



Pennsylvania
Department of Transportation

Reference Guide for TA-TCI Module: Plans Reading

Acronyms, Key Important Terms, and Definitions

3-D Drawings: Three-dimensional digital representations of the highway design and its surrounding environment. These drawings are typically created using specialized software, such as AutoCAD Civil 3D, Bentley OpenRoads, or similar platforms. These allow the Inspector to view a more detailed breakdown of the site. Inspectors can isolate specific materials, phases, and areas of the site, providing a clearer view of existing and future work.

ADT: Average Daily Traffic. A figure that represents traffic volume over an average 24-hour period. Also known as AADT or Annual Average Daily Traffic. This is documented in the annual Pennsylvania Traffic Data document, PennDOT Publication 601.

As-Built Drawings: The records of how a project was built. They are a marked-up version of the approved construction plans reflecting all changes made on the project. It is the inspection team's responsibility to capture and record project deviations on the official As-Built Drawing plan set.

ATON: Aids to Navigation. ATONs include markers, signs, lights, buoys, or other devices placed in or near waterways to guide and warn recreational boaters about construction activities or changes in waterway conditions due to highway or bridge projects. An ATON plan is generally required when a proposed project could impact recreational boating.

Bar Length: This is the total length of an individual piece of reinforcement steel. Additional section lengths are shown under "A," "B," "C," etc., and correspond with the letter designation in the illustration for that specific bar.

Bar Mark: An alphanumeric designation that indicates where the bar is being used, as well as the size of the bar.

Bar Quantity: This represents the number of specific reinforcement bars for each type.

Bar Size: This designates the bar diameter in eighths of an inch; therefore, a No. 8 bar will be 1" in diameter, whereas a No. 4 bar will be 1/2" in diameter.

Beam Details Sheet: This document provides plan views and sections that indicate the beam dimensions and reinforcement details.

Best Practices: Best practices refer to a set of proven, effective procedures and guidelines that are widely accepted within the industry to maximize safety, minimize risk, and ensure compliance with regulations during construction activities on or near roadways. These practices are typically based on regulatory standards (e.g., OSHA, FHWA, MUTCD), industry experience and research, lessons learned from past incidents, and technological advancements.

BMP: Best Management Practices (see Best Practices).

Cross-Section View: This view permits you to see the inside of an object, construction details, and dimensions. Sections are visual “slices” of the roadway, typically taken along the centerline at 50-foot intervals.

Deck Placement Plan: This provides a plan view of the sequence for placing concrete across the bridge deck. Details for the deck reinforcement steel, joints, blackouts, and negative/positive moment regions are also provided. Information on minimum bar lap lengths is also included.

Detailed Abutment Plan: This provides a Plan view, Elevation View, and Cross Section View of the structure. It also includes references to additional cross-section details found on other plan sheets, along with notes directing readers to related information elsewhere on the plans. It includes a Title Block to identify the project, structure, and the specific information presented on the sheet.

Detailed Framing Plan: This provides a plan view that identifies the limits for each construction stage, the dimensions and locations for each beam, diaphragm, and joint (expansion or fixed), and the location of each of the substructure elements (abutments and piers).

Erosion and Sedimentation (E&S) Control: The practice of minimizing accelerated soil erosion and sedimentation associated with temporary earth disturbance activities.

E&S Best Management Practices: These are the erosion and sedimentation (E&S) controls that will be installed on the site. Some examples include cofferdams, causeways, erosion blankets, filter bags, and other things such as silt socks, seeding, rock construction entrances, and inlet protections.

E&S Construction Sequence: This is typically included with the General Notes and outlines the timeline and schedule. It includes required notifications to outside agencies—such as the County Conservation District or the Pennsylvania Department of Environmental Protection—as well as the order in which major construction tasks must occur.

E&S Detail Sheets: These provide information on how to install Best Management Practices. The information on the Detail Sheets is commonly used in conjunction with PennDOT’s standards.

Erosion and Sediment (E&S) Form: This form is used to document Erosion and Sedimentation Control inspections. These are conducted weekly or after a rainfall event of 1/4 inch or more. The form is also available in the VSIR app and may be referred to as Form I- Soil Erosion and Sedimentation Control.

E&S General Notes Sheet: This provides an overview of the E&S requirements, the inspection and maintenance schedule, and references to applicable standard specifications and drawings.

E&S Plan Sheets: These provide locations for Best Management Practice installations and limits of disturbances.

E&S Plan: This can be a one-page summary narrative or a full set of plans. E&S plans identify environmentally sensitive areas, limits of disturbance (LODs), sequence of construction, and Best Management Practices (BMPs).

Elevation View: This type of engineering drawing shows the vertical profile of a roadway or structure as seen from the side. It represents how the road or bridge appears in terms of height, slope, and vertical alignment along its centerline.

Existing Drawings: These usually provide details for existing structures. They are important when existing items, such as a bridge, need to be altered or demolished.

General Notes Sheet: This provides general information related to the work to be done on the bridge, such as a list of non-standard abbreviations, reinforcing steel, foundation information, existing bridge notes, and utility information.

General Plan and Elevation Sheet: This shows a general view of the entire bridge and illustrates what the bridge will span, the bridge's horizontal alignment, length, and width.

Highway Lighting Plans: These show the locations and quantities of all items related to highway lighting, including circuits (which represent the entire lighting system and all its components), power supplies (where electricity is provided to the circuit), lighting locations (the locations of the lights and poles themselves), and conduits (the small-diameter pipes through which the wires are run).

Index Map: This contains an index of the various drawings, a map indicating where the project is located within the state, and an index map showing a general plan view of the project.

Legend: A legend explains the symbols, line types, abbreviations, and markings used throughout the plan sheet. It is at the beginning of most plan sets and serves as a reference to help interpret how information is presented on the plans.

Location Map: A bird's eye view of the project area to include limits of work, public utility information, tabulations of overall length, tabulations of construction lengths, segment information, and earthwork summaries.

Location Reference System (LRS): The LRS provides a framework for which all Roadway Management System (RMS) data can be tied to true roadway locations.

Pier Sections Sheet: This includes the Pier Plan view, Pier Elevation view, and Pier Cross Section view, and a Legend that describes the notation used in the plans.

Plan Coordination: Refers to how all plan sheets, drawings, and details work together to guide the inspector during field activities. Each discipline—such as roadway, structures, drainage, and traffic control—provides information that connects and supports the others. When reviewed as a whole, the coordinated plans give inspectors a complete picture of what should be built, where it should be located, and how different components interact.

Plan Sheet: This is used to show construction details for all new work on a project. New work is typically indicated by bold lines on the plan sheets.

Plan View: Also known as a bird's-eye view. This is a view from directly above an object.

Plan, Elevation, Section, and Detail Sheet: This provides detailed construction information about a specific structural element or operation.

Plans: These are also known as blueprints. These are part of the contract documents. They provide information and details (i.e., detailing dimensions and materials) to build roadways and structures. They include standard and project-specific drawings that demonstrate how to build the project, as well as the pay limits for the work.

Profile Sheet: This shows a longitudinal cross-section of the roadway as viewed through the centerline.

Profile View: This view shows elevations along the centerline of a road project—elevations of both the original ground and the finished roadway. It identifies the vertical elevations and grades and the relationships between the roadway grades and the original groundline.

Project Specific Contract Plans: Plans issued by PennDOT that show the location, character, dimensions, and details of the work to be performed specific to each project.

Reinforcement Bar (Rebar) Schedules: These provide a detailed list of all rebars used in the structure, complete with illustrations, bar marks, lengths, quantities, and sizes. They are primarily used to ensure the accurate placement of steel reinforcement.

RMS: The Roadway Management System (RMS) is a centralized data processing application system for managing Pennsylvania's state highway assets. It records the location, physical characteristics, usage, and administrative attributes of all state roads.

ROW: Right-of-Way. This refers to the legal right to access and use a designated area of land for the construction and maintenance of highways.

Segment: A part of a state route that is approximately one-half mile long and is identified by a four-digit number.

Segment Offsets: A specific point measured within a segment. It represents the distance from the starting point of that segment to a particular feature, work item, or location shown on the plans. Segments break longer project areas into smaller, manageable parts, and the offset identifies exactly where something falls inside that segment.

Signing and Pavement Marking Plan: This outlines the permanent installation of traffic signs and pavement markings. It includes detailed sheets that show sign messages, locations, types of signs, and structural/fabrication information. It also identifies the final pavement marking types and their placement. This plan is a valuable reference for understanding what the completed project will look like.

Smart PDF: Smart PDF software is part of PennDOT's broader Digital Delivery Directive 2025, which aims to modernize project delivery by transitioning from traditional paper-based plans to fully digital workflows. This allows red lines to be seen as they are created. This means the contractor, engineer, and inspector are all working from the same drawing.

Station (STA): A precise point along a linear project from which measurements are made. On construction drawings, every 100-foot interval is called a station. For example, station 0+00 is the beginning of the project, station 1+10 is 110 feet from the starting point, and station 3+50 is 350 feet away from the starting point.

Stake-Out Sketch (or Plan): This shows all the necessary information to stake out the bridge. This information includes the work point coordinates and locations, bridge locations (beginning and ending station points), and the location and orientation of piers, abutments, and wingwalls.

Standard Drawing: An approved drawing showing standard details that are used repeatedly on multiple projects.

Stationing: This is a way to measure horizontal distance along a project. The direction of stationing is described as either ahead (increasing stations) or “back” (decreasing stations). “Ahead” stationing typically runs from south to north or from west to east.

Structure Plans: These include General Plan and Elevation Sheets, General Notes Sheets, Tabulation of Quantities (Tab) Sheets, Stake-Out Sketches, Plan, Elevation, Section, and Detail Sheets, and Reinforcement Bar Schedules.

Summary Sheet: This summarizes the quantity of each item of work for the entire project and directs the reader to the appropriate Tabulation of Quantities Sheet, also known as the Tab Sheets.

Survey Control Points: Fixed reference markers, or monuments, that help inspectors identify their exact position on the project site. These points link field locations to the measurements shown in the plans.

Survey Coordinates: Provide the exact location and alignment of the project in the field. They help inspectors verify that construction matches the design by confirming the correct placement and elevation of roads, utilities, and structures. These coordinates guide staking, layout, and measurements to ensure work is built in the proper location.

Tabulation of Quantities Sheet: This is also known as a “tab sheet.” It lists the quantities for each item of work for each major structural element of the bridge, as well as the total quantities for each item. This summarizes the items of work and their quantities by specific locations.

Traffic Control Plan (TCP) Plans: These project-specific drawings outline how traffic is safely directed through or around a construction zone. Traffic control is required whenever vehicles move within or near active work areas. The work includes furnishing, installing, maintaining, and relocating traffic control devices, as well as performing flagging or pilot-car operations to guide traffic and manage dust. All traffic control activities must follow Publication 212, Publication 213, the MUTCD, Special Provisions, Standard Drawings, the approved Traffic Control Plans (TCP), and any additional direction provided.

TCP General Notes Sheet: This provides an overview of the traffic control requirements, the inspection and notification requirements, and references to applicable standard specifications and drawings.

TCP Index Map: This provides a general plan view of the project. Like the Index Map in the Roadway Plans, this sheet provides references to applicable Plan Sheets.

TCP Plan Sheets: These identify the location of active work zones and each required traffic control item. On complex projects, these items will be broken down by stage and phase.

TCP Sequence of Construction Operations Sheet: This describes where and when to install the temporary traffic control items. This sheet also identifies how to divert traffic around active work zones.

TCP Summary Tab Sheets: These show the required temporary construction items, quantities, and locations for traffic control. They also include items such as pavement types, signage, arrow boards, impact attenuators, and pavement markings. On complex projects, these items will be shown by stage and phase.

TCP Temporary Traffic Signal Permit Sheets: These indicate the location of important items such as stop bars, signal heads, video detection zones, and signal timings.

Traffic Signal Plan Cross Walks: These are designated paths that direct pedestrian traffic across one or more lanes of traffic. Cross walks are delineated by some physical characteristics, such as various configurations of pavement markings, textured surface, and/or other aesthetic materials such as bricks or cobblestones.

Traffic Signal Plan Legends: These are Thermoplastic pavement markings installed on the pavement surface to communicate additional information to vehicular traffic, excluding line striping. Examples include left and right turn arrows, "School Zone," "Only," "Slow," "Stop," and handicap symbols.

Traffic Signal Plan Mast Arms: Mast arm poles consist of a transformer base, a vertical pole shaft, and a horizontal mast arm where traffic signals, luminaires, and signing are attached to direct traffic.

Traffic Signal Plan Push Buttons and Signals: A pedestrian push button is used by pedestrians to request a walk signal at a signalized intersection. When the button is pressed, it sends a message to the traffic signal controller indicating that a pedestrian would like to cross the road. The pedestrian signal head then displays visual cues, such as a walking person to indicate it's safe to cross, or an unpraised hand to signal "don't walk." These symbols function similarly to a red light for vehicles and are designed to help pedestrians cross safely.

Traffic Signal Plan Signalized Intersection: An intersection where traffic is controlled by traffic signals.

Traffic Signal Plan Signing: This includes various informational, regulatory, and warning signs that communicate information to both vehicular and pedestrian traffic.

Traffic Signal Plan Stop Bars: These are 24"-wide, white, thermoplastic pavement markings that traverse a lane of traffic and designate the point where traffic is to stop when approaching a traffic signal.

Traffic Signal Plan: This shows the locations and quantities of permanent traffic signal items at signalized intersections.

Types of Bars: This is a representation of the bar's appearance with straight and bent sections. Letters are used in this graphic to designate each section of the bar. Letters and numbers are often used to designate sections and provide information about each section.

Typical Section: This provides a cross-sectional view of the roadway that shows the construction of the drainage, subgrade, subbase, and roadway surface between various station points.

Utility Relocation Drawings: These indicate the specific items of work for the relocation of existing and proposed gas, water, sewer, power, and cable utilities.

Working Drawings: These are created by the contractor to indicate various procedures such as the erection of a bridge beam, the demolition of a structure, or temporary sheeting and shoring installations. These drawings must be approved by PennDOT prior to performing the work.

Links to Reference Materials

Construction and Stormwater Compliance: <https://www.pa.gov/agencies/penndot/programs-and-doing-business/environment/construction-stormwater-compliance>

Erosion and Sediment Pollution Control Program Manual:
<https://fewwnpoer.pa.gov/elibrary/GetFolder?FolderID=1468236>

Guidelines for Aids to Navigation (ATON) Plans: https://www.pa.gov/content/dam/copapwp-pagov/en/fishandboat/documents/boating/safety/pfbc_guidelines_aton_plans.pdf

PennDOT Publication 14M, Design Manual Part 3, Plans Representation:
<https://www.pa.gov/content/dam/copapwp-pagov/en/penndot/documents/public/pubsforms/publications/pub-14m/april%202016%20change%20no.%201.pdf>

PennDOT Publication 72M - Revisions to Standards for Roadway Construction (change number 12): https://www.pa.gov/content/dam/copapwp-pagov/en/penndot/documents/public/pubsforms/publications/pub-72m/72m_2010_12/72m_2010_12.pdf

PennDOT Publication 111 Revisions to Traffic Control - Pavement Markings and Signing Standards TC-8716 Traffic Control Signing Type III Barricade:
<https://www.pa.gov/content/dam/copapwp-pagov/en/penndot/documents/public/pubsforms/publications/pub%20111.pdf>

PennDOT Publication 213 Temporary Traffic Control Guidelines:
<https://www.pa.gov/content/dam/copapwp-pagov/en/penndot/documents/public/pubsforms/publications/pub%20213.pdf>

PennDOT Publication 218M: Standards for Bridge Design:
<https://digitalcollections.statelibrary.pa.gov/Documents/Detail/standards-for-bridge-design-pub.-218m/465744>

PennDOT Publication 219M - Standards for Bridge Construction:
<https://digitalcollections.statelibrary.pa.gov/Documents/Detail/standards-for-bridge-construction-pub.-219m/465745>

PennDOT Publication 601 - 2024 Pennsylvania Traffic Data:

<https://www.pa.gov/content/dam/copapwp-pagov/en/pennidot/documents/public/pubsforms/publications/pub%20601.pdf>

Pennsylvania Location Reference System: <https://www.pa.gov/agencies/pennidot/research-planning-and-innovation/roadway-management-testing/location-reference-system>