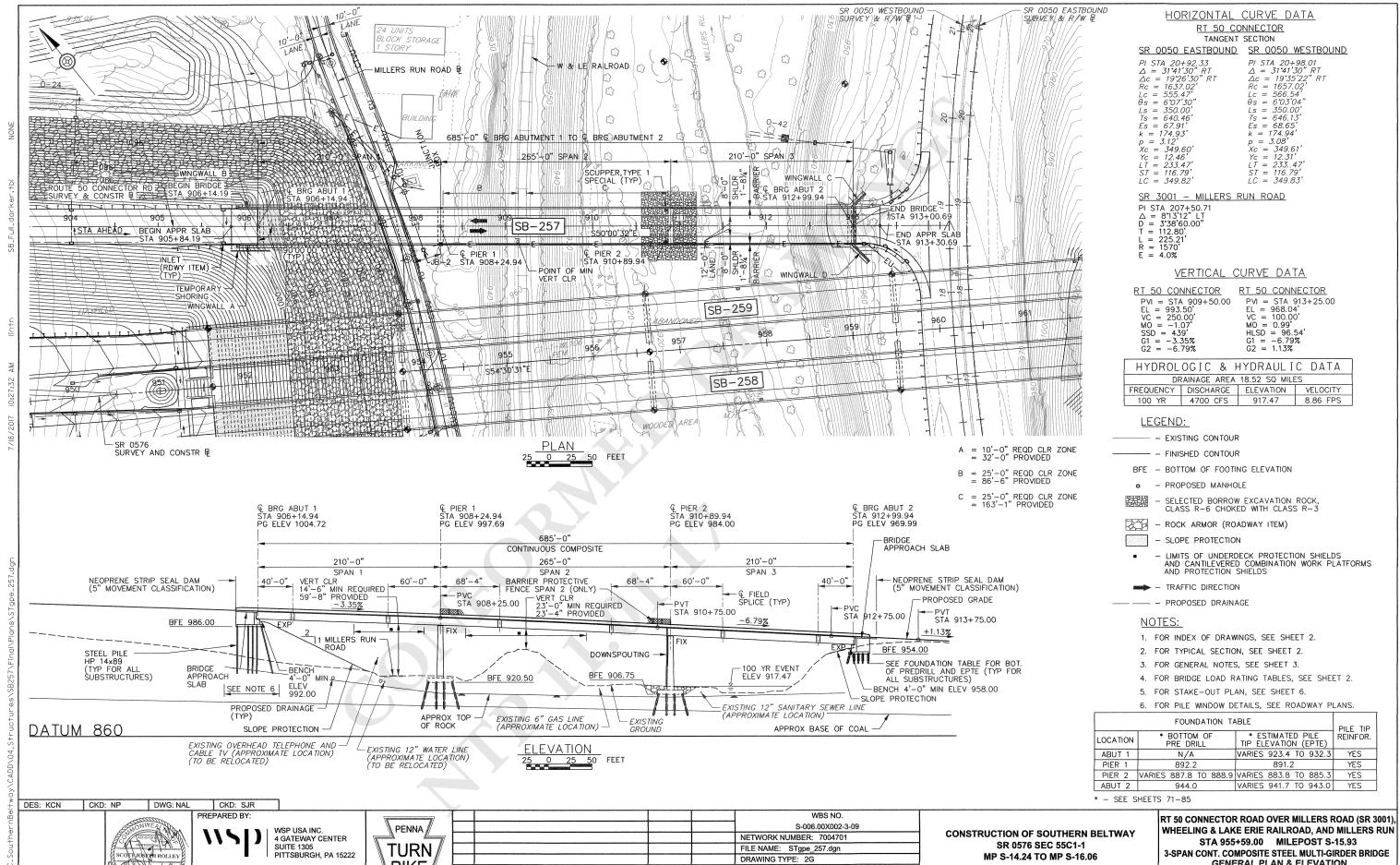
CDR|M: Construction Manager

Section	Designer	Contractor
55A1	Mackin Engineering	Independence Excavating Inc.
55A1-1	Mackin Engineering	Mosites Construction
55A2	AECOM	Trumbull
55B	Stantec	JB Fay
55C1-1	Parsons-Brinkerhoff (WSP)	Beaver Excavating Company
55C1-2	Parsons-Brinkerhoff (WSP)	Trumbull
55C2-1	ms consultants	Walsh Construction
55C2-2	ms consultants	Independence Excavating, Inc.
55S	Markosky	Power Contracing
r.c.T	Observa	Alliana Dadi Osotos dana
55T	Stantec	Allison Park Contractors
55W	ms consultants	Cast & Baker Corporation
Section	Designer	Contractor
55M General	AE Works	Nello Construction
55M Electrical	AE Works	Schultheis Electric
55M Plumbing	AE Works	Wayne Crouse, Inc.

55M AVAC AE Works McKamish, Inc.







DRAWING TYPE: 2G

SCALE: AS NOTED

STRUCTURE NUMBER: SB-257

PITTSBURGH, PA 15222

THE PENNSYLVANIA

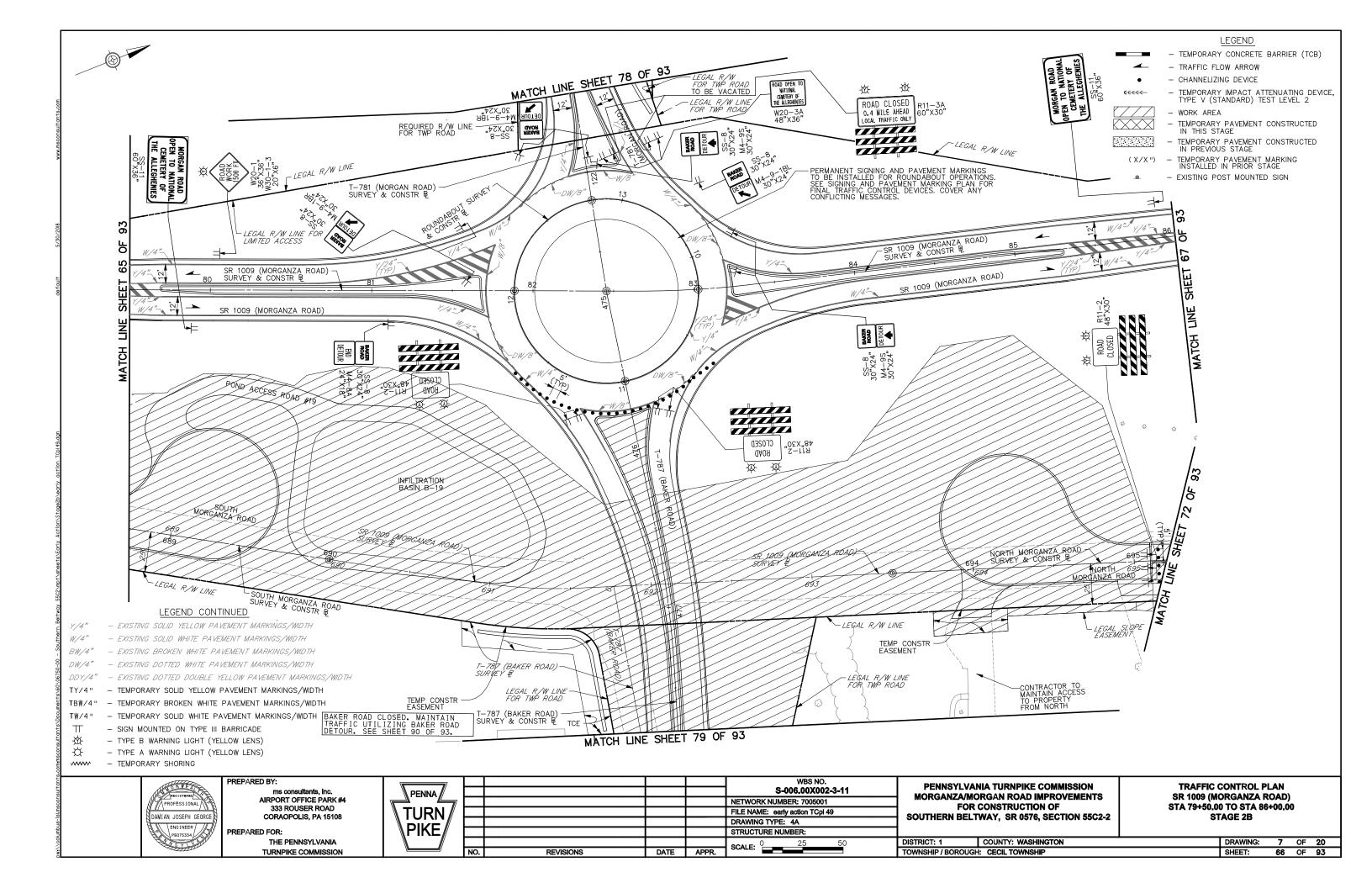
TURNPIKE COMMISSION

PREPARED FOR-

3-SPAN CONT. COMPOSITE STEEL MULTI-GIRDER BRIDGE **GENERAL PLAN & ELEVATION** DRAWING: 1 OF 85

COUNTY: ALLEGHENY TOWNSHIP / BOROUGH: SOUTH FAYETTE TOWNSHIP SHEET: 1 OF 85

MP S-14.24 TO MP S-16.06



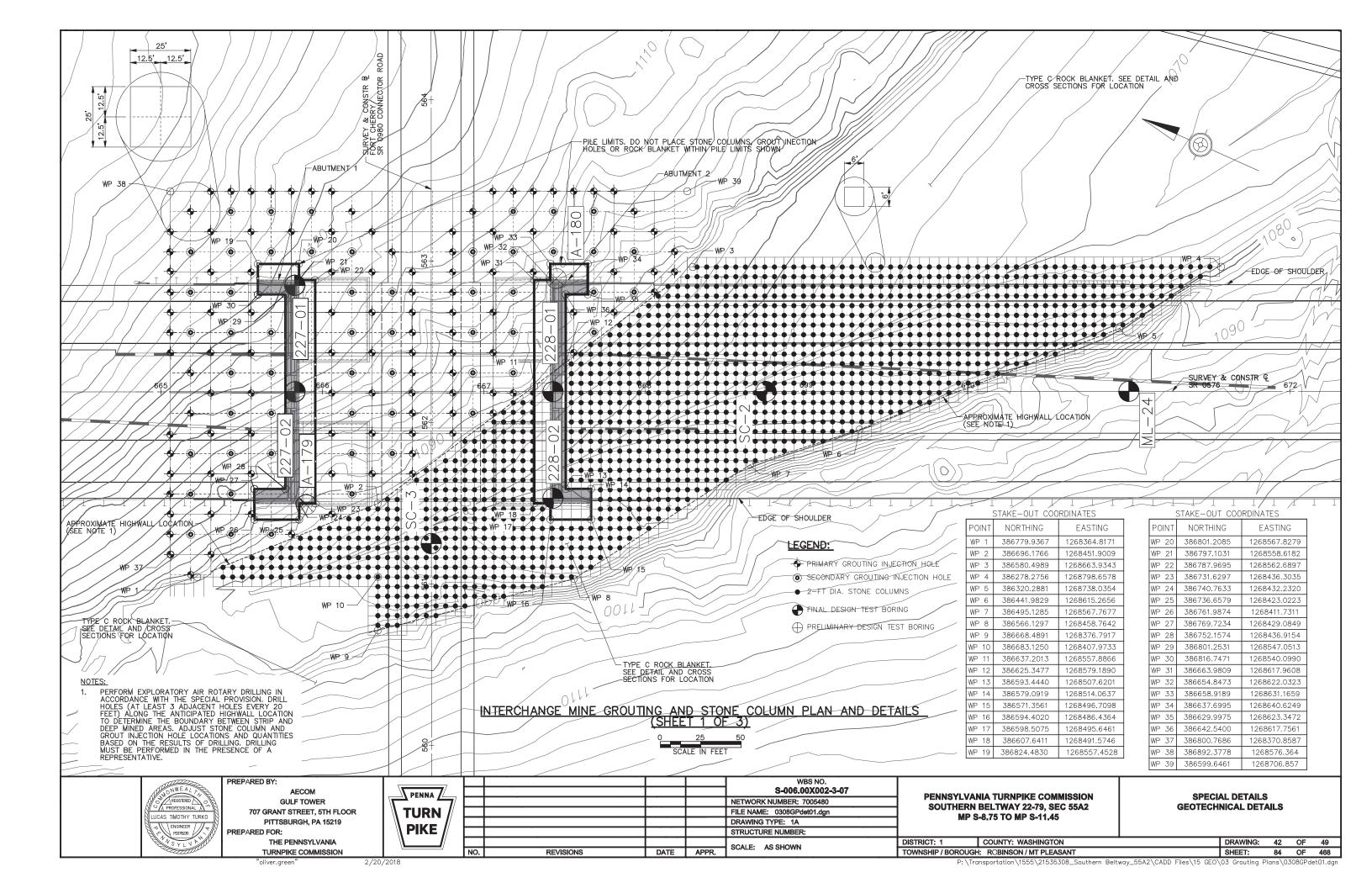




Photo 1 – Aerial View of Completed Interchange with Morganza Road



Photo 2 - Beam Erection

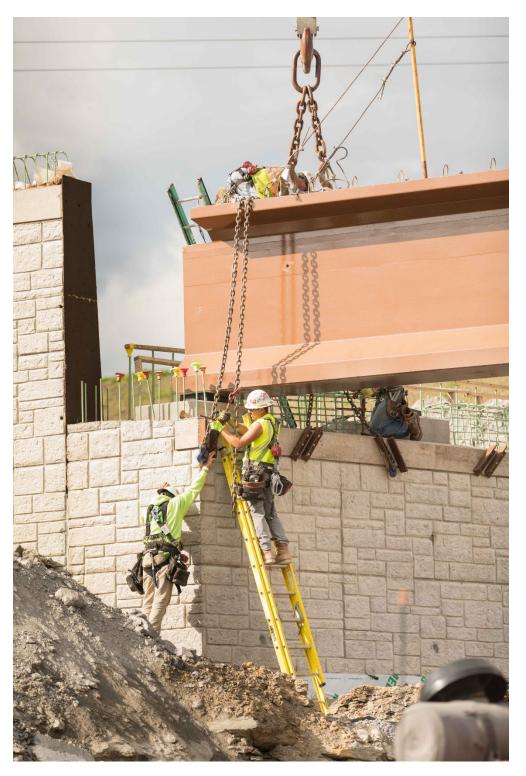


Photo 3 – Setting Bridge Beams



Photo 4 – Gas Well Plugging



Photo 5 – 55A-1 Pickle Sludge Excavation



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June 23, 2022 News Release

Pennsylvania Turnpike Announces All Connections with I-79 and Southern Beltway to Open June 24

Pennsylvania Turnpike Announces All Connections with I-79 and Southern Beltway to Open June 24

More traffic expected on Southern Beltway with full interchange open at I-79.

The Pennsylvania Turnpike Commission (PTC) is pleased to announce that the full interchange connecting I-79 and the Southern Beltway (PA Turnpike 576) will be open on June 24. Last fall drivers were able to travel the Southern Beltway when it opened to traffic, but there were restrictions at I-79.

The 19-mile Southern Beltway links I-376 near the Pittsburgh International Airport in Allegheny County to I-79 at the Allegheny-Washington County line, where the full interchange will be open to traffic.

"Since opening in October, the PA Turnpike Commission has seen nearly 8,000 vehicles a day on sections of the Southern Beltway," stated PA Turnpike CEO Mark Compton. "With all connections at I-79 open, that usage will inevitably increase, which will meet and probably exceed our expectations of 10,000 vehicles on average per day."

This \$800 million project is significant for motorists in the corridor because it will help ease congestion on arteries like the Parkway West, I-79, and State Route 50. Additionally, it will provide emergency-response vehicles, businesses, and the public with a safer alternative to rural, two-lane roads.

"This was a huge undertaking that couldn't be accomplished without a large team of dedicated professionals who made this highway a reality," stated Brad Heigel, Pa Turnpike Chief Engineer. "We'd like to thank all designers, consultants and contractors who had a hand in constructing the Southern Beltway."

The Southern Beltway was built for seamless nonstop travel by utilizing an all-electronic tolling system. Three toll points span the 19-mile stretch and electronically charge a toll as drivers pass under them.

Customers with E-ZPass pay as usual with their account being charged the toll. Customers without E-ZPass are charged via the Toll By Plate method in which cameras take a photo of the vehicle's license plate and the registered owner gets an invoice in the mail.

"We now have a new payment method in place that allows customers receiving a Toll By Plate invoice the option to pay with cash instead of mailing in the payment," stated Compton. "When they receive the invoice in the mail, there are instructions included as to how to pay with cash by creating a pay slip to take to participating retailers that accept these cash payments."

For a full list of participating retailers and more information on how to use this cash payment method to pay PTC invoices and even add funds to existing E-ZPass accounts, click here: pay-a-bill.

Additional information about the Southern Beltway Project can be found at: <u>Southern Beltway (paturnpike.com)</u>.

To report an accident or other emergency on the PA Turnpike, dial *11 via mobile phone. To learn more about PA Turnpike conditions, use one of these resources:

ON THE TURNPIKE

- <u>511PA Smartphone App</u>: real-time, hands-free PA traffic advisories
- Digital Message Signs: more than 100 boards along the Turnpike

ON THE WEB

- 511/<u>511pa.com</u>: live, interactive map
- Twitter: @PATurnpikeAlert

BY PHONE

- 511: dial from any PA roadway for local travel information
- Pennsylvania Turnpike Customer Assistance Center: 877-736-6727, Monday through Friday, 7 a.m. to 5 p.m.

###

Media contact: Renee Vid Colborn, 724-755-5260

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Statement of Commitment that one Representative will attend Awards Presentation.

January 8, 2024

Dear Selection Committee:

One representative from our project team will attend the Awards Presentation.

Sincerely,

H. Daniel Cessna, PE President - Engineering



CDR Maguire, Inc. 178 Thorn Hill Road Suite 200 Warrendale, PA 15086 cdr-eng.com