



# Pennsylvania 811 White Paper

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Successfully Designing and Constructing Broadband Fiber  
Project builds in Pennsylvania



## Introduction

To address Pennsylvania's broadband infrastructure challenges and increasing access to high-speed broadband services to all Pennsylvanians, the Commonwealth of Pennsylvania created a Statewide Broadband Plan. This plan addresses both the immediate needs and long-term objectives for Pennsylvania broadband expansion and outlines the goals and action steps toward achieving universal broadband access throughout the state.

To meet the need for Broadband expansion in Pennsylvania, numerous government funding programs were initiated. For example:

- In 2020, the General Assembly created the Unserved High-Speed Broadband Funding Program through Act 132 of 2020, a **\$10 million** grant program that provides funding for the advancement of high-speed broadband services infrastructure deployment in unserved areas of this commonwealth.
- In March 2022, the Commonwealth Financing Authority approved **\$10 million** for nineteen projects for nongovernmental entities to deploy middle-mile and last-mile high-speed broadband infrastructure to unserved areas.
- Act 98 of 2020 removed the requirement that mandated commonwealth rural electric cooperatives to enter into new easement agreements with each property owner for the installation of high-speed infrastructure.
- In June 2021, Act 50, otherwise referred to as the Small Wireless Facilities Deployment Act was signed into law to expedite the deployment of wireless small cell facilities throughout the commonwealth.
- In late 2021, Congress passed, and President Biden signed into law, the Infrastructure Investment and Jobs Act (IIJA), also known as the Bipartisan Infrastructure Law. This was a historic step forward toward the goal of providing broadband access to the entire country. The IIJA invests \$65 billion into broadband to close the digital divide – of which Pennsylvania is guaranteed a minimum of **\$100 million** and is expected to receive hundreds of millions in additional funding through formula or competitive funding opportunities.
- The Commonwealth was also allocated **\$278,793,641** million from the American Rescue Plan Act Capital Projects Fund to allot toward broadband deployment.

To ensure that this influx of funding is properly allocated and managed, the Pennsylvania legislature created The Pennsylvania Broadband Development Authority (PBDA).<sup>(1)</sup> This is an independent agency of the Pennsylvania Department of Community and Economic Development (DCED). The authority is responsible for creating the [statewide broadband plan](#)<sup>(2)</sup> for distributing federal and state monies for broadband expansion projects in unserved and underserved areas of Pennsylvania. PBDA efforts focus on closing Pennsylvania's digital divide so all Pennsylvanians can get connected to affordable and reliable high-speed broadband internet at home, at work, or on the road.

The Statewide Broadband Plan is very comprehensive, with details on the challenges, goals, and actions steps needed to close the digital divide in Pennsylvania. However, the plan does not cover the details of how to safely and efficiently construct new underground broadband fiber facilities throughout the numerous municipalities in Pennsylvania.

This white paper is designed to provide guidance on how to successfully build new underground broadband fiber facilities in Pennsylvania. The goal is to educate all underground stakeholders i.e., Project Owners, Designers, Excavators and Facility Owners, on the necessary steps that must be taken to ensure that any new underground broadband fiber build in Pennsylvania is done efficiently, timely, and most importantly, done safely.

Pennsylvania's One Call Law i.e., The Underground Utility Line Protection Law Act 287 as amended by Act 50 of 2017 (UULPA) <sup>(3)</sup> deals exclusively with safety and utility services to the public when excavation is used in the installation of new underground infrastructure. This Law is enforced by the PA Public Utility Commission <sup>(4)</sup>. As background, Pennsylvania 811 was created as a sub-committee of the Pittsburgh Public Service Coordinating Committee in 1968. Operations were established in September 1972 and the service covered 6 utilities serving Allegheny County in Southwestern Pennsylvania. In April 1975, Act 287 (1974) went into effect requiring excavators to call before digging, and expanded the service area to 11 counties. At that time, in honor of the 1776 United States Bicentennial, the toll-free number 800-242-1776 was added as an additional way to reach the call center, and coverage included the 33 counties of Western Pennsylvania.

Expansion continued across the Commonwealth in 1977, adding Central Pennsylvania in a merger with JUNE (Joint Utility Notification for Excavators) and the Southeastern counties were added in September 1977. Pennsylvania One Call System, Inc. is incorporated under the laws of the Commonwealth of Pennsylvania and registered as a non-profit corporation under Section 501(c)(6) of the Internal Revenue Code.

A 35-member Board of Directors governs the organization. The composition of the Board includes representation from the following industries: Electric, Gas (including an owner or operator associated with Conventional oil and gas wells and a facility owner representative of a pipeline associated with Unconventional oil and gas wells), Municipal, Pipeline, Telecommunications, Telephone, Water, Cable Television, Associate, Contractor, Designer, the Pennsylvania Public Utility Commission, Pennsylvania Emergency Management Agency, and the Department of Transportation. William G. Kiger, is the President and Chief Executive Officer of the corporation.

Funding of the company has come from notification service fees to members. Increased revenues from growth are used to offset operating expenses. A lesser amount comes from collection of excavator fees. The excavator fees are used to offset the cost of membership for municipalities and municipal authorities, to offset certain company operational costs, and to partially fund the PUC enforcement effort.

Today Pennsylvania 811 serves all 67 counties and employs over 90 people. For 51 years Pennsylvania 811 has been known as the "**Keystone of Damage Prevention**" in the prevention of damages to underground facilities in Pennsylvania with the clear mission of "**Our purpose is to prevent damage to underground facilities. To promote safety, we provide an efficient and effective communications network among project owners, designers, excavators, and facility owners.**"

With millions of dollars being allocated for Pennsylvania broadband fiber infrastructure projects, all underground stakeholders need to be prepared for the influx of construction activities associated with these infrastructure projects. Pennsylvania 811 has all the project management tools in place that will allow all underground Project Owners to safely manage their underground projects. Past history has

shown that if the underground design and construction guidelines are not strictly adhered too, damages to existing facilities; to property; and serious injury to workers or the general public will occur.

To mitigate this concern, all underground stakeholders must follow the design, and construction guidelines and standards that are already in place for building their broadband fiber projects in Pennsylvania. Furthermore, it is imperative that all stakeholders follow several basic business principles or business etiquette to meet each other goals and objectives on these projects:

- That all stakeholders Communicate, Cooperation, Collaborate, Coordinate with each other during the entire project build.
- Stakeholders need have empathy for each other business problem(s) and negotiate fairly and openly while dealing with each other
- To **Communicate Early and Communicate Often** with each other
- ***That personal Safety and Zero Damages to existing infrastructure is the number one priority!***

In the following pages, we will outline the necessary steps that the Project Owner, Designer, Excavator and existing Facility Owners need to do during the Conception Phase, the Design Phase, and the Construction Phase of the broadband fiber project. The information we will provide is based on scientific hypothesis, meaning that the methodologies put forth have been tested and proven to work in minimizing damages to existing facilities and eliminating personal injury.

The first phase of any broadband fiber project build is to familiarize you and your staff with Pennsylvania's UULPA Law. Pennsylvania 811 strongly recommends that all new Project Owners, Designers and Excavators (Contractors) that are involved in a broadband fiber project build take Pennsylvania 811 training prior to commencing any work on the project. Education and Public Awareness are a critical part of the service Pennsylvania 811 provides. Educational Programs, Compliance Training, and Safety Presentations are offered targeting facility owners, designers, excavators (contractors), and locators. To learn more about Pennsylvania 811 Education Team and its class offerings please visit our website at [www.paonecall.org](http://www.paonecall.org)

I hope you will find the information contained in this report valuable resource for you as begin your broadband fiber project build. Feel free to contact me or other members of the Pennsylvania 811 staff with any questions you have about this white paper.

Sincerely,

**William G. Kiger**

President and Chief Executive Officer  
Pennsylvania One Call System, Inc. dba Pennsylvania 811

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Like us on Facebook! <http://www.facebook.com/pennsylvania811>

## The Problem

With underground fiber capital builds there tends to be a disconnect between speed to market and actual construction. Fiber Project owners prioritize the getting the fiber assets in the ground quickly to maximize Return on Investment (ROI) and to beat their competitors to market.

When Fiber Project owners develop their business plans those two factors are the primary drivers. The disconnect with construction happens when the Project Owner build plan doesn't take into account the ability of the existing facility owners to identify and locate their underground facilities during construction.

With the main driver being ROI and speed to market, the Project Owners will generally attempt to "crash the task" to expedite the build. The Project Owner will employ a General Contractor to assume the responsibility to manage the project build. To meet the Project Owner's proposed build schedule and financial objectives, the General Contractor will use as many subcontractors as necessary to meet the build schedule.

For example, visualize a 100-home subdivision where a new fiber company decides to be a competitor to the incumbent cable TV or Telecom provider. Let's also add that this fiber company plans on building in 5 of these types of subdivisions in one specific municipality. The General Contractor wins the bid and agrees to the payment terms of \$1,000 per household passed and agrees to a specific timeframe for completion of the build. To meet the Project Owner's timeframe, the General Contractor decides to hire 4 subcontractors for this project. The build plan is to have all of the subcontractors working concurrently within the municipality. This build plan as outlined will maximize the use of subcontractor's personnel to meet the project objectives. However, the build plan has one big flaw, the Project Owner or the General Contractor never took into account of the external forces, i.e., the locating of existing facilities, that may delay and impact their build plan.

The locating of existing facilities is the biggest hurdle to many fiber build plans. Why would this be an issue. General Contractors must review the requirement of each individual states one call laws and follow the applicable municipality permitting guidelines. In Pennsylvania you are required to call 3 days before your dig. In addition, if the project is complex, meaning that there is complexity to the work based on duration, impact, size or complexity, then the excavator must have a complex project meeting 10 days before excavation. We will discuss the rules and guidelines of a Complex Project later in this document.

The main issue with most fiber build plans is that the General Contractor didn't account for the locate capacity of the existing facility owners' locators in their planning. Many of the fiber builds are being placed in existing utility rights of way. In the existing ROW you may have electric, gas, water and other telecom/Cable TV facilities. All of these facilities will need to be located prior to excavation. However, many times the local municipality that owns the sewer and sometimes the water facilities have limited personnel to do the locates. Most municipalities will base their locate personnel based on past locate demand history. For example, if a municipality typically get 10 to 15 locates notifications daily, then most likely they will only have one or two persons assigned to do locates for the municipality. To complicate this scenario further, the local utilities also have limited personnel for locates. Even though

they may be staffed with more locate personnel, those locators are usually doing locates in multiple municipalities within a county.

With this information, let's go back to the General Contractor who is "crashing the task" to meet the project owner's financial and speed to market objective. Remember the General Contractor just hired 4 subcontractors that are going to be working in the municipality concurrently. Let's also say that each one of the subcontractors has a goal of completing approximately 2,000 feet a day in their specific build area.

However, the Project Owner nor did the Designer ever directly contacted the local facility owner in advance to inform them of the proposed project. Many times, there may have been communications about the proposed build between Project Owner and local elected officials, but that communication doesn't provide the advance notice needed for the facility Owner's Operations staff to prepare for this influx of underground excavation.

With the local Facility Owners not being directly informed of this fiber build project in advance and with the Facility Owners locate capacity being limited, this proposed fiber build project will clearly exceed the capacity of the Facility Owner's locators. Poor project design, poor project communication, and the lack of adequate advance notice will end up causing numerous damages to existing underground facilities, along with frequent complaints from local residents.

How do we mitigate this issue? The information in this white paper will elucidate how Pennsylvania underground stakeholders can successfully manage this critical issue so that all underground fiber builds get completed timely and done with minimal damage to existing facilities.

### **Let's Begin to Design and Construct a Successful Fiber Build**

You as the Project Owner have just secured funding to do a new underground build out. As stated in the introduction of this paper, before you begin, Pennsylvania 811 strongly recommends that all Project Owners, Designers and Excavators that are involved in a broadband fiber project build take Pennsylvania 811 training prior to commencing any work on the project. The UULPA addresses the details of the build process beginning with Preliminary Design, Subsurface Utility Engineering (SUE)<sup>(5)</sup>, and posting Facility info and SUE Level A confirmation on the Final Design before bids are sent to contractors.

### **Project Owner Process**

Let's start with the definition of a Project Owner in Pennsylvania. UULPA defines a Project Owner as "any person who or which engages an excavator for construction or any other project which requires excavation or demolition work." UULPA further elucidates the responsibilities of the Project Owner in Section 6.1 of the law. Highlighted below are key obligations of the Project Owner in Pennsylvania:

- **To participate in design and preconstruction meetings either directly or through a representative.**
- **To install color-coded permanent markers to indicate the type and location of all laterals installed on new construction or where practicable on your projects**
- **To use sufficient quality levels of Subsurface Utility Engineering (SUE) when a project cost is \$400,000 or more.**

- **To provide the SUE data to the One Call system in a mutually agreeable format.**
- **To wait for the final design before releasing to bid or starting the construction project.**
- **To respond to all notifications from the excavator.**

Pennsylvania 811 has all the project management tools in place that will allow all underground Project Owners to safely manage their underground projects from conception to construction. Once the Project Owner is awarded government funding or venture capital for the broadband fiber project build and knows the proposed build area, Pennsylvania 811 strongly recommends that the Project Owner put all the fiber build project details into **Pennsylvania 811 Coordinate PA (CPA)** application.

What is CPA? ***It's The Next Generation of Utility Coordination!*** CPA enables users to add and/or import existing projects; find opportunities with others Project Owners and Designers who want to coordinate, collaborate with each other; it enables Project Owners share project documents and communicate with designated contacts on their projects; and will notify facility owners and other contacts at any phase of a broadband fiber project. Highlighted below are some of CPA key attributes:

- **Free web-based application**
- **Coordinate PA is a secure repository**
- **Add project contacts and permissions**
- **Design Drawing Exchange**
- **Virtual maps with different map base options**
- **Import moratorium data**
- **Share future project information at the user's discretion and to follow the PBDA "Dig Once" Strategy**
- **Provides opportunity for Project Owners/Designers to Collaborate, Coordinate, Cooperate and Communicate on future and current projects all the way to completion in a safe repository.**



## Here is a screen shot of CPA

Coordinate PA V. 8.2.2 (updated 12-JAN-2023) Logged in as NORM PARRISH (PENNSYLVANIA ONE CALL SYSTEM INC) Reports

Zoom To: County LEHIGH Municipality: COPLAY BORO Import from XML Import from Shapefile Import Moratoriums/Civic Events Add Project

Search as I move the map

40 665853°N -75 494378°W

Narrow by: My Projects SELECT DATES Any Facility Type

#	Project (click name for details)	Id	Construction Dates	Facility Type	Project Owner	Project Creator	Status	Actions
1	I-76 FIBER OPTIC PART 251.1 - 247.3	1671785	03-Jul-2021 - 31-Dec-2022	TELECOM	PENNSYLVANIA TURNPIKE COMMISSION	BLACK AND VEATCH	IN PROGRESS	View Request Access Zoom
2	RIDGE ROAD GAS MAIN EXTENSION	1189085	30-Dec-2020 - 05-Mar-2021	GAS - NATURAL GAS	UGI GAS	SKODA CONTRACTING	IN PROGRESS	View Request Access Zoom
3	???? LOWER PAXTON TOWNSHIP PAWING PROJECT - EDELS STREET	3135571	26-Apr-2023 - 18-Sep-2023	OTHER	LOWER PAXTON TOWNSHIP	HERBERT ROWLAND AND GRUBIC INC	PLANNING	View Request Access Zoom
4	???? LOWER PAXTON TOWNSHIP PAWING PROJECT - FOREST HILLS DRIVE	3135566	26-Apr-2023 - 18-Sep-2023	OTHER	LOWER PAXTON TOWNSHIP	HERBERT ROWLAND AND GRUBIC INC	PLANNING	View Request Access Zoom

Showing Visible Projects 1 - 25 of 3992 Page 1 of 160 Results Per Page 25

Having the Broadband Fiber Project in CPA will provide the Project Owner the ability to manage and communicate the project among all the underground stakeholders throughout the broadband project lifecycle i.e., conception to construction of project. Entering the project in CPA also begins the process of **Communicate Early and Communicate Often** to all underground stakeholders, which will allow you to get your project done efficiently while minimizing potential underground damages.

This is also the time when the Project Owner should engage the elected officials of the County/Municipality of where the build is going to take place. This first communication is key to ensure the local elected officials are aware of the entire project proposal and can disseminate any needed information to their constituents. In addition, by entering the project information into CPA you will also have the option to allow other existing Project Owners (utilities) to see each other projects in the area.

The benefit of having the ability to see each other's underground projects is to allow the underground Project Owners to collaborate, coordinate, cooperate, and communicate on large complex underground excavation projects that are occurring in the same area. This type of collaboration creates the potential of reducing cost for road openings and repaving; it eliminates the issue of multiple facility owners cutting open the same road multiple times; and all underground excavation work can now be coordinated effectively to minimize the disruption to the residents in the proposed build area.



## **Designer Process**

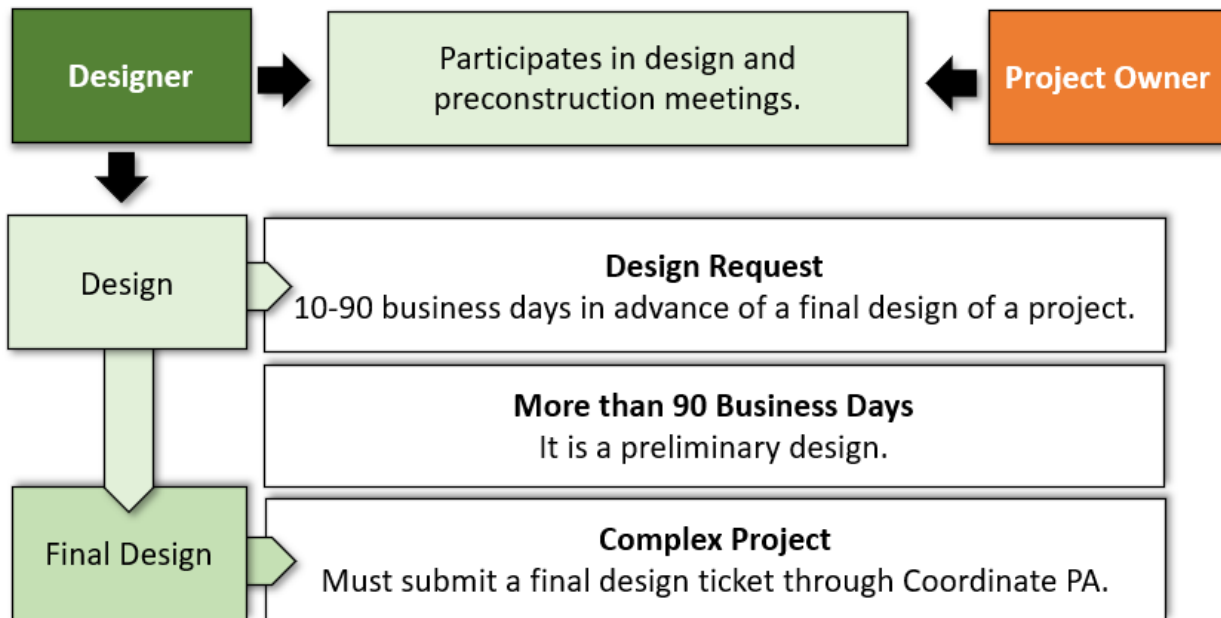
Using the CPA project management tools allows the Project Owner to electronically transfer all the fiber build project information to the Designer of choice that will be designing the underground project.

**UULPA** defines the Designer as *“any architect, engineer or other person who or which prepares a drawing for a construction or other project which requires excavation or demolition work as herein defined.”* UULPA further elucidates the responsibilities of the Designer in Section 4 of the act.

Highlighted below are key obligations of the Designer in Pennsylvania:

- **To do all Design Notification via Pennsylvania 811 CPA Application.**
- **To design a project to minimize the existing underground facility disruption.**
- **To show on the drawing the position, type of each facility owner’s lines and the name of the facility owner.**
- **To show your One Call serial number and the One Call phone number on your drawing.**
- **To submit design requests 10-90 business days in advance of a final design of a project.**
- **To state preliminary design if the design request is more than 90 business days.**
- **To forward a copy of the project plans to each facility owner who requests a copy.**
- **To participate in preconstruction meetings for a complex project if you are responsible for the final design.**
- **To create a new design request of your final design if the scope or project site changes.**

Below is a graphical overview of both the Project Owner and Designer obligations under UULPA:



RESOURCE: Underground Utility Line Protection Law, PA Act 287, as amended

Following the theme of **Communicate Early and Communicate Often** mentioned in the introduction, it is imperative that Designers reach out to the underground stakeholders as early as possible on a broadband fiber build project. In Pennsylvania this is accomplished with the Project Owner putting the project in CPA and with the Designer doing its Preliminary Design Notification via CPA. The Preliminary Design Notification allows a Designer to request line and facility information more than ninety days before final design is to be completed, however, they (The Designer) shall state in their design requirements that such work is preliminary.

If you recall, one the main obligations of the Designer is to design underground projects that minimize existing underground facility disruption. This is a key requirement to minimize underground damages and eliminate the need of design-related change orders during construction. This can only be accomplished by following the **Subsurface Utility Engineering (SUE) Standard Guidelines for Investigating and Documenting Existing Utilities – ASCE/UESI/CI Standard 38-22 and 75-22**.

The goal of the ASCE 38 Standard is to put forth procedures, actions, and guidance that, when coupled with professional judgment, facilitate a constructible project design with a minimum of Utility relocations, design-related change orders, and construction-related delays, claims, or changes owing to errors or omissions in the documentations of known and unknown utilities.

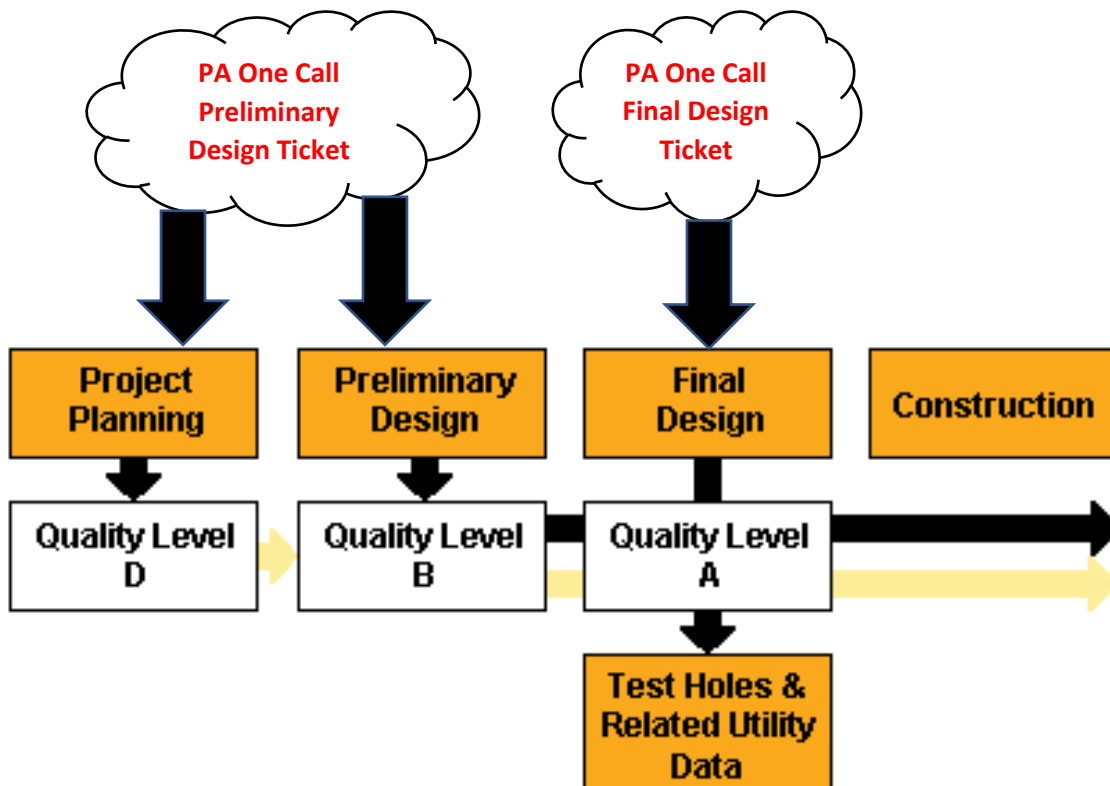
The ASCE 38 Standard is a combination of a prescriptive standard and a performance standard. As a prescriptive standard, it sets forth a series of minimum actions necessary to attempt to achieve a particular Utility Quality Level Documentation. As a performance standard, it describes the significant professional judgment that should be exercised by the professional i.e., The Designer, to determine the appropriate timing, sequencing, and location of Utility investigative effort to achieve the goal of reduced Utility issues during Project Delivery. The diligent use of ASCE 38 Standard protects the Designer from errors or omissions in Utility identification.

The ASCE 38 Standard also pertains to the investigation, identification, and documentation of underground Utility networks. This standard does not replace statutory requirements for Facility Owners to mark their utilities' suspected locations on the ground surface as a construction damage prevention mechanism.

The ASCE Standard 38-22 stipulates that the utility investigation standards, and mandates that all the utility investigations take place under the direct responsible charge of a licensed professional engineer (PE) aka The Designer.

The diagram below highlights how the Quality Levels of the SUE Process align with the Design Requirements of PA Act 287:

# Four ASCE 38 Quality Levels Summary



During the Preliminary Design phase, the Designer can reach out to key Facility Owners, i.e., the gas, sewer, water and electric companies in the propose build area. This contact can be done via the preliminary Design Notification where all facility owners will be contacted to either send the Designer their underground facility drawings, or the Facility Owner can request the Designer to send their preliminary drawings to the facility owner, and they will indicate on the drawing where they have facilities. The Designer can also find out what Facility Owners are in a particular municipality via the Facility Owner List on Pennsylvania 811 website [www.paonecall.org](http://www.paonecall.org)

This initial contact (Preliminary Design) is the perfect opportunity for the Project Owner and the Designer to have comprehensive conversations with all the underground facility owners in the proposed broadband fiber build area. Pennsylvania 811 strongly recommends that you have either a face-to-face or a virtual meeting with the operational representatives of the effected Facility Owners in the proposed build area at this time. **THIS COMMUNICATION STEP IS CRITIAL FOR THE TIMELY SUCCESS OF ANY BROADBAND FIBER PROJECT BUILD.**

This meeting is where you, as the Project Owner and/or Designer, will find out key details about the underground facilities that are existing in the area. It is also where you can discuss your desired build schedule and the facility owners can provide you details of their locate capacity during construction.

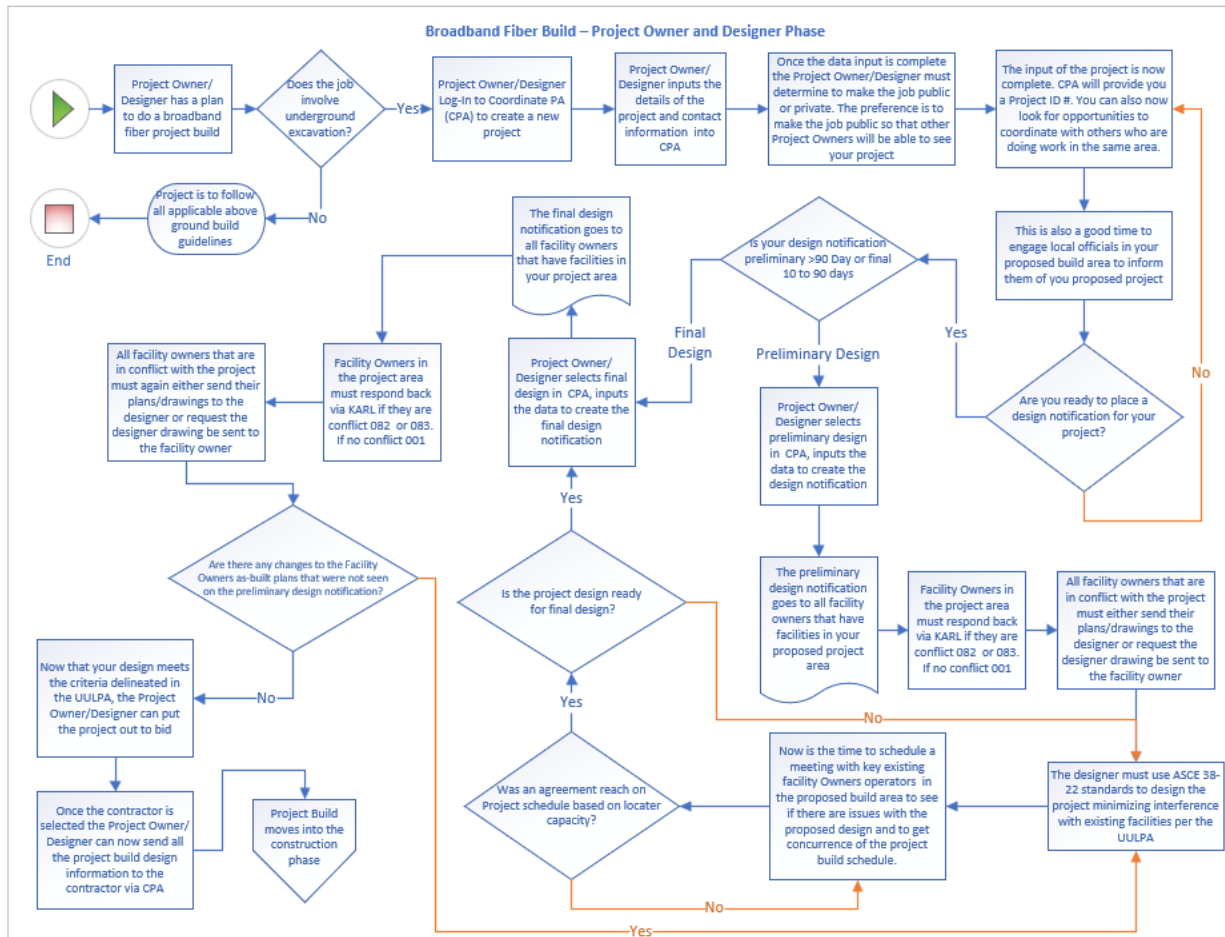
Many times, on large Complex Projects, the Project Owner and Designer build schedule i.e., Project Timeline, is aggressive and will exceed the locate capacity of the local facility owners' staff. For a variety of reasons, Facility Owners do not have the ability to arbitrarily add additional locate personnel to meet the needs of one or several Project Owners. This early communication will allow all parties to discuss, understand, and negotiate, to resolve the scheduling and locate issues during the design phase versus trying to figure it out during construction.

Plus, it is an opportunity to create a rapport with the Facility Owner's operation managers, supervisors and locators. Early communication and good rapport with the Facility Owners' personnel during the Design phase will ensure a smooth construction build. This may take more than one meeting, but again if you **Communicate Early and Communicate Often**, you will eliminate damages to existing underground facilities during construction and you will get your project completed within a reasonable timeline.

Once the Project Owner and/or Designer has stepped through the design process (SUE) and is ready for a final design, UULPA requires that a final Design Notification be done via CPA. This Notification must be done not less than 10, nor no more than 90 business days in advance of the final design. A Final Design Notification means the engineering and construction drawings that are provided to a bidder or other person who is asked to initiate construction on the bid date or the date the project is set for construction in the absence of a bid.

In the final design, the Designer **"shall make a reasonable effort to prepare the construction drawings to avoid damage to and minimize interference with a facility owner's facilities in the construction area by maintaining the clearance as provided for in the applicable easement condition or an eighteen-inch clearance of the facility owner's facilities if no easement restriction exists."** For the final design the Designer is required to Utilize Utility Quality Level A (QL-A) based on the data received from the other QL (D, C, B), meaning that any conflicting utilities were exposed and verified at that exact spot, and the uncertainty of its location is nearly zero.

This is a flowchart that details the project entry and design process from concept to final design:

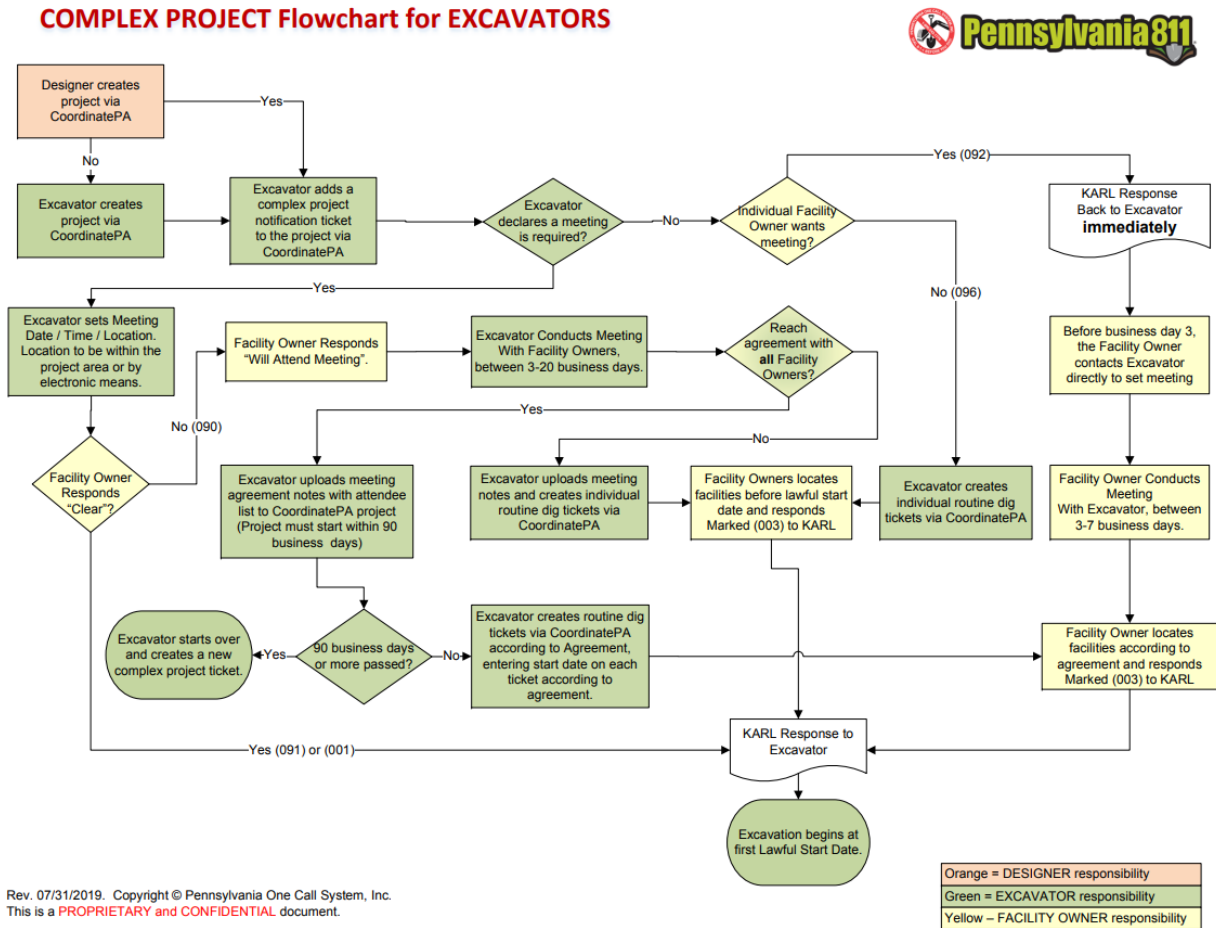


## Construction Process

Now that we have a final design that meets all the criteria delineated in UULPA; that follows the ASCE/UESI/CI Standard Guidelines; and we have a negotiated proposed build schedule, between the Project Owner and the Facility Owners that is in alignment with the existing Facility Owners locate work force, it is now the time to move your project to the construction phase of the fiber build project. Again, the Project Owner/Designer can provide all the details of the project that were captured in CPA to the General Construction Contractor (Excavator) that won the bid to do the work with CPA.

The Pennsylvania 811 underground stakeholder community views broadband fiber project builds as a Complex Project. UULPA defines a Complex Project as *“an excavation the involves more work than properly can be described in a single locate request or any project designated as such by the excavator or facility owner as a consequence of its complexity or its potential to cause significant disruption to lines or facilities and the public, including excavations that require scheduling locates over an extended time frame.”* Based on the large scale of the broadband fiber builds, all these types projects are deemed as Complex Project.

To assist the Excavator in managing the broadband project build, Pennsylvania 811 Board of Directors put together a Complex Project policy. The policy provides guidance and rules to follow when managing Complex Projects in Pennsylvania. To aid excavator in navigating the Complex Project Policy, Pennsylvania created a detailed flowchart of the Complex Project process:



With Complex Projects, the excavator must have a Complex Project Meeting. Remember **Communicate Early and Communicate Often**? Because you have done meetings in the design phase of the project, this Complex Project Meeting is a follow up meeting to ensure that everyone involved in the project build are on the same page with what was agreed to in the other meetings. One of the key components of CPA is that all the agreements and meeting notes must be memorialized in the CPA system. Prior agreements and concerns can be reviewed and shared with all the underground stakeholders attending the construction Complex Project meeting. Here is an example of the template used for sign-n sheet and notes in CPA:







This meeting is also where the final construction phases can be shared and the locate scheduled can be reaffirmed and finalized. As in the previous meetings, to have the build be done efficiently and with zero damages, all must be in agreement with the phases and the build schedule. To get consensus, both the Project Owner/Designer/Excavator and the Facility Owner must have empathy to each other's business problem, and work together to find an amiable solution that works for everyone. This is all achievable if the Project Owner/Designer/Excavator **Communicate Early and Communicate Often** with the existing Facility Owners during all phases, i.e., Conception to Construction, of the project.

During construction, again communication is paramount. The UULPA requires that the excavator ***“exercise due care and to take all reasonable steps necessary to avoid injury to or otherwise interfere with all lines where positions have been provided to the excavator by the facility owners pursuant to Section 2 (5). Within the tolerance the excavator shall employ prudent techniques, which may include hand-dug test holes, vacuum excavation or similar devices to ascertain the precise position of such facilities.”*** In addition, should any damage to existing facilities happen to occur during the construction and installation of new broadband fiber facilities, whether the funding of the project is from government or private funding, the excavator is obligated to report any damage to any underground line or facility within 10 business days to the PUC through the Pennsylvania 811 website.

It should also be noted that all Excavators, i.e., General Contractors and their subcontractors are required to follow all applicable federal, state, local build and permitting guidelines for their broadband fiber project builds. In addition, to ensure a successful build, excavators must follow all clauses in the UULPA, and all safety guidelines and standards referenced in the Common Ground Alliance Best Practices <sup>(6)</sup>, OSHA <sup>(7)</sup>, and Horizontal Directional Drilling Good Practices <sup>(8)</sup>.

Many times, General Contractors will hire folks that don't speak English to do the excavation work. To mitigate potential employee injuries, it is recommended that General Contractor and their Subcontractors have someone on their staff that can communicate to their workers in both English and Spanish. In addition, it is strongly recommended that excavation contractors have a “Competent Person” at each excavation site. OSHA defines a “Competent Person” as “one who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them” [29 CFR 1926.32(f)]. This “Competent Person” is the individual that ensures all applicable safety rules and guidelines are followed during the excavation project.

To aid the Excavator with the UULPA rules and guidelines, in the appendix of this document is Pennsylvania 811 Excavator Handbook Q and A for Safe Digging. However, as stated in the introduction of this paper, before you begin Pennsylvania 811 strongly recommends that all Project Owners, Designers and Excavators that are involved in any infrastructure project build take Pennsylvania 811 training prior to commencing any work on the project. Pennsylvania 811 has a team of Damage Prevention Liaisons that can assist all stakeholders from concept to construction. You will find their contact information in the appendix of this document.

Utilizing Pennsylvania 811 CPA application to coordinate and manage the broadband fiber project builds; finding conflicts with facilities in the design phase (SUE); creating a design that ensures minimum interference with existing facilities; excavating using prudent techniques and following all safety guidelines and standards; and by **Communicating Early and Communicating Often**, will result in an efficient, timely, project build, that will have minimal damage to existing facilities and no personal injury to workers or the public.

Norman L. Parrish  
 Manager – Education  
 Pennsylvania 811

## Appendix



This document is to be used for reference only. It is not legal advice. For any legal requirements, please consult your attorney or refer to the most current amendment to Act 287 of 1974 which is available at [www.pa1call.org/palaw](http://www.pa1call.org/palaw).

*When applicable, the answers to the questions will reference the section of PA Act 287 of 1974, as amended, 73P.S. § 176 et. seq. and/or the Complex Project Policy (Policy) located on the PA One Call website.*

To download this guide go to [www.pa1call.org/excavatorhandbook](http://www.pa1call.org/excavatorhandbook) or use the QR code below.



**Additional reference materials can be found:**

[www.paonecall.org](http://www.paonecall.org)  
[www.commongroundalliance.com](http://www.commongroundalliance.com)  
[www.puc.pa.gov](http://www.puc.pa.gov)  
[www.apwa.net](http://www.apwa.net)  
[www.FHWA.dot.gov](http://www.FHWA.dot.gov)

+ **Question: What is considered an excavation?**

**Answer:** The use of powered equipment or explosives in the movement of earth, rock or other material.

- o There are very specific requirements as to what activities constitute excavation which should be reviewed on the website [www.paonecall.org](http://www.paonecall.org).

*Section 1*

+ **Question: What do I need to do before I dig?**

**Answer:** Place a call to 8-1-1 at least 3 business days, but not more than 10 business days, prior to starting excavation.

*Section 5 (2.1) and (2.2)*

+ **Question: Should I mark in white before I call?**

**Answer:** Yes, the perimeter of the Work site should be marked in white. (Do not use any other color.)

*Sections 1, 2 (5)(vi), and 5 (11)*

+ **Question: What hours are the one call center open?**

**Answer:** 24 x 7 every day of the year.

+ **Question: Who must place the one call?**

**Answer:** The responsible person doing the excavation.

*Sections 1 and 5 (2.1)*

+ **Question: What is a serial number?**

**Answer:** Proof that you placed a one call notification. The serial number is assigned by the One Call System and is on the locate request.

*Section 5 (2.2)*

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✦ **Question: I'm a subcontractor, can I piggyback on my main Excavator's one call?**  
**Answer:** No. Each responsible Excavator must make their own notification.  
*Section 5 (2.1) and (2.2)*

✦ **Question: Who is responsible for finding the precise location of the underground line?**  
**Answer:** The Excavator, using prudent techniques.  
*Section 5 (4)*

✦ **Question: Upon initial arrival at the Work site, what should I do if there are no visible mark-outs?**  
**Answer:** Do not begin excavating. Check the KARL responses through the one call center.  
*Section 5 (20)*

✦ **Question: What should I do if I disagree with the responses in KARL, due to visible evidence in the field?**  
Renotify the One Call System. After the renotify, wait up to three hours for the response from the Facility owner(s) before digging prudently.  
*Section 5 (20)*

✦ **Question: What is the Tolerance zone?**  
**Answer:** 18 inches horizontally from the exterior wall of the pipe or facility. (See back of handbook)  
*Section 1*

✦ **Question: What is required within the Tolerance zone?**  
**Answer:** Exercise due care and use prudent techniques.  
*Section 5(4)*

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✦ **Question: For how long are the marks good?**  
**Answer:** When excavation begins within the Lawful start dates, you can continue work as long as equipment is on site and the marks are visible.  
*Section 5 (3) and (14)*

✦ **Question: Must I physically protect the marked Facility owner lines I expose in preparation for excavation?**  
**Answer:** Yes, in consultation with the Facility owner.  
*Section 5 (6)(ii)*

✦ **Question: When may I lawfully start digging?**  
**Answer:** Read the locate request for your Lawful start date.  
*Sections 1 and 1.1*

✦ **Question: When do I need to call back for re-marking?**  
**Answer:** You have an obligation to protect the marks. When the marks become obscured or when you remove equipment from the site for more than 2 business days, you must call one call for re-marks.  
*Section 5 (3) and (14)*

✦ **Question: May I refresh anyone else's marks using their color?**  
**Answer:** No. You must protect the marks. You may not refresh anyone else's marks.  
*Section 5 (3)*

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✦ **Question: What should I do when I hit or damage a Line or facility?**  
**Answer:**

- Stop digging!
  - If gas is escaping or blowing, you must call 9-1-1.
  - Call 8-1-1 to create a damage notification or notify the Facility owner directly.
  - Submit an Alleged Violation Report (AVR) not more than 10 business days after the damage occurred.
- Section 5 (7), (8), and (16)*

✦ **Question: What is an Emergency one call?**  
**Answer:** A notification involving an event that has an immediate effect on life or property.  
*Sections 1 and 5 (9)*

✦ **Question: What is the difference between a single excavation notification and a Complex project?**  
**Answer:** The maximum area of a single notification is 1,000 feet or intersection to intersection, whichever is greater, along the same street, within the same political subdivision. Anything greater than this is considered a Complex project.  
*Section 3 (4)*

✦ **Question: What determines if my Excavation work is a Complex project?**  
**Answer:**

- Duration
- Impact on the Facility owner's lines or the public
- Size
- Complexity

*Section 1*

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† **Question: A Facility owner feels my Excavation work is complex and requests a meeting through the KARL System; what happens next?**

**Answer:** The Facility owner will contact you directly to schedule a meeting.  
Section 1

† **Question: My Excavation work falls under the definition of complex; what do I need to do?**

**Answer:**

- If a project does not exist in the Coordinate PA (CPA) portal on the PA One Call website, then create one.
- Create a Complex project meeting notification from within the project.
- Hold a Preconstruction meeting, as applicable.
- Create locate request(s) from within the project based on agreements made at the meeting.

Sections 1 and 5 (3) and Policy

† **Question: Where should the Preconstruction meeting be held?**

**Answer:** In close proximity to the project work location or electronically.  
Sections 1 and 5 (3) and Policy

† **Question: What should occur at the Preconstruction meeting?**

**Answer:** Attendance should be recorded on the POCs approved Complex Project Meeting Sign In Sheet template and notes taken, including the scope of locate request(s) and the agreed upon mark-out

schedule.

Note: Sign in sheet and meeting notes template are available on the POCs website.  
Policy

† **Question: What should happen after the meeting?**

**Answer:** The meeting notes/agreement and sign in sheet should be uploaded to the CPA portal. Locate request(s), as modified, should be created via the CPA portal based on the agreement reached at the meeting.

Policy

† **Question: Is a Preconstruction meeting required?**

**Answer:** No, if the Excavator chose not to hold a meeting, a Facility owner can request a one on one meeting with the Excavator.









Section 5 (3)

† **Question: May an Excavator dig on a Complex project notification?**

**Answer:** No, this is the notification that begins the preconstruction planning process.

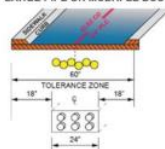
Policy

**APWA / CGA Temporary Marking Color Code (ANSI Standard Z535.1)**

	<b>WHITE</b> - Proposed Excavation
	<b>PINK</b> - Temporary Survey Markings
	<b>RED</b> - Electric Power Lines, Cables, Conduit and Lighting Cables
	<b>YELLOW</b> - Gas, Oil, Steam, Petroleum, Gaseous and Hazardous Materials
	<b>ORANGE</b> - Communication, Alarm or Signal Lines, Cables or Conduit, and Traffic Loops
	<b>BLUE</b> - Potable Water
	<b>PURPLE</b> - Reclaimed Water, Irrigation and Slurry Lines
	<b>GREEN</b> - Sewer and Drain Lines

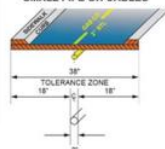
**TOLERANCE ZONE**

**LARGE PIPE OR MULTIPLE DUCTS**




18" 18" 6" 36"

**SMALL PIPE OR CABLES**



18" 18" 2" 36"

**PA One Call does not locate or mark underground lines.**



**THREE BUSINESS DAYS BEFORE YOU DIG – DRILL – BLAST**  
Dial 8-1-1 or 1-800-242-1776  
[www.paonecall.org](http://www.paonecall.org)



**APWA/CGA Best Practices  
For Temporary Markings**

**PA Act 287, as amended**

An excavator shall use the color white to mark a proposed excavation site when **exact** site information cannot be provided. THIS SHOULD BE DONE PRIOR TO THE NOTIFICATION, DIAL 811 or 1-800-242-1776 (from outside PA). Pennsylvania law requires no less than 3 nor more than 10 business days before you dig ANYWHERE IN THE COMMONWEALTH. Any excavation within the tolerance zone is performed by using prudent techniques. The excavator shall observe a tolerance zone comprised of the width of the facility plus 18 inches on either side of the outside edge of the underground facility on horizontal plane (see graphic on following page). Use pink temporary survey markings for all surveying and grade marks. *Continue using Prudent Techniques until you find the Line. Notify Project owner and charge PennDOT 408 Spec for necessary work.*

**Temporary Facility Markings by Facility Owners**

To mark, stake, locate or otherwise provide the position of the facility owner's underground lines at the site within 18 inches horizontally from the outside wall of such line in a manner so as to enable the excavator, where appropriate within the tolerance zone, to employ prudent techniques, which may include hand-dug test holes, to determine the precise position of the underground facility owner's lines. This shall be done to the extent such information is available in the facility owner's records or by use of standard locating techniques other than excavation. The marking can be done in one of two ways: either placing the marks over the approximate center of the facility, or by placing the marks over the actual outside edges of the facility with a line connecting the two horizontal lines to indicate there is only one facility. **PA One Call does not locate or mark lines.**

**Best Practices for Locating & Marking Practices/  
Responsibilities**

The APWA/CGA Temporary Marking Color Code and Chapter 4 marking practices are specified in PA Act 287, as amended. Operators are responsible for marking the facilities and appurtenances in the appropriate color of their facility type, their company identifier (name, initials or abbreviation), the number and width of their facilities and a description of the facility (HP, FO, STL). Use paint, flags, stakes or whisksers or a combination to identify the operator's facility(s) at or near the excavation site. It is against the Law to tamper with these markings.

**Uniform Color Code**

The American Public Works Association/CGA's Uniform Color Code is PA law. The code uses ANSI Standard Z535.1 Safety colors, as shown for temporary marking of excavation sites and underground facility identification (examples are provided on the previous page).



**WORK LOCATION REQUEST FORM**

TELEPHONE NUMBER: ( ) EXT.: CALLER: \_\_\_\_\_  
 COMPANY NAME: \_\_\_\_\_  
 ADDRESS: \_\_\_\_\_  
 CITY: STATE: ZIP: \_\_\_\_\_  
 EXCAVATOR: \_\_\_\_\_

**WORKSITE INFORMATION:**  
 COUNTY: MUNICIPALITY: WARD: \_\_\_\_\_  
 STREET ADDRESS: STREET NAME: \_\_\_\_\_  
 NEAREST INTERSECTION: \_\_\_\_\_  
 SECOND INTERSECTION: \_\_\_\_\_  
 SITE MARKED IN WHITE:  Yes  No  
*When specific site information is not provided the site must be marked in white.*  
 LOCATION INFORMATION: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

SUBDIVISION: TYPE OF WORK: \_\_\_\_\_  
 WORKING IN:  STREET  SIDEWALK  PUBLIC PROPERTY  PRIVATE PROPERTY  
 OTHER (SPECIFY) \_\_\_\_\_  
 DEPTH: EXTENT OF EXCAVATION: \_\_\_\_\_  
 METHOD OF EXCAVATION: PROJECT OWNER: \_\_\_\_\_  
 DURATION OF JOB: PERSON TO CONTACT: \_\_\_\_\_  
 PHONE: ( ) EXT: BEST TIME TO CALL: \_\_\_\_\_  
 FAX #: EMAIL ADDRESS: \_\_\_\_\_  
 PENNDOT CONTRACT/PERMIT #: JOB #: \_\_\_\_\_  
 REMARKS: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

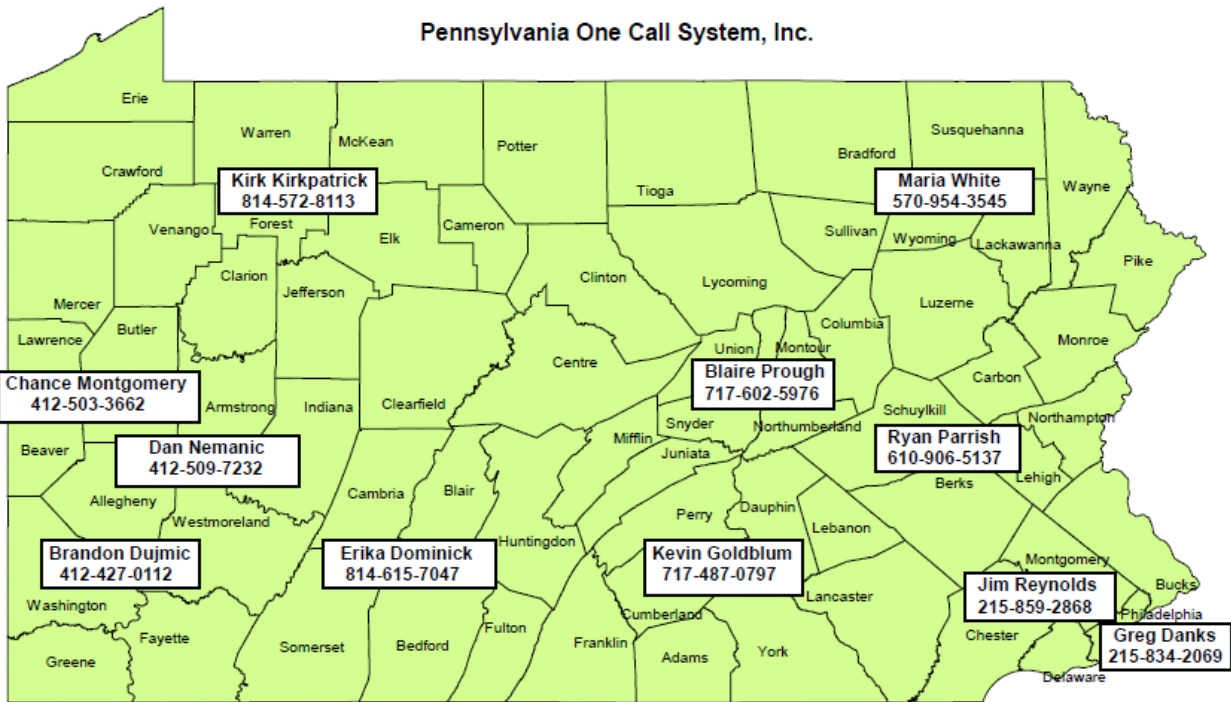
**NOTIFICATION TYPE:**  
 CONSTRUCTION (not less than 3 nor more than 10 Business Days) SCHEDULED EXCAVATION DATE: TIME: \_\_\_\_\_  
 FINAL DESIGN (not less than 10 nor more than 90 Business Days)  PRELIMINARY DESIGN

**TO BE COMPLETED AFTER PLACING ONE CALL**

LAWFUL START DATES: THROUGH \_\_\_\_\_  
 FACILITY OWNER MEMBERS NOTIFIED: \_\_\_\_\_  
 SERIAL NUMBER(S) ASSIGNED: DATE: \_\_\_\_\_

THERE IS AN ANNUAL FEE

## Pennsylvania One Call System, Inc.



[www.pa1call.org/liaisons](http://www.pa1call.org/liaisons)

Liaisons updated as of 4/13/23

### References:

- (1) <https://dced.pa.gov/programs-funding/broadband-in-pennsylvania/pennsylvania-broadband-development-authority/>
- (2) <https://dced.pa.gov/download/statewide-broadband-plan/?wpdmdl=117083>
- (3) User Guide Pennsylvania Underground Protection Act 287 of 1974 as Amended by Act 50 of 2017 (UULPA) [www.paonecall.org](http://www.paonecall.org)
- (4) Pennsylvania Public Utility Commission (PUC) <https://www.puc.pa.gov/pipeline-safety/pa-one-call/>
- (5) Subsurface Utility Engineering (SUE) Standard Guidelines for Investigating and Documenting Existing Utilities – ASCE/UESI/CI Standard 38-22 and 75-22 <https://www.asce.org/communities/institutes-and-technical-groups/utility-engineering-and-surveying-institute>
- (6) Common Ground Alliance Best Practices Version 18 <https://commongroundalliance.com/>  
<https://commongroundalliance.com/sites/default/files/webform/Trenchless%20Best%20Practices%20of%20Damage%20Prevention%20May%202016.pdf>
- (7) OSHA [https://www.osha.gov/sites/default/files/publications/trench\\_excavation\\_fs.pdf](https://www.osha.gov/sites/default/files/publications/trench_excavation_fs.pdf)  
<https://www.osha.gov/sites/default/files/publications/shib031318.pdf>
- (8) Horizontal Directional Drilling Good Practices Guidelines HDD Consortium 2014 (4<sup>th</sup> Addition) <https://nastt.org/>



<https://commongroundalliance.com/sites/default/files/webform/Trenchless%20Best%20Practices%20for%20Damage%20Prevention%20May%203%202016.pdf>

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[https://www.northeastgas.org/pdf/d\\_walsh\\_directional.pdf](https://www.northeastgas.org/pdf/d_walsh_directional.pdf)