York University
Campus Services and Business Operations
Planning & Renovation

DRAWING STANDARDS AND PROCEDURES

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AUTOCAD DRAWING STANDARDS

Drawings submitted to York University will comply with the layering standard found in the AIA CAD Layer Guidelines found in the *United States National CAD Standard – Version 4*. The file naming convention will be based on the sheet identification format and also complies with the U.S. National CAD Standard. For additional detail beyond what is outlined herein, please refer to the U.S. National CAD Standard for guidance. A copy of the current National CAD Standard may be obtained from http://www.buildingsmartalliance.org/ncs/.

We will discuss briefly only two aspects of the drawing standards here: layering and sheet identification and delivery. A more detailed document of the drawing standards will be provided by the Department Planning and Design Services at a later date.

1. Layering

The layering standard complies with the AIA CAD Layer Guidelines as found in the United States National CAD Standard (US NCS) Version 4. It is also acceptable to adopt the current version of the US NCS (Version 5).

1.1. Layer Name Formatting

The layer name format is organized as a hierarchy with four defined layer name data fields separated from one another by dashes: Discipline Designator, Major Group, tow Minor Groups, and Status. Layer names may be as short as six characters (Discipline Designator + Major Group) or as long as fifteen characters (Discipline Designator(s) + Major Group + Minor Group(s) + Status).

Examples of acceptable layer names:

A-WALL (Discipline Designator + Major Group)
A-WALL-FULL (Discipline Designator + Major Group + Minor Group)
AI-WALL-FULL-DIMS-N (Discipline Designator with optional modifier + Major Groups + Minor Groups + Status)

1.1.1. Discipline Designator:

The Discipline Designator denotes the category of subject matter contained on the specified layer. It is a two-character field with the first character being a mandatory designator from the table below and if necessary an optional second character (a user defined modifier) followed by a hyphen. The Discipline Designators are the same for both layer names and file names.

Discipline Designator			
A	Architectural	**O**	Operations
B	Geotechnical	**P**	Plumbing
C	Civil	**Q**	Equipment
D	Process	**R**	Resource
E	Electrical	**S**	Structural
F	Fire Protection	**T**	Telecommunications
G	General	**U**	University (HU defined)
H	Hazardous Materials	**V**	Survey/Mapping
I	Interiors	**X**	Other Disciplines
L	Landscape	**Z**	Contractor / Shop Drawings
M	Mechanical		

1.1.2. Major Group:

The Major Group is a four-character field that identifies a major building system, such as doors, walls, windows, etc. Although most major groups are logically associated with specific discipline codes, it is possible to combine Major Group with any Discipline Designator, for example, A-WALL or I-WALL.

1.1.3. Minor Group:

This is an optional, four-character field to further define the Major Groups. For example, partial height walls (A-WALL-PART) might be differentiated from full height walls (A-WALL-FULL). The following common modifiers defined by the AIA can also be used in the minor group field:

IDEN identification tags
PATT texture or hatch patterns

1.1.4. Status Field:

The status field is an optional one-character designator that indicates work status or construction phase. Examples of values defined for this field, by the AIA, are as follows:

Status Field Codes			
N	New Work	**T**	Temporary work
E	Existing to remain	**M**	Items to be moved
D	Existing to demolish	**X**	Not in Contract
F	Future work	**1-9**	Phase Numbers

1.2. Attributes (Colors, Linetypes, Pens)

1.2.1. Colors:

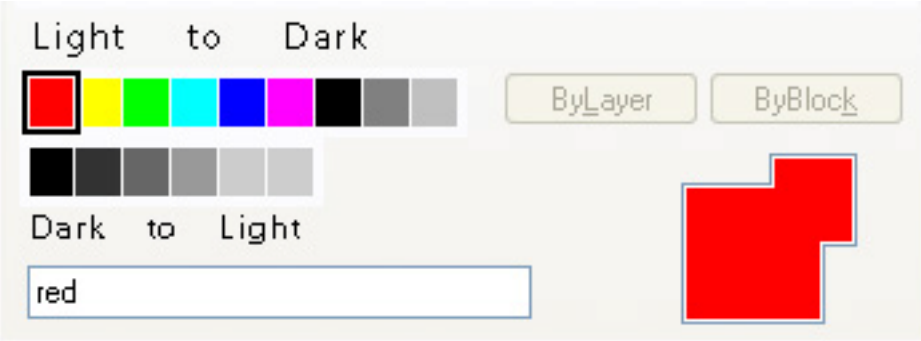
Drawing elements should assume the color property of the layer on which they reside or in other words, objects will have color “by layer”.

1.2.2. Linetypes:

The default linetype of each layer is typically “continuous” unless otherwise specified.

1.2.3. Line thickness:

Black pen will be used for color 1-red to 7-white with 1-red being thinnest (light) moving gradually to 7-white being heaviest (dark). For ghosting and background, 250-Dark Grey being the darkest (heaviest) gradually reduced to 255- Light Grey being the lightest (thinnest), using color pen. See below for general guideline of color and line thickness.



Color	NCS Color #	Line Thickness suggestion	Pen Plotter pen mm suggestion	Plot Color
Red	1	Thin (Extra Fine)	0.13	Black
Yellow	2	Thin (Fine)	0.18	Black
Green	3	Thin	0.25	Black
Cyan	4	Medium	0.35	Black
Blue	5	Heavy (Wide)	0.50	Black
Magenta	6	Heavy (Extra Wide)	0.70	Black
White	7	Heavy (Extra Wide)	0.70	Black
Gray	8	Heavy (XX Wide)	1.00	Black
Light Gray	9	Heavy (XXX Wide)	1.40	Black
250	250	Medium	0.35	250
251	251	Medium	0.35	251
252	252	Heavy	0.50	252
253	253	Thin	0.25	9
254	254	Thin	0.18	8
255	255	Thin	0.13	8
30	30	Heavy	0.50	Black
40	40	Heavy	0.70	Black

1.3. Layer Management

1.3.1. Use the minimum number of layers necessary to adequately separate entities in each drawing. Drawings should not contain extraneous, redundant or overly detailed layer names.

1.3.2. Purge each drawing of unused layers prior to submittal. The drawing file should contain only those layers necessary for displaying and plotting the information and drawing entities contained in each drawing. The drawing file should not contain any layer that is turned off or frozen.

1.4. Layer for Facility Management

1.4.1. A single layer named “RM” shall be created in each drawing of plans. This layer will contain only polylines that outline each room in the drawing.

1.4.2. The polyline for each room will follow the wall surface and will be a closed polyline. These polylines on this layer will be the link to our facilities management program.

1.4.3. This layer and its polylines are only required in the CAD submittals beginning when the project enters the construction phase.

2. Sheet Identification and Delivery

A corresponding DWG and PDF file will accompany each sheet submitted as a project deliverables. The sheet and digital files follow the same naming convention. York University requests that DWG files be submitted using eTransmit.

2.1. Naming Construction Drawings

The file naming convention follows the Sheet Identification section of the US NCS Version 4.

2.2. Sheet Identification

The sheet identification format is applicable to both manual and CAD drawing production. There are three components in a sheet identification format:

- the discipline designator, consisting of one alphabetical character and a hyphen or two alphabetical characters
- the sheet type designator, consisting of one numerical character
- the sheet sequence number, consisting of two numerical characters

The discipline designator used here are the same with the one used for naming layer. It is acceptable to combine different types of drawings onto the same sheet.

Discipline Designator				
A	**A**	N	N	N

Sheet Type Designator				
A	A	**N**	N	N

Sheet Sequence Number				
A	A	N	**N**	**N**

Sheet type Designators	
0	**General** (symbols legend, notes, etc.)
1	**Plans** (horizontal views)
2	**Elevations** (vertical views)
3	**Sections** (sectional views, wall sections)
4	**Large-Scale Views** (plans, elevations, stair sections, or sections that are not details)
5	**Details**
6	**Schedules and Diagrams**
7	**User Defined** (for types that do not fall in other categories including typical detail sheets)
8	**User Defined** (for types that do not fall in other categories)
9	**3D Representations** (isometrics, perspectives, photographs)

ROOM AND DOOR NUMBERING GUIDELINES

For New Construction and Major Renovation

1. Introduction

The following guidelines have been established to guide the process and procedures for establishing room and door numbers for new buildings and areas where major renovations/alterations are being proposed.

The first overall objective of a room numbering system is to establish a set of numbers to be assigned, one to each identifiable space or area, so that building occupants, users, visitors and maintenance/operational staff are guided in a logical and sequential manner to the rooms/areas to which access is required.

The second objective is to provide a room/area identification system which is suitable for facilities management where each individual room/area in a building has its own distinct number. This number is to be incorporated into the facilities management database which will allow for quick reference to any identifiable space/area on the campus.

The following guidelines recognize that room numbering takes priority over door numbering. Rooms with more than one door will be signed with the same number at all its entrances. Each door will, however, have its own distinct number which will allow it to be identified for the purposes of maintenance, keying, etc. The guidelines attempt to establish a logical and systematic relationship between room numbers and the associated doors.

The higher priority of room numbers over door numbers arises out of consideration of how numbers are used by building occupants/visitors and of facilities management and the related space management data base. Users can usually identify easier with room numbers as opposed to door numbers since it is room numbers that are identified in directories and way-finding signage. The process of finding a room in a complex of buildings is not unlike the experience of locating a street address. The occupants/visitors should be exposed to a logical, systematic method of room identification which quickly leads to the space/area of interest.

Contact Graphic Design/ Signage coordinator and Space Data coordinator for room numbering and signage confirmation. Final room numbers of new buildings have to be approved by Space Data coordinator prior to commencing construction.

2. Room Numbering

The following guidelines are to be applied in the establishment of the room/area numbers within a building:

2.1 Identifiable Spaces

All identifiable spaces within a given building/area are to receive their own distinct and unique numbers. This applies to both assignable and non-assignable spaces such as corridors, vestibules, mechanical/electrical rooms, kitchens, washrooms, etc.

2.2 Room Identification

2.2.1 Room numbers will be four characters where the first four are digits and the fourth is a letter suffix, where applicable. The first digit represents the floor number and the next three digits indicate the room number. The letter suffix is only applicable in the case of a suite or adjoining/adjacent rooms or areas where letter suffix is required for proper distinction between the two spaces.

2.2.2 Where a floor in a given building may contain more than 99 identifiable rooms/areas, a five character system will be applied with the first four characters being digits and the fifth being a letter suffix, where applicable. Numbering will begin at 1001, 2001, 3001, etc. for each floor and increase sequentially.

2.2.3 Where the number of floors in a building exceeds nine, a four and five character system will be applied as described in article 2.2.2. Floors one through nine, including the basement, will have a four character system, while floors 10 and up, will have a five character system. Where articles 2.2.2 and 2.2.3 apply simultaneously to any one given building, refer to the Department of Facilities Planning for clarification.

2.2.4 Letter prefixes are not used to distinguish wings or blocks of building/floors since they have proven to be unsuccessful in aiding visitors/occupants to quickly find the areas of interest.

2.2.5 The letters "I" and "O" are not to be used as suffixes due to their similarity in appearance to digits.

2.3 Suites

A suite is herein defined as a group of spaces which open onto a common circulation area which eventually exits to a main corridor.

2.3.1 The room which provides the main entrance to the suite receives the sequential room number. The rooms opening onto the open plan space will receive letter suffixes starting with "A" and proceeding in a clockwise direction.

2.4 Corridors

A corridor is herein defined as the space onto which individual rooms open into. It normally follows the vestibule or lobby of a given floor/building.

2.4.1 All corridors within a given floor are to receive their own distinctive number. Where a corridor changes direction, it maintains the same number unless the change in direction involves a physical break.

2.4.2 Physical breaks leading to a change in number include doors and changes in elevation such as stairs. Gradually sloping ramps do not account for a change in corridor number.

2.4.3 There should be identification at all doors off corridors indicating the number of the space to which the door provides access.

2.5 Phantom Spaces

Phantom spaces are those areas where no physical barriers exist but the obvious distinction of different spaces does exist. Phantom spaces are common in wide corridors or open plan areas where spaces are distinguished without the use of physical barriers.

2.5.1 Phantom spaces are to receive their own distinct and sequential number after a dash following the room numbers whether they be in a corridor, open plan area, or a suite. Example of phantom space number: 2017A-1, 135-2

2.5.2 Phantom spaces are not normally displayed, but are necessary for facilities management database purposes.

2.6 Non-Assignable Spaces

All non-assignable spaces such as corridors, elevators, ramps, vestibules, lobbies, caretaking closets, washrooms, electrical/mechanical rooms, etc. are to receive their own distinct number.

2.6.1 Non-assignable spaces are to be numbered in descending order starting with the digit representing the floor and followed by 99. They need not be in sequence with the assignable room/areas since visitors to the floor will likely not be looking for these areas. Furthermore, by numbering in a descending order beginning with 99, lower sequential numbers are left available for future changes/expansion.

2.6.2 Where a floor contains more than 99 identifiable spaces and a four

digit numbering system is used, non-assignable room/areas are to be numbered in descending order starting with the digit representing the floor and followed by 199.

2.7 Basements

Zero will be the first digit for basements, or the lowest below grade level. The letter prefix "b" is not to be used to identify spaces in basement levels. The digit zero applies to both a three digit and four digit numbering system. In a three digit system, the first room number will be 001 and in a four digit system 0001.

2.8 Even/Odd Numbering

On double loaded corridors, odd numbers will be located along one side of the corridor and even numbers on the opposite side.

2.8.1 Rooms whose doors open off a corridor from the north and east are to receive even numbers while those opening from the south and west are to receive odd numbers.

2.8.2 Where larger spaces on one side of a corridor are opposite single occupancy offices, it is recommended that numbers be skipped with respect to the larger spaces. This should be done so that the number applied to the larger space is opposite to a number close to it. (For example, the large room opposite offices 122 and 124, should be 123 regardless if numbers have to be skipped along the odd side to do so).

2.8.3 In building/floors where single loaded corridors exist, an even/odd numbering system need not be used. Room numbers should follow a logical sequence regardless of odd and even numbers.

2.9 Beginning of Sequence

On any floor, the lowest number in the floor sequence should be at the major point of access to the floor, unless there is some other logical starting point for the number system. All room numbers should follow a logical sequence starting from the lowest number. This sequence should be maintained regardless of change in direction of corridors or other paths of travel. Occupants/visitors to the floor should be able to follow the sequence regardless of their point of entry to the floor/building.

2.10 Numbering Sequence

In establishing a room numbering system, some consideration should be given to the flexibility required to facilitate future changes in the room configurations. Numbers need not increment consecutively, especially where the potential for future subdivision or change exists. This will permit the numbering scheme to remain intact by having unused numbers in the sequence available for use.

2.11 Tiered Spaces

Where a room/area spans two or more floors, such as a tiered-floor lecture theatre, the room number will be the number in the appropriate sequence of the major entrance at the lowest level.

2.12 Vertical Spaces

Similarity of numbers for rooms vertically above one another should be applied whenever possible, especially in the case of service/non-assignable rooms/spaces such as washrooms, electrical/mechanical rooms, stairwells, elevator shafts, etc. This will facilitate in locating such spaces for maintenance purposes due to their similar servicing.

2.13 Pipe Space

Pipe space will be numbered in descending order starting with the digit representing the floor, followed by 99 (or another high number that can be justified) following by a letter suffix starting with Z.

3. Door Numbering

The following guidelines are to be applied in the establishment of the door numbers within a building:

3.1. Door Identification

3.1.1. All doors are to receive their own distinct number for the purposes of identification for operational and maintenance staff.

3.1.2. If required, door numbers can be displayed by means of small inconspicuous labels attached to the top corner of the door over the hinge, on the corridor or entry side of the door.

3.1.3. All door numbers are to be identified on all drawings produced and filed by the Drafting Office.

3.2. Single-door Rooms/Areas

Where there is only one door to a room/space, the door number will be the room number following by a dot (.) and number one (1). For example, room 105 has only 1 door. The door number will be 105.1

3.3. Multiple-door Room/Areas

3.3.1. Where a room/space has more than one door leading into or out of the space, the more frequently used door will have the same number as the room following

by dot (.) one (1).

3.3.2. Other doors in multiple-door spaces/rooms will be made up of the room number followed by a number suffix after a dot (.) starting with number two (2) and continuing in a clockwise direction around the room/space.

3.4. Doors to Adjoining Rooms

Where two or more room/spaces share doors, the door number will be that of the room into which the door swings followed by a number suffix after a dot (.). Usually, the number suffix is greater or equal to (2), unless it is the only door into the adjoining room/space.

3.5. Entrance Doors

All exterior/entrance door numbers are to be preceded by the letter "E" signifying "Entrance".

3.5.1. Entrance door numbering is to begin at the North East corner of the building and continue in a clockwise direction and increase sequentially beginning with E101.

3.5.2. Entrance doors which access off of floors other than the ground or first floor are to be numbered accordingly to indicate the floor number while maintaining the prefix "E".

3.5.3. Entrance door numbers in a building which contains a four digit room numbering system need not have four digits unless there are more than 99 entrance doors on any given floor.