

SR 0100-13M BETTERMENT PROJECT

Upper Macungie Township, PA

Under \$20M

AMERICAN SOCIETY OF HIGHWAY ENGINEERS
2023 National Project of the Year Award

ASHE East Penn Section Submission



Photo credit: Nick Giglio, Urban Engineers



ENTRY FORM



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 (Check One):

- Northeast Great Lakes Northwest
- Mid-Atlantic North Central Rocky Mountain
- Southeast South Central 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
 ext. 10422

PROJECT INFORMATION:

ENTERING AGENCY/COMPANY'S NAME: _____
 PROJECT NAME: _____ TYPE: _____
 PROJECT LOCATION: _____
 CITY: _____ COUNTY: _____ STATE: _____
 FINAL CONSTRUCTION COST: _____ BUDGETED CONSTRUCTION COST: _____
 PROJECT COMPLETION DATE: _____

PROJECT ASHE SECTION: East Penn ASHE SECTION CONTACT NAME: Tom Dominiecki
 PHONE (OFFICE): 610.783.3750 PHONE (MOBILE): 484.252.1825 E-MAIL: tdominiecki@gfnet.com

PROJECT TEAM:

PROJECT OWNER: _____
 STREET ADDRESS: _____
 CITY: _____ STATE: _____ ZIP: _____
 CONTACT PERSON: _____ PHONE: _____
 E-MAIL ADDRESS: _____

PROJECT DESIGN FIRM: _____
 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: _____ **Date:** _____

PROJECT NARRATIVE

INTRODUCTION

The SR 0100-13M Betterment Project in Upper Macungie Township (UMT), Lehigh County, PA involved 1.36 miles of SR 0100 full depth reconstruction between Industrial Boulevard and SR 1002 (Main Street/Tilghman Street). Milling and overlay of the I-78 interchange ramps, as well as the SR 0100 northern/southern limits (because of traffic control shifts), were also included. This project included storm sewer improvements, curb replacement, upgraded traffic signal equipment, ADA ramp improvements, water main relocation, and a new cantilever sign structure.

The project was substantially completed in December 2022 at an approximate cost of \$19.6 million.

COMPLEXITY

Regional Mobility

SR 0100, once a small road in the 1930s with little traffic, has grown to become an integral part of the transportation network for Lehigh County's industrial and commercial businesses (refer to Photo 1). The current average daily traffic is over 34,000 vehicles with approximately 20% trucks. The reconstructed SR 0100 section includes four high demand intersections, an I-78 interchange, and an at-grade railroad crossing with Norfolk Southern. This heavily traveled corridor was pieced together and widened over the decades and needed a complete reconstruction.

The SR 0100 Section 13M Betterment Project reconstructed the four and six lane roadway while maintaining the existing curb-to-curb width, existing drainage outfall elevations, and traffic flow during construction.

Under the Surface

Since SR 0100 was developed and widened at different times over the years in several different segments, straightforward design elements became much more challenging.

Pavement. The existing pavement consists of various depths and materials, including concrete overlay sections and full depth asphalt sections. Several alternatives were analyzed in design. A bonded concrete overlay on asphalt (BCOA) was originally selected in preliminary design due to its ability to accommodate heavy truck traffic. However, in final design, BCOA was replaced with a full depth asphalt and a Stone Matrix Asphalt (SMA) wearing course (refer to Plan 1). This was decided because the traffic control complexity was not conducive to constructing BCOA.

Utilities. The underground utilities through this section of SR 0100 included water, communications, and sewer. An existing water main was found to largely fluctuate elevation and meandered through several sections of the existing drainage. Utility relocations were unavoidable.

Drainage. The SR 0100 existing drainage networks conveyed flow offsite and outside of the project limits; therefore, all existing outfalls and tie-in elevations had to be maintained. With a deeper pavement section, multiple utility conflicts, and the requirement to maintain existing outfall elevations, the proposed stormwater network design involved many iterations (refer to Plan 2).

Keeping Traffic Moving

Project complexity continued with traffic control. Reconstruction required lane reductions while staying within the existing curblines. A multi-segmented and staged approach was selected, providing less delay and duration of construction to residents and business owners along SR 0100.

The final traffic control plan consisted of five segments, twenty stages, sixteen minor road and township road detours, railroad preemption coordination, and forty-two temporary signal plans (refer to Photo 2 and Plan 3 for traffic control at Ramp G).

NEW APPLICATION OF EXISTING TECHNIQUES / ORIGINALITY / INNOVATION

This project included three unique elements:

Traffic Signal Phase Removal. Reducing SR 0100 by one lane in each direction during construction would increase morning and evening peak hour queues and overall motorist delay.

Gannett Fleming (GF) reduced existing SR 0100 four-phase traffic signals to two or three phases during construction using minor street approach closures and local road detours. This approach eliminated the associated yellow and all-red times, increased the amount of SR 0100 green time, and subscribed to the “keep traffic moving” philosophy for the project.

Segmented Traffic Control. The original design called for traditional traffic control staging, consisting of four main stages along SR 0100 between Industrial Boulevard and SR 1002: 1) median removal, 2) shift traffic and reconstruct one side, 3) shift traffic again and construct the other side, and 4) median construction.

The idea of segmented traffic control separated the project into five shorter sections; contractor New Enterprise Stone and Line (NESL) condensed this to three segments during construction to make up for lost time during Covid (refer to Photo 3). While segmented traffic control slightly lengthened the overall duration, it utilized similar staging and addressed economic considerations expressed by the municipality and its stakeholders (see the Social/Economic Considerations section).

Stone Matrix Asphalt (SMA). As discussed in the Complexity section, GF considered several pavement options before selecting a SMA surface course. Heavy truck traffic throughout the corridor demanded a durable pavement which could accommodate it. SMA offers increased rut resistance, relies on stone-to-stone contact for its strength, and is a rich mortar binder to provide durability. This

application is relatively new to PennDOT District 5-0 and required coordination with PennDOT Central Office before implementing it into the design.

SOCIAL/ECONOMIC CONSIDERATIONS

Social Considerations. Through public meetings, GF listened to business owners who voiced concerns from prior SR 0100 projects about the anticipated length of time that construction would occur in front of their establishments.

GF addressed this concern by designing segmented traffic control, which reduced the time that construction work occurred in front of a given location from years to months. During construction, our team coordinated with these business owners before and during construction to ensure that their access needs were accommodated.

Economic Considerations. The recommended pavement was an economic consideration when GF performed the pavement alternative analysis and final pavement design. Current and future traffic conditions historically favored a conventional full-depth Portland Cement Concrete (PCC) pavement. However, the combination of its higher cost (compared to asphalt) and placement of joints in a constrained work area while maintaining two lanes of traffic in each direction proved restrictive. GF strongly considered a bonded concrete overlay on asphalt (BCOA) option that was approximately 73% lower than the cost of PCC, but similar issues with the PCC pavement did not allow for easy construction. Both concrete options would also result in longer work zone durations and future maintenance requirements, which would likely have negative economic impacts on local businesses. Ultimately, GF and District 5-0 recommended full-depth reconstruction with an asphalt pavement section with an SMA wearing course, which was more cost effective (approximately 27% lower) than full-depth PCC based on the life-cycle cost analysis (LCCA).

SAFETY

Gannett Fleming met with UMT's Good Neighbor Coalition (GNC) early in project design for community input. The GNC was formed to enhance safety, given the growing volume of traffic in UMT. Some examples of safety in the design are:

Weekend Intersection Closures. Full reconstruction of each of the Schantz Road and Penn Drive intersections was accomplished through three partial weekend intersection closures. Refer to Plans 4 and 5 for a weekend closure example to work in the eastern side and middle of the Schantz Road intersection.

These closures included either full or partial side street detours, maintained SR 0100 through traffic, eliminated traffic signal control, and limited side street approaches to right-in, and stop-controlled right-out movements. In construction, these closures limited turning movements and allowed adequate work zones for worker safety.

Business Coordination. During Segment 2 construction, impatient SR 0100 northbound motorists utilized the Gerber Collision driveway to cut through the property to make a right turn onto Penn Drive. After several observed near misses between these motorists and employees/customers, Gerber Collision requested that NESL supply a temporary concrete barrier to block their SR 0100 driveway during construction (refer to Photo 4).

AESTHETICS AND SUSTAINABLE FEATURES

Aesthetics. Prior to construction, SR 0100 was riddled with deteriorated pavement, different pavement materials, and spalling medians and curbs. SR 0100 now has a new durable SMA wearing course, new medians and curbs, and new pavement markings and signs. Aesthetically, this corridor has been refreshed significantly to the point that a municipal representative equated SR 0100 to a new racetrack (refer to Photo 5).

Sustainability. The selection of full-depth pavement and SMA wearing course was largely due to sustainability. As industrial and commercial properties continue to develop in the area, demand for this corridor will continue to grow. The pavement structure accounts for this growth as follows:

- Geotextile was placed at the subgrade to separate poor soils from the new pavement structure.
- SMA is specially designed to resist rutting from large truck traffic.

MEETING AND EXCEEDING OWNER'S/CLIENT'S NEEDS

The project team included the following:

- Gannett Fleming, Inc. (prime consultant), Malick & Scherer, P.C. (subconsultant), Lotus Environmental Consulting (subconsultant)
- PennDOT District 5-0 (client)
- New Enterprise Stone and Lime, Inc. (contractor)

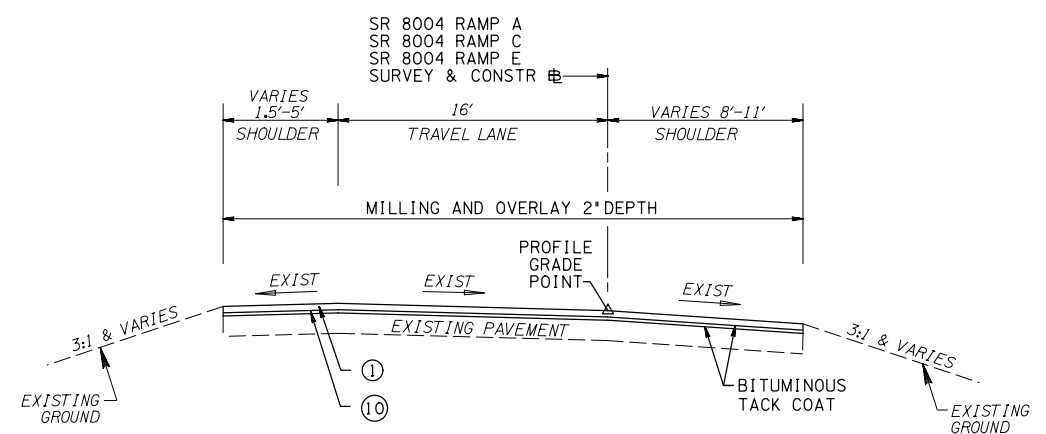
Throughout design and construction, the team approach was used at every level. Open and honest communication about critical components such as the following resulted in the project's success.

- Pavement selection
- Traffic control selection
- Traffic control revisions during construction

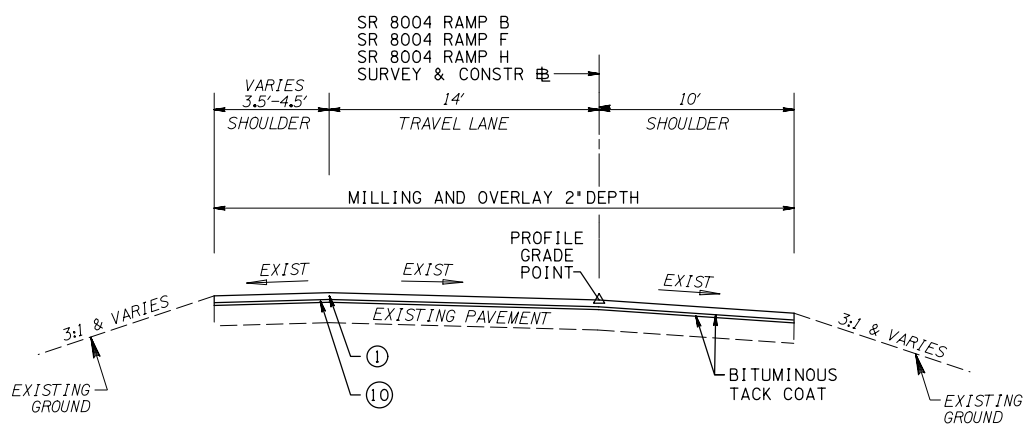
Client's thoughts. "Route 100 now has quality pavement and drainage; this allows for safe and efficient travel within the project limits. It was constructed with minimal disruption to the traveling public (as minimal as this type of construction can be). The team was reliable and cooperative, making the process run smoothly and efficiently." Kerry Cox, PE, District 5-0 Project Manager

CONSTRUCTION DRAWINGS

DISTRICT	COUNTY	ROUTE	SECTION	SHEET
5-0	LEHIGH	0100	13M	16 OF 120
UPPER MACUNGIE TOWNSHIP				
REVISION NUMBER	REVISIONS			DATE BY



TYPICAL SECTION
 SR 8004 RAMP A STA 11+94.28 TO 17+23.98 AND STA 20+70.79 TO 24+24.00
 SR 8004 RAMP C STA 70+97.00 TO 74+73.31 AND STA 75+98.65 TO 80+13.44
 SR 8004 RAMP E STA 141+83.85 TO 144+45.04 AND STA 151+08.10 TO 154+26.00
 NOT TO SCALE



TYPICAL SECTION
 SR 8004 RAMP B STA 45+38.00 TO 49+26.41 AND STA 52+99.55 TO 59+02.05
 SR 8004 RAMP F STA 175+25.00 TO 179+96.44 AND STA 186+04.10 TO 188+94.56
 SR 8004 RAMP H STA 242+96.18 TO 248+95.41 AND STA 250+00.52 TO 254+72.00
 NOT TO SCALE

LEGEND

- ① STONE MATRIX ASPHALT MIXTURE DESIGN, WMA WEARING COURSE, RPS, PG 76-22, 9.5 MM MIX, 1 1/2" DEPTH, SRL-E (SEE FINAL WEARING NOTE)
- ② SUPERPAVE ASPHALT MIXTURE DESIGN, WMA BINDER COURSE, PG 76-22, 10 TO < 30 MILLION ESALS, 19.0 MM MIX, (4 1/2" DEPTH) (SEE FINAL WEARING NOTE)
- ③ SUPERPAVE ASPHALT MIXTURE DESIGN, WMA BASE COURSE, PG 64-22, 0.3 TO < 3.0 MILLION ESALS, 25.0 MM MIX, 10" DEPTH
- ④ SUBBASE 8" DEPTH (NO. 2A)
- ⑤ PLAIN CEMENT CONCRETE PAVEMENT, 4" DEPTH
- ⑥ BITUMINOUS TACK COAT
- ⑦ MILLING OF BITUMINOUS PAVEMENT SURFACE, 1 1/2" DEPTH, MILLED MATERIAL RETAINED BY CONTRACTOR (SEE FINAL WEARING NOTE)
- ⑧ GEOTEXTILE, CLASS 4, TYPE A
- ⑨ SUBBASE (NO. 2A) (INCIDENTAL TO CONCRETE MOUNTABLE CURB)
- ⑩ SUPERPAVE ASPHALT MIXTURE DESIGN, WMA WEARING COURSE (LEVELING), PG 76-22, 10 TO < 30 MILLION ESALS, 9.5 MM MIX, SRL-L (USE AS SCRATCH COURSE 75 LB/SY)
- ⑪ MILLING OF BITUMINOUS PAVEMENT SURFACE, 2" DEPTH, MILLED MATERIAL RETAINED BY CONTRACTOR (SEE FINAL WEARING NOTE)
- ⑫ TOPSOIL FURNISHED AND PLACED AND SEEDING AND SOIL SUPPLEMENTS - FORMULA B

FINAL WEARING NOTE:

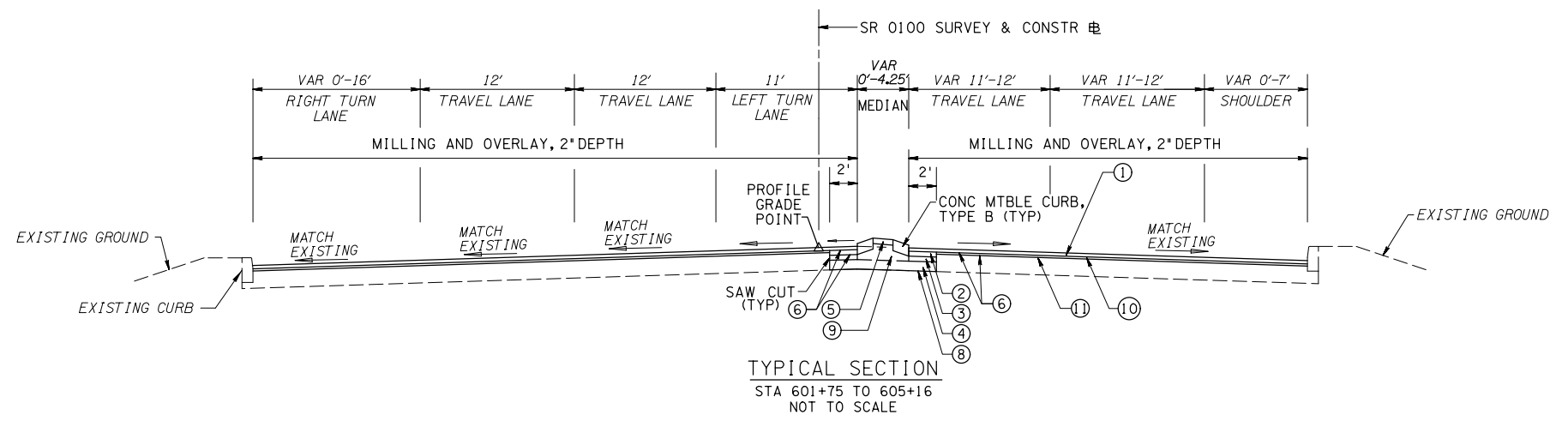
4 1/2" BINDER IS TO BE PLACED TO FINAL ROADWAY ELEVATION. MILLING AND OVERLAY OF ENTIRE SR 0100 CORRIDOR AND INTERCHANGE RAMP IS TO BE DONE ONCE TRAFFIC CONTROL SEGMENTS 1 THRU 5 ARE COMPLETED. SEE TRAFFIC CONTROL PLAN FOR MORE INFORMATION.

CONC MEDIAN BARRIER INSTALLATION

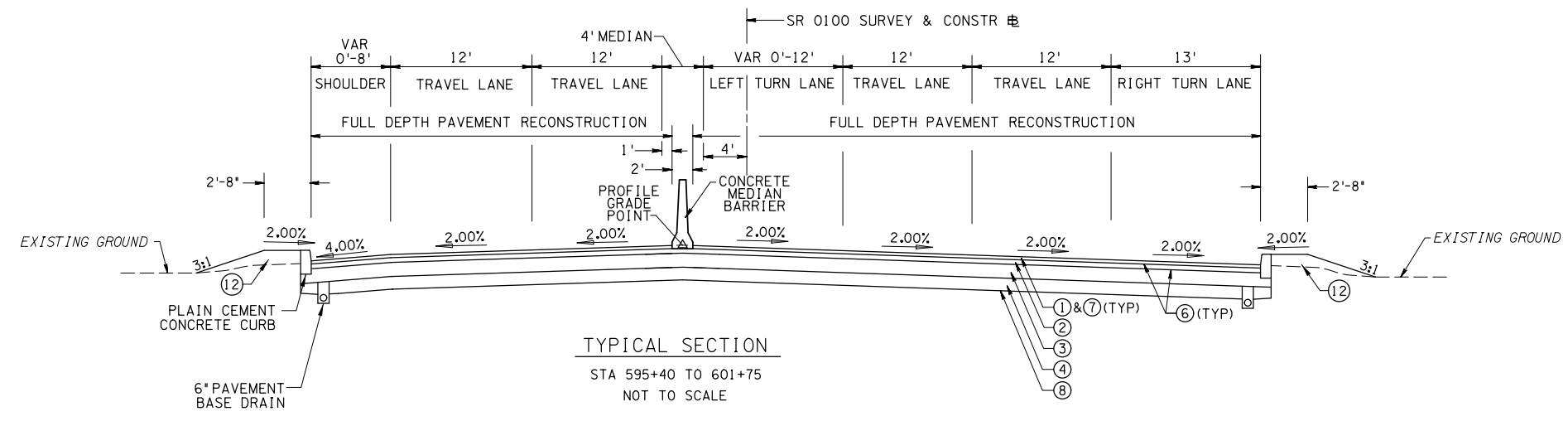
MILL 2" DEPTH FROM FINAL GRADE TO PLACE BARRIER WHEN BARRIER CANNOT BE INSTALLED DURING FULL DEPTH CONSTRUCTION DUE TO TRAFFIC CONTROL STAGING.

UNSUITABLE MATERIAL NOTE:

OVER-EXCAVATION OF UNSUITABLE MATERIAL BENEATH THE PROPOSED SUBBASE AND BACKFILLING IS PAID UNDER ITEM 9000-0002.



TYPICAL SECTION
 STA 601+75 TO 605+16
 NOT TO SCALE



TYPICAL SECTION
 STA 595+40 TO 601+75
 NOT TO SCALE

Plan 1: Typical Sections Indicating Stone Matrix Asphalt (SMA) Wearing Course

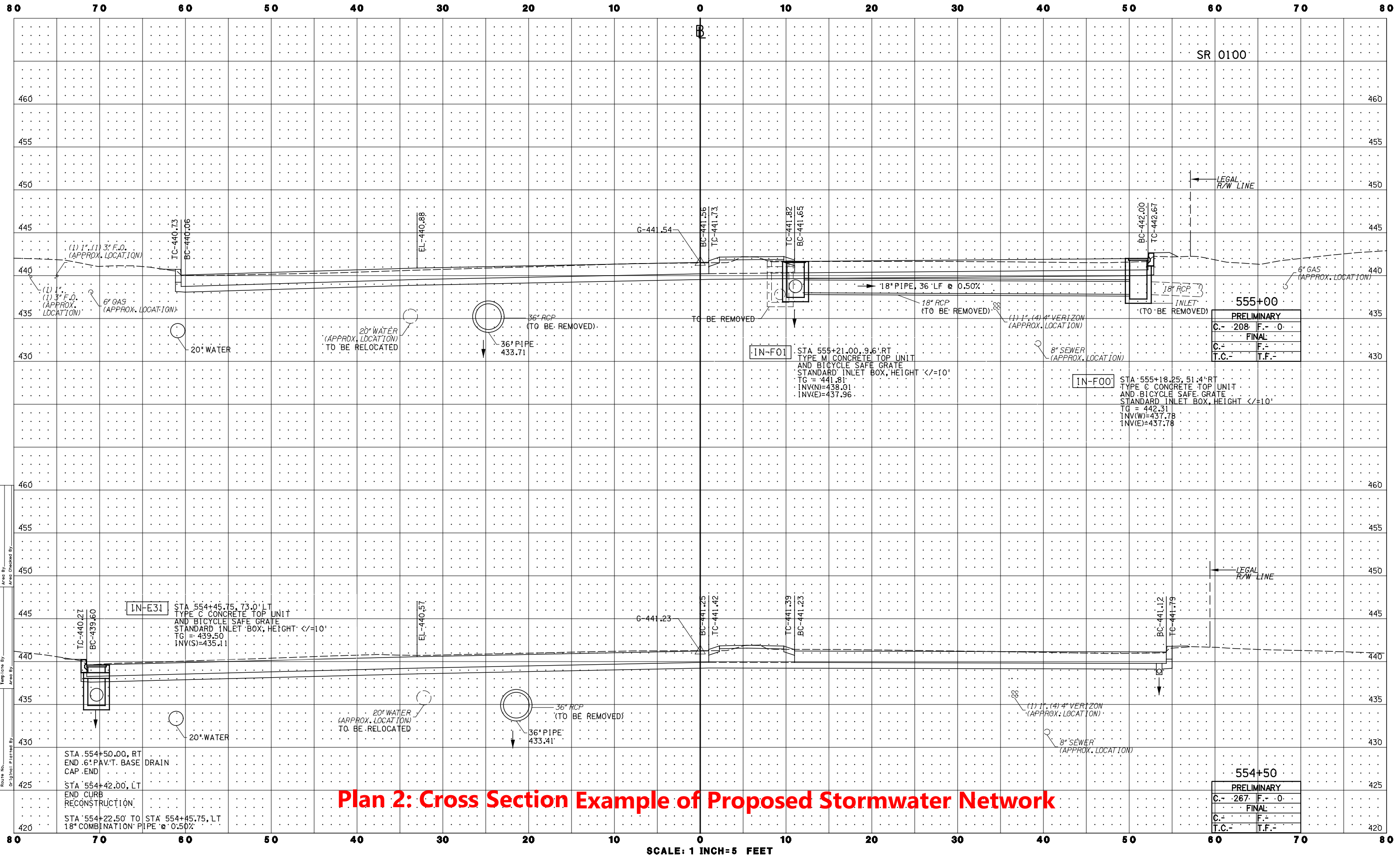
TYPICAL SECTIONS

PREPARED BY:
 GANNETT FLEMING, INC.
 VALLEY FORGE, PA

FILE: pw:\gfpw\ing02\corporate\gannett_fleming.com\gfpw02\Documents\Projects\59814\OUTPUT\COMP_01\CIVIL\ROAD\PL01\SR0100rptyp05.dgn
 DATE: 8/27/2019

**PENNSYLVANIA DEPARTMENT OF TRANSPORTATION
CROSS SECTIONS**

District	County	Route	Sect.	Prelim. Book No.	Final Book No.	Sheet
5-0	LEHIGH	SR 0100	13M			39 OF 94



Plan 2: Cross Section Example of Proposed Stormwater Network

SCALE: 1 INCH=5 FEET

Application No. _____
 Route No. _____
 Original Plotted By _____
 Original Checked By _____
 Template By _____
 Area Checked By _____
 Final Plotted By _____
 Final Checked By _____
 Area Checked By _____

555+00	
PRELIMINARY	
C.- 208	F.- 0
FINAL	
C.-	F.-
T.C.-	T.F.-

554+50	
PRELIMINARY	
C.- 267	F.- 0
FINAL	
C.-	F.-
T.C.-	T.F.-

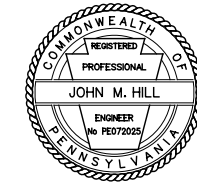
STA 554+50.00, RT
 END 6" PAV'T. BASE DRAIN
 CAP. END
 STA 554+42.00, LT
 END CURB
 RECONSTRUCTION
 STA 554+22.50 TO
 18" COMBINATION PIPE @ 0.50%

IN-F01 STA 555+21.00, 9.6' RT
 TYPE M CONCRETE TOP UNIT
 AND BICYCLE SAFE GRATE
 STANDARD INLET BOX, HEIGHT $\leq 10'$
 TG = 441.81'
 INV(N)=438.01'
 INV(E)=437.96'

IN-F00 STA 555+18.25, 51.4' RT
 TYPE C CONCRETE TOP UNIT
 AND BICYCLE SAFE GRATE
 STANDARD INLET BOX, HEIGHT $\leq 10'$
 TG = 442.31'
 INV(W)=437.78'
 INV(E)=437.78'

IN-E31 STA 554+45.75, 73.0' LT
 TYPE C CONCRETE TOP UNIT
 AND BICYCLE SAFE GRATE
 STANDARD INLET BOX, HEIGHT $\leq 10'$
 TG = 439.50'
 INV(S)=435.11'

PREPARED BY:
MALICK & SCHERER, P.C.



DISTRICT	COUNTY	ROUTE	SECTION	SHEET
5-0	LEHIGH	0100	13M	320OF 336

UPPER MACUNGIE TOWNSHIP				
REVISION NUMBER	REVISIONS	DATE	BY	
PERMIT NO.	TEMPORARY	SHEET 40 OF 56		
DATE ISSUED	DATE REVISED			

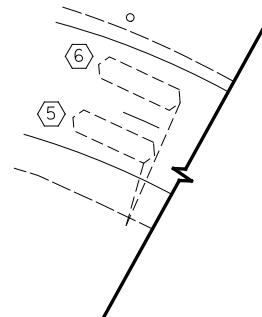
GENERAL NOTES:

- DO NOT MODIFY INSTALLATION WITHOUT PRIOR WRITTEN APPROVAL.
- ALL SIGNS AND PAVEMENT MARKINGS INDICATED ARE PART OF THE PERMIT. INSTALL AND MAINTAIN IN ACCORDANCE WITH PUBLICATION 212.
- POST MOUNTED SIGNALS: INSTALL WITH A MINIMUM CLEARANCE OF 2 FEET BEHIND FACE OF CURB OR EDGE OF SHOULDER; AND 8 FEET ABOVE SIDEWALK OR PAVEMENT GRADE.
- OVERHEAD SIGNALS: INSTALL WITH A MINIMUM SIGNAL HEAD CLEARANCE OF 2 FEET BEHIND FACE OF CURB OR EDGE OF SHOULDER. PROVIDE A MINIMUM SIGNAL HEAD CLEARANCE OF 16 FEET ABOVE ROADWAY; RIGIDLY MOUNT, TOP AND BOTTOM; AND EQUIP WITH BACKPLATES. PROVIDE A MINIMUM HORIZONTAL DISTANCE OF 8 FEET BETWEEN SIGNALS AS MEASURED AT RIGHT ANGLES TO APPROACH.
- DETERMINE WITH A PENNDOT REPRESENTATIVE, THE EXACT LOCATION OF DETECTORS PRIOR TO INSTALLATION.
- CONSULT WITH LOCAL OFFICIALS AND UTILITIES TO RESOLVE CONFLICTS PRIOR TO CONSTRUCTION.
- COMPLY WITH PROVISIONS OF ACT 181, FOR PREVENTION OF DAMAGE TO UNDERGROUND UTILITIES, DATED MARCH 29, 2007.
- ALL DESIGNERS AND CONTRACTORS UTILITIZING THIS PLAN AND THE INFORMATION CONTAINED THEREON ARE CAUTIONED TO COMPLY WITH THE REQUIREMENTS OF PENNSYLVANIA ACT 199, ENTITLED "UNDERGROUND UTILITY LINE PROTECTION LAW", (AMENDS PENNSYLVANIA ACT 187). ANY INFORMATION APPEARING ON THESE DRAWINGS AS TO THE UNDERGROUND LINES OF A USER, SUCH AS A PUBLIC UTILITY, HAS BEEN INCORPORATED HEREON PURSUANT TO SAID PENNSYLVANIA ACT 199.
- ALL LOCATIONS OF UNDERGROUND UTILITIES ARE APPROXIMATE ONLY AND MUST BE FIELD VERIFIED PRIOR TO CONSTRUCTION.
- PAID UNDER ITEM 4901-0729 TEMPORARY TRAFFIC SIGNALS (PERMANENT ONLY), I-78 RAMP G. REFER TO SPECIAL PROVISION FOR MORE INFORMATION.

I-78 RAMP "G" PREEMPTION NOTES:

- WHEN PREEMPTION IS ACTIVATED, ALL GREEN INDICATIONS, EXCEPT SIGNALS 3 & 4 SHALL BE FOLLOWED BY SELECTIVE CLEARANCES DEPENDENT UPON THE PHASE IN WHICH THE PREEMPTION OCCURS.
- WHEN PREEMPTION IS ACTIVATED ALL YELLOW AND RED INDICATIONS SHALL TIME OUT, FOLLOWED BY PREEMPTION PHASE.
- IF SIGNALS ARE FLASHING WHEN ACTIVATED FOR PREEMPTION, ALL SIGNALS SHALL REMAIN FLASHING.
- UPON COMPLETE OF THE PREEMPTION PHASE, PHASE 4 INTERVAL 4 SHALL FOLLOW.
- A CONSTANT CALL ON THE RAMP PREEMPT DETECTOR NO. 5 & 6 FOR 20 SECONDS SHALL ACTIVATE THE PREEMPTION.
- A CONSTANT CALL ON THE RAMP PREEMPT DETECTOR NO. 5 & 6 FOR 180 SECONDS SHALL INHIBIT THE PREEMPT CALL.

LOOPS LOCATED 850' FROM STOP BAR



STA. 216+63

SIGNAL IDENTIFICATION



1,2
3,4

EQUIP OVERHEAD SIGNALS WITH BACKPLATES. INSTALL LEDS IN ALL VEHICULAR SIGNAL HEADS.

PLAN SYMBOL	SERIES	SIZE	QTY.	MESSAGE
A	R3-3	24X24	1	NO TURNS
B	R6-1R	36x12	1	ONE-WAY RIGHT
C	R9-3	18X18	1	NO PEDESTRIAN CROSSING
D	W3-3	18X18	1	SIGNAL AHEAD

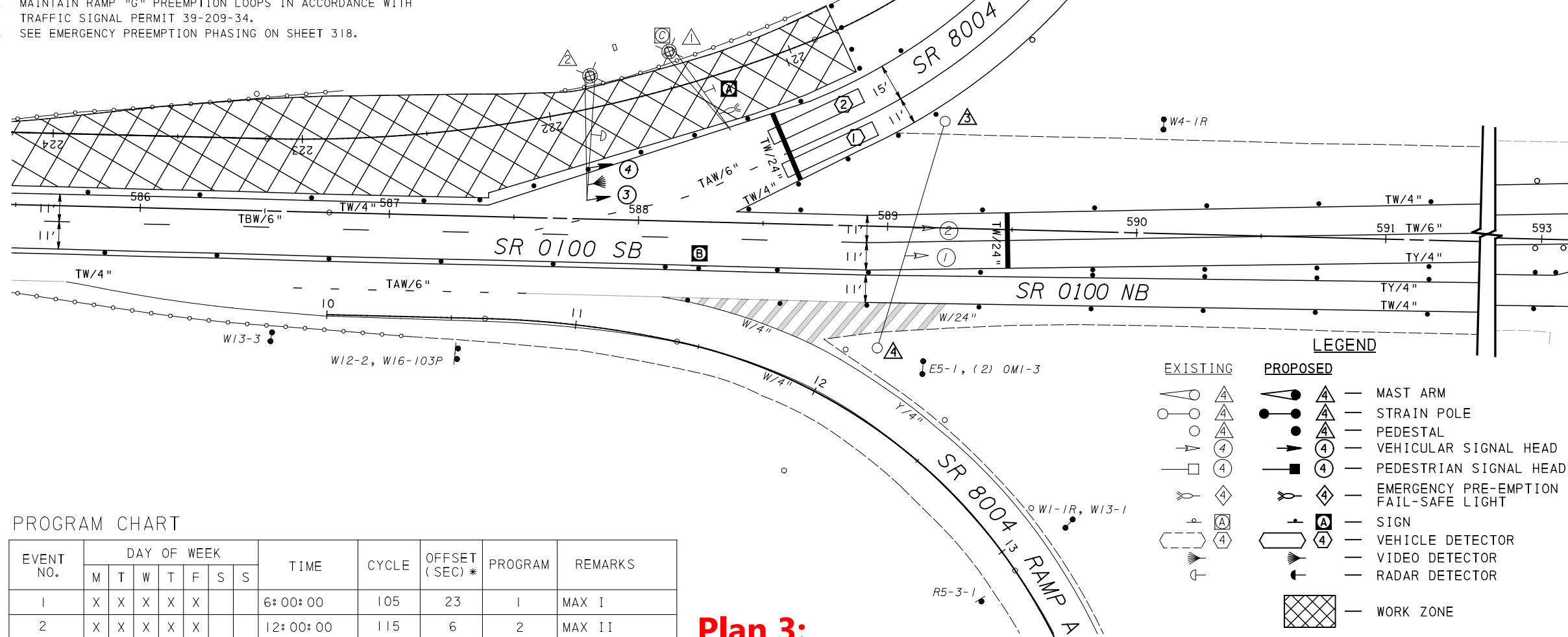
**** DENSITY ZONE NOTES**

- RANGE OF DETECTION: 0-100 FEET FROM STOP BAR
- MINIMUM SPEED BOUNDARY: 1-35 MPH

**** ADVANCE DILEMMA ZONE NOTES**

- ESTIMATED TIME OF ARRIVAL: MIN 2.5-MAX 5.5 SEC
- RANGE OF DETECTION: MIN 0-MAX 500 FT
- SPEED RANGE: 30-100 MPH

- MOVE TRAFFIC SIGNAL HEADS 3 & 4 AND SIGN ON EXISTING POLE #2 AS SHOWN.
- MAINTAIN SIGNAL COORDINATION WITH THE CLOSED LOOP SYSTEM WITH THE MASTER CONTROLLER, LOCATED AT THE SOUTHEAST CORNER OF SR 1002 (TILGHMAN STREET) AND SR 100.
- PROVIDE RADAR DETECTION FOR VOLUME DENSITY LOOPS ON SR 0100 SOUTHBOUND TO OBTAIN VOLUME DENSITY OPERATIONS 400' FROM THE STOP BAR.
- MAINTAIN RAMP "G" PREEMPTION LOOPS IN ACCORDANCE WITH TRAFFIC SIGNAL PERMIT 39-209-34.
- SEE EMERGENCY PREEMPTION PHASING ON SHEET 318.



PROGRAM CHART

EVENT NO.	DAY OF WEEK							TIME	CYCLE	OFFSET (SEC) *	PROGRAM	REMARKS
	M	T	W	T	F	S	S					
1	X	X	X	X	X			6:00:00	105	23	1	MAX I
2	X	X	X	X	X			12:00:00	115	6	2	MAX II
3	X	X	X	X	X	X	X	19:00:00	---	---	3	FREE MAX III

THE INTERSECTION OF TILGHMAN ST/ROUTE 100 HAS THE MASTER CONTROLLER. OFFSET REFERENCED TO BEGINNING OF INTERVAL 2 YELLOW.

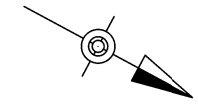
**Plan 3:
Traffic Control Example - Ramp G**

EXISTING	PROPOSED	DESCRIPTION
		MAST ARM
		STRAIN POLE
		PEDESTAL
		VEHICULAR SIGNAL HEAD
		PEDESTRIAN SIGNAL HEAD
		EMERGENCY PRE-EMPTION FAIL-SAFE LIGHT
		SIGN
		VEHICLE DETECTOR
		VIDEO DETECTOR
		RADAR DETECTOR
		WORK ZONE

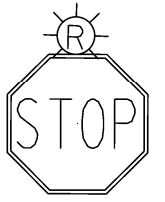
SEGMENT 4 - STAGE 2B
TRAFFIC CONTROL PLAN
TEMPORARY SIGNAL PERMIT

COUNTY:	LEHIGH
MUNICIPALITY:	UPPER MACUNGIE TOWNSHIP
INTERSECTION:	SR 0100 (PA ROUTE 100) & RAMP G
REVIEWED:	
CONTRACTOR REPRESENTATIVE	DATE
REVIEWED:	
DISTRICT TRAFFIC SIGNALS UNIT	DATE
RECOMMENDED:	
DISTRICT TRAFFIC ENGINEER	DATE
SCALE:	0 25 50 75 FEET

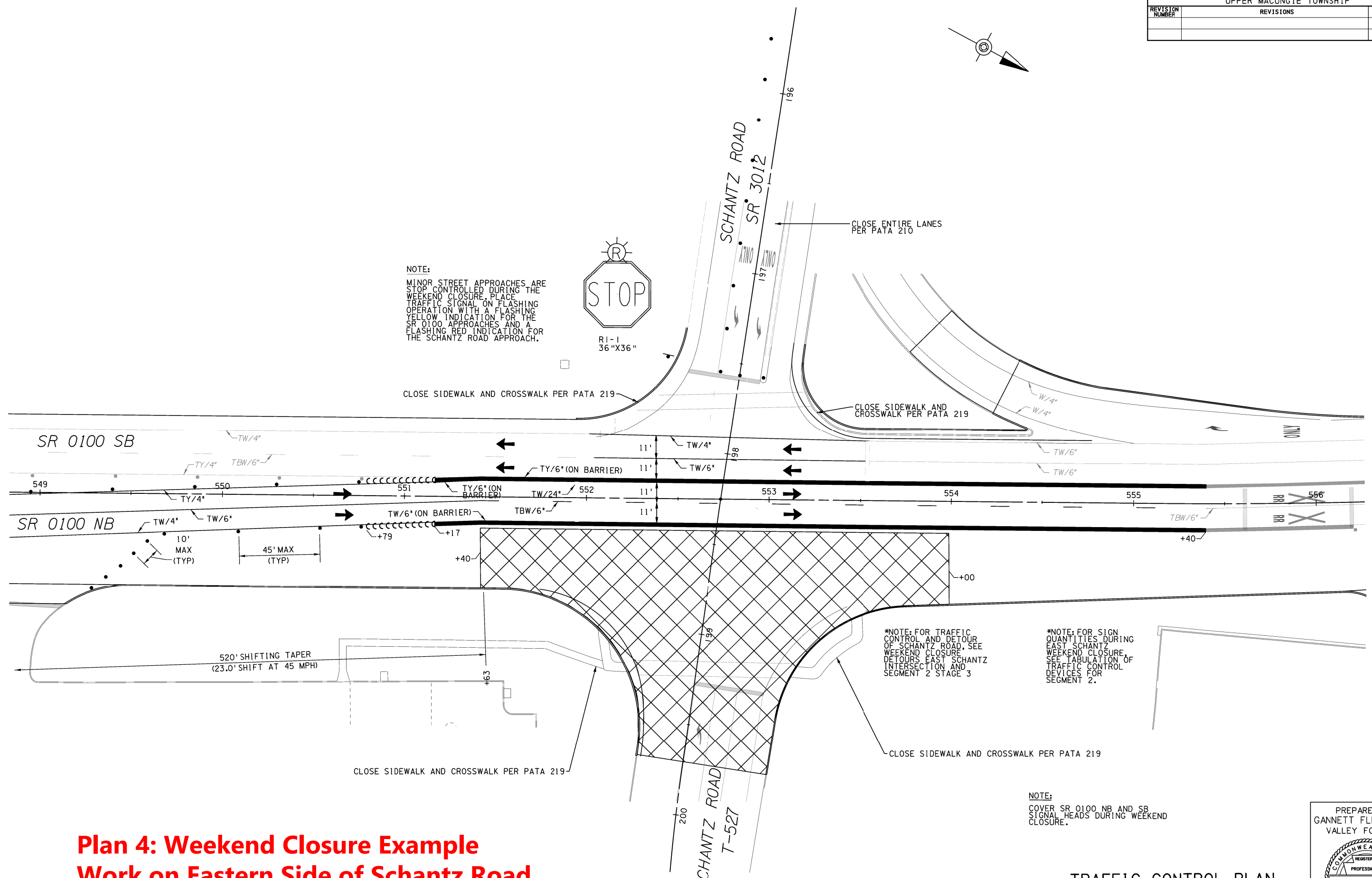
DISTRICT	COUNTY	ROUTE	SECTION	SHEET
5-0	LEHIGH	0100	13M	273 OF 336
UPPER MACUNGIE TOWNSHIP				
REVISION NUMBER	REVISIONS	DATE	BY	



NOTE:
 MINOR STREET APPROACHES ARE STOP CONTROLLED DURING THE WEEKEND CLOSURE. PLACE TRAFFIC SIGNAL ON FLASHING OPERATION WITH A FLASHING YELLOW INDICATION FOR THE SR 0100 APPROACHES AND A FLASHING RED INDICATION FOR THE SCHANTZ ROAD APPROACH.

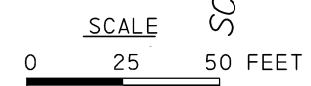


R1-1
36"X36"



SEE SHEET 272

**Plan 4: Weekend Closure Example
 Work on Eastern Side of Schantz Road**



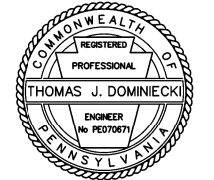
*NOTE: FOR TRAFFIC CONTROL AND DETOUR OF SCHANTZ ROAD, SEE WEEKEND CLOSURE, DETOURS EAST SCHANTZ INTERSECTION AND SEGMENT 2 STAGE 3

*NOTE: FOR SIGN QUANTITIES DURING EAST SCHANTZ WEEKEND CLOSURE, SEE TABULATION OF TRAFFIC CONTROL DEVICES FOR SEGMENT 2.

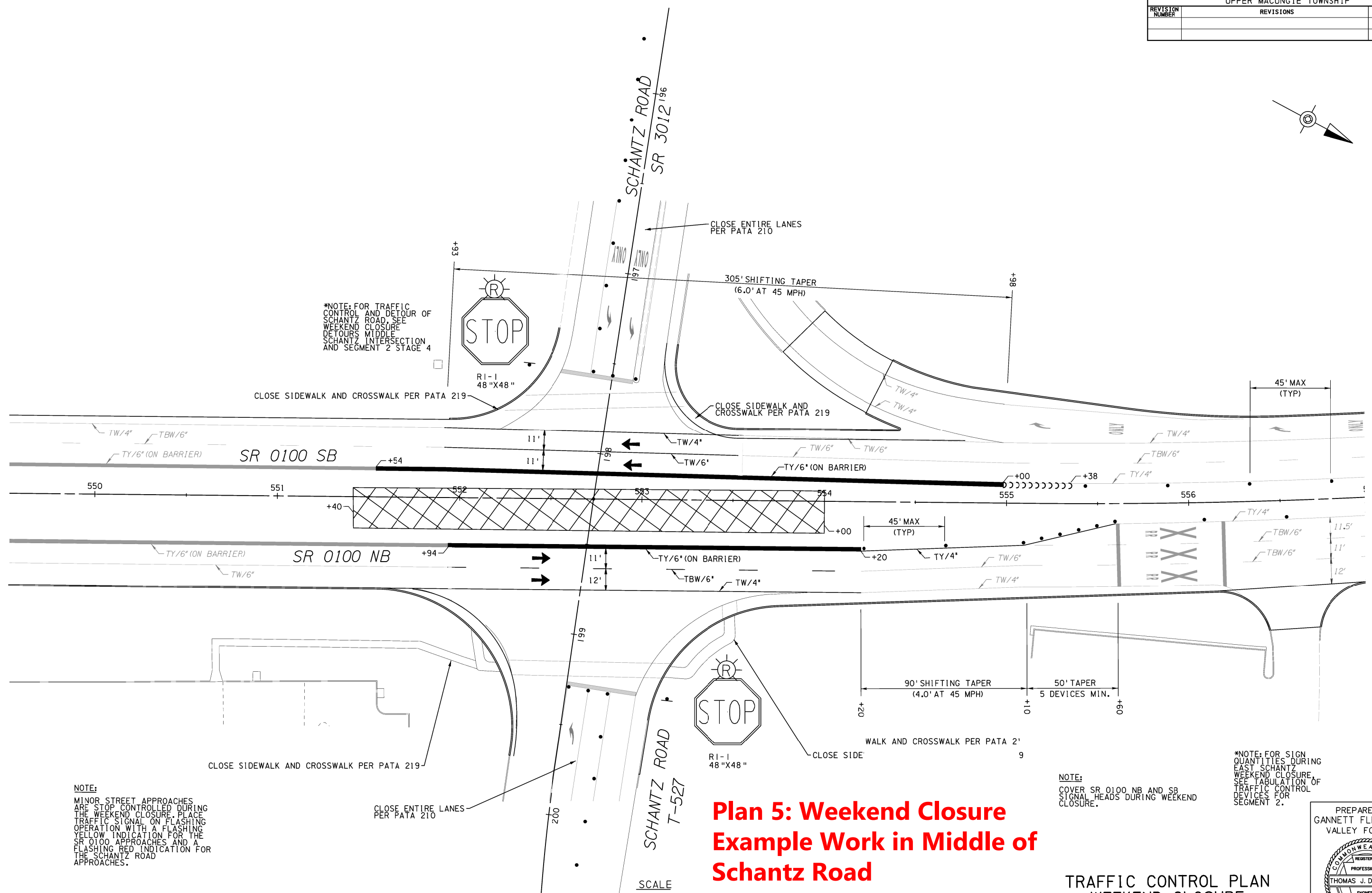
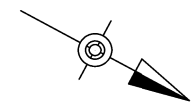
NOTE:
 COVER SR 0100 NB AND SB SIGNAL HEADS DURING WEEKEND CLOSURE.

**TRAFFIC CONTROL PLAN
 WEEKEND CLOSURE
 EAST SCHANTZ INTERSECTION**

PREPARED BY:
 GANNETT FLEMING, INC.
 VALLEY FORGE, PA



DISTRICT	COUNTY	ROUTE	SECTION	SHEET
5-0	LEHIGH	0100	13M	274 OF 336
UPPER MACUNGIE TOWNSHIP				
REVISION NUMBER	REVISIONS			DATE BY



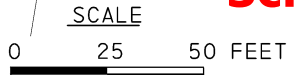
*NOTE: FOR TRAFFIC CONTROL AND DETOUR OF SCHANTZ ROAD SEE WEEKEND CLOSURE DETOURS MIDDLE SCHANTZ INTERSECTION AND SEGMENT 2 STAGE 4

NOTE:
MINOR STREET APPROACHES ARE STOP CONTROLLED DURING THE WEEKEND CLOSURE. PLACE TRAFFIC SIGNAL ON FLASHING OPERATION WITH A FLASHING YELLOW INDICATION FOR THE SR 0100 APPROACHES AND A FLASHING RED INDICATION FOR THE SCHANTZ ROAD APPROACHES.

NOTE:
COVER SR 0100 NB AND SB SIGNAL HEADS DURING WEEKEND CLOSURE.

*NOTE: FOR SIGN QUANTITIES DURING EAST SCHANTZ WEEKEND CLOSURE, SEE TABULATION OF TRAFFIC CONTROL DEVICES FOR SEGMENT 2.

Plan 5: Weekend Closure Example Work in Middle of Schantz Road



TRAFFIC CONTROL PLAN
WEEKEND CLOSURE
MIDDLE SCHANTZ INTERSECTION

PREPARED BY:
GANNETT FLEMING, INC.
VALLEY FORGE, PA

PHOTOS

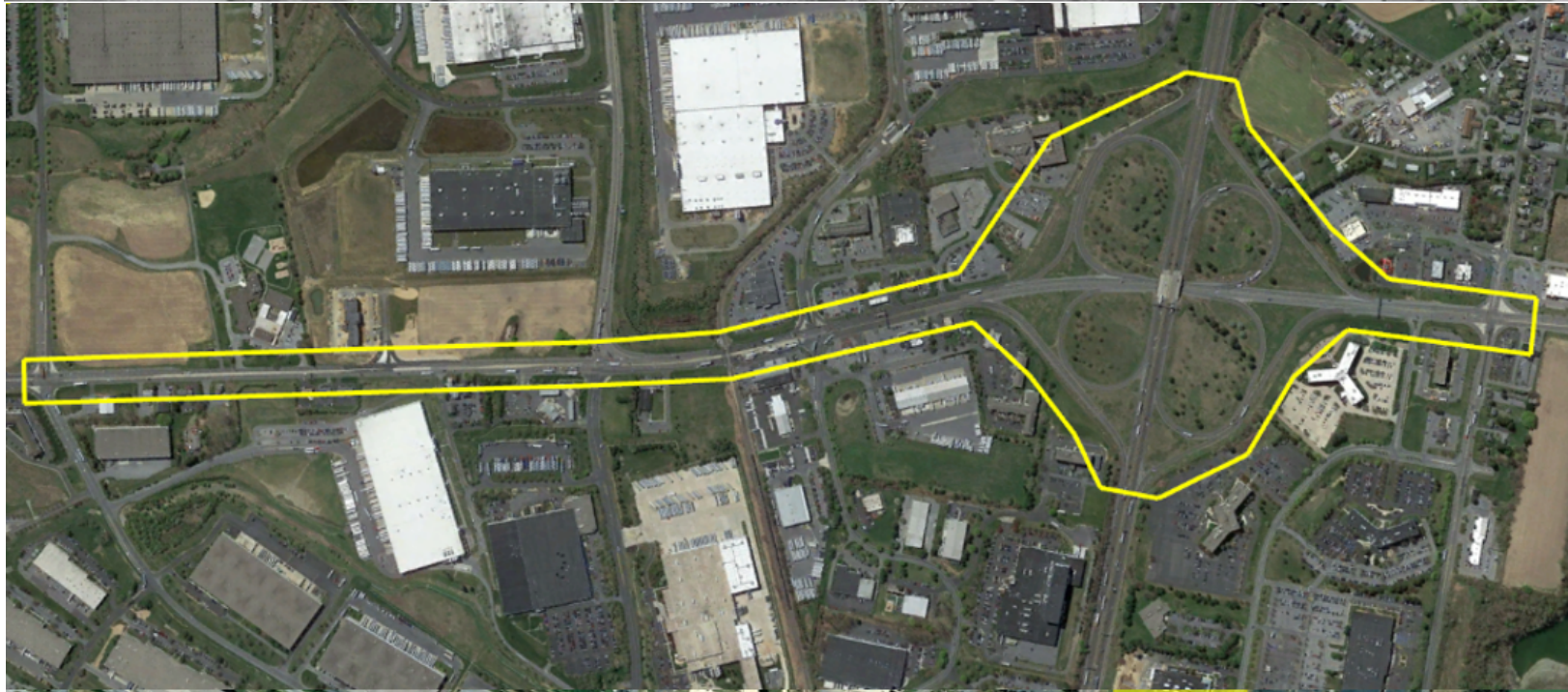
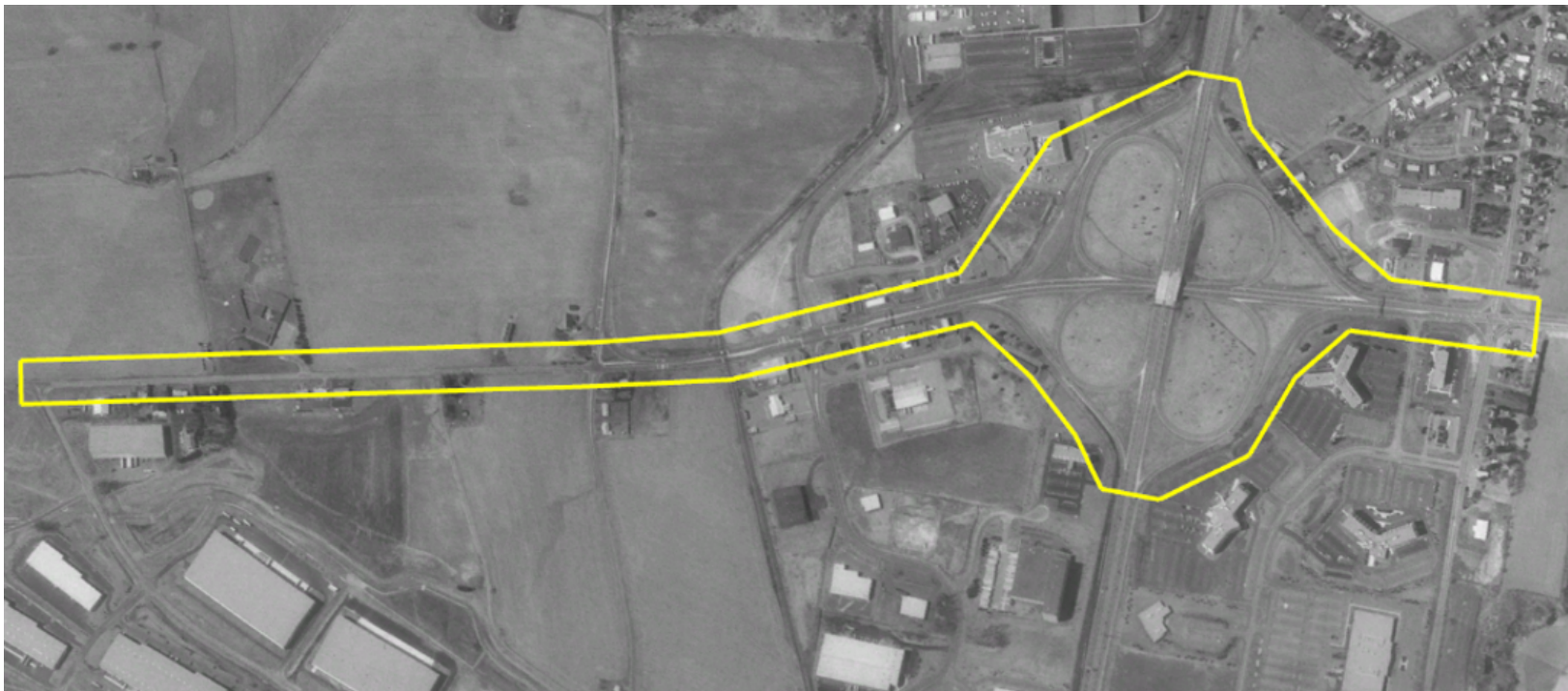


Photo credit: Google Earth

**Photo 1: Industrial and Commercial Growth Along the SR 0100 Corridor
Between 1992 (Top) and 2017 (Bottom)**



Photo Credit: Nick Giglio, Urban Engineers

Photo 2: Traffic Control Example – Ramp G

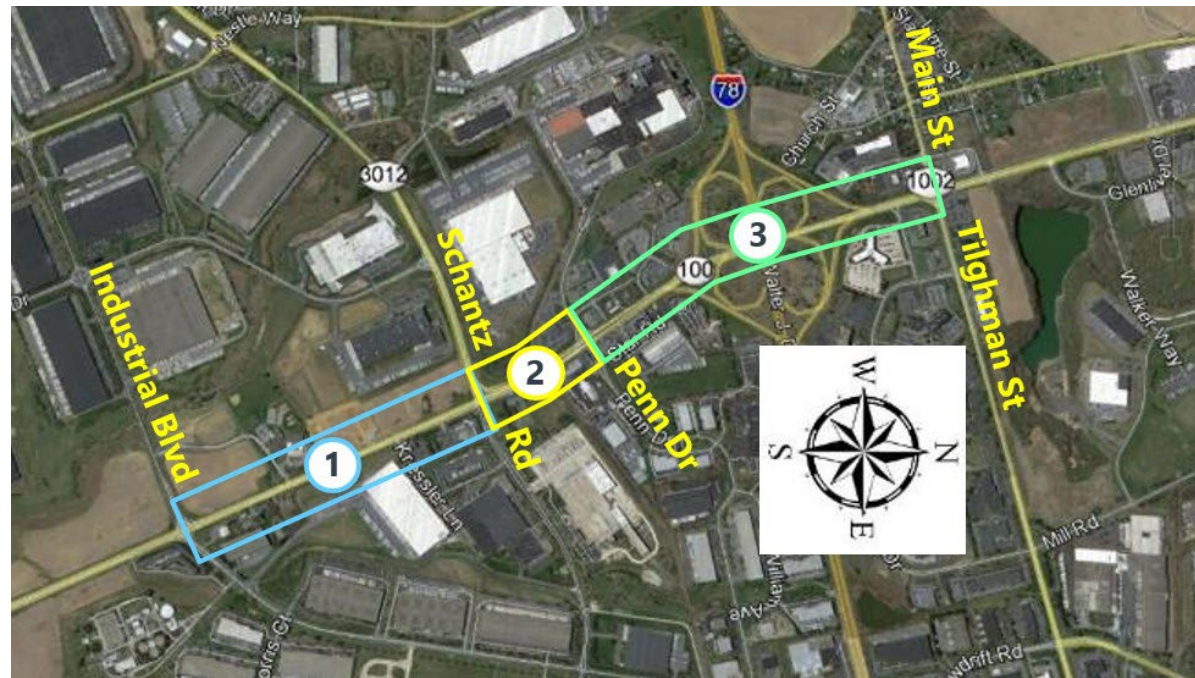
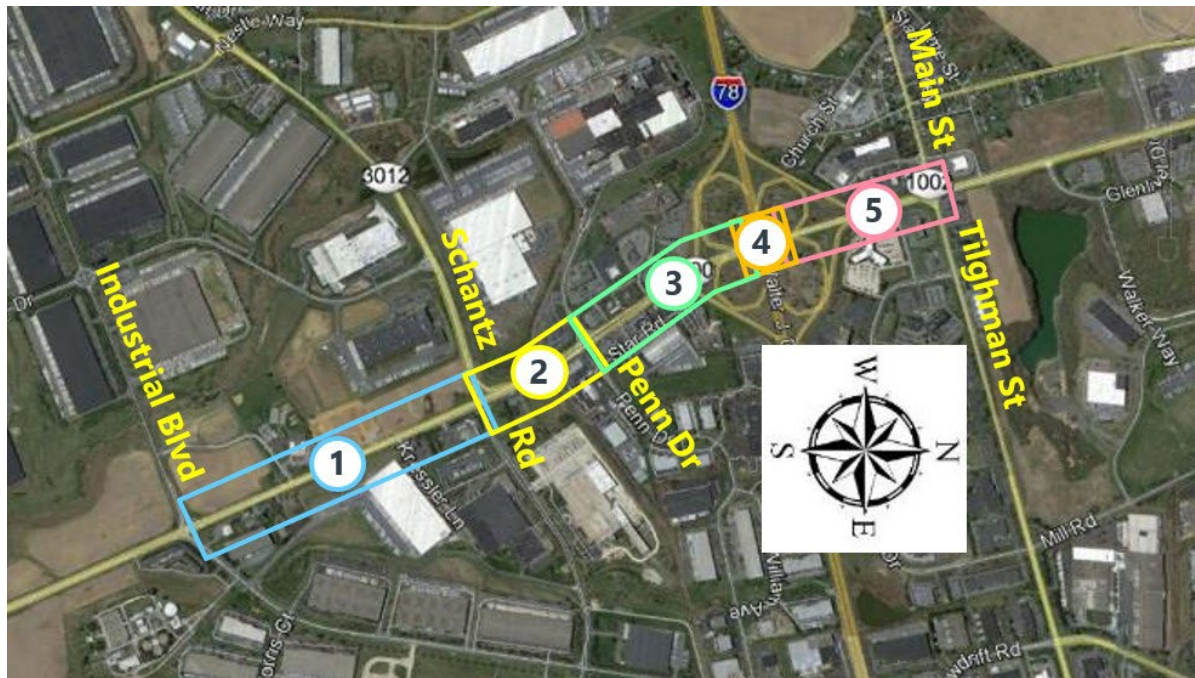


Photo credit: Google Earth

Photo 3: Reduction of Traffic Control Segments from 5 Segments (Top) to 3 Segments (Bottom)



Photo credit: David Bauscher, Urban Engineers

Photo 4: Temporary Concrete Barrier to Address Gerber Collision Safety Concern



Photo credit: Nick Giglio, Urban Engineers

Photo 5: SR 0100 Aesthetics

VERIFICATION OF SUBSTANTIAL COMPLETION

Dominiecki, Thomas J.

From: Ulshafer, Calvin M <culshafer@pa.gov>
Sent: Wednesday, January 18, 2023 11:47 AM
To: Dominiecki, Thomas J.
Cc: Reber, Matthew S.; Cox, Kerry
Subject: RE: [External] SR 0100-13M: Verification of Substantial Completion

[EXTERNAL EMAIL]: This email originated from outside the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Tom, Physical work on this project is complete. The Department is moved into the post construction (close-out) phase and is in the process of issuing notice of final quantities. As of 12-09-2022 this project was substantially complete.

Calvin Ulshafer TCM2

PA Department of Transportation | District 5-0
1002 Hamilton Street | Allentown, PA 18101
Phone: 610.390-2475
www.dot.state.pa.us

From: Cox, Kerry <kecox@pa.gov>
Sent: Wednesday, January 18, 2023 11:29 AM
To: Dominiecki, Thomas J. <tdominiecki@GFNET.com>; Ulshafer, Calvin M <culshafer@pa.gov>
Cc: Reber, Matthew S. <mreber@gfnet.com>
Subject: RE: [External] SR 0100-13M: Verification of Substantial Completion

I believe this one would be for Calvin to confirm, ECMS does shows a physical work complete date of 12/09/2022.

Kerry Cox, P.E. | Senior Project Manager
PennDOT Engineering District 5-0
Phone: 610.871.4528

From: Dominiecki, Thomas J. <tdominiecki@GFNET.com>
Sent: Wednesday, January 18, 2023 11:21 AM
To: Ulshafer, Calvin M <culshafer@pa.gov>; Cox, Kerry <kecox@pa.gov>
Cc: Reber, Matthew S. <mreber@gfnet.com>
Subject: [External] SR 0100-13M: Verification of Substantial Completion

ATTENTION: This email message is from an external sender. Do not open links or attachments from unknown senders. To report suspicious email, use the [Report Phishing button in Outlook](#).

Calvin (or would it be Kerry?),

Gannett Fleming is entering the SR 0100-13M Betterment project for the ASHE East Penn Project of the Year. We are submitting this Friday.

We need to include a brief statement from PennDOT indicating/verifying substantial completion of the project prior to December 31, 2022. See the below screenshot for highlighted text from the entry requirements...

- The project must be substantially completed and open to the public by December 31, 2022, and immediately prior to the 2022 ASHE National Annual Conference.
- Previous winning projects in the NPAC are not eligible.
- Entry submissions shall contain:
 - ✓ Completed Project Entry Form.
 - ✓ Narrative describing the project not exceeding 1500 words (single sided, 12-point font, 8 ½ "x11 address the 6 categories in the scoring and judging criteria below. Project construction costs must
 - ✓ Up to five (5) five construction drawings on 11"x17" sheets that are relative to the scoring and ju
 - ✓ Up to five (5) photos (maximum size: 8 ½"x11") that are relative to the scoring and judging criteri
 - ✓ Verification of substantial completion by the date noted.
 - ✓ Statement of commitment that at least one representative from the project team will attend the

Would you be willing to provide that statement so we can include it in our submission? A reply to this email would be fine. It just basically proves that this project reached substantial completion sometime between 1/1/2021 and 12/31/2022.

Thank you,
Tom

Thomas J. Dominiecki, PE, PTOE | Assistant Manager – Highway Department/Valley Forge
Gannett Fleming | Valley Forge Corporate Center, 1010 Adams Avenue, Valley Forge, Pennsylvania 19403-2402
O 610.783.3750 | C 484.252.1825 | tdominiecki@gfnet.com
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STATEMENT OF COMMITMENT

Should this entry be included in the 2023 National Project of the Year awards luncheon, at least one representative from Gannett Fleming will attend the awards luncheon.