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7.0  E/A DESIGN DIVISION BIM STANDARD MANUAL

The Port Authority of NY & NJ Building Information Model (BIM) Standard Manual describes the processes and procedures required for the preparation and submission of BIM Models on Port Authority of NY & NJ projects.

7.1  INTRODUCTION

BIM is a growing industry trend that is changing the way planning, design, construction and facility operations are conducted and in turn changing the face of the industry as a whole. BIM uses computer-based simulations to study and validate project design and construction before they actually take place.

BIM is far more than basic 3D modeling; BIM is a business approach that integrates multiple streams of project-related information. BIM moves users away from the traditional “document-centric” approach, which only addresses the capital construction side of a facility, toward a “data-centric” approach, which supports the facility lifecycle operation. The result is more effective and efficient design, estimating, scheduling, and construction phases.

BIM breaks down traditional barriers related to interdisciplinary collaboration, facilitates off-site prefabrication, improves design options, and reduces risk, rework, and cost. BIM also allows for the integration of construction phasing through project scheduling software, automated quantity takeoffs, automated costing based on the integration of materials pricing software packages, and green building analysis, among others.

7.2  PURPOSE

The Port Authority of NY & NJ BIM Standard Manual ensures that the Engineering Department will produce, release and receive data in a consistent format. This will maintain an efficient exchange of data between disciplines and the compatibility of each discipline’s model(s).

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

7.3  APPLICABILITY

The BIM application can progressively build and update comprehensive models of any Port Authority of NY & NJ facility, regardless of size. This benefits the Port Authority of NY & NJ by leveraging smaller projects that consultants and contractors are otherwise unable to justify on an individual project basis. The BIM repositories of each facility would contain new and updated information supplied via design/construction projects, significant renovations, and routine maintenance and operations systems, offering a valuable life cycle tool to operate the Organization’s facilities.
7.4 **HOW TO USE THIS MANUAL**

To ensure that the Port Authority of NY & NJ BIM Standard Manual is clearly understood, the following nomenclature is used throughout this document:

- When referring to tools launched from the Contextual Tab we use *UPPER CASE* italicized text to describe the Contextual Tab and Panel and *Lower Case* italicized text is used to describe the Tool.

  Example:
  
  To make the required modifications, go to the **VIEW** Contextual Tab and click on the New Sheet Tool located under the **SHEET COMPOSITION** Panel.

- When referring to Dialog Boxes, *UPPER CASE* italicized text is used. For Tabs within a Dialog Box, *Lower Case* italicized text is used. Any references to a Pull Down Menu, a Check Box, an Option Button, a Text Box, or a Drop Down list within a Dialog Box will be marked with a red rectangle. Referenced titles will be identified between quotes (" ") using *Lower Case* italicized text and followed by a brief explanation.

  Example:
  
  Within the **OPTIONS** Dialog Box, select the Spelling tab and make the necessary changes as shown in the image below.
  
  Under "Settings", ensure that none of the boxes are checked.
  
  Under “Main Dictionary”, ensure that the “American English” option is selected.

- When referring to tools launched from the Project Browser, *UPPER CASE* italicized text is used to describe the View Type and *Lower Case* italicized text is used to describe the command.

  Example:
  
  In the Project Browser, right-click on top of **SHEETS** and then select New Sheet.
When referring to pull-down menus, **UPER CASE** italicized text is used to describe the menu option and **Lower Case** italicized text is used to describe the command.

Example:

Go to the **TOOLS** pull-down menu and select **Global Options**.

When referring to folders, **bolded** text to is used describing the folder location.

Example:

The local version of the Revit Central File is saved on the user’s workstation under the following folder:

**C:\REVIT Projects\**
7.5 BIM PROJECTS WORKFLOW

This section describes The Port Authority of NY & NJ BIM Project Workflow based on The Port Authority of NY & NJ BIM Master Plan.

7.5.1 INTEGRATED PROJECT DELIVERY

Integrated Project Delivery (IPD) is a project delivery approach that integrates people, systems, and practices to optimize efficiency through all phases of design, fabrication and construction.

IPD encourages early contribution of knowledge and experience and it requires proactive involvement of key participants from conception throughout the facility’s life cycle.

The following image highlights the differences between traditional project delivery and IPD in terms of decision making and user involvement based on The Port Authority of NY & NJ project delivery stages.

The Port Authority of NY & NJ is moving forward in adopting the Integrated Project Delivery and slowly moving away from the Traditional Project Delivery approach.
7.5.2 DISCIPLINE LEVEL

The project workflow at the Discipline Level is as follows: (with minor variations, and depending on which disciplines are involved in the project)

1. The Architectural Group will start a project by creating the Levels and Grid. The group will then crate their model, which might contain Structural elements such as columns. Once the Design gets to the appropriate Milestone and/or Level of Development, the Architectural Group will share their Model with the Structural Group.

2. The Structural Group will link the Architectural Model and take ownership of the Levels and Grid. The group will determine the Structural elements by making changes to the Levels and Grid based on the Architectural Design if appropriate. Once the Design gets to an appropriate Milestone and/or Level of Development, the Structural Group will share their Model with the Architectural Group.

3. The Architectural Group will link the Structural Model and will monitor the Structural Levels, Grid and Structural elements, and will erase any instance of the Levels, Grid and Structural elements they originally created. The Architectural Group will continue their design effort by adding Lighting and Plumbing Fixtures intended as placeholders. Once the Design gets to an appropriate Milestone and/or Level of Development, the Architectural Group will share their Model with the Electrical and Mechanical Groups.

4. The Electrical Group will link the Architectural and Structural Models and Copy/Monitor at least the Structural Levels & Grid and the Architectural Walls if needed. The Electrical Group will start their design effort by laying out their Corrosion Protection, Electrical and/or Electronics components based on the placeholders determined by the Architectural Group. Once the Design gets to an appropriate Milestone and/or Level of Development, the Electrical Group will share their Model with the Team.

5. The Mechanical Group will link the Architectural and Structural Models and Copy/Monitor the Structural Levels & Grids and the Architectural Walls if needed. The Mechanical Group will start their design effort by laying their Fire Protection, HVAC and Plumbing components based on the placeholders determined by the Architectural Group. Once the Design gets to an appropriate Milestone and/or Level of Development, the Mechanical Group will share their Model with the Team.

6. The Architectural Group will link the Electrical and Mechanical Models and erase any instances of Lighting and Plumbing Fixtures they originally placed.

7.5.3 PROJECT LEVEL

A Site Model (SM) file is created for each Revit project. This Site Model file has a combination of Aerial Photometry and CAD Files based on The Port Authority of NY & NJ BMMS (Base Map Management System). This file holds the project coordinate system and controls the location, rotation, and elevation of all Revit-based Models (Architectural, Electrical, Mechanical and Structural) linked to it.

A Project Information Model (PIM) file is created for each Revit project. This file has a combination of all the Revit-based Models and all the AutoCAD-based (Civil 3D) Models (Civil, Environmental, Geotechnical and Traffic Disciplines). These files will be combined at the completion of the Project and are the basis of the Facility Information Model described in Section 7.5.4 – Facility Level.
7.5.4 **FACILITY LEVEL**

The Facility Information Model (FIM) file stores the latest and most current version of the Facility 3D Model; completed projects are uploaded here. The following image shows the workflow for BIM projects at The Port Authority of NY & NJ.

![Workflow Diagram](image)

At the completion of each project, the Site Model (which contains all the Revit-based Models) along with the individual AutoCAD based Models will be uploaded into the Project Information Model (PIM) file. The PIM file is uploaded into the Facility Information Model, which over time will have the entire Facility in 3D.
7.6 **BIM ROLES AND RESPONSIBILITIES**

This section describes the Roles and Responsibilities of the different Team Members involved in Port Authority of NY & NJ BIM Projects. These Roles and Responsibilities might vary depending on the Project specifics and might change as the use of BIM Technology is spread throughout the different Port Authority of NY & NJ Departments.

### 7.6.1 CAD\BIM SUPPORT GROUP

The CAD\BIM Support Group is responsible for creating and maintaining all BIM Support Files and Documentation along with providing the appropriate support to the A/E Design Division.

In addition to its other Roles and Responsibilities, the CAD\BIM Support Group will:

- Create and maintain all Port Authority of NY & NJ BIM content.
- Provide a Project Kickoff Seminar.
- Provide Discipline Specific Seminars.
- Create and maintain the Facility Information Model.
- Create and maintain the Project Information Model.
- Create and maintain the Project Site Model.
- Create the Project’s Central File.
- Create each User’s Local File.

#### 7.6.1.1 PROJECT KICKOFF SEMINAR

At the beginning of each project, the CAD\BIM Support Group will provide a BIM Standard Orientation Seminar for in-house staff as well as for outside consultants.

#### 7.6.1.2 DISCIPLINE SPECIFIC KICKOFF SEMINARS

The CAD\BIM Support Group will provide Discipline Specific Seminars starting with the Lead Discipline followed by the other Disciplines involved as they join the Project.

The Discipline Specific Seminars Kickoff Seminar will address at least the following topics:

- Project Browser
- Phases
- Copy/Monitor
7.6.2 BIM Lead Coordinator

Each Project has a BIM Lead Coordinator who is responsible for the following:

- Notifying the CAD\BIM Support Group if changes are required to the Site Model.
- Coordinate Clash Detection Meetings.
- Notifying the CAD\BIM Support Group when the Project needs to be archived.

**NOTE**
Most of the times the Project BIM Lead Coordinator is the Project’s LEA and he or she might have a dual responsibility not only as the Project’s BIM Lead Coordinator, but also as the Discipline BIM Coordinator.

7.6.3 BIM Coordinators

Each Discipline has a BIM Coordinator who is responsible for the following:

- Manage other BIM Users within the Discipline.
- Coordinate any BIM related issues with the rest of their Discipline Team.
- Create Discipline Specific BIM Content.
- Run Discipline Specific Clash Detection.
- Export the Model for Inter-Disciplinary Clash Detection.
- Archived Disciplines Specific Folders under SUBMITTALS.

7.6.4 BIM Users

Each Discipline might have multiple BIM Users who are responsible for the following:

- Day to day BIM work.
7.7 BIM STANDARD COMPLIANCE REPORT

The CAD\BIM Support Group will monitor all BIM projects for standard compliance. These reports will be generated on discipline-specific Models developed by in-house staff and/or outside consultants and are applicable to all projects in PDF format and will be submitted to the Project’s LEA and the appropriate discipline specific Task Leader (TL).

The BIM Standard Compliance Report checks for compliance in the following fields among others:

- General
  - Folder Structure
  - File Location
  - Coordinate System

- Project Settings
  - Units
  - Shared Parameter File

- Naming Convention

- Project Browser Structure

- Styles

- Plan Set Preparation

- PlotSheet Files

NOTE

The BIM Standard Compliance Report check will be run on the Discipline’s Central File only.

The image below shows an example of the first 2 pages of the BIM Standard Compliance Report. A third page with comments will be included with each Report as well.
BIM Standard Compliance Report

Facility Name: Discipline Group:
PID Number: Task Leader:
Contract Number: LEA:
Project Title: Consultant Name:

Stage: Reviewed By:
Submittal Percentage: % Date Reviewed:
File Reviewed:

☐ Passed ☐ Failed

GENERAL
Folder Structure:
File Location:
Coordinate System:
Duplicate Elements:
AutoCAD Links:
Revit Links:

PROJECT SETTNGS
Units:
Shared Parameter File:
Import AutoCAD Line Weights:
Export to AutoCAD Layers:

NAMING CONVENTIONS
Files:
WorkSets:
Views:
Families:

PROJECT BROWSER STRUCTURE
Discipline Sub-Group:
View Classification:
THE PORT AUTHORITY OF NY & NJ
CAD/BIM Support Group

STYLES
Objects:
Line Weights:
Annotations:
Tags:
Text:
Dimensions:
Labels:
Lines:
Regions:
Graytones:
Phase Settings:
View Templates:

PLAN SET PREPARATION
Title Sheet:
Contract Border:
Facility:
Discipline:
Sub-Discipline:
Drawing Type:
Drawing Number:
Professional Stamps:
C & CP Stamps:
Objects on Sheets:
Plot Settings:

PLOTSHEET FILES
Format (DWF's):
Full Size:
Black & White:
Grouped by Drawing Type:
Original Signed By Line:
7.8 Model Generalities

This section establishes the technical criteria required to develop a project using BIM technology for The Port Authority of NY & NJ.

7.8.1 Model Requirements

All BIM Models shall be developed in accordance with the most current version of the BIM Standard Manual and should be compatible with the current version of the Revit-based applications currently in use by The Port Authority of NY & NJ, regardless of when the project began.

7.8.2 Model Ownership

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

Outside resources, such as consultants and/or contractors, using the 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 BIM Model to The Port Authority of NY & NJ.

7.8.3 Model Quality

The Port Authority of NY & NJ requires that all BIM Models shall be developed using object-based elements only, such as Columns, Beams, Walls, Doors, Windows, etc. along with their associated parametric information. This will stream down the BIM processes from Design all the way down to Construction and then Operations.

7.8.4 Model Level of Development

The Model Level of Development (LoD) describes the level of completeness to which a Model is developed and their minimum requirements. The Level of Development is accumulative and should progress from Level to Level. The PANYNJ Level of Development is developed in alignment with the AIA – Exhibit E202 Document.
7.8.4.1 LEVEL 1 (LoD-100)
Level 1 Models are compared to the traditional Pre-Stage I (Studies) and will include elements such as Masses and are used for preliminary studies only. Analysis based on their Location and Orientation can be performed, and quantities based on Overall Area and Overall Volume can be obtained.

The images below show the Building Elements as Masses and their associated Area and Volume:

![Building Elements as Masses](image1)

7.8.4.2 LEVEL 2 (LoD-200)
Level 2 Models are compared to the traditional Conceptual Design approach and will include elements in which Masses have been replaced with Generic Components. Analysis based on Overall Systems can be performed. Quantities based on specific Elements can be obtained.

The images below show the different Building Elements as Generic Components. The major characteristics of components are their thickness and/or width allowing quick takeoffs:

![Building Elements as Generic Components](image2)

<table>
<thead>
<tr>
<th>Wall Schedule (LoD-2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Family</td>
</tr>
<tr>
<td>--------</td>
</tr>
<tr>
<td>Basic Wall</td>
</tr>
<tr>
<td>Basic Wall</td>
</tr>
</tbody>
</table>
7.8.4.3 Level 3 (LoD-300)

Level 3 Models are compared to the traditional Design Development approach and will include elements in which Generic Components have been replaced with fully defined assemblies, traditional design approach, and will include elements that are accurate in terms of size, shape, location, quantity and orientation. Analysis based on Specific Systems can be performed, and quantities based on Materials can be obtained.

The images below show the different Building Elements as fully defined Assemblies, where the different components have well-defined characteristics; therefore, a more specific takeoff can be performed.

<table>
<thead>
<tr>
<th>Wall Material Takeoff (LoD-3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Material Name</td>
</tr>
<tr>
<td>----------------</td>
</tr>
<tr>
<td>Gypsum Wall Board</td>
</tr>
<tr>
<td>Masonry - Brick</td>
</tr>
<tr>
<td>Metal - Stud Layer</td>
</tr>
<tr>
<td>Misc. Air Layers - Air Space</td>
</tr>
<tr>
<td>Wood - Sheathing - plywood</td>
</tr>
</tbody>
</table>

7.8.4.4 Level 4 (LoD-400)

Level 4 Models are compared to the traditional Final Design approach and will include elements that are accurate in terms of size, shape, location, quantity and orientation with complete fabrication, assembly and detailing information. At this Level, the Model may also have non-geometric (2D) information such as text, dimensions, notes, 2D details, etc.

The image below shows a detail where 2D information has been placed on top of the 3D Model on a Section View.
7.8.4.5 LEVEL 5 (LOD-500)

Level 500 Models include elements modeled as constructed. Elements are modeled to accurate size, shape, location and orientation. At this Level, the Model may also have custom and/or physical attributes, included as parameters, to the geometric shape used for operations and maintenance.

The image below shows a Model element that has been associated with a database and contains inspection information.

```
<table>
<thead>
<tr>
<th>element_ID</th>
<th>rev_id</th>
<th>last_inspected</th>
<th>next_inspection_due_date</th>
<th>priority</th>
<th>condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>123457890</td>
<td>1234</td>
<td>02/03/2009</td>
<td>01/04/2011</td>
<td>medium</td>
<td>good</td>
</tr>
<tr>
<td>234567890</td>
<td>2345</td>
<td>03/03/2009</td>
<td>02/04/2011</td>
<td>medium</td>
<td>good</td>
</tr>
<tr>
<td>345678901</td>
<td>3456</td>
<td>04/03/2009</td>
<td>03/04/2011</td>
<td>medium</td>
<td>good</td>
</tr>
</tbody>
</table>
```

7.8.5 MODEL GRANULARITY

This document assumes that not all items shall be modeled within the BIM Model files. This is not a common practice supported by The Port Authority of NY & NJ BIM Standard Manual, and therefore, the BIM Model itself may not represent the exact design intent of real live elements. As a rule of thumb, objects smaller than 6” in size should not be modeled.

7.8.6 MODEL DISCREPANCIES

When conflicts exist between the contents of a BIM Model and the Contract Set of Drawings, the information contained within the Contract Set will prevail and be considered as definitive.
7.9 **SPECIAL PROJECTS**

Special Projects are those in which unique circumstances may require different guidelines be followed in order to comply with The Port Authority of NY & NJ BIM Standard. The contents of this section will be followed in addition to the ones already specified in this document, unless specifically instructed otherwise.

7.9.1 **SECURITY PROJECTS**

Security Projects contain either Confidential or Confidential Privileged information and their access within the E/A Design Division network is restricted to certain users.

7.9.1.1 **FOLDER STRUCTURE**

A Folder Structure has been provided for the Central File of Confidential and/or Confidential Privileged Projects. Internally, this folder will have specific access rights to the C and/or CP users only.

Refer to Section 7.14.7 - Sample Folder Structure for proper use.

7.9.1.2 **FILE NAMING CONVENTION**

All Confidential and/or Confidential Privileged Project files, which will include the Central and Local Revit files in RVT format, along with the Plotsheet files in DWF format should have the letters "_C" for Confidential Projects and/or "_CP" for Confidential Privileged Projects.

As an example, the Architectural Group is working on a project where portions have been determined to be Confidential Privileged; two Central files will need to be created and should be named as follows:

A08313000-3D_CENTRAL.rvt
A08313000-3D_CENTRAL_CP.rvt
7.10 REQUIREMENTS
This section describes the minimal Software and Digital Submittal Requirements for Port Authority of NY & NJ BIM Projects

7.10.1 SOFTWARE REQUIREMENTS
The Port Authority of NY & NJ has adopted Autodesk Revit as its standard BIM software, along with some Third Party Applications.

7.10.1.1 AUTODESK SOFTWARE
The Port Authority of NY & NJ has adopted Autodesk Revit as its standard BIM software. The Autodesk Revit products currently in use by the Port Authority of NY & NJ are:

- Autodesk Revit Architecture
- Autodesk Revit MEP
- Autodesk Revit Structure

NOTE
Based on the backwards compatibility issues of the Revit-based applications, please make sure to check which version of the application is currently being used by the Port Authority of NY & NJ.

In addition to the Revit-based applications, the Port Authority of NY & NJ has adopted, as well, the following applications for its BIM effort:

- Autodesk NavisWorks
- Autodesk Quantity Takeoff
- Autodesk Ecotect Analysis
- Autodesk Green Building Studio
- Autodesk 3D MAX Design
- Autodesk Design Review

7.10.1.2 THIRD PARTY APPLICATIONS
In addition to the applications described above, The Port Authority of NY & NJ is using the following applications:

- IES - VE
- CSI - ETABS
- Trane - TRACE 700
7.10.2 DIGITAL SUBMITTAL REQUIREMENTS

All submitted electronic files must be compatible with the version of the Autodesk Revit software currently being used by the Port Authority of NY & NJ and must conform and comply with the latest version of the Port Authority of NY & NJ BIM Standard as outlined in this Manual.

7.10.2.1 FILE FORMATS

The following formats are required on every submission:

- **RVT**: Autodesk Revit files
- **NWF**: Autodesk NavisWorks Master files
- **NWC**: Autodesk NavisWorks Cache files
- **DWF**: Autodesk Design WEB Format files
- **ATO**: Autodesk Quantity Takeoff files

7.10.2.2 COORDINATE SYSTEMS

In an effort to organize, consolidate and standardize the information generated and consumed by all divisions within the agency, all Port Authority of NY & NJ BIM projects shall use NAD83 as the Coordinate Systems.

The CAD\BIM Support Group is responsible for setting each Discipline Central File with the right Coordinate System.

7.10.2.3 MEDIA AND IDENTIFICATION

All project-related files must be submitted on media CDs/DVDs, delivered virus free, and labeled with the following information:

- Company Name and Address
- Contact Name
- E-mail Address
- Phone Number
- Facility Name
- Project Identification (PID) Number
- Project Name
- Discipline
- Percent Completed
- Submittal Date
7.10.2.4 Project Websites

The Port Authority of NY & NJ has 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 (PWS) have a folder structure similar to the one described in Section 7.13 - Project Directory Structure.

Please refer to the project specifics to determine if a PWS is available for use. If so, all transfer of digital information should be made via the PWS. Transfer of data via e-mail or CDs/DVDs will not be permitted if a project website is available.
7.11 DELIVERABLES

Hardcopy and Electronic Deliverables are required at the completion of every project.

7.11.1 HARDCOPY DELIVERABLES

Final hard copies of drawings in full size, either 22x34 or 34x56, must be submitted as Mylar plots using The Port Authority of NY & NJ Title Sheets and Contract Borders identified in this Manual.

7.11.2 ELECTRONIC DELIVERABLES

Electronic files are required for each milestone during Stages I, II, and III. If the project does not have a milestone scheduled prior to the 100% Submittal, files must be submitted no later than 6 weeks before the submission for a BIM Standard Compliance Audit.

Below is a description of the files required:

- RVT : Autodesk Revit files
- NWF : Autodesk NavisWorks Master files
- NWC : Autodesk NavisWorks Cache files
- 2D DWF : Autodesk 2D Design WEB Format files
- 3D DWF : Autodesk 3D Design WEB Format files
- ATO : Autodesk Quantity Takeoff files

NOTE

Consultants are required to submit the entire Central File version of the Project Directory Structure. Refer to Section 7.14.6.12 - Submittals Folder and Section 7.17.18 - Submissions for proper use.
7.12 ACCESSING THE E/A DESIGN DIVISION BIM STANDARD

The Port Authority of NY & NJ BIM Standard includes a series of support files that are stored in a folder named “EAD_BIM Standard” which internally is located on the root level of the “L:\" drive.

7.12.1 UNDERSTANDING THE SUPPORT FILES

All support files are divided into four major groups: the “Content” folder which includes product-specific (Architecture, MEP and Structure) libraries, the “Seminar” folder, which includes a series of PDFs documents describing specific Revit functions, The “Standards” folder which contains all the support files that affect all the Revit-based applications and the “Tutorial” folder with learning material.

The “Standards” folder contains all cross-discipline support files used by all the Revit-based applications.

Support files within the “Standards” folder have been divided into various folders as shown in the image to the right. All Port Authority of NY & NJ workstations have already been configured to access these files.

Outside consultants should copy these files to the appropriate directories. Contact your System Administrator or CAD\BIM Manager for proper configuration and use.
7.12.2 Using the Support Files

Following is a brief description of the contents of each sub-folder within the All Disciplines folder:

<table>
<thead>
<tr>
<th>FOLDER</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fonts</td>
<td>Includes the approved fonts used within the Template files.</td>
</tr>
<tr>
<td>Logos</td>
<td>Includes the latest PA Logos.</td>
</tr>
<tr>
<td>Lookup Tables</td>
<td>Includes the support files for Conduits and Pipes.</td>
</tr>
<tr>
<td>Manual</td>
<td>Includes the PDF version of this document.</td>
</tr>
<tr>
<td>Sample Folder Structure</td>
<td>Includes the Folder Structure templates to address both the Central File and the Local File.</td>
</tr>
<tr>
<td>Shared Parameters</td>
<td>Includes the Port Authority of NY &amp; NJ custom Shared Parameters file.</td>
</tr>
<tr>
<td>Support</td>
<td>Includes support files for importing and exporting AutoCAD files to and from Revit, a CTB used when plotting AutoCAD files created from Revit, and an XML file for importing NavisWorks settings into Revit.</td>
</tr>
<tr>
<td>Templates</td>
<td>Includes the discipline-specific template files for the Architectural, Electrical, Mechanical, and Structural disciplines.</td>
</tr>
<tr>
<td>Titleblocks</td>
<td>Includes Title Sheets and Contract Borders for Engineering and PATH projects for both sizes 22x34 and 34x56.</td>
</tr>
<tr>
<td>Stamps</td>
<td>Includes all of the Signature Stamps for NY and NJ Professional Engineer and Registered Architect, as well as the Submission and Confidential &amp; Privileged Stamps.</td>
</tr>
</tbody>
</table>
7.13 Environment Setup

This section describes the process of setting up the Autodesk Revit products to ensure proper use of the application under The Port Authority of NY & NJ requirements.

7.13.1 Options

To make the required modifications, go to the APPLICATION menu and select the “Options” button. This will open the OPTIONS Dialog Box as shown in following images.

Select the General tab and make the necessary changes as shown in the image to the right.

Unlike AutoCAD, the Revit-based applications do not have an auto-save feature. The “Notifications” settings will only remind users to save the local and central versions of their 3D Models.

The “Username” should match your “login name” and should never be changed. Worksets rights are set upon this value.

NOTE

Changing your username in the middle of the project will break the synchronization established between the Central File and your Local File, restricting your access to the Worksets and increasing the chances of corrupting the Project.

Select the Graphics tab and make the necessary changes as shown in the image to the right.

To promote consistency across all users, the “Selection Color,” the “Highlight Color,” and the “Alert Color” shall be set to Green, Yellow, and Red, respectively.
Select the **File Locations** tab and make sure that under the “**Default Template File**” you select your discipline-specific template; that under the “**Default Path for User Files**” you are pointing to C:\REVIT Projects\ folder; and that under the “**Default Path for Family Template Files**” you select the right folder on the L:\ drive as shown in the image to the right.

All Port Authority of NY & NJ workstations have already been configured to access these files.

**NOTE**

Outside consultants should copy these files to the appropriate directories. Contact your System Administrator or CAD\BIM Manager for proper use.

### 7.13.2 **Shared Parameters**

The Revit-based applications enable the creation of custom fields to be shared within a project through a function named “Shared Parameters”.

To make the required modifications, go to the **MANAGE** Contextual Tab and select **Shared Parameters**. This will open the **EDIT SHARED PARAMETERS** Dialog Box as shown in the image to the right.

To select the file, click on the “**Browse**” button and navigate to the following folder:

**EAD\BIM_Standard\2012\Standards\Shared Parameters**

Then select “PA - Shared Parameters.txt” and click on the “**OK**” button.

The Port Authority of NY & NJ Shared Parameters file only addresses information within the Titleblocks (Title Sheets and Contract Borders) and some Mechanical and Electrical components at this point.

**NOTE**

The Autodesk Revit Products can reference only one shared parameter file at a time, so make sure this is the default file when working on Port Authority of NY & NJ projects.
7.13.3 IMPORT/EXPORT SETTINGS

The Revit-based applications have the ability to import and export AutoCAD files into and from the 3D Model, respectively.

7.13.3.1 IMPORT LINE WEIGHTS DWG/DXF

To make the required modifications, go to the INSERT Contextual Tab and expand the arrow under the Import Panel.

This will launch the IMPORT LINE WEIGHTS Dialog Box as shown in the image to the right, click on the “Load” button to select the PA - Import Line Weights from AutoCAD.txt file which can be found under:

EAD\BIM_Standard\2012\Standards\Support\AutoCAD.txt

NOTE

AutoCAD drawings need to be set appropriately before being imported into Revit, refer to Section 7.17-Linking AutoCAD Drawings into Revit for proper use.

7.13.3.2 EXPORT LAYERS DWG/DXF

To make the required modifications, go to the APPLICATION menu and select Export, then Options, and then Export Layers DWG/DXF option.

This will launch the EXPORT LAYERS Dialog Box as shown in the image to the right, click on the “Load” button to select one of the following files based on the application used:

- PA - Export Layers to AutoCAD

These files can be found under:

EAD\BIM_Standard\2012\Standards\Support\
NOTE

Two color-dependent Plot Style Table files (CTBs) have been provided with The PANYNJ BIM Standard to plot from AutoCAD in either full size or half size.

- PA - MasterFULL.ctb
- PA - MasterHALF.ctb

These files can be found under:

EAD\BIM_Standard\2012\Standards\Support\
7.14 PROJECT DIRECTORY STRUCTURE

The Port Authority of NY & NJ BIM Standard provides a structure for the organization of BIM projects within the Engineering Department.

The primary goal of this structure is to improve coordination among all functional groups within the E/A Design Division and their consultants, as well as to develop BIM projects in a way that will facilitate the further use of the electronic information beyond the initial contract.

7.14.1 FACILITY FOLDERS

All Port Authority of NY & NJ BIM projects are stored on a central server, which has internally been mapped using the drive letter “R.” The Engineering BIM Server (R:\ drive) is divided into Facility Folders using the following Facility Codes.

<table>
<thead>
<tr>
<th>FACILITY CODE</th>
<th>FACILITY NAME</th>
</tr>
</thead>
<tbody>
<tr>
<td>AMT</td>
<td>Automobile Marine Terminal</td>
</tr>
<tr>
<td>BB</td>
<td>Bayonne Bridge</td>
</tr>
<tr>
<td>BRKMT</td>
<td>Brooklyn Port Authority Marine Terminal</td>
</tr>
<tr>
<td>EP</td>
<td>Elizabeth Port Authority Marine Terminal</td>
</tr>
<tr>
<td>EWR</td>
<td>Newark Liberty International Airport</td>
</tr>
<tr>
<td>FERRY</td>
<td>Ferry Transportation</td>
</tr>
<tr>
<td>GB</td>
<td>Goethals Bridge</td>
</tr>
<tr>
<td>GWB</td>
<td>George Washington Bridge and Bus Station</td>
</tr>
<tr>
<td>HCMF</td>
<td>Harrison Car Maintenance Facility</td>
</tr>
<tr>
<td>HELI</td>
<td>Downtown Manhattan Heliport</td>
</tr>
<tr>
<td>HH</td>
<td>Howland Hook Marine Terminal</td>
</tr>
<tr>
<td>HT</td>
<td>Holland Tunnel</td>
</tr>
<tr>
<td>IPY</td>
<td>Industrial Park at Yonkers</td>
</tr>
<tr>
<td>JFK</td>
<td>John F. Kennedy International Airport</td>
</tr>
<tr>
<td>JSTC</td>
<td>Journal Square Transportation Center</td>
</tr>
<tr>
<td>LGA</td>
<td>LaGuardia Airport</td>
</tr>
<tr>
<td>LT</td>
<td>Lincoln Tunnel</td>
</tr>
<tr>
<td>MULTI</td>
<td>Multi Facility Projects</td>
</tr>
<tr>
<td>NFC</td>
<td>Newport Financial Center</td>
</tr>
<tr>
<td>NJMT</td>
<td>New Jersey Marine Terminals</td>
</tr>
<tr>
<td>NLCC</td>
<td>Newark Legal and Communication Center</td>
</tr>
<tr>
<td>OBX</td>
<td>Outer Bridge Crossing</td>
</tr>
<tr>
<td>PABT</td>
<td>Port Authority Bus Terminal</td>
</tr>
<tr>
<td>PACD</td>
<td>Port Authority Police Academy</td>
</tr>
<tr>
<td>PATC</td>
<td>Port Authority Technical center</td>
</tr>
<tr>
<td>PATH</td>
<td>Port Authority Trans-Hudson Corporation</td>
</tr>
<tr>
<td>PHQ</td>
<td>Police Headquarters</td>
</tr>
</tbody>
</table>
### FACILITY CODE

<table>
<thead>
<tr>
<th>FACILITY CODE</th>
<th>FACILITY NAME</th>
</tr>
</thead>
<tbody>
<tr>
<td>PJ</td>
<td>Port Jersey</td>
</tr>
<tr>
<td>PN</td>
<td>Port Newark</td>
</tr>
<tr>
<td>PRTC</td>
<td>Police Rescue Training Center</td>
</tr>
<tr>
<td>RLLC</td>
<td>Cross Harbor Rail Road NY/NJ</td>
</tr>
<tr>
<td>SWF</td>
<td>Stewart International Airport</td>
</tr>
<tr>
<td>TEB</td>
<td>Teterboro Airport</td>
</tr>
<tr>
<td>TLPT</td>
<td>Staten Island Teleport</td>
</tr>
<tr>
<td>WTC</td>
<td>World Trade Center</td>
</tr>
</tbody>
</table>

#### 7.14.2 FIM (FACILITY INFORMATION MODEL) FOLDER

The root of each Facility Folder contains the FIM sub-folder, which stores the most recent 3D Model of that particular Facility.

The image to the right illustrates this concept using the FIM Folder at the root of PATH.

The FIM Folder contains eight sub-folders named after each discipline. Each of these sub-folders stores the discipline-specific models that compose the Facility Information Model.

**NOTE**

The CAD\BIM Support Group is responsible for updating the FIM Folder.

#### 7.14.3 PID (PROJECT IDENTIFICATION) NUMBER FOLDER

The PID Number is a unique identifier assigned for all Port Authority of NY & NJ BIM projects. Every Facility Folder within the Engineering BIM Server has been divided into project folders using an eight-digit PID Number.

The image to the right illustrates this concept using a project at PATH with the PID Number of 0796300, which includes the PIM Folder, the SM folder and eight pre-defined Discipline Folders.

The Lead Engineer/Architect (LE/A) shall request the creation of the Project Folder Structure on the Engineering BIM Server through the CAD\BIM Support Group. Consultants are required to get this number from either the LE/A or the discipline’s Task Leader (TL) at the project kickoff.
7.14.4 PIM (PROJECT INFORMATION MODEL) FOLDER

Each PID Folder contains a PIM sub-folder that stores the most recent 3D Model of that particular project. The image to the right illustrates this concept using a project with the PID Number of 0796300, which includes the PIM Folder at the top of the folder. At the completion of the project, the PIM Folder will include one Model per discipline.

NOTE
The CAD\BIM Support Group is responsible for the PIM Folder.

7.14.5 SM (SITE MODEL) FOLDER

Each PID Folder contains a SM sub-folder that stores the Site Model file, which holds the project coordinate system and controls the location, rotation, and elevation of all Revit-based Models. The image to the right illustrates this concept using a project with the PID Number of 07963000, which includes the SM Folder.

The Site Model Folder stores two files, an AutoCAD file in DWG format and a Revit file in RVT format, both named after the eight-digit PID Number followed by letters SM.

NOTE
The CAD\BIM Support Group is responsible for creating the files contained within the SM Folder.

7.14.6 DISCIPLINE FOLDER

This folder is used to share files among the eight Disciplines of The Port Authority of NY & NJ Engineering Department, which are:

- Architectural
- Civil
- Electrical
- Environmental
- Geotechnical
- Mechanical
- Structural
- Traffic
Every Discipline is provided with a folder in the Project Directory. Each Discipline folder has a series of standardized sub-folders in which all design related data is to be stored.

The image to the right illustrates these standardized sub-folders using the Architectural folder as an example.

Rules of the DISCIPLINE folder:
- Sub-folders should not be created in the Discipline folder.
- The Discipline folder has read-write permissions assigned to that owning discipline only.

7.14.6.1 BIM FOLDER

This folder is to be used for storing Revit-related information files that do not need to be shared outside each discipline.

The image to the left illustrates the standardized sub-folders provided within the BIM folder.

Rules of the BIM folder:
- Sub-folders should not be created at the root level of the BIM folder.
- The BIM folder allows read-write access to the owning discipline.
- No other discipline has access to the BIM folder.
- The BIM folder will be archived with the project.

7.14.6.1.1 ANALYSIS FOLDER

This folder stores results of the different types of analysis performed in the BIM Model.

Rules of the ANALYSIS folder:
- Sub-folders may be created in the Analysis folder. (Refer to Section 7.16.1 - Folder Naming Convention.)
7.14.6.1.2 BACKGROUNDS FOLDER
This folder stores AutoCAD and/or Image files that will be referenced into the BIM Model and will become part of the Contract Set.

Rules of the BACKGROUNDS folder:
- Sub-folders should not be created in the BACKGROUNDS folder.
- AutoCAD files and Image files should be named accordingly. (Refer to Section 7.16.2.8 - AutoCAD Files and Section 7.16.2.10 - Image Files.)

7.14.6.1.3 COORDINATION FOLDER
This folder stores documents and reports for multi-discipline coordination purposes only.

Rules of the COORDINATION folder:
- Sub-folders may be created in the COORDINATION folder. (Refer to Section 7.16.1 - Folder Naming Convention.)

7.14.6.1.4 LIBRARY FOLDER
This folder stores project-specific Revit Family files.

Rules of the LIBRARY folder:
- Sub-folders may be created in the LIBRARY folder. If this is decided by the Project Team, a folder structure similar to the one provided by the Revit product in use should be created. This folder structure can be found under:

  C:\Documents and Settings\All Users\Application Data\Autodesk\REVIT PRODUCT\Imperial Library\

7.14.6.1.5 MATERIALS FOLDER
This folder stores custom and/or project-specific materials (.MLIB files) along with the associated bitmaps used within the BIM Model.

Rules of the MATERIALS folder:
- Sub-folders may be created in the MATERIALS folder. If this is decided by the Project Team, a folder structure similar to the one provided by the Revit product in use should be created. This folder structure can be found under:

  C:\Program Files\REVIT PRODUCT\Data\Rendering\assetlibrary_base.fbm\Materials\
7.14.6.1.6 POINTCLOUDS FOLDER
This folder stores Laser Scan Data in its raw format for future reference along with its indexed version (PCG) after Revit processes the file.
Rules of the POINTCLOUDS folder:
- Sub-folders should not be created in the POINTCLOUDS folder.

7.14.6.1.6.1 IMAGES Folder
This folder stores Images, such as 3D QuickTime files that are generated as part of the Laser Scan process.
Rules of the IMAGES folder:
- Sub-folders should not be created in the IMAGES folder.

7.14.6.1.7 RENDERINGS FOLDER
This folder stores data such as images, walkthroughs and animations generated from the BIM Model.
Rules of the RENDERINGS folder:
- Sub-folders may be created in the RENDERINGS folder. (Refer to Section 7.16.1 - Folder Naming Convention.)

7.14.6.2 FROMOTHERPROJECTS FOLDER
This folder stores data that relates to the current project and is needed only as a reference.
If a drawing needs to be part of the Contract Set, it should be either moved or copied into the BACKGROUNDS folder and renamed accordingly.
Rules of the FROMOTHERPROJECT folder:
- Sub-folders may be created in the FROMOTHERPROJECT folder. (Refer to Section 7.16.1 - Folder Naming Convention.)
- The FROMOTHERPROJECT folder allows read-write access to the owning discipline.
- No other discipline has access to the FROMOTHERPROJECT folder.
- The FROMOTHERPROJECT folder will not be archived with the project.
7.14.6.3 MANAGEMENTDOCS FOLDER

This folder stores non-drawing project-related data such as e-mails, memos, spreadsheets, documents, estimates, specs, etc.

Rules of the MANAGEMENTDOCS folder:

- Sub-folders may be created in the MANAGEMENTDOCS folder. (Refer to Section 7.16.1 - Folder Naming Convention.)
- The MANAGEMENTDOCS folder provides read-write access to the owning discipline.
- No other discipline has access to the MANAGEMENTDOCS folder.
- The MANAGEMENTDOCS folder will be archived with the project.

7.14.6.4 MODEL FOLDER

This folder stores the Revit Model file.

Rules of the MODEL folder:

- Sub-folders should not be created in the MODEL folder.
- The MODEL folder allows read-write access to the owning discipline.
- The MODEL folder allows read-only access to all other disciplines.
- The MODEL folder will be archived with the project.

7.14.6.5 PHOTOS FOLDER

This folder stores digital photographs relevant to the project.

If a photo needs to be part of the Contract Set, it should be moved or copied into the BACKGROUNDS folder and renamed accordingly.

Rules of the PHOTOS folder:

- Sub-folders may be created in the PHOTOS folder. (Refer to Section 7.16.1 - Folder Naming Convention.)
- There are no file naming requirements for images saved in the PHOTOS folder.
- The PHOTOS folder allows read-write access to the owning discipline.
- The PHOTOS folder allows read-only access to all other disciplines.
- The PHOTOS folder will be archived with the project.
7.14.6.6 PLOTSHEETS FOLDER
This folder stores AutoCAD files assembled as sheets for printing created from Civil 3D and shall consist of external reference files only. Refer to the E/A Design Division CAD Standard for proper use.
No line work or annotation is allowed on the PlotSheet files.
Layout tabs must be named after their sheet numbers and must appear in sequential order. Only consecutive drawings may be stored on multiple paper-space tabs in a single drawing file.
Rules of the PLOTSHEETS folder:
- Sub-folders should not be created in the PLOTSHEETS folder.
- The PLOTSHEETS folder allows read-write access to the owning discipline.
- The PLOTSHEETS folder allows read-only access to all other disciplines.
- The PLOTSHEETS folder will be archived with the project.

7.14.6.6.1 DWF FOLDER
This folder stores DWF files created from the Revit-based applications and from Civil 3D and shall always contain the latest and most current version of the DWF files.
DWF files shall be created and saved in the DWF folder every time a submittal milestone is reached.
Rules of the DWF folder:
- Sub-folders should not be created in the DWF folder.

7.14.6.7 PUBLISH FOLDER
This folder is used as a sharing mechanism between disciplines using the Revit-based applications and Civil 3D. BIM Models will be exported as DWG files and saved within this folder.
Rules of the PUBLISH folder:
- Sub-folders should not be created in the PUBLISH folder.
- The PUBLISH folder allows read-write access to the owning discipline.
- The PUBLISH folder allows read-only access to all other disciplines.
- The PUBLISH folder will be archived with the project.
7.14.6.8 RECEIVED FOLDER

This folder contains a dated archive of design information received from outside sources.
This folder is a record intended to identify exactly when and what information was provided by a consultant.

Rules of the RECEIVED folder:
- Sub-folders may be created in the RECEIVED folder. (Refer to Section 7.16.1 - Folder Naming Convention.)
- The RECEIVED folder provides read-write access to the owning discipline.
- No other discipline has access to the RECEIVED folder.
- The RECEIVED folder will not be archived with the project.

7.14.6.9 RELEASED FOLDER

This folder contains a dated archive of design information provided to outside sources.
This folder is a record intended to identify exactly when and what information was provided to a consultant.

Rules of the RELEASED folder:
- Sub-folders may be created in the RELEASED folder. (Refer to Section 7.16.1 - Folder Naming Convention.)
- The RELEASED folder provides read-write access to the owning discipline.
- No other discipline has access to the RELEASED folder.
- The RELEASED folder will not be archived with the project.

7.14.6.10 SCHEMES FOLDER

This folder stores various schemes of a design when using Civil 3D, providing the designer with an area in which to make trial changes to a design. Refer to the E/A Design Division CAD Standard for proper use.

When using the Revit-based applications, Design Options is the preferred method to accomplish schemes.

Rules of the SCHEMES folder:
- Sub-folders may be created in the SCHEMES folder. (Refer to Section 7.16.1 - Folder Naming Convention.)
- The SCHEMES folder allows read-write access to the owning discipline.
- No other discipline has access to the SCHEMES folder.
- The SCHEMES folder will not be archived with the project.
7.14.6.11  SHARED FOLDER

This folder is used as a sharing mechanism for non-CAD\BIM-related information between disciplines, such as e-mails, memos, spreadsheets, documents, estimates, specs, etc.

A discipline may copy its files into its own SHARED folder, making them available for other disciplines to use.

Rules of the SHARED folder:

- Sub-folders may be created in the SHARED folder. (Refer to Section 7.16.1 - Folder Naming Convention.)
- The SHARED folder allows read-write access to the owning discipline.
- The SHARED folder allows read-only access to all other disciplines.
- The SHARED folder will not be archived with the project.

7.14.6.12  SUBMITTALS FOLDER

This folder is to be used for storing project information as it appears at each milestone of the project.

The image to the left illustrates the standardized sub-folders provided within SUBMITTALS.

While the BIM, MANAGEMENTDOCS, MODEL, PHOTOS, PLOTSHEETS and PUBLISH folders contain working information that changes throughout the life of project, the SUBMITTALS folder preserves the state of those files at the moment of each milestone.

NOTE

Before every submission, BIM Models should be purged of all unused information. Users will need to save their Local Files, Synchronize with Central and Relinquish their Worksets.

Each discipline Task Leader is responsible for archiving their own discipline-specific Central Files into one of the sub-folders within SUBMITTALS. After verifying that all discipline Task Leaders has archived their folders, the LEA should notify the CAD\BIM Support Group.
Rules of the SUBMITTALS folder:

- Sub-folders should not be created at the root level of the SUBMITTALS folder.
- The SUBMITTALS folder allows read-write access to the owning discipline.
- The SUBMITTALS folder allows read-only access to all other disciplines.
- All sub-folders under the SUBMITTALS folder will be archived with the project.

7.14.6.12.1 PRESENTATIONS FOLDER
The Presentations folder might contain different file formats used for presentation purposes only.

Rules of the Presentations folder:

- Sub-folders may be created as long as they follow the naming convention of the default folder provided in which the letters XX are replaced by a two-digit number representing the percentage stage number.
- Only the BIM, MANAGEMENTDOCS, MODEL, PLOTSHEETS and PUBLISH folders should be copied into this folder.

7.14.6.12.2 PRE-STAGEI FOLDER
The Pre-StageI (Pre-Conceptual Design) is necessary for some projects to compare alternatives before proceeding with StageI (Conceptual Design)

Rules of the Pre-StageI folder:

- Sub-folders may be created as long as they follow the naming convention of the default folder provided in which the letters XX are replaced by a two-digit number representing the percentage stage number.
- Only the BIM, MANAGEMENTDOCS, MODEL, PLOTSHEETS and PUBLISH folders should be copied into this folder.

7.14.6.12.3 STAGEI FOLDER
StageI (Conceptual Design) is necessary for some projects to develop design concepts, determine anticipated construction costs and schedules, and to compare alternatives before proceeding with Design Development (StageII) or Final Design (StageIII).

Rules of the StageI folder:

- Sub-folders may be created as long as they follow the naming convention of the default folder provided in which the letters XX are replaced by a two-digit number representing the percentage stage number.
- Only the BIM, MANAGEMENTDOCS, MODEL, PLOTSHEETS and PUBLISH folders should be copied into this folder.
7.14.6.12.4 STAGEII FOLDER

StageII (Design Development) is necessary to develop the chosen design concept, further refine anticipated construction costs and schedules before proceeding with contract documents.

Rules of the Pre-StageII folder:

- Sub-folders may be created as long as they follow the naming convention of the default folder provided in which the letters XX are replaced by a two-digit number representing the percentage stage number.
- Only the BIM, MANAGEMENTDOCS, MODEL, PLOTSHEETS and PUBLISH folders should be copied into this folder.

7.14.6.12.5 STAGEIII FOLDER

StageIII (Final Design) effort includes preparation of contract documents that will be used for construction.

Rules of the Pre-StageIII folder:

- Sub-folders may be created as long as they follow the naming convention of the default folder provided in which the letters XX are replaced by a two-digit number representing the percentage stage number.
- Only the BIM, MANAGEMENTDOCS, MODEL, PLOTSHEETS and PUBLISH folders should be copied into this folder.

7.14.6.12.5.1 As-Advertised-Signed-Set Sub-Folder

The As-Advertised-Signed-Set is when the project reaches 100% Submission and Mylars are plotted, signed and sealed.

Before the As-Advertised-Signed-Set submission, all Design Options within the BIM Models should be converted into the Primary Option.

Rules of the As-Advertised-Signed-Set folder:

- Sub-folders should not be created in the As-Advertised-Signed-Set folder.
7.14.6.12.5.2 Addendum Sub-Folder

The Addendum Set contains drawings that have been modified or new drawings that have been issued after the Contract Set was signed.

Addenda happen after the Mylar Set is plotted and signed. Not all the addenda might contain drawings; some might only contain specifications. For that reason, the Addendum Set might contain non-consecutive addenda sub-folders.

Rules of the Addendum folder:

- Sub-folders may be created as long as they follow the naming convention of the default folder provided in which the letters XX are replaced by a two-digit number representing the Addendum number.
- Only the BIM, MANAGEMENTDOCS, MODEL, PLOTSHEETS and PUBLISH folders should be copied into this folder.
- A set of DWF files should be created including only the drawings that have changed and/or drawings that have been added. Either a single-sheet DWF files (for non-consecutive drawings) and/or multi-sheet DWF files (for consecutive drawings).

NOTE

A new Contract Border should be used only on the drawings that have changed and/or have been added to the Addendum Set. Contact the CAD\BIM Support Group if you need to create a new Contract Border for the above Submissions.

7.14.6.12.5.3 As-Bid Sub-Folder

The As-Bid Set is the Awarded Set of Drawings that incorporates all the addenda that have been issued.

Rules of the As-Bid folder:

- Sub-folders should not be created in the As-Bid folder.

7.14.6.12.6 STAGE IV FOLDER

Stage IV (Construction) effort includes preparation of contract documents while construction is in progress and completed.
7.14.6.12.6.1 PACC Sub-Folder

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

Rules of the PACC folder:

- Sub-folders may be created as long as they follow the naming convention of the default folder provided in which the letters XX are replaced by a two-digit number representing the PACC number.

- Only the BIM, MANAGEMENTDOCS, MODEL, PLOTSHEETS and PUBLISH folders should be copied into this folder.

- A set of DWF files should be created including only the drawings that have changed and/or drawings that have been added. Either a single-sheet DWF files (for non-consecutive drawings) and/or multi-sheet DWF files (for consecutive drawings).

NOTE

A new Contract Border should be used only on the drawings that have changed and/or have been added to the Addendum Set. Contact the CAD\BIM Support Group if you need to create a new Contract Border for the above Submissions.

7.14.6.12.6.2 Drawing-of-Record Sub-Folder

The Drawing-of-Record Set is the set of drawings created after construction is completed. This Set may also be called the “As-Built Set”.

Rules of the Drawing-of-Record folder:

- Sub-folders should not be created in the Drawing-of-Record folder.
7.14.7 **SAMPLE FOLDER STRUCTURE**

The Sample Folder Structure, defined in this section, should be used to simplify the exchange of information among The Port Authority of NY & NJ departments, divisions, and functional groups as well as between The Port Authority of NY & NJ and outside resources (consultants and contractors).

Every discipline is provided with a folder in the project directory, in which all design-related data is to be stored. Consultants are required to use this folder structure when defining their Revit Central Files.

Three Sample Folder Structures have been provided with The Port Authority of NY & NJ BIM Standard, two of which address the Central File for Standards Projects and for Confidential and/or Confidential Privileged Projects respectively, and one which addresses the Local Files.

Central File folder  

The word “Facility Name” should be replaced with the Facility Code provided in [Section 7.14.1 - Facility Folders](#) and the letters “PID” with the eight-digit PID Number provided by the LE/A or by the Discipline TL at the kickoff meeting.

Local File folder  

The word “Facility Name” should be replaced with the Facility Code provided in [Section 7.14.1 - Facility Folders](#), the letters “PID” with the eight-digit PID Number provided by either the LE/A or by the Discipline TL at the kickoff meeting and the word “Discipline” with one of the eight disciplines within the Port Authority of NY & NJ Engineering Department provided in [Section 7.14.6 - Discipline Folder](#).

A copy of both Sample Folder Structures can be found under:

**EAD\BIM_Standard\2012\Standards\Sample Folder Structure\**

**NOTE**

The CAD\BIM Support Group is responsible for setting up all Revit Models either for internal use or when consultants are involved.
7.14.7.1 CENTRAL FILE

Each discipline’s Central File folder has a series of standardized sub-folders that will contain various groups of design data.

7.14.7.1.1 STANDARD FOLDER

The image to the left shows the Central File Folder Structure for Standard Projects using the Architectural Folder as an example for a project on PATH with a PID Number of 0796300.

7.14.7.1.2 C & CP FOLDER

The image to the left shows the Central File Folder Structure for Confidential and/or Confidential Privileged Projects using the Architectural Folder as an example for a project on PATH with a PID Number of 0796300.
7.14.7.2 LOCAL FILE

The Local version of the Central File described above should be saved on the user's local machine on a folder named as follows:

C:\REVIT Projects\  

The image to the left shows the Local File Folder Structure using the Architectural folder as an example for a project on PATH with a PID Number of 0796300.

NOTE

The contents of the sub-folders within the Local File folder, with the exception of the MODEL folder, which is automatically synchronized with the Central File through Revit, should be manually copied back to their respective folders in the server.
7.15 **TEMPLATES**

All Revit projects must be created using one of the templates provided with the BIM Standard, which are:

- PA - TEMPLATE ARCHITECTURAL
- PA - TEMPLATE ELECTRICAL
- PA - TEMPLATE MECHANICAL
- PA - TEMPLATE STRUCTURAL

To promote consistency in the Contract Set as well as to prevent the use of un-licensed fonts, all Port Authority of NY & NJ Text Styles, Dimension Styles, Leaders, Tags and Content have been defined using the RomanS.TTF font.

**NOTE**

For no reason should the settings within the Template Files be modified or altered in any way or form.

7.15.1 **TEXT STYLES**

Six Text Styles have been defined within the Templates as follows:

- PA - NOTE 1.0/10" (Use in general notes)
- PA - TEXT 0.5/10" (Use in location plan notes)
- PA - TEXT 1.0/10" (Use for text)
- PA - TEXT 1.5/10" (Use for sub-titles)
- PA - TEXT 2.0/10" (Use for regular titles)
- PA - TEXT 2.5/10" (Use for big titles)

7.15.2 **DIMENSIONS STYLES**

Three Dimension Styles have been defined within the Templates as follows:

- PA - DIM ARC
- PA - DIM DIAGONAL
- PA - DIM LINEAR
7.15.3 **GRIDS**

Two Standard Grids have been provided as follows:

- PA - GRID HEAD EXISTING
- PA - GRID HEAD NEW

7.15.4 **ELEVATIONS**

Three Standard Elevations have been provided as follows:

- PA - EXTERIOR ELEVATIONS
- PA - FRAMING ELEVATIONS
- PA - INTERIOR ELEVATIONS

7.15.5 **SECTIONS**

Three Standard Sections have been provided as follows:

- PA - BUILDING SECTION
- PA - DETAILS
- PA - SECTIONS

7.15.6 **CALLOUTS**

One Standard Callout has been provided as follows:

- PA - DETAIL

7.15.7 **TAGS**

Different Tags have been pre-loaded within the Templates based on the Discipline. General Tags have been provided in all of them as follows:

- PA - ELEVATION MARK TAG
- PA - KEYNOTE TAG
- PA - GENERIC MODEL TAG
- PA - LEVEL TAG
- PA - SPECIALITY EQUIPMENT TAG
7.15.8  **LINE WEIGHTS**

Line Weights have been provided for Model, Annotation and Perspective Objects as follows.

### 7.15.8.1  **MODEL AND ANNOTATION LINE WEIGHTS**

Sixteen Line Weights have been provided for Annotation Objects and for Model Objects, which have been defined at the 1/8” = 1’ Scale and increases and decreases in 25% increments and decrements from the previous scale.

<table>
<thead>
<tr>
<th>PEN #</th>
<th>WIDTH</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.0040”</td>
</tr>
<tr>
<td>2</td>
<td>0.0080”</td>
</tr>
<tr>
<td>3</td>
<td>0.0100”</td>
</tr>
<tr>
<td>4</td>
<td>0.0120”</td>
</tr>
<tr>
<td>5</td>
<td>0.0140”</td>
</tr>
<tr>
<td>6</td>
<td>0.0160”</td>
</tr>
<tr>
<td>7</td>
<td>0.0180”</td>
</tr>
<tr>
<td>8</td>
<td>0.0200”</td>
</tr>
<tr>
<td>9</td>
<td>0.0240”</td>
</tr>
<tr>
<td>10</td>
<td>0.0280”</td>
</tr>
<tr>
<td>11</td>
<td>0.0320”</td>
</tr>
<tr>
<td>12</td>
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<td>0.0400”</td>
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<tr>
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<td>0.0440”</td>
</tr>
<tr>
<td>15</td>
<td>0.0480”</td>
</tr>
<tr>
<td>16</td>
<td>0.0720”</td>
</tr>
</tbody>
</table>

### 7.15.8.2  **PERSPECTIVE LINE WEIGHTS**

All Perspective Line Weights have been set to 0.0050”
7.15.9 **LINE STYLES**

Sixteen Line Styles that match the sixteen Line Weights have been provided as follows:

<table>
<thead>
<tr>
<th>NAME</th>
<th>PEN # (WIDTH)</th>
<th>LINE PATTERN</th>
</tr>
</thead>
<tbody>
<tr>
<td>PA - Pen#1</td>
<td>1 (0.0040&quot;)</td>
<td>Solid</td>
</tr>
<tr>
<td>PA - Pen#2</td>
<td>2 (0.0080&quot;)</td>
<td>Solid</td>
</tr>
<tr>
<td>PA - Pen#3</td>
<td>3 (0.0100&quot;)</td>
<td>Solid</td>
</tr>
<tr>
<td>PA - Pen#4</td>
<td>4 (0.0120&quot;)</td>
<td>Solid</td>
</tr>
<tr>
<td>PA - Pen#5</td>
<td>5 (0.0140&quot;)</td>
<td>Solid</td>
</tr>
<tr>
<td>PA - Pen#6</td>
<td>6 (0.0160&quot;)</td>
<td>Solid</td>
</tr>
<tr>
<td>PA - Pen#7</td>
<td>7 (0.0180&quot;)</td>
<td>Solid</td>
</tr>
<tr>
<td>PA - Pen#8</td>
<td>8 (0.0200&quot;)</td>
<td>Solid</td>
</tr>
<tr>
<td>PA - Pen#9</td>
<td>9 (0.0240&quot;)</td>
<td>Solid</td>
</tr>
<tr>
<td>PA - Pen#10</td>
<td>10 (0.0280&quot;)</td>
<td>Solid</td>
</tr>
<tr>
<td>PA - Pen#11</td>
<td>11 (0.0320&quot;)</td>
<td>Solid</td>
</tr>
<tr>
<td>PA - Pen#12</td>
<td>12 (0.0360&quot;)</td>
<td>Solid</td>
</tr>
<tr>
<td>PA - Pen#13</td>
<td>13 (0.0400&quot;)</td>
<td>Solid</td>
</tr>
<tr>
<td>PA - Pen#14</td>
<td>14 (0.0440&quot;)</td>
<td>Solid</td>
</tr>
<tr>
<td>PA - Pen#15</td>
<td>15 (0.0480&quot;)</td>
<td>Solid</td>
</tr>
<tr>
<td>PA - Pen#16</td>
<td>16 (0.0720&quot;)</td>
<td>Solid</td>
</tr>
<tr>
<td>PA - Contract Limit</td>
<td>11 (0.0302&quot;)</td>
<td>Center</td>
</tr>
</tbody>
</table>

7.15.10 **LINE PATTERNS**

Line Patterns have been provided by Discipline as follows.

7.15.10.1 **ARCHITECTURAL AND STRUCTURAL**

For the Architectural and Structural Disciplines, Line Patterns have not been customize at this point. Only the out-of-the-box Revit standard Line Patterns are being used.
7.15.10.2  ELECTRICAL

14 Line Patterns have been defined for the Electrical Group as described on the table below.

<table>
<thead>
<tr>
<th>ELECTRICAL LINETYPES</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>13.8KV</td>
<td>Underground Conduit Electric 13.8KV</td>
</tr>
<tr>
<td>27KV</td>
<td>Underground Conduit Electric 27KV</td>
</tr>
<tr>
<td>FA</td>
<td>Fire Alarm</td>
</tr>
<tr>
<td>FO</td>
<td>Fiber Optic</td>
</tr>
<tr>
<td>GND</td>
<td>Ground</td>
</tr>
<tr>
<td>HTRACE</td>
<td>Heat Trace</td>
</tr>
<tr>
<td>OS</td>
<td>Out of Service</td>
</tr>
<tr>
<td>P</td>
<td>Power</td>
</tr>
<tr>
<td>PSEG</td>
<td>PSGE</td>
</tr>
<tr>
<td>UCD</td>
<td>Underground Communications Duct</td>
</tr>
<tr>
<td>UGC</td>
<td>Underground Conduit Communications</td>
</tr>
<tr>
<td>UGP</td>
<td>Underground Power</td>
</tr>
<tr>
<td>UPD</td>
<td>Underground Power Duct</td>
</tr>
<tr>
<td>UPCD</td>
<td>Underground Power and Communications Duct</td>
</tr>
</tbody>
</table>

7.15.10.3  MECHANICAL

56 Line Patterns have been defined for the Mechanical Group as described on the table below.

<table>
<thead>
<tr>
<th>MECHANICAL LINETYPES</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACID</td>
<td>Acid</td>
</tr>
<tr>
<td>AFSA</td>
<td>Aviation Fuel System Above</td>
</tr>
<tr>
<td>AFSU</td>
<td>Aviation Fuel System Underground</td>
</tr>
<tr>
<td>BBD</td>
<td>Boiler Blow Down</td>
</tr>
<tr>
<td>CA</td>
<td>Compressed Air</td>
</tr>
<tr>
<td>CHWR</td>
<td>Chilled Water Return</td>
</tr>
<tr>
<td>CHWS</td>
<td>Chilled Water Supply</td>
</tr>
<tr>
<td>CO2</td>
<td>CO2</td>
</tr>
<tr>
<td>CWR</td>
<td>Condenser Water Return</td>
</tr>
<tr>
<td>CWS</td>
<td>Condenser Water Supply</td>
</tr>
<tr>
<td>D</td>
<td>Drain</td>
</tr>
<tr>
<td>DCW</td>
<td>Domestic Cold Water</td>
</tr>
<tr>
<td>DEL</td>
<td>Deluge</td>
</tr>
<tr>
<td>Abbreviation</td>
<td>Description</td>
</tr>
<tr>
<td>--------------</td>
<td>---------------------------</td>
</tr>
<tr>
<td>DHW</td>
<td>Domestic Hot Water</td>
</tr>
<tr>
<td>DRY</td>
<td>Dry</td>
</tr>
<tr>
<td>DRY-CHEM</td>
<td>Dry Chemical</td>
</tr>
<tr>
<td>DTW</td>
<td>Domestic Tempered Water</td>
</tr>
<tr>
<td>DTWR</td>
<td>Dual Temperature Water Return</td>
</tr>
<tr>
<td>DTWS</td>
<td>Dual Temperature Water Supply</td>
</tr>
<tr>
<td>FM-200</td>
<td>FM-200</td>
</tr>
<tr>
<td>FOAM</td>
<td>Foam</td>
</tr>
<tr>
<td>FOR A</td>
<td>Fuel Oil Return Above</td>
</tr>
<tr>
<td>FORU</td>
<td>Fuel Oil Return Underground</td>
</tr>
<tr>
<td>FOSA</td>
<td>Fuel Oil Supply Above</td>
</tr>
<tr>
<td>FOSU</td>
<td>Fuel Oil Supply Underground</td>
</tr>
<tr>
<td>FOVA</td>
<td>Fuel Oil Ventilation Above</td>
</tr>
<tr>
<td>FOVU</td>
<td>Fuel Oil Ventilation Underground</td>
</tr>
<tr>
<td>FSP</td>
<td>Wet Piping</td>
</tr>
<tr>
<td>G</td>
<td>Gas</td>
</tr>
<tr>
<td>HCWR</td>
<td>Hot-Chilled Water Return</td>
</tr>
<tr>
<td>HCWS</td>
<td>Hot-Chilled Water Supply</td>
</tr>
<tr>
<td>HPCW</td>
<td>High Pressure Condensate Water</td>
</tr>
<tr>
<td>HPS</td>
<td>High Pressure Steam</td>
</tr>
<tr>
<td>HTHWR</td>
<td>High Temperature Hot Water Return</td>
</tr>
<tr>
<td>HTHWS</td>
<td>High Temperature Hot Water Supply</td>
</tr>
<tr>
<td>HWR</td>
<td>Hot Water Return</td>
</tr>
<tr>
<td>HWS</td>
<td>Hot Water Supply</td>
</tr>
<tr>
<td>INERT</td>
<td>Inert Gas</td>
</tr>
<tr>
<td>LPC</td>
<td>Low Pressure Condensate</td>
</tr>
<tr>
<td>LPS</td>
<td>Low Pressure Steam</td>
</tr>
<tr>
<td>MPC</td>
<td>Medium Pressure Condensate</td>
</tr>
<tr>
<td>MPS</td>
<td>Medium Pressure Steam</td>
</tr>
<tr>
<td>MTHWR</td>
<td>Medium Temperature Hot Water Return</td>
</tr>
<tr>
<td>MTHWS</td>
<td>Medium Temperature Hot Water Supply</td>
</tr>
<tr>
<td>MU</td>
<td>Makeup Water</td>
</tr>
<tr>
<td>OSMR</td>
<td>Oil Snow Melting Return</td>
</tr>
<tr>
<td>OSMS</td>
<td>Oil Snow Melting Supply</td>
</tr>
<tr>
<td>OW</td>
<td>Oil Water</td>
</tr>
<tr>
<td>RD</td>
<td>Refrigerant Discharge</td>
</tr>
<tr>
<td>RL</td>
<td>Refrigerant Liquid</td>
</tr>
<tr>
<td>RS</td>
<td>Refrigerant Suction</td>
</tr>
<tr>
<td>SANA</td>
<td>Sanitary Piping Above</td>
</tr>
<tr>
<td>SANU</td>
<td>Sanitary Piping Underground</td>
</tr>
<tr>
<td>STA</td>
<td>Storm Piping Above</td>
</tr>
</tbody>
</table>
7.15.10.4 **LINE STYLES SCREENING**

Five screened Line Styles have been provided as follows:

<table>
<thead>
<tr>
<th>NAME</th>
<th>PEN # (WIDTH)</th>
<th>RGB</th>
<th>RGB COLOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>PA - Black 100%</td>
<td>1 (0.0040&quot;)</td>
<td>000-000-000</td>
<td></td>
</tr>
<tr>
<td>PA - Black 80%</td>
<td>3 (0.0100&quot;)</td>
<td>050-050-050</td>
<td></td>
</tr>
<tr>
<td>PA - Black 60%</td>
<td>5 (0.0140&quot;)</td>
<td>100-100-100</td>
<td></td>
</tr>
<tr>
<td>PA - Black 40%</td>
<td>7 (0.0180&quot;)</td>
<td>150-150-150</td>
<td></td>
</tr>
<tr>
<td>PA - Black 20%</td>
<td>9 (0.0240&quot;)</td>
<td>200-200-200</td>
<td></td>
</tr>
</tbody>
</table>

**NOTE**

The lighter the Screening of the Line Style the thicker it has been set; this is because we need to ensure that screened Line Styles reproduce in the copies of the Mylars.
7.15.11 Fill Patterns
Fill Patterns have been imported from AutoCAD as follows:

<table>
<thead>
<tr>
<th>LINE PATTERNS</th>
</tr>
</thead>
<tbody>
<tr>
<td>PA - ANSI31</td>
</tr>
<tr>
<td>PA - ANSI32</td>
</tr>
<tr>
<td>PA - ANSI33</td>
</tr>
<tr>
<td>PA - ANSI34</td>
</tr>
<tr>
<td>PA - ANSI35</td>
</tr>
<tr>
<td>PA - ANSI36</td>
</tr>
<tr>
<td>PA - ANSI37</td>
</tr>
<tr>
<td>PA - ANSI38</td>
</tr>
<tr>
<td>PA - Brass</td>
</tr>
<tr>
<td>PA - Brick-01</td>
</tr>
</tbody>
</table>

7.15.12 Fill Regions
Fill Regions (opaque and transparent) have been provided as follows:

<table>
<thead>
<tr>
<th>SCRENING</th>
</tr>
</thead>
<tbody>
<tr>
<td>FILLED REGION NAME</td>
</tr>
<tr>
<td>PA - Solid Black 100%</td>
</tr>
<tr>
<td>PA - Solid Black 80%</td>
</tr>
<tr>
<td>PA - Solid Black 60%</td>
</tr>
<tr>
<td>PA - Solid Black 40%</td>
</tr>
<tr>
<td>PA - Solid Black 20%</td>
</tr>
</tbody>
</table>

7.15.13 HalfTone
Halftone has been set to 50%.
7.15.14 SCHEDULES
A series of Schedules for Engineering Estimates (ES) have been provided with the different Discipline Templates to support the Estimating process.

The Header and Body Text size of any custom Schedules needs to be set within the Appearance Tab as described in the Table below.

<table>
<thead>
<tr>
<th>SCHEDULES</th>
</tr>
</thead>
<tbody>
<tr>
<td>TEXT TYPE</td>
</tr>
<tr>
<td>Header Text</td>
</tr>
<tr>
<td>Body Text</td>
</tr>
</tbody>
</table>

NOTE
Schedules can be duplicated within the Revit Model so the Filter and Sorting/Grouping Categories can be used.

7.15.15 PHASES
Phases can be created to match the Project Phases as necessary. The LE/A is responsible for coordinating how many Phases the Project might have. Refer to Section 7.16.6 – Phasing Naming Convention for proper Naming Convention.

Phase Status for Existing, Demolished, New and Temporary have been set as shown in the image below.
7.15.16 ROOM COMPUTATION

The Room Computation has been enabled for Area and Volumes and has been set at wall finish as shown in the image below.
7.15.17 SYMBOLS

Different Symbols have been pre-loaded within the Templates based on the Discipline. General Symbols have been provided in all of them as follows:

- PA - BREAK LINE
- PA - CENTERLINE
- PA - ELEVATION MARK POINTER
- PA - REVISION TRIANGLE
- PA - SPOT ELEVATION

7.15.18 CONTENT

The Port Authority of NY & NJ BIM Standard Templates include out-of-the-box System Families, such as Columns, Beans, Walls, Roofs, Ceilings, Floors, etc. Users can customize this content as per project needs.

Loadable Families, such as Doors, Windows, Furniture, Fixtures, Equipment, etc. will need to go through the approval of the CAD\BIM Support Group by the use of Request to Create BIM Content Form …..

All The Port Authority of NY & NJ BIM computers have been configured to access Loadable Families from:

EAD\BIM_Standard\2012\Standards\Content\
7.16 Naming Conventions

All electronic project information should be named following The Port Authority of NY & NJ BIM Standard Naming Conventions.

7.16.1 Folder Naming Convention

If creation of sub-folders are needed and permitted by the Folder’s Rules, they can be created under the predefined Project Folder Structure and they should follow the Folder Naming Convention.

The folders should be named beginning with a four-digit year, an underscore, a two-digit month, an underscore, a two-digit day, a dash an optional description.

The folder should take the form of:

YYYY-MM-DD_Description

<table>
<thead>
<tr>
<th>ITEM</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>YYYY</td>
<td>Four-digit Year</td>
</tr>
<tr>
<td>MM</td>
<td>Two-digit Month</td>
</tr>
<tr>
<td>DD</td>
<td>Two-digit Day</td>
</tr>
</tbody>
</table>
| Description (optional) | Brief User Description (up to 12 characters)  
The following characters should not be used as part of the description  
@ $ % ^ & < > / \ " : ; ? * | , |

NOTE

Refer to Section 7.14.6 - Discipline Folder for each Discipline’s folder rules before creating a sub-folder.

7.16.2 File Naming Convention

All electronic files should be named following the File Naming Convention, including Revit files (RVT), Plotsheet files (DWF), Revit Family files (RFA), AutoCAD files (DWG), Image files (JPG, MOV), Animation files (AVI), Microsoft Office files (DOC, XLS, HTML, TXT), NavisWorks files (NWF, NWC) and Analysis files (multiple formats).
7.16.2.1 **DISCIPLINE CODES**

There are eight disciplines within The Port Authority of NY & NJ Engineering Department as described in Section 7.14.6 - Discipline Folder. All electronic files should be named beginning with the appropriate Discipline Code based on the following table.

<table>
<thead>
<tr>
<th>DISCIPLINE CODE</th>
<th>DISCIPLINE NAME</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Architectural</td>
</tr>
<tr>
<td>C</td>
<td>Civil</td>
</tr>
<tr>
<td>E</td>
<td>Electrical</td>
</tr>
<tr>
<td>N</td>
<td>Environmental</td>
</tr>
<tr>
<td>G</td>
<td>Geotechnical</td>
</tr>
<tr>
<td>M</td>
<td>Mechanical</td>
</tr>
<tr>
<td>S</td>
<td>Structural</td>
</tr>
<tr>
<td>T</td>
<td>Traffic</td>
</tr>
</tbody>
</table>

7.16.2.2 **REVIT CENTRAL FILE**

The Central file should be named beginning with the Discipline Code, an eight-digit PID Number, a dash, a Model Type, an underscore and the word “CENTRAL”. Once defined, the Central File name should not change through the life of the project.

The filename should take the form of:

```
DPID–MT_CENTRAL.rvt
```

<table>
<thead>
<tr>
<th>ITEM</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>D</td>
<td>Discipline Code</td>
</tr>
<tr>
<td></td>
<td>Refer to Section 7.16.2.1 - Discipline Codes</td>
</tr>
<tr>
<td>PID</td>
<td>Eight-digit PID Number</td>
</tr>
<tr>
<td>MT</td>
<td>Model Type Code</td>
</tr>
<tr>
<td></td>
<td>Refer to chart below</td>
</tr>
<tr>
<td>CENTRAL</td>
<td>This shall stay as is</td>
</tr>
</tbody>
</table>

Model Types

<table>
<thead>
<tr>
<th>MODEL TYPE CODE</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>3D</td>
<td>3D Model</td>
</tr>
<tr>
<td>EC</td>
<td>Existent Conditions Model</td>
</tr>
<tr>
<td>PC</td>
<td>Point Cloud Model</td>
</tr>
<tr>
<td>SC</td>
<td>Site Context Model</td>
</tr>
</tbody>
</table>
As an example, the Architectural Group is saving their Revit Model as a Central File to a network drive. The file should be named as follows:

A07963000-3D_CENTRAL.rvt

**NOTE**

After you save the Central File, Revit creates two folders: one named “YOUR FILE NAME_backup” and another folder named “Revit_temp”. Neither the folders nor the files contained within it should be moved, renamed, or deleted.

### 7.16.2.3 REVIT LOCAL FILE

The Local File should be a copy of the Central File and should be named beginning with the Discipline Code, an eight-digit PID Number, a dash and a Model Type. As the Central File, once defined, the Local File name shall not change through the life of the project.

The Local File does not have the word CENTRAL appended at the end of the file name.

The filename should take the form of:

```
DPID–MT.rvt
```

<table>
<thead>
<tr>
<th>ITEM</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>D</td>
<td>Discipline Code</td>
</tr>
<tr>
<td></td>
<td>Refer to Section 7.16.2.1 - Discipline Codes</td>
</tr>
<tr>
<td>PID</td>
<td>Eight-digit PID Number</td>
</tr>
<tr>
<td>MT</td>
<td>Model Type</td>
</tr>
<tr>
<td></td>
<td>Refer to chart below</td>
</tr>
</tbody>
</table>

Model Types

<table>
<thead>
<tr>
<th>MODEL TYPE CODE</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>3D</td>
<td>3D Model</td>
</tr>
<tr>
<td>EC</td>
<td>Existent Conditions Model</td>
</tr>
<tr>
<td>PC</td>
<td>Point Cloud Model</td>
</tr>
<tr>
<td>SC</td>
<td>Site Context Model</td>
</tr>
</tbody>
</table>

As an example, the Architectural Group is saving their Revit Model as a Local File to their local drives. The file should be named as follows:

A07963000-3D.rvt
NOTE
After you save the Local File, Revit creates a folder named “YOUR FILE NAME_backup.” Neither this folder nor the files contained within it should be moved, renamed or deleted.

7.16.2.4 PLOTSHEET FILES
Plotsheet files should be generated out of the Revit Models in DWF format and should be named beginning with the Discipline Code, an eight-digit PID Number, a dash, a Drawing Type, a dash and the Sheet Number range.

The filename should take the form of:

DPID–DT–001_###.dwf

<table>
<thead>
<tr>
<th>ITEM</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>D</td>
<td>Discipline Code</td>
</tr>
<tr>
<td></td>
<td>Refer to Section 7.16.2.1 - Discipline Codes</td>
</tr>
<tr>
<td>PID</td>
<td>Eight-digit PID Number</td>
</tr>
<tr>
<td>DT</td>
<td>Drawing Type</td>
</tr>
<tr>
<td></td>
<td>Refer to Section 7.16.3 - Drawing Type Convention</td>
</tr>
<tr>
<td>001_###</td>
<td>First Sheet Number to Last Sheet Number</td>
</tr>
<tr>
<td></td>
<td>Refer to Section 7.16.4 - Sheet Number Convention</td>
</tr>
</tbody>
</table>

When using Series Numbers, either Level 1 or Level 2, as described in Section 7.16.4 - Sheet Number Convention, the DWF files should be named not only by grouping them together by Drawing Type but also by their Series Number.

Example 1
The Architectural Group is creating a set of drawings using Level 1 (without using the Series Number), which include the General drawings (1 through 7), Architectural drawings (1 through 37), and Landscape drawings (1 through 11) for a project with a PID Number of 07963000, three multi-sheet files should be created and named as follows:

A07963000-G001_G007.dwf
A07963000-A001_A037.dwf
A07963000-LS001_LS011.dwf
Example 2

The Architectural Group is creating a set of drawings using Level 1 (using the Series Number), where the Series 1 are being used to describe their plan drawings (1 through 3) and Series 4 are being used to describe their elevation drawings (1 through 7) for a project with a PID Number of 07963000, two multi-sheet files should be created and named as follows:

A07963000-A101_A103.dwf
A07963000-A401_A407.dwf

Example 3

The Architectural Group is creating a set of drawings using Level 2 (using the Series Number), where the Series 01 are being used to describe their plan drawings (1 through 5) and Series 02 are being used to describe their section drawings (1 through 3), for a project with a PID Number of 07963000, two multi-sheet files should be created and named as follows:

A07963000-A0101_A0105.dwf
A07963000-A0201_A0203.dwf

7.16.2.5 Family Files

Family files should be named beginning with the Functional Type followed by the Subtype, the Manufacturer Name and two optional User Description fields.

The filename should take the form of:

<Functional Type>-<Subtype>-<Manufacturer>-<Series/Model>-<Description1>-<Description2>.rfa

<table>
<thead>
<tr>
<th>ITEM</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Functional Type</td>
<td>Names the element that the family creates</td>
</tr>
<tr>
<td>Subtype</td>
<td>Names the part type</td>
</tr>
<tr>
<td>Manufacturer</td>
<td>Manufacturer Name or Generic Primary Characteristic or Shape</td>
</tr>
<tr>
<td>Series/Model</td>
<td>Series or Model Number</td>
</tr>
</tbody>
</table>
| Description1 / Description2 (Optional) | Brief User Description (up to 12 characters)  
The following characters should not be used as part of the description  
@ $ % ^ & < > / " : ; ? * | , ' |
When naming Family Files keep in mind the following:

- Capitalize the leading letters in each portion of the family name.
- Keep file names as short as possible because they need to display in the Type Selector.
- Do not use spaces between words in the file names. To separate words use the underscore "_" character.
- Create a Type Catalog for Family files that contain five or more types. See Section 7.16.2.6 - Type Catalog Convention.

Examples

- Window-Double_Hung-Andersen-400_Series-Archtop.rfa
- Sink-Oval-Generic-Undercounter.rfa
- Air_Handling_Unit-Vertical_Packaged-Sierra-Roof_Top.rfa
- Framing-Wood-Lumber.rfa
- Foundation-Concrete-Rectangular.rfa

7.16.2.5.1 FAMILY TYPE FILES

Types within a Family file should indicate the key differences or variations between the different Family options. Depending on the Family Component the Type names might take one of the following forms:

- <Model> or <Series Number>
- <Value> or <Capacity>
- <Width>x<Depth>x<Height>

NOTE

- Do not include the Family Name in the Type Name.
- Type Names should mirror actual usage.
- Capitalize the leading letters in each portion of the Type Name (when applicable).
- When Types are named by size, use dimensions only.
- Keep file names as short as possible because they need to display in the Type Selector.
- Do not use spaces between words in the Type Names. To separate words use the underscore "_" character.
- Create a Type Catalog for Family files that contain five or more types. See Section 7.16.2.6 - Type Catalog Convention.
Examples

- Window-Double_Hung-Andersen-400_Series-Archtop.rfa
  - WA1832
  - WA2032
  - WA2432
- Sink-Oval-Generic-Undercounter.rfa
  - Standard_Height
  - ADA_Height
- Air_Handling_Unit-Vertical_Packaged-Sierra-Roof_Top.rfa
  - 2400_CFM
  - 3000_CFM
  - 4000_CFM
- Framing-Wood-Lumber.rfa
  - 6”x8”
  - 6”x10”
  - 6”x12”
- Foundation-Concrete-Rectangular.rfa
  - 16”x32”x8”
  - 20”x36”x10”
  - 24”x40”x12”

7.16.2.6 TYPE CATALOGS FILES

Create a Type Catalog for Family files that contain five or more types or when the Family file exceeds 500 Kb of memory.

Name the Type Catalog file (.TXT) with the same name as the Family file (.RFA) that it supports.

NOTE

- If a Type Catalog is used, no predefined Types should exist in the Family file.
- Do not include the Family Name in the Type Name.
- Type Names should mirror actual usage.
- Capitalize the leading letters in each portion of the Type Name (when applicable).
- When Types are named by size, use dimensions only.
- Keep file names as short as possible because they need to display in the Type Selector.
- Do not use spaces between words in the Type names. To separate words use the underscore “_” character.
Examples

- Window-Double_Hung-Andersen-400_Series-Archtop.rfa
  Window-Double_Hung-Andersen-400_Series-Archtop.txt
- Sink-Oval-Generic-Undercounter.rfa
  Sink-Oval-Generic-Undercounter.txt
- Air_Handling_Unit-Vertical_Packaged-Sierra-Roof_Top.rfa
  Air_Handling_Unit-Vertical_Packaged-Sierra-Roof_Top.txt
- Framing-Wood-Lumber.rfa
  Framing-Wood-Lumber.txt
- Foundation-Concrete-Rectangular.rfa
  Foundation-Concrete-Rectangular.txt

7.16.2.7 MATERIALS

Materials should be named beginning with the Finish Material followed by the Manufacturer Name, the Finish Code and an optional User Description.

The filename should take the form of:

<Finish>-<Manufacturer>-<Code>-<Description>

<table>
<thead>
<tr>
<th>ITEM</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Finish</td>
<td>Finish Material</td>
</tr>
<tr>
<td>Manufacturer</td>
<td>Manufacturer Name or Generic Primary Characteristic or Shape</td>
</tr>
<tr>
<td>Finish Code</td>
<td>Finish Code or Model Number</td>
</tr>
<tr>
<td>User Description (Optional)</td>
<td>Brief description (up to 24 characters)</td>
</tr>
<tr>
<td></td>
<td>The following characters should not be used as part of the description</td>
</tr>
<tr>
<td></td>
<td>@ $ % ^ &amp; &lt; &gt; / &quot; : ; ? *</td>
</tr>
</tbody>
</table>

**NOTE**

- Capitalize the leading letters in each portion of the Material Name.
- Do not use spaces between words in the file names. To separate words use the underscore "_" character.

**Examples**

- Paint-Sherwin_Williams-SW6034-Arresting_Auburn
- Glass-Pilkington-Evergreen_3/16"-Uncoated_Insulated
7.16.2.7.1 BITMAP FILES

Bitmap files used to define Materials within Revit should match the corresponding Materials they represent and should be in .JPG format

Examples

- Paint-Sherwin_Williams-SW6034-Arresting_Auburn
  Paint-Sherwin_Williams-SW6034-Arresting_Auburn.jpg
- Glass-Pilkington-Evergreen_3/16"-Uncoated_Insulated
  Glass-Pilkington-Evergreen_3/16"-Uncoated_Insulated.jpg

7.16.2.8 AutoCAD FILES

AutoCAD files linked to the Revit Model should be named beginning with the Discipline Code, followed by the eight-digit PID Number, an optional two-digit Drawing Type and/or Sequence Number and an optional User Description. Once defined, the AutoCAD file name should not change for the life of the project.

The filename should take the form of:

```
DPID–SN/DT–Description.dwg
```

<table>
<thead>
<tr>
<th>ITEM</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>D</td>
<td>Discipline Code&lt;br&gt;Refer to Section 7.16.2.1 - Discipline Codes</td>
</tr>
<tr>
<td>PID</td>
<td>Eight-digit PID Number</td>
</tr>
<tr>
<td>DT/SN (Optional)</td>
<td>Drawing Type / Sequence Number&lt;br&gt;(Drawing Type based on PANYNJ CAD Standards / Two-digit consecutive numbers starting with 01)</td>
</tr>
<tr>
<td>Description (Optional)</td>
<td>Brief User Description&lt;br&gt;(up to 12 characters)&lt;br&gt;The following characters should not be used as part of the description @ $ % ^ &amp; &lt; &gt; / &quot; : ; ? *</td>
</tr>
</tbody>
</table>

Example 1

As an example, the Structural Group is linking three AutoCAD files into their Revit Model. The files should be named as follows:

- S07963000-01-First Floor.dwg
- S07963000-02-Second Floor.dwg
- S07963000-03-Roof.dwg
Example 2
As an example, the Structural Group is linking three AutoCAD files into their Revit Model. The files should be named as follows:

- S07963000-FP-First Floor.dwg
- S07963000-FP-Second Floor.dwg
- S07963000-FP-Roof.dwg

Example 3
As an example, the Structural Group is linking three AutoCAD files into their Revit Model. The files should be named as follows:

- S07963000-FP01-First Floor.dwg
- S07963000-FP02-Second Floor.dwg
- S07963000-FP03-Roof.dwg

NOTE
Only AutoCAD files in DWG format should be linked into the Revit BIM Model.

7.16.2.9 POINT CLOUD FILES
Point Cloud files linked to the Revit Model should be named beginning with the Discipline Code, followed by the eight-digit PID Number, a dash, an optional Sequence Number, a dash, and an optional User Description. Once defined, the Point Cloud file name should not change for the life of the project.
The filename should take the form of:

```
DPID–Description.pcg
```

<table>
<thead>
<tr>
<th>ITEM</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>D</td>
<td>Discipline Code&lt;br&gt;Refer to <a href="#">Section 7.16.2.1 - Discipline Codes</a></td>
</tr>
<tr>
<td>PID</td>
<td>Eight-digit PID Number</td>
</tr>
<tr>
<td>/SN (Optional)</td>
<td>Sequence Number&lt;br&gt;(Two-digit consecutive numbers starting with 01)</td>
</tr>
</tbody>
</table>
| Description (Optional)| Brief User Description<br>(up to 12 characters)<br>The following characters should not be used as part of the description<br>@ $ % ^ & < > / " : ; ? * | , ^
Revit will index the Raw Point Cloud File (FLS, FWS, LAS, PTG, PTS, PTX, XYB, XYZ) before insertion creating a new compressed file on the same folder but with the extension PCG. The file should be named as follows:

A06497000-Washington St. Shaft.pcg

**NOTE**

Point Cloud files can contain millions of points and therefore be extremely large in size. Depending on the project needs, the level of accuracy or point density should be determined beforehand to avoid having unnecessary information.

7.16.2.9.1 QUICKTIME FILES

QuickTime files delivered with the Point Cloud file should be named beginning with the Discipline Code, followed by the eight-digit PID Number, a two-digit Sequence Number and an optional User Description. The filename should take the form of:

DPID-SN–Description.mov

<table>
<thead>
<tr>
<th>ITEM</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>D</td>
<td>Discipline Code</td>
</tr>
<tr>
<td>PID</td>
<td>Eight-digit PID Number</td>
</tr>
<tr>
<td>SN</td>
<td>Sequence Number (Two-digit consecutive numbers starting with 01)</td>
</tr>
<tr>
<td>Description</td>
<td>Brief User Description (up to 12 characters)</td>
</tr>
<tr>
<td>(Optional)</td>
<td>The following characters should not be used as part of the description</td>
</tr>
</tbody>
</table>

@ $ % & < > / \ ` : ; ? ^ | , '
7.16.2.10 Image Files

Image files linked to or created from the Revit Model should be named beginning with the Discipline Code, followed by the eight-digit PID Number, an optional Sequence Number and an optional User Description. If Image files are referenced into the Revit Model, once defined, the Image file name should not change through the life of the project.

The filename should take the form of:

```
DPID–SN–Description.jpg
```

<table>
<thead>
<tr>
<th>ITEM</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>D</td>
<td>Discipline Code</td>
</tr>
<tr>
<td>PID</td>
<td>Eight-digit PID Number</td>
</tr>
<tr>
<td>SN (Optional)</td>
<td>Sequence Number (Two-digit consecutive numbers starting with 01)</td>
</tr>
<tr>
<td>Description (Optional)</td>
<td>Brief User Description (up to 12 characters)</td>
</tr>
<tr>
<td></td>
<td>The following characters should not be used as part of the description</td>
</tr>
<tr>
<td></td>
<td>@ $ % ^ &amp; &lt; &gt; / \ &quot; : ; ? *</td>
</tr>
</tbody>
</table>

As an example, the Architectural Group is linking two image files into their Revit BIM Model. The files should be named as follows:

```
A07963000-01-Signage A1.jpg
A07963000-02-Signage A2.jpg
```

**NOTE**

Only Image files in JPG format should be linked into, or created from, the Revit Model.

7.16.2.11 Animation Files

Animation files created from the Revit Model should be named beginning with the Discipline Code, followed by the eight-digit PID Number, an optional Sequence Number and an optional User Description. The filename should take the form of:

```
DPID–SN–Description.avi
```
As an example, the Architectural Group is creating an animation file out of their Revit Model. The file should be named as follows:

A07963000-01-Walkthrough Exterior.avi

NOTE
Only Image files in AVI format should be created from the Revit Model.

7.16.2.12 MICROSOFT OFFICE FILES
Microsoft Office files created from the Revit Model should be named beginning with the Discipline Code, followed by the eight-digit PID Number, an optional Sequence Number and an optional User Description.

The filename should take the form of:

DPID–SN–Description.format

As an example, the Mechanical Group is exporting two schedules out of their Revit Model into Excel. The files should be named as follows:

M07963000-01-Equipment List.xls
M07963000-02-Loads.xls
NOTE

Only Microsoft Office Word, Excel, Hyper Text Markup Language and Text files, in DOC, XLS, HTML and TXT format, respectively, shall be created from the Revit Model.

7.16.2.13 3D DWF FILES

3D DWF Files created from the Revit Model should be named beginning with the Discipline Code, followed by the 8-digit PID Number and the letters 3D.

The filename should take the form of:

![DWF Icon]

DPID–3D.dwf

<table>
<thead>
<tr>
<th>ITEM</th>
<th>DESCRIPTION</th>
</tr>
</thead>
</table>
| D    | Discipline Code  
      | Refer to Section 7.16.2.1 - Discipline Codes |
| PID  | Eight-digit PID Number |
| 3D   | 3D Model  
      | (this may remain as is) |

As an example, the Electrical Group is exporting their Revit BIM Model as a 3D DWF. The file should be named as follows:

E07963000-3D.dwf

NOTE

The 3D DWF files will be used for cost estimate, quantity takeoff, and visualization purposes.
7.16.2.14 NAVISWORKS CACHE FILES

NavisWorks Cache files created from the Revit Model should be named beginning with the Discipline Code, followed by the eight-digit PID Number and the characters “3D”.

The filename should take the form of:

\[ DPID–3D.nwc \]

<table>
<thead>
<tr>
<th>ITEM</th>
<th>DESCRIPTION</th>
</tr>
</thead>
</table>
| D    | Discipline Code  
|      | Refer to Section 7.16.2.1 - Discipline Codes |
| PID  | 8-digit PID Number |
| 3D   | 3D Model  
|      | (this may remain as is) |

As an example, the Architectural Group is exporting their Revit Model as a NavisWorks Cache file. The file should be named as follows:

A07963000-3D.nwc

NOTE

NavisWorks Cache Files in NWC format stores the project model geometry.

7.16.2.15 NAVISWORKS MASTER FILES

NavisWorks Master files created by assembling the Discipline specific NavisWorks Cache files from NavisWorks Manage should be named beginning with the eight-digit PID Number and the characters “3D”.

The filename should take the form of:

\[ PID–3D.nwf \]

<table>
<thead>
<tr>
<th>ITEM</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>PID</td>
<td>Eight-digit PID Number</td>
</tr>
</tbody>
</table>
| 3D   | 3D Model  
|      | (this may remain as is) |
As an example, the LE/A has assembled all Discipline’s NavisWorks Cache files into a NavisWorks Master file. The file should be named as follows:

07963000-3D.nwf

NOTE
The LE/A is responsible for assembling all discipline’s NavisWorks Cache files into a NavisWorks Master file.

NavisWorks Master files in NWF format stores the links to the appended NWC files, but no project model geometry.

7.16.2.16 ANALYSIS FILES
Multiple applications will be used to perform different types of analysis within the different Revit Models.
Analysis files should be named beginning with the Discipline Code, followed by the eight-digit PID Number, an optional Sequence Number and an optional User Description.
The filename should take the form of:

DPID–SN–Description.format

<table>
<thead>
<tr>
<th>ITEM</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>D</td>
<td>Discipline Code</td>
</tr>
<tr>
<td></td>
<td>Refer to Section 7.16.2.1 - Discipline Codes</td>
</tr>
<tr>
<td>PID</td>
<td>Eight-digit PID Number</td>
</tr>
<tr>
<td>SN (Optional)</td>
<td>Sequence Number (Two-digit consecutive numbers starting with 01)</td>
</tr>
<tr>
<td>Description (Optional)</td>
<td>Brief User Description (up to 12 characters)</td>
</tr>
<tr>
<td></td>
<td>The following characters should not be used as part of the description</td>
</tr>
<tr>
<td></td>
<td>@ $ % ^ &amp; &lt; &gt; / &quot; : ; ? *</td>
</tr>
</tbody>
</table>

NOTE
Regardless of the application used to perform the analysis within the Revit-based applications, the results of such applications shall be brought back into the Revit 3D Model. This will ensure that the Revit 3D Model has the latest and most current information.
7.16.3 Drawing Type Naming Convention

Drawing Types are categories used to organize the Contract Set of Drawings and refer to either one or two letters that appear before the Sheet Number in the lower right hand corner of each sheet.

The image to the right shows this concept, taking as an example a Structural Drawing.

The following table shows the Drawing Types Convention to be used on BIM Projects.

<table>
<thead>
<tr>
<th>ALL DISCIPLINES</th>
</tr>
</thead>
<tbody>
<tr>
<td>G</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ARCHITECTURAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
</tr>
<tr>
<td>CS</td>
</tr>
<tr>
<td>LS</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CIVIL</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
</tr>
<tr>
<td>CS</td>
</tr>
<tr>
<td>MT</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ELECTRICAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>CP</td>
</tr>
<tr>
<td>E</td>
</tr>
<tr>
<td>ES</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ENVIRONMENTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>GEOTECHNICAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>GT</td>
</tr>
</tbody>
</table>
### 7.16.4 Sheet Number Naming Convention

The Sheet Number Convention refers to the numbers that appear right after the Drawing Type and are used to organize the Contract Drawings in order.

The image to the right shows this concept, taking as an example a Structural Drawing.

The Port Authority of NY & NJ BIM Standard adopts two types of Sheet Number Conventions to provide flexibility when numbering the Contract Set of Drawings:

**Level I** Based on the Drawing Type (Refer to Section 7.16.3 - Drawing Type Convention) plus three digits.

**Level II** Based on the Drawing Type (Refer to Section 7.16.3 - Drawing Type Convention) plus four digits.

At the beginning of each project, the LE/A will determine whether a Level I or a Level II format will be used for all Disciplines of the project. A description of what each number in a series represents will be defined by each Discipline's Task Leader. These two formats cannot co-exist on the same project.
7.16.4.1 LEVEL I

For projects in which series are not used or with nine or less series, the identification format should include a one-letter or two-letter Drawing Type followed by a one-digit Series Number, followed by a two-digit Sheet Counter Number.

Use Level I Sheet Number Convention for projects that do not require detailed sheet numbering.

The Sheet Number should take the form of:

Without using Series

- Use a “0” as the Series Number for projects where the number of drawings does not exceed 999 sheets.
- All drawings should be consecutive starting from 001

Using Series

- Use “1” through “9” as the Series Number for projects where a more detailed breakdown is required and the number of drawings per series does exceed 99 sheets.
- The Sheet Counter Number should be a two-digit number and shall always start with drawing “01” when series are used.

The images below show this concept for both options within Level I. The image to the left shows an example for a project without using Series and the image to the right shows an example for a project in which Series “1” is being used.

7.16.4.2 LEVEL II

For projects with more than nine series, the identification format should include a one-letter or two-letter Drawing Type followed by a two-digit Series Number, followed by a two-digit Sheet Counter Number.

Use Level II Sheet Number Convention for complex projects for which Level I Series are not sufficient.

The Sheet Number should take the form of:
- Use “01” through “99” as the Series Number for projects where a more detailed breakdown is required and the number of drawings per series does exceed 99 sheets.
- The Series Number shall be a two-digit number and shall always start with “01.”
- The Sheet Counter Number should be a two-digit number and shall always start with drawing “01.”

The image below shows this concept for Level II taking as an example a project in which Series “01” is being used.
7.16.5 WORKSETS NAMING CONVENTION

When naming Worksets, The Port Authority of NY & NJ BIM Standard adopts two different approaches based on the size and complexity of the project.

Each discipline shall determine which of the two approaches better fits their design needs. The Worksets Naming Convention is discipline specific, not project specific; therefore, these two formats will be able to co-exist within the same project.

The image to the right shows the default Worksets supported by both approaches, which are:

- Default
- Linked Files
- Shared Levels and Grids

7.16.5.1 WORKSETS BASED ON LOCATION

Worksets based on location should be named according to where the elements are spatially located within the project.

The Workset should take the form of:

<Location>-<Description>

<table>
<thead>
<tr>
<th>ITEM</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location</td>
<td>Location within the project.</td>
</tr>
<tr>
<td>Description</td>
<td>Brief User Description (up to 12 characters)</td>
</tr>
<tr>
<td></td>
<td>The following characters should not be used as part of the description</td>
</tr>
<tr>
<td></td>
<td>@ $ % ^ &amp; &lt; &gt; / \ &quot; &quot; ; ? *</td>
</tr>
</tbody>
</table>

The following characters should not be used as part of the description:

@ $ % ^ & < > / \ " " ; ? * | ,
NOTE

- This approach is most suitable for small-to-medium size projects in which a small team is part of the project.
- Capitalize the leading letters in each portion of the Workset name.
- Keep file names as short as possible.
- Do not use spaces between words in the file names. To separate words, use the underscore “_” character.

The image to the right shows the Worksets for a project done by the Architectural Group in which they are proposing 4 Worksets named as follows:

- North East - Head House
- North West - Head House
- South East - Head House
- South West - Head House
7.16.5.2 WORKSETS BASED ON ELEMENT\SYSTEM

Workset based on Element should be named according to what each Element and Component represent within the project.

The Workset should take the form of:

<Element\System>-<Component>

<table>
<thead>
<tr>
<th>ITEM</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Element\System</td>
<td>Elements within the project. Refer to chart below.</td>
</tr>
<tr>
<td>Component (Optional)</td>
<td>Components within the project. Refer to chart below.</td>
</tr>
</tbody>
</table>

NOTE

- This approach is most suitable for medium-to-large size projects in which a large team is part of the project.
- Capitalize the leading letters in each portion of the Workset name.
- Keep file names as short as possible.
- Do not use spaces between words in the file names. To separate words, use the underscore “_” character.

7.16.5.2.1 ARCHITECTURAL DISCIPLINE

<table>
<thead>
<tr>
<th>ELEMENT\SYSTEM TYPE</th>
<th>COMPONENT TYPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Building Exterior</td>
<td>Entourage</td>
</tr>
<tr>
<td></td>
<td>Landscape</td>
</tr>
<tr>
<td></td>
<td>Roof</td>
</tr>
<tr>
<td></td>
<td>Walls</td>
</tr>
<tr>
<td>Building Interior</td>
<td>Ceilings</td>
</tr>
<tr>
<td></td>
<td>Equipment</td>
</tr>
<tr>
<td></td>
<td>Fixtures</td>
</tr>
<tr>
<td></td>
<td>Furniture</td>
</tr>
<tr>
<td></td>
<td>Lighting</td>
</tr>
<tr>
<td></td>
<td>Slabs</td>
</tr>
<tr>
<td></td>
<td>Vertical Circulation</td>
</tr>
<tr>
<td></td>
<td>Walls</td>
</tr>
</tbody>
</table>
7.16.5.2.2 **ELECTRICAL DISCIPLINE**

<table>
<thead>
<tr>
<th>ELEMENT/SYSTEM TYPE</th>
<th>COMPONENT TYPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corrosion Protection</td>
<td>Cathodic</td>
</tr>
<tr>
<td>Electrical</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Auxiliary Power</td>
</tr>
<tr>
<td></td>
<td>Grounding</td>
</tr>
<tr>
<td></td>
<td>Lighting</td>
</tr>
<tr>
<td></td>
<td>Lightning</td>
</tr>
<tr>
<td></td>
<td>Power</td>
</tr>
<tr>
<td>Electronics</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Access Control</td>
</tr>
<tr>
<td></td>
<td>Fire Alarm</td>
</tr>
<tr>
<td></td>
<td>Radio</td>
</tr>
<tr>
<td></td>
<td>Network</td>
</tr>
<tr>
<td></td>
<td>Public Address</td>
</tr>
<tr>
<td></td>
<td>Security</td>
</tr>
<tr>
<td></td>
<td>Telecommunications</td>
</tr>
</tbody>
</table>

7.16.5.2.3 **MECHANICAL DISCIPLINE**

<table>
<thead>
<tr>
<th>ELEMENT/SYSTEM TYPE</th>
<th>COMPONENT TYPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fire Protection</td>
<td>Foam</td>
</tr>
<tr>
<td></td>
<td>FM200</td>
</tr>
<tr>
<td></td>
<td>Sprinkler</td>
</tr>
<tr>
<td>HVAC</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Chill Water</td>
</tr>
<tr>
<td></td>
<td>Controls</td>
</tr>
<tr>
<td></td>
<td>Ductwork</td>
</tr>
<tr>
<td></td>
<td>Equipment</td>
</tr>
<tr>
<td></td>
<td>Hot Water</td>
</tr>
<tr>
<td></td>
<td>Steam</td>
</tr>
<tr>
<td>Plumbing</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Compress Air</td>
</tr>
<tr>
<td></td>
<td>Domestic Cold Water</td>
</tr>
<tr>
<td></td>
<td>Domestic Hot Water</td>
</tr>
<tr>
<td></td>
<td>Domestic Hot Water Return</td>
</tr>
<tr>
<td></td>
<td>Fixtures</td>
</tr>
<tr>
<td></td>
<td>Natural Gas</td>
</tr>
<tr>
<td></td>
<td>Sanitary Sewer</td>
</tr>
<tr>
<td></td>
<td>Sanitary Ventilation</td>
</tr>
<tr>
<td></td>
<td>Storm</td>
</tr>
<tr>
<td>Vertical Circulation</td>
<td>Baggage Handling</td>
</tr>
</tbody>
</table>
7.16.5.2.4 STRUCTURAL DISCIPLINE

<table>
<thead>
<tr>
<th>ELEMENT\SYSTEM TYPE</th>
<th>COMPONENT TYPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Columns</td>
<td>Concrete</td>
</tr>
<tr>
<td></td>
<td>Steel</td>
</tr>
<tr>
<td></td>
<td>Wood</td>
</tr>
<tr>
<td>Foundation</td>
<td>Concrete</td>
</tr>
<tr>
<td></td>
<td>Steel</td>
</tr>
<tr>
<td>Framing</td>
<td>Concrete</td>
</tr>
<tr>
<td></td>
<td>Steel</td>
</tr>
<tr>
<td></td>
<td>Wood</td>
</tr>
<tr>
<td>Slabs</td>
<td>Concrete</td>
</tr>
<tr>
<td></td>
<td>Steel</td>
</tr>
<tr>
<td></td>
<td>Wood</td>
</tr>
</tbody>
</table>

The image to the right shows the Worksets for a project done by the Structural Group in which they are proposing 2 Worksets named as follows:

- Columns-Concrete
- Columns-Steel
7.16.6 Phasing Naming Convention

Phases within the Project shall be named beginning with the word “Phase”, a space and a Roman Numeral.

The Phases should take the form of:

Phase RN

<table>
<thead>
<tr>
<th>ITEM</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phase</td>
<td>This shall stay as is</td>
</tr>
<tr>
<td>RN</td>
<td>Roman Number</td>
</tr>
<tr>
<td></td>
<td>(Phases should be consecutive numbers starting with I)</td>
</tr>
</tbody>
</table>

At the beginning of each project, the LE/A will determine how many Phases the Project might have. All other Disciplines are required to recreate and match those Phases on their Revit Models.

As an example, if the Electrical Group is creating two Phases on a Project, the Phases should be named as follows:

- Phase I
- Phase II
- Phase III

NOTE

At the beginning of each project, the LE/A will determine how many Phases the project might have so each Discipline’s Task Leader can duplicate and map them on their own Revit Models.
7.16.7 LEVELS NAMING CONVENTION

Levels should be named beginning with the Discipline Code, a dash and the word “Level” followed by the Level Number.

The Levels should take the form of:

D - Level LN

<table>
<thead>
<tr>
<th>ITEM</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>D</td>
<td>Discipline Code</td>
</tr>
<tr>
<td></td>
<td>Refer to Section 7.16.2.1 - Discipline Codes</td>
</tr>
<tr>
<td>Level</td>
<td>This shall stay as is</td>
</tr>
<tr>
<td>LN</td>
<td>Datum Elevation or Level Name</td>
</tr>
</tbody>
</table>

When naming Levels, The Port Authority of NY & NJ BIM Standard adopts two different approaches based either on the Datum Elevation (NAD83-based) or the Level Name.

At the beginning of each project, the LE/A will determine whether the Datum Elevation or the Level Name approach will be used for all Disciplines of the project. These two approaches cannot co-exist on the same project.

Example 1

The Architectural Group is the Lead Discipline on a project where they decided to use the Datum Elevation approach. The Levels should be named as follows:

- A - Level 342’
- A - Level 356’ 6”
- A - Level 363’

Example 2

The Structural Group is the Lead Discipline on a project where they decided to use the Level Name approach. The Levels should be named as follows:

- S - Level 1
- S - Level 2
- S - Level 3

NOTE

The CAD/BIM Support Group is responsible for creating, maintaining and managing the different Discipline Levels. Refer to Section 7.17.5 - Levels and Plan Views for proper use.
7.16.8 VIEWS NAMING CONVENTION

Views within the Project Browser shall be named beginning with the View Type Code, followed by an optional Level/Sequence Number and an optional User Description.

The Views should take the form of:

`<View>-<Level/Sequence>-<Description>`

<table>
<thead>
<tr>
<th>ITEM</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>View</td>
<td>View Type Code</td>
</tr>
<tr>
<td></td>
<td>Refer to charts below</td>
</tr>
<tr>
<td>Level/Sequence</td>
<td>Level Number or Sequence Number (Two-digit number)</td>
</tr>
<tr>
<td>(Optional)</td>
<td></td>
</tr>
<tr>
<td>Description</td>
<td>Brief User Description (up to 12 characters)</td>
</tr>
<tr>
<td>(Optional)</td>
<td>The following characters should not be used as part of the description @ $ % ^ &amp; &lt; &gt; / \ : ; ? *</td>
</tr>
</tbody>
</table>

7.16.8.1 ALL DISCIPLINES

<table>
<thead>
<tr>
<th>ALL DISCIPLINES</th>
<th>VIEW TYPE CODE</th>
<th>VIEW TYPE NAME</th>
</tr>
</thead>
<tbody>
<tr>
<td>3D</td>
<td>3D Views</td>
<td></td>
</tr>
<tr>
<td>AP</td>
<td>Area Plans</td>
<td></td>
</tr>
<tr>
<td>BS</td>
<td>Building Sections</td>
<td></td>
</tr>
<tr>
<td>CP</td>
<td>Ceiling Plans</td>
<td></td>
</tr>
<tr>
<td>CS</td>
<td>Construction Staging or Construction Sequence</td>
<td></td>
</tr>
<tr>
<td>DL</td>
<td>Drawing List</td>
<td></td>
</tr>
<tr>
<td>DR</td>
<td>Drafting Views</td>
<td></td>
</tr>
<tr>
<td>DS</td>
<td>Detail Sections</td>
<td></td>
</tr>
<tr>
<td>DV</td>
<td>Detail Views</td>
<td></td>
</tr>
<tr>
<td>EE</td>
<td>Exterior Elevations</td>
<td></td>
</tr>
<tr>
<td>ES</td>
<td>Engineering Estimates</td>
<td></td>
</tr>
<tr>
<td>QP</td>
<td>Equipment Plan</td>
<td></td>
</tr>
<tr>
<td>FE</td>
<td>Framing Elevation</td>
<td></td>
</tr>
<tr>
<td>FP</td>
<td>Floor Plans</td>
<td></td>
</tr>
<tr>
<td>IE</td>
<td>Interior Elevations</td>
<td></td>
</tr>
<tr>
<td>KL</td>
<td>Keynote Legend</td>
<td></td>
</tr>
<tr>
<td>LG</td>
<td>Legends</td>
<td></td>
</tr>
<tr>
<td>LP</td>
<td>Location Plan</td>
<td></td>
</tr>
<tr>
<td>ON</td>
<td>One Line Diagram Plan</td>
<td></td>
</tr>
</tbody>
</table>
### 7.16.8.2 ARCHITECTURAL

<table>
<thead>
<tr>
<th>VIEW TYPE CODE</th>
<th>VIEW TYPE NAME</th>
</tr>
</thead>
<tbody>
<tr>
<td>FU</td>
<td>Furniture Plan</td>
</tr>
<tr>
<td>SP</td>
<td>Signage Plan</td>
</tr>
</tbody>
</table>

### 7.16.8.3 ELECTRICAL

<table>
<thead>
<tr>
<th>VIEW TYPE CODE</th>
<th>VIEW TYPE NAME</th>
</tr>
</thead>
<tbody>
<tr>
<td>AX</td>
<td>Auxiliary Power Plan</td>
</tr>
<tr>
<td>AC</td>
<td>Access Control Plan</td>
</tr>
<tr>
<td>CM</td>
<td>Communication Plan</td>
</tr>
<tr>
<td>CO</td>
<td>Corrosion Protection Plan</td>
</tr>
<tr>
<td>FA</td>
<td>Fire Alarm Plan</td>
</tr>
<tr>
<td>GP</td>
<td>Grounding Plan</td>
</tr>
<tr>
<td>LI</td>
<td>Lighting Plan</td>
</tr>
<tr>
<td>LT</td>
<td>Lightning Protection Plan</td>
</tr>
<tr>
<td>NS</td>
<td>Network System Plan</td>
</tr>
<tr>
<td>PA</td>
<td>Public Address System Plan</td>
</tr>
<tr>
<td>PP</td>
<td>Power Plan</td>
</tr>
<tr>
<td>RS</td>
<td>Radio System Plan</td>
</tr>
<tr>
<td>SS</td>
<td>Security System Plan</td>
</tr>
<tr>
<td>TC</td>
<td>Telecommunication Plan</td>
</tr>
<tr>
<td>WD</td>
<td>Wiring Diagram Plan</td>
</tr>
</tbody>
</table>
### MECHANICAL

<table>
<thead>
<tr>
<th>VIEW TYPE CODE</th>
<th>VIEW TYPE NAME</th>
</tr>
</thead>
<tbody>
<tr>
<td>CD</td>
<td>Communication System Plan</td>
</tr>
<tr>
<td>CN</td>
<td>Control Plan</td>
</tr>
<tr>
<td>CC</td>
<td>Control Schematic Plan</td>
</tr>
<tr>
<td>FP</td>
<td>Fire Protection Plan</td>
</tr>
<tr>
<td>FS</td>
<td>Fire Suppression Plan</td>
</tr>
<tr>
<td>HP</td>
<td>HVAC Ductwork Plan</td>
</tr>
<tr>
<td>MD</td>
<td>Machine Design Plan</td>
</tr>
<tr>
<td>MH</td>
<td>Material Handling Plan</td>
</tr>
<tr>
<td>PI</td>
<td>Piping Plan</td>
</tr>
<tr>
<td>PL</td>
<td>Plumbing Plan</td>
</tr>
<tr>
<td>SK</td>
<td>Sprinkler Plan</td>
</tr>
<tr>
<td>SI</td>
<td>Specialty Piping Plan</td>
</tr>
</tbody>
</table>

### STRUCTURAL

<table>
<thead>
<tr>
<th>VIEW TYPE CODE</th>
<th>VIEW TYPE NAME</th>
</tr>
</thead>
<tbody>
<tr>
<td>CF</td>
<td>Concrete Framing Plan</td>
</tr>
<tr>
<td>DP</td>
<td>Decking Plan</td>
</tr>
<tr>
<td>FD</td>
<td>Foundation Plan</td>
</tr>
<tr>
<td>FR</td>
<td>Framing Plan</td>
</tr>
<tr>
<td>GC</td>
<td>Graphical Column Schedule</td>
</tr>
<tr>
<td>JL</td>
<td>Joist Girder Load Diagram</td>
</tr>
<tr>
<td>PP</td>
<td>Precast Panel Plan</td>
</tr>
<tr>
<td>RE</td>
<td>Reinforcement Plan</td>
</tr>
<tr>
<td>SF</td>
<td>Stair Framing Plan</td>
</tr>
<tr>
<td>ST</td>
<td>Steel Framing Plan</td>
</tr>
<tr>
<td>TB</td>
<td>Truss Bracing Plan</td>
</tr>
<tr>
<td>XB</td>
<td>X Bracing Plan</td>
</tr>
<tr>
<td>WG</td>
<td>Wind Girt Plan</td>
</tr>
</tbody>
</table>
The image to the right shows the Floor Plans Views within the Project Browser organized by its View Type Code followed by a Sequence Number and a Description.

Example 1
Architectural Floor Plans should be named as follows if the optional Level/Sequence Number is not used:

- FP-First Floor
- FP-Second Floor
- FP-Third Floor

Example 2
Mechanical Ceiling Plans should be named as follows if the optional Level/Sequence Number is used but the optional Description is not used:

- CP03
- CP04
- CP05

Example 3
Structural Analytical Plans should be named as follows if both the optional Level/Sequence Number is used and the optional Description is used:

- FP07-Level 260
- FP08-Level 275
- FP09-Level 290

There are specific steps required to be followed when creating Views. Refer to Section 7.17.5 - Levels and Plan Views and Section 7.17.6 - Views.
7.17 **BEST PRACTICES AND PROCEDURES**

The following sections describe application-specific best practices as well as procedures used on all Port Authority of NY & NJ BIM projects.

### 7.17.1 GENERAL GUIDELINE

The following characteristics of a Revit Model can affect performance:

- Complex Geometry
- Multiple Parametric Relations
- Multiple Constraints
- Linked Files

#### 7.17.1.1 RESTARTING REVIT

The Revit-based applications maintain model data in memory and hard disk caches to increase performance against repeated data access. Revit platform performance may benefit from a workstation restart once or twice a day, and especially before triggering the following memory-intensive tasks:

- Printing
- Rendering
- Exporting

#### 7.17.1.2 COMPACTING CENTRAL AND LOCAL FILES

Compacting the Central and Local files reduces file sizes when saving Workset-enabled files. During a normal save, Revit-based applications only write new and changed elements to the existing files. This can cause files to become large, but it increases the speed of the save operation. The compacting process rewrites the entire file and removes obsolete parts to save space. Because it takes more time than a normal save, use the compact option when the workflow can be interrupted.

#### 7.17.1.3 DESIGN OPTIONS

Even though this document does not mandate any Naming Conventions when Design Options are used, the Option Set Names and the Option Names should be named after their location and scheme respectively so they can be easily identified by other team members.

- Preserve Design Options only as long as they are useful to the project. Even though options may not be active and visible, when changes are made within the main model all Design Options will update to maintain the model’s consistency.
- Consider whether options should be preserved long-term in separate models that can be linked as needed.
7.17.1.4 AUTOCAD FILES
- Minimize the number of linked or imported DWG files.
- Only link essential DWG files into necessary views.
- Avoid exploding the geometry imported from DWG files. The exploding operation within a Revit-based application can change a DWG from a single-managed element to hundreds or thousands of additional elements depending on the number of entities in the imported DWG.

7.17.1.5 LINKING FILES
- Unload links of all types if not used.
- Temporarily unload links if not needed in the view and reload them as required to limit memory resources necessary to open a project file.

7.17.1.6 VIEWS
- Use “Wireframe” or “Shading” display modes when working in linked file environment. “Wireframe” and “Shading” modes can be three times faster than “Hidden Line” or “Shading with Edges” modes.
- Zoom in to speed up drawing and snapping.
- Clear the “Snap to Remote Objects” setting in the snap dialog if you have a very dense view and snap lines appear to be shooting off in all directions.
- Close unnecessary windows.
- Turn off shadows in views where they are unnecessary.

7.17.1.7 MODELING
- Until component types are determined, use the generic version of elements such as walls, doors, windows, slabs and roofs, which incorporate less geometry.
- Break up models when they get to over 250MB.
- Regularly review and fix warnings by going to the MODIFY Contextual Tab and clicking on the Warnings option located under the INQUIRY Panel.

7.17.1.8 USERS
- Break up the Revit Model when more than 7 people are accessing the file at the same time.

7.17.1.9 WORKSTATIONS
- Try to have all users utilizing the same Operating System.
- Install the latest version of the approved Video Drives.
7.17.1.10 SAVING

- Before closing a file, keep only a simple Drafting View open to accelerate saving and subsequent opening of the file.
- It is recommended that 3D views should be closed when saving to Central, since the Revit-based applications will regenerate this complex view as part of the save process.
- Synchronize with Central several times a day.
- Reload Latest several times a day.
- Relinquish your Workset(s) at the end of the day.

7.17.1.11 THIRD-PARTY APPLICATIONS

The Port Authority of NY & NJ recognizes that there are multiple third-party applications currently available on the market that are able to run simulations and/or analysis within the Revit-based applications.

However, regardless of the software used to run simulations and/or analysis within the Revit-based applications, the results must be brought back into the Revit 3D Model. This will ensure that the Revit 3D Model has the latest and most current information.

7.17.2 PROJECT TEMPLATES

As described in Section 7.15 - Templates, Project Templates include predefined settings for a project, such as Project Parameters, Project Browser, Unit Settings, Object Styles, Line Patterns, Line & Dimension Styles and Print Settings, among others which should be used on The Port Authority of NY & NJ BIM Projects.

7.17.2.1 USING THE PA TEMPLATES

All Revit projects must be created using one of the templates provided with the BIM Standard as described in Section 7.15 - Templates.

7.17.2.2 CREATING THE CENTRAL AND LOCAL FILES

The CAD/BIM Support Group is responsible for setting up each Discipline-specific project on the BIM Server (Central File) as well as creating each user’s Local File. These files will include:

- Predefined Coordinate System
- Initial Worksets Configuration
- Project Browser Setup
7.17.3 PROJECT BROWSER

A customized Revit Project Browser has been included within the different Discipline Templates, as described in Section 7.17.2 - Project Templates, in which Views and Sheets within the Project Browser will be grouped based on the PA - View Classification as follows:

<table>
<thead>
<tr>
<th>PA - VIEW CLASSIFICATION</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Design Views</td>
<td>Views intended to be included in the Contract Set.</td>
</tr>
<tr>
<td>Export Views</td>
<td>Views intended to be exported to Third Party Applications.</td>
</tr>
<tr>
<td>Presentation Views</td>
<td>Views intended for presentation purposes only to be included in the Stage I - Report Book.</td>
</tr>
<tr>
<td>Schemes Views</td>
<td>Views including Design Options. Once a Scheme View has been approved, it should be moved to the Design Views Category.</td>
</tr>
<tr>
<td>System Views</td>
<td>Views intended to maintain the coordination across disciplines. (Views within this Category are managed by the CAD/BIM Support Group)</td>
</tr>
<tr>
<td>Working Views</td>
<td>These types of Views are for working purposes only and not intended to be included in the Contract Set.</td>
</tr>
</tbody>
</table>

Views will need to be manually associated to their corresponding Category by going to the Properties Panel of that particular View and typing the category name right next to the PA - View Classification Parameter located under the Graphics Group.
7.17.3.1 SYSTEM VIEW CLASSIFICATION

System Views are intended to be the Views that maintain the coordination across the different Discipline Revit Models as well as for coordination purposes only. These types of Views include Floor Plans, Ceiling Plans, 3D Views and Elevations.

System Views are created, maintained and managed by the CAD/BIM Support Group.

As an example, the Structural Group is the Lead Discipline on a Project that has 3 Levels, named Level 230’, Level 242’ and Level 254’. The System Views should be named as follows:

Floor Plans
- Level 230’
- Level 242’
- Level 254’

Ceiling Plans
- Level 230’
- Level 242’
- Level 254’

NOTE

Floor Plans and/or Reflected Ceiling Plans should be created from the System Views and moved to the appropriated category. Refer to Section 7.17.5 - Levels and Plan Views for proper use.
7.17.3.2 ARCHITECTURAL & STRUCTURAL VIEW CLASSIFICATION

The Architectural and Structural Disciplines within the A\E Design Division will organize their Views within the Project Browser based on the following structure:

- PA - View Classification
- Family and Type
- View Name

The image to the left shows the PA - Project Browser for Views, of either an Architectural or a Structural project.

7.17.3.3 ELECTRICAL AND MECHANICAL VIEW CLASSIFICATION

The Electrical and Mechanical Disciplines within the A\E Design Division will organize their Views within the Project Browser based on the following structure:

- Sub-Discipline
- PA - View Classification
- Family and Type
- View Name
The Sub-Discipline Category is required due to the fact that different sub-groups exist within the Electrical and Mechanical Disciplines.

### SUB-DISCIPLINE VIEW CLASSIFICATION

<table>
<thead>
<tr>
<th>ELECTRICAL</th>
<th>MECHANICAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corrosion Protection</td>
<td>Fire Protection</td>
</tr>
<tr>
<td>Electrical</td>
<td>HVAC</td>
</tr>
<tr>
<td>Electronics</td>
<td>Plumbing</td>
</tr>
</tbody>
</table>

The image to the left shows the PA - Project Browser for Views, of either an Electrical or a Mechanical project.
7.17.3.4 SHEETS VIEW CLASSIFICATION (ALL DISCIPLINES)

All Disciplines within the A/E Design Division will organize their Sheets within the Project Browser based on the following structure:

- PA - View Classification
- Sheet Number

The image to the left shows the PA - Project Browser for Sheets, of any of the Disciplines.

7.17.4 VIEW TEMPLATES & FILTERS

View Templates are a collection of View Properties, such as the Discipline, the View Scale, the Detail Level, and Overrides to Model and Annotation Objects that are common for a View Type, such as a 3D View, a Plan View or an Elevation View.

View Templates have been provided within the different Discipline Templates in Black & White as well as in Color. Black & White View Templates are intended for Design, Export, Scheme and System Views while Color View Templates are intended to be used only on Working and Presentation Views.

NOTE

View Templates have been associated with their respective Project Browser Category, so when applying a View Template to a specific View this will automatically move to the right Category.

To apply a View Template to a View, go to the VIEW Ribbon and under the GRAPHICS Panel click on the View Templates Pull Down Menu and select the Apply Template to Current View Tool.

Filters provide additional control for View Templates by overriding the graphic display and controlling the visibility of elements that share common properties in a view.
Filters are designed to apply a Color, Line Weight, Line Pattern, Fill Color and Fill Pattern to objects based on specific characteristics.

Categories in Revit tend to be very general and do not distinguish between similar objects made of different material or that have different purposes. For example, Revit doesn’t graphically distinguish between a pipe used for domestic cold water and one used for liquid refrigerant without the use of Filters. Therefore, Filters are being provided within the different Discipline Templates to solve this issue only for the Electrical and Mechanical Disciplines.

The use of Filters requires each element to be associated to their correspondent Search Parameter based on the following Table:

<table>
<thead>
<tr>
<th>FILTERS SEARCH PARAMETERS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ELECTRICAL</strong></td>
</tr>
<tr>
<td>Electrical Filter</td>
</tr>
</tbody>
</table>

Filters are case-sensitive, that means that the Search Parameter for both the Electrical and Mechanical Filters need to match exactly with the Tables provided in Section 7.17.4.2.1 - Electrical Filters and Section 7.17.4.3.1 - Mechanical Filters.

To apply a Filter to an Object, select the Object and within the Properties Panel look for either the Electrical Filter or the Mechanical Filter Parameter under the Identity Data Group.

7.17.4.1  ARCHITECTURAL VIEW TEMPLATES

- PA - Architectural 2D
- PA - Architectural 3D
- PA - Architectural Ceiling Plan
- PA - Architectural Elevation
- PA - Architectural Plan
- PA - Architectural Section
- PA - Site Plan
- PA - Site Section

7.17.4.2  ELECTRICAL VIEW TEMPLATES

- PA - Corrosion Protection 2D
- PA - Corrosion Protection 3D
- PA - Corrosion Protection Cathodic Plan
7.17.4.2.1 ELECTRICAL FILTERS

### CORROSION PROTECTION FILTERS

<table>
<thead>
<tr>
<th>NAME</th>
<th>SEARCH PARAMETER</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cathodic Conduit &amp; Cable Tray</td>
<td>CP</td>
</tr>
<tr>
<td>Cathodic Power</td>
<td>CP</td>
</tr>
<tr>
<td>Corrosion Protection Equipment</td>
<td>Corrosion Protection</td>
</tr>
</tbody>
</table>

### ELECTRICAL FILTERS

<table>
<thead>
<tr>
<th>NAME</th>
<th>SEARCH PARAMETER</th>
</tr>
</thead>
<tbody>
<tr>
<td>13.8KV Cable</td>
<td>13.8KV</td>
</tr>
<tr>
<td>13.8KC Conduit/Cable Tray</td>
<td>13.8KV</td>
</tr>
<tr>
<td>27KV Cable</td>
<td>27KV</td>
</tr>
<tr>
<td>27KV Conduit/Cable Tray</td>
<td>27KV</td>
</tr>
<tr>
<td>Electrical Equipment</td>
<td>Electrical Ground</td>
</tr>
<tr>
<td>----------------------</td>
<td>-------------------</td>
</tr>
<tr>
<td>Ground</td>
<td>G</td>
</tr>
<tr>
<td>Out of Service</td>
<td>OS</td>
</tr>
<tr>
<td>Out of Service Conduit/Cable Tray</td>
<td>OS</td>
</tr>
<tr>
<td>PSEG Conduit/Cable Tray</td>
<td>PSEG</td>
</tr>
<tr>
<td>Power Ductbank</td>
<td>PD</td>
</tr>
<tr>
<td>Power Underground</td>
<td>PU</td>
</tr>
</tbody>
</table>

### ELECTRONICS FILTERS

<table>
<thead>
<tr>
<th>NAME</th>
<th>SEARCH PARAMETER</th>
</tr>
</thead>
<tbody>
<tr>
<td>CCTV Cable</td>
<td>CCTV</td>
</tr>
<tr>
<td>CCTV Conduit/Cable Tray</td>
<td>CCTV</td>
</tr>
<tr>
<td>Communication Cable</td>
<td>C</td>
</tr>
<tr>
<td>Communication Conduit/Cable Tray</td>
<td>C</td>
</tr>
<tr>
<td>Electronics Equipment</td>
<td>Electronics</td>
</tr>
<tr>
<td>Fire Alarm Cable</td>
<td>FA</td>
</tr>
<tr>
<td>Fire Alarm Conduit/Cable Tray</td>
<td>FA</td>
</tr>
<tr>
<td>Fiber Optic Cable</td>
<td>FO</td>
</tr>
<tr>
<td>Fiber Optic Conduit/Cable Tray</td>
<td>FO</td>
</tr>
<tr>
<td>Out of Service</td>
<td>OS</td>
</tr>
<tr>
<td>Power &amp; Communication</td>
<td>PC</td>
</tr>
<tr>
<td>Power &amp; Communication Conduit/Cable Tray</td>
<td>PC</td>
</tr>
</tbody>
</table>
7.17.4.3 MECHANICAL VIEW TEMPLATES

- PA - Fire Protection 2D
- PA - Fire Protection 3D
- PA - Fire Protection Equipment Plan
- PA - Fire Protection Sprinkler Plan
- PA - HVAC 2D
- PA - HVAC 3D
- PA - HVAC Ductwork & Piping Plan
- PA - HVAC Ductwork Plan
- PA - HVAC Equipment Plan
- PA - HVAC Piping Plan
- PA - Plumbing 2D
- PA - Plumbing 3D
- PA - Plumbing Domestic & Waste Water Plan
- PA - Plumbing Domestic Water Plan
- PA - Plumbing Equipment Plan
- PA - Plumbing Fuel Piping Plan
- PA - Plumbing Other Systems Plan
- PA - Plumbing Waste Water Plan
- PA - Vertical Circulation 2D
- PA - Vertical Circulation 3D
- PA - Vertical Circulation Baggage Handling
- PA - Vertical Circulation Elevators
- PA - Vertical Circulation Escalators
### Mechanical Filters

#### Fire Protection Filters

<table>
<thead>
<tr>
<th>Name</th>
<th>Search Parameter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deluge System Piping</td>
<td>Deluge</td>
</tr>
<tr>
<td>Dry Chemical System Piping</td>
<td>Dry Chemical</td>
</tr>
<tr>
<td>Dry System Piping</td>
<td>Dry</td>
</tr>
<tr>
<td>Mechanical Equipment - Fire Protection</td>
<td>Fire Protection</td>
</tr>
<tr>
<td>Wet System Piping</td>
<td>Wet</td>
</tr>
</tbody>
</table>

#### HVAC Filters

<table>
<thead>
<tr>
<th>Name</th>
<th>Search Parameter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boiler Blow Down</td>
<td>BBD</td>
</tr>
<tr>
<td>Chilled Water Supply</td>
<td>CHWS</td>
</tr>
<tr>
<td>Chilled Water Return</td>
<td>CHWR</td>
</tr>
<tr>
<td>Condensate Low Pressure</td>
<td>LPC</td>
</tr>
<tr>
<td>Condensate Medium Pressure</td>
<td>MPC</td>
</tr>
<tr>
<td>Condensate High Pressure</td>
<td>HPC</td>
</tr>
<tr>
<td>Condenser Water Supply</td>
<td>CWS</td>
</tr>
<tr>
<td>Condenser Water Return</td>
<td>CWR</td>
</tr>
<tr>
<td>Drain</td>
<td>Drain</td>
</tr>
<tr>
<td>Dual Temperature Water Supply</td>
<td>DTWS</td>
</tr>
<tr>
<td>Dual Temperature Water Return</td>
<td>DTWR</td>
</tr>
<tr>
<td>Duct Supply</td>
<td>Supply</td>
</tr>
<tr>
<td>Duct Return</td>
<td>Return</td>
</tr>
<tr>
<td>Duct Exhaust</td>
<td>Exhaust</td>
</tr>
<tr>
<td>High Temperature Hot Water Supply</td>
<td>HTHWS</td>
</tr>
<tr>
<td>High Temperature Hot Water Return</td>
<td>HTHWR</td>
</tr>
<tr>
<td>Hot Water Supply</td>
<td>HWS</td>
</tr>
<tr>
<td>Hot Water Return</td>
<td>HWR</td>
</tr>
<tr>
<td>HVAC Equipment</td>
<td>HVAC</td>
</tr>
<tr>
<td>Makeup Water</td>
<td>MU</td>
</tr>
<tr>
<td>Medium Temperature Hot Water Supply</td>
<td>MTHWS</td>
</tr>
<tr>
<td>Medium Temperature Hot Water Return</td>
<td>MTHWR</td>
</tr>
<tr>
<td>Refrigerant Discharge</td>
<td>RD</td>
</tr>
<tr>
<td>Refrigerant Liquid</td>
<td>RL</td>
</tr>
<tr>
<td>Refrigerant Suction</td>
<td>RS</td>
</tr>
<tr>
<td>Steam Low Pressure</td>
<td>LPS</td>
</tr>
<tr>
<td>Steam Medium Pressure</td>
<td>MPS</td>
</tr>
<tr>
<td>Steam High Pressure</td>
<td>HPS</td>
</tr>
</tbody>
</table>
7.17.4.4 STRUCTURAL VIEW TEMPLATES

- PA - Structural 2D
- PA - Structural 3D
- PA - Structural Analytical Normal
- PA - Structural Analytical Stick
- PA - Structural Building Elevation
- PA - Structural Drafting View
- PA - Structural Foundation Plan
- PA - Structural Framing Elevation
- PA - Structural Framing Plan
- PA - Structural Section

### PLUMBING FILTERS

<table>
<thead>
<tr>
<th>NAME</th>
<th>SEARCH PARAMETER</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compressed Air</td>
<td>CA</td>
</tr>
<tr>
<td>Domestic Cold Water</td>
<td>DCW</td>
</tr>
<tr>
<td>Domestic Hot Water Supply</td>
<td>DHW</td>
</tr>
<tr>
<td>Domestic Hot Water Return</td>
<td>DHWR</td>
</tr>
<tr>
<td>Fuel Oil Equipment</td>
<td>Fuel Oil</td>
</tr>
<tr>
<td>Fuel Oil Return Above</td>
<td>FORA</td>
</tr>
<tr>
<td>Fuel Oil Return Below</td>
<td>FORU</td>
</tr>
<tr>
<td>Fuel Oil Suction Above</td>
<td>FOSA</td>
</tr>
<tr>
<td>Fuel Oil Suction Below</td>
<td>FOSU</td>
</tr>
<tr>
<td>Fuel Oil Vent Above</td>
<td>FOVA</td>
</tr>
<tr>
<td>Fuel Oil Vent Below</td>
<td>FOVU</td>
</tr>
<tr>
<td>Gas</td>
<td>Gas</td>
</tr>
<tr>
<td>Plumbing Equipment</td>
<td>Plumbing</td>
</tr>
<tr>
<td>Sanitary Sewer</td>
<td>STU</td>
</tr>
<tr>
<td>Sanitary Ventilation</td>
<td>STA</td>
</tr>
<tr>
<td>Storm</td>
<td>Storm</td>
</tr>
<tr>
<td>Wet System Piping</td>
<td>Wet</td>
</tr>
</tbody>
</table>
7.17.5 LEVELS AND PLAN VIEWS

The Revit-based applications create a relationship between the Level and the Floor Plans, so when the Level Name is changed, the associated name for the Floor Plan and the Reflected Ceiling Plan updates automatically.

Users will be given the option to rename the corresponding Level Views (Floor Plan and Reflected Ceiling Plan) if the Level Name is changed. If so, the relationship between both will be broken.

It is crucial to maintain this name relationship between the Level and the Floor Plans on a multi-disciplinary practice as ours for coordination purposes.

As described in Section 7.6.1.2 - Discipline Specific Kickoff Seminars, the CAD/BIM Support Group will set up all necessary Project Levels. If new Levels need to be created, please contact the CAD/BIM Support Group.

Plan Views should be created by making a copy of any of the existing Floor Plans and/or Reflected Ceiling Plans under the System Views Category by using the tools on the View Ribbon. Under the Create Panel, expand the Duplicate View Pull Down Menu to select the Duplicate View Option as shown in the image below.

By default, the new Floor Plan and/or Reflected Ceiling Plan will be created within the System Views Category. To associate the new View to the right Category, refer to Section 7.17.3 - Project Browser and/or Section 7.17.4 - View Templates and Filters.

NOTE

All Detail Lines, Text, Dimensions and Tags should be placed within the Design Views which will be dragged-and-dropped into Sheet Views.
7.17.6 Views
Views, such as Elevations, Sections, Callouts and 3D Views will be created within the Revit Models as the project evolves. By default, all these types of Views will not be associated with any of the Categories described in Section 7.17.3 - Project Browser. They will be placed under a Category named “???” as shown in the image below.

To associate the new View to the right Category refer to Section 7.17.3 - Project Browser and/or Section 7.17.4 - View Templates and Filters.

NOTE
All Detail Lines, Text, Dimensions and Tags should be placed within the Design Views which will be dragged-and-dropped into Sheet Views.

7.17.7 Special Characters
As described in Section 7.15 - Templates, only the RomanS.TTF font is permitted for use on Port Authority of NY & NJ BIM Projects. Therefore, only Special Characters associated with the RomanS.TTF font can be used.

The image to the left shows the Character Map
7.17.8 UNIFORMAT CLASSIFICATION

The Port Authority of NY & NJ organizes all of its assets based on the Uniformat System. This classification organizes the different building elements into specific groups. Therefore, when creating Revit Families, the Assembly Code Parameter under the Identity Data Group shall be defined and set in accordance with the CSI Uniformat 2004.

The image to the right shows the FAMILY TYPES Dialog Box within a Door Family with the Assembly Code parameter set to C1020, which corresponds to the Interior Doors classification.

NOTE
Revit uses RevitKeynotes_Imperial_2004.TXT for the Assembly Code mapping

7.17.9 WORKSETS

A Workset is a collection of elements, such as Walls, Doors, Windows, Stairs, etc. that can be accessed by only one user at a given time. All team members can view Worksets owned by other team members but they cannot make changes to them. This restriction prevents potential conflicts within the project and at the same time allows the one Model to be broken up so different team members can access it.

Users are required to take ownership of the Worksets they are working on by Editing the Status of the Workset to establish Ownership as shown in the image below.

To assign a Workset to an Object, set the Workset as Active. All Objects created while the Workset is Active will have the Workset Value automatically associated to them. If you need to make a change on the Workset associated to an Object, select the Object and within the Properties Panel look for the Workset Parameter under the Identity Data Group.
When working with Worksets, users must follow these steps to ensure changes are saved to both the Local and the Central versions of the Revit 3D Model file, as well as relinquishing previously owned Worksets.

1. Synchronize with Central
2. Save to Local
3. Relinquish All Mine

**NOTE**
Users can add new elements to Worksets that they do not own but they cannot modify elements on those Worksets.

### 7.17.10 Working with Other Discipline Models

As previously mentioned in Section 7.14.5 - SM (Site Model) Folder, the Site Model file holds the project coordinate system and controls the location, rotation, and elevation of all Revit-based Models.

When working with other Discipline Revit Model files, you are required to link them using the Shared Coordinates option.

The image to the right shows the **IMPORT/LINK RVT** Dialog Box with the “Auto By Shared Coordinates” option selected under “Positioning.”
NOTE
Links should always be referenced from another discipline’s MODEL folder

7.17.11 COPY/MONITOR

The Copy/Monitor tool helps to monitor and coordinate changes between teams from different disciplines, which reduces mistakes and expensive rework.

The copy functionality copies grids, levels, columns, walls, and floors from a linked project into a host project. You can modify these copied elements, which are automatically related to the original elements. The monitoring functionality sets and maintains relationships for those elements in the host or linked project.

To start the Copy/Monitor Tool go to the COLLABORATE Contextual Tab and click on the Copy/Monitor located under the COORDINATE Panel and then select the Select Link option.

The first step when using the Copy/Monitor Tool is to select “Options” as shown in the image to the right.

This will open the COPY/MONITOR OPTIONS Dialog Box as shown in the images below.

7.17.11.1 LEVELS

Under the Categories and Types to Copy the New Type column should be set to PA - LEVEL HEAD.

Under the Additional Copy Parameters the Offset Level Parameter should be set to 0' 0" and the Reuse Levels With the Same Name Parameter should be checked.
7.17.11.2 GRIDS

Under the Categories and Types to Copy the New Type column should be set to either PA GRID HEAD NEW or PA GRID HEAD EXST.

Under the Additional Copy Parameters, the “Reuse Grids With the Same Name” Parameter should be checked the and “Reuse Matching Grids” should be set to “Don’t Reuse”.

7.17.11.3 COLUMNS

Under the Categories and Types to Copy, make every attempt to match the New Type with the Original Type. When this is not possible, try to select one that best resembles the original.

Under the Additional Copy Parameters, the “Split Columns by Levels” Parameter should be left unchecked.
7.17.11.4 WAlls

Under the Categories and Types to Copy, make every attempt to match the New Type with the Original Type. When this is not possible, try to select one that best resembles the original.

Under the Additional Copy Parameters, the “Copy Windows/Doors/Openings” Parameter should be checked.

7.17.11.5 FLoors

Under the Categories and Types to Copy, make every attempt to match the New Type with the Original Type. When this is not possible, try to select one that best resembles the original.

Under the Additional Copy Parameters, the “Copy Openings/Inserts” Parameter shall be checked.
7.17.12 COORDINATION REVIEW

Whenever you modify monitored elements, a coordination monitor warning displays. You can review these warnings using the Coordination Review Tool and decide what action to take.

To start the Coordination Review Tool, go to the COLLABORATE Contextual Tab and click on the Coordination Review located under the COORDINATE Panel, and then select the Select Link option.

Warnings can occur because of these violations:

- An original monitored element from the linked project has changed.
- A copied monitored element in the host project has changed.
- Both the original monitored element and the copied element have changed.
- The original element in the linked file was deleted.
- The copied element in the host file was deleted.

By default, changes in the Revit-linked model will not change in your model. Revit wants to ensure that the user is aware of the change before taking any action.

The image to the right shows the COORDINATION REVIEW Dialog Box showing a level in the linked model that has moved by 5'.
There are four actions that can be performed in a Coordination Review:

<table>
<thead>
<tr>
<th>ACTION</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Postpone</td>
<td>Take no action on the element. Changes the message status so that it can be filtered out or considered later.</td>
</tr>
<tr>
<td>Reject</td>
<td>There is a difference between an element in the host file and its associated monitored element. The change made to the element in the host file is incorrect, and a change must be made to the associated monitored element.</td>
</tr>
<tr>
<td>Accept Difference</td>
<td>Accepts the change made to the element and updates the relationship. For example, if a pair of grids was 20” apart and one was moved to 30” away, the change would be accepted, and the relationship would now be set to 30”.</td>
</tr>
<tr>
<td>Modify Rename Move</td>
<td>The command name changes based on the action. If the name of the monitored element has changed, the command reads Rename. If a column or level is moved, the command is Move. If a grid is changed or moved, the command is Modify</td>
</tr>
</tbody>
</table>

If desired, click “Add Comment” to enter comments on your action. Enter comments into the “Edit Comment” line and click OK. This is your form of communication to the other cross-functional team members.

**NOTE**

If you select one of these commands you are changing the element in the current project, not the linked project.

### 7.17.13 Phases

Phasing allows representation of different elements of the Model in different time periods in the life of the project for design, scheduling and construction purposes. All Objects added to a project have a Phase Created and a Phase Demolished Parameter.

Revit tracks the Phase in which elements are created or demolished and lets you use and create Phase Filters that can be applied to Views so that different stages of work can be displayed in different Views.

To create a Phase go to the MANAGE Ribbon and under the PHASING Panel click on the Phases Tool. If the Project is not going to be phased, work with the default Phases (Existing and New Construction); If it is going to be phased, insert Phases as needed. Refer to Section 7.16.6 – Phasing Naming Convention for proper Naming Convention.
To assign a Phase to an Object, assign the Phase to a View and then add Objects to the View. All Objects created within that View will have the Phase Value automatically associated to them. If you need to make a change on the Phase associated to an Object, select the Object and within the Properties Panel look for the Phase Created and Phase Demolished Parameters under the Phasing Group.

7.17.13.1 PHASE STATUS

As mentioned previously, all Objects added to a project have a Phase Created and a Phase Demolished Parameter. Depending on the values assigned to each of these Parameters, Revit determines the Phase Status.

<table>
<thead>
<tr>
<th>PHASE STATUS</th>
<th>ACTION</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>New</td>
<td>Element was created in the current Phase and will not be demolish in the current Phase</td>
<td></td>
</tr>
<tr>
<td>Existing</td>
<td>Element was created in an earlier Phase and continues to exist in the current Phase</td>
<td></td>
</tr>
<tr>
<td>Demolish</td>
<td>Element was created in an earlier Phase and demolished in the current Phase</td>
<td></td>
</tr>
<tr>
<td>Temporary</td>
<td>Element was created and demolished during the current Phase</td>
<td></td>
</tr>
</tbody>
</table>
7.17.13.2 PHASEFILTERS

A Phase Filter is a setting that is applied to a View to control the display of elements based on their Phase Status.

- Show All
- Show Complete
- Show Demo + New
- Show New
- Show Previous + Demo
- Show Previous + New
- Show Previous Phase

The image to the left shows the Graphic Override assigned to each of the Phase Status.
7.17.13.3 Matching Phase Across Disciplines

When working with Phases on a multi-disciplinary project, it is critical to match Phases across the different Discipline Models.

Select each of the linked Models and go to their Type Properties and select the Edit Button right next to the Phase Mapping Parameter as shown in the image below.

This will open the Phases Dialog Box as shown in the image to the left. Match the Phase of the Host Model (Left Column) with the ones of the Linked Model (Right Column).
7.17.14 COST ESTIMATE AND QUANTITY TAKEOFF

A series of pre-defined empty Engineer’s Estimates (ES) Schedules have been provided with the Templates. These Schedules will populate automatically as you add content to the Models and will help streamline the processes of Cost Estimating and Quantity Takeoffs with the Engineering Department Estimating Group.

7.17.14.1 EXPORTING TO EXCEL

In order to export a Revit Schedule to Excel, the Schedule View will need to be open and active. Go to the APPLICATION menu and select the “Export” button followed by the “Reports” option, and then “Schedule”. This will open the EXPORT SCHEDULE Dialog Box as shown in the image below.

Browse to your own discipline’s MANAGEMENT folder on the BIM Server mapped internally as the R:\ drive, by selecting the drop-down button.

After clicking the OK button, the EXPORT SCHEDULE Dialog Box will open as shown in the image below.
Make sure the settings match the ones on the image above and click the OK button. At this point open Excel and open the TXT file and follow the prompts.

7.17.14.2 EXPORTING TO 3D DWF

In order to export the Revit Model for Cost Estimate and Quantity Takeoffs purposes, go to the APPLICATION menu and select the “Export” button followed by the “DWF” option, and then “DWF”. This will open the DWF EXPORT SETTINGS Dialog Box as shown in the image below.

In the “View/Sheet Set” Tab, select the “In Session View/Sheet Set” under the “Export” drop-down list.

This will enable the “Show in List” drop-down list, from which you can select the “Views in the Model” option to select which views to export.

Select the 3D View to export.
Switch to the “DWF Properties” Tab and have both check boxes, “Element Properties” and “Rooms and Areas in a Separate Boundary Layer”, under the “Export Object Data” option, checked.

Click the “Export” button

This will open the EXPORT DWF Dialog Box as shown in the image to the right. Browse to your own discipline’s ANALYSIS folder on the BIM Server mapped internally as the R:\ drive, by selecting the drop-down button.

Under the “File Name/Prefix” option, type the desired name of the DWF file, and under the “Files of Type” options select “DWF Files (*.dwf.).

Under the “Naming” option, select “Automatic - Long (Specify Prefix)”. This option will append the selected view name at the end of the file name. Users are required to rename this file as described in Section 7.16.2.13 - 3D DWF Files.
7.17.15 SHEET VIEWS

Creating a Contract Set in Revit is accomplished through Sheets, in which Views have been added. Sheets within The Port Authority of NY & NJ BIM Standard have been pre-configured to work in conjunction with the discipline Templates file and with the Shared Parameters file.

NOTE
Detail Lines, Text, Dimensions and Tags should not be created within the Sheet Views themselves.

7.17.15.1 PROJECT INFORMATION

Project Information is data that remains the same on all sheets of a project, such as the Facility Name, Project Name, Contract Number, Work Order Number, PID Number, Discipline Group, Discipline’s Chief, Total Sheet Number, Signee’s Name, and Project Issue Date.

To make the required modifications, go to the MANAGE Contextual Tab and click on the Project Information Tool located under the PROJECT SETTINGS Panel.

The image to the left shows the Project Information INSTANCE PROPERTIES Dialog Box.

All the available Project Information fields are listed under the Title Text and Other Parameter columns.

Another option to enter the Project Information is by typing it directly on a sheet by clicking on the text placeholder and updating the text as desired.

NOTE
The Revit-based applications will update all sheets in the Contract Set based on the information provided here.
7.17.15.2 LOADING THE TITLE SHEET AND CONTRACT BORDER

Title Sheets and Contract Borders can be loaded using one of the following methods:

- In the VIEW Contextual Tab, select the New Sheet Tool located under the SHEET COMPOSITION Panel.
- In the Project Browser, right-click on top of SHEETS and then select New Sheet.

Either of these methods will display the SELECT A TITLEBLOCK Dialog Box as shown in the image to the left.

Click on the “Load” button to import the Titleblocks provided with the Port Authority of NY & NJ BIM Standard and then click “OK.”

The Titleblocks can be found under:

EAD\BIM Standards\2012\Titleblocks\ 

Once the Title Sheet and Contract Borders are loaded, they will get populated with the Project Information provided in Section 7.17.15.1 - Project Information.

NOTE

A new Contract Border should be used when working on the Addendum Set and/or the PACC Set, where the date is appended at the end of the Family File. Contact the CAD\BIM Support Group if you need to create a new Contract Border for any of the above Submissions.

7.17.15.3 DRAWING INFORMATION

Drawing Information is data relating to an individual sheet of the Contract Border in a project. All the available Title Sheet Information fields are listed under the Identity Data and Title Text Parameter columns.

To update the Drawing Information of a sheet, use either one of the following methods:

- Enter the information directly on a sheet by clicking on the text placeholder within the sheet and update the text as desired.
- Select a sheet and right-click it to display the OPTIONS menu and select “View Properties”. This will open the Sheet INSTANCE PROPERTIES Dialog Box. Change the values as desired.
7.17.15.3.1 TITLE SHEETS

Values within the Title Sheet are the Program Director and the Current Sheet Number.

The image to the left shows the Title Sheet INSTANCE PROPERTIES Dialog Box.

Three Signature Lines are provided within the Title Sheets:

- Line One
  ASSISTANT CHIEF ENGINEER / DESIGN
- Line Two
  PROGRAM DIRECTOR XX or SR. PROGRAM MANAGER/PROGRAM MANAGER
- Line Three
  CHIEF ENGINEER

The following table describes which Signature Lines to use, depending on the Contract Type and Contract Cost.

<table>
<thead>
<tr>
<th>CONTRACT TYPE</th>
<th>ENGINEER’S ESTIMATE</th>
<th>SIGNATURE LINES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quick Bids (Limited to $500,000 including extra work &amp; net cost)</td>
<td>Up to $1,000,000</td>
<td>Deputy Director - Design Sr. Program Manager/Program Manager</td>
</tr>
<tr>
<td></td>
<td>Above $1,000,000</td>
<td>Deputy Director - Design Program Director Chief Engineer</td>
</tr>
<tr>
<td>M/WBE Set-Asides</td>
<td>Up to $2,500,000</td>
<td>Deputy Director - Design Sr. Program Manager/Program Manager</td>
</tr>
<tr>
<td>Work Order Drawings &amp; Standard Contracts</td>
<td>Above $2,500,000</td>
<td>Deputy Director - Design Program Director Chief Engineer</td>
</tr>
</tbody>
</table>
There are only two possible options for the Signature Lines:

- **Option 1**
  - Line One: ASSISTANT CHIEF ENGINEER / DESIGN
  - Line Two: SR. PROGRAM MANAGER/PROGRAM MANAGER

- **Option 2**
  - Line One: ASSISTANT CHIEF ENGINEER / DESIGN
  - Line Two: PROGRAM DIRECTOR XX
  - Line Three: CHIEF ENGINEER

The PROGRAM DIRECTOR line (included only in Option 2) contains a field (which by default is set to XX) that should be replaced by any one of the following options:

- **AVIATION**
- **PATH / E&WD**
- **PORT COMMERCE**
- **TB&T**
- **SECURITY**
### 7.17.15.3.2 CONTRACT BORDERS

Values within the Contract Border are the Discipline Sub-Group, the Drawing Name, the Design by, Drawn by & Checked by Lines, and the Current Sheet Number.

The image to the left shows the Contract Border Information ELEMENT PROPERTIES Dialog Box.

The following table describes the options for the “Discipline Group” field and the “Discipline Sub-Group” field that users will need to refer to when filling out the Project Information and the Contract Border, respectively.

<table>
<thead>
<tr>
<th>DISCIPLINE GROUP</th>
<th>DISCIPLINE SUBGROUP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Architecture</td>
<td>Landscape</td>
</tr>
<tr>
<td>Civil</td>
<td></td>
</tr>
<tr>
<td>Electrical</td>
<td>Power</td>
</tr>
<tr>
<td></td>
<td>Electronics</td>
</tr>
<tr>
<td></td>
<td>Corrosion Protection</td>
</tr>
<tr>
<td>Environmental</td>
<td></td>
</tr>
<tr>
<td>General</td>
<td></td>
</tr>
<tr>
<td>Geotechnical</td>
<td></td>
</tr>
<tr>
<td>Mechanical</td>
<td>Fire Protection</td>
</tr>
<tr>
<td></td>
<td>HVAC</td>
</tr>
<tr>
<td></td>
<td>Plumbing</td>
</tr>
<tr>
<td>Structural</td>
<td></td>
</tr>
<tr>
<td>Traffic</td>
<td></td>
</tr>
</tbody>
</table>
The image to the left shows an example where the “Discipline Group” field has been set to MECHANICAL and the “Discipline Sub-Group” field has been set to FIRE PROTECTION.

If a discipline does not have a “Sub-Group”, this field should be left empty.

NOTE

Both the “Discipline Group” and the “Discipline Sub-Group” fields should be filled out using uppercase characters.

To promote consistency and easy identification of the people involved in the project, the “Designed by”, “Drawn by”, and “Checked by” fields should have the first name’s initial, followed by a period, a space and the first seven characters of the last name.

The “Date” field should be filled out as a two-digit month, a two-digit day, and a four-digit year format separated by the slash “/” character as shown in image to the left.

NOTE

The “Designed by”, “Drawn by”, and “Checked by” fields should be filled out using uppercase characters only for the first character of the first name and last name. Only one person’s name is allowed by field.
7.17.15.4 CONTROLLING VISIBILITY

Visibility Parameter has been set within the Title Sheets, Contract Borders, and Stamps provided with the Port Authority of NY & NJ BIM Standard.

The Revit-based applications provide these parameters with their default values set ON. These parameters are controlled within the project file itself.

To control visibility, by turning those fields ON and OFF, use the following methods:

- For sheet-specific fields, select a sheet and right-click it to display the OPTIONS menu and select “Element Properties”. This will open the Sheet INSTANCE PROPERTIES Dialog Box, where the values can be changed as desired.
- For project-specific fields, within the Sheet INSTANCE PROPERTIES Dialog Box accessed in the previous step, select the “Edit Type” button to access the TYPE PROPERTIES Dialog Box, and change the values as desired.

7.17.15.4.1 TITLE SHEETS

There are four sheet-specific fields within the Title Sheets, which are:

- Sr. Program Manager/Program Manager
- Program Director
- FAA
- Chief Engineer

There is one project-specific field within the Title Sheets, which is:

- Work Order Number

The image to the left shows the four sheet-specific fields of the Title Sheet controlled within the INSTANCE PROPERTIES Dialog Box.
The image to the left shows the project-specific field of the Title Sheet controlled within the INSTANCE PROPERTIES Dialog Box.

7.17.15.4.2 CONTRACT BORDERS

There are three project-specific fields within the Contract Borders, which are:

- Work Order Number
- Original Signed By
- Discipline’s Chief

The image to the left shows the three project-specific fields of the Contract Border controlled within the TYPE PROPERTIES Dialog Box.
7.17.15.5 INSERTING STAMPS

A series of Professional, Submissions and Confidential & Confidential Privileged Stamps for both sizes, 22x34 and 34x56, have been provided with the Port Authority of NY & NJ BIM Standard and can be found under:

EAD\BIM Standards\2012\Stamps\n
These Stamps have been defined within the Revit-based applications as symbols and should be inserted on each individual sheet origin. To insert a symbol on a sheet, go to the ANNOTATE Contextual Tab and click on the Symbol Tool located under the DETAIL Panel.

All Stamps should be inserted at the sheet origin, which is invisible by default. To enable the sheet origin, hover over it.

The image to the left shows the sheet origin.

To edit the fields and control visibility within the Stamps, select a symbol and right-click it to display the OPTIONS menu and then select “Element Properties.”

This will open the Symbol INSTANCE PROPERTIES Dialog Box as shown in the image to the left. Select the “Edit Type” button to access the TYPE PROPERTIES Dialog Box and change the values as desired.
7.17.15.5.1 PROFESSIONAL STAMPS

Professional Stamps have been created for both New York and New Jersey Professional Engineer and Registered Architect and can accommodate these 3 options:

- Single Professional Stamp - Two Consultants
- Combined Professional Stamps of NY & NJ - One Consultant
- Combined Professional Stamps of NY & NJ - Two Consultants

The Consulting Firm field is required and should accommodate the primary consultant hired directly by the Port Authority of NY & NJ. The Sub-Consulting Firm fields have been provided to accommodate the sub-consultant name performing work for the primary consultant. If no sub-consultant is involved this field should be left empty.

2 lines have been provided for both the Consulting Firm and Sub-Consulting Firm. If the second line of either of these fields is not needed, it should be left empty.

By default, the DISCIPLINE’S CHIEF and the ORIGINAL SIGNED BY fields are provided with their default values set ON as shown in the image to the left.

In order to accommodate the Professional Stamps, these fields should be turned OFF. This is accomplished by controlling the visibility of the Contract Border as described on Section 7.17.15.4.2 - Contract Borders.
NOTE

The Professional Stamps should be used instead of custom Consultant Logos.

The Consulting Firm and Sub-Consulting Firm fields should only accommodate the Consultants and Sub-Consultants Company Name, not the Company Address.

The image to the left shows an example of the Single Professional Stamp - Two Consultants provided with this Manual, which includes 2 lines for both the Consulting Firm and the Sub-Consulting Firm.

The Single Professional Stamp - Two Consultants provided with this Manual are:

- PA - NJPE 22x34.rfa
- PA - NJRA 22x34.rfa
- PA - NYPE 22x34.rfa
- PA - NYRA 22x34.rfa
- PA - NJPE 34x56.rfa
- PA - NJRA 34x56.rfa
- PA - NYPE 34x56.rfa
- PA - NYRA 34x56.rfa
The image to the left shows an example of the Combined Professional Stamps of NY & NJ - One Consultant, provided with this Manual, which includes 2 lines for either the New York or the New Jersey Registered Architect or Professional Engineer.

The Combined Professional Stamps of NY & NJ - One Consultant, provided with this Manual, are:

- PA - NY&NJ PE ONE CONSULTANT 22x34.rfa
- PA - NY&NJ RA ONE CONSULTANT 22x34.rfa
- PA - NY&NJ PE ONE CONSULTANT 3x56.rfa
- PA - NY&NJ RA ONE CONSULTANT 34x56.rfa

The Combined Professional Stamps of NY & NJ - One Consultant are used for jobs in which signatures of Professionals from both States are required.

The image to the left shows an example of the Combined Professional Stamps of NY & NJ - Two Consultants provided with this Manual, which includes 2 lines for either the New York or the New Jersey Registered Architect or Professional Engineer.

The Combined Professional Stamps of NY & NJ - Two Consultants provided with this Manual are:

- PA - NY&NJ PE TWO CONSULTANTS 22x34.rfa
- PA - NY&NJ RA TWO CONSULTANTS 22x34.rfa
- PA - NY&NJ PE TWO CONSULTANTS 34x56.rfa
- PA - NY&NJ RA TWO CONSULTANTS 34x56.rfa

The Combined Professional Stamps of NY & NJ - One Consultant are used for jobs in which signatures of Professionals from both States are required.
7.17.15.5.2 SUBMISSION STAMPS

Submission Stamps have been provided for the following circumstances:

- Law Review
- Preliminary
- Submission

**NOTE**

All Submission Stamps should be removed before plotting Mylars and before creating the DWF files.

The image to the left shows an example of the Law Review Stamp provided with this Manual, in which the date needs to be entered in the format MM/DD/YYYY, as described in Section 7.17.15.4.2 - Contract Borders.

The Law Review Stamps provided with this Manual are:

- PA - LAW REVIEW 22x34.rfa
- PA - LAW REVIEW 34x56.rfa
The image to the left shows an example of the Preliminary Stamp provided with this Manual, in which the date needs to be entered in the format MM/DD/YYYY, as described in Section 7.17.15.4.2 - Contract Borders.

The Preliminary Stamps provided with this Manual are:

- PA - PRELIMINARY 22x34.rfa
- PA - PRELIMINARY 34x56.rfa

The image to the left shows an example of the Submission Stamp provided with this Manual, in which the date needs to be entered in the format MM/DD/YYYY, as described in Section 7.17.15.4.2 - Contract Borders, as well as the submission percentage.

The Submission Stamps provided with this Manual are:

- PA - SUBMISSION 22x34.rfa
- PA - SUBMISSION 34x56.rfa
7.17.15.5.3 SECURITY STAMPS

Security Stamps have been provided for the following circumstances:

- Confidential
- Confidential Privileged

NOTE

Security Stamps should be kept when plotting Mylars and when creating the DWF files to help identify either the Confidential and/or the Confidential Privileged sheets.

Refer to Section 7.9.1 - Security Projects for proper handling of this type of Projects.

NOTE

All Confidential and/or Confidential Privileged sheets should be grouped together on a separate DWF file.
7.17.15.6 MAKING REVISIONS

Revision tracking is the process of recording changes made to a model after sheets have been issued. In the Revit-based applications revisions are displayed and tracked using revision clouds, tags, and schedules.

The revision process should be managed as follows:

1. Enter information about the revision in the SHEETS ISSUES/REVISIONS Dialog Box.
2. Update the Revit project to implement the change.
3. In one or more project views, draw revision clouds to indicate the areas that changed.
4. Assign a revision to each cloud.
5. Tag the revision clouds to identify the assigned revisions.
6. Check sheets to make sure that the revision schedules show the desired information.
7. Issue the revisions.

The Revit-based application provides flexibility in how it displays the sequence of revisions in a project, the numbers used, what is shown, and the system used.

To set up the Revisions go to the VIEW Contextual Tab and expand the SHEET COMPOSITION Panel.

The image to the left shows the preferences used within The Port Authority of NY & NJ BIM Standard.

Revisions are project based, shall use Numbers and shall show the Cloud and Tag.

The revision schedule displays information about revisions that have been issued in the project. All Contract Borders provided with The Port Authority of NY & NJ BIM Standard have been preset with the PA - REVISION SCHEDULE.

NOTE

When issuing a revision within the Revit-based applications the following applies:

- On the SHEETS ISSUES/REVISIONS Dialog Box, you can no longer change information for that revision.
- In project views, you can no longer assign the issued revision to additional (new) revision clouds.
- You cannot edit revision clouds to which the issued revision is assigned.
The image to the left shows the Revision Schedule updated after 3 revisions have been issued.

7.17.16 Plotting

The Port Authority of NY & NJ BIM Standard adopts the DWF format as the standard to be used when creating sheets for plotting purposes.

Plotting from the Revit-based application is accomplished by exporting the sheets as a DWF file. All Revit-based templates provided with The Port Authority of NY & NJ BIM Standard have been preconfigured with these settings.

DWF files shall always be created as multi-sheet files, in full size (22x34 or 34x56), in black and white, and grouped together by Drawing Type and by Series (if used).
By default, the ORIGINAL SIGNED BY field is provided with its default value set ON, as described on Section 7.17.15.5.1 - Professional Stamps.

The image to the left shows this field turned OFF, which is required when plotting Mylars.

NOTE

PDF files are not accepted.
7.17.16.1 PLOTTING SETUP

In order to configure the plotter to properly create DWF files, go to the APPLICATION menu, and select the “Export” button followed by the “DWF” option.

This will open the DWF EXPORT SETTINGS Dialog Box as shown in the image to the left. Switch to the “DWF Properties” Tab and select the “Print Setup” button as shown in the image below.

This will open the PRINT SETUP Dialog Box as shown in the image to the left. Under “Name” select the “PA – DWF Exporter” option to set the preconfigured parameters.

NOTE

Regardless of the page size, this option will read the settings from both the Title Sheet and Contract Border loaded within your project and will create a 22x34 and/or a 34x56 sheet.
7.17.16.2  **EXPORT SHEETS TO DWF**

The DWF files are the electronic version of the Mylar Set.

By default, the ORIGINAL SIGNED BY field is provided with its default value set ON, as described on Section 7.17.15.5.1 - Professional Stamps, which is required when creating the DWF files, as shown in the image to the left.

The Professional Stamps have been provided with a field named ORIGINAL SEALED AND SIGNED BY which is OFF by default. To edit the fields and control visibility within the Professional Stamps follow the instructions described on Section 7.17.15.5 - Inserting Stamps.

In order to Export Sheets to DWF, go to the APPLICATION menu and select the “Export” button followed by the “DWF” option. This will open the DWF EXPORT SETTINGS Dialog Box as shown in the image to the left.
In the “View/Sheet Set” tab select the “In Session View/Sheet Set” under the “Export” drop-down list. This will enable the “Show in List” drop-down list from which you can select the “Sheets in the Model” option to select which sheets to export. Once you selected the desired sheet select the “Export” button. This will open the EXPORT CAD FORMATS Dialog Box as shown in the image to the left.

Browse to your own discipline’s PLOTSHEETS\DWF folder on the BIM Server mapped internally as the R:\ drive, by selecting the drop-down button.

Under the “File Name/Prefix” option, type the desired name of the DWF file; under the “Files of Type” option, select “DWF Files (*.dwf); and the “Combined Selected Views and Sheets into a Single DWF File” check-box shall be selected. This enables the creation of multi-sheet files.

Under the “Naming” option select “Automatic - Long (Specify Prefix)”. This option will append the selected sheet at the end of the file name. Users are required to rename this file or files as describe in Section 7.16.2.4 - Plotsheet Files.

7.17.16.3 PLOTTING THE DWF FILES

The image to the left shows the settings when plotting DWF files either from Autodesk DWF Viewer or from Autodesk Design Review.

Under “Color Setting”, select “Black and White” from the drop-down list; under “Page Handling”, select the check-box right next to “Choose Paper Source by DWF Page Size”; under the “Scale” option, select “100%” followed by the “Clip Pages” options from the drop-down list; and under the “Alignment” option, select the “Center in Printer Margins” from the drop-down list.
7.17.17 PURGE UNUSED

The Purge Unused command unloads any unused Families and Family Types along with Groups and Styles, reducing the file size of the Revit Model file.

To purge the Revit Model, go to the MANAGE Contextual Tab and click on the Purge Unused Tool located under the PROJECT SETTINGS Panel. This will open the PURGE UNUSED Dialog Box as shown in the image below.

Expand the desired category and click on the “OK” button.

NOTE

Every discipline’s Task Leader is responsible for purging their discipline’s Revit Model before each Submittal milestone.

7.17.18 SUBMISSIONS

Before every Submission, each Discipline’s BIM Coordinator is responsible for having all their team members save their changes to the Central File and to release any Workset ownership.

At the completion of every milestone, each Discipline’s BIM Coordinator shall copy their Discipline’s BIM, MANAGEMENTDOCS, MODEL, PHOTOS, PLOTSHEETS, and PUBLISH folders into the appropriate milestone sub-folder within SUBMITTALS.

Once the folders have been copied, each Discipline’s BIM Coordinator shall notify the BIM Lead Coordinator who will notify the CAD\BIM Support Group via email (engcadd@panynj.gov).

Upon notification, the CAD\BIM Support Group shall move the files to the Archive Server, mapped internally as the N:\ drive, leaving behind a text file named ARCHIVED YYYY-MM-DD.txt, which contains the exact location where the files can be found.

Projects received from an Outside Resource should be sent directly to the Discipline’s BIM Coordinator.

NOTE

Before every submission, BIM Models should be purged of all unused information as described in Section 7.17.17 - Purge Unused.
7.17.19 LINKING AutoCAD DRAWINGS INTO Revit

There are two types of AutoCAD Drawings that might need to be linked into Revit, Reference Drawings and Detail Drawings. The first type refer to drawing such as Floor Plans, that will be used as an underlay to build Revit Elements from their entities and will not be part of the Contract Set. The second type of files refer to drawings such as a Location Plan or a One Line Diagram, that will be included as part of the Contract Set. Both types of files required the following minimal settings before being link into Revit:

- In the AutoCAD file set the PROXYGRAPHICS System Variable to 1.
- Linked files should not contain External References.
- In order to preserve the AutoCAD Line Weight inside Revit, the Line Weight column within the Layer Properties Manager Dialog Box should be set to Default.
- Avoid importing unnecessary data like hatching or line-work such as construction lines. Delete all unnecessary parts and layers of the DWG file within AutoCAD and import only the cleaned smaller version.

In order to link AutoCAD Drawings into Revit, go to the INSERT Ribbon and from the LINK Panel select the LINK CAD Tool to open the LINK CAD FORMATS Dialog Box as shown in the image below.

The image to the right shows the LINK CAD FORMATS Dialog Box
These settings within the LINK CAD FORMATS Dialog Box should be set as follows:

- The “Current View Only” Option Check Box should be un-checked when linking Reference Drawings and should be check when linking Detail Drawings.
- Set the “Colors” Option to either “Invert”, “Preserve” or “Black and White” as desire.
- Set the “Layers” Option to either “All”, “Visible” or “Specify” as desire.
- Set the “Import Units” Option to “Auto-Detect”.
- Set the “Positioning” Option to “Auto - By Shared Coordinates” for Reference Drawings or to “Auto - Center to Center” for Detail Drawings.

**NOTE**
The Import CAD Tool should never be used instead of the Link CAD Tool since the Revit-based applications handles AutoCAD entities individually, decreasing overall Model performance.

**7.17.19.1 REFERENCE DRAWINGS**
Reference Drawings are typically linked into Floor Plan Views and/or Ceiling Plan Views and are usually used as an underlay to build Revit Elements from their entities.

In addition to the requirements described above, the Reference Drawings should have the following:

- DWG files shall be on NAD83 Coordinate System.
- DWG files shall be saved using the World Coordinates System (WCS) before they are linked into Revit in order to be correctly aligned.
- Elements within the DWG cannot be more than 2 miles apart from each other.
- When linking files, un-check the “Current View Only” Option.
- When linking files, under “Positioning”, select the “Auto - By Shared Coordinates” option located in the lower right hand corner of the LINK CAD FORMATS Dialog Box.

**7.17.19.2 DETAIL DRAWINGS**
Detail Drawings are typically linked into Drafting Views and/or Legend Views and are usually used as part of the Contract Set.

In addition to the requirements described above, the Detail Drawings should have the following:

- When linking files, check the “Current View Only” Option.
- When linking files, under “Positioning”, select the “Auto – Center to Center” option located in the lower right hand corner of the LINK CAD FORMATS Dialog Box.
7.17.20 EXPORTING REVIT VIEWS TO AUTOCAD

This section describes the steps required to export Revit Views to AutoCAD preserving the predefined Coordinates System (NAD83) used on all BIM projects so other disciplines using Civil 3D can use these files as backgrounds.

In order to export Revit Views to AutoCAD, go to the APPLICATION menu and select the “Export” button followed by the “CAD Formats” option and then “DWG”. This will open the EXPORT CAD FORMATS Dialog Box as shown in the image below.

In the “View/Sheet Set” Tab, select the “In Session View/Sheet Set” under the “Export” drop-down list. This will enable the “Show in List” drop-down list, from which you can select the “Views in the Model” option to select which views to export. Select the desired views to export from the list.

If you are planning to export the same floor plan or levels multiple times throughout the lifetime of the project, you can save the selected views by clicking on the “New Set” button in the upper left-hand corner of the EXPORT CAD FORMATS Dialog Box.

The NEW SET Dialog Box will open as shown in the image to the right. Type a name and click the “OK” button. Next time you need to export the same floor plan or levels you just need to load the set you just saved.

Switch to the “DWG Properties” Tab and chose these settings as follows:

- Set the “Layers and Properties” option to “Category Properties BYLAYER, Overrides BYENTITY.”
- Set the “Linetype Scaling” option to “Modelspace (PSLTSCALE = 1).”
- Set the “Coordinate System Basis” option to “Shared.”
- Set the “One DWG Unit Is” option to “Inch.”
Click on the “Layer Settings” button located in the upper right-hand corner of the EXPORT CAD FORMATS Dialog Box, represented by a square with three dots, to make sure you are using the PA - Export Layers to AutoCAD.txt exporter. If not, click on the “Load” button and browse to:

EAD\BIM Standards\2012\Support\%

This file, as described in Section 7.13.3.2 - Export Layers DWG/DXF, will convert Revit objects such as Walls, Doors, and Windows into their respective PA AutoCAD layers.

Switch to the “View/Sheet Set” Tab and select “Export” button to open the EXPORT CAD FORMATS Dialog Box as shown in the image to the right, and browse to your own discipline’s PUBLISH folder on the CAD Server mapped internally as the M:\ drive, by selecting the drop-down button.

This is where you will share backgrounds with disciplines not using Revit.

These settings within the EXPORT CAD FORMATS Dialog Box should be set as follows:

- The “File name/prefix” box has to be set to the Discipline Code followed by the eight-digit PID Number.
- Under “Files of type” select “AutoCAD 2010 DWG Files (*.dwg).”
- Under “Naming” select the “Automatic - Long (Specify Prefix)” option.
- Un-check the check-box right next to the “Xref Views on Sheets” option.

NOTE

Two color-dependent plot style table files (CTBs) have been provided with The PANYNJ BIM Standard to plot from AutoCAD, refer to Section 7.13.3.2 - Export Layers DWG/DXF for proper use.
7.17.21 EXCHANGING INFORMATION WITH OUTSIDE RESOURCES

Consultants are required to use the Sample Folder Structure provided with The Port Authority of NY & NJ BIM Standard Manual when working on BIM projects.

When exchanging information with outside resources, the Central File version of the Revit Model is the file that shall be shared.

The frequency with which this information will be shared between in-house staff and outside resources may vary from project to project. The following two sections describe the appropriate procedure when sharing information.

Two folders (RECEIVED and RELEASED) have been provided within the Sample Folder Structure to keep track of this.

7.17.21.1 RELEASING INFORMATION TO AN OUTSIDE RESOURCE

Each Discipline’s Task Leader is required to submit their own discipline Model file, along with copies of other Disciplines Model files (if required) directly to their consultants.

7.17.21.2 RECEIVING INFORMATION FROM AN OUTSIDE RESOURCE

Consultants are required to submit their own discipline Model file directly to their Discipline’s Task Leader.

Upon receiving the information, each discipline TL is responsible for copying their discipline models on the BIM Server, mapped internally as the R:\ drive, and shall notify the LE/A.

After copying the Revit Model file into the discipline’s MODEL folder, the discipline’s TL is responsible for opening the file and resaving it as a new central copy, overwriting the existing file.

This will ensure that all references to external servers are replaced and remapped to the R:\ drive.

To accomplish this, go to the APPLICATION menu and select the “Save As” button followed by the “Project” option.

This will open the SAVE AS Dialog Box as shown in the image to the right and click the “Options” button located in the lower right-hand corner.
This will open the FILE SAVE OPTIONS Dialog Box. Check the box right next to the “Make This a Central File After Save” option and click the “OK” button.
7.18 INTERFERENCE CHECK

The Interference Check Tool can be used during the design process to coordinate major building elements and systems allowing the identification of interferences earlier in the design process. This tool can be used to find single-discipline or cross-discipline interferences, enabling effective identification, inspection and/or reporting of any interference.

The use of Interference Check Tools such as the ones performed either within the Revit based applications or through NavisWorks will have 3 possible outcomes within our BIM practice:

- No Clash: This will be the perfect case scenario.
- Soft Clash: Such as Ducts going through Partition Walls for example. This type of Clash will not require any additional action from the Team.
- Hard Clash: Such as Columns going through Equipment for example. This type of Clash will require action from the Team.

7.18.1 SINGLE-DISCIPLINE INTERFERENCE CHECK

The Single-Discipline Interference Check will be performed by each Discipline’s Task Leader using the Interference Check tool within Revit.

To start the Interference Check Tool, go to the COLLABORATE Contextual Tab and click on the Interference Check located under the COORDINATE Panel and then select the Run Interference Check option.

This will open the INTERFERENCE CHECK Dialog Box as shown in the image to the right, in which Structural Framing is being checked against Walls.

For Single-Discipline Interference Check, the “Categories From” option in the upper portion of both panes should be set to “Current Project.”

The INTERFERENCE CHECK Dialog Box is divided into two panes. On the left pane select the Primary element category or system you want to check, followed by the Secondary element category or system you want to check the primary selection against. Then click the “OK” button.
If there are no interferences to report, a Dialog Box displays informing you of this. If there are interferences to report, the INTERFERENCE REPORT Dialog Box, as shown in the image to the right, displays a list of all elements that are in conflict with one another.

Interferences are grouped according to the way you generated the check. By default, they are grouped as Primary Selection (left pane/first line) and Secondary Selection (right pane/second line).

To see one of the elements that are intersected, select its name in the INTERFERENCE REPORT Dialog Box and click the “Show” button. A view opens that displays the problem. To correct a conflict, click in the view and modify the overlapping elements. The INTERFERENCE REPORT Dialog Box remains visible.

When you have fixed the problem intersection, in the INTERFERENCE REPORT Dialog Box, click the “Refresh” button. If the problem has been resolved, the problem elements are removed from the list of conflicts. You can continue resolving conflicts in this manner.

If you cannot resolve all conflicts without additional input from team members, you can generate an HTML version of the report by clicking on the “Export” button within the INTERFERENCE REPORT Dialog Box.

This will open the EXPORT AN INTERFERENCE REPORT TO A FILE Dialog Box as shown in the image to the right. Browse to your own discipline’s COORDINATION folder on the BIM Server mapped internally as the R:\ drive, by selecting the drop-down button.

Under the “File Name” option, type the name of the Report as described in Section 7.14.2.11 - Microsoft Office Files and under the “Files of Type” options select “Revit Interference Report (*.html).”

Click the “Save” button. This will take you back to the INTERFERENCE REPORT Dialog Box. Click the “Close” button to finish using the Interference Check Tool.

**NOTE**

Disciplines are encouraged to run cross-discipline Interference Checks before the Inter-Disciplinary Interference Check Sessions using the Interference Check Tool within Revit. This can be accomplished by selecting the other discipline’s Linked Files from the pull-down menu under the “Category From” option.
7.18.2 CROSS-DISCIPLINE INTERFERENCE CHECK

The LE/A is responsible for setting up Inter-Disciplinary Interference Check Sessions as often as the project requires.

The Cross-Discipline Interference Check will be performed by the project LE/A using Autodesk NavisWorks. Each discipline’s TL, including the Lead Discipline, is responsible for creating a NavisWorks file out of their Revit Models.

To create a NavisWorks file out of the Revit Model go to the ADD-INS Contextual Tab and click on the External Tools located under the EXTERNAL Panel as shown in the image to the right, and then select the Navisworks 2010 Link.

This will open the EXPORT SCENE AS Dialog Box, as shown in the image to the right. Browse to your own discipline’s COORDINATION folder on the BIM Server mapped internally as the R:\ drive, by selecting the drop-down button.

Under the “File Name” option, type the name of the NavisWorks file as described in Section 7.16.2.14 – NavisWorks Cache File.

Select the “Navisworks Settings” button to open the NAVISWORKS OPTIONS EDITOR – REVIT Dialog Box as shown in the image to the right.

Expand the File Readers/Revit and make sure of the following:

- The “Convert Elements Ids” option should be checked.
- Under “Coordinates” select “Shared”,
- Under “Export” select “Entire Project”
- Under “World Units” select “Feet”

Click the “OK” button. This will take you back to the EXPORT SCENE AS Dialog Box. Click the “Save” button to save the NavisWorks file.

NOTE

When exporting the Revit Model using the External Tools, only the current Discipline Model gets exported. Therefore all links attached are discarded.
7.18.3 **NavisWorks Clash Report Settings**

The LE/A is responsible for compiling all the discipline-specific NavisWorks Cache files (NWC) into a single Master NavisWorks file (NWF) for coordination purposes.

After launching NavisWorks Manage, the LE/A should open his/her discipline NWC file and link other disciplines NWC files by going to the **FILE** pull-down menu, and selecting **Append** as shown in the image to the right.

This will open the **APPEND** Dialog Box as shown in the image to the right. Browse to every single discipline’s COORDINATION folder on the BIM Server mapped internally as the R:\ drive, by selecting the drop-down button. Select the NWC file and select the “Open” button.
Go to the Tools pull-down menu and select Global Options. This will open the OPTIONS EDITOR Dialog Box.

Expand the Interference/Display Units and make sure of the following:

- Under “Linear Units” select “Feet and inches Fractions”
- Under “Angular Units” select “Degrees”
- Under “Decimal Places” select “2”
- Under “Fractional Display Precision” select “1/32”

Expand the Interference/Smart Tags/Definitions and make sure of the following:

- Under the first “Category” field select “Item”
- Under the second “Category” field select “Element ID”

NOTE

All these settings can be imported from an XML file provided with this manual using the “Import” button found in the lower left hand corner of the OPTIONS EDITOR Dialog Box and selecting PA – NavisWorks Options.xml, which can be found under:

EAD\BIM Standard\2012\Support\n
After loading all disciplines NWC files, the LE/A will save this file in his own COORDINATION folder as a NWF file as described in Section 7.16.2.15 – NavisWorks Master File. The NavisWorks Master File (NWF) contains links to the original NWC files generated by each discipline. No model geometry is saved with this file format, so the next time the disciplines update their NWC files the Master files will automatically be updated. If links are not found, you will be prompted with the RESOLVE Dialog Box to re-path the location of the NWC files.
7.18.4 NAVISWORKS CLASH REPORT

7.18.4.1 COLOR SCHEMES

The following color scheme is used to promote consistency and easy identification across all users when generating Clash Reports.

<table>
<thead>
<tr>
<th>DISCIPLINE</th>
<th>COLOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Architectural</td>
<td>Cyan</td>
</tr>
<tr>
<td>Electrical</td>
<td>Yellow</td>
</tr>
<tr>
<td>Electronics</td>
<td>White</td>
</tr>
<tr>
<td>Corrosion Protection</td>
<td>Orange</td>
</tr>
<tr>
<td>HVAC</td>
<td>Green</td>
</tr>
<tr>
<td>Plumbing</td>
<td>Magenta</td>
</tr>
<tr>
<td>Fire Protection</td>
<td>Red</td>
</tr>
<tr>
<td>Vertical Circulation</td>
<td>Pink</td>
</tr>
<tr>
<td>Structural</td>
<td>Blue</td>
</tr>
</tbody>
</table>

**NOTE**

Depending on the project needs further breakdown can be set either by level or by system. Contact the CAD\BIM Support Group if you need to create new Color Schemes.

The image to the left shows an example in which Structural Bracing (color blue) and a HVAC Exhaust Fan (color green) are clashing.
NOTE
This can be accomplished by selecting each Discipline Model and overriding its color with the above settings.

7.18.4.2 CLASH DETECTIVE
Go to the Tools pull-down menu and select Clash Detective. This will open the CLASH DETECTIVE dockable window.

Switch to the Rules Tab and make sure of the following:
- The “Items in previously found pair of composite objects” option should be checked.
Switch to the Select Tab and make sure of the following:

- Under “Type” select “Hard”
- Under “Tolerance” select “0ft 0in”

Switch to the Results Tab and make sure of the following:

Under the “Display” category:
- The “Auto Reveal” option should be checked.
- The “Auto Zoom” option should be checked.
- The “Save Viewpoint” option should be checked.
- The “Dim Other” option should be checked.
- The “Transparent Dimming” option should be checked.

Under the “Item 1” and “Item 2” category
- The “Highlight” options should be un-checked on both.
Switch to the Report Tab and make sure of the following:

Under the “Contents” category:

- The “Summary” option should be checked.
- The “Date Found” option should be checked.
- The “Layer Name” option should be checked.
- The “Item ID” option should be checked.
- The “Status” option should be checked.
- The “Smart Tags” option should be checked.
- The “Image” option should be checked.

Under the “Report Format” category

- Select “HTML” from the pull-down menu.

NOTE

Depending on the type of Report you need to generate, make sure you check the appropriate Clash Type under the “Include Clashes” category.
7.18.4.3 CLASH REPORT SAMPLE

The image below shows an example of a NavisWorks Clash Report required on all BIM projects done at the Port Authority of NY & NJ.
7.19 Title Sheets & Contract Borders

The following pages shows images of the official Port Authority of NY & NJ Title Sheets and Contract Borders for both sizes, 22x34 and 34x56, used on Engineering and Path projects.
7.19.1 **Title Sheet Engineering 22x34**
7.19.2 Title Sheet Engineering 34x56
7.19.3 TITLE SHEET PATH 22x34
7.19.4 Title Sheet Path 34x56
7.19.5 CONTRACT BORDER ENGINEERING 22x34
7.19.6  CONTRACT BORDER ENGINEERING 34x56
7.19.7 **CONTRACT BORDER PATH 22x34**

![Diagram of contract border path 22x34]
7.19.8 **CONTRACT BORDER PATH 34x56**

![Diagram of CONTRACT BORDER PATH 34x56]
7.20 DISTRIBUTION FILES
This section documents the files provided with the Port Authority of NY & NJ BIM Standard.

7.20.1 MANUAL
Includes the PDF version of this document

7.20.2 SAMPLE FOLDER STRUCTURE
Includes empty Folder Structures for Central and Local model storage

7.20.3 SHARED PARAMETERS
Includes all the Parameters for all Disciplines

7.20.4 STAMPS
Includes Stamps for the Titleblocks for both sizes, 22x34 and 34x56

7.20.5 SUPPORT
Includes all the NavisWorks and AutoCAD support files

7.20.6 TEMPLATES
Includes the SM-PIM-FIM Template along with the 4 mayor discipline Templates

7.20.7 TITLEBLOCKS
Includes Titleblocks for both sizes, 22x34 and 34x56
7.21 UPDATES AND REVISIONS

The dynamic nature of BIM technology 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 standard based on changes in the BIM environment. All requested changes to this document must be accompanied by a Request to Change BIM Standard Form provided in Section 7.21.1 - Request to Change BIM Standard Form.

The Request to Change Standards form must be provided to the CAD\BIM Support Group. All requests will be reviewed on a periodic basis. If the change is approved, it will be incorporated into the next draft of this document and all support files will be modified.

The creation of Standards Content may be made based on Components used and approved by the CAD/BIM Support Group.

All requests must be accompanied by a Request to Create BIM Content Form provided in Section 7.21.1 - Request to Change BIM Standard Form.

The Request to Change Standards form must be provided to the CAD\BIM Support Group.

Updates to this document and the related support files will be made as required and will be posted on http://www.panynj-cadstandards.com/
# 7.21.1 Request to Change BIM Standard Form

## Requestor Information

| Name: | [ ] |
| Company: | [ ] |
| Address: | [ ] |
| City: | [ ] |
| State: | [ ] |
| Zip Code: | [ ] |
| Email: | [ ] |
| Phone: | [ ] |

## Category Change

| Document Correction | [ ] | Naming Conventions | [ ] |
| Environment Setup | [ ] | Best Practices and Procedures | [ ] |
| Sample Folder Structure | [ ] | Support Files | [ ] |
| Line Patterns | [ ] | Object Line Weights | [ ] |
| View Templates | [ ] | Filters | [ ] |

**Other (Specify):**

| [ ] |

## Description

Please be specific about any change or enhancements you would like to request and include why you are requesting the change.

| [ ] |

## Disclaimer

By making this submission you, the submitter, agrees that no contractual confidential relationship is established between you and the issuer of this Standard. If your material is incorporated into this Standard, you will not be compensated. In addition, if the material which you have submitted on this form is protected by any copyright, patent, trademark, or other proprietary right, then you are granting the issuer of this Standard a non-exclusive, royalty-free, perpetual and fully transferable license to use the materials in connection with this Standard.
### 7.21.2 REQUEST TO CREATE BIM CONTENT FORM

#### Requestor Information

| Name:          |  
|----------------|---
| Company:       |  
| Address:       |  
| City:          |  
| State:         |  
| Zip Code:      |  
| Email:         |  
| Phone:         |  

#### Category

<table>
<thead>
<tr>
<th>Family File</th>
<th>Family Types</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type Catalog</td>
<td>Materials</td>
</tr>
<tr>
<td>Symbol</td>
<td>Tag</td>
</tr>
<tr>
<td>Line Pattern</td>
<td>Fill Region</td>
</tr>
<tr>
<td>Text Style</td>
<td>Dimension Style</td>
</tr>
</tbody>
</table>

Other (Specify):

#### Description

Please be specific about if the information requested, such as a Family, its Types and dimensions along with its Uniformat Classification Code. Include any sample files, drawings or sketches.

---

**DISCLAIMER**

By making this submission you, the submitter, agrees that no contractual confidential relationship is established between you and the issuer of this Standard. If your material is incorporated into this Standard, you will not be compensated. In addition, if the material which you have submitted on this form is protected by any copyright, patent, trademark, or other proprietary right, then you are granting the issuer of this Standard a non-exclusive, royalty-free, perpetual and fully transferable license to use the materials in connection with this Standard.
### 7.22 ACRONYMS

<table>
<thead>
<tr>
<th>ACRONYMS</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIM</td>
<td>Building Information Model</td>
</tr>
<tr>
<td>C3D</td>
<td>Civil 3D</td>
</tr>
<tr>
<td>E/A D</td>
<td>Engineering/Architecture Design</td>
</tr>
<tr>
<td>FIM</td>
<td>Facility Information Model</td>
</tr>
<tr>
<td>IPD</td>
<td>Integrated Project Delivery</td>
</tr>
<tr>
<td>LE/A</td>
<td>Lead Engineer/Architect</td>
</tr>
<tr>
<td>LoD</td>
<td>Level of Development</td>
</tr>
<tr>
<td>PIM</td>
<td>Project Information Model</td>
</tr>
<tr>
<td>PWS</td>
<td>Project Website</td>
</tr>
<tr>
<td>SM</td>
<td>Site Model</td>
</tr>
<tr>
<td>TL</td>
<td>Task Leader</td>
</tr>
<tr>
<td>WCS</td>
<td>World Coordinates System</td>
</tr>
</tbody>
</table>
### 7.23 GLOSSARY OF TERMS

<table>
<thead>
<tr>
<th>TERM</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>3D Model</td>
<td>A three-dimensional representation of a building and/or structure generated out of a CAD and/or BIM application</td>
</tr>
<tr>
<td>Building Information Model</td>
<td>A Building Information Model (BIM) is a digital representation of the physical and functional characteristics of a building and/or structure</td>
</tr>
<tr>
<td>CAD\BIM Manager</td>
<td>The System Administrator for all CAD &amp; BIM projects, in this case the CAD\BIM Support Group</td>
</tr>
<tr>
<td>Central File</td>
<td>The Master Project File that is saved to a network drive and acts as the distribution point for publishing work to the rest of the team. The Central File stores the current ownership information for all the elements of the project</td>
</tr>
<tr>
<td>Contract Drawing</td>
<td>A drawing sheet of the Contract Set</td>
</tr>
<tr>
<td>Contract Set</td>
<td>The legal sheet of Mylar drawings originally signed and sealed by a PE or RA</td>
</tr>
<tr>
<td>DWF</td>
<td>A highly compressed non-editable vector file format created out of CAD\BIM applications. A DWF file can represent sheets for plotting purposes (2D DWF) or the entire 3D Model (3D DWF) for visualization or estimating purposes</td>
</tr>
<tr>
<td>Element Borrowing</td>
<td>The ability to edit an element located in a Workset owned by another user. If no one owns the Workset, permission to borrow the element is automatically granted</td>
</tr>
<tr>
<td>Facility Information Model</td>
<td>The Facility Information Model (FIM) stores the most current Revit-based and Civil 3D-based models of that particular facility</td>
</tr>
<tr>
<td>Intelligent Objects</td>
<td>An Object or Set of Objects that represents not only the geometry of a component but also has much more information that can be extracted in multiple ways depending on the user needs</td>
</tr>
<tr>
<td>Integrated Project Delivery</td>
<td>Integrated Project Delivery (IPD) is a project delivery approach that integrates people, systems, and practices to optimize efficiency through all phases of design, fabrication and construction</td>
</tr>
<tr>
<td>Lead Engineer/Architect</td>
<td>Lead Engineer/Architect (LE/A) refers to the project coordinator among all disciplines involved in the project</td>
</tr>
<tr>
<td>Local File</td>
<td>The copy of the Central File located directly on the user’s workstation. The main purpose of the Local File is faster data access. The Workset processes establish a link between the Central File and the Local File for data sharing</td>
</tr>
<tr>
<td>Level of Development</td>
<td>Level of Development</td>
</tr>
<tr>
<td>Project Information Model</td>
<td>The Project Information Model (PIM) stores the finalized Revit-based and Civil 3D-based models as a record of a completed project</td>
</tr>
<tr>
<td>Point Cloud</td>
<td>A Point Cloud is a large collection of points placed on a 3D Coordinate System which creates a 3D representation of an object or space.</td>
</tr>
<tr>
<td>Revit Families</td>
<td>Revit Families are groups of elements with a common set of parameters, identical use, and similar graphical representation</td>
</tr>
<tr>
<td>Shared Parameters</td>
<td>Shared Parameters can be added to projects and then shared with other families or projects. They give the ability to add specific data that is not already predefined in the Revit-based applications</td>
</tr>
<tr>
<td>TER M</td>
<td>DESCRIPTION</td>
</tr>
<tr>
<td>---------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Site Model</td>
<td>The Site Model (SM) is the centralized Revit-based file where all models share coordinates with each other and at the same time will control true north, project north, and elevations.</td>
</tr>
<tr>
<td>Task Leader</td>
<td>Task Leader (TL) refers to the each discipline's responsible team member. This person will be in charge of managing the 3D Model in terms of Worksets and rights.</td>
</tr>
<tr>
<td>Traditional Project Delivery</td>
<td>Traditional Project Delivery (TPD), such as Conceptual Design, Design Development, and Final Design, creates well-defined workflow boundaries that do not align with a collaborative process.</td>
</tr>
<tr>
<td>Worksets</td>
<td>Worksets create the ability to divide the project in functional areas allowing the propagation and coordination of changes between designers, enabling multiple members of a team the ability to simultaneously work on different portions of a project.</td>
</tr>
</tbody>
</table>
7.24  CONTACT INFORMATION

Questions regarding the Port Authority of NY & NJ BIM Standard provided within this Manual should be directed to the CAD\BIM Support Group at:

Port Authority of NY & NJ
100 Mulberry St.
Newark, NJ 07102
Two Gateway Center
11th Floor
Attn. CAD\BIM Support Group
973-565-7510
engcadd@panynj.gov