

COMCAST TECHNOLOGY CENTER 18TH STREET PEDESTRIAN TUNNEL PHILADELPHIA, PA

PSPE Presentation, December 1, 2016

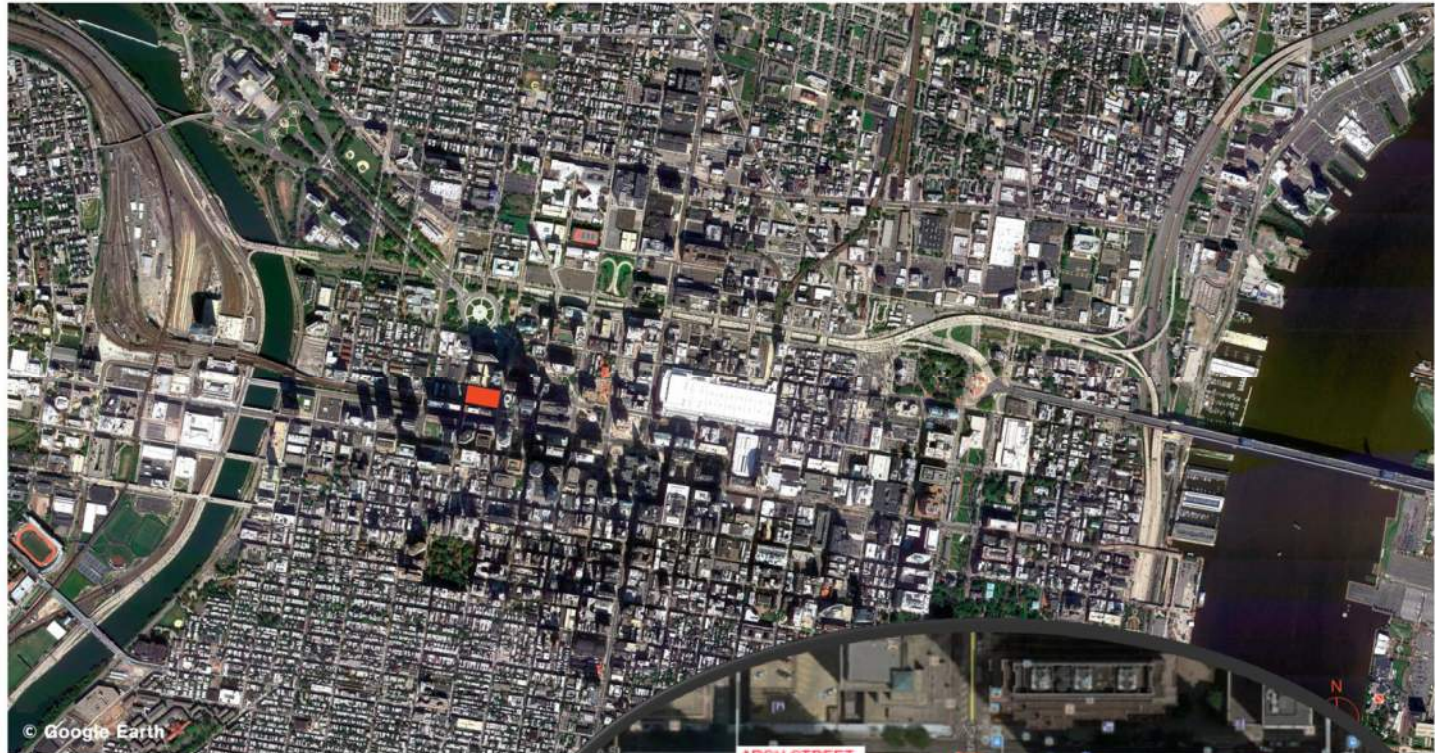
Thornton Tomasetti



PARTNERS FOR WHAT'S POSSIBLE
www.pennoni.com

Kelly/Maiello
Architects & Planners

Location Map (Aerial)



18th Street &
Cuthbert Street
Philadelphia, PA



18th Street and Cuthbert Walkway



LOOKING NORTH ALONG 18TH
STREET

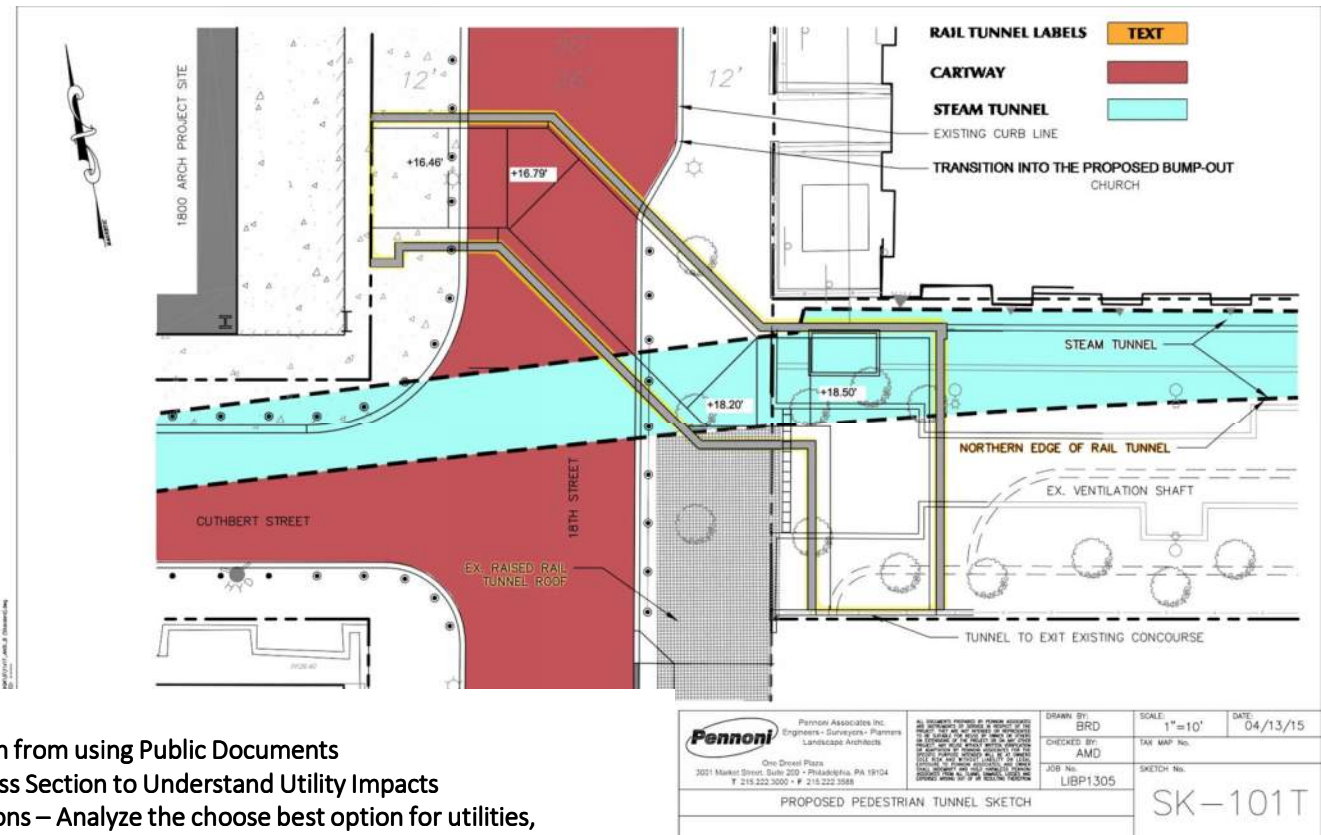
*LOOKS NORMAL
ON THE SURFACE!!*



LOOKING EAST ALONG CUTHBERT
WALKWAY

General Project Overview

Scope of Work – Feasibility, Engineering Study & Construction Coordination



Step 1:

Create a Base Plan from using Public Documents

Prepare Road Cross Section to Understand Utility Impacts

- Multiple Sections – Analyze the choose best option for utilities, easements, and road improvements

No Public Involvement - **Confidential**

Step 2:

Coordination with Utility Owners (SEPTA contacted first)

Coordination with Philadelphia Streets Department

Coordination with Public Property

Subsurface Utility Investigation

Study for Raising Street Grade Impacts

Engineering Challenges & Solutions

Client: Liberty Property 18th and Arch LP

Design Team:

Pennoni

Kelly Maiello

Thornton Tomasetti

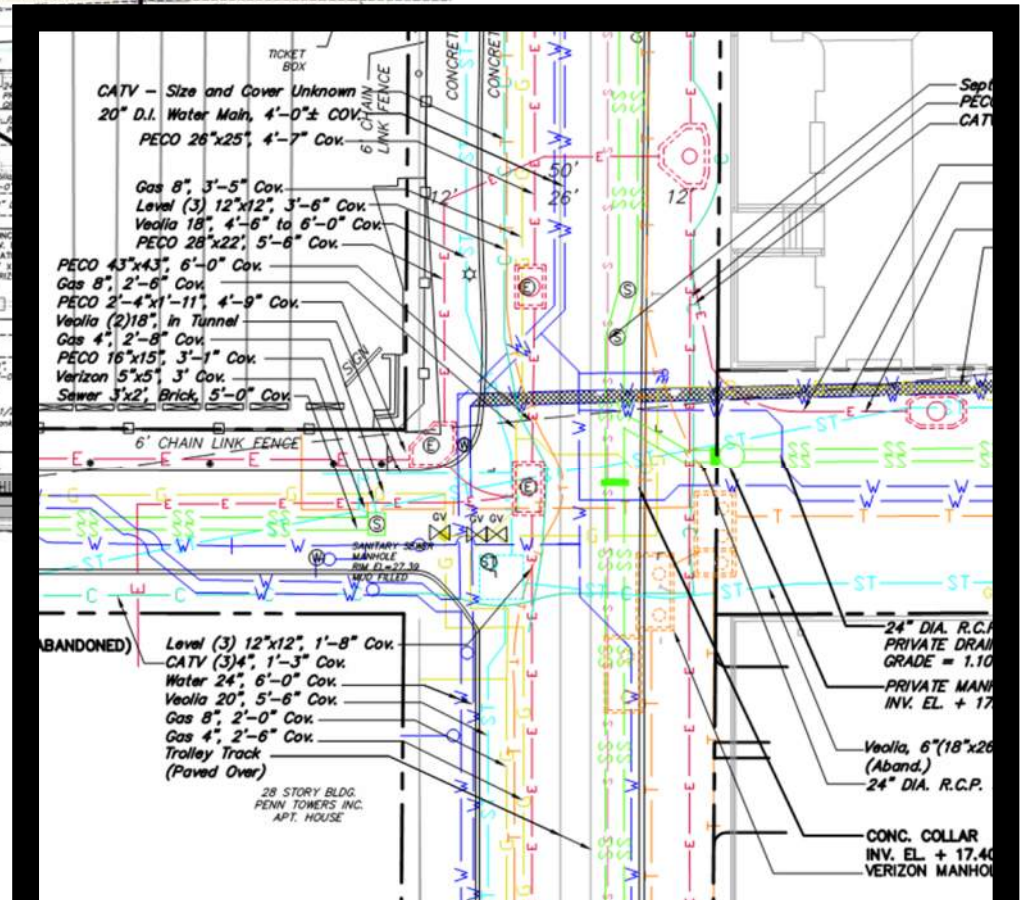
BALA

Construction Manager: L.F. Driscoll

Contractor: AP Construction

- ◆ **Final Design – June 2013 – December 2016... major challenges included:**
- ◆ **Existing Conditions**
 - ❖ SEPTA Tunnels
 - ❖ Utility Coordination & Relocation
- ◆ **PUC – Pennsylvania Public Utility Commission**
- ◆ **Ordinance Passed**
 - ❖ Construct, Use, and Maintain an underground pedestrian tunnel crossing 18th Street extending the existing underground transit concourse westward beneath 18th Street.
- ◆ **Construction Logistics**
 - ❖ Project Schedule – Tunnel Completed with Building
 - ❖ World Meeting of Families (September 2015)
 - ❖ Utility Schedules
 - ❖ Road Closures

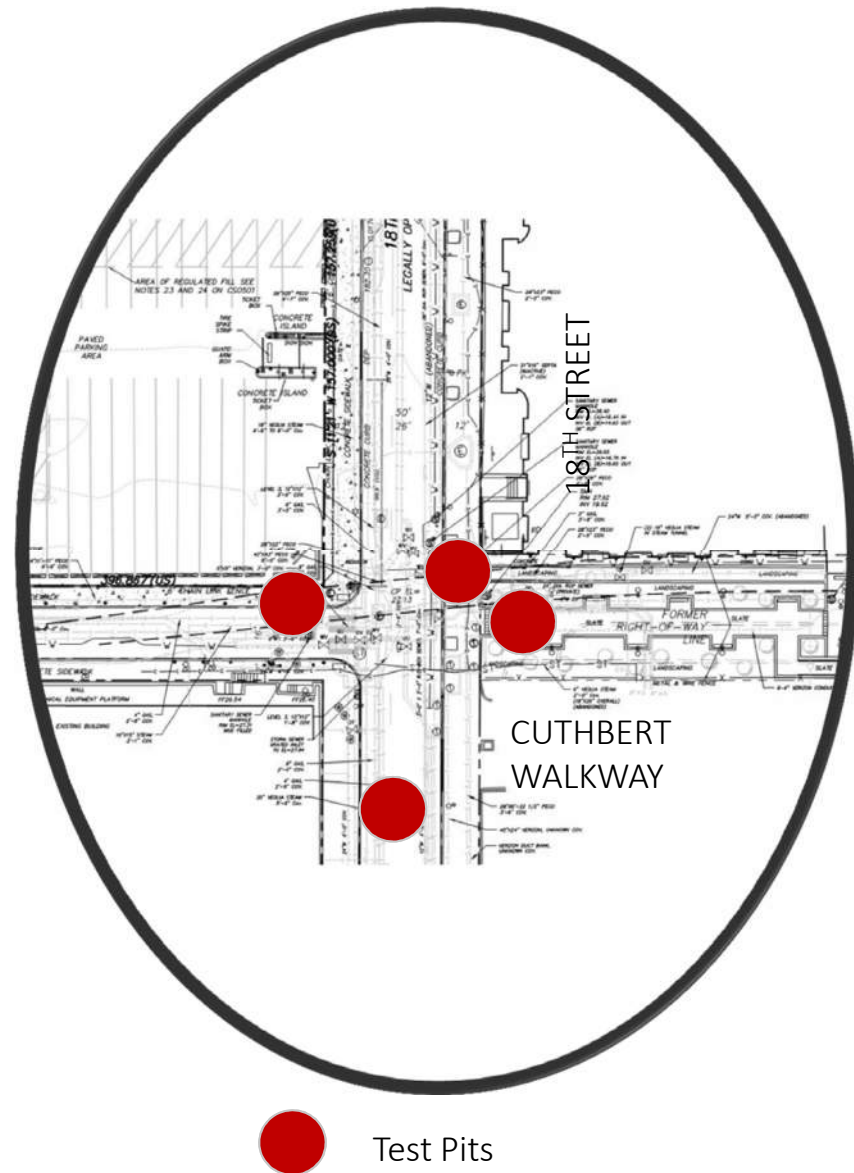
- Feasibility Study with No Public Involvement – **Confidential**
- 5 Options Analyzed



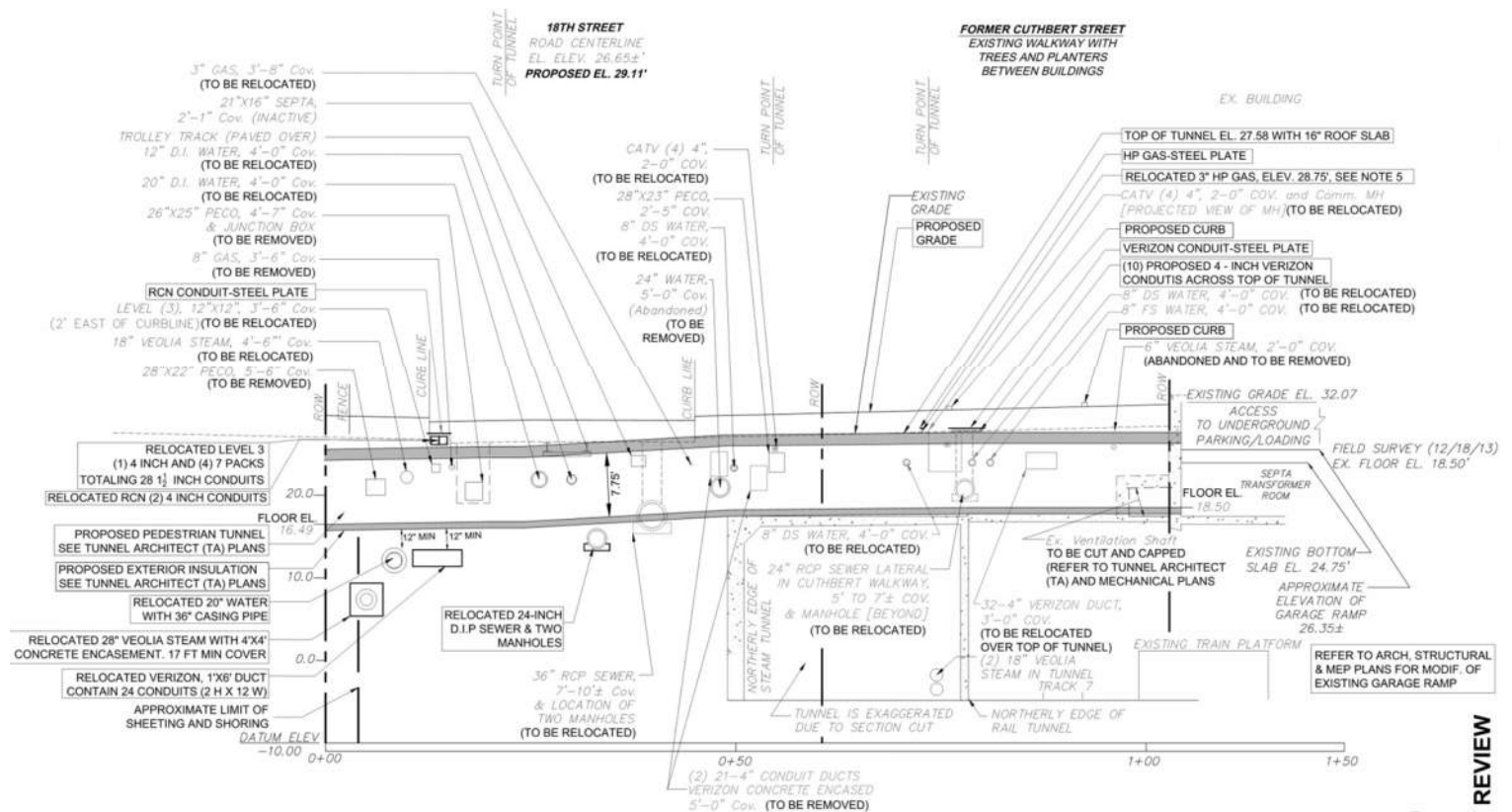
Engineering Solution - Existing Conditions - Utilities

- Started in Summer 2013
- Review of Existing Conditions
- Potential Utility Conflicts
- Historical Document Review
- Soft Dig Exploration
- Individual and Monthly Group Coordination Meetings

- ◆ **Utilities:**
 - COMCAST
 - LEVEL 3
 - PECO
 - PGW
 - PWD
 - PSD
 - RCN
 - SEPTA
 - SUNESYS
 - VEOLIA
 - VERIZON

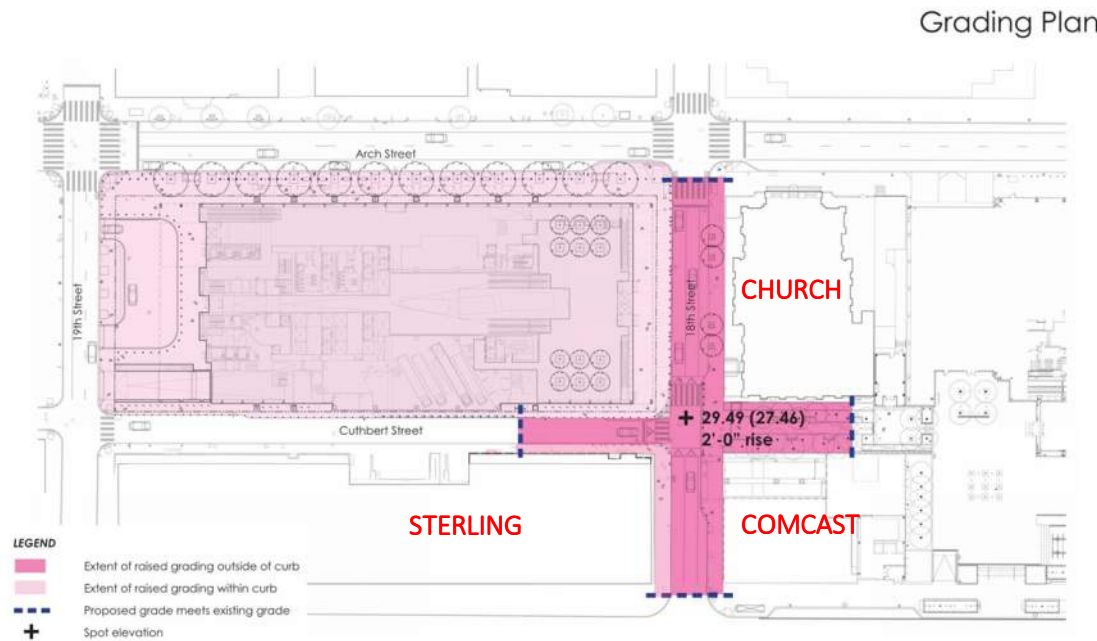


Engineering Solution - Existing Conditions - Utilities



COORDINATION AND VERIFICATION OF
EXISTING AND PROPOSED UTILITIES

Engineering Challenge & Solution – Roadway Reconstruction and Grading Study



Coordination with
Adjacent Property
Owners



Existing Arch Street
Presbyterian Church

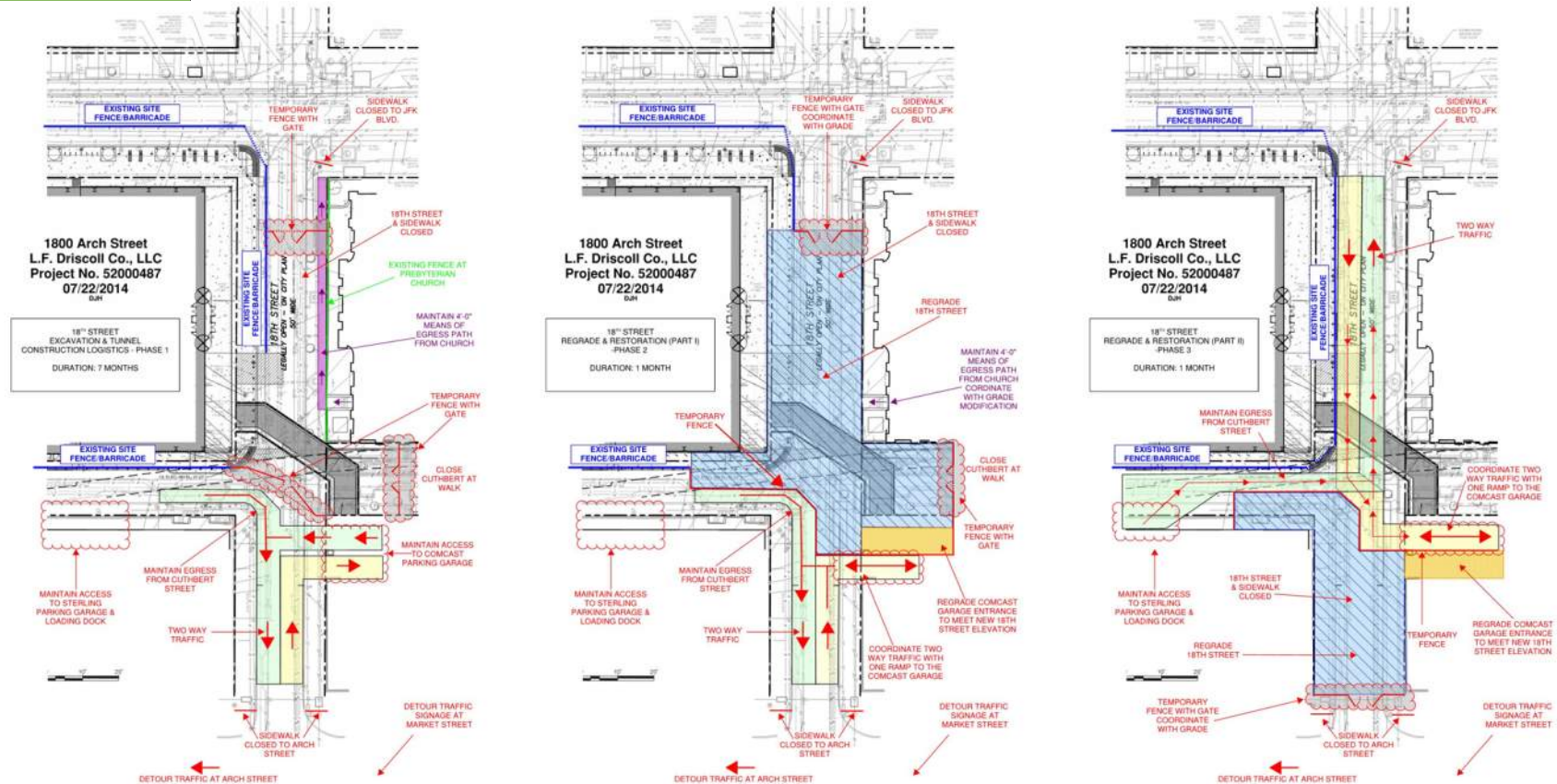


Existing Comcast One
underground parking garage
ramp



Sterling Building –
Cuthbert Street Access

Engineering Challenge & Solutions – Construction Logistics (Maintenance & Protection of Traffic)



Overview:

- Maintain Access to Comcast Center Garage
- Maintain Access to Sterling Building Loading Dock
 - Cuthbert Street – Traffic Flow Change
- 18th Street closed to Thru Traffic and various Utility Installations

Engineering Challenge – SEPTA Underground Steam and Rail Tunnel



Test Pit 4&5

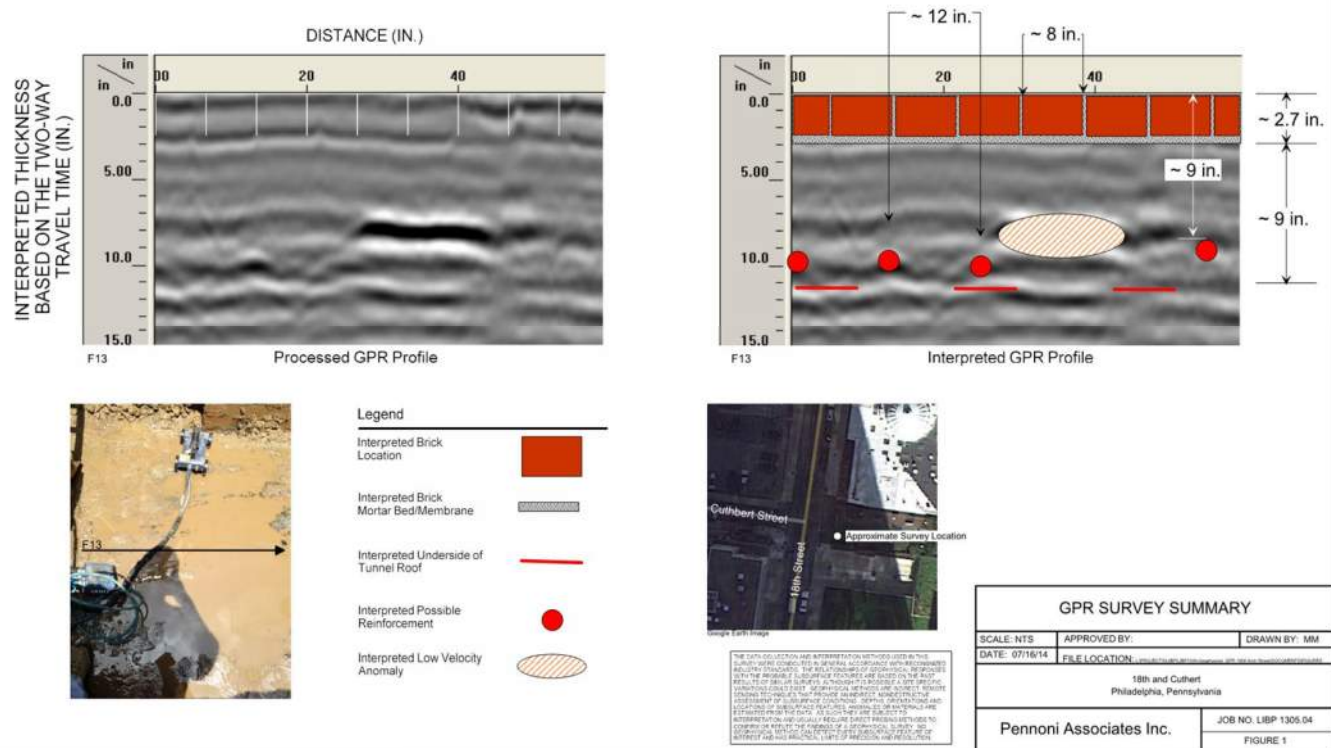
Existing railroad tunnel roof
and Verizon duct bank

Tunnel built in 1930's – lack of
record documents



Engineering Solution – Test Pit #4&5 (Ground Penetrating Radar)

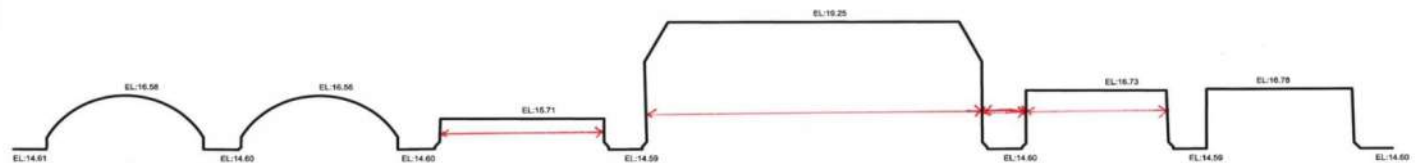
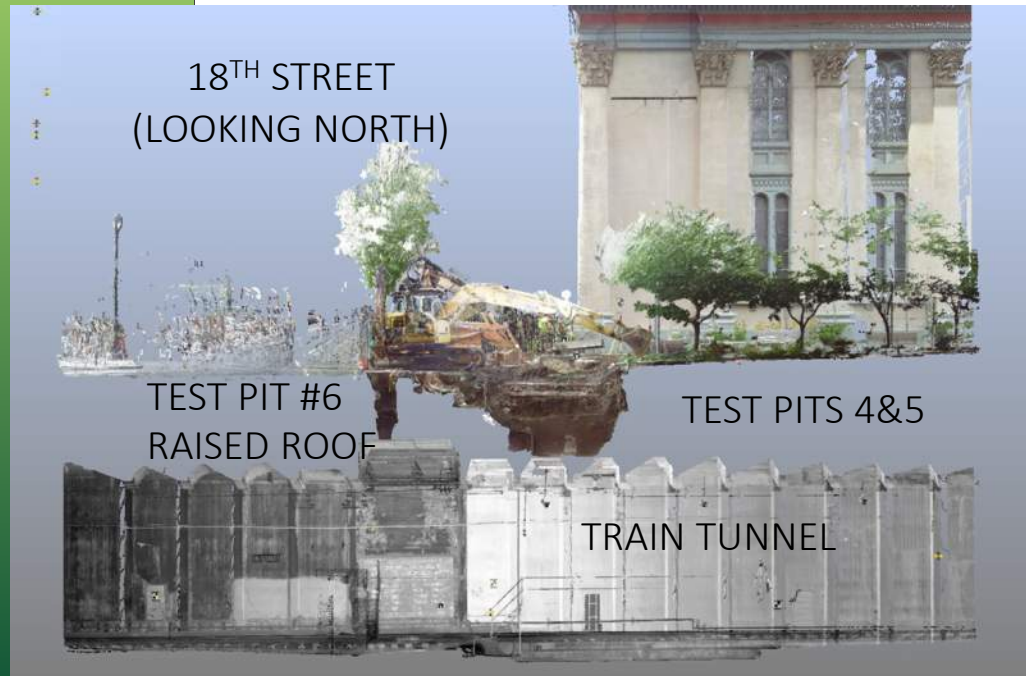
Typical GPR Profile (Test Pit Long Axis Direction)



Engineering Solutions – Existing Rail and Steam Tunnels – 3D Scanning

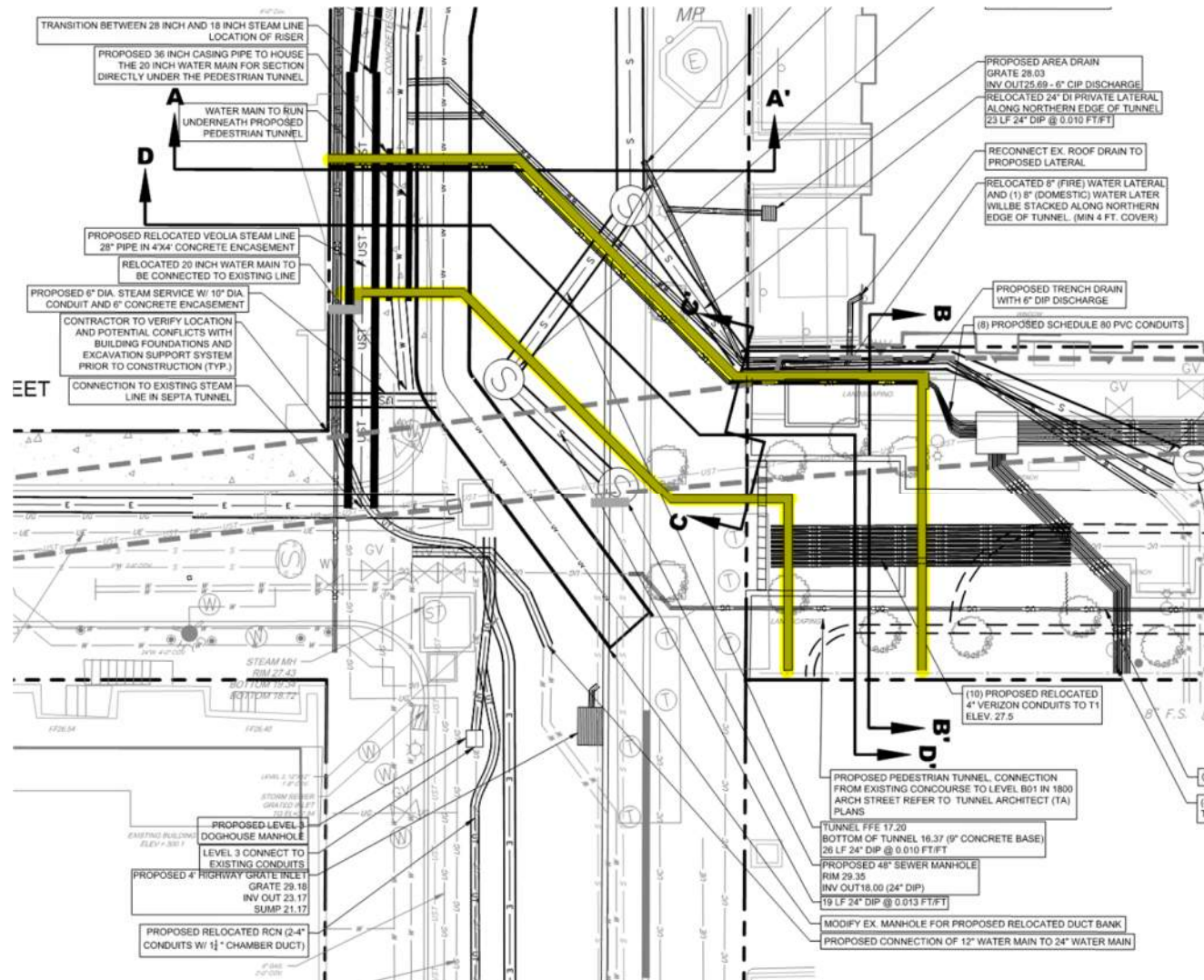


Engineering Solution – 3D Scanning



CROSS SECTION DEVELOPED FROM SCANNING WITHIN
THE CONCOURSE AND TRACK LEVEL AREAS
SHOWING UNDERSIDE ROOF ELEVATIONS

Final Design – Underground Pedestrian Tunnel

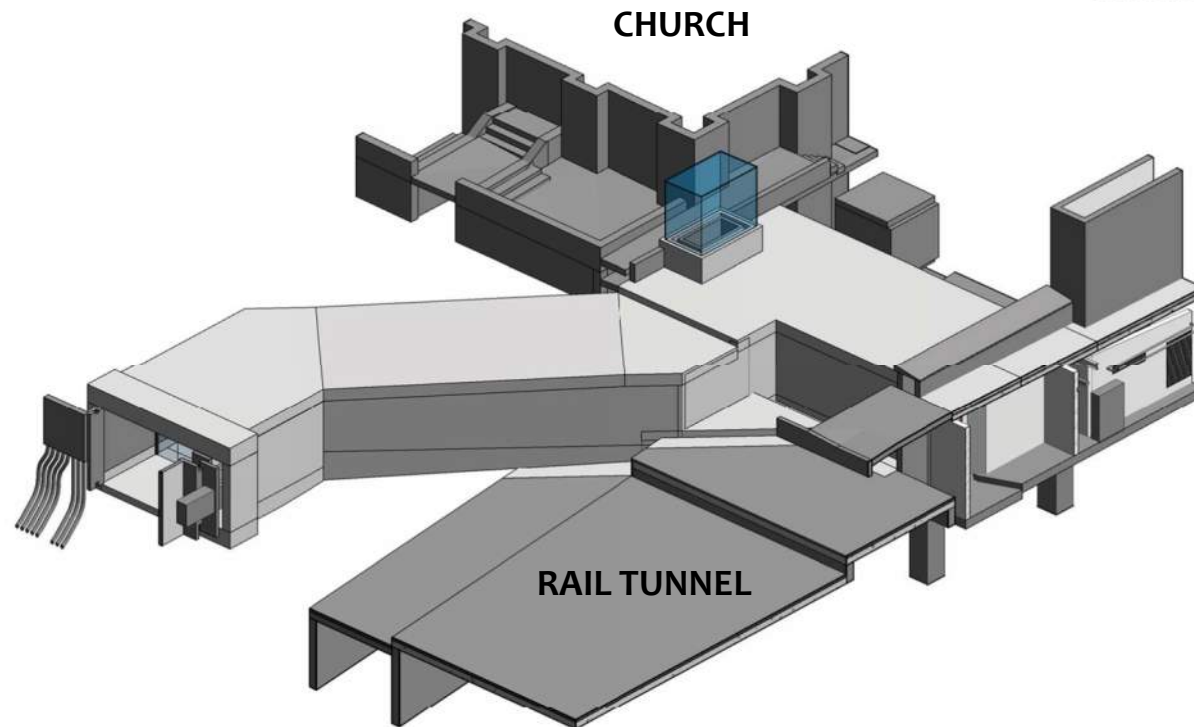


Skylight and Tunnel Structure Rendering

Kelly/Maiello
Architects & Planners

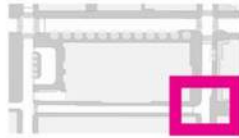
Thornton Tomasetti

Cuthbert & 18th St
SKYLIGHT 3D VIEW

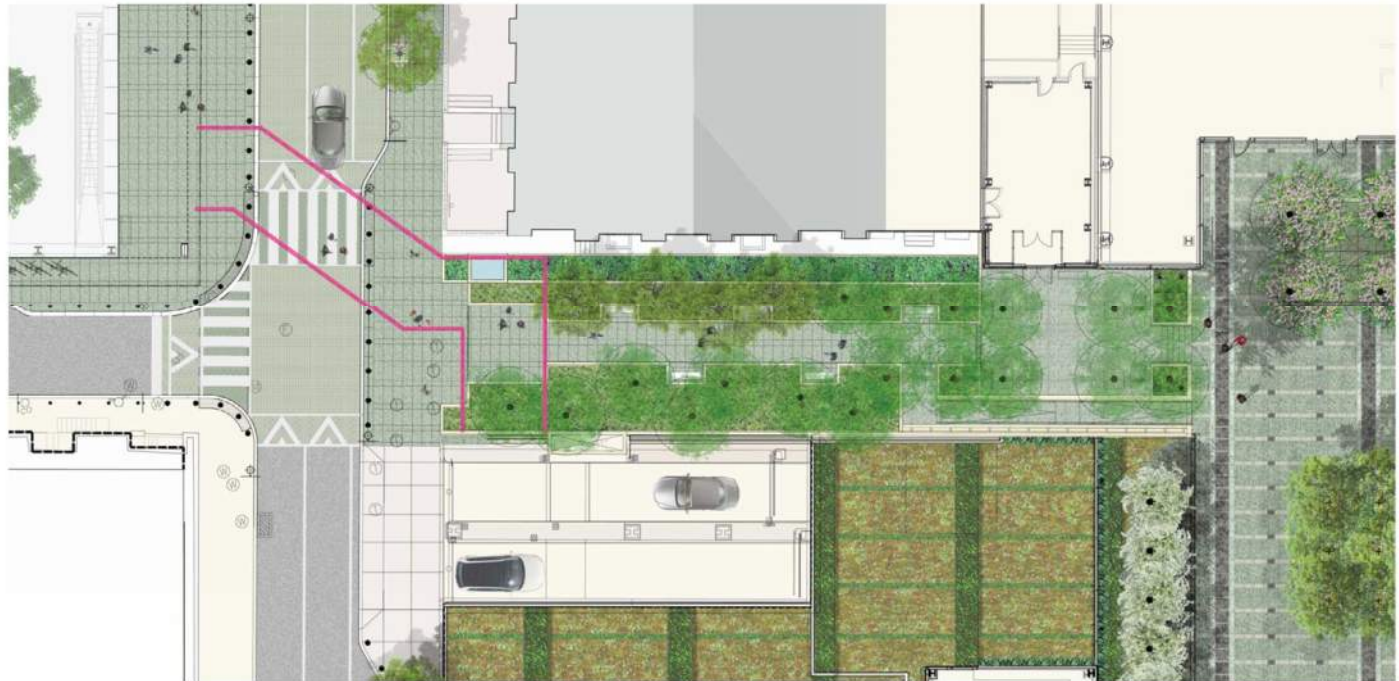


1800 ARCH STREET -

Surface View Rendering of Underground Tunnel



Cuthbert & 18th St
PLAN



1800 ARCH STREET -

Cuthbert Walkway Rendering

Cuthbert Walk Skylight
PERSPECTIVE



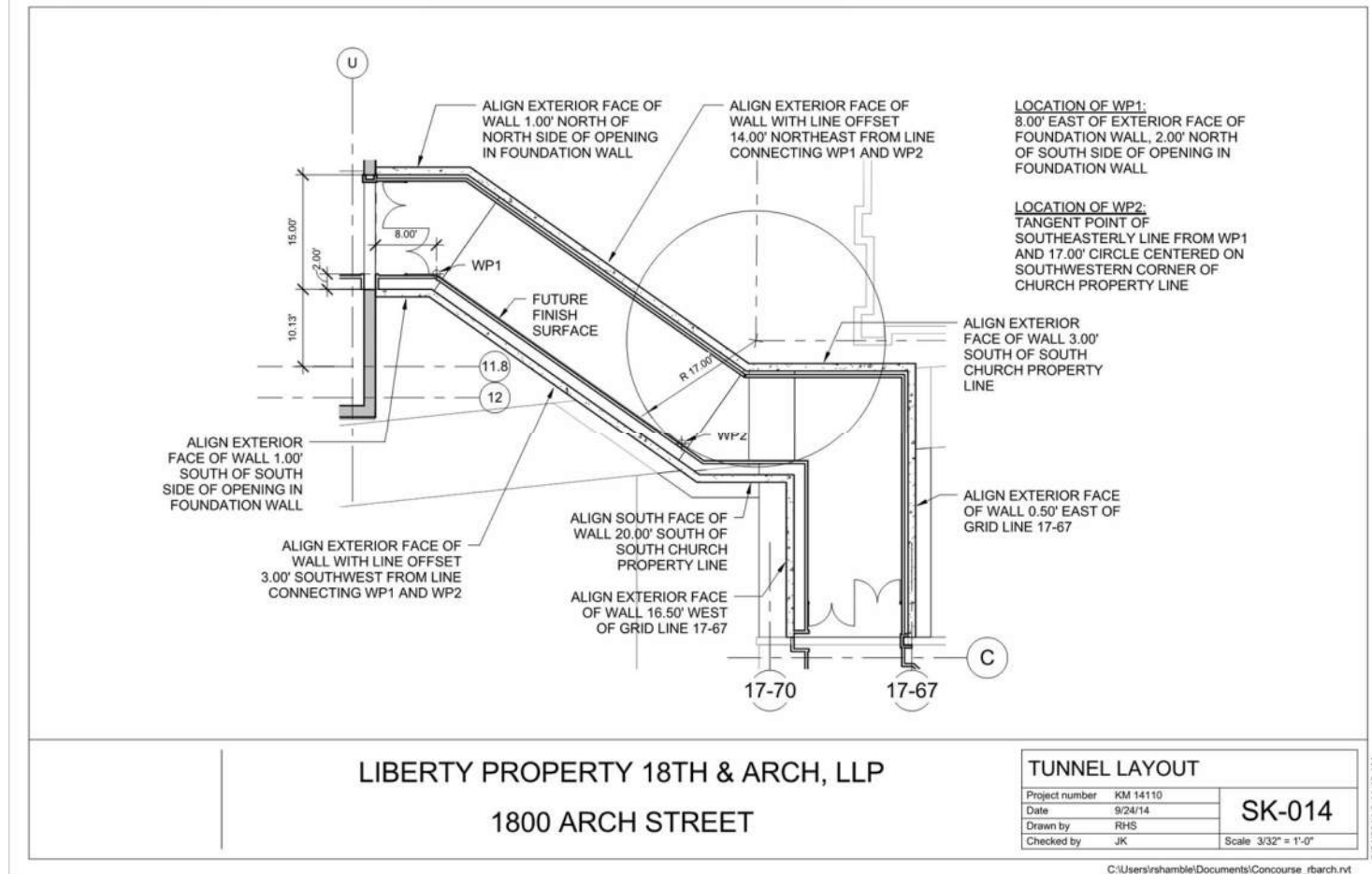
1800 ARCH STREET - 1/27/15



Tunnel Design

Kelly/Maiello
Architects & Planners

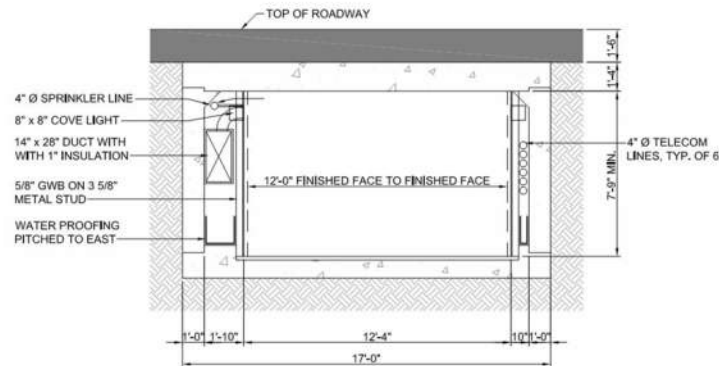
Thornton Tomasetti



Tunnel Section

Kelly/Maiello
Architects & Planners

Thornton Tomasetti



LIBERTY PROPERTY 18TH & ARCH, LLP
1800 ARCH STREET

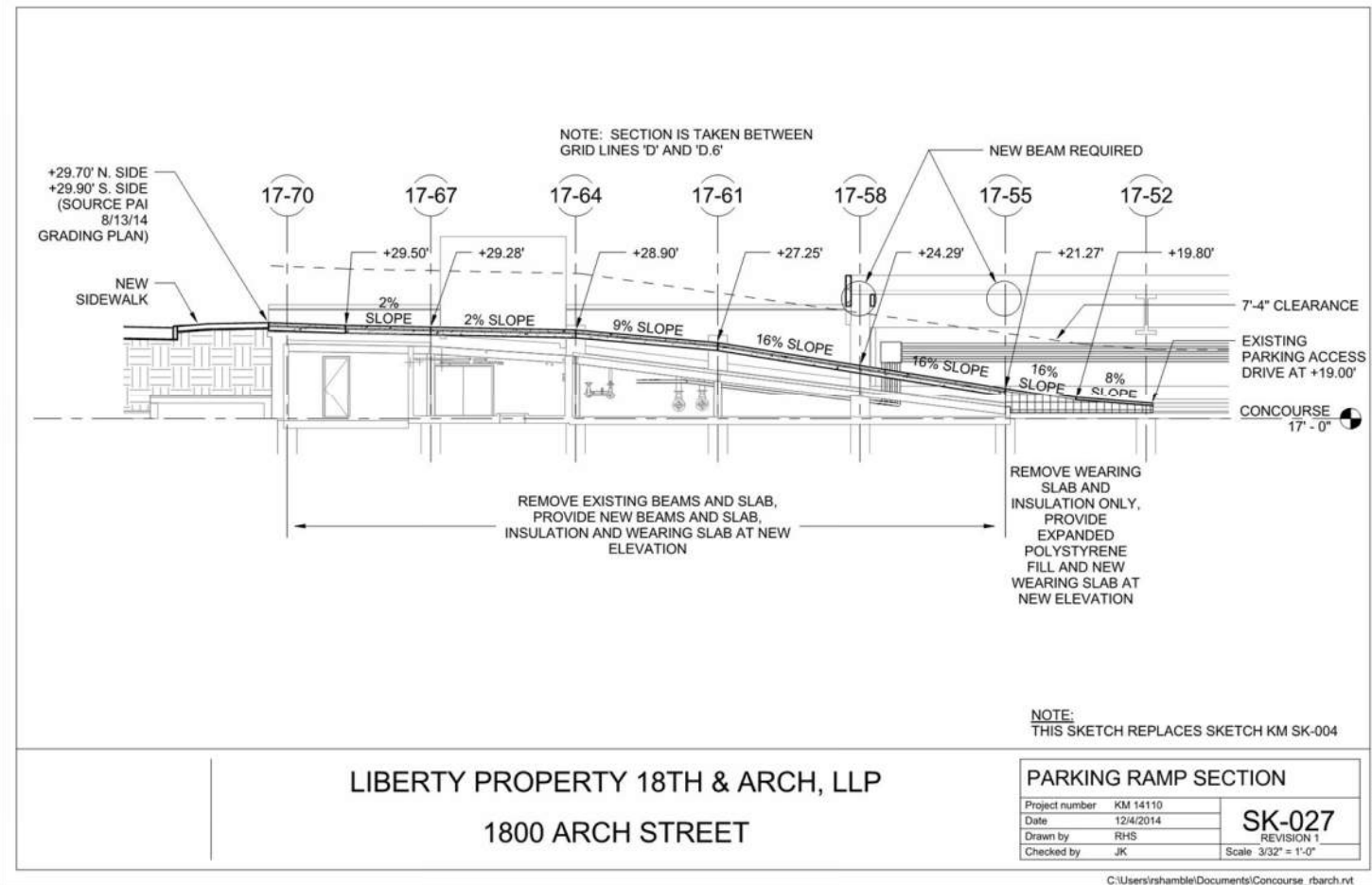
TUNNEL SECTION - UTILITIES

Project number	KM 14110	SK-008
Date	9/2/2014	
Drawn by	VG	
Checked by	JK	
Scale		1/4" = 1'-0"

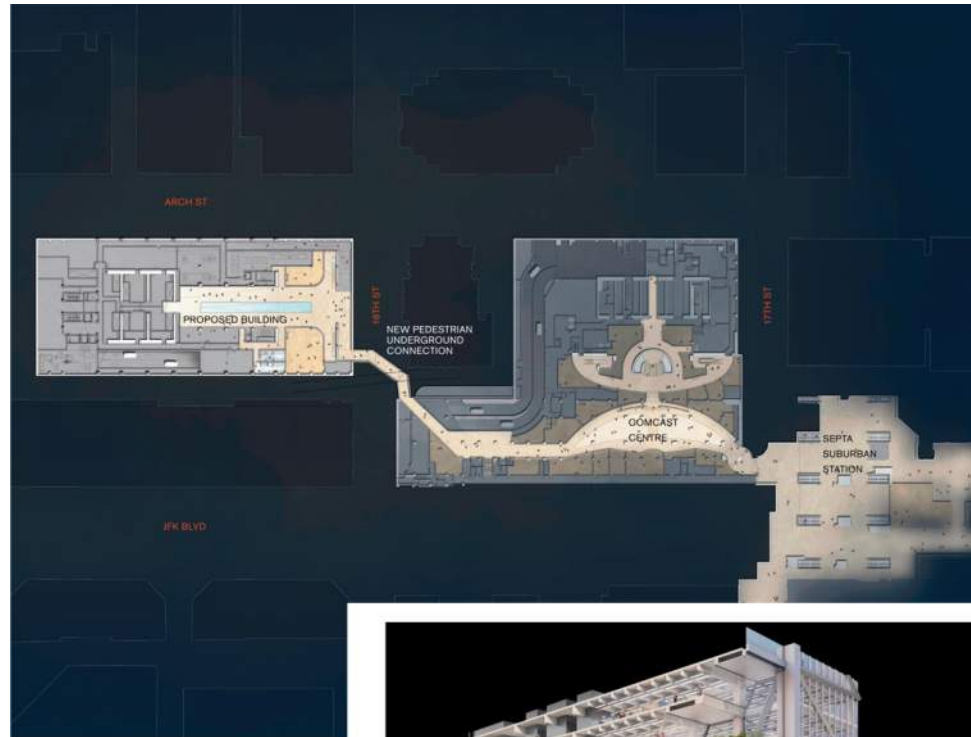
Comcast Garage Ramp – 18th St.

Kelly/Maiello
Architects & Planners

Thornton Tomasetti



Underground Concourse Extension and Building Connection



- PUBLIC ENTRANCE TO CONCOURSE LEVEL
- HOTEL BALLROOM
- RAISED BUILDING LOBBY
- HOTEL RESTAURANT
- PUBLIC WINTER GARDEN
- MAIN ENTRANCE
- 18th STREET

LONG SECTION CENTRAL AXIS OF PODIUM

Construction Photographs August/September 2016



Continued Demolition and Clean up for
Proposed Tunnel



Continued Utility Relocation Work

Construction Photographs October 2016



First & Second Section
of Tunnel Structure



Relocated Steam Line
connection into
Existing Steam Tunnel



Reconstructed North Garage
Ramp for Comcast Center

Construction Photographs November 2016



18th St. Tunnel Progress

Waterproofing Prep for Next Section
of Tunnel Structure



18th St Tunnel Progress

Third Section of Tunnel Structure

Summary

1. Project Challenges and Innovative Solutions

- A. Routing Tunnel through congested corridor - Utilities
- B. Coordinating all parties to achieve desired results – Utilities and Adjacent Property Owners
 - 1. Construction Logistics
 - 2. Raising 18th Street

2. Importance of Engineering Profession to Society

- A. Major infrastructure improvements would not be possible without engineers:
 - 1. Civil/Site
 - 2. Structural
 - 3. Geotechnical
 - 4. Traffic
 - 5. Utility (Gas, Electric, S team, Water, Sewer, & Telecommunication)

Hundreds of thousands will enjoy the results of these engineering labors.

3. Project Benefits to Delaware Valley Region

- A. Underground Pedestrian Tunnel Provides:
 - 1. Public Concourse Extension to 19th Street
 - 2. Reduce Pedestrian Roadway Congestion
 - 3. Allow for All-weather Mobility

QUESTIONS

