THE COLLAPSE OF I-95

Robert Buckley, President

Buckley & Company, Inc.

Archie Filshill, CEO

AERO Aggregates of North America

Din Abazi, P.E.

PennDOT, District 6-0

Executive

6/11/23 SUNDAY

0619 Hrs - PSP Troop K calls in reporting truck fire along I-95 near Cottman Avenue.

District Bridge Engineer notified; Bridge Inspection Team mobilized.

Dynamic Message signs activated.

Global detour initiated with NJDOT & DelDOT

PSP on scene; shut down NB & eventually SB.

PennDOT Phila County Maintenance followed up - subsequently closed both directions & ramps with equipment.

BRIDGE DATA

Year Built: 2016
Structure Type:
Welded Steel I-Beams, 16 Beams total
Span(s): 1
Length: 104
Width: 149’
Skew: 57^{o}
Vertical Clearance: 14’-7”

Welded Plate Girders:

1” thick x 1’-2” top flange,

43” deep x ½” thick web,

2” thick x 1’-4” bottom flange

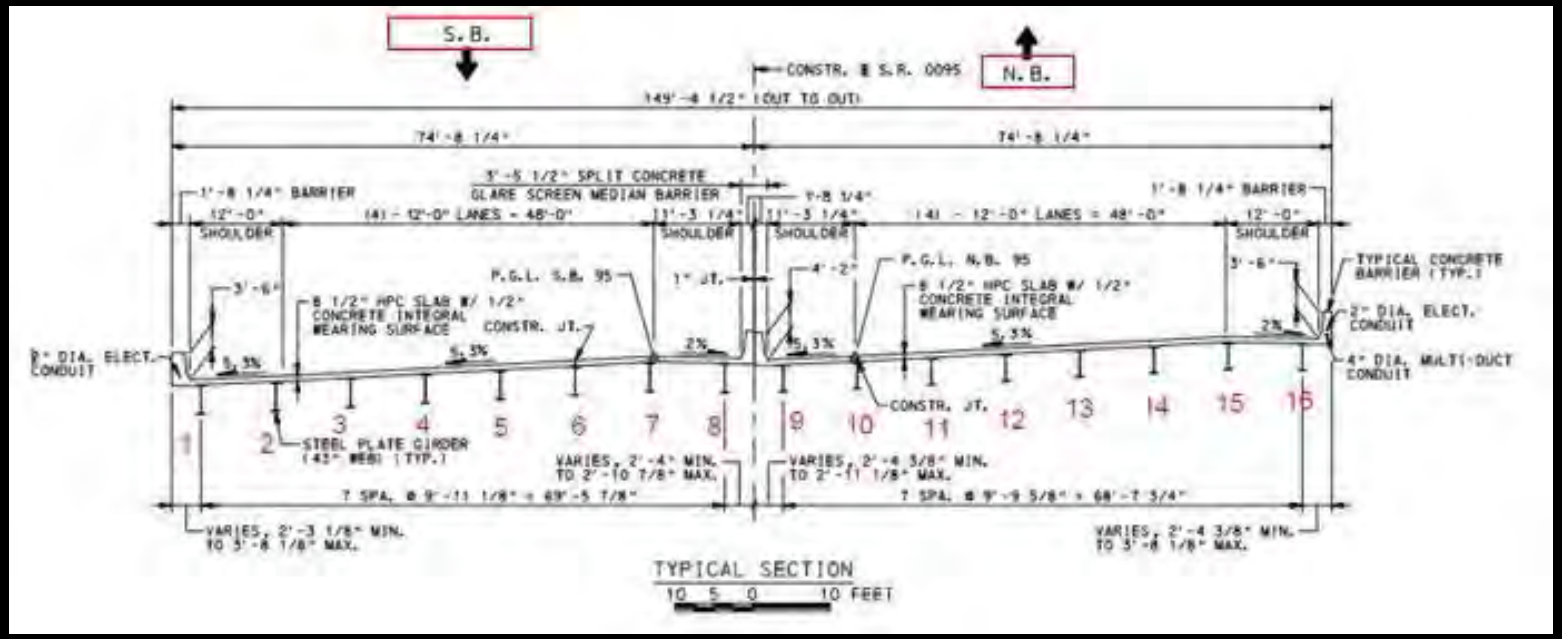
Bearings:

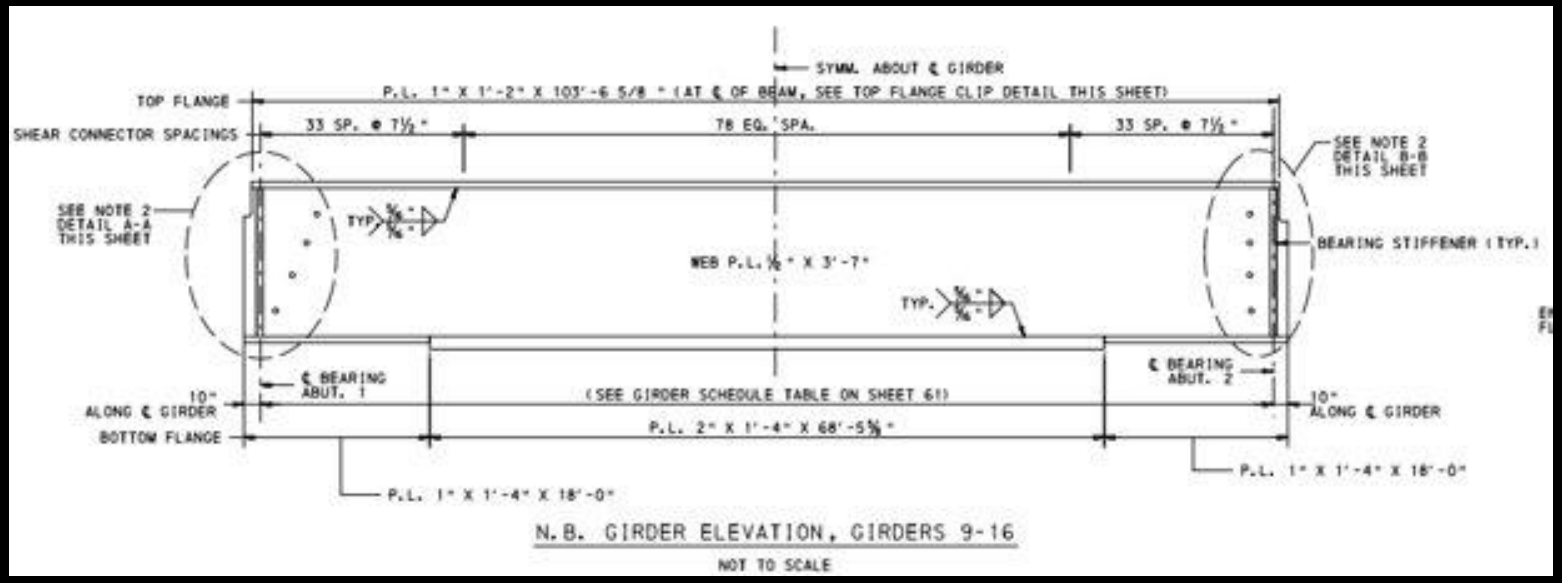
Laminated Elastomeric Bearing Pads

Joints:

Strip Seal 3” Movement Classification

On Tyle 3 Approach Slab





BRIDGE DAMAGE ASSESSMENT

Fire collapsed the NB span.

Question became what was the serviceability of SB span of the structure?

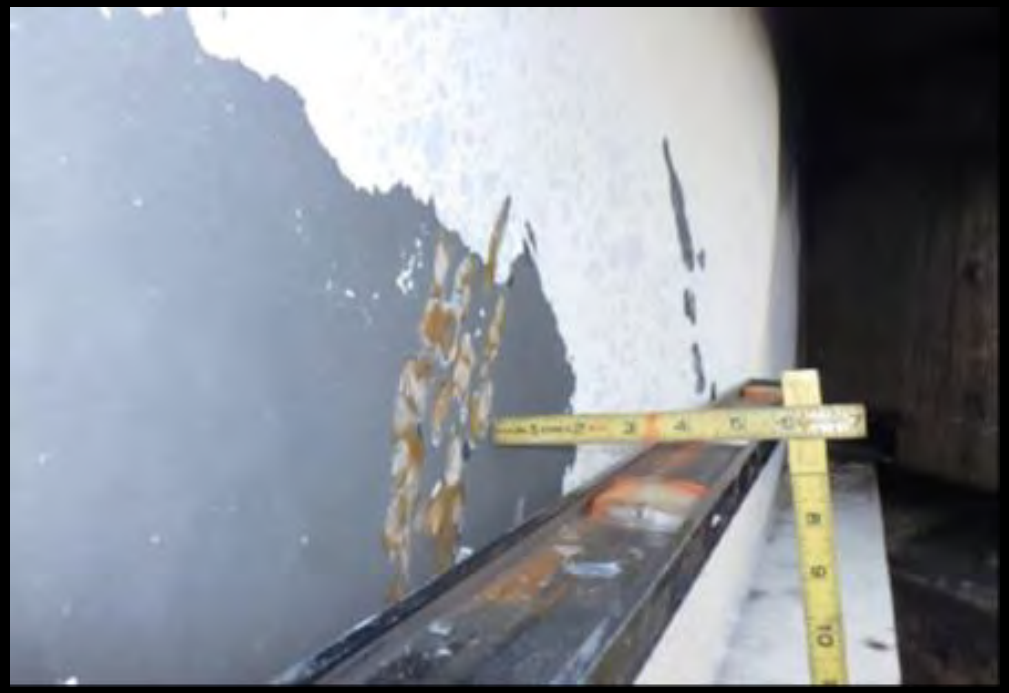
Underside exhibited severe damage from the heat of the fire, paint loss and soot staining to all superstructure and substructure components. **Heavy soot staining did not permit detailed inspection of connections for the presence of displacement-induced cracking.** Inspectors were called out to perform a bridge inspection using aerial equipment.

BRIDGE DAMAGE ASSESSMENT

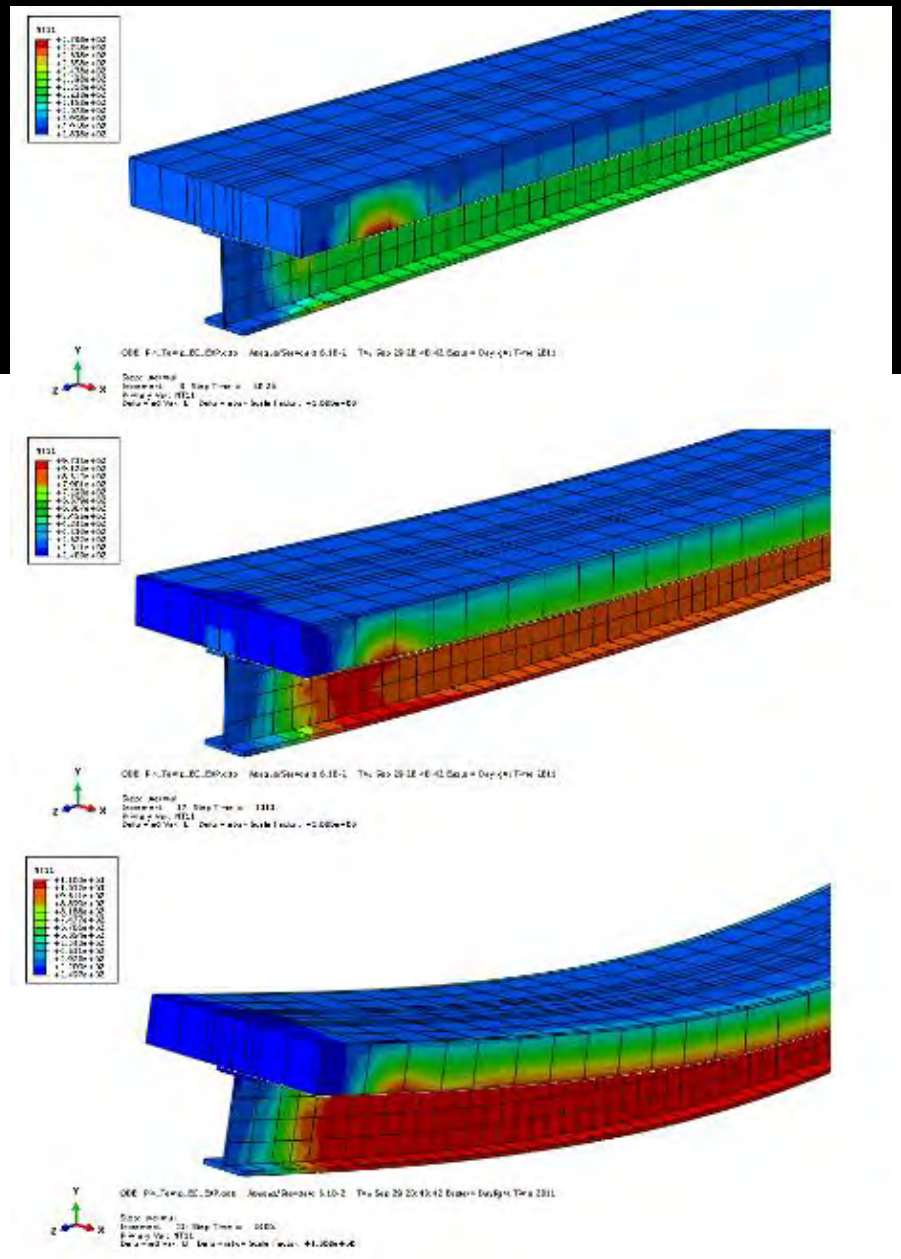
Question became what was the serviceability of SB portion (beams 1 to 8) of the structure?

Each girder suffered distortion throughout. The worst being beam 8 which was closest to the fuel source. East end of beam 8 bottom flange exhibited lateral and vertical distortion.

All beams exhibited web distortion. Beam 8 was largest at 2 ½" at end and 2" at mid-span. Beam 1 had ½" at end and ½" at mid-span.



STEEL REACTION TO TEMPERATURES



Steel is unchanged+/- up to 600 F

Retains ½ its Strength up to 1,100 F

Losses All its Strength 2,200-2,700 F

Heat Strengthening Limited to 1,200 F

Heat Cambering between 1,000 F and 1,150 F
Don't exceed 1,200 F

>1,300 F Starts Changing Steel Properties and Grain Structure.

SOUTHEASTERN REGIONAL TRAFFIC MANAGEMENT CENTER – DISTRICT 6-0

INCIDENT COMMAND CENTER (ICC)

0900 hrs - ICC Activated and staffed 24/7.

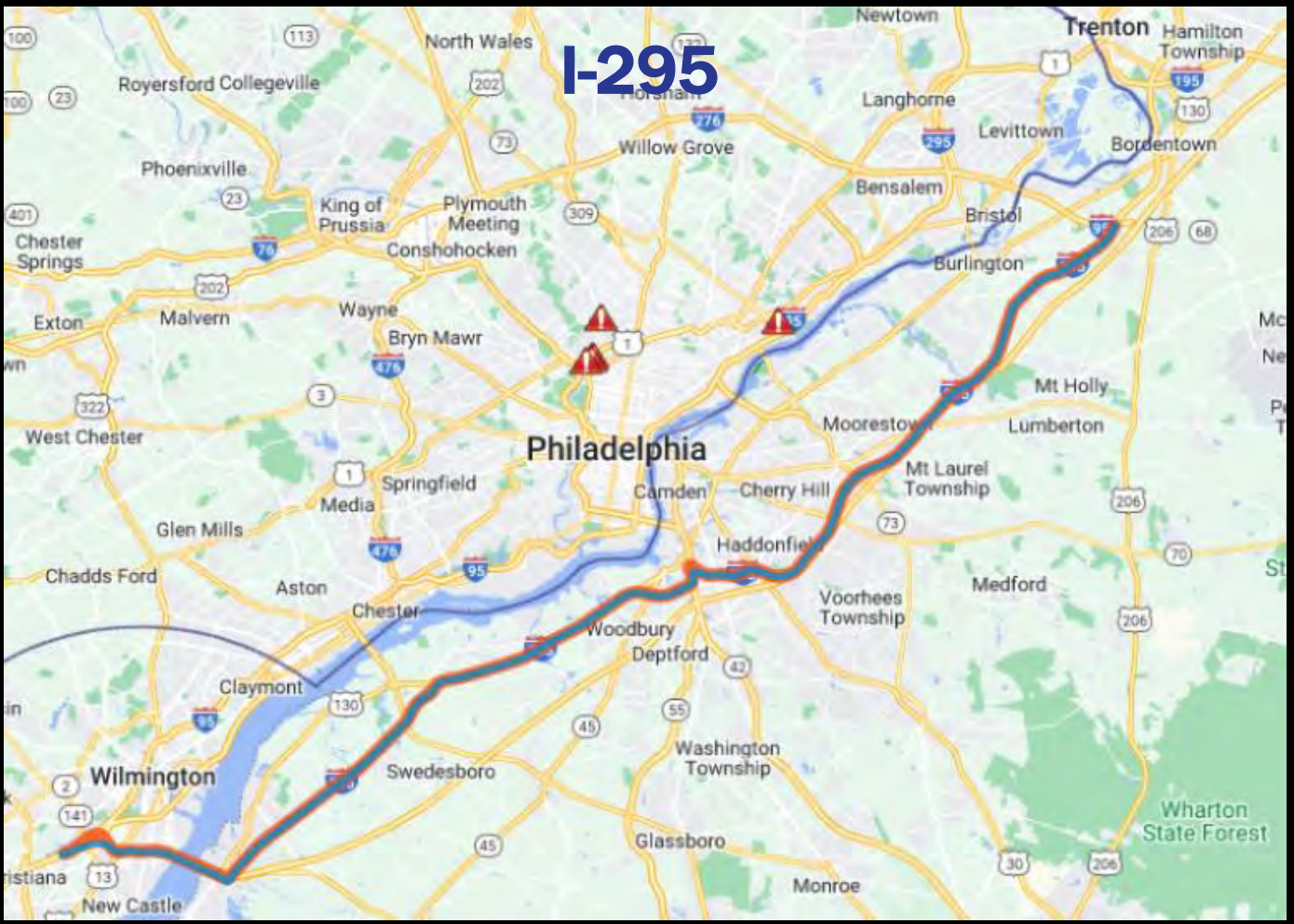
District Leadership, Traffic Engineering and Maintenance support staff, and Press Office.

Philadelphia OEM (Office of Emergency Management) held 1-2 daily coordination calls with PennDOT (ICC, Construction Field Staff), PA State Police, City of Phila (Police & Streets Dept), PEMA, SEPTA, etc.

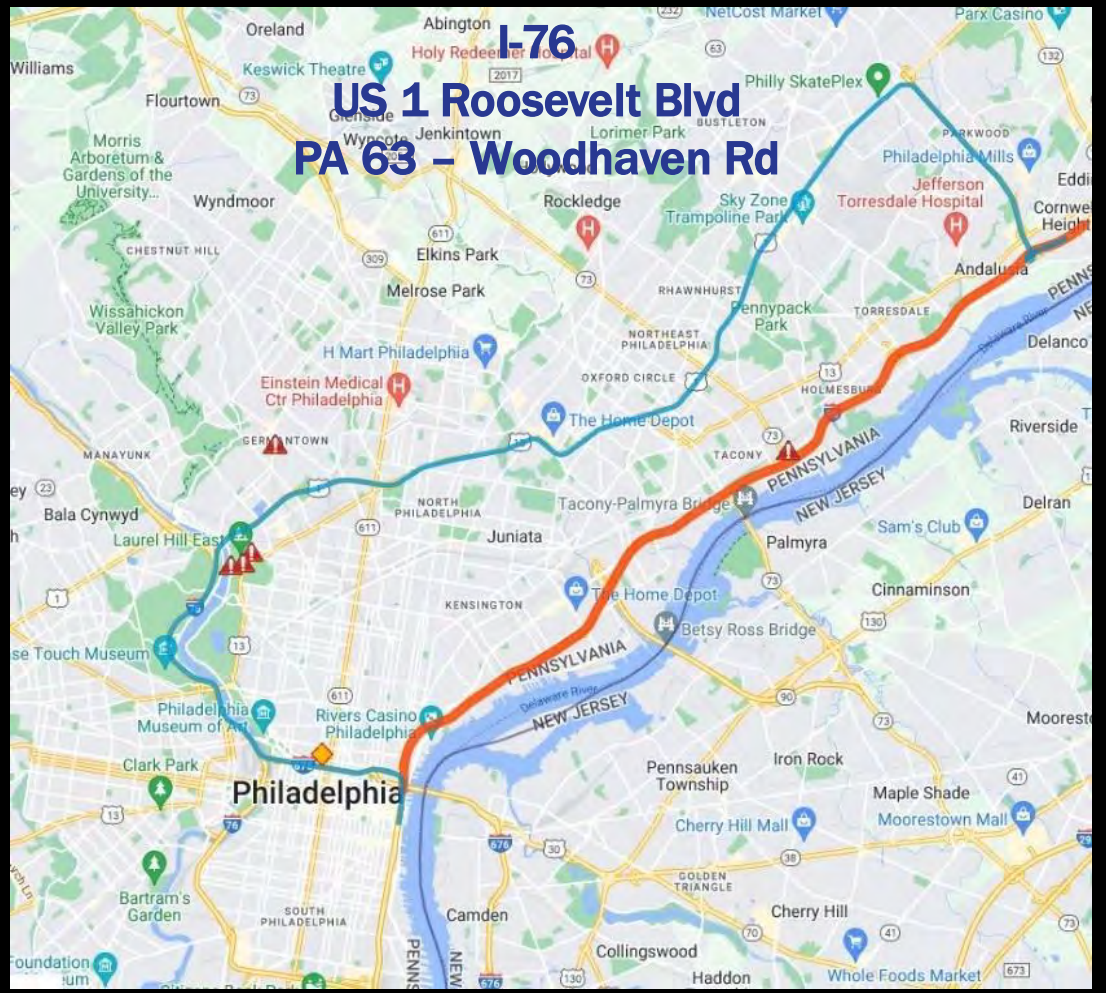
Our full CCTV network was accessible to ICC to inform decisions; supplemented with some portable CCTV at key intersections.

Traffic control modifications were coordinated continuously with the City from the ICC for the duration of the incident - which was critical towards improving conditions.

GLOBAL DETOURS



Multi-State Detour



PennDOT Regional Detour

CITY OF PHILADELPHIA – LOCAL DETOURS

SEPTA enhanced their service.

Freeway Service Patrols added to Roosevelt Blvd

50+ PPD officers-controlled intersection traffic 24/7 and closed most neighborhood cut-throughs.

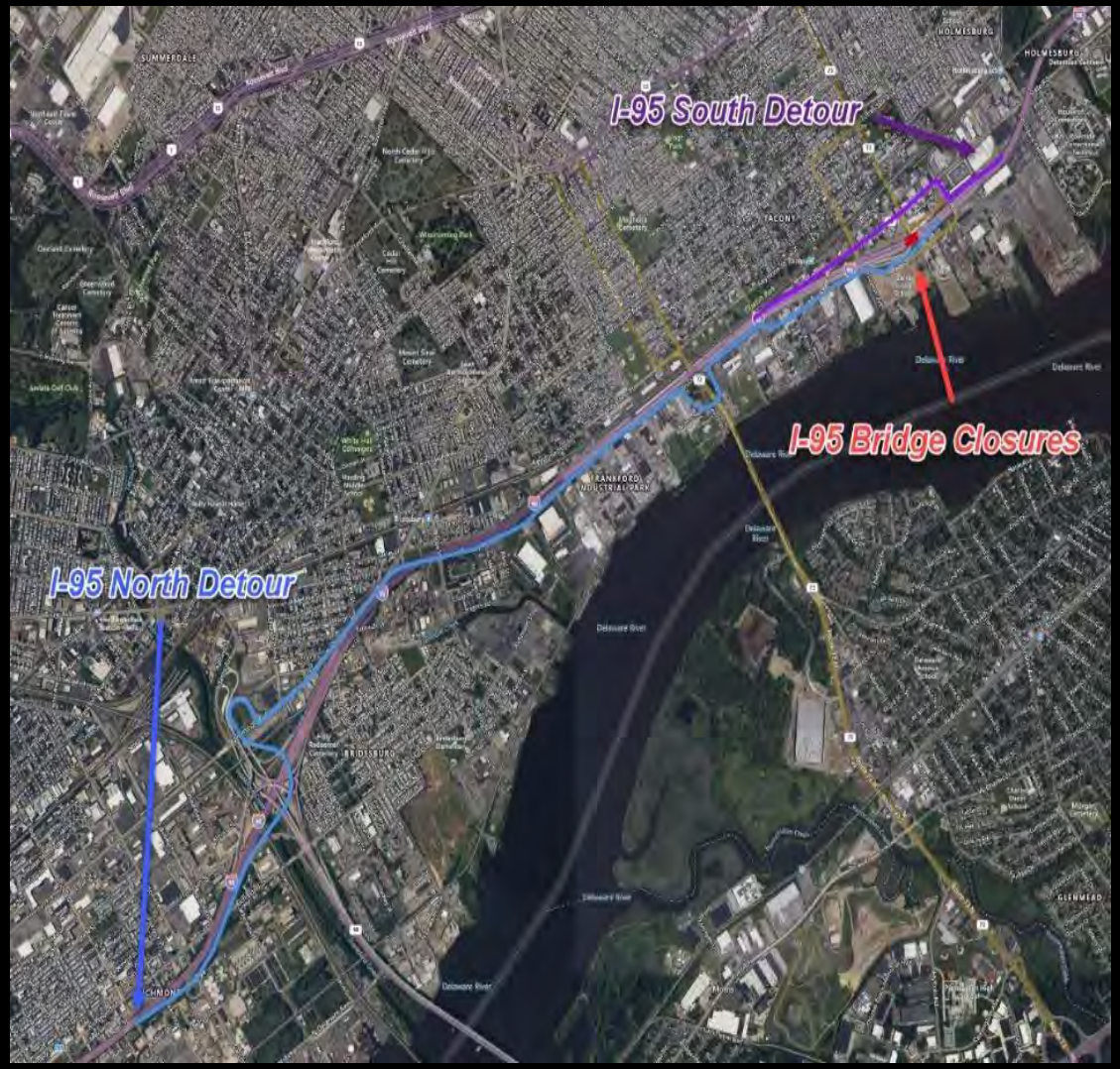
Goal was to carry 2 lanes through the entire length of the NB & SB local detours.

Roadways were converted from 2 way (single lane) to 1 way (2 lanes) in spots.

Signal timing mods were coordinated with the City

Various pavement marking improvements made to improve traffic flow.

Travel times were monitored using INRIX crowd-sourced data; posted on PA511.



BUCKLEY & COMPANY'S EMERGENCY EXPERIENCE

Tire Fire- 1996 Port Richmond I-95

- The fire was caused by illegal dumping of tires underneath I-95 in the Port Richmond section of Philadelphia
- Destroyed 8 lanes of traffic
- Buckley repaired the section of I-95 in record time and was rewarded for completing the project in record time

Shut Down by Tire

Highway arsonists

By Jeff Gammage, Larry Fish and Lea Sitton
INQUIRER STAFF WRITERS

A monstrous fire in a heap of di carded tires damaged a span of I terstate 95 yesterday, spawning g ant traffic snarls and shutting two-mile stretch of one of the gion's busiest arteries for at lea five days.

The eight-alarm blaze in a ti dump in the city's Port Richmon section burned the bottom of I-95 if it were a pot over an open flam snapping support wires, charrin concrete and sending a column sooty smoke south along the Del ware River.

The intense heat buckled alum num guardrails on the elevat highway. Basketball-sized chunks concrete fell away when enginee tapped the road with hammers y terday.

Fire investigators said the bla was deliberately set. They said th had no suspects or motive.

State highway officials, rushing arrange emergency repairs, said t highway would stay closed betwe Bridge Street and Girard Aven into next week. Early hopes for

The Philadelphia Inquirer / MICHAEL MALLY

the air near an evacuated stretch of Interstate 95 about four hours after the eight-alarm fire in Port Richmond he pile of burning tires extended under the elevated highway. Crews began repairs last night.

Expansion joint

Concrete bea

BUCKLEY & COMPANY'S EMERGENCY EXPERIENCE

I-95 near Kerlin Street exit in Chester, PA- June 22, 1998

- Involved a gas tanker flipping into the adjacent lane
- The explosion caused the section of I-95 (9 beams) to sag but not collapse
- Buckley originally built the bridge in the 1960s and was hired to conduct a complete rebuild after the fire
- Buckley completed the job in record time

BUCKLEY & COMPANY'S EMERGENCY EXPERIENCE

9th & Cecil B. Moore Ave.

- Bridge collapse- the line that feeds the Gallery (mall in downtown Philadelphia) needed to be open before Christmas for the merchants for the holiday season

BUCKLEY & COMPANY'S EMERGENCY EXPERIENCE

Flood (I-676 & I-76)- September 2021

- Hurricane Ida (10-15 ft of water in a short period of time, closing Vine Street in Center City Philadelphia)
- 36 million gallons of water
- The pump station was under water, shorted out, temporary electric was installed, restoring submersible pumps, cleaning inlets (4 days)
- Needed to be open before Made in America concert

BUCKLEY & COMPANY'S EMERGENCY EXPERIENCE

Snow Removal Philadelphia Airport

- Buckley has been contracted at the Philadelphia Airport for the last 50+ years
- Also work performed under emergency conditions

Snow Removal of South Philadelphia

- Food distribution center
- Eastwick
- Stadiums
- Broad Street

MAJOR CONCERNS

1. Rebuild I-95 as quickly, efficiently, and safely as possible

2. Beneath the Cottman Ave off ramp there are multiple water mains, sewers and pipes. We were unsure of the condition of the existing utilities, what compressive loads could we place on top of the utilities without an ultimate failure & collapse of the roadway under I-95.

3. 8,500 gallons of gasoline was leaking into the storm sewers which drain into the Delaware River. Typically, this would not be a problem, however the Baxter Water Treatment Plant gets their water from the Delaware River. There could have been potential to contaminate all drinking water in Northeast Philadelphia.

MAJOR CONCERNS

4. Unsure of the condition of the utilities underneath Cottman Ave which consisted of the box culvert, plastic drainage pipes, and terracotta lines

5. The Bridge is not square and parallel; it has a 57-degree skew and designed on a radius. We had to saw cut and remove the existing parapet barrier and roadway to make it square and parallel

6. We did not know the extent of the damage on the abutments. We took test cores the entire time in an effort to see how far back the damage was from the face of the abutment and the beam seats.

7. SEPTA re-route busses and an alternative schedule for trains to handle additional volume, all handled by Leslie Richards

THE METHOD TO TEMPORARILY REBUILD I-95

Our Solution:

- Now we must produce an urgent plan, it must be accurate, safe, and well-thought out
- In addition, we had to find a way to detour 160,000 cars
  - We called in Philadelphia Emergency Management, State Police, Jerry McVay, Local Highway Police, Greg Realey and the Fire Department was already on the scene, led by Tony Hudgins
- Also, the DEP was notified about the potential for water contamination
  - Coast Guard installed a boom containing gasoline on the Delaware River to avoid water contamination at the Baxter Water Treatment Plant, which feeds all of Northeast Philadelphia with drinking water

THE METHOD TO TEMPORARILY REBUILD I-95

Our Solution:

- Backfill the center part of I-95 to create a temporary roadway (3 lanes northbound and 3 lanes southbound)
- Use Ultra Lightweight Aggregate from Aero Aggregates to avoid overstressing the pipes located on the off ramp, the condition of the utilities were unknown
  - The aggregate was calculated to be approximately 650 LBS/FT, as determined by Joe Sirignano of Benesch Engineering
  - Glass aggregate weighs approximately 20 LBS/CF vs. Common fill which would weight 120-130 LBS/CF, therefore reducing the stress on the utilities, the effective load approximately 650 LBS/SF

THE METHOD OF BACKFILLING

Temporary Retaining Wall System

- 500 Wire baskets at ground level, running parallel with I-95
- 2000 SY of Huesker Geogrid
- 500 SY of Tri-Axle fabric (heavy duty) (2.5 miles stretched out)
- Use (2) scoping tele belts & stone slingers to place stone with 4 CY & 8 CY Loaders
- Place 18 inches of ultra lightweight glass aggregate at the bottom, close to the top we moved to 9 inches of ultra lightweight glass aggregate
- Compact stone after 18 inches (9 inches the last 4 levels)
- Placed geogrid between each lift for reinforcement and Class 4 Fabric

THE PLAN

- Presented to Mike Carroll & Harold Windisch to clarify any questions he had regarding the rebuilding of the busiest highway in our area
- Illustrates the basic idea of backfilling the center section of I-95
- Drawing is prepared not to scale (NTS)

6/11/23 SUNDAY

- 8:00 AM detours were announced to re-route drivers between exits 30 and 32 on I-95
- 9:00 AM A meeting was held with PennDOT Officials Din Abazi, Harold Windisch, and Lou Belmont with Rob Buckley, and Pete Abbonizio
- An agreement was achieved that Abbonizio was complete the demo and Buckley would temporarily rebuild I-95
- Due to the close proximity of Abbonizio equipment, Abbonizio was directed to proceed with demolition
- Philadelphia Fire Department was still putting the fire out at this time under the direction of Anthony Hudgins
- 10:00 AM Equipment was in position immediately once the site was declared safe by the NTSB (National Transportation Safety Board)
- 12:00 PM Demolition began

6/12/23 MONDAY

- 12:00 PM Governor Shapiro signed a Proclamation of Disaster Emergency
- 6:45 PM the Shapiro Administration, PennDOT & City Officials provided an update
- The Governor stated that the temporary rebuild would take approximately **3 MONTHS** to complete

6/13/23 TUESDAY

- 11:00 AM US Transportation Secretary Pete Buttigieg, Administrator of the Federal Highway Administration, Shailen Bhatt & PennDOT Secretary Mike Carroll traveled to the site, assessed the damage, and never left until I-95 reopened

- Demolition was on-going

6/14/23 WEDNESDAY

- 11:00 AM Governor Shapiro, PennDOT Secretary, Mike Carroll & Mayor, Jim Kenny, hired Buckley & Company to complete the project
- An excellent recommendation from Ryan Boyer, President of District Council

6/15/23 THURSDAY

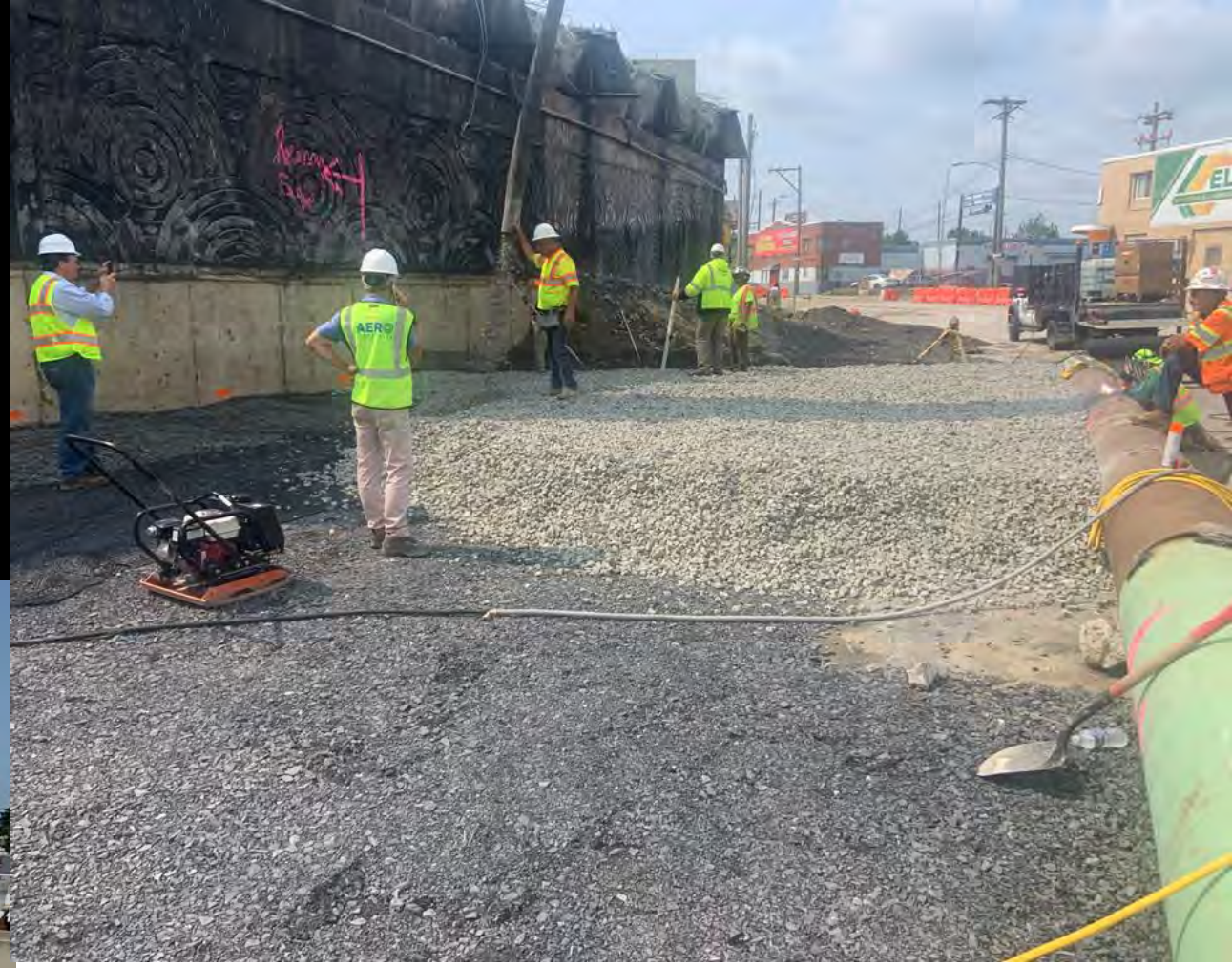
- 8:30 AM the I-95 Livestream was announced
- Buckley began their advertising campaign

6/15/23 THURSDAY

- 8,000 CY (36,000 full size wheelbarrows & a savings of **7 million beer bottles** which were diverted from a landfill) Of Ultra Lightweight Aggregate started to be delivered and stockpiled
- Aero Aggregates supervised the placement of material
  - 100% curbside recycled glass powder mixed with a foaming agent
  - The mixed powder is sent through a kiln and softened
  - The foaming agent creates bubbles within the softened glass and creates foamed glass aggregates
  - Approximately 85% lighter than traditional aggregates

6/15/23 THURSDAY

- FGA Stockpiled on I-95
- Welded wire temporary MSE wall
- FGA placed in 18” lifts to align with geogrid reinforcement



Several Types of Foam Glass Aggregates

Open Cell

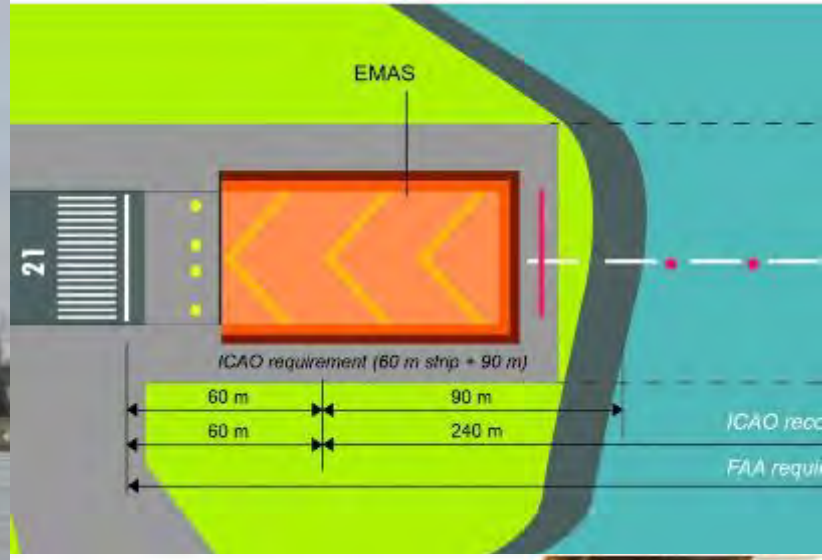
- Horticulture and Hydroponics
- Green EMAS Systems

Closed Cell

- Wet Process
- Dry Process

Open Cell

- Absorbs and retains water
- Provides moisture and oxygen at the root zone
- Green Roof applications
- Not suitable for highway applications



Photos: Runway Safe

Open Cell
Engineered Material Arresting Systems – Green (EMAS)

Closed-Cell

Dry Process

98% Recycled Glass Powder
2% Recycled Silicon Carbide

Wet Process

92% Recycled Glass Powder
8% Glycerin, Sodium Silicate, Water Mix

Compressive Strength

European Standard EN 1097-11, “Tests for mechanical and physical properties of aggregates, Part 11: Determination of compressibility and confined compressive strength of lightweight aggregates.” Modified.

Dry Process
Avg. 19,000 psf

Wet Process
Avg. 6,000 psf

Dry Process

- Compaction factor 20%
- 24” lift thickness
- Dozer and Excavator for compaction
- European standard for roadways

Wet Process

- Compaction factor 30%
- 12” lift thickness
- Plate tamper for compaction
- European standard for insulation

TYPE OF FOAM GLASS	Unit Weight	Average Compressive Strength
Open Cell - Horticulture	9-11 pcf	Not tested
Open Cell - EMAS	6.2 pcf	2,500 psf
Closed Cell Wet Process	9-11 pcf	6,000 psf
Closed Cell Dry Process	13.5-14.5 pcf	19,000 psf

Alternative Backfills for Highway Applications: State of the Practice

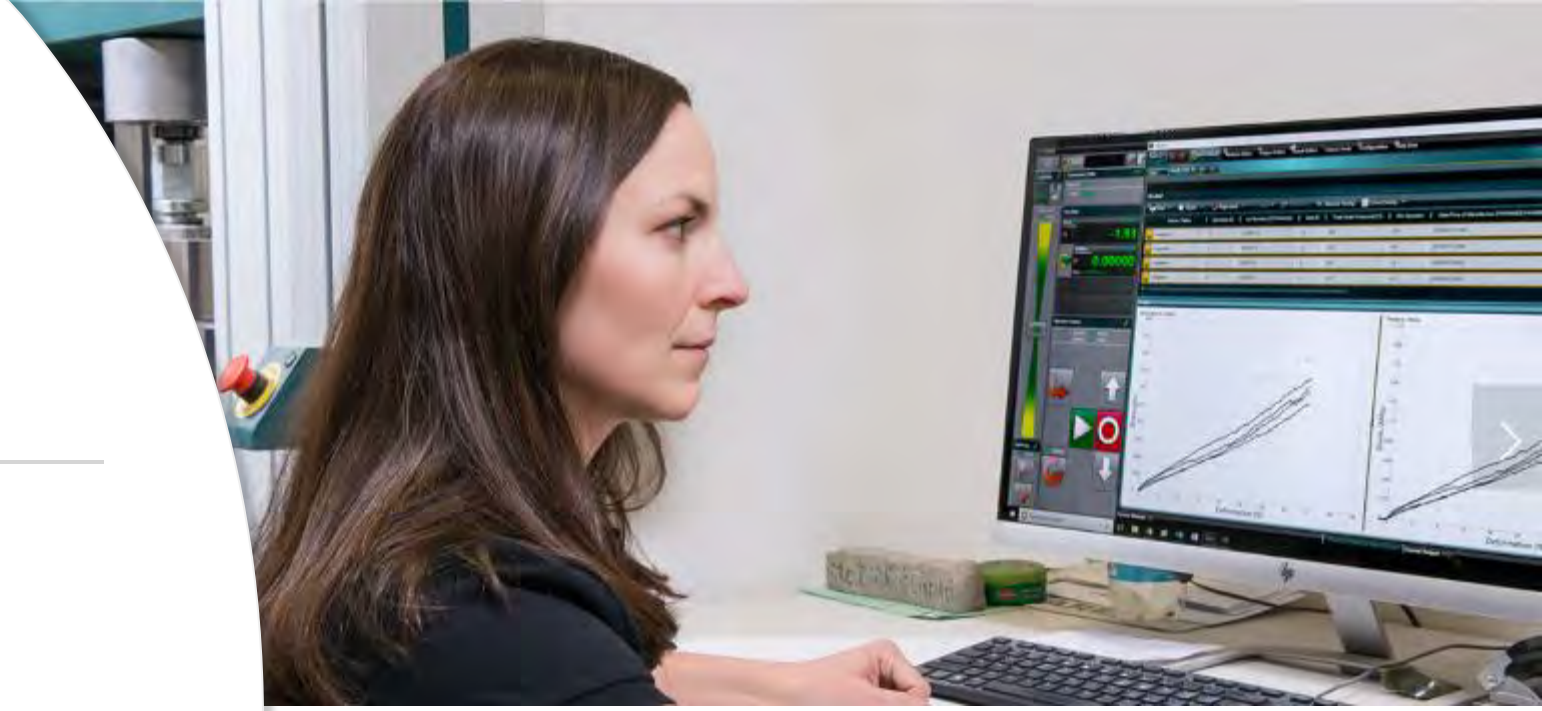
PUBLICATION NO. FHWA-HRT-23-110

JANUARY 2024

Chapter 4: FGA

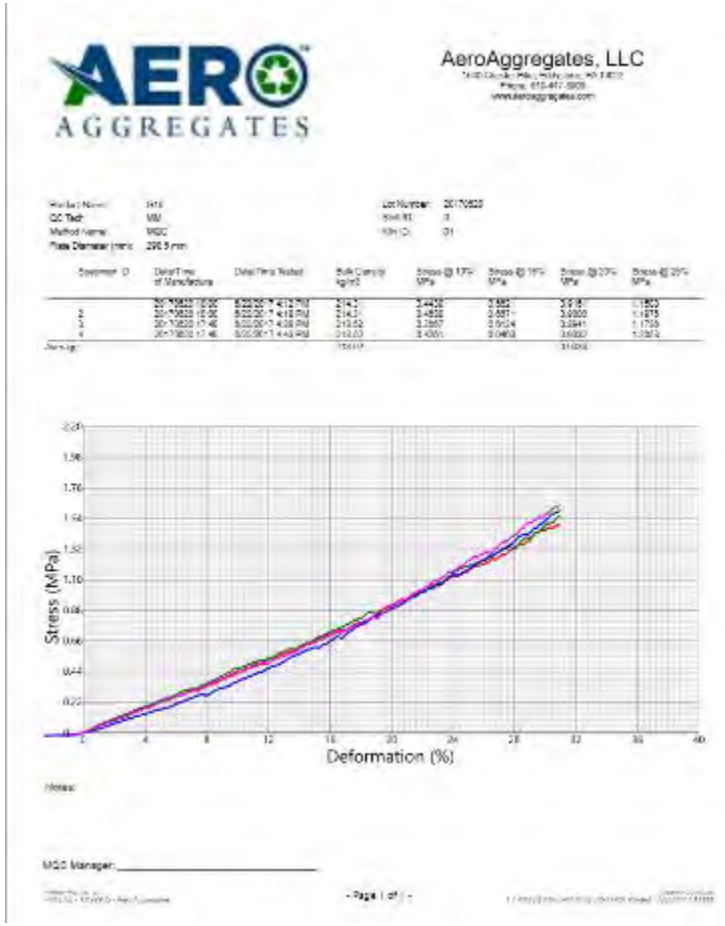
Quality Control Program

- In-house QC program
  - 4 tests per day
  - Every 200 CY is tested
- Third-party testing
- Field Testing

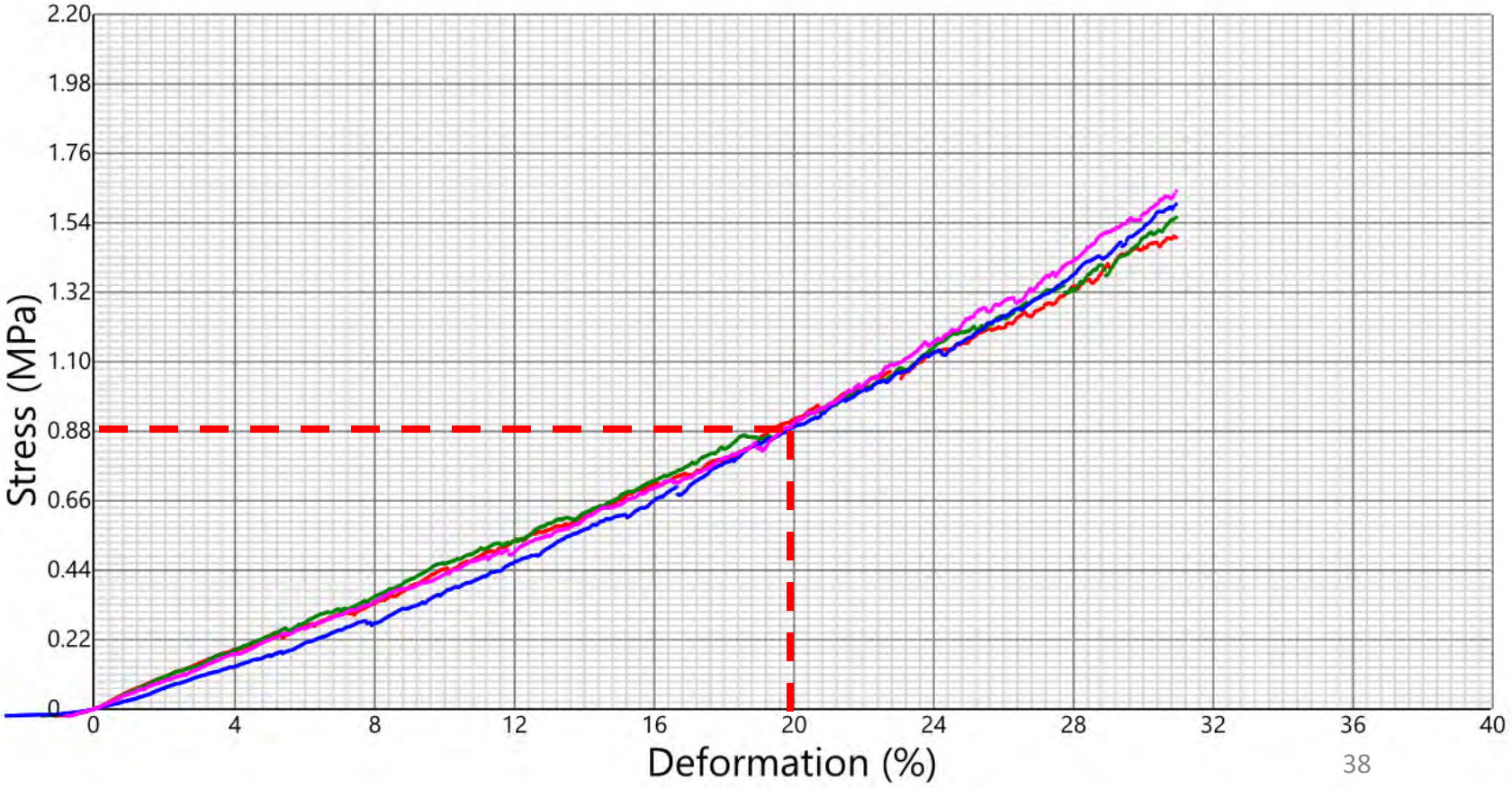


Quality Control Program – Test Report

- Density (Dry, bulk density < 240 kg/m^3 (15 pcf))
- Compression (Stress @ 20% Deformation > 0.71 Mpa (15,000 psf))


AERO AGGREGATES

AeroAggregates, LLC

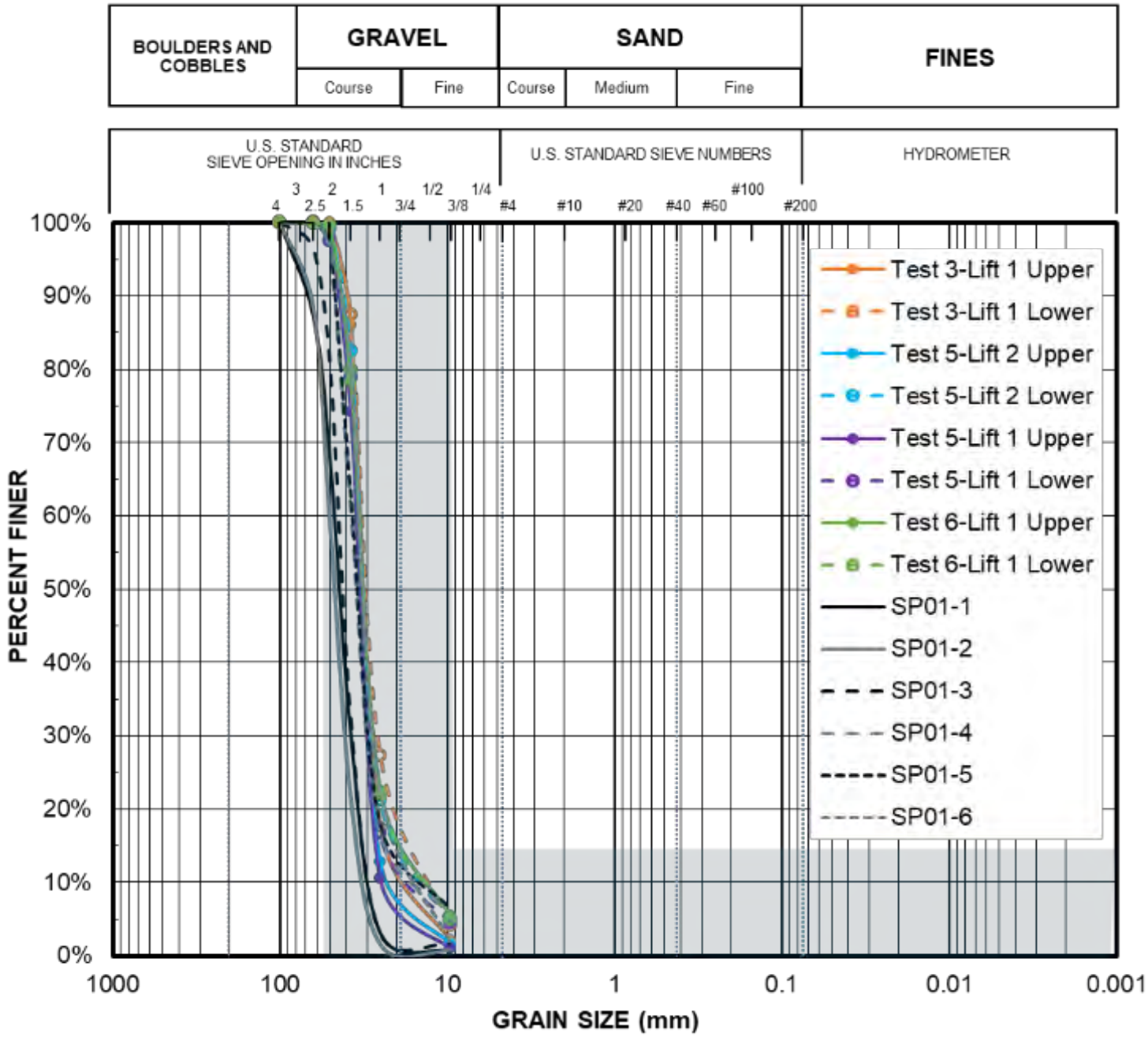


PennDOT Compaction Verification

Has post-installation, post-compaction gradations been performed to compare against source gradations?

TABLE A

Sieve Size	Total Percent Passing
4”	100
2 ½”	85-100
3/8”	0-15



6/15/23 THURSDAY

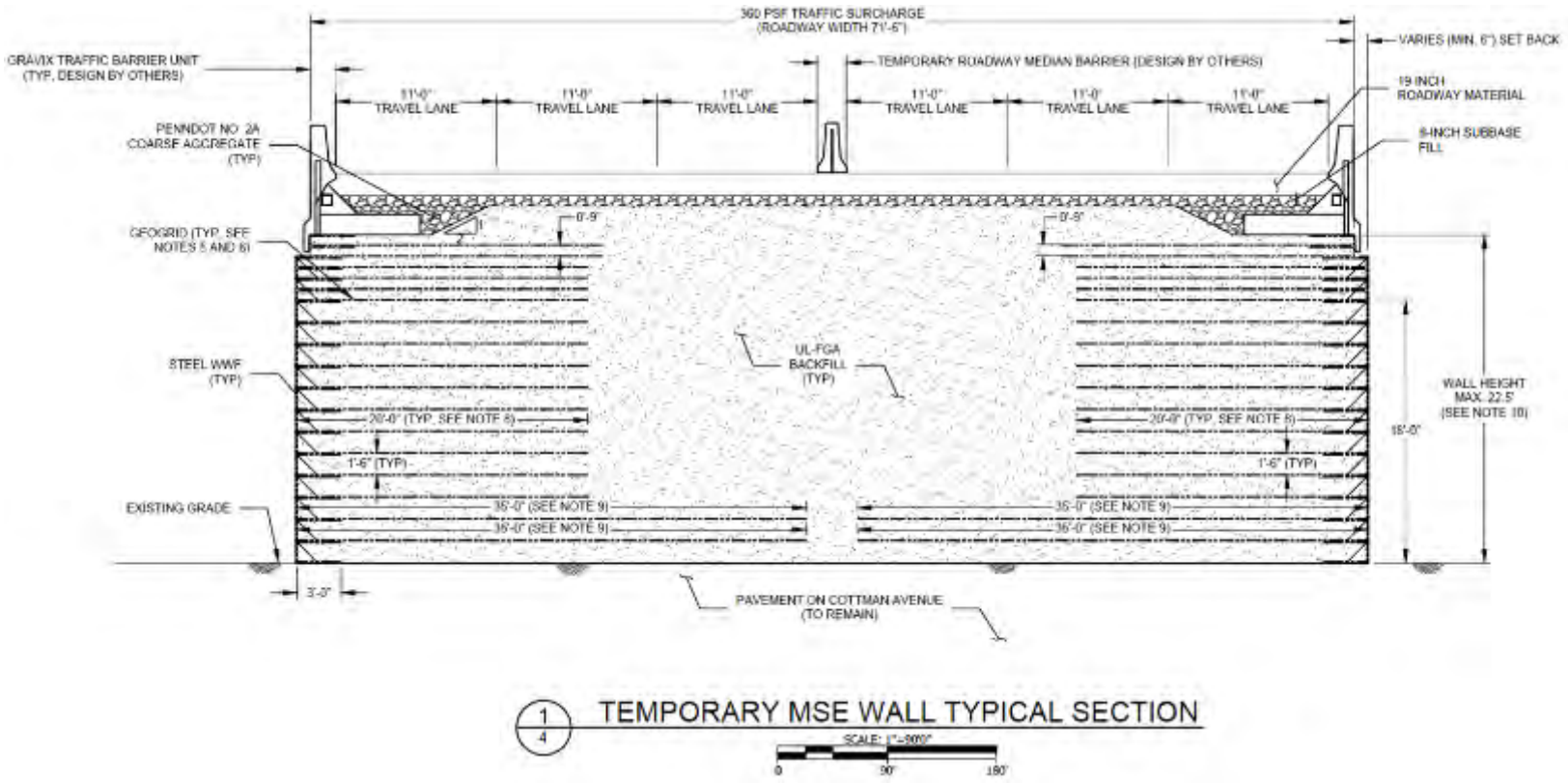
- This project holds the record for **the highest production** of placement of glass fill in an MSE structure in the history of Aero Aggregates by **over 30%**
- Lidar monitoring system was installed for monitoring settlement to prove the structure is stable

Near Vertical Face

6” setback for barrier

LiDAR Monitoring

Philadelphia, PA



1/4 TEMPORARY MSE WALL TYPICAL SECTION

SCALE: 1"=90'

0 90' 180'

Temporary MSE Wall Excavated

I-95 Philadelphia

Reused behind walls along Front Street

6/16/23 FRIDAY

- 8:00 AM While Demolition was on-going, Buckley began installing U-Drain and setting steel plates on the Cottman Ave off-ramp to protect the existing box culvert, sewers, and terracotta pipes
- Installed 30-inch utility pipe and underground drainage
- 12:00 PM demolition was completed, except for the Stub Walls and Back Walls, and small sections of beams that were incorporated in the back walls

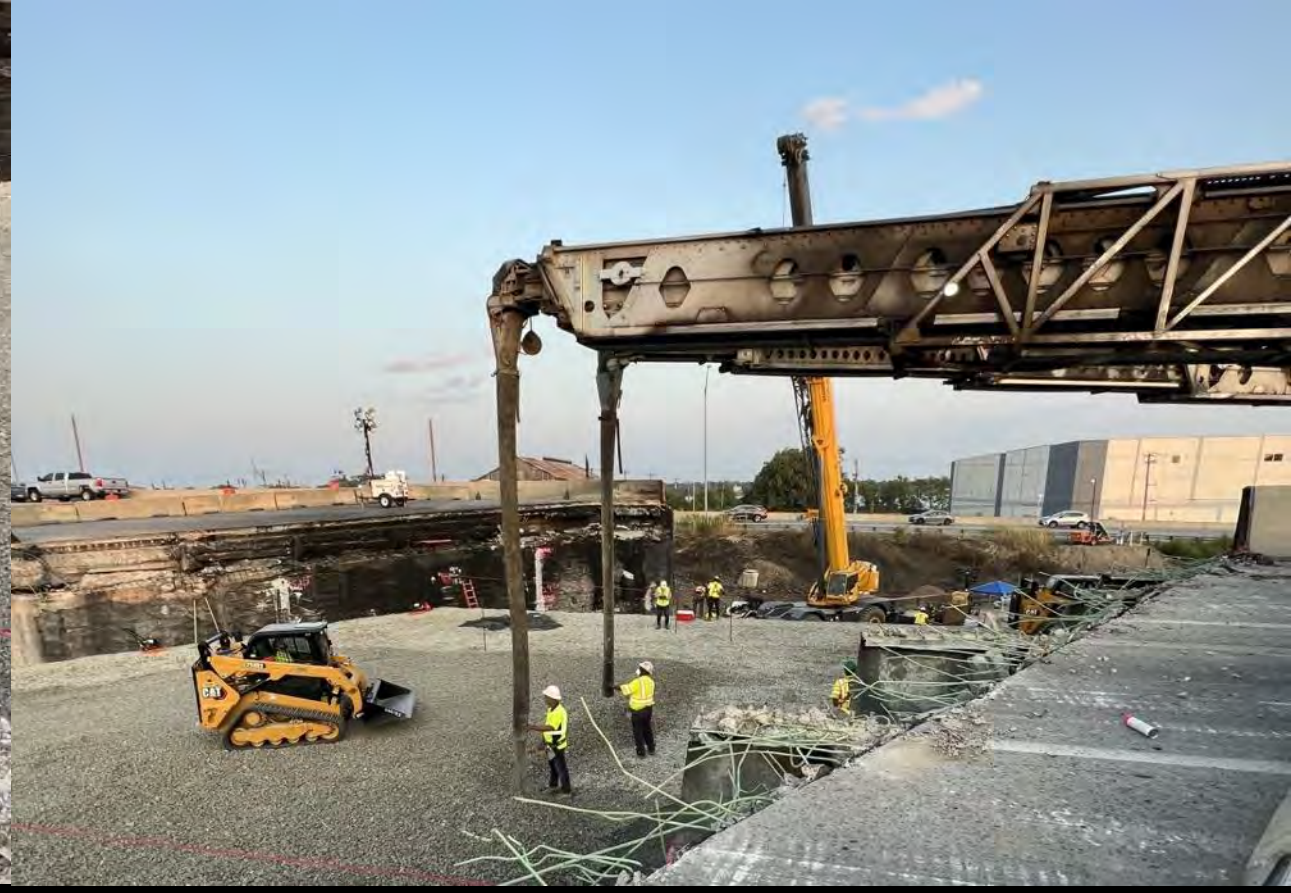
6/17/23 SATURDAY

President, Joe Biden, accompanied by Josh Shapiro conducted a fly over from a helicopter to assess the damage of I-95

At that time, Joe Biden stated **"This is the most important job in the U.S.A today."**

6/17/23 SATURDAY

- Started full production, everyone works together as an assembly line, practicing safe measures at all times
  - Cutting of the fabric
  - Installing the baskets
  - Placing and compacting the aggregate



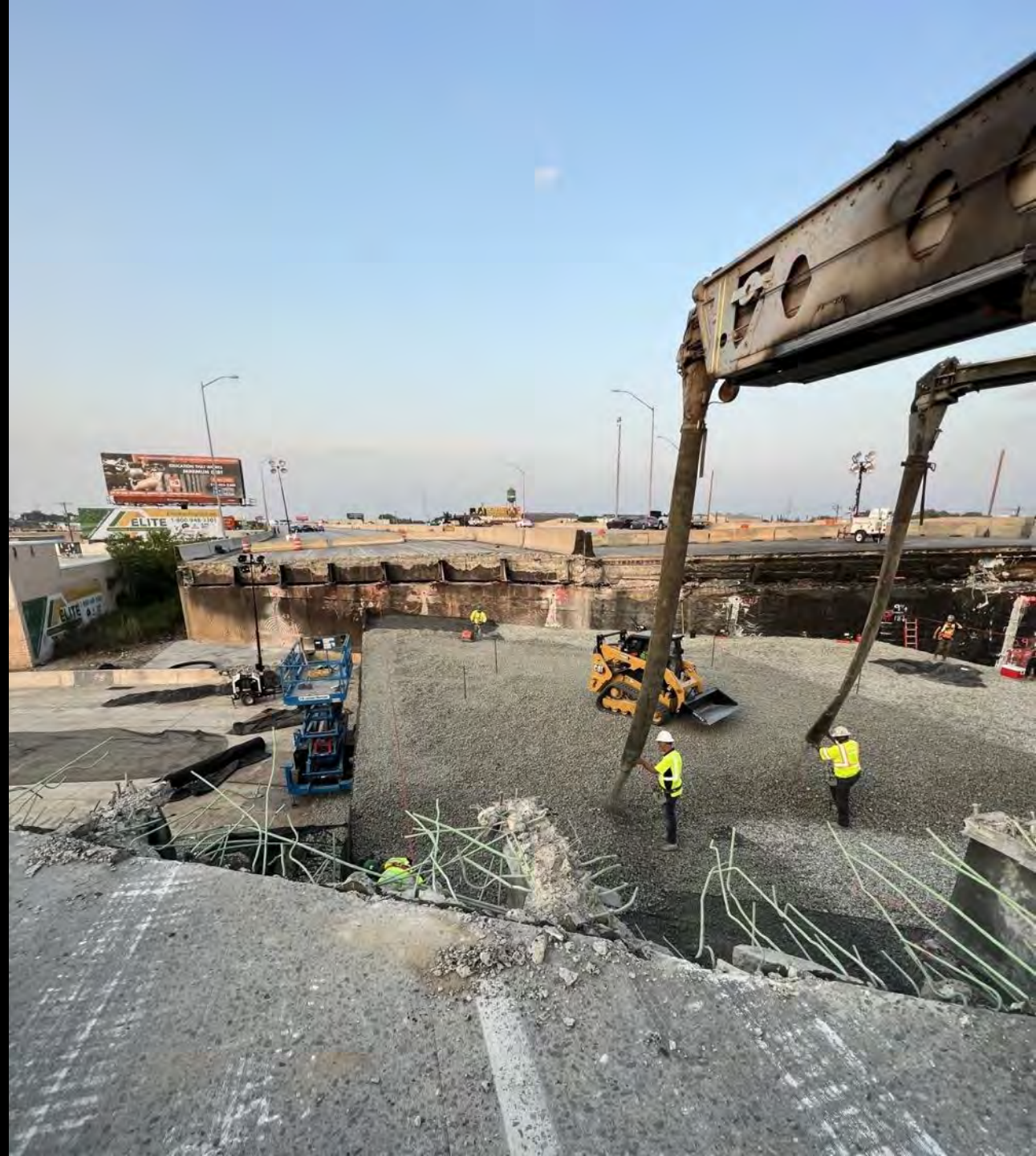
6/17/23 SATURDAY

By 8:00 PM we were finished building approximately ¾ of the 6-lane backfilled section of I-95

6/18/23- 6/20/23
SUNDAY-TUESDAY

FATHER'S DAY JUNE 18, 2023

By 7:00 AM on June 20th backfilling continues at a very high production.



6/20/23 TUESDAY

- Close to the top elevation of aggregate we placed a whole layer of geogrid across the entire backfilled section and packed it down with 8 inches of 2A Modified Stone
- Used a 300 Ton Crane on the West Side and a 500 Ton Crane on the East Side to set the Gravix T-Wall
  - Gravix Parapet Barrier with a moment slab cast in one panel acted as a moment slab and parapet on roadway
  - Was available and already pre-casted for another PennDOT project
- Once the Gravix wall was set, we locked it in with additional 810 Tons of 2A Modified Stone
- Placed approximately 500 SY of triaxial heavy duty fabric

6/21/23 WEDNESDAY

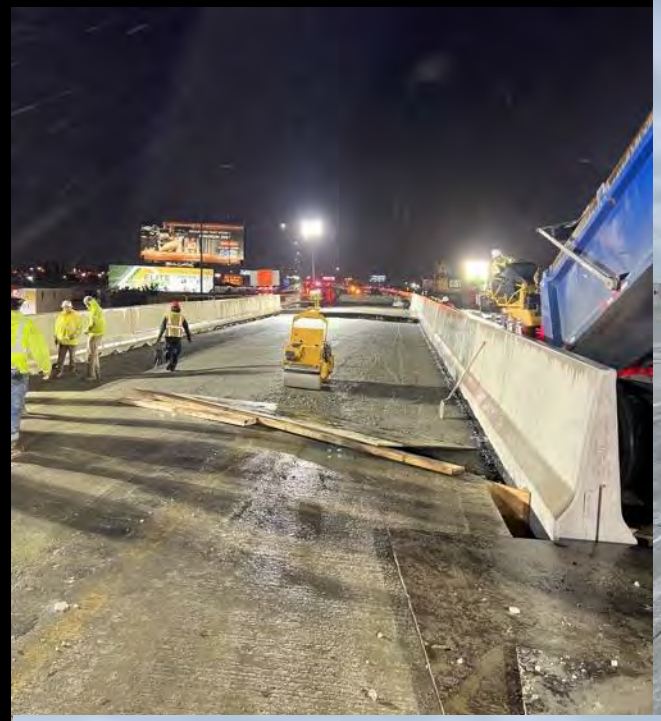
- On top of the 2A Modified Stone, we poured a concrete leveling pad with AA rapid set concrete (hot mix from SJA)
- Set Faddis pre-cast asymmetrical (bifurcated) median barrier
  - Two elevations between northbound and southbound I-95
  - Used asymmetrical barrier to tie into existing road barrier
  - A call was made to Bob and Austin Hess of Faddis on Friday, June 16th, following the phone call was a design from Benesch Engineering and a signed Purchase Order from Dave Warner of Buckley & Company
  - Faddis custom made the asymmetrical median barrier, poured day and night, and delivered the barrier on Tuesday June 20th
  - 15 pieces of 52" Median Barrier in Designed, Approved, Manufactured and Delivered in 4 days (180 LF)

6/21/23 WEDNESDAY

- 6:00 PM Rain Delay
- 7:30 PM we were stagged and placed asphalt base pavement, SJA Construction
  - Placed top, base, and binder
- 829 Tons total
  - 4:00 AM Thursday Placed 532 Tons of 2 5-inch lifts of base
  - We had to stop placing asphalt due to the cooling period, had to cool off to a minimum of 100 degrees according to PennDOT Specifications
  - 11:00 AM Thursday worked continued placing 300 Tons of binder and wearing coarse

6/22/23 THURSDAY

- 5:00 AM crews were finished paving
- Our crews worked all night paving and preparing the temporary roadway for line striping
- Heavy rains rolled in throughout the night and early morning, soaking the roadway
- We could not pave lines in wet conditions
- The jet dryer from Pocono Raceway, along with a police escort arrived in Philadelphia to dry the highway for line striping, complements to Mike Carroll, Secretary of Transportation
- Line striping was performed overnight on 6/22-6/23 to prepare for the re-opening of I-95



TRAFFIC CONDITIONS

- 18 message boards were used for directing traffic
- Cover existing signs
- 50 custom made signs
- 6 crash trucks
- Re-line striping the roadway
- Hundreds of State and Local Police and PennDOT crews
- Cones and barrels; triple lane closures
- Structural mounted barrier

POLITICIANS

With the eyes of the world upon us, I, Rob Buckley, was lucky enough to be the quarterback on this team. The word came down from the President of the United States, this is the most important job in the USA today.

We received help from our great Governor, Josh Shapiro, who was engaged and informed every day from Mike Carroll, Pennsylvania Secretary of Transportation, who never left the job.

Also, we received help from the Federal Government, Shailen Bhatt, Pete Buttigieg, U.S. Secretary of Transportation, and Mitch Landrieu, Infrastructure Coordinator.

Locally we received outpouring support from Ryan Boyer, President of the Building Trades.

In the 48 years of being in the industry and President of Buckley & Company, it is the first time we have been acknowledged and supported to this degree.

JUNE 23, 2023
FRIDAY

THE REOPENING OF I-95

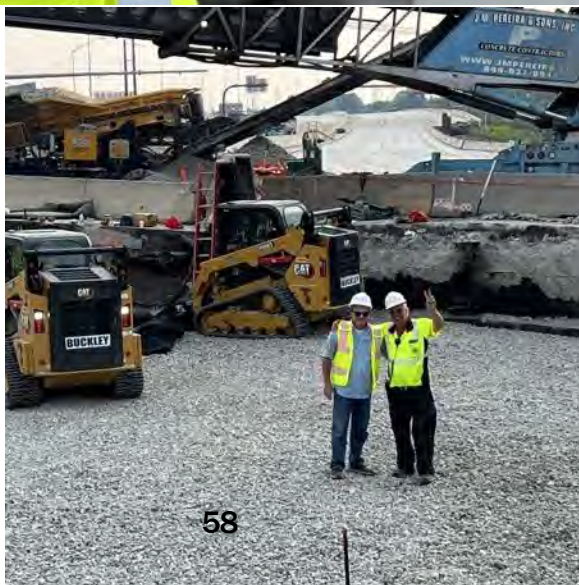

CAT


PHILADELPHIA FIRE DEPT.
RIT


BUCKLE
PENNDOT RULES
THE BEST!


FX4


BUCKLE
PENNDOT RULES
THE BEST!


BUCKLEY

THE A-TEAM

- Hundreds of individuals involved
- Thousands of hours worked

SUBS & SERVICES USED

- AERO AGGREGATES: ULTRA LIGHTWEIGHT AGGREGATE
- ANDERSON CONSTRUCTION: COORDINATION WITH THE ADJACENT PROJECT (ANDERSON), RUMBLE STRIPS, WELDED MANHOLES, RECONFIGURED THEIR TEMPORARY BARRIER FOR 5,200 LF
- FADDIS: 52" GLARE SCREEN BARRIER (180 LF)
- PELET WELDING: STAINLESS STEEL STRUCTURE MOUNTED BRACKETS
- RIVERSIDE MATERIAL: 2A STONE MODIFIED
- SJA CONCRETE: AA CONCRETE, AA CONCRETE BLOCKS, ASPHALT SUPPLY AND PLACEMENT
- EARTH WALL PRODUCTS: MOMENT SLAB WITH CAST-IN PARAPET
- FAZIO: STEEL & CLIPS, MISC. IRON
- INOVA: GEOGRID & BASKETS
- TCM SWEEPING: SWEEPER
- BUCKS CONCRETE SERVICES: TELEBELT & SLINGER
- POCONO RACEWAY: JET DRYER
- CHESCO CORING & CUTTING: CORE DRILLING, GPR SCANNING, SAW CUTTING
- THACKERY CRANE: 2 CRANES (300 TON & 500 TON)
- A-I EQUIPMENT SERVICE & REPAIR: BURNT CORE TRANSPORTATION
- ZONE STRIPING: LINE STRIPING
- WHARTON HARDWARE: TAMPERS & MISC. ITEMS

MATERIALS USED

15 PIECES OF 52" GLARE SCREEN BARRIER

7796.88 CY OF ULTRA LIGHTWEIGHT AGGREGATE

811.89 TONS OF 2A STONE

20 CONCRETE BLOCKS

30 PIECES OF TRAFFIC BARRIER

3 PLATES 2" X 6" X 15'4" PI STEEL

2 PLATES 2-½ STEEL 8' X 15'5-½"

30 D-RINGS WITH CLIPS

BOTTOM LINE, WE ALL WORKED TOGETHER...

THE FEDERAL GOVERNMENT
THE STATE GOVERNMENT
THE LOCAL GOVERNMENT
THE UNIONS
THE COMPANIES

IT'S ALWAYS A TEAM EFFORT
THANKS TO ALL INVOLVED, WE CAN DO GREAT THINGS WHEN WE WORK TOGETHER.

6/25/23 SUNDAY

XFINITY LIVE CELEBRATION

- Xfinity Live hosted a celebration for all I-95 workers on Sunday
- An excellent event that honored the workers and brought families together

6/26/23 MONDAY-ON GOING

BACK TO WORK

- Worked with Benesch Engineering to design the new project
- Ordered Material
  - Fabricated Structural Steel typically takes 9-12 months to be fabricated and delivered
  - High Steel is putting priority on our order and expedited fabrication and delivery down to 2 months
  - Order beam seats, bearings, etc.
- Chesco Coring & Cutting began saw cutting
- Buckley crews began hand chipping
- HTNE began Hydrodemolition
- LB began tying rebar

7/24/23 SUNDAY

On Sunday July 24, 2023, The Pocono Raceway graciously invited Buckley & Company to the Pocono 500 to celebrate and honor the workers that rebuilt I-95

KAMALA HARRIS & JULIE SU VISIT

Kamala Harris, Vice President of the U.S., and Julie Su, Secretary of Labor came to visit our site

HIGH STEEL DAY- 8/7/23

- High Steel, fabricator of steel girders, cross frames, and diaphragms, invited Buckley & Company, the Governor & Lieutenant Governor to their facility
- Buckley & Company, the Governor, Josh Shapiro, and Lieutenant Governor, Austin Davis, took a tour of their facility and attended a bridge beam signing ceremony

PRESS CONFERENCE

Most recently we held a press conference with PennDOT, the Governor, the Unions, and Buckley & Company to give an update on the progress of rebuilding I-95

TEMPORARY PHASE COMPLETED

PERMANENT PHASE BEGINS

JULY 2023

STAGE 1 CONSTRUCTION – OUTER BRIDGE

- Abutment wall reconstruction

HIGH STEEL DELIVERY - 8/29/23

16 Plate Girders

- 103-ft long
- 32,000 LB each

56 Cross frames (600 LB each)

48 Diaphragms (200 LB each)

16 Elastomeric Bearings were designed, fabricated, and delivered from Nevada (**Scougal Rubber**)

Expedited design by Benesch

Expedited delivery by High Steel (< 3 months)

Cleveland Cliffs rolled and rough cut girders to shape and delivered to High Steel in record time

AUGUST 2023

STAGE 1 NB & SB CONSTRUCTION – OUTER BRIDGE

- Maintain traffic in the center
- Reconstruct North and South outer bridge superstructure (girders set by **Cornell**)

SEPTEMBER 2023

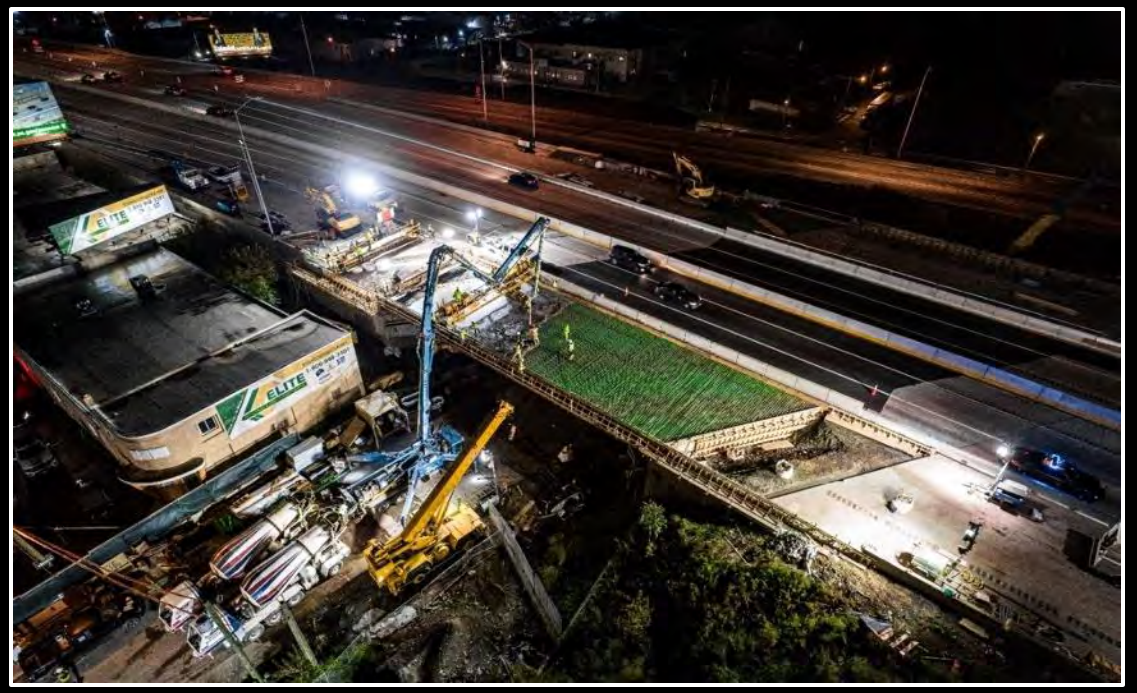
STAGE 1 NB & SB CONSTRUCTION – OUTER BRIDGE

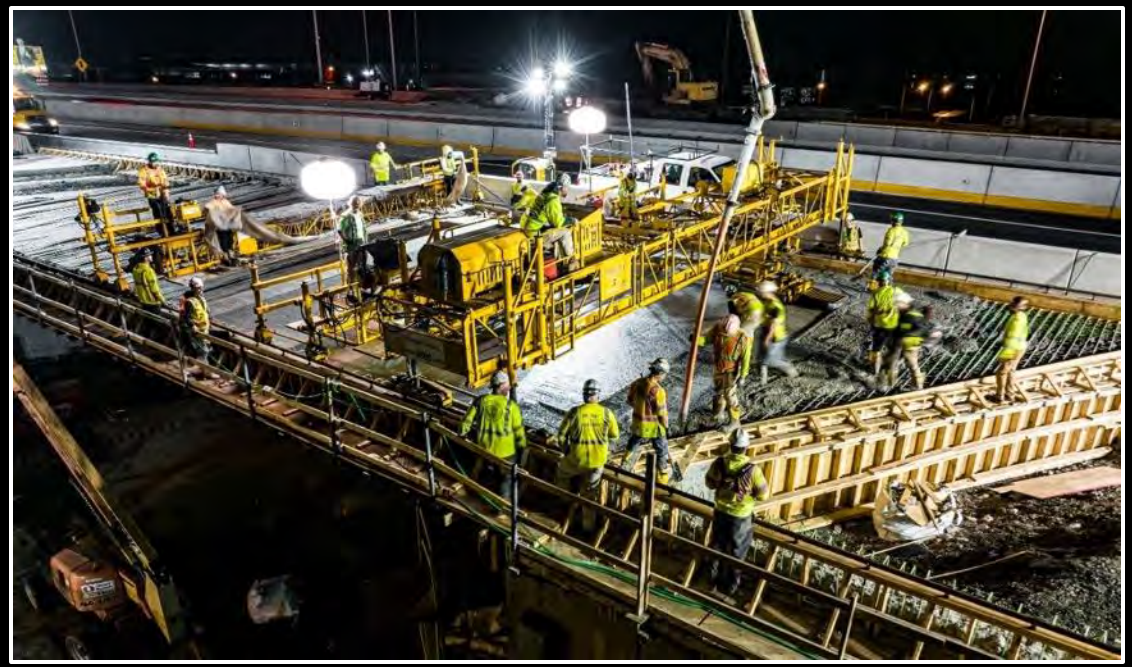
- Set 8 girders and diaphragms (**Cornell & Company**)
- Shielding boards
- Stay-in-place forms (**Structural Services**)
- Studs (**Structural Services**)
- Deck reinforcement (LB **Construction**)

OCTOBER 2023

STAGE 1 NB & SB CONSTRUCTION – OUTER BRIDGE

- Concrete deck placement
- Completed during off-peak hours at night due to traffic and temperature constraints





STAGE 1 (OUTER BRIDGE) COMPLETED

STAGE 2 (INNER BRIDGE) BEGINS

NOVEMBER 2023

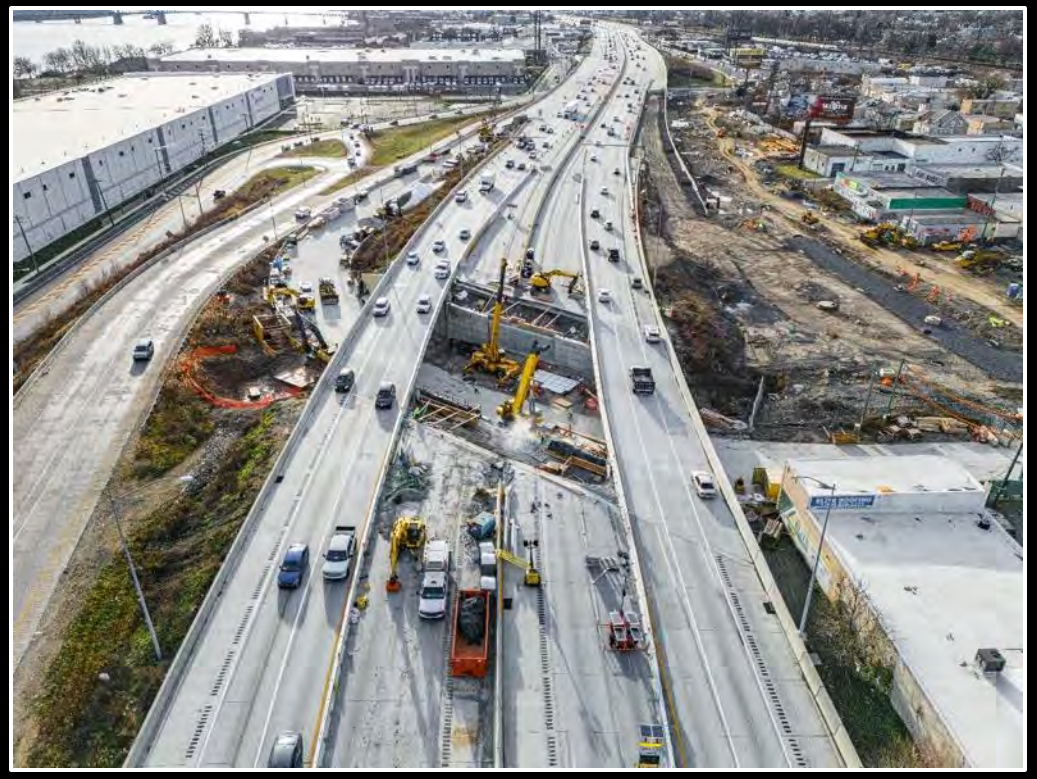
STAGE 2 NB & SB CONSTRUCTION – INNER BRIDGE (CENTER OF BOAT)

- Reroute traffic to newly constructed bridge
- Remove temporary glass fill structure

JANUARY 2024

STAGE 2 NB & SB CONSTRUCTION – INNER BRIDGE (CENTER OF BOAT)

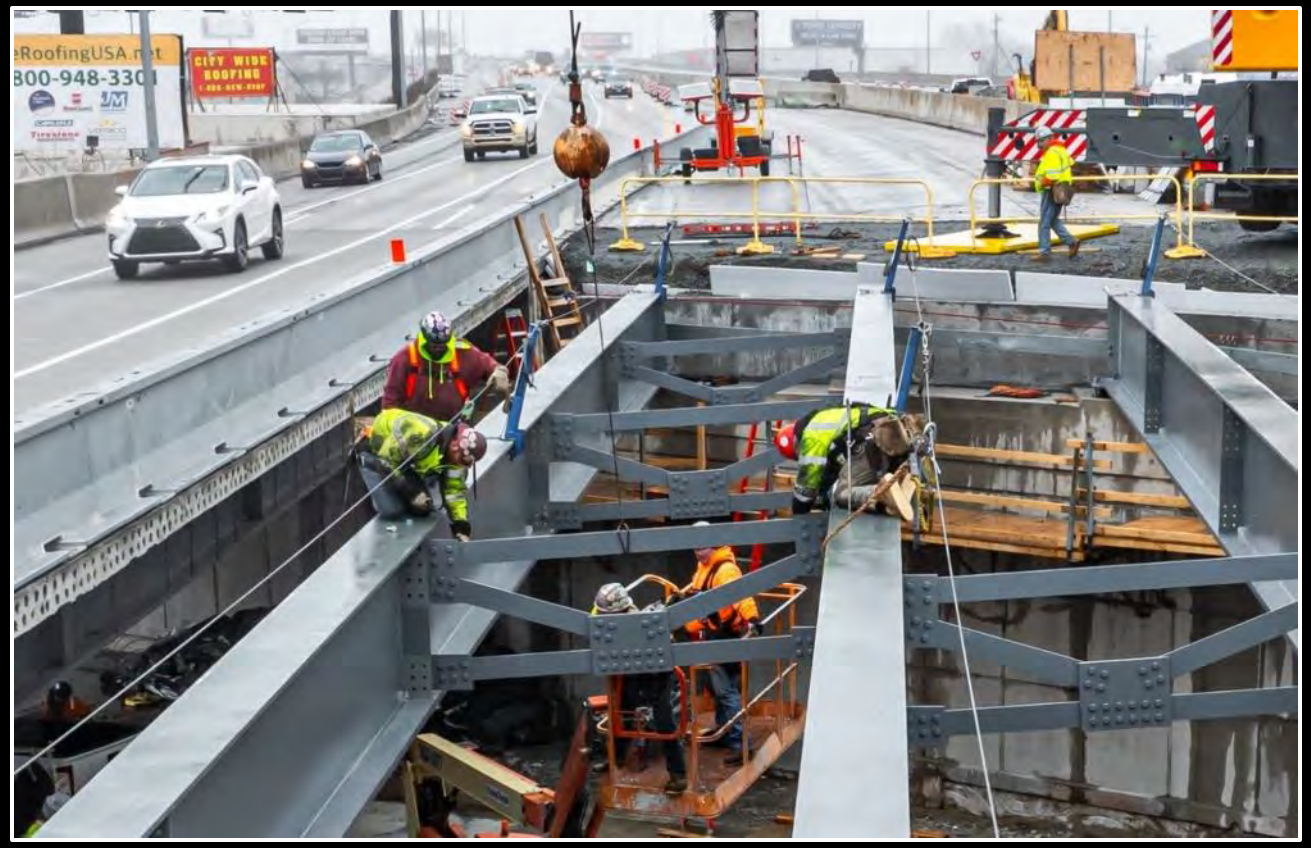
- Reconstruct inner bridge superstructure
- Abutment wall reconstruction
  - Hand chipping to remove damaged concrete

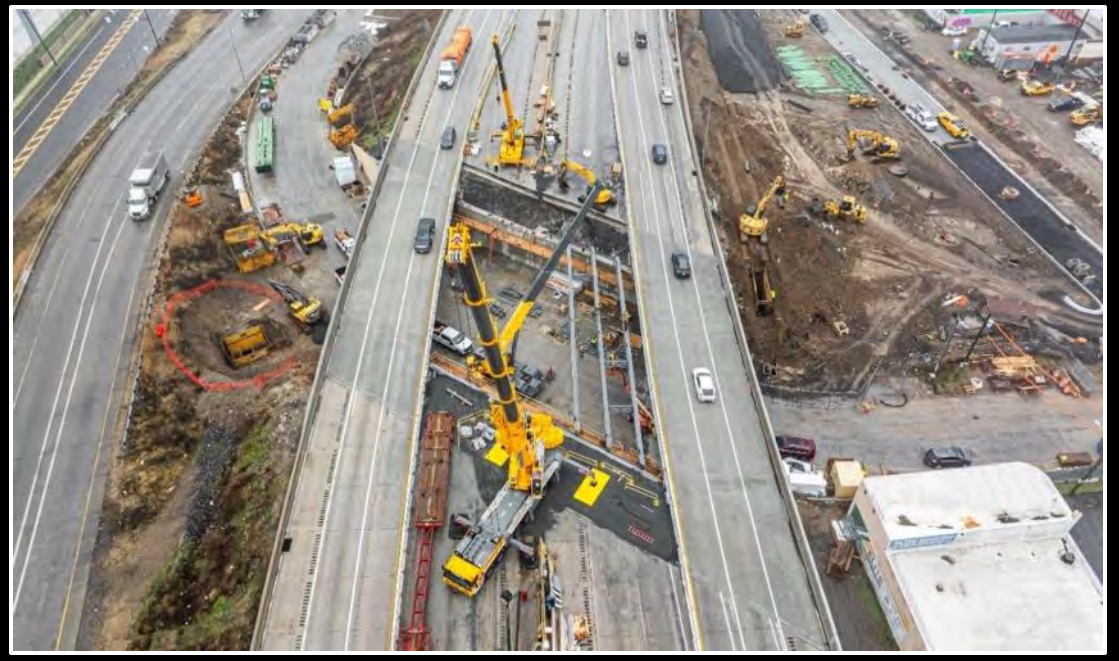


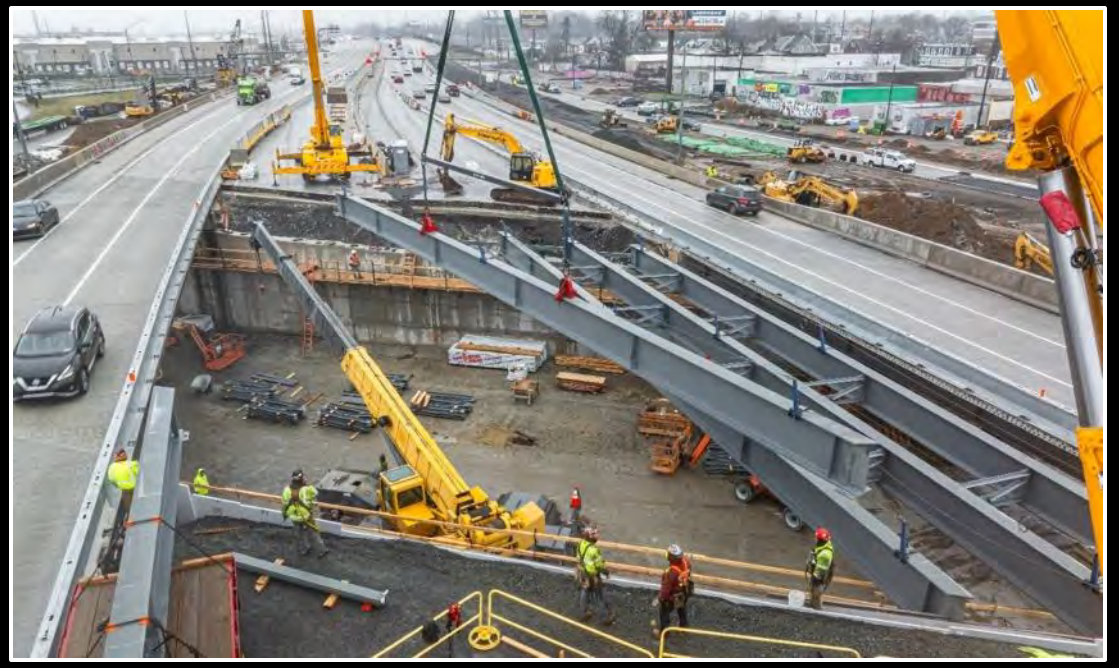
MARCH 2024

STAGE 2 NB & SB CONSTRUCTION – INNER BRIDGE (CENTER OF BOAT)

- 8 girders (set by **Cornell & Company**)



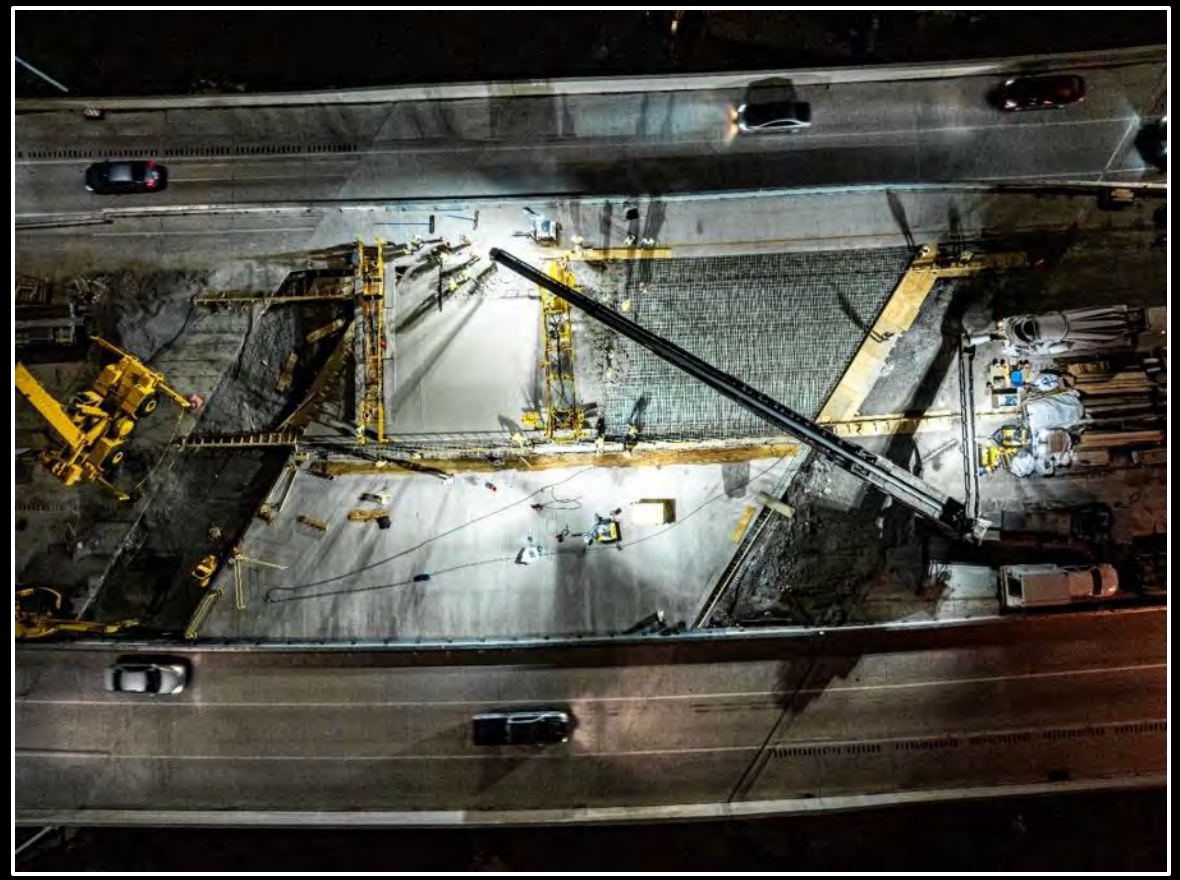




APRIL 2024

STAGE 2 NB & SB CONSTRUCTION – INNER BRIDGE

- Concrete deck placement
- Completed during off-peak hours at night



APRIL 2024

STAGE 2 CONSTRUCTION – RAMP B

- Fire damage to stormwater system
- Stormwater replacement
- Manholes/inlets/Reinforced Concrete Pipe
- Performed concurrently with overhead deck pour (**JPC**)

APRIL 2024

STAGE 2 CONSTRUCTION – RAMP B

- Roadway placement
- Placed in phases

MAY 2024

- Opened all I-95 NB & SB Lanes to traffic
- Open Ramp to traffic
- This project was completed as a request from Governor Shapiro to be finished in under one year of the accident.
- Worked 12 hours per day, 7 days a week, except for major holidays.
- Worked overtime on all critical items of the project.

JUNE 2024

- SAFETY FEATURES
- FLASHING CHEVRON CURVE WARNING SIGNS
- HIGH FRICTION SURFACE TREATMENT

THANK YOU

QUESTIONS ARE WELCOMED