



# Engineering CAD Standard

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## STANDARD CHANGES

### STANDARD CHANGES DECEMBER 2023

SECTION	DESCRIPTION
Entire Document	Links have been reviewed and updated
Entire Document	Formatting reviewed
Entire Document	Figures & tables and descriptions updated
Entire Document	General writing improvements for clarity
2.1 Document Hierarchy	Subsection Added
2.2 Applicability	Subsection Added
2.3 VDC Engagement	Subsection Added
2.4 Files Ownership	Subsection Added
2.5 Software	Subsection Added
4.2 AutoCAD Civil 3D	Subsection removed and new separated Section created: Section 12.0
5.1 Project Folder Structure	Child Subsection names updated to match BIM Standard Documentation
5.2 ACC Folder Structure (Autodesk Construction Cloud)	Subsection Created
6.3 Model Files	Subsection created and separated from main text
6.4 PDF File	Subsection created and separated from main text

6.5 Plotsheet Files	Updated numbering from Subsection 6.3
6.6 Drawing Number Conventions	Updated numbering from Subsection 6.4. Child subsections created for each allowable numbering
6.7 Layering Scheme Definition	Updated numbering from Subsection 6.5
6.8 Folder Naming Convention	Updated numbering from Subsection 6.6
7.2 Coordinate System	Added information regarding allowable coordinate systems
7.12 Layer Key Styles	Subsection Added
8.9 Plot Setup	Subsection Stage I CAD Standard text was merged to Section 13.0. Compliance CAD Standards Report
9.1 AutoCAD 2022 Configuration (Plotting by Layout)	Subsection removed. This is a "How-to" and some related info is provided in Section 7.3
9.1 Plan Set Title Sheet	Subsection number changed to 9.2
9.2 Plan Set Plot Sheets	Subsection number changed to 9.3
9.2.2 Sheet Numbering	Subsection added and following subsections updated accordantly
9.2.5 Making Revisions in Contract Drawings	Subsection Number updated from 9.2.4 and two subsections were created with separated identification of Partial and Addition Revisions
12.0 Civil 3D	Entire Section Created
13. Compliance CAD Standard Report	Section number updated from Section 12 to 13

## 1.0 INTRODUCTION

The CAD Standard outlined within this document was established to provide guidance for the preparation of the Engineering / Architecture (E/A) Design Division and Construction Division (CMD) of the Port Authority of New York and New Jersey’s (PANYNJ) contract documents.

This document is intended for the use by both in-house personnel as well as outside consultants involved in creating or updating PANYNJ facilities’ Computer Aided Drafting (CAD) data.

## 2.0 PURPOSE

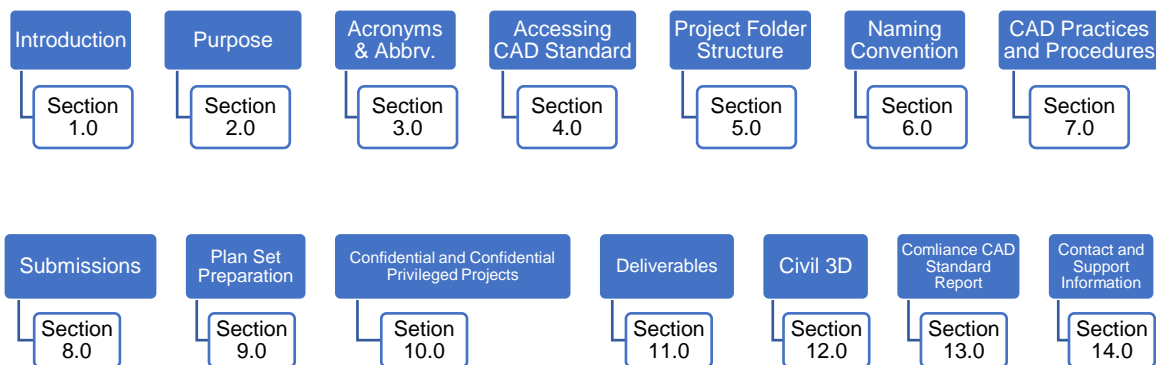
This standard establishes requirements and procedures for the preparation and milestone records (submissions) of CAD based drawings throughout the project life cycle. Adherence to this standard ensures that the Design and Construction Divisions of the PANYNJ shall produce and receive data in a consistent format. The Authority’s VDC Standards apply to the full life cycle of a project from conceptual design through construction, close out, and operations. The adherence to the PA Standard also ensures the consistency of the information the information within each discipline and the efficient exchange of information between disciplines.

The level of required understanding of the CAD Standard is determined by the role of individual assigned to the project. For CAD operators, designers, and functional supervisors a thorough knowledge of all CAD related elements associated with a project is crucial. The project manager, however, only requires a general knowledge of the EAD CAD Standard and how it is employed to create a project. Both levels of knowledge will be possible with this manual.

The CAD system adopted by the PANYNJ is comprised of several Autodesk products. Throughout this manual terminology and references will be made that are unique to Autodesk and primarily, different AutoCAD based software applications.

## 2.1 DOCUMENT HIERARCHY

Figure 2.1 shows the document hierarchy adopted for the VDC standards.



**Figure 2.1. Document Hierarchy**



## 2.2 APPLICABILITY

The chapters within this standard describe how the E/A Design Division and Construction Management Division (CMD) uses AutoCAD and how to configure AutoCAD to support the E/A Design Division and Construction Division CAD Standard, which they have adopted.

The appendices, which are in a separate document, support the chapters in several ways. Each discipline has been assigned an appendix to explain information specific to their functional group. In addition, appendices have been provided to support CAD related subject matter, which is common throughout all disciplines. Finally, some appendices have been created to support internal E/A Design and Construction Division staff only; these appendices will be for internal use; however, they have been supplied with the document for both in-house and consultant staff.

## 2.3 VDC ENGAGEMENT

### 2.3.1 PANYNJ PROJECT STAGES

In Table 2.1 the indicated phases relate directly to distinct Stages of a project’s lifecycle development at The Port Authority of NY & NJ.

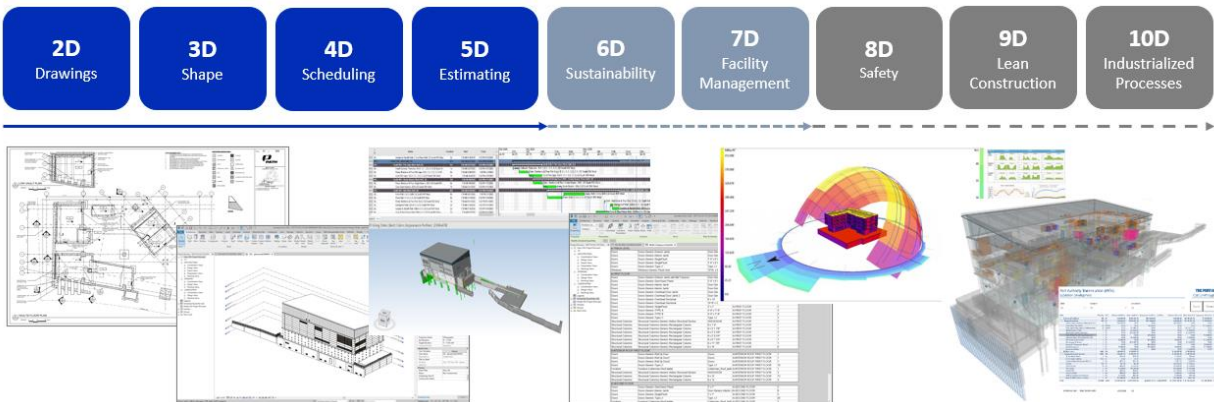
*Table 2.1. PANYNJ Project Stages.*

BIM PHASE	PANYNJ STAGE	DESCRIPTION
Conceptualization & Analysis	Stage I	Conceptual Design
Design & Documentation	Stage II	Preliminary Design
	Stage III	Final Design
Management & Construction	Stage IV	Construction
Maintenance & Operations	Stage V	Project Closeout

### 2.3.2 CAD & BIM OBJECTIVES

The Authority’s strategic objectives, relative to these Standards, are to:

- Achieve interoperability between project teams to facilitate information exchange, enhance communication and enable collaboration between functions.
- Promote the expansion of Virtual Design Construction (VDC) Technologies and ensure Data Integrity during the complete Project Lifecycle:



**Figure 2.2. VDC Dimensions**

In Figure 2.2 are shown the VDC dimensions, which are as follow:

- 2D - Drawings, sketches, details development.
- 3D - Design development, visualization, review, and coordination.
- 4D - Scheduling, field coordination and logistics management.
- 5D - Quantity take off and estimating.
- 6D - Resilience and Sustainability.

- 7D - Facility management and enterprise asset management (EAM).

Ensure that all CAD and BIM content is appropriately detailed, meeting the standards of the Authority and fitting its purpose. All models and files must comply to the Authority's VDC Standard.

## 2.4 FILES OWNERSHIP

The Port Authority of NY & NJ holds ownership of the CAD and BIM files including all inventions, ideas, designs, and methods contained within. This includes, but is not limited to, AutoCAD blocks, Revit families (system-based and/or component-based) and any other content submitted as part of the deliverables.

Outside resources, such as consultants and/or contractors, using the CAD files and BIM Model are granted temporary use of it for the duration of the project. After project completion, they are required to return all copies of the files to The Authority.

## 2.5 SOFTWARE

The Port Authority of NY & NJ CAD and BIM practice is comprised of several Autodesk products. The VDC Standard will generally use terminology and references that are unique to the Autodesk-based software applications.

All active project files shall be developed in accordance with the current software version in use by The Port Authority of NY & NJ. This includes all third-party applications, regardless of when the project began.

Based on the backwards compatibility issues of some applications, please make sure to check which version of the application is recently being used by the Port Authority of NY & NJ.

Table 2.2 shows the current list of software adopted by the PANYNJ. The Current Autodesk products version used is v.2022.

**Table 2.2. Adopted CAD Software list.**

DATA AUTHORIZING
Autodesk Revit
Autodesk Civil 3D
Autodesk AutoCAD
Autodesk AutoCAD MAP 3D
Autodesk AutoCAD Architecture
Autodesk AutoCAD MEP
Autodesk AutoCAD Raster Design

### 3.0 ACRONYMS AND ABBREVIATIONS

In Table 3.1 are shown the Acronyms and Abbreviations used throughout this document.

*Table 3.1. Acronyms and Abbreviations*

ACRONYM	DEFINITION
C3D	Autodesk AutoCAD Civil 3D
C	Confidential
CMD	Construction Management Division
CP	Confidential Privileged
CTB	Color Dependent Plot Style Table
DST	Drawing Sheet File
DWG	AutoCAD drawing file
DWT	AutoCAD template file
EAD	Engineering Architecture Design
EOL	Engineering Online
EOP	Engineer of Projects
FAC	Facility Code
LE/A	Lead Engineer or Architect
LT	Linetype scale
MEP	Autodesk AutoCAD MEP
MS	Model Space
PANYNJ	Port Authority of New York and New Jersey
PC3	Plotter Configuration file
PDF	Portable Document Format file
PID	Project Identification Number
PMP	Plotter Model Parameter file
PS	Paper Space
RVT	Autodesk Revit
VDC	Virtual Design and Construction

## 4.0 ACCESSING CAD STANDARD

### 4.1 USING THE STANDARD FILES

The CAD Standard includes a series of support files that can be accessed either from VDC's Internal SharePoint website or through an external website. The internal SharePoint website can only be accessed by in-house staff through the link below.

[VDC Documents Support.](#)

Figure 4.1 is shown a diagram of the folder structure of this website. All the needed CAD reference files are located at:

*VDC Documents\02.Development\2022\Content\AutoCAD*

For external consultants - without access to VDC's internal SharePoint Website – these same files can be downloaded at the following location:

[Port Authority NY & NJ Engineering Available Documents](#)

At the website location above, go to VDC Requirements and Standards (BIM/CAD) and look for CAD Support Files. Figure 4.2 shows a diagram of the links structures of this website.

In both cases there will be a folder called “**All\_Disciplines**”. This folder contains several cross-discipline support files. Additionally, specific BIM/CAD support files are also available for all other disciplines.

These discipline sub-folders are divided into three sub-folders, which contain all the specific support files discipline. Back to Figure 4.1, is shown the typical example of these folders, which contains layer, palette, and symbol.

The Traffic and Geotechnical sub-folders contain “styles” as an additional folder. The Civil discipline contains additional folders for Civil 3D objects.

Refer to Engineering CAD Appendix document section **1.6 Appendix D – Distribution Files** to get access to a complete list of the distribution files and a thorough description of each file.

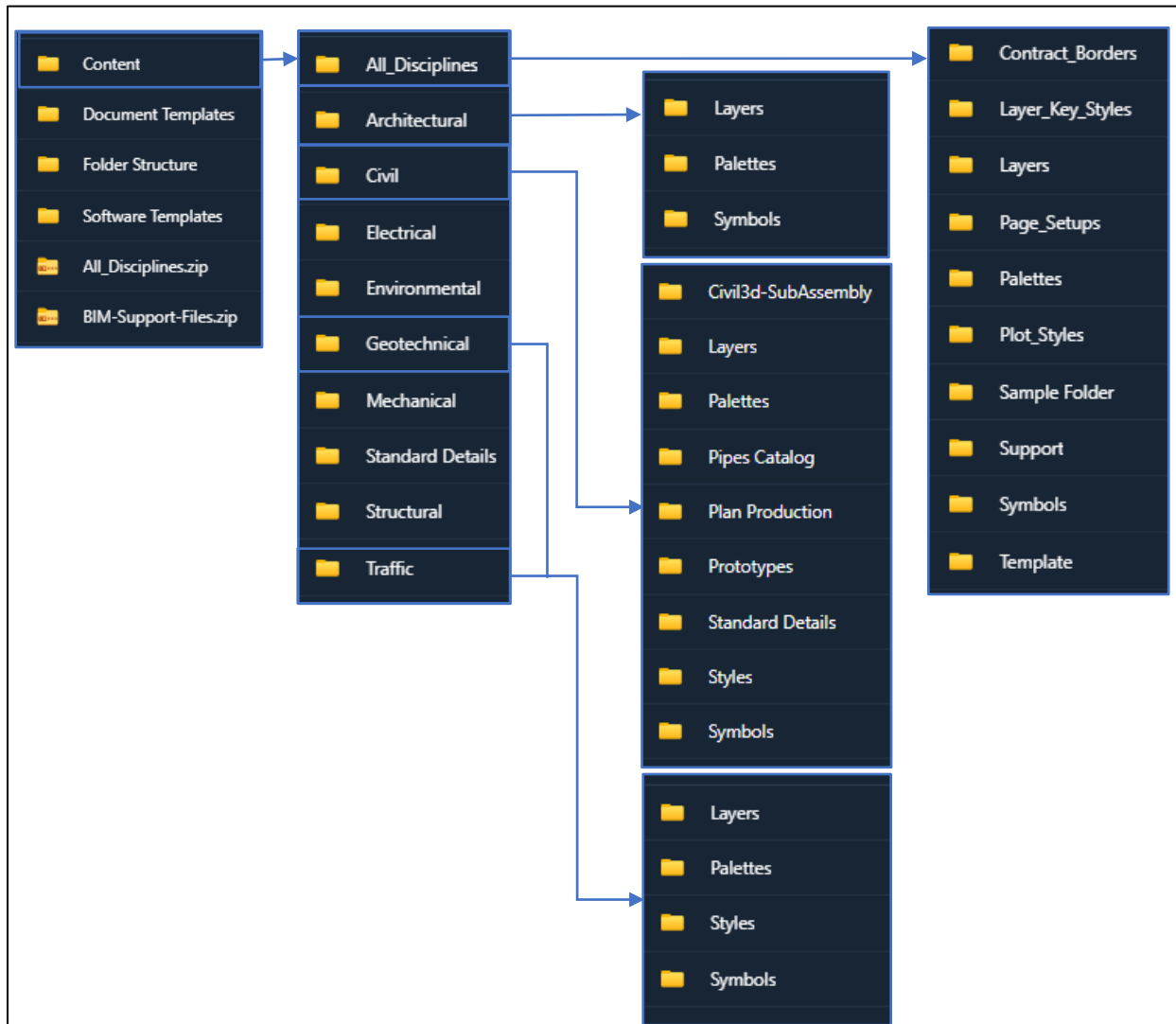


Figure 4.1. Folder structure in SharePoint.



**Figure 4.2. PA's external consultant CAD Standard files website**



## **5.0 PROJECT FOLDER STRUCTURE**

The Port Authority of NY & NJ VDC Standard provides a structure for the organization of project deliverables within the Engineering Department. The primary goal is to improve coordination among all functional groups within the PANYNJ Divisions and their Consultants/Contractors, as well as to develop projects in a way that will facilitate the further use of the electronic information beyond the initial contract. In this section, it is expected that the folder structure for projects be developed on the internal network. Efforts are being made to define the ACC folder structure, yet there is not a final consensus, and any project done in the cloud should be coordinated directly with the VDC and project team lead.

### **5.1 FOLDER STRUCTURE (INTERNAL SERVER)**

#### **5.1.1 FACILITY FOLDER**

All Port Authority of NY & NJ projects are stored on a central server, which has internally been mapped using the drive letter "M." The Server (M:\ drive) is organized by Facility Folders using the following Facility Codes shown in Table 5.1.

Table 5.1. PANYNJ's Facility Name and Code.

FACILITY CODE	FACILITY NAME
AMT	Automobile Marine Terminal
BB	Bayonne Bridge
BRKMT	Brooklyn Port Authority Marine Terminal
EP	Elizabeth Port Authority Marine Terminal
EWR	Newark Liberty International Airport
FERRY	Ferry Transportation
GB	Goethals Bridge
GWB	George Washington Bridge and Bus Station
HCMF	Harrison Car Maintenance Facility
HELI	Downtown Manhattan Heliport
HH	Howland Hook Marine Terminal
HT	Holland Tunnel
IPY	Industrial Park at Yonkers
JFK	John F. Kennedy International Airport
JSTC	Journal Square Transportation Center
LGA	LaGuardia Airport
LT	Lincoln Tunnel
MULTI	Multi Facility Projects
NFC	Newport Financial Center
NJMT	New Jersey Marine Terminals
NLCC	Newark Legal and Communication Center
OBX	Outer Bridge Crossing
PABT	Port Authority Bus Terminal
PACD	Port Authority Police Academy
PATC	Port Authority Technical center
PATH	Port Authority Trans-Hudson Corporation
PHQ	Police Headquarters
PJ	Port Jersey
PN	Port Newark
PRTC	Police Rescue Training Center
RLLC	Cross Harbor Railroad NY/NJ
SWF	Stewart International Airport
TEB	Teterboro Airport
TLPT	Staten Island Teleport
WTC	World Trade Center

### 5.1.2 \_FIM FOLDER (FACILITY INFORMATION MODEL)

The Facility Information Model (\_FIM) stores the latest version of the Facility 3D Model; completed projects are uploaded here. Figure 5.1 shows the workflow for PANYNJ BIM projects.

The FIM is stored as a Navisworks File Set (\*.nwf) and composed of Navisworks Federated Files (\*.nwf).

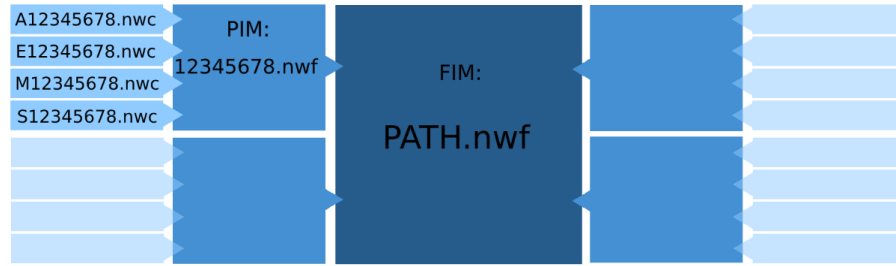


Figure 5.1. FIM Content Workflow.

### 5.1.3 PROJECT IDENTIFICATION NUMBER

The PID Number is a unique identifier assigned for all PANYNJ projects. Every Facility Folder within the Engineering Server has been divided into project folders using an eight-digit PID Number.

Figure 5.2 illustrates this concept using a PATH project with the PID Number 07963625, which includes the \_PIM Folder, the \_SM folder and nine pre-defined Discipline Folders.

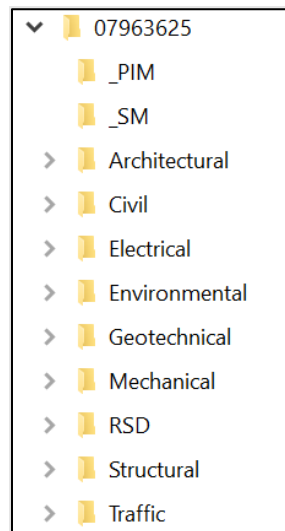


Figure 5.2. PID Folder Example.

The Lead Engineer/Architect (LE/A) shall request the creation of the Project Folder Structure on the Engineering BIM Server by filling out the TECNow form in the link below.

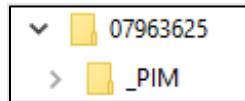
[TECNow form](#)

Consultants are required to get this number from either the LE/A or the discipline’s Task Leader (TL) at the project kickoff.

### 5.1.3.1 **\_PIM FOLDER (PROJECT INFORMATION MODEL)**

A Project Information Model (PIM) file is created for each project. This file has a combination of all the Revit-based and Civil 3D-based most recent Models. Each discipline should be exported to Navisworks file (\*.nwc).

Figure 5.3 illustrates this concept using a project with the PID Number of 07963625, which includes the PIM Folder at the top of the folder:

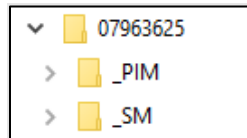


**Figure 5.3. Project Information Model (PID) Number Folder.**

### 5.1.3.2 **\_SM FOLDER (SITE MODEL)**

Each PID Folder contains an SM sub-folder that stores the Site Model file, which holds the project coordinate system and controls the location, Project North, and elevation of all Discipline Models.

Figure 5.4 illustrates this concept using a project with the PID Number of 07963625, which includes the SM Folder.

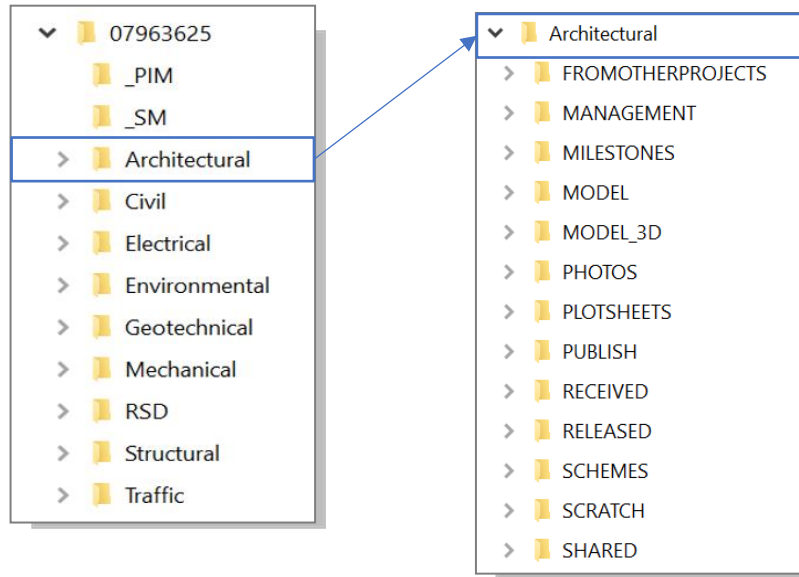


**Figure 5.4. Site Model (SM) Folder.**

The Site Model Folder stores two files, an AutoCAD file in DWG format and a Revit file in RVT format, both named PID-SM. The VDC Group is responsible for creating the files contained within the SM Folder. Site Model file will be shared at the commencement of the project, after the VDC Kickoff meeting.

### 5.1.3.3 **DISCIPLINE FOLDERS**

Every discipline is provided with a folder in the project directory in which all design related data is being stored. Each discipline folder has a series of standardized sub-folders which are to contain the various types of design data. Figure 5.5 illustrates these standardized sub-folders using the Architectural folder as an example.



**Figure 5.5. Folder Number Using Projects PID and Respective Discipline Structure.**

The Model, Plotsheet, and Publish folders should always contain the current version of all CAD/BIM drawings related to the project. For more information on the usage of these folders refer to the section titled Discipline Folder Rules of this standard.

For more information on the Plotsheets\_CP and PDF\_CP folders refer to Section 10.0 Confidential & Confidential Privileged Projects of this standard.

### 5.1.3.3.1 Discipline Internal Folders Rules

All folders have a preset of rules that in-house and consultant shall follow. Table 5.2 displays the rules of each folder for consistency throughout the projects for the Port Authority.

**Table 5.2. Discipline Internal Folder Rules.**

FOLDER	RULES			
	Sub-folders Permitted	Read-write Permissions (per discipline)	Access for Other Disciplines (Read-only Permission)	Archived
FROMOTHERPROJECTS	X	X		
MANAGEMENT	X	X		X
MILESTONES		X	X	X
MODEL		X	X	X
MODEL_3D		X	X	X
PHOTOS	X	X	X	X
PLOTSHEETS		X	X	X
PUBLISH		X	X	X
RECEIVED	X	X		
RELEASED	X	X		
SCHEMES	X	X		
SCRATCH	X	X		
SHARED	X	X	X	

### 5.1.3.3.2 FROMOTHERPROJECTS Folder

The FROMOTHERPROJECTS folder will contain drawings and data that have been taken from other projects that relate to the current project. If a file from another project is required for reference purposes only and is not going to be included as part of the contract set it will be stored in this directory. If a file is required to be part of the contract set, then it will be copied to the MODEL/MODEL\_3D folder and must comply with the current CAD and BIM Standards. Related contracts and reference documents are shared in Livelink/E-Builder with the consultants in Stage I through Stage III.

### 5.1.3.3.3 MANAGEMENT Folder

The MANAGEMENT folder will contain all non-drawing related project data. Spreadsheets, documents, specifications, memos, estimates, etc. will be stored in this folder.

### 5.1.3.3.4 MILESTONES Folder

The MILESTONES folder is a location for storing independent (duplicate) copies of project information as it appears at each milestone of the project. While the root Model, Plotsheets and Publish folders contain the current versions of drawings which will evolve throughout the life cycle of the project, the MILESTONES folder will preserve the state of those drawings at each

milestone deliverable. Sub-folders may be created for each submission milestone from Stage I through Stage IV.

Each discipline Task Leader is responsible for archiving their own discipline-specific Central Files into one of the sub-folders within MILESTONES. After verifying that all discipline Task Leaders have archived their folders, the LEA should notify the VDC Group. For more information regarding the specific submittal milestones, refer to 8.0 Submissions.

#### **5.1.3.3.5 MODEL Folder**

All design work and annotation must be stored inside AutoCAD drawings saved within the MODEL folder. The CAD Standard refers to these design drawings as Model files.

Images and Office documents referenced or linked by drawing files will also be stored in the Model folder and must comply with the rules for Model files. References to OLE objects are not permitted.

#### **5.1.3.3.6 MODEL\_3D Folder**

This folder stores the Central Revit Model files. Within this folder lives the SUPPORT sub-folder, which stores Revit-related information that is not contained under any other existing available folder, and it does not need to be shared outside each discipline. If NWCs need to be stored for BIM Coordination purposes, the COORDINATION folder should be used.

#### **5.1.3.3.7 PHOTOS Folder**

The PHOTOS folder will contain all digital photographs relevant to the project, except for those used in contract drawings. If a photo needs to be part of the Contract Set, it should be moved or copied into the MODEL or MODEL\_3D folder and renamed accordingly.

Within this folder lives the RENDERING sub-folder, which stores Rendering files such as JPGs, PNGs, TIFs, etc.

#### **5.1.3.3.8 PLOTSHEETS Folder**

All layouts for plotted sheets will be saved inside AutoCAD drawings stored within the PLOTSHEETS folder. The CAD Standard refers to these layout drawings as plotsheet files. These files are assembled sheets used for plotting. These drawings consist of a series of external references. Only plotsheet files will be stored within this folder.

All paper drawings in the Contract Set will have a corresponding plotsheet file in the PLOTSHEETS folder, the only exception is the Title Sheet. Within this folder lives the PDF sub-folder, which stores PDF files. A PDF is an industry standard non-editable file format. Refer to 6.4PDF Files for PDF requirements.

The PDF folder will always contain the most recent milestone version of the PDF file(s). Earlier milestone files once copied to the MILESTONES folder for the milestone will be either deleted from the PDF folder or overwritten in place.

#### **5.1.3.3.9 PUBLISH Folder**

The PUBLISH folder will be used as a sharing mechanism between disciplines. A discipline may copy Model files into its own PUBLISH folder, making them available for other disciplines to

reference. Other disciplines are not permitted to copy these files, but instead, these disciplines will externally reference these files directly from the owner's PUBLISH folder.

**There will be only one Contract Border per project.** The only exception to this rule is when new drawings are added to the Contract Set as part of a Stage IV – PACC. Refer to 8.7 Stage IV\_PACC for instructions. If necessary, BIM Models will be exported as DWG files and saved within this folder.

It is important that this methodology for referencing design files from other disciplines be followed. If a user copies design files from another discipline's Model, Plotsheets or Publish folder then they must take ownership of the file. By taking ownership, the discipline copying the file will then be responsible for all CAD Standards compliance of that file as if it were created by that discipline.

Only copies of Model files for other disciplines to reference shall be stored in the Publish folder. The owning discipline is not able to reference files from its own PUBLISH folder (except for the lead discipline, which should reference the Contract Border from its own PUBLISH folder).

#### **5.1.3.3.10 HISTORY Folder**

The HISTORY folder is the only sub-folder permitted within the PUBLISH folder. If a single file is to be published more than once, the file that exists in the PUBLISH folder will be moved to a dated sub-folder within the HISTORY folder. The updated version of the file will then be copied into the root of the PUBLISH folder.

This will allow other disciplines to continue to reference older or time-phased versions of reference drawings if required by their design schedule by changing the external reference path to the dated sub-folder within the History folder. Only copies of previously published files will be copied to the HISTORY folder.

#### **5.1.3.3.11 \_DATASHORTCUTS Folder**

The \_DATASHORTCUTS folder is only populated in the folder structure for disciplines that use AutoCAD Civil3D as an authoring application.

- This folder is selected when setting up the Data Shortcut using the Civil 3D Toolspace Prospector.
- Sub-folders are permitted within the \_DATASHORTCUTS folder. Refer to 6.8 Folder Naming Convention for proper usage.
- The \_DATASHORTCUTS folder has read-write permissions assigned to the owning discipline.
- Other disciplines have read permissions assigned to the \_DATASHORTCUTS folder.
- The \_DATASHORTCUTS folder will be archived with the project.



#### **5.1.3.3.12 RECEIVED Folder**

The RECEIVED folder will contain a dated archive of design information received from other disciplines and outside sources. This folder is intended as a record to identify exactly what information was provided and on what date.

#### **5.1.3.3.13 RELEASED Folder**

The RELEASED folder will contain a dated archive of design information provided to other disciplines and outside sources. This folder is intended as a record to identify exactly what information was provided and on what date.

#### **5.1.3.3.14 SCHEMES Folder**

The SCHEMES folder will contain various schemes of a design as well as any temporary design data. This folder provides the designer with an area in which to make trial changes to a design and a place to store temporary files. If a scheme is created and is later chosen as the final design version, the files stored under that scheme are to be copied to the MODEL folder.

When using the Revit-based applications, Design Options is the preferred method to accomplish schemes. This folder is a record intended to identify exactly when, and what information was provided to a consultant.

#### **5.1.3.3.15 SCRATCH Folder**

The SCRATCH folder is meant to be used by team members to work on details, or store Project related information relevant to the Discipline members.

#### **5.1.3.3.16 SHARED Folder**

The SHARED folder will be used as a sharing mechanism for non-CAD\BIM-related information between disciplines. A discipline may copy MANAGEMENT files into its own SHARED folder, making them available for other disciplines.

Files stored within the SHARED folder are not to be referenced in any contract drawings and are provided for information only. Only copies of MANAGEMENT files shall be stored in this folder, Model files are not permitted within the SHARED folder.

### **5.1.4 SAMPLE PROJECT**

To simplify the exchange of information between the various PANYNJ departments, divisions, and function groups as well as between consultants and contractors, every attempt will be made to adhere to both the drive mapping and directory structures defined within this section.

A sample project folder structure has been provided with the CAD Standard as shown in Figure 5.6.

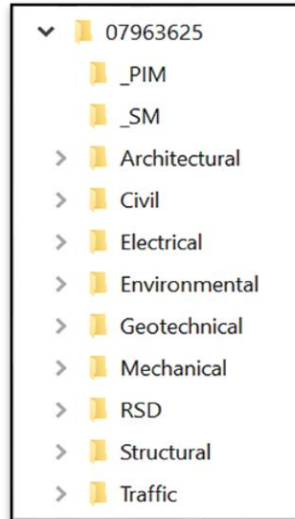
The project folder structure requires the replacement of "Facility Name" with the Facility Code provided in Section 5.1 Project Folder Structure and the letters "PID" with the eight (8) digit Project Identification Number provided by the LEA.

A copy of the project folder structure can be found in the link below:

**[Sample Project Folder Structure](#)**

The Figure 5.6 represents the project folder structure (Sample Project for Consultants) which can be followed with the below provided link:

*All\_Disciplines\_Support\_Files\Sample Project*



*Figure 5.6. Project Folder Structure.*

## **5.2 ACC FOLDER STRUCTURE (AUTODESK CONSTRUCTION CLOUD)**

This section is currently under development. If a project is planned to be developed in the cloud, make sure to coordinate with the VDC team.

## 6.0 FILE NAMING CONVENTION

All electronic project files such as DWG, PDF, Images and Office documents referenced by a contract drawing, will be named following the CAD Standard File Naming Convention.

### 6.1 DISCIPLINE CODES

Table 6.1 lists codes for the eight (8) disciplines within the E/A Design Division of the PANYNJ. All files referenced by contract drawings will be named beginning with the appropriate Discipline Code. The only exception to this rule is the Contract Border file. Sub-discipline codes can be used for MODEL and PLOTSHEET file naming.

*Table 6.1. Discipline Code.*

CODE	DISCIPLINE
A	Architectural
C	Civil
E	Electrical
N	Environmental
G	Geotechnical
M	Mechanical
S	Structural
T	Traffic

### 6.2 CONTRACT BORDER FILE

The Contract Border file contains general information about the project.

*Table 6.2. Contract Border Acronyms File Description.*

ACRONYM	DESCRIPTION
PID	Eight Digit Project Identification Number
CB	Contract Border

Table 6.2 explains the components of the filename taking the form of:

*PID-CB.dwg (ex. 01234567-CB)*

Since one Contract Border file is used by all the project's disciplines, no discipline code is used in its file name. The filename will also contain no spaces or description.

Consultants may create their own Contract Border file only if they are the Lead Discipline. Otherwise, they will request the Contract Border from the EAD LE/A and place it in the Lead Discipline's Publish folder.

If new drawings are added to the Contract Set during the Stage III via an Addendum or in the Stage IV – PACC, the original Contract Border cannot be used. A new Contract Border will be issued by the Lead Discipline and the new issue date will be included within the Revision Stamp and as the drawing date. The new Contract Border will be issued with the name appended with the date the Addendum is issued and named as follows:

***PID-CB-YYYY\_MM\_DD.dwg (ex. 01234567-CB-2022\_03\_02)***

The original Contract Border will remain untouched, and both files will co-exist within the Publish folder.

**6.2.1 CONFIGURING THE CONTRACT BORDER**

To create the project border, open the “Contract\_Border.dwg” file provided with this standard, fill out all attribute information requested in the drawings, and save it to your LEAD discipline’s PUBLISH folder. The naming convention described in 5.1.3.3.8 PLOTSHEETS Folder shall be adopted.

As with the Title Sheet, the “WORK ORDER No.” line has been turned off by default and layer GN-ANNO-TTLB-WRKO is to be turned on if a WORK ORDER No. needs to be entered.

For a listing of Contract Border files, refer to the CAD Appendix document section **1.6 Appendix D – Distribution Files**.

**6.3 MODEL FILES**

Model files are working drawing files containing the actual design geometry and annotations; they may also include externally referenced files from either the discipline’s own Model folder or other disciplines’ Publish folders.

***DPID-FP01-UserDescription.dwg (M01234567-SPK01-North Wind.dwg)***

Table 6.3 describes the acronyms that comprise the model file names.

***Table 6.3. Model Files Naming Nomenclature.***

ACRONYM	DESCRIPTION
D	Discipline Code (Refer to Table 6.1. Discipline Code.).
PID	Eight Digit Project Identification Number.
FP	Model File Plan Type (Refer to Table 6.4. Model File Plan Types).
01	Sequence Modifier (If used will be two digits).
User Description	A description of up to 24 characters, including spaces. The following characters are not permitted. < > / \ “ ” : ; ? *   , = ‘ & %

Refer to the list of approved Model File Plan Types listed in Table 6.4. Model File Plan Types. Once defined a model file’s name will not change throughout the life of the project. This restriction is required due to the nature of externally referencing Model files.

For a listing of common Model File Plan Types for particular disciplines, refer to that specific discipline's appendix in the Engineering CAD Appendix document. The Model File Plan Types shown in Table 6.4 are not discipline specific so they can be used by every discipline.

Table 6.4. Model File Plan Types.

MODEL FILE PLAN TYPE	DESCRIPTION	MODEL FILE PLAN TYPE	DESCRIPTION
3D	3D Isometric	MD	Machine Design Plan
AA	Asbestos Abatement	MT	Maintenance of Traffic Plan
ALN	Alignment Plan	NOT	Notes and Specifications Plan
AN	Annotations	ONL	One Line Diagram
AP	Auxiliary Power Plan	PAV	Paving Plan
ASL	Asbestos Sample Location	PB	Presentation Border
BSE	Background Drawing	PIP	Piping Plan
CD	Communication System Plan	PJ	Project Location
CFP	Concrete Framing Plan	PL	Part Plan
COM	Communication Plan	PLP	Plumbing Plan
CP	Control Plan	PM	Pavement Marking Plan
CPP	Corrosion Protection Plan	PP	Power Plan
CS	Construction Staging	PPL	Pre-cast Panel Layout Plan
CSD	Control Schematic	PPP	Pollution Prevention Plan
COR	Corridor	PRF	Profile
D	Decking Plan	QP	Equipment Plan
DAT	Microsoft Office Document	RCP	Reflected Ceiling Plan
DTL	Detail	RE	Reinforcement Plan
EL	Exterior Elevation	RI	Riser Diagram
EM	EMCS Plan	RL	Removal
EP	Enlarge Plan	RM	Remediation Plan
EV	Environmental Plan	RP	Roof Plan
FA	Fire Alarm	SCH	Schedule
FD	Foundation Plan	SE	Soil Erosion Plan
FNP	Furniture Plan	SEC	Section
FP	Floor Plan	SF	Stair Framing Plan
FPW	Floor Plan Wall	SG	Signal Plan
FR	Framing Plan	SK	Sketch
FS	Fire Suppression Plan	SNP	Sign Plan
GP	Grounding Plan	SO	Sequence of Operation Plan
GRD	Grading Plan	SP	Site Plan
GT	Geotechnical Plan	SPK	Sprinkler Plan
HDP	HVAC Ductwork Plan	SPP	Specialty Piping Plan
HP	Hydraulic Profile	ST	Steel Framing Plan
ICM	ITS Communication Plan	STG	Staging Plan
IDX	Index of Drawings	TB	Truss Bracing Plan
IEL	Interior Elevation	TOP	Topographic Plan
IMG	Image	TRK	Track Plan
JL	Joist Girder Load Diagram	UTL	Utility Plan
KP	Keyplan	WD	Wiring Diagram
LA	Lead Abatement	WET	Wetland Plan
LIP	Lighting Plan	WG	Wind Girt Plan
LP	Landscape Plan	WTP	Water Treatment Plan
LR	Lightning Protection Plan		
LSL	Lead Paint Sample Location		
MD	Machine Design Plan		
MH	Material Handling Plan		
MIS	Miscellaneous		
MLS	Marking Lighting & Signage		

The Sequence Modifier is restricted to the following two options.

Option 1 – Without using the Sequence Modifier. For example:

- M01234567-SPK-Level 2 North Wing.dwg
- M01234567-SPK-Level 2 South Wing.dwg
- M01234567-SPK-Level 4 North Wing.dwg
- M01234567-SPK-Level 4 South Wing.dwg

Option 2 – Using the Sequence Modifier. For Example:

- M01234567-SPK02-North Wing.dwg
- M01234567-SPK02-South Wing.dwg
- M01234567-SPK04-North Wing.dwg
- M01234567-SPK04-South Wing.dwg

Note that each discipline can choose which of the options they will follow for the project.

## 6.4 PDF FILES

PDF files will be created at full-size, directly from the AutoCAD drawing files. If applicable, when signing and sealing, do not disable the function that allows the document to be printed to PDF.

Two forms of PDF files can exist: Single Sheet and Multi Sheet.

The PDF filename will take the form of:

***DPID-PTXX01.pdf (Single Sheet)***

***DPID-PTXX01\_PTXX20.pdf (Multi Sheet)***

The description for each acronym is shown in Table 6.5a.

***Table 6.5. PDF File Name Structure.***

ACRONYM	DESCRIPTION
D	Discipline Code (Refer to Table 6.1. Discipline Code.)
PID	Eight Digit Project Identification Number
PT	Plotsheet Plan
XX	Series Modifier (Refer to Section 6.6 Drawing Number Conventions)
01	Single Sheet Number
XX01_XX20	Starting Sheet Number to Ending Sheet Number

The PDF file is not permitted to have a user description appended to its name.

PDF files will be submitted as multi-sheet files at every milestone submission of the project and will be created:

- From the current set of Plotsheet files.
- Full Size (either 22x34 or 34x56).
- In black and white (exception: graphic signage type sheets).
- In consecutive order.
- Grouped together by Discipline Plotsheet Plan Type and drawing number.

When using a Series drawing arrangement, the PDF files will be named by grouping them together by Plotsheet Plan Type. DWF files are not permitted as substitutions for PDF files.

For Example:

- T01234567-G001\_G007.pdf
- T01234567-T101\_T307.pdf

In addition, a multi-sheet contract set PDF is required by the LE/A. Once the individual discipline's PDFs are submitted to the LE/A, a multi-sheet contract set of the drawings needs to be created and saved in the Lead Discipline's PDF folder. This should be assembled according to the Drawing Index and named by the **Contract Number** only.

For Example:

- EWR154395.pdf

## 6.5 PLOTSHEET FILES

Plotsheet files are drawings, assembled as sheets for plotting, consisting of an externally referenced Contract Border, an inserted Drawing\_Info block and externally referenced Model files from either the discipline's own Model folder or other disciplines Publish folders. The filename will take the form of:

***DPID-PTXX01.dwg (ex. M01234567-SP001.dwg)***

The description for each acronym used by plotsheets is shown in Table 6.6.

***Table 6.6. Plotsheet Files Naming Conventions.***

ACRONYM	DESCRIPTION
D	Discipline Code (Refer to Table 6.1. Discipline Code.)
PID	Eight Digit Project Identification Number
PT	Plotsheet Plan Type (Refer to Table 6.7. List of Plotsheet Plan Types.)
XX	Series Modifier (Refer 6.6. Drawing Number Conventions)
01	Sheet Number



For multiple layouts in one Plotsheets file the filename will take form of:

***DPID-PTXX01\_PTXX02.dwg (E01234567-ES001\_ES004.dwg)***

The Plotsheet file is not permitted to have a user description appended to its name.

Sheet Set Manager has been adopted for the use of Plotsheet creation. When using Sheet Set Manager, a .dst file format shall be submitted in the Plotsheets folder and the filename will take form of:

***DPID.dst (E01234567.dst)***

### **6.5.1 PLOTSHEET PLAN TYPE**

Plotsheet Plan Types organize the contract drawings within the contract document set, they are the alphabetic character components of the sheet number depicted in the lower right-hand corner of the plotted sheet.

A listing of the Plotsheet Plan Types usable by specific discipline appears in Table 6.7.

Table 6.7. List of Plotsheet Plan Types.

USEABLE BY	DESCRIPTION	PLOTSHEET PLAN TYPE
Confidential and Confidential Privileged	Cover Sheet (See Section 9.1)	CV
All Disciplines (Lead Discipline)	Index of Drawing Sheet (See Section 9.1)	IX
	General Project Sheets (Regional Plan, Project General Notes, etc.)	G
	Stage IV Sketch Sheets (For Stage IV use only)	SK
	Construction Staging or Sequence Plan	CS
	Title Sheet	TS
Architectural	Architectural Plan	A
	Landscape Plan	LS
Civil	Civil Plan	C
	Marking Lighting & Signage	ML
Electrical	Electrical Plan	E
	Corrosion Protection Plan	CP
	Electronics Plan	ES
	Fire Alarm Plan	FA
	Marking Lighting & Signage	ML
Environmental	Environmental Plan	N
Geotechnical	Geotechnical Plan	GT
Mechanical	Mechanical HVAC Plan	M
	Baggage Handling Plan	B
	Fire Protection Plan	FP
	Plumbing Plan	P
	Sprinkler Plan	SP
	Vertical Transportation Plan	VT
Structural	Structural Plan	S
Traffic	Traffic Plan	T
	Intelligent Transportation Systems	ITS
	Maintenance of Traffic	MT
	Signal Plan	SG

## 6.6 DRAWING NUMBER CONVENTIONS

The Port Authority CAD Standards supports three options of sheet numbering, numbering by “One-Digit-Series”, numbering by “Two-Digit-Series” or numbering by “Counter” alone. At the start of each project the LE/A will determine which numbering option will be used. **The chosen approach shall be deployed by all disciplines for every contract drawing produced for the entire project.**

When a “Series” numbering system is chosen by the LE/A, each disciplines Task Leader will be responsible for the determination of what drawing types are assigned to each of the available counters in the series. This information will be distributed within the discipline by the Task Leader.

These three formats **cannot** co-exist on the same project. The Sheet Number will take the form as shown in

Figure 6.1.

Option One			Option Two			Option Three	
Plotsheet Plan Type	Series Number (1 through 9)	Counter Number (01 through 99)	Plotsheet Plan Type	Series Number (01 through 99)	Counter Number (01 through 99)	Plotsheet Plan Type	Counter Number (001 through 999)
S	1	01	S	01	01	S	001

*Figure 6.1. Drawing Numbering Conventions Options*

### 6.6.1 OPTION ONE (ONE-DIGIT SERIES)

For projects with nine or less series the sheet number format will include a one or two letter Plotsheet Plan Type followed by a one-digit series number followed by a zero-padded, two-digit sheet “counter” number.

*Use digits “0” through “9” as the series numbers*

*Series number can be skipped*

Counter numbers must be consecutive numbers beginning at “01” for each series.

*D\_Series Number\_Drawing Counter*

*Example: S101*

### 6.6.2 OPTION TWO (TWO-DIGIT SERIES)

For projects with ten or more series the sheet number format will include a one or two letter Plotsheet Plan Type followed by a two-digit series number followed by a two-digit sheet “counter” number.

**Use digits “01” through “99” as the series numbers.**

Series numbers can be skipped.

Counter numbers must be consecutive numbers beginning at “01” for each series.

***D\_Series Number\_Drawing Counter***

***Example: S0101***

**6.6.3 OPTION THREE (WITHOUT SERIES)**

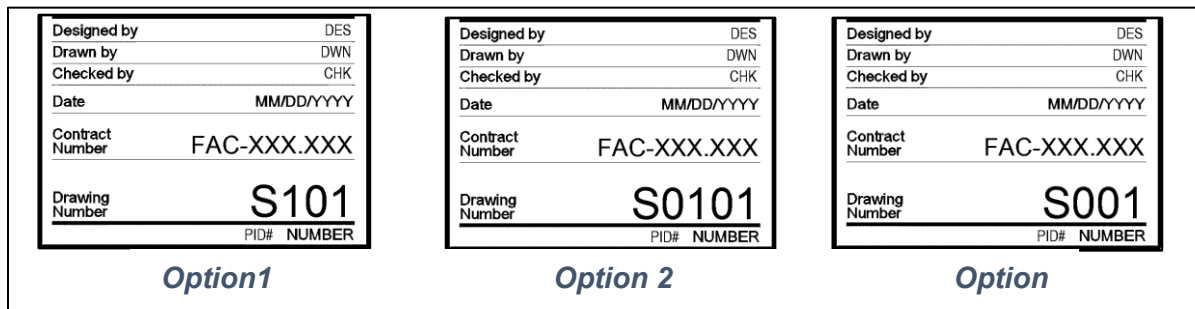
For projects that are not using a series the sheet number format will include a one or two letter Plotsheet Plan Type followed by a zero-padded three-digit sheet “counter” number.

Counter numbers must be consecutive numbers beginning at “001”.

***D\_Counter Number***

***Example: S001***

The following Figure 6.2 displays how the three options would appear on a Plotsheet.



**Figure 6.2. Allowable cases of how drawing numbering may be shown.**

**6.7 LAYERING SCHEME DEFINITION**

All layers contained within E/A Design Division drawings have been defined using variations of the Tri-Services and the AIA layer guidelines and standards. All disciplines use a layer standard that is similar.

**Table 6.8. Layers Scheme Nomenclature.**

FIELD	DESCRIPTION	LENGTH
Discipline	Discipline Code (Table 6.9)	1 Chr
Major	Major grouping of features that have common characteristics	4 Chr
Minor	Subgrouping of Major category	4 Chr
Description	Extended description of layers for clarity	4 Chr
Phase	Indication of the information’s current Phase (Table 6.10)	4 Chr

**Table 6.9. Layer Discipline Codes.**

CODE	DISCIPLINE
A	Architectural
L	Landscape
C	Civil
E	Electrical
N	Environmental
G	Geotechnical
M	Mechanical
S	Structural
T	Traffic
GN	General

**Table 6.10. Layer Phase Codes.**

CODE	PHASE
EXST	Existing
OTHR	Work by others
RELO	Relocation
RMVL	Removal
TEMP	Temporary
FUTR	Future (if needed)

**Note** that the discipline codes listed in Table 6.8 are for layer definitions only. Sub-discipline codes should not be used for layer naming.

The major components of a standard layer name are defined as follows:

***Discipline-Major-Minor-Description-Phase***

For Example:

***C-UTIL-STRM-IDEN or C-UTIL-STRM-SYMB-RELO or C-UTIL-STRM-SYMB-RMVL***

The field position and character count in each component of the layer stratagem is always to be preserved for standard layer naming. The underscore “\_” character is used to both pad and fill unused character spaces in fields or fill entire unused fields. Character padding is always appended to the right side of the fields designation.

For Example:

***S-BEAM-STL\_ -\_\_\_\_-EXST***

The E/A Design Division layering stratagem consists of nine discipline groups and a general group that corresponds to spatial data layers to assist in the isolation of information for design purposes and for the translation and use with GIS. Although every attempt has been made to create an all-encompassing standard, reality dictates that additions will need to be made to the layer stratagem.

In the case that additions are required, they will only be accepted as additions to minor or description categories. If an addition is required to the Standard layer list for the discipline or major categories, then a Request to Change Standard Form is required. Project specific layers can be used and should follow the layer naming convention in the CAD Appendix Section 1.3.1 Request to Change Standard.

**6.8 FOLDER NAMING CONVENTION**

For the folders allowed to create sub-folders within the pre-defined folder structure will take the form of:

*YYYY\_MM\_DD-User Description*

Where:

*Table 6.11. Acronym and description for Folder Naming Convention.*

ACRONYM	DESCRIPTION
YYYY	Four-digit Year
MM	Two-digit Month
DD	Two-digit Day
User Description	A description of up to 24 characters, including spaces. The following characters are not permitted < > / \ " ' : ; ? *   , = ' & %

## 7.0 CAD PRACTICES AND PROCEDURES

CAD drawing files must be consistently formatted in order to provide an effective method of data dissemination and retrieval. To that end, these standards will guide the user in the requirements of layer naming, graphic symbology, lettering styles, drawing units and other drawing related features.

### 7.1 CAD ENVIRONMENT SETUP

In order to plot successfully using this standard, some configuration of the AutoCAD environment will be necessary. This configuration will only need to be done once and will streamline plotting moving forward.

### 7.2 COORDINATE SYSTEMS

For all Authority projects, where appropriate, the default horizontal coordinate systems are shown in Table 7.1.

*Table 7.1. Default Horizontal Coordinate Systems.*

STATE PAN NAME	CODE	REGION	UNIT	NOTES
NAD83 New York State Planes	NY83-LIF	Long Island	US Foot	Apply for all projects in NYC
NAD83 New York State Planes	NY83-EF	East Zone	US Foot	
New Jersey State Planes	NJ83F	US Foot	US Foot	

The default vertical system is the State Plane NAVD 88 system. Depending on the project location, NY or NJ State Plane in use could vary, CSG Group should always be contacted to reconfirm the coordinates applicable for the project.

The LEA must determine at the beginning of a project if another coordinate system is to be used. The project coordinate system will be established in the BIM Site Model file provided by The Port Authority of NY & NJ VDC Support Group. All other models' coordinates will be set by acquiring coordinates from the Site Model.

### 7.3 TEMPLATES DRAWING SETUP

For proper plotting and consistency, the PANYNJ has available AutoCAD template drawing files. All AutoCAD projects must be created using the provided templates and version, which are:

- PA – arch-inch.dwt > for Architectural units
- PA – deci-feet.dwt > for Decimal units
- More in depth information on required template setups are described in Figure 7.1.

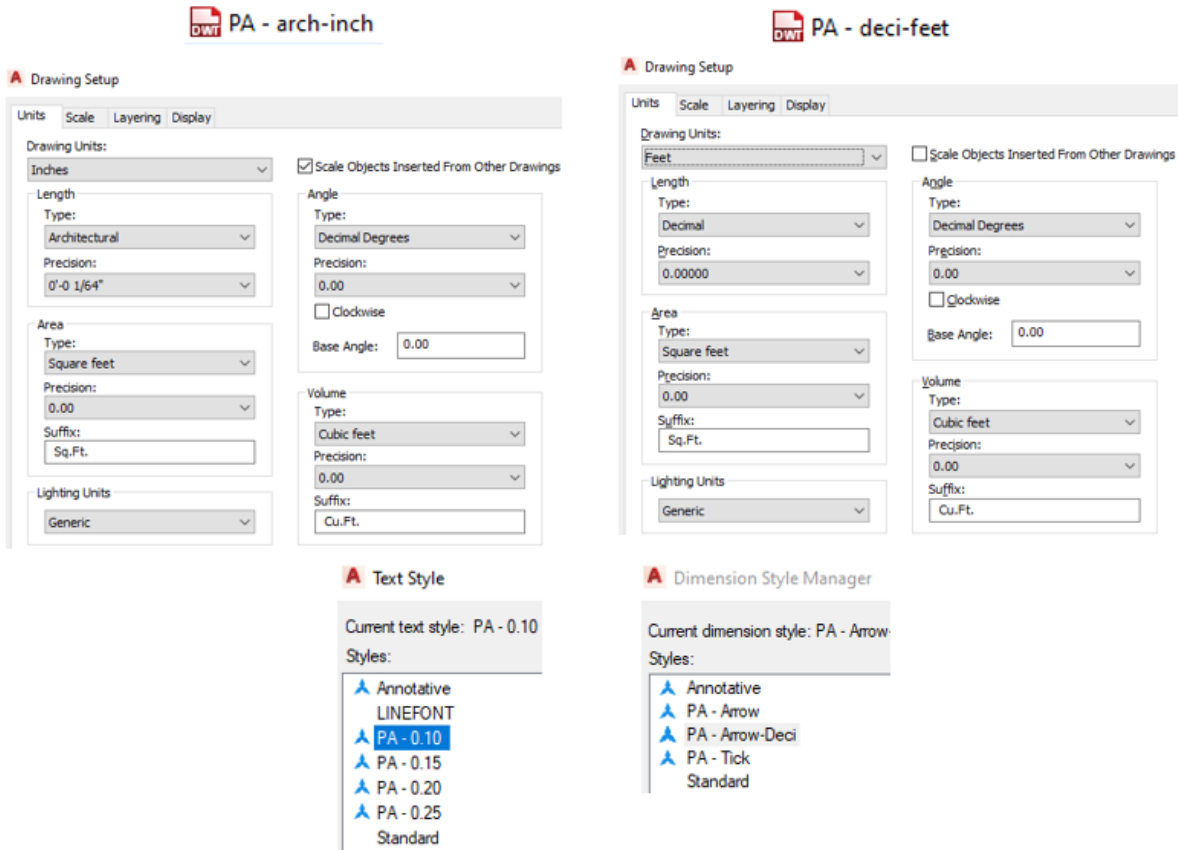
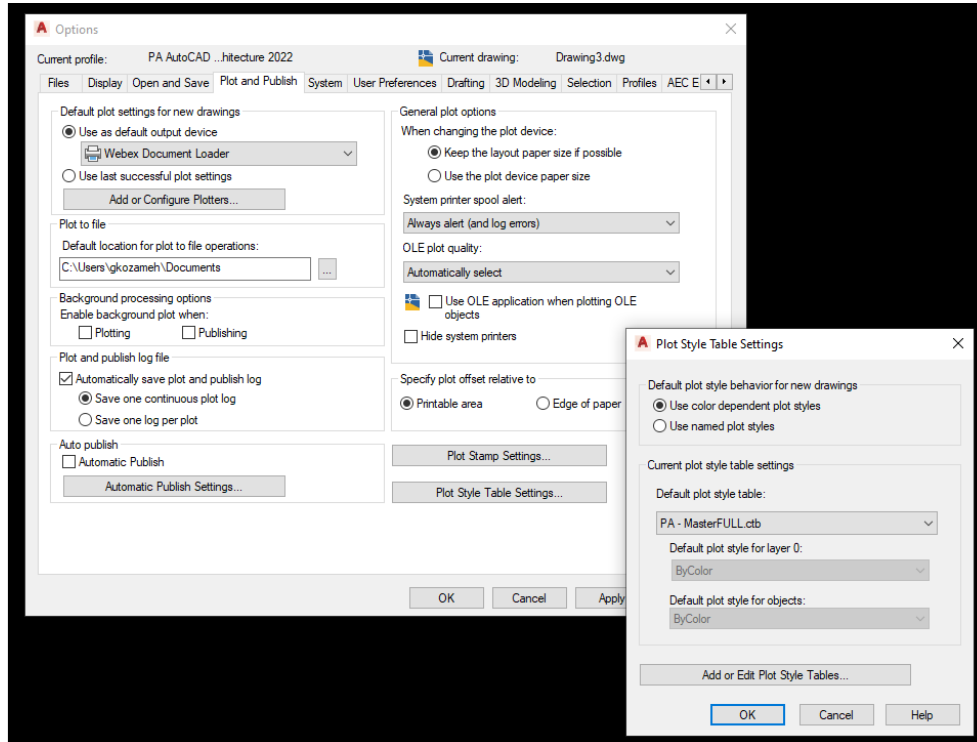


Figure 7.1. AutoCAD Templates Content.



In Figure 7.2 is displayed the required Plot Style Table Settings for AutoCAD templates.



**Figure 7.2. Plot Style Table Settings.**

## 7.4 UNITS

All templates contain preset Units, a CTB file and “LINEFONT” Text Style defined as standard linetype. By default, the “Plot Style Table Settings” have the “Use Color Dependent Plot Styles” option selected and the Default plot style table set to “PA-MasterFULL.ctb” as shown in the image below.

Every object created is measured in drawing units. Before drawing can begin, the drawing units used will need to be decided based on the type of plan being drawn. All drawings will be created at actual size with the unit convention decided on.

Template files have been provided for both Architectural units (inches) and Decimal units (feet).

The creation of all drawings will be accomplished by using one of the two templates provided with the VDC Standard. By adhering to this process problems will be avoided when loading custom EAD linetypes. For a list of which templates are typically used by each discipline refer to Table 7.2.

**Table 7.2. Units to be Used by Each Discipline.**

ARCHITECTURAL UNITS	DECIMAL UNITS
Architectural	Civil
Electrical	Environmental
Mechanical	Geotechnical
Structural	Traffic

## 7.5 ENTITY AND LAYER LINETYPES

Standard E/A Design Division linetypes have been created for use with all design documents. These linetypes have been assigned to their respective layers in the <Layers.dwt> drawings, which have been provided for each discipline as part of this standard. Special linetypes supplied require the use of a textstyle named LINEFONT, starting a drawing with the template drawings provided as part of this standard will ensure that the linetypes are loaded correctly. All entities will have their linetype assigned “bylayer”.

To ensure correct linetype scaling settings for Plotsheet drawings the “LTScale” and “PSLTScale” variables will be set to “1” prior to plotting. This sets all linetypes to be scaled based on the paper space viewport scale factor.

For design (MODEL) files, which utilize model space, will have the “LTScale” variable set to the drawing scale. “MSLTSCALE” should be set to ‘0’.

For discipline specific linetype usages refer to the Engineering CAD Appendix document sections **1.8 Appendix F – Architectural Discipline** through **1.14 Appendix M – Traffic Discipline**. All entities will be drawn on the specified layers and must have color assigned to “bylayer”. Layer color assignments are included in the layer definitions provided.

For discipline specific color usages refer to the Engineering CAD Appendix document sections **1.8 Appendix F – Architectural Discipline** through **1.14 Appendix M – Traffic Discipline**.

## 7.6 BLOCKS

A pre-arranged group of geometry that can be inserted at scale into a drawing is defined by AutoCAD as a “block”. There are two (2) types of blocks provided in this standard, Scalable and Non-Scalable blocks. Standard blocks have been provided as part of this standard.

For discipline specific symbol definitions refer to the Engineering CAD Appendix document sections **1.8 Appendix F – Architectural Discipline** through **1.14 Appendix M – Traffic Discipline**.

### 7.6.1 SCALABLE BLOCKS

Scalable blocks are created with the intent that they will appear the same size when plotted at different scales.

- Blocks are created on Layer “0” and will automatically take on the characteristics of the layer they are inserted on. All blocks will be inserted on the layer identified within this standard.
- For ease of use, the insertion scale factor of each scalable block will depend on the plot scale.
- Any text associated with the block should be on layer “0”, color set to “212”.

### 7.6.2 NON-SCALABLE BLOCKS

Non-Scalable symbols are created with the intent that they will appear at true size for all plot scales.

- Blocks are created on Layer “0” and will automatically take on the characteristics of the layer they are inserted on. All blocks shall be inserted on the layer identified within this standard.
- The insertion scale factor for all non-scalable blocks will be “1”.
- Any text associated with the block should be on layer “0”, color set to “212”.

### 7.6.3 CREATING BLOCKS

Blocks must be documented and supplied to the CAD committee in digital format as a single AutoCAD drawing file accompanied by a plot of the block and a Request to Change Standard Form found in the Engineering CAD Appendix document **Section 1.3.1 – Request to Change Standard**.

Blocks will be created on Layer “0”. Other layers may be present in the drawing for supplemental information such as no-plot information within the block.

- Blocks will be created using the current version of AutoCAD software in use by the E/A Design Division.
- Colors and Linetypes will always be set to “bylayer”.
- Text within the block will utilize one of the Text Styles provided within this standard so that it is legible upon plotting. Any text associated with the block should be on layer “0”, color set to “212”.
- The block will be drawn so that the insertion point is located appropriately and is at 0,0,0.
- The “base” of the drawing will be set to 0,0,0.
- The block drawing will be purged of all unused blocks, layers, linetypes, text styles, etc.

## 7.7 PLOTTED LINEWEIGHTS

The colors used in the layer definitions provided within this standard correspond to plotted pen weights. AutoCAD products make use of a CTB file to assign pen weights to object colors. All Contract Drawings are to be plotted using the “PA-Master.ctb” file that is provided with this standard. Many variables within the CTB file remain constant throughout the pen assignments, these variables are specified in Table 7.3.

**Table 7.3. CTB Plotted Lineweights.**

VARIABLE	VALUE
Color	Black
Dither	On
Virtual Pen Number	Automatic
Linetype	Use Object Linetype
Adaptive	On
Line End Style	Use Object End Style
Line Join Style	Miter
Fill Style	Use Object Fill Style

The pen numbers, lineweights and percent screening assigned to the pens used in the “PA-MasterFull.ctb” file is displayed in Table 7.4 and are for Contract Drawings, disciplines are permitted to use their own ctb files for presentation and Stage I documentation purposes.

Table 7.4 PA-MasterFull.ctb pens configurations.

PEN	COLOR	WEIGHT	SCREEN	PEN	COLOR	WEIGHT	SCREEN	PEN	COLOR	WEIGHT	SCREEN
1		0.0100	100%	71		0.0100	100%	143		0.0080	100%
2		0.0140	100%	80		0.0100	100%	144		0.0720	100%
3		0.0200	100%	81		0.0200	100%	148		0.0100	30%
4		0.0360	100%	82		0.0140	100%	150		0.0280	100%
5		0.0080	100%	83		0.0080	100%	170		0.0200	100%
6		0.0240	100%	90		0.0240	100%	172		0.0240	100%
7		0.0080	100%	92		0.0120	100%	180		0.0040	100%
8		0.0080	100%	93		0.0080	100%	190		0.0080	100%
9		0.0080	100%	96		0.0100	100%	191		0.0140	100%
10		0.0140	100%	100		0.0160	100%	192		0.0240	100%
11		0.0180	100%	110		0.0080	100%	194		0.0200	100%
12		0.0100	100%	120		0.0200	100%	200		0.0100	100%
13		0.0280	100%	121		0.0140	100%	201		0.0280	100%
14		0.0080	100%	130		0.0100	100%	202		0.0100	100%
15		0.0140	100%	131		0.0200	100%	210		0.0160	100%
20		0.0180	100%	132		0.0040	100%	211		0.0320	100%
21		0.0080	100%	133		0.0080	100%	212		0.0140	100%
23		0.0200	100%	140		0.0240	100%	220		0.0200	100%
24		0.0320	100%	141		0.0320	100%	221		0.0040	100%
30		0.0400	100%	142		0.0180	100%	222		0.0100	100%
31		0.0080	100%	143		0.0080	100%	223		0.0040	100%
32		0.0200	100%	144		0.0720	100%	230		0.0160	100%
33		0.0240	100%	148		0.0100	30%	231		0.0240	100%
35		0.0240	100%	150		0.0280	100%	232		0.0440	100%
37		0.0080	100%	170		0.0200	100%	234		0.0160	100%
40		0.0200	100%	172		0.0240	100%	240		0.0040	100%
41		0.0140	100%	180		0.0040	100%	241		0.0080	100%
42		0.0080	100%	190		0.0080	100%	242		0.0040	100%
43		0.0240	100%	110		0.0080	100%	244		0.0080	100%
46		0.0040	100%	120		0.0200	100%	250		0.0040	80%
50		0.0200	100%	121		0.0140	100%	251		0.0080	70%
51		0.0280	100%	130		0.0100	100%	252		0.0080	60%
52		0.0240	100%	131		0.0200	100%	253		0.0080	50%
53		0.0040	100%	132		0.0040	100%	254		0.0040	40%
54		0.0100	100%	133		0.0080	100%	255		0.0480	100%
60		0.0160	100%	140		0.0240	100%	250		0.0040	80%
61		0.0100	100%	141		0.0320	100%	251		0.0080	70%
62		0.0080	100%	142		0.0180	100%	252		0.0080	60%
								253		0.0080	50%

### 7.8 TEXT STYLES AND HEIGHTS

To promote consistency in Contract Drawings as well as prevent the use of “third -party” unlicensed AutoCAD font files, and to ensure a consistent plotted appearance of text, only ARIAL.TTF, ARIALN.TTF, and RomanS fonts are permitted for use on Contract Drawings. It should be noted that RomanS font is not permitted for general use, being reserved specifically for use in Line Types that contain text.

Six Text Styles have been provided as part of this standard. Two of the Text Styles provided (ARIAL, and Linefont) are used for Contract Border, Drawing Information or Linetype definitions and are not permitted for general use by the disciplines. The remaining four Text Styles provided, which are permitted for use by the disciplines are created as annotative styles and utilize ARIAL.TTF font. Annotative styles allow the AutoCAD product to scale the text heights appropriately based on the scale of the plotted drawing. The Text Styles provided are shown in Table 7.5 and in Table 7.6 are shown typical text settings and scales.

*Table 7.5. Text Styles and Heights.*

TEXT STYLE	PLOTTED HEIGHT	ANNOTATIVE	FONT	DESCRIPTION OF USE	USABLE BY DISCIPLINES
PA – 0.10	0.10”	Yes	ARIAL.TTF	Normal Text	Yes
PA – 0.15	0.15”	Yes	ARIAL.TTF	Headings	Yes
PA – 0.20	0.20”	Yes	ARIAL.TTF	Titles	Yes
PA – 0.25	0.25”	Yes	ARIAL.TTF	Alternate Titles	Yes
Linefont	0.10”	No	RomanS.shx	Linetype Definitions	No
ARIAL	Varies	No	ARIAL.TTF	Contract Border, Title Sheet, and Drawing Info Blocks	No

Table 7.6 Text Settings and Scales.

TEXT SETTING AND SCALES					
DRAWING SCALE	DIMSCALE SCALE FACTOR [in]	TEXT HEIGHT [in] IN MODEL SPACE			
		PA - 0.10 (3/32")	PA - 0.15 (5/32")	PA - 0.20 (13/64")	PA - 0.25 (1/4")
1:1	1	0.10	0.15	0.20	0.25
ARCHITECTURAL DRAWINGS					
1/32" = 1'-0"	384	38.4	57.6	76.8	96
1/16" = 1'-0"	192	19.2	28.8	38.4	48
3/32" = 1'-0"	128	12.8	19.2	25.6	32
1/8" = 1'-0"	96	9.6	14.4	19.2	24
3/16" = 1'-0"	64	6.4	9.6	12.8	16
1/4" = 1'-0"	48	4.8	7.2	9.6	12
3/8" = 1'-0"	32	3.2	4.8	6.4	8
1/2" = 1'-0"	24	2.4	3.6	4.8	6
3/4" = 1'-0"	16	1.6	2.4	3.2	4
1'-0" = 1'-0"	12	1.2	1.8	2.4	3
1-1/2" = 1'-0"	8	0.8	1.2	1.6	0
3" = 1'-0"	4	0.4	0.6	0.8	1
SITE PLANS					
1" = 5' (1:5)	60	6	9	12	15
1" = 10' (1:10)	120	12	18	24	30
1" = 20' (1:20)	240	24	36	48	60
1" = 30' (1:30)	360	36	54	72	90
1" = 40' (1:40)	480	48	72	96	120
1" = 50' (1:50)	600	60	90	120	150
1" = 60' (1:60)	720	72	10.8	144	180
1" = 100' (1:100)	1200	120	18	240	300
1" = 200' (1:200)	2400	240	36	480	600
1" = 300' (1:300)	3600	360	54	720	900
1" = 400' (1:400)	4800	480	72	960	1200
1" = 500' (1:500)	6000	600	90	1200	1500
1" = 600' (1:600)	7200	720	108	1440	1800

### 7.9 DIMENSION AND LEADER STYLES

To promote consistency in Contract Drawings only the Dimension and Leader Styles that have been provided as part of this standard are permitted for use. Three Dimension Styles and eight Multi-Leader Styles that have been provided are showed in Table 7.7.

*Table 7.7 Typical Dimension and Leader Styles.*

DIMENSION STYLE	ARROWHEAD	CONTENT	UNIT TYPE
PA-Arrow	Closed Filled Arrow	0.10" Mtext	Inches
PA-Arrow-Deci	Closed Filled Arrow	0.10" Mtext	Feet
PA-Tick	Tick	0.10" Mtext	Inches

### 7.10 TABLE STYLES

As with the text and dimension styles, the EAD CAD Standard has provided Table Styles as part of this standard aiming promote consistency throughout the creation of Contract Drawings. This style is shown in Table 7.8.

*Table 7.8 Typical Table Styles.*

TABLE STYLE	DESCRIPTION OF USAGE
PA-Table	General Tables

### 7.11 EXTERNAL REFERENCE FILES

Files that are “attached” using AutoCAD’s XREF command should always use the coordinate 0,0 for two-dimensional files or 0,0,0 for three-dimensional files as the insertion point and a zero-rotation angle.

All external reference drawings will be attached as “Overlays”. By adhering to this process, all users will be able to use drawings within their own disciplines as well as drawings from other disciplines without concern for circular references and other potential problems. The path type will be set to “Relative Path”, for both, external reference drawings and external reference images, this process will ensure the proper exchange of drawings and/or images between in-house staff and outside consultants.

### 7.12 LAYER KEY STYLES

There are two Layer Key Styles set provided within the template package provided. These sets will ensure that inserted block in the Architectural and Structural Files drawings are following the correct EAD layer standards. Depending on which discipline, by setting up in the Default Layer Standard in Drawing Setup (Command AECDWGLAYERSETUP), objects from the tool pallet of drawing inserted blocks will be added on the correct layer according to the standard Layer Key defined for these two disciplines



## **8.0 SUBMISSIONS**

CAD files in DWG and PDF format, accompanied with hardcopies are required at 100% Milestone Submissions.

Until project completion, all current working drawings are saved in the MODEL, MODEL\_3D, PLOTSHEETS and PUBLISH folders of each discipline's root directory.

At the completion of every milestone, each discipline will copy its MODEL, MODEL\_3D, PLOTSHEETS and PUBLISH folders into the appropriate milestone sub-folder within MILESTONES. Note that MILESTONES was formally referred to as SUBMITTALS folder, and older projects are still allowed to use the previous nomenclature. Refer to 5.1.3.3.4. MILESTONES Folder.

Once the folders have been copied, the involved Task Leaders will notify the LEA, who will then notify the CAD Support Group for Cad compliance report. Refer to Section 0 for more information on this process. Upon notification, the CAD Support Group will only move files from the discipline's MILESTONES folder to the ARCHIVE server.

The MILESTONES folder is for internal use only. Consultants are required to submit the entire Project Folder Structure as outlined in Section 5.1. It should contain not only the Discipline folder in which their drawings are saved, but also all other Discipline folders from which external references were made.

### **8.1 STAGE I\_100PERCENT**

Stage I (Conceptual Design) is used to develop design concepts, confirm Facility scope, determine anticipated construction costs and schedules and to compare alternatives before proceeding with Design Development (Stage II) or Final Design (Stage III).

Note that for Stage I and II a sketch border may be used. This contract border is found in the Contract Border folder within the distribution files.

### **8.2 STAGE II\_100PERCENT**

Stage II (Design Development) is used to develop the chosen design concept, further refine anticipated construction costs and schedules before proceeding to final design (Stage III).

Note that for Stage I and II a sketch border may be used. This contract border is found in the Contract Border folder within the distribution files.

### **8.3 STAGE III\_PA-WIDE REVIEW (100%)**

Stage III (Final Design) effort includes preparation of contract documents that will be used for construction. The procedures vary for alternate delivery methods such as Work Order Contracts, Design/Bid/Build, Design/Build Contracts and Design/Build/Operate/Maintain Contracts.

PA Wide Review usually happens when the project is between 90% to 95% complete, this may vary depending on the project specifics. When a project reaches PA-Wide Review, full-sized PDFs are required to begin the Electronic Review Process.

#### **8.4 STAGE III\_AS-ADVERTISED-SIGNED-SET**

The signed and sealed, updated based on PA-Wide 100% submission comments review, final submission plotted on Permalife® paper is the “As Advertised Signed Set”. All original signatures shall be in blue ink.

#### **8.5 STAGE III\_ADDENDUM**

The Addendum Set contains drawings that have been modified or new drawings that have been issued after the original As Advertised Signed Set was signed, sealed, and issued. Not all addenda contain drawings; some may only contain specifications or other revised contract information pertinent to bidders. Therefore, an Addendum Set may contain non-consecutive addenda sub-folders. The StageIII\_Addendum folder should only contain the Addenda sub-folder in which drawings were required. This folder should not contain the entire set of CAD files; it should only contain the Addenda files.

The revision procedures detailed in section 9.2.5 apply to Addenda.

#### **8.6 STAGE III\_AS-BID**

The As-Bid Set incorporates all the addenda that have been issued during the bid period and the As Advertised drawings, specifications and contract book sections that have not been modified by Addenda.

#### **8.7 STAGE IV\_PACC**

The PACC Set (Post Award Contract Changes) contains As Bid drawings that have been modified or new drawings that have been issued after the Contract was awarded.

The revision procedures detailed in section 9.2.5 apply to PACC Sets.

#### **8.8 STAGE IV\_RECORD DRAWINGS**

The Drawing-of-Record Set is the set of drawings created after construction is completed.

In addition to any revisions required by the Engineer, updated Design Files shall include all approved (a) Shop Drawing changes as field verified by the Contractor, (b) revisions resulting from responses to requests for information (RFIs) during performance of the Work, and (d) accurate geometry and location for all constructed Work.

All submissions shall include a description of updates made to these files and all necessary linked files to ensure a comprehensive, coordinated submission (including but not limited to \*.dwg and/or \*.rvt files). When requested by the Engineer, editable model geometry and data shall be submitted in native approved formats (e.g., \*.rvt, \*.dwg) in addition to published formats (i.e., \*.pdf).

All file submissions should be delivered following standard drawing’s requirements; the Contract Border should include the “As-Constructed” Stamp to indicate the drawings reflect the final conditions of each element in the field.

Files will be submitted for compliance review and will need to be approved in order to close out the Project final Submission.

## **8.9 PLOT SETUP**

All drawings will be plotted from paper space layout tab. The tab will be named the same as the sheet number being plotted. Full-size and Half-size sheets may be plotted from a single layout by utilizing page setups. Multiple layouts are not to be used for the separation of Full-size and Half -size sheets. Multiple layouts may be used for the plotting of multiple sequential sheets.

## **8.10 PAGE SETUP**

Page Setups enable the user to save specific settings within the AutoCAD plotting environment. The Page Setups created for the in-house designers make use of PC3, PMP and CTB files as well as configuration changes. PC3 files are typically copied to the “Plotters” folder under the root AutoCAD installation directory. The Page Setups created for in-house use are located on the internal network at Disciplines Page Setups.

The Page Setups that contain the PC3, PMP and CTB of the Port Authority are for the use of in-house designers since they are configured for the plotters within the Agency. Outside consultants will not have access to the Port Authority’s plotters but may want to develop page setups using the Authority standards.

## 9.0 PLAN SET PREPARATION

### 9.1 PLAN SET TITLE SHEET

The term “Title Sheet” refers to the topmost sheet of the plan set. The use of block attributes will ensure consistency between contracts and improve the appearance of all contracts sets. It is important to maintain the integrity of the Title Sheet.

#### 9.1.1 TITLE SHEET CONFIGURATION

The Title Sheet drawing has purposely been created in paper space. As a result, this border drawing cannot be inserted as a block or externally referenced into other drawing files. The process for defining the Title Sheet is as follows.

- Begin by opening the Title\_Sheet.dwg file located at:

**Title Sheets and Contract Borders (In-house)**

**All\_Discipline\_Support\_File\Template (Consultant)**

- Once open, Save the drawing to the appropriate project sub-folder.
- Enter the appropriate values for each attribute provided in the Title Sheet.

#### 9.1.2 ENTERING TITLE SHEET INFORMATION

Each Title Sheet drawing file provided with the standard has three signature lines defined. They are:

- Chief of Design, E/A Design Division
- Program Director “XX” or Sr. Program Manager “XX” or Program Manager “XX”
- Chief Engineer/Director

There are two possible options for the signature lines. Table 9.1 identifies which option to be used based on each contract type and cost when aiming to determine which Layers are to be turned off for each option.

**Table 9.1. Contract Type Options and Corresponding Required Signatures.**

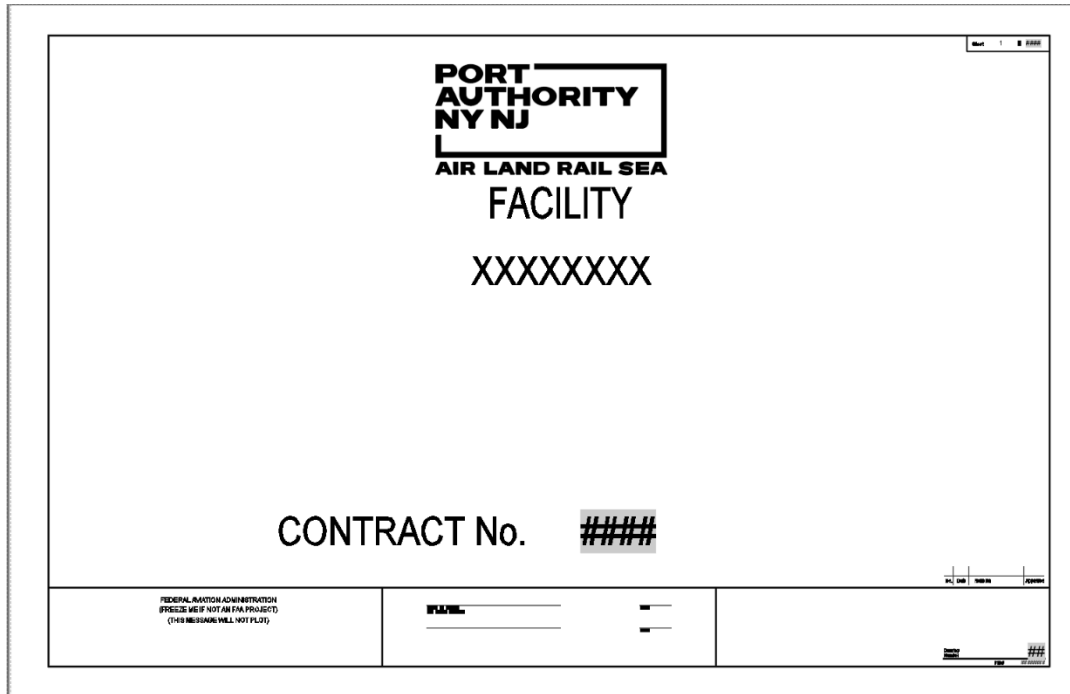
CONTRACT TYPE	ENGINEER'S ESTIMATE	TITLE SHEET SIGNATURES REQUIRED	OPTION TO USE
S/M/WBE Contracts	Up to \$1,000,000	Chief of Design, E/A Design Division Facility Sr. Program Manager / Program Manager	Option 1
	Above to \$1,000,000	Chief of Design, E/A Design Division Facility Program Director Chief Engineer/Director	Option 2
Work Order Drawings and Standard Contracts	Up to \$2,500,000	Chief of Design, E/A Design Division Facility Sr. Program Manager / Program Manager	Option 1
	Above to \$2,500,000	Chief of Design, E/A Design Division Facility Program Director Chief Engineer/Director	Option 2

Table 9.2. Layers to Turn On/Off According to the Status Option in Use. identifies with layers should be turn on/off according to the signature status option in use.

**Table 9.2. Layers to Turn On/Off According to the Status Option in Use.**

LAYER NAME	STATUS FOR OPTION 1	STATUS FOR OPTION 2
GN-ANNO-TTLB-CHIF	OFF	ON
GN-ANNO-TTLB-PDIR	OFF	ON
GN-ANNO-TTLB-PMAN	ON	OFF

Under no circumstance will the Title Sheet block attributes be exploded or modified. Figure 9.1. Standard Title Sheet Provided with the EAD CAD Standard. shows the default Title Sheet provided with the EAD CAD Standard. The “WORK ORDER No.” line has been turned off by default and layer GN-ANNO-TTLB-WRKO is to be turned on if a WORK ORDER No. needs to be entered.



**Figure 9.1. Standard Title Sheet Provided with the EAD CAD Standard.**

The “PROGRAM DIRECTOR” line contains an attribute, which by default is set to XX. The XX value is to be replaced with one of the following options:

- TB&T
- PORT COMMERCE
- AVIATION
- PATH
- SECURITY
- WTC

Under the Contract Number the letters “FAC” are to be replaced with the appropriate Facility Code listed in Table 5.1 and then followed by the Contract Number itself. Multiple stamps have been provided within the Title Sheet and are to be turned on/off when necessary. The stamps provided and the layers on which they are stored are show in Table 9.3.

**Table 9.3. Stamps and Layers Provided**

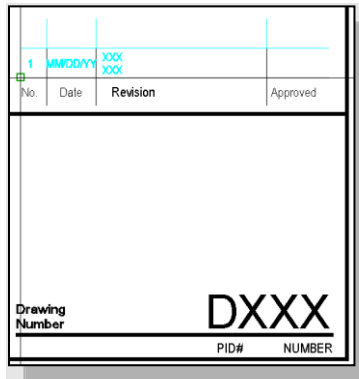
STAMP	LAYER NAME
FAA	GN-ANNO-TTLB-FAA
Law Review	GN-ANNO-STMP-LAWR
Preliminary	GN-ANNO-STMP-PRLM
Submission	GN-ANNO-STMP-SUBM

**9.1.3 USING THE REVISION BLOCK WITHIN THE TITLE SHEET**

A revision block named “Drawing\_Info – Stamp\_Revision.dwg” has been provided with the EAD CAD Standard. When revisions are made, this block is to be inserted using an endpoint snap to the upper left corner of the previous revision line. Figure 9.2 displays where the revision stamp is to be inserted. The stamp is located on the network at the links below:

[Contract Borders Stamps \(In-house\)](#)

[“All Discipline Support File\Contract Border\Stamp” \(Consultant\)](#)



**Figure 9.2. How to Show Revision Revisions on the Title Block**

Once inserted the revision block will prompt the user for information pertaining to the revision. Under no circumstances will the revision block be exploded or modified.

**9.1.4 PLOTTING THE TITLE SHEET**

The layout for the Title Sheet will be configured to use one of the page setups supplied within this standard. As previously stated, outside consultants will need to configure the page setups for their own use and for the particular environment they are working in. After importing an appropriate page setup, the Title Sheet will be configured to plot by layout and use the PA-MasterFull.ctb plot style.

## **9.2 PLAN SET PLOT SHEETS**

Plotsheet files are drawing files assembled as sheets for printing. These drawings consist only of external reference files, see section 7.11, and the items indicated below. No line work is permitted within Plotsheet drawings in either Model or Paper space with the following exceptions:

- North Arrows
- Graphic Scales
- Revision Clouds and Revision Cloud Text
- Match Lines and Match Line Text
- View Titles
- Block with the prefix "Drawing\_Info"
- Architectural Plotsheets

All Plotsheet files shall make use of a relevant PANYNJ Graphic Scale symbol. Such a scale bar is critical for any party viewing the drawings to be able to verify distances within the drawing. It is mandatory to include a standardized PANYNJ Graphic Scale, available through the PANYNJ CAD Standards website, on each Plotsheet drawing.

In order to comply with this standard, each project will have a single Contract Border that will be created by the Lead Discipline and will be stored in that discipline's PUBLISH folder. All other disciplines will externally reference the border from the Lead Discipline's PUBLISH folder. This border will contain all information pertinent to the project itself. Once the Contract Border is properly referenced into each sheet the appropriate "Drawing\_Information" block is to be inserted into each layout tab. The Drawing\_Information block will contain all drawing specific information. Illustrations of the Contract Borders provided can be found in the **Engineering CAD Appendix Document – section 1.5 Appendix C – Contract Borders and Title Sheets**.

Outside consultants are required to reproduce the folder structure as specified in Section 5.0 by copying the Sample Project and replacing the Facility name and PID with those of the current project. All backgrounds (including the Contract Border) provided by the E/A Design Division will go into their respective discipline folders.

### **9.2.1 CONTRACT BORDER**

AutoCAD options must be set to ensure proper placement of the Contract Border in the paper space layout environment. The border is to be referenced into a paper space layout, that has been configured following the steps outlined in 8.9 Plot Setup, with an insertion point of 0,0. Under no circumstances will the contract border be exploded, renamed or modified.

### **9.2.2 SHEET NUMBERING**

As shown in Figure 6.2, all plotsheets are required to have sheet numbering added to the upper right corner of the set. Although, it is not necessary to have this information added to the Index



of Sheets. Besides using AutoCAD, sheet numbering may also be added using Bluebeam or other PDF readers with the same capability.

**9.2.3 INSERTING DRAWING INFORMATION**

Once the Contract Border has been externally referenced the “Drawing\_Info.dwg” block will need to be inserted. This block will be inserted with an insertion point of 0,0 and all attribute information is to be filled out.

The “Drawing\_Info.dwg” block contains a pair of lines that state “Original Signed By” and “Original Signee”. These lines of text are stored on the layer GN-ANNO-TTLB-SIGN, which by default is turned off. The “Original\_Signee” attribute field is to be filled in using the name of the person that signed the drawings. The layer with this information shall be turned on once the Stage III is completed, and contract drawings are signed by the Chief discipline Engineer.

In Figure 9.3 is displayed this text OFF and ON. Note, this attribute is only required for internal use and outside consultants need not turn on this layer. For information on the correct process for outside consultants refer to 9.2.8 Using the Signature Stamps.



**Figure 9.3. Original Signed B Stamp On (Left) Off (Right).**

When entering the “Discipline Group” and “Discipline Sub-Group” attribute fields users will need to refer to Table 9.4 for the proper values to be used within these fields.

**Table 9.4. Allowable Discipline Groups and Subgroups.**

DISCIPLINE GROUP	DISCIPLINE SUB-GROUP
Architecture	General
	Landscape
Civil	General
	Construction Staging
Electrical	General
	Power
	Electronics
	Corrosion Protection
Environmental	General
Geotechnical	General
Mechanical	General
	Fire Protection
	HVAC
	Plumbing
Structural	General
Traffic	General
	Maintenance of Traffic

To promote consistency and easy identification of the people involved in the project the Designed By, Drawn By and Checked By attribute fields are to be filled out following the next example:

***Filippo Brunelleschi would fill out the field as F.Brunellesc***

Note that spaces before or after the period are not permitted. The process used to create Contract Borders allows flexibility in editing and updating information both at the project level as well as at the drawing level. If a project level change is required, then the PID-CB.dwg file can be opened and modified and if a drawing level change is required then the individual drawing can be opened and modified.

**9.2.4 CREATING A VIEWPORT**

When a viewport is created in Paper Space, it is to be placed on the appropriate layer for that discipline, typically <discipline>"-ANNO-VPRT". Once the viewport is created the scale of the viewport must be set. All Division files are created to be plotted with a scale of 1:1, which means that the viewports created will need to have a scale assigned to them. Once the viewport scale has been assigned and the drawing information has been centered within the view, the viewport display should be set to locked.

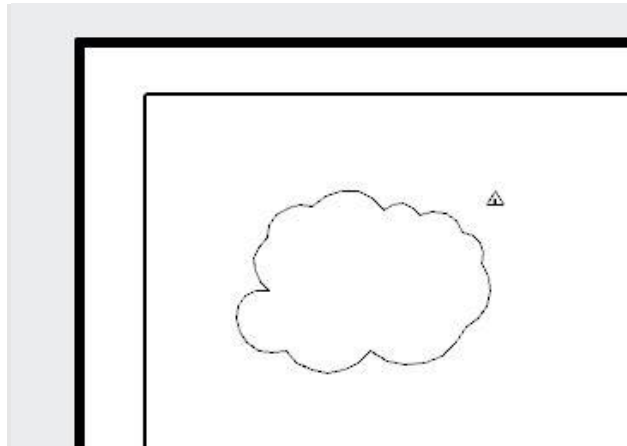
### 9.2.5 MAKING REVISIONS IN CONTRACT DRAWINGS

Two types of revisions can happen in a Contract Drawing Set: Partial Revisions and Additions. A partial revision is when only portions of the Contract Drawings have been changed and an Addition takes place when an additional Contract Drawing is added to the Drawing Set.

Regardless of the revision type, users will be required to place the “Drawing\_Info – Stamp\_Triangle.dwg” block in the drawing pane, near the revised entities. A revision cloud is also to be placed around the area that is being revised. The revision cloud is not required for new drawings.

#### 9.2.5.1 FOR PARTIAL REVISIONS

A Revision Cloud will be placed either in Model Space or in Paper Space surrounding just the area of the drawing where changes were made. The Stamp Triangle will be placed right next to the Revision Cloud with an arc linking it to the cloud including the Revision Number, see Figure 9.4. Example of Revision Cloud.. The Revision Block will be inserted including the Revision Number as well as the Date, the Description and the Initials of the person that approved the changes (Refer to section 6.2). The initials should be an original signature, in blue ink, for the current revision, if a new revision to the same drawing is required, the first revision initials should be added in AutoCAD and the initials for the new revision should be added in an original signature in blue ink.



*Figure 9.4. Example of Revision Cloud.*

#### 9.2.5.2 FOR ADDITIONS REVISIONS

The entry for the Sheet in the Drawing Index will be bubbled with a Revision Cloud. The Revision Block will be inserted including the Revision Number as well as the Date, the Description and the Initials of the person who approved the changes. A new Contract Border shall be issued, reference 6.2. Contract Border File for the file name of the Contract Borders use on addition sheets.

Lastly, the sheet counter text "Sheet \_ of \_", displayed on the new drawing, must reflect the location of the new sheet and total number of sheets in the set.

MT013	THE TEXT HERE DOESNT MAT
MT014	STANDARD DETAILS
MT015	CONSTRUCTION SIGN DATA

**Figure 9.5. Example of How to Show a Plan Addition.**

Note that for any drawings that are added within a series (as opposed to the end of the series), all drawings following the inserted drawing must be renumbered correctly so that drawing numbers remain unique.

As shown in Figure 9.6, any drawings that have had their drawing number changed because of the addition of a drawing within a series must have the drawing number bubbled on the Sheet itself as well as in the Drawing Index, since the corresponding entry for the drawing shall be modified. When a drawing is removed from the contract set, the Drawing Index will also have the drawing name removed.

1	MM/DD/YY	XXX	XXX
<input type="checkbox"/>	Date	Revision	Approved
ENGINEERING DEPARTMENT			
ENTER			
FACILITY			
NAME			
HERE			
DISCIPLINE			

**Figure 9.6. Example of Bubble Markup on Drawing Index.**

**9.2.6 USING THE REVISION BLOCK WITH THE CONTRACT BORDER**

A revision block named “Drawing\_Info – Stamp\_Revision.dwg” has been provided with the CAD Standard. When revisions are made, this block is to be inserted using an endpoint snap to the upper left corner of the previous revision line. **Error! Reference source not found.** displays where the revision stamp is to be inserted. The stamp is located on the network at the links below:

[Contract Borders Stamps \(In-house\)](#)

[All Discipline Support File\Contract Border\Stamp \(Consultant\)](#)

Once inserted the revision block will prompt the user for information pertaining to the revision. Under no circumstances will the revision block be exploded or modified.

A revision cloud is to be placed around the area of revision whenever a revision is made. Also, note that when an entirely new sheet is added to the set as a revision, the date of the sheet

should be the date of the revision, not the original signature date (a revision note is still required on the new sheet).

**9.2.7 USING THE SUBMISSION STAMPS**

Submission stamps have been provided for both the Contract Border and Contract Border – OS (oversize) sheets and can be found at the link below:

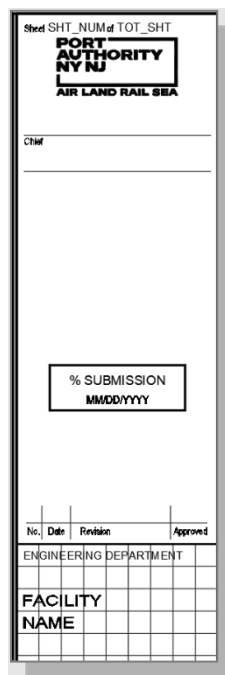
[Contract Borders Stamps \(In-house\)](#)

[All Discipline Support File\Contract Border\Stamp \(Consultant\)](#)

The submission stamps will be inserted as blocks within the Contract Border with an insertion point of 0,0. The following submission types have stamps provided with this standard:

- Law-Review
- Preliminary
- QA-Submission
- Percent Submission
- As-Constructed

Figure 9.7 displays how the submission stamp types appear on the Contract Border.



*Figure 9.7. Example of Submission Stamp.*

**9.2.8 USING THE SIGNATURE STAMPS**

Signature stamps have been provided for both the New York and New Jersey Professional Engineer and Registered Architect and are to be used by outside consultants in-lieu of

Consultant Logos. The word “Drawing\_Info – Stamp\_” has been prefixed at the beginning of each stamp to indicate that these stamps are to be placed within the individual layout tabs and not directly into the Contract Border file. The signature stamps provided within this standard are located at the links below:

**Contract Borders Stamps**

***All\_Discipline\_Support\_File\Contract Border\Stamp (Consultant)***

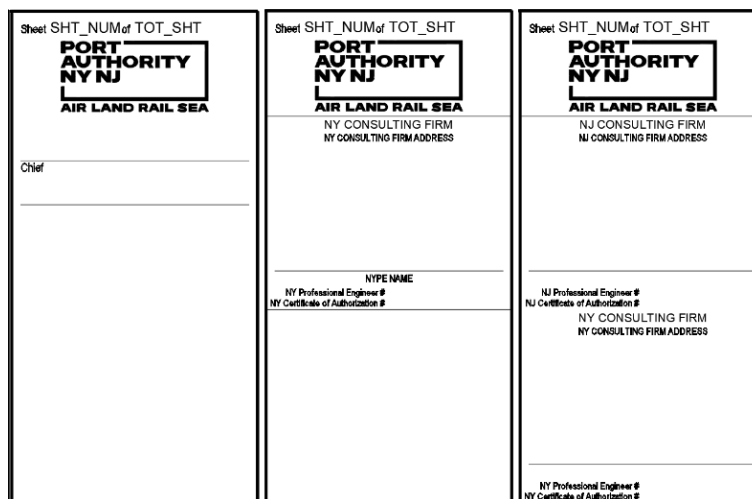
The use of the Signature stamps by outside consultants will require that the GN-ANNO-TTLB-PANU layer be turned off. This layer contains the signature lines for the in-house staff and is not needed when outside consultants are signing the sheets.

Signature stamps are to be inserted with an insertion point of 0,0 and are required to have all appropriate attribute fields filled in. The stamp is dynamic and has visibility states. It should be inserted and then edited.

Note that when filling in the Consultant company information only the company name and address is to appear, not the logo. **If a sub-consultant is used, then the primary consultant will fill in their company name using the first NYPE Consultant and the second NYPE Consultant attribute fields and the sub-consultant will fill in their company name using the Sub-Consultant1 and Sub-Consultant2 attribute fields.** Bi-State drawing information stamps are provided and should be used when it’s appropriate.

On the left side of Figure 9.8 the Contract Border with the GN-ANNO-TTLB-PANU layer for in-house use turned on is displayed, on the middle of Figure 9.8 the Contract Border with that layer turned off and a consultant signature stamp inserted is displayed and on the right side of Figure 9.8 the Contract Border with that layer turned off and the Bi-state consultant signature stamp inserted is displayed.

The seal for the Architectural and/or Engineering firm should be shaded or stamped in the open space under the NJ/NY PE/RA consulting firm name.



**Figure 9.8. Contract Border Layers Options.**

### **9.2.9 USING THE CONFIDENTIAL PRIVILEGED STAMPS**

Confidential Privileged Stamps have been provided for both, the Contract Border and Contract Border - OS (oversize version). The Confidential Privileged Stamps are to be inserted as blocks with an insertion point of 0,0 on each individual sheet unless the entire project is considered Confidential and Privileged, in which case the stamps can be placed within the Contract Border. The Confidential Privileged Stamps provided with this standard are located at the links below:

#### ***Contract Borders Stamps***

##### ***All\_Discipline\_Support\_File\Contract Border\Stamp (Consultant)***

Figure 10.8 illustrates a Contract Border with a Confidential Privileged Stamp (Drawing\_Info - Stamp\_CPbar.dwg) inserted.

## **10.0 CONFIDENTIAL & CONFIDENTIAL PRIVILEGED PROJECTS**

Confidential and Confidential Privileged Projects are those in which unique circumstances may require different guidelines to be followed in order to comply with the CAD Standards. The contents of this document will be followed in addition to the ones already specified in the CAD Standards, unless specifically instructed otherwise within this section.

### **10.1 PURPOSE**

The Port Authority C & CP Standard Compliance outlined is established to provide guidance for the preparation of the EAD Division of the Port Authority of New York and New Jersey's contract documents that contain Confidential and Confidential Privileged information.

This document is intended for use by both in-house personnel as well as outside consultants involved in creating construction documents for the Port Authority. It establishes requirements and procedures for the preparation and submission of CAD based drawings throughout the project life cycle. Adherence to this standard ensures that the E/A Design Division and the Construction Division of the PANYNJ will receive and produce data in a consistent format.

For more information on practices and procedures on protected information projects it can be found on Engineering Department Protected Information Practices and Procedures.

### **10.2 CONFIDENTIAL PROJECTS (C)**

Confidential Projects contain highly sensitive information that if lost or made public could seriously damage or compromise the Port Authority and/or public safety and security. Confidential information includes, but is not limited to, methods utilized to mitigate vulnerabilities and threats, such as identity, location, design construction and fabrication of security systems.

For that reason, if aspects being worked on as part of a project drawing are considered Confidential, they will need to be handled differently than standard contract drawings.

If information on a drawing is considered to be Confidential, then that model drawing is to be stored in the Model\_C folder or Model\_3D\_C. Any plotsheet drawing that contains Confidential information must be stored in the Plotsheets C folder. It is permitted to reference non-Confidential information from outside the Confidential folder into a Confidential project. If a

model file that has been deemed Confidential needs to be shared across disciplines, then the file is to be copied to the Publish\_C folder. In Figure 10.1 showed an example of how the folder structure of a C file should be configured.

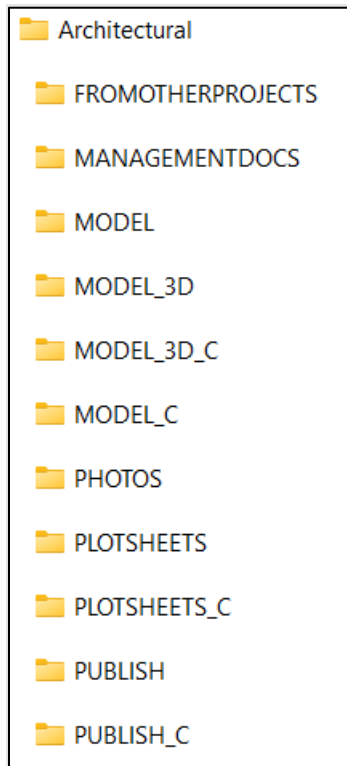


Figure 10.1. Example of a Confidential Project Setup.

Cover sheets shall be used to divide the complete set into Unmarked, Confidential and Confidential Privileged drawings, the cover sheet files are found inside the Contract Border folder of the standardize files. If a project contains Confidential sheets, then **they must be separated out into their own set with its own Cover Sheet**. The Confidential Stamp markings at the top, bottom and right side of the pages must be displayed, identifying the project as Confidential. **This is accomplished by turning on and thawing the “GN- ANNO-TTLB-CONF” layer**. Confidential Cover Sheet doesn’t require the use of the Warning stamp.

All interior Confidential pages within the set must also be marked Confidential at the top, bottom, and right side of the page. Sets of documents that are folded or rolled must be marked so that the marking is visible on the outside of the set once folded or rolled.

This is accomplished by inserting the “Drawing\_Info – Stamp\_Cbar.dwg” block into paper space of the Plotsheet drawing containing the Confidential information. The “Drawing\_Info – Stamp\_Cbar.dwg” block is to be inserted with an insertion point of 0,0,0 on layer 0 and is not to be exploded or modified in any way. All the Confidential Markings are displayed in Figure 10.2 and Figure 10.3



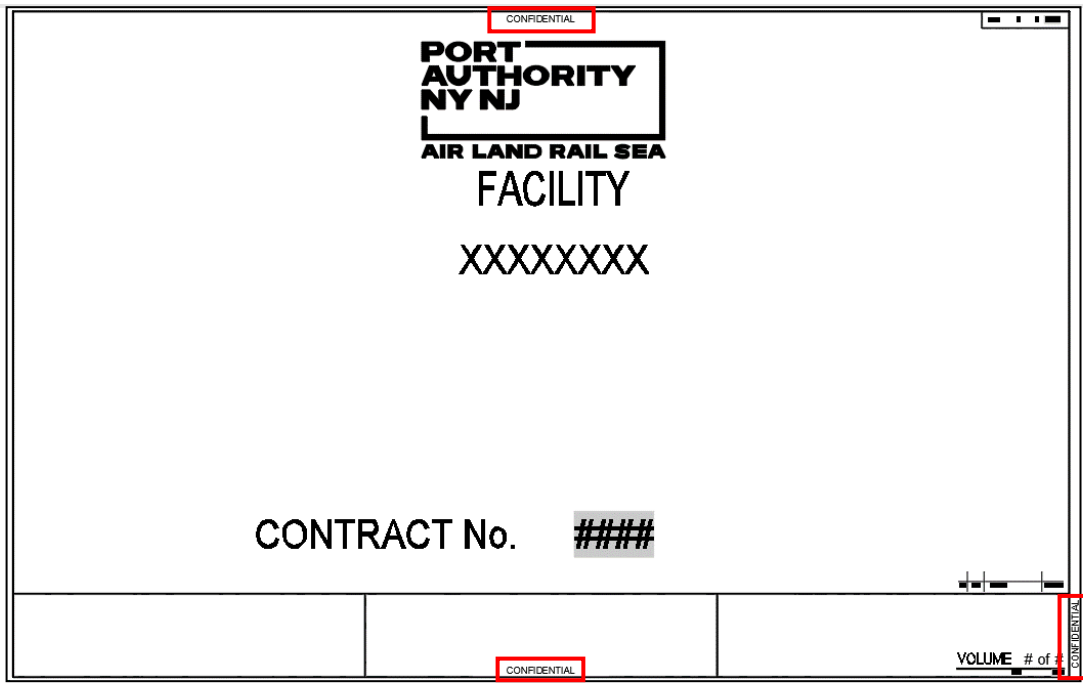


Figure 10.2. Example of a Confidential Project Title Sheet..

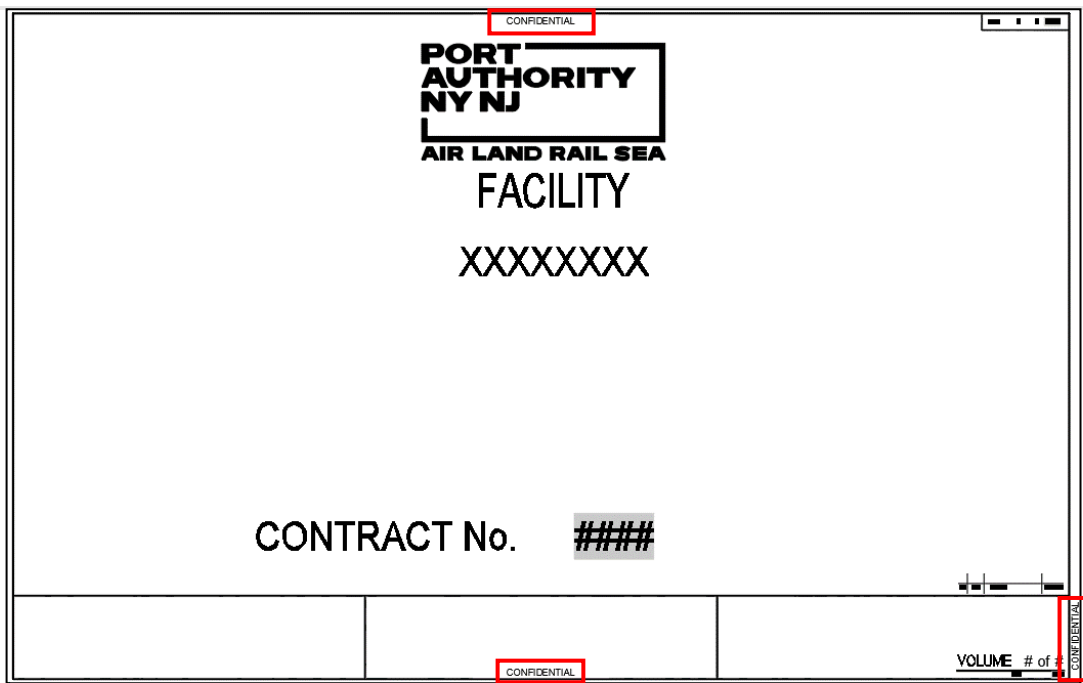
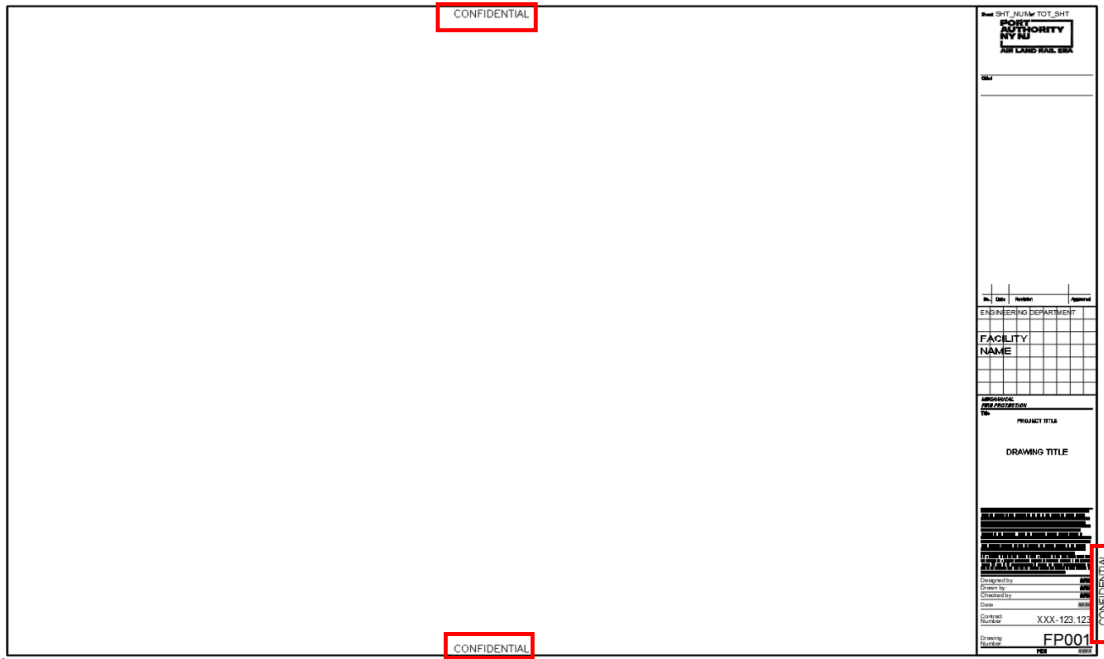


Figure 10.2. Example of a Confidential Project Title Sheet.



**Figure 10.3. Example of a Confidential Project Title Sheet.**

Confidential and Unmarked drawings will be separated into two sets, for more referred to section 1.9.4 C & CP Contract Drawing Set. On the Drawing Index sheet, names of Confidential drawings shall be listed to inform the viewer that additional drawings have protected information. This drawing shall take the form "<Drawing Title> (Protected Information Volume X)", where <Drawing Title> is the title of a Confidential drawing and X is the Volume number as shown in Figure 10.4. Examples of an Index of Drawings with Protected Information. below.

INDEX OF DRAWINGS	
DRAWING NO.	SHEET TITLE
GENERAL	
TS001	TITLE SHEET
G001	INDEX OF DRAWINGS
CIVIL	
C001	NOTES, LEGEND AND ABBREVIATION
C002	SITE PLAN (PROTECTED INFORMATION VOL. 2)
ELECTRICAL	
E001	NOTES, LEGEND AND ABBREVIATION
E002	ELECTRICAL DETAILS (PROTECTED INFROMATION VOL. 3)

**Figure 10.4. Examples of an Index of Drawings with Protected Information.**

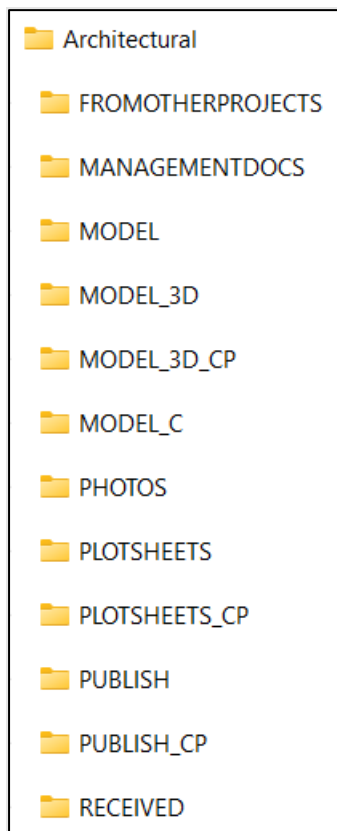
For more information on the handling and submitting of Confidential projects refer to “The Port Authority of New York & New Jersey Information Security Handbook”.

### 10.3 CONFIDENTIAL PRIVILEGED PROJECTS (CP)

Confidential Privileged Projects contain extremely sensitive security or public safety information that if lost or made public could seriously damage or compromise the Port Authority and/or public safety and security. Confidential Privileged information includes, but is not limited to, any information identifying vulnerabilities, capabilities, threats, operational methodologies and/or security related design criteria.

For that reason, if aspects being worked on, as part of a project drawing, are considered Confidential Privileged, they will need to be handled differently than standard contract drawings.

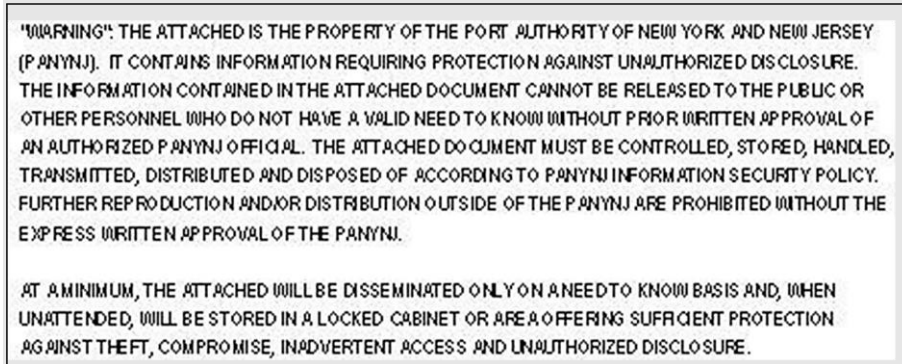
If information on a drawing is considered to be Confidential Privileged, then that model drawing is to be stored in the Model\_CP folder. Any plotsheet drawing that contains Confidential Privileged information must be stored in the Plotsheets\_CP folder. Figure 10.5 Example of a Confidential Privileged Project Setup. represents the folder's structure. It is permitted to reference non-Confidential information from outside the CP folder into a Confidential Privileged plotsheet drawing. If a model file that has been deemed Confidential Privileged needs to be shared across disciplines, then the file is to be copied to the Publish\_CP folder.



**Figure 10.5 Example of a Confidential Privileged Project Setup.**

Cover sheets shall be used to divide the contract set into Unmarked, Confidential and Confidential Privileged drawings; the cover sheet files are found inside the Contract Border folder of the standardized files. If a project contains any Confidential Privileged sheets, **then they must be separated out into their own set with its own Cover Sheet.** The Confidential

Information Warning Sign (CP - WARNING.dwg) must be displayed on the Cover Sheet of the Confidential Privileged set, along with markings at the top, bottom and right side of the page identifying the project as Confidential Privileged. **This is accomplished by turning on and thawing the “GN-ANNO-TTLB-CP” layer.** The Warning Sign is displayed in Figure 10.6.



**Figure 10.6. Warning Notice**

All interior pages within the set must also be marked at the top, bottom, and right side of the page. Sets of documents that are folded or rolled must be marked so that the marking is visible on the outside of the set once folded or rolled. This is accomplished by inserting the “Drawing\_Info – Stamp\_CPbar.dwg” block into the paper space of the Plotsheet drawing containing the Confidential Privileged information. The “Drawing\_Info – Stamp\_CPbar.dwg” block is to be inserted with an insertion point of 0,0,0 on layer 0 and is not to be exploded or modified in any way.

Projects identified as Confidential Privileged are assigned a Confidential Privileged Document Control Number. These markings are to appear on the top, bottom, and right side of each printed sheet next to the Confidential Privileged markings **and is also stored on the GN-ANNO-TTLB-CP layer for title sheets and within the “Drawing\_Info – Stamp\_CPbar.dwg” block.** All the Confidential Privileged Markings are displayed in Figure 10.7 and Figure 10.8.

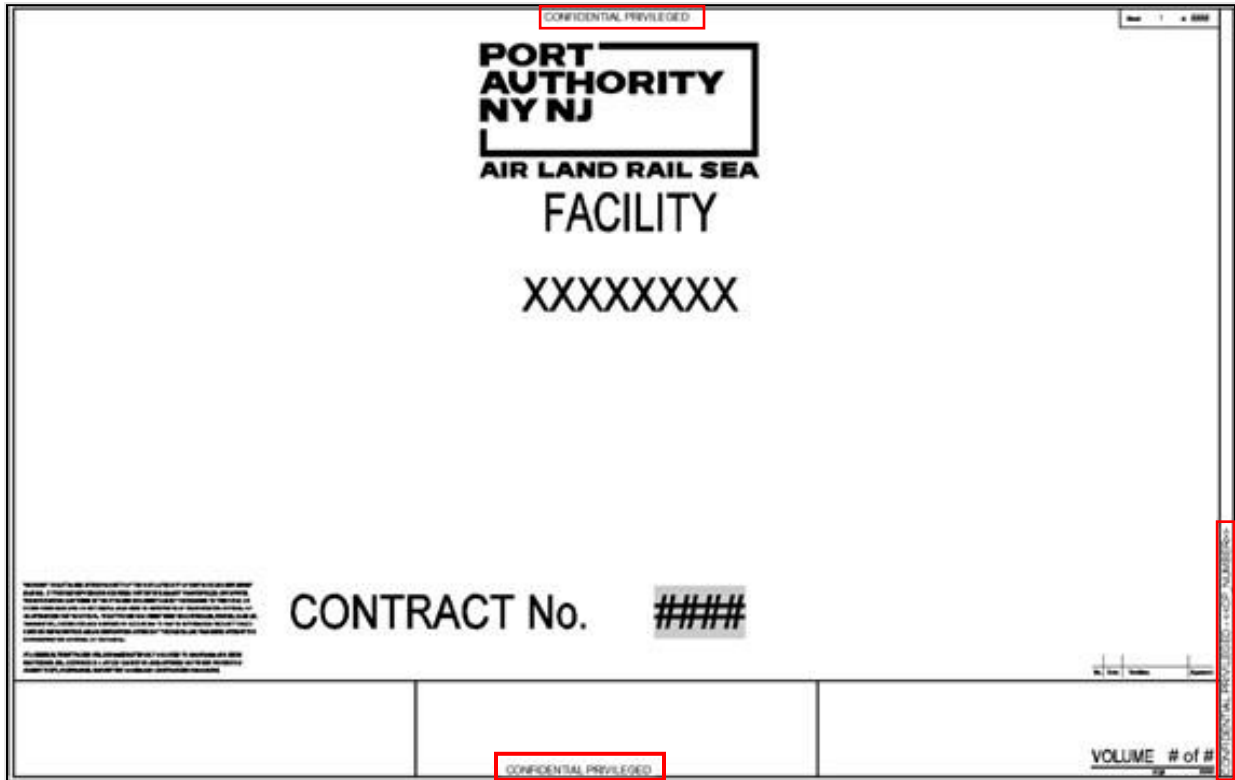


Figure 10.7. Confidential Privileged Title Sheet with Required Markups.



Figure 10.8. Confidential Privileged Contract Border with Required Markups.

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On the Drawing Index sheet, names of Confidential Privileged drawings that are separated out of the main drawing set should be listed to inform the viewer that additional drawings are available and should take the form "<Drawing Title> (Protected Information Volume X)", where <Drawing Title> is the title of a Confidential Privileged drawing and X is the Volume number as shown in Figure 10.4.

For more information on the Document Control Number and the handling and submitting of Confidential Privileged projects refer to "The Port Authority of New York & New Jersey Information Security Handbook".

**10.4 C & CP CONTRACT DRAWING SET**

This document defines what are the requirements that Confidential and Confidential Privileged Projects shall contain prior to submission to the Port Authority. If a project contains both C & CP drawings, then the Contract Set shall be divided into three volumes as stated in Sections 10.2 and 10.3.

The set containing the unmarked drawings will be Volume 1, the set containing confidential drawings will be Volume 2, the set containing the confidential privileged drawings will be Volume 3 and shall be marked in the index drawings as the following:

- <Drawing Title> (Volume 1)*
- <Drawing Title> (Protected Information Volume 2)*
- <Drawing Title> (Protected Information Volume 3)*

Each volume shall have a Cover sheet and an Index of drawings with the number of the volume in the file name, as shown in Table 10.1. The following requirements on Table 10.2 only applies when Confidential and Confidential Privilege documents are part of the Contract Set.

**Table 10.1. Required Elements of a Standard Project.**

STANDARD PROJECTS			
ITEMS INCLUDED PER SET	UNMARKED SET	CONFIDENTIAL SET	CONFIDENTIAL PRIVILEGED SET
Title Sheet*	X		
Cover Sheet		X	X
Warning Label (Title Sheet Only)			X
Signature Lines (Title Sheet)	X		
Index of Drawings	X	X	X
Security Markings		X	X
Document Control Numbers			X

Table 10.2 Required Elements of a Security Project.

SECURITY PROJECTS ONLY			
ITEMS INCLUDED PER SET	VOLUME 1	VOLUME 2	VOLUME 3
Title Sheet*	X		
Cover Sheet		X	X
Warning Label (Title Sheet Only)	X	X	X
Signature Lines (Title Sheet)	X		
Index of Drawings	X	X	X
Security Markings	X	X	X
Document Control Numbers			X

The Title Sheet is the first sheet of the first volume in the Contract Set. The cover sheets are duplicated title sheets without the drawing number and signature lines, see Figure 10.9 and Figure 10.10. The Title Sheet, Cover Sheet, and Index of Drawings sheets will have unique names to distinguish them from the design/construction plotsheet files.

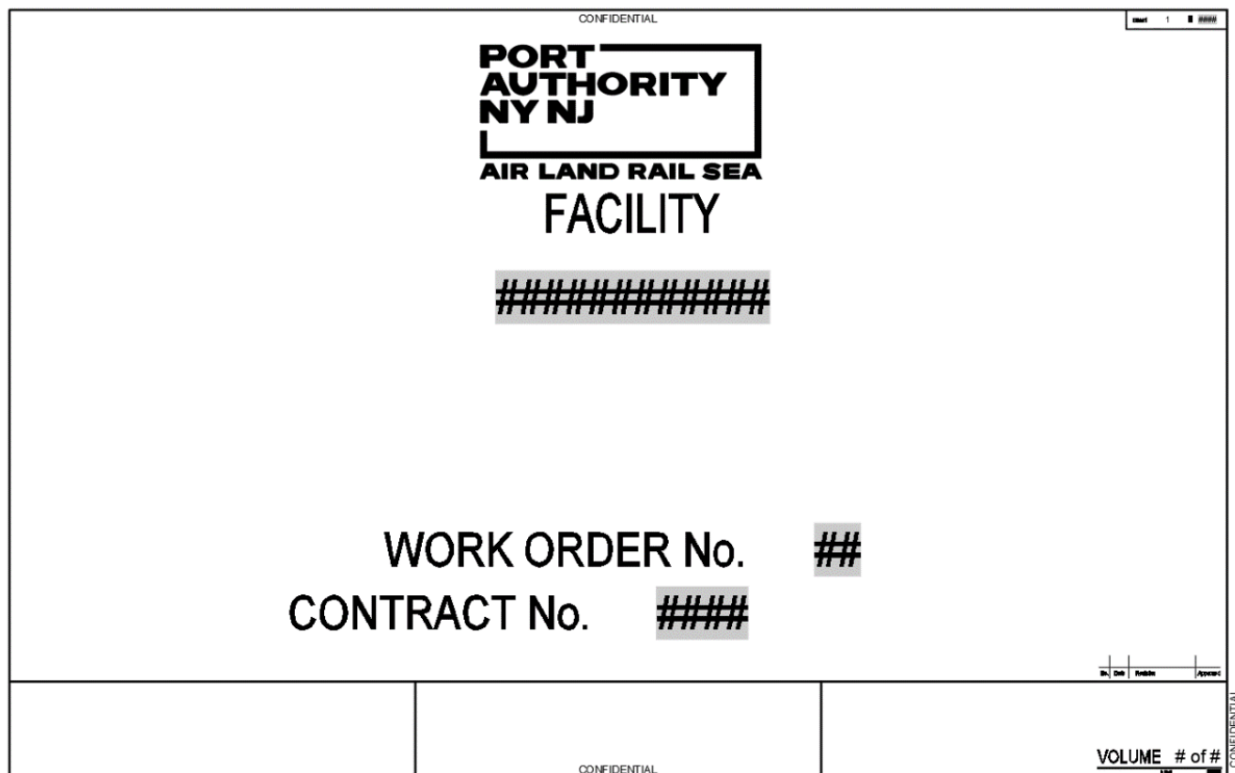


Figure 10.9. Cover sheets for Confidential Projects with more than one volume.

CONFIDENTIAL PRIVILEGED

**PORT  
AUTHORITY  
NY NJ**  
AIR LAND RAIL SEA  
FACILITY

#####

WORK ORDER No. ##

CONTRACT No. #####

CONFIDENTIAL PRIVILEGED

CONFIDENTIAL PRIVILEGED <<CP NUMBER>>

Sheet 1 of 1

DATE: / /

SCALE: /

APPROVED: /

VOLUME # of #

*Figure 10.10. Cover sheets for Confidential Privileged Projects with more than one volume.*

The volume number must be noted in the bottom right corner of the Cover sheet, when multiple volumes are produced. The title sheet is dynamic and has visibility states that allows the Volume attributes to be filled. If the project does not contain any Confidential or Confidential Privileged information the volume number will not be noted on the Title sheet of that set.



## **11.0 DELIVERABLES**

The CAD Standard adopts AutoCAD as the “Standard CAD Software”. Consultants are required to submit electronic CAD files in a format compatible with the current version of AutoCAD software in use by the E/A Design Division of the PANYNJ.

Soft copy submittals (electronic CAD files) must include all information presented on the hardcopy submittals (plots). This precludes the use of sticky-backs, graphic tapes, hand lettering and anything else that is placed on the drawing after it is plotted excepting any signatures and seals.

Consultants are required to submit CAD files accompanied with hardcopies every time a project reaches a 100% submittal milestone. This includes, but is not limited to, PA Review Set, Percent Submittal Set, Addendum Set, As Bid Set, PACC Set, Drawing of Record Set, etc. Refer to Section 8.0 Submissions.

### **11.1 MEDIA AND FORMAT**

AutoCAD drawing files will be submitted on media CDs. All disks are to be delivered virus free.

Final hardcopies of each sheet must use the PANYNJ Contract Border identified in this standard and must be submitted at full size, either 22x34 or 34x56. Submitted hardcopies must use archival paper with Permalife® plotter paper specifications. Engineering Department staff will verify that submissions contain the “Permalife 25% cotton content” watermark. Authorized professional signatures must use blue ink.

### **11.2 DIGITAL SIGNATURE**

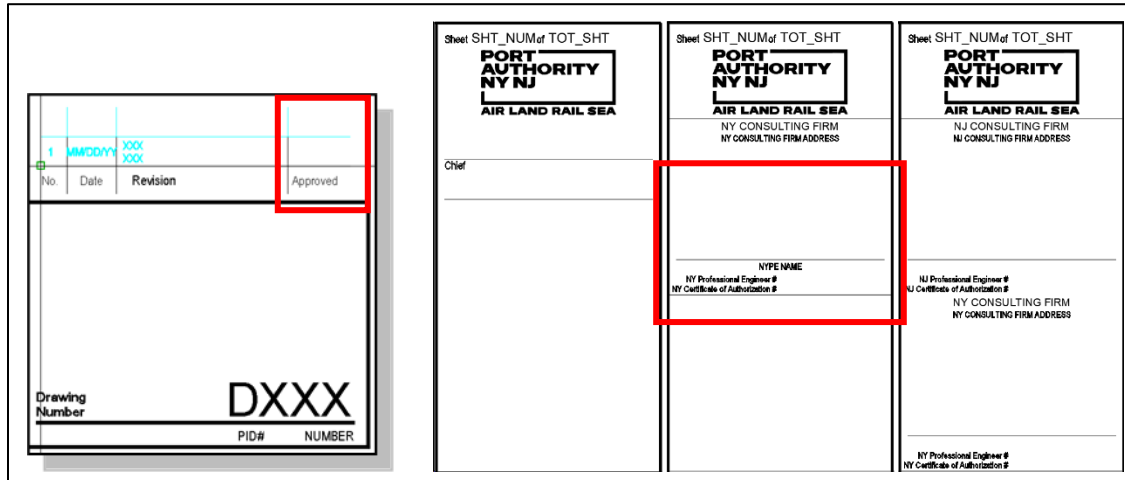
Digital signatures and digital seals will be used on all sheets of the PDF contract sets and documents where signatures are required on all Port Authority projects. Engineering Department staff will be verifying submissions contain the appropriate digital seals and signatures.

Digitally signed and sealed documents following the New York and New Jersey State regulations and guidelines will be provided. Each signee will provide a signed letter stating that all digital signature New York and New Jersey State regulations and guidelines have been followed. Address the letter to the discipline Chief for all discipline involved.

All drawings prepared must be digitally signed and sealed by a Principal of the firm with a New York Professional Engineer’s or New York Registered Architect’s License.

The digital signature and digital initials will be used by all In-House and Consultant professionals. The signature will represent the recipients’ evidence of signage and that the document(s) or sheet(s) have been approved.

When reviewing addenda or post award contract change (PACC) drawings, digital initials will be used by the discipline principal and/or checker using Adobe or BlueBeam software. The initials shall be placed on the appropriate revision line in the APPROVED column on the contract border as highlighted in Red in Figure 11.1.



**Figure 11.1. Location of Signature and Revision Digital Initials.**

The digital seal will also be used by all In-House and Consultant professionals who are required to sign contracts. The seal will be used on all contract, addenda and PACC sheets as proof of the professional seal. This is integrated with the digital signature which is applied with DocuSign.

It is the responsibility of all licensed professionals to add the digital signatures to the appropriate contract documents and signify that there are no errors prior to final submission. Once documents have been digitally signed and sealed, they cannot be updated or changed in any manner. It is also the responsibility of the Consultant signee to ensure that all state digital regulations and/or guidelines have been met. A letter or memo certifying compliance should be submitted, by the Consultant, as part of the final deliverables to the Authority.

For more information on how to get and use digital signature and digital seals refer to the link below:

**[Digital Signatures and Digital Seals Documentations](#)**

**11.3 IDENTIFICATION**

All CDs submitted to the E/A Design Division of the PANYNJ will be labeled with the following information:

- Consultant’s name and Project Identification Number (PID)
- Contact name and phone number of consulting project manager
- Discipline-Facility (e.g. Civil-JFK)
- Submittal Date and Percent Completed
- Data Format (e.g. AutoCAD Version .dwg)
- File Name(s) on CD

*Engineering CAD Standard*

As much information as possible should be printed on both the CD label and the CD case. If all the information will not fit on either the CD label or the CD case, the information can be listed in an orderly manner in a text file that will be copied to the CD in electronic format.

**11.4 PROJECT WEBSITES**

The PANYNJ developed a “Project Extranet” to enhance collaboration between in-house designers and outside consultants, as well as with different departments and divisions throughout the agency. All Project Websites have a folder structure similar to that described in Section 5.0 Project Folder Structure of this standard.

Please refer to the project specifics to determine if a Project Website is available for use. If so, all transfer of digital information should be made via the website. Transfer of data via email or CDs is not permitted if a project website is available.

If a Project Website is available for the project the Project Website link will be provided along with a Username and a Password.

## 12.0 CIVIL 3D

In this section are discussed requirements to be followed when utilizing Civil 3D for the development of Projects. It is suggested that the following disciplines to implement automated Civil 3D workflows:

- Civil
- Geotechnical
- Environmental
- Traffic

### 12.1 TEMPLATES

There are four Civil 3D templates that can be utilized for the development of projects. These templates shall be saved in the 2018 version.

*Table 12.1. Civil 3D Templates*

CIVIL 3D TEMPLATE NAME	DISCIPLINE	LOCATION
PA - Civil-C3D.dwg	Civil	Civil Support Files
PA - Traffic-C3D.dwg	Traffic	Traffic Support Files
PA - Environmental-C3D.dwg	Environmental	Environmental Support Files
PA - Geotechnical-C3D.dwg	Geotechnical	Geotechnical Support Files

### 12.2 PROJECT COORDINATES

It is required that any project developed in Civil 3D to deploy the state coordinate systems mentioned in Section 7.2.

### 12.3 PLAN PRODUCTION

Civil 3D plan production automation tool helps speed up the process of generating extensive plan sheets. In the Civil support files, under Plan Production, are made available three templates for Plan, Plan and Profile, and Sections sheets.

### 12.4 DATASHORCUTS

Most AutoCAD users are familiar with referencing techniques for sharing drawing information, such as XREF, wblock, import and attach. Civil 3D uses intelligent objects which do not retain intelligence through typical external references. The data can be shared throughout the project and accessed as read-only mode from external drawings and only the host source will be able to edit the object.

Currently the following object can be shared as Datashortcuts with different project:

- Alignments
- Surfaces
- Profiles
- Sections
- Corridors
- Pipe Networks

Data shortcuts shall be utilized whenever possible to share data between projects. External reference may be used to add labels to Civil 3D Intelligent Objects, but user will not be able to create profiles and sections views through this method.

The shared object data lives in the Project’s Data Shortcut folder, more information on how to setup the \_DATASHORCUT folder is found on Section 5.1.3.3.11 and details on how to setup a project is described in the Engineering CAD Standard.

**12.5 OBJECTS AND LAYER STYLES**

A series of predefined object and layer styles have been created. It is recommended to utilize the predefined styles to create new ones. Use the following nomenclature to name the object and layer styles:

***Discipline Identifier – Style Description***

Where Discipline Identifier may assume values below:

***Table 12.2. Civil 3D Object and Layer Objects.***

DISCIPLINE IDENTIFIER	DISCIPLINE
CVL	Civil
TFC	Traffic
ENV	Environmental
GEO	Geotechnical

Example:

***ENV – Profile View Style***  
***TFC – Maintenance of Traffic***

**12.6 PIPE NETWORKS AND PRESSURE PIPE NETWORKS**

Within the Civil Support Files package, is provided a Pipe Network Catalog that includes the most common types of pipes and structures used in the PA’s standard workflows. For the design of pipe networks, it is required designers utilize this resource. In case new items need to be added to the catalog and therefore the catalog needs to be modified, please, reach out to the VDC team so a new Catalog Version can be released.

Currently the PA uses the standard Civil 3D Pressure Pipe Catalog.

**12.7 REQUIRED CIVIL 3D DRAFTING PRACTICES**

Civil 3D projects shall be developed in such a way to maximize computational resources and performance. It is required that Alignments, Corridors, Surfaces, and Pipe Networks are developed in separate drawings and referenced into another through Datashortcuts where possible. External references may be used only for labeling of shared object data.

As 03/31/2024 with the objective of identifying Model files containing Civil 3D features, it is required that these drawings are named following the same the Model Files directrices discussed in Subsection 6.3 Model Files. Also, in order to identify the Civil 3D object types contained in the drawing, the following abbreviations showed in Table 12.3 shall be used.

*Table 12.3. Plan Model File Plan Type abbreviations to be used with Civil 3D Drawings.*

ALIGNMENTS	CORRIDORS	SURFACES	PIPE NETWORKS
ALN	COR	GRD	UTL
		TOP	
		GP	

Example:

***S12345678-ALN-Main Street***  
***S12345678-TOP-Existing Surface***

## **13.0 COMPLIANCE CAD STANDARDS REPORT**

The VDC team offers continuum support to assure PA's CAD Standard are being deployed for every analysis. In an effort to confirm the compliance of the CAD Standard, the use of the Compliance report shall be filled based on the status of all submitted files. CAD Standards reviews are applicable to all projects, in-house and/or consultant that are issued either for construction contracts or work orders. The VDC CAD Guidelines provides detailed information on the items checked on CAD Compliance.

Passing CAD report is mandatory only for Stage III PA-Wide Review (100%) and forward, although even if a project does not pass for CAD Compliance, projects can still go forward for PA Wide Review (Engineering Review), but they are still required to have the CAD drawings updated in order to comply with VDC CAD Engineering standards.

For earlier stages, a passing status is not required, although at discretion of the LEA, CAD reviews can be executed to ensure that standards are being followed from the beginning of the project.

### **13.1 WORK ORDER & CONSTRUCTION CONTRACT PA WIDE CAD REVIEW**

Review is mandatory for all Contract Drawings.

- Initial failures are issued to the LEA and Task Leaders.
- 3 weeks are provided for the correction of the files.
- At the end of the 3-week period a Report is issued to the Assistant Chiefs, Principals, LEA and Task Leaders.
- During the PA Wide Review drawings will be analyzed and a FINAL pass/fail Report will be issued.
- Drawings will not be reviewed after the PA Wide Review period.

Requirements:

- Timeframe: Required at the on-set of PA Wide Review.
- Initiated by the LEA via EOL request form.

Only for **PA Wide Review** upon receipt of the request the CAD Support Group is to upload the files to Live Link for electronic review and notify the Contract Engineer of the initiation of PA Wide Review.

- Final Report is issued to the Assistant Chiefs, Principals, LEA and Task Leaders.

All items on the CAD Standards Review Report are required to be in compliance with CAD Standards in order for the project to pass, this is followed by a Notes section that includes comments pertaining to the review.

Engineering CAD Standard

This form will be reviewed on a regular basis and is subject to changes. If a change is approved, it will be posted on the E/A Design Division CAD Standard website (below) and incorporated into the next revision of this document.

[E/A Design Division CAD Standard website](#)

Figure 13.1 and Figure 13.2 illustrate the CAD Standards Review Report and are to be used as a checklist for checking CAD Standard compliance prior to submitting drawings.

<b>CAD - DISCIPLINE COMPLIANCE REPORT</b>			
<b>ACCEPTED</b>		Reviewed By:	
<b><u>PROJECT INFORMATION</u></b>			
Facility Name:	Newark Airport	Review Type:	PA Wide Review
Contract Number:		Submittal Percentage / Number:	100
PID Number:		Date Submitted:	1/3/2022
Project Title:	CAD Report	Date Reviewed:	
Stage:	3	Due Date:	
Lead Discipline:	Civil	Task Leader:	
LEA:		Discipline:	Civil
Consultant:		File Reviewed:	
Confidentiality Level:	Not Confidential		

Figure 13.1. Header of a CAD Discipline Compliance Report.



<u>PRE-AUDIT</u>			
<u>PRE-AUDIT</u>	YES		
Folder Structure	Yes		
Files Location	Yes		
Files Submitted	Yes		
FilesNaming Convention	Yes		
<u>PERFORMANCE SUMMARY</u>			
<u>PROJECT SETUP</u>	YES	<u>NAMING CONVENTION</u>	YES
Project Coordinates	Yes	Layers	Yes
External Reference	Yes		
Layout Tab	Yes		
Page Setups	Yes		
		<u>MODEL INTEGRITY</u>	YES
		Duplicates	Yes
		Floating Contents	Yes
		Model Cleanup	Yes
<u>DRAWINGS PERFORMANCE SUMMARY</u>			
<u>PLAN SET PREPARATION</u>	YES	<u>STYLES</u>	YES
Contract Border	Yes	Text	Yes
Drawing Information	Yes	Dimensions	Yes
No Linework in Sheet	Yes	Tables	Yes
Professional Stamps	Yes	CTB	Yes
PDFs Setup	Yes		
<u>CIVIL 3D</u>			
<u>CIVIL 3D</u>	YES		
Project Coordinates	Yes		
Data Shortcuts	Yes		
Alignments	Yes		
Corridors	Yes		
Pipe Networks	Yes		
Surfaces	Yes		

Figure 13.2. Body of Items Checked on a CAD Compliance Check.

### 13.2 CAD STANDARD UPDATE AND REVISION PROCEDURES

The dynamic nature of CAD technology and the engineering process dictates that this document will change over time. Changes to this document will be made by following strict procedures and guidelines.

Changes may be made based on errors and omissions, as well as to enhance or update the standards based on changes in the CAD environment. All requested changes to this document must be accompanied by a Request to Change Standard form provided in the Engineering CAD Appendix section 1.3.1 Request to Change Standard.

Updates to this document and the related support files will be made as required. Updates will be posted on the link below:

[Engineering Available Documents](#)

For in-house the updates shall be posted on the links below

***CAD Standards\2022***

And in the internal network at:

***K:\Documentation\Standards Document***

## **14.0 CONTACT AND SUPPORT INFORMATION**

Questions regarding the standards provided within this document should be directed to the VDC Support Group at: 212-435-6102 or [engvdc@panynj.gov](mailto:engvdc@panynj.gov).

## **15.0 CONCLUSION**

This document is a comprehensive standard for the creation of contract drawings for the PANYNJ. All drawings submitted to the E/A Design Division and Construction Division must adhere to the conventions documented here. The VDC Support Group will use automated procedures to verify compliance with this standard.