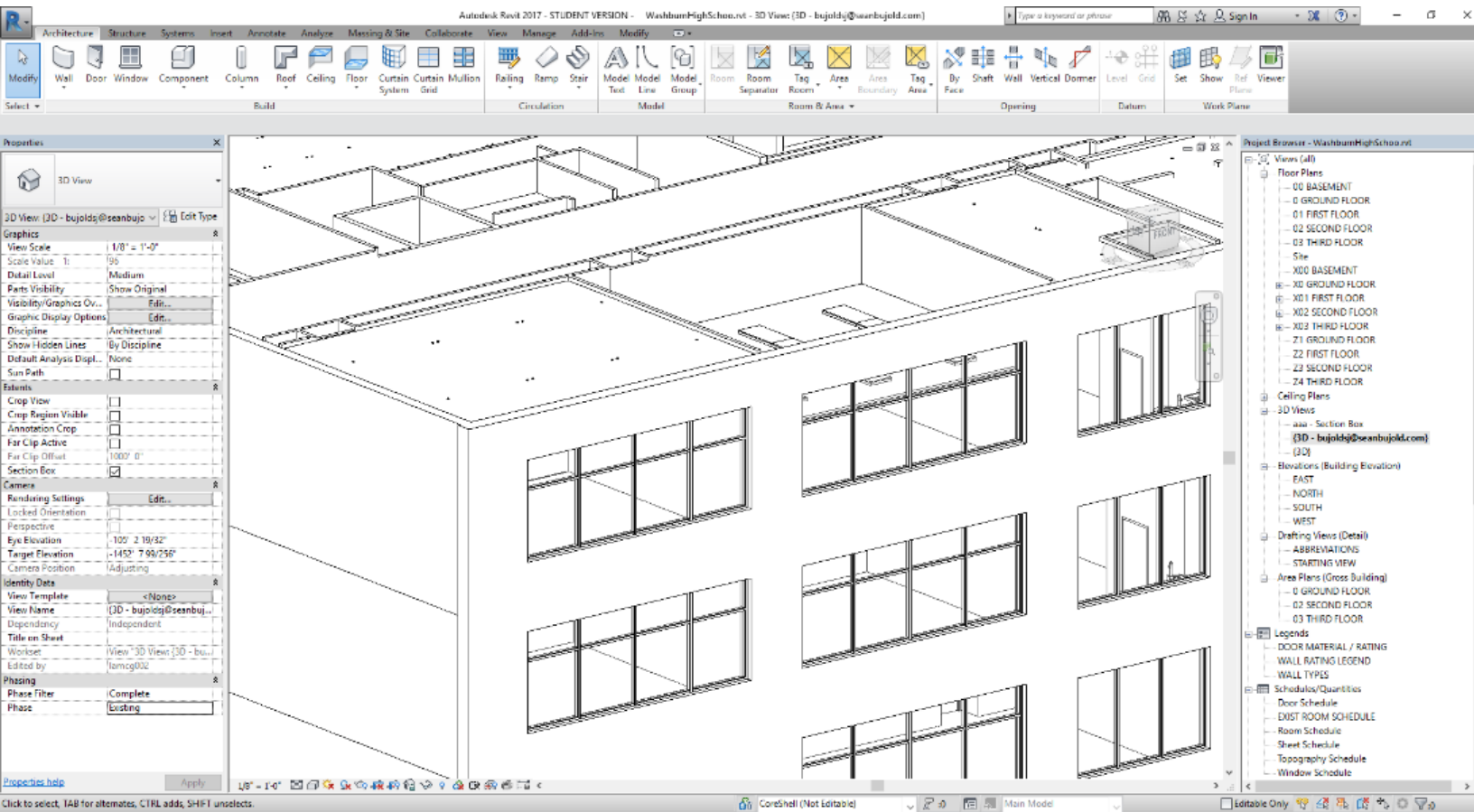


Revit and Drafting Standards



Minneapolis Public Schools

Version 1.1

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Introduction

Minneapolis Public Schools (MPS) provides a Revit template, Revit and Drafting standards, and sheet numbering standards. Architectural consultants are expected to use Autodesk Revit and their consultants are encouraged to use Revit where reasonable. If Revit is not an option for a sub-consultant, Autodesk CAD is the acceptable option. To the extent possible, follow these standards in order to deliver a standardized Revit file as one of the project deliverables to MPS. Included in these standards are:

- Default template file: “default20__.rte” (default[version].rte)
- Sheet numbering standards
- Sample Revit families that may be used. Consultant is responsible for all content in the model.

Start project files from this template unless you receive an accurate as-built Revit model from MPS. The default view is set to Drafting View named STARTING VIEW. Customize this view with project name and information.

Level of Detail

MPS expects that the entire building is modeled in Revit. New construction and renovation portions of the building shall be modeled at LOD 300 and field verification is required. Portions of the building that are not new construction or renovation shall be modeled at LOD 200 based on historical documents provided by MPS. Field verification is not required in those portions of the building. Exterior walls will have a material applied that accurately represents the existing material so that renderings of new construction are realistic. Revit models will include a 3D topography and plantings.

Naming Conventions

File names must include at least the official four character code for the building. If reasonable, include the full name of the building in the file name for clarity. The file name must also include the fiscal year in which the project was funded. Example:

Project name: FY17 Washburn Renovation and Expansion

Code: WASH

Revit file name: Washburn_FY17.rvt or WASH_FY17.rvt

If linked files are used for Structural, Mechanical, Interiors, etc. then use similar names to identify linked files for the same work. For example the structural file for the example would be Washburn_FY17_Structural.rvt or WASH_FY17_Structural.rvt. If the project is a campus with multiple buildings, create a main campus file (Washburn_Campus_FY17) and link individual building Revit files.

Archiving: Archive each official submittal phase of project with dated file. nameSD10-24-17, nameDD10-24-17, etc. Central file name remains the same and continues forward with current information.

Type face and size

Use Arial typeface. Type size will vary by use. We suggest these sizes and understand that there will be variations depending on specific situations.

- Text notes: $\frac{3}{32}$ " in general, $\frac{1}{16}$ " if necessary. Please do not use typeface sizes smaller than $\frac{1}{16}$ " as they can be difficult to read.
- Text notes with emphasis: $\frac{3}{32}$ " bold Arial or $\frac{1}{4}$ " as needed.
- Drawing titles on sheets: $\frac{3}{32}$ "
- Headings can be $\frac{1}{4}$ " and larger as needed

Revit Families

The library contains both Revit families and text files that define family parameters for the most commonly used elements. Example: A single door will have a table of information, created in a text file, that defines multiple widths, heights, types (A, B, C..), material, frame type, comments, etc. Additional sizes, etc. can be defined for an individual project as needed.

Manufacturers are providing more and more families for their products. Care must be taken that these families are created properly and are generic enough for open specifications. Make every attempt to keep Revit family sizes small and simple as to not bog down large Revit models.

Browser Organization

Default to “All” when files sent to School District. Consultant may choose to work in alternate Browser views, but will select All when sent to District.

Views

Delete unreferenced views.

Worksets

Worksets divide scope and work process to speed up process allowing multiple people to be active in one project file at a time. Worksets need to be for larger groupings – entire building, entire shell of building, entire mechanical or structural elements of building. Worksets should relate to building such that information for all floors (vertical information) is contained in the same work set. Do not subdivide building into quadrants or other pieces in a workset.

Standard worksets

- CoreShell – Exterior of building, floors, stairs, elevators, toilets, etc.
- BuildOut – new construction walls, doors, interior windows, ceilings, floors, etc.
- Entourage – cars, people, etc.
- Code – egress path, notes, rates, (text in legend), occupancy, etc. (visible only on Code Plan)
- FEE – furniture and equipment
- Int – Interiors, floor finishes, wall treatments, etc.
- Sign - Signage
- Site – topography, walks, drives, landscape and all related site work.

Linked files

Linked files: If linked files are utilized, each file should have separate workset in the main file:

- LinkMech - Mechanical
- LinkPlmb - Plumbing
- LinkElec – Power and Lighting
- LinkST - Structural
- LinkFire – fire protection system
- LinkSurvey – link survey
- LinkCivil – link Civil
- LinkCAD – used for CAD files not associated with a specific discipline

Non-Revit information (DWG, etc.) must be linked instead of imported.

Projects with a campus of multiple buildings will have worksets for individual buildings.

Sheet Names and Sorting

Sheet numbering is standardized and based on the National CAD Standards, Version 6. With very few exceptions, MPS follows the CAD standards. Sheet names will have two alpha characters and three numerical characters. The characters symbolize:

- First alpha character represents the discipline as follows:
 - G = General
 - H = Hazardous Materials
 - V = Survey/Mapping
 - B = Geotechnical
 - C = Civil
 - L = Landscape
 - S = Structural
 - A = Architectural
 - I = Interiors
 - Q = Equipment
 - F = Fire Protection
 - P = Plumbing
 - D = Process
 - M = Mechanical
 - E = Electrical
 - T = Telecommunications
 - X = Other Disciplines
 - Z = Contractor/Shop drawings
 - O = Operations
- Second alpha character represents the phase and sub discipline as follows:
 - - = new construction phase that does not specify a sub discipline
 - D = demolition
 - MD = general mechanical demolition
 - MH = Mechanical HVAC
 - MX = Mechanical HVAC demolition
 - MP = Mechanical piping
 - MY = Mechanical piping demolition
 - MC = Mechanical controls
 - MZ = Mechanical controls demolition
 - ED = general electrical demolition

- EP = Electrical power
- EX = Electrical power demolition
- EL = Electrical lighting
- EY = Electrical lighting demolition
- First numerical character represents the type of drawing as follows:
 - 0 = general
 - 1 = plans
 - 100 = floor plan below first floor
 - 101 = floor plan below first floor
 - 110 = first floor plan zone A
 - 111 = first floor plan zone B
 - 120 = second floor plan zone A
 - 121 = second floor plan zone B
 - 130 = third floor plan zone A
 - 131 = third floor plan zone B
 - 180 = roof plan
 - 190 = penthouse roof plan
 - 2 = exterior elevations and RCPs
 - 200 = exterior elevation 1
 - 201 = exterior elevation 2
 - 250 = RCP on levels below first floor
 - 260 = RCP first floor
 - 270 = RCP second floor
 - 280 = RCP third floor
 - 290 = RCP fourth floor
 - 3 = building sections
 - 300 = building sections
 - 310 = wall sections
 - 320 = stair sections
 - 4 = enlarged floor plans
 - 5 = details
 - 6 = schedules
 - 7 = add alternates
 - 700 = drawings related to alternate #1
 - 710 = drawings related to alternate #2
 - 720 = drawings related to alternate #3
 - 8 = miscellaneous
 - 9 = 3-D rendering and imagery

Sorting

Use a sort parameter in the sheet list schedule to properly sort disciplines in this order

Sort	Sheet Discipline	Number	Title
0	General	G-000	General Information
1	Hazardous Materials	H-000	Hazardous Materials General
2	Survey	V-000	Site Survey
3	Geotechnical	B-000	Geotechnical
4	Civil	C-100	Civil Site Plan
5	Landscape Architecture	L-100	Landscape Architecture Site Plan
6	Structural	S-120	Second floor framing plan
7	Architecture	AD110	First Floor Demolition Plan
8	Architecture	A-110	First Floor Plan
9	Interiors	I-130	Third floor interiors floor plan
10	Equipment	Q-110	First Floor Equipment Plan
10.1	Equipment	QF110	First Floor Kitchen Equipment Plan
10.2	Equipment	QE120	Second Floor Science Equipment Plan
11	Fire Protection	F-110	First Floor Fire Protection Plan
12	Plumbing	P-130	Third Floor Plumbing Plan
13	Mechanical	M-120	Second General Mechanical Plan
13.1	Mechanical	MP120	Second Floor Mechanical Piping Plan
13.2	Mechanical	MH120	Second Floor Mechanical HVAC Plan
13.3	Mechanical	MC120	Second Floor Mechanical Controls Plan
14	Electrical	E-110	First Floor General Electrical Plan
14.1	Electrical	EP110	First Floor Electrical Power Plan
14.2	Electrical	EL110	First Floor Electrical Lighting Plan
14.3	Electrical	EI110	First Floor Electrical Instrumentation Plan
14.4	Electrical	ET110	First Floor Electrical Telecommunications Plan
14.5	Electrical	EY110	First Floor Electrical Auxiliary Systems
15	Security	TY110	First Floor Security Plan
16	Telecommunications	T-110	First Floor Telecommunications Plan
17	Other disciplines		
18	Contractor	Z-503	Shop Drawing Details
19	Operations	o-700	Operations Alternates

Plans

Floor Plans

100	Start numbering at 100 for all floor plans that represent floors below first floor
110	First floor plan (use series for plans separated by zone)
120	Second floor plan
130	Third floor plan
140	Fourth floor plan
150	Fifth floor plan
180	Roof plan
190	Penthouse plan

Sheets with floor plans

Sheets that contain floor plans shall be numbered according to their floor. The 100 and 250 series sheets will have the fourth sheet digit correspond to the level. For example, third floor plans will be on 130.

Reflected Ceiling Plans

Reflected ceiling plans will be placed starting at 250. Floors below first floor will start at 250, first floor will be placed on 260, etc.

Other sheets

Sheets that contain plans that do not correspond to a specific floor will be numbered in series starting at 00. Subsequent sheets will be numbered in series. When possible, match enlarged floor plan sheet numbering between architectural, mechanical, structural, and electrical sheets. For example, detail sheets will be placed on A-500, E-500, S-500, etc.

3D Views

Label 3D views according to what you are viewing; North Entrance, Science Room, Band Room, etc.

Elevations

Label building elevations: NORTH, SOUTH, EAST, AND WEST. Label partial elevations with descriptive names: entrance elevation, kitchen prep area elevation, etc.

Sections

Label building sections according to cardinal direction. NORTH/SOUTH, EAST/WEST. Label stair sections according to the stair letter designated on floor plans. Label wall sections in a descriptive manner: brick wall section, window head detail at brick, etc.

Detail Views

Name for object detailing: Support Bracket, Laundry Shelf, etc.

Renderings

Save images from 3D views as JPG files that can be exported.

Legends

Create legends that describe:

- WALL TYPES
- WALL RATING
- REGULATORY INFORMATION
- DOOR TYPES
- FRAME DETAILS
- FRAME TYPES

Post CD Phase

Revision Clouds and Table

- Label revisions per Project, not sheet.
- Make revisions to current views.
- Bubble changes. (Don't bubble on sheet. Bubble in model view.)
Change "Revision" parameter to appropriate revision in table.
- Once changes are correct, duplicate the view and use PREFIX (ADD1, ASI3) for view name.
- Change parameter "Title on Sheet" so prefix assigned to view does not show on sheet title.
- Adjust 'crop view' to fit on 8.5x11 sheet or reprint large sheet.

Use prefix indicated for sheets with changes.

- ADD01 ADDENDUM
- ASI03 ARCHITECTS SUPPLEMENTAL INSTRUCTION
- CCD02 CONSTRUCTION CHANGE DIRECTIVE
- RFP04 Request for Proposal
 - RFP - Proposed changes should be done as Design Option.
Once completed, use a 'call out' for a new view with prefix showing Design Option of choice.

Printed documents

Print to PDF at the end of each official submittal phase and archive the entire set.

View Templates

Suggested view templates.

1/8 Floor Plan Project North

- Detail Level - course
- Project North
- Phase – Previous and New

1/4 Floor Plan Project North

- Detail Level – Fine (Over write wall level to course so wall rating is visible.)

<input type="checkbox"/>	Topography								<input type="checkbox"/>	by view
<input checked="" type="checkbox"/>	Walls								<input type="checkbox"/>	Coarse
<input checked="" type="checkbox"/>	Windows								<input type="checkbox"/>	by view

- Project North
- Phase – Previous and New

Code Plan

1/8 RCP

- Detail Level - course
- Project North
- Phase – Previous and New

1/8 Building Elevation

- Detail Level - Medium
- Phase – Previous and New

1/8 Building Section

- Detail Level - Medium
- Phase – Previous and New

1/20 Site Plan True North

- Detail Level - course
- Project North
- Phase – Previous and New

Families / Model Objects

- Confirm that assembly code is assigned and accurate for object.
- Door families – See basic doors provided with District template.
Expand as needed for individual project.
- In place families should be used for unique objects only.

Wall Types

Wall types provided as samples and may be used. Architect responsible for construction and regulatory requirements.

Walls – walls are created and named based on fire rating and construction elements. Wall types contain graphic representation based on wall rating. Wall tag will provide additional information regarding construction.

Wall rating patterns visible in “course” view setting. Fill patterns color as follows:

- Blue - 1 Hour Fire
- Green – Smoke
- Red – 2 Hour Fire
- Pattern files included



1 HOUR FIRE/SMOKE BARRIER



1 HOUR FIRE BARRIER



2 HOUR FIRE BARRIER



2 HOUR FIRE/SMOKE BARRIER



2 HOUR FIRE WALL

- Use Wall Type Legend for construction elements
- Use Wall Rating Legend for rating designation
- Annotations on plans, elevations and details shall be:
 - UPPERCASE Arial font
 - 3/32” height when plotted

Detailing

Reference views in the model to create detail views and avoid using drafting views at all costs. Use detail component families when possible.

Purge

Purge unused objects.

End of Document