

**BWSC CAD  
Standards for  
Site Plans  
(Design and  
As-Built)**

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# Type A

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*The following CAD standards are for Type A application and involve no work in Public Street, except for connection(s) to the Boston Water and Sewer Commission (BWSC) facilities and no addition or modification to BWSC facilities. The BWSC Engineering Customer Services Department will determine which type of application will apply to you.*

## **Format**

All drawings submitted to the Boston Water and Sewer Commission (BWSC) must be provided on disk or CD in DWG format. DXF and DGN (Microstation) formats must be converted to DWG format to be accepted by BWSC. Version of AutoCAD software must be at least Release 14 up to Release 2016.

Prior to delivery to the BWSC, the following must be done on all drawings:

1. If the site plan itself is a block, it must be exploded.
2. PURGE all unused objects and AUDIT all drawings.
3. The ZOOM EXTENTS command must be issued in Model Tab (Model Space) and in each layout (Paper Space).
4. Lost objects must be removed from each tab.

## **Scale**

All drawings provided must be done in MODEL SPACE at real scale (1:1) and must be printable from a layout (PAPER SPACE) at scale 1"=1" (1:1).

BWSC Standard scale for viewports is 1"=20'. Other scales must be pre-approved by the BWSC. The height of text when printing drawings from Paper Space at the scale 1:1 must not be smaller than 0.09 inch.

## **Fonts, Linetypes, Shapes**

The BWSC will not accept drawings that require special font files, linetypes, and shape files. All fonts and linetypes used on as-built plans should be selected among the fonts and linetypes provided by Autodesk with their software. Special linetypes that require shape files are not acceptable.

## Layers

All drawings submitted to the BWSC must comply with the following layers and colors:

Name	On	Freeze	Lock	Color	Linetype	Plot
BWSC-DRAIN				104	CONTINUOUS	
Proposed and as-built drain pipes, catch basins, manholes, laterals related annotations, etc. Existing drain on separate layer color  253						
BWSC-SEWER				30	CONTINUOUS	
Proposed and as-built sewer and combined sewer pipes, manholes, laterals and related annotations, etc. Existing sewer on separate layer color  253						
BWSC-WATER				160	CONTINUOUS	
Proposed and as-built water pipes, valves, hydrants, service connections, meter, related annotations, etc. Existing water on separate layer color  253						
BWSC-DIM				240	CONTINUOUS	
Dimensions, measurements, ties, and stations to proposed and as-built water, sewer and drain facilities, miscellaneous as-built annotations.						
BWSC-Street Names				180	CONTINUOUS	
For street names only. Color 180 is defined with a line width of 0.70 mm in all BWSC PC3 files.						
Building Outline				7	CONTINUOUS	
Thick polyline for proposed building outline in black.						
Prop-Roadway				7	CONTINUOUS	
For proposed or new roadways, property limits. Limited linework and annotations if possible						
ALL OTHER UTILITIES LAYERS in MODEL space				253	CONTINUOUS	
All existing and proposed utilities, existing water, sewers, and drains, existing roadways, sidewalks, parking lots, vegetation, proposed curbs, existing and proposed electric, telephone, gas, etc.						
ALL LAYERS IN TITLE BLOCKS				7	CONTINUOUS	
Frame, text and all object in title block must be black						

The color of all AutoCAD entities must be set to BYLAYER.

Structural and other details can be in any color except yellow, cyan and the colors used above (30, 104, 160, 180, 240).

For the applicant's convenience, the BWSC will provide a drawing file with the above layers already created. This file may be inserted in your drawings.

## External Reference and Image Files

- ✓ When submitting Site Plan Record Plan Drawings to Engineering Customer Service, please make sure that there are no External

Reference files (XREFS) and external images included in the Drawing. You can choose to bind a XREF to a drawing using either the Bind option or the Insert option. The option you choose determines how the file names are merged from the reference file into the drawing file. Using Bind will avoid overriding existing block definitions. If you use Insert, the symbol names are merged into the drawing file. If duplicate symbols exist, AutoCAD uses the symbols already defined in the current drawing and overrides them.

- ✓ External images must be removed from drawings and re-inserted as an embedded (OLE) object. (Copying and pasting images from MS Word is a quick method for embedding images).

### ***Surveyed Information***

- ✓ AEC survey points, if available should be present in the drawing on frozen or non-printable layers.
- ✓ If available, benchmark elevation and description should be noted with location description.

### ***Annotations***

- ✓ The default “Standard” text style and Dimension Style must not be used. The applicant must create their own text styles and dimension styles.
- ✓ The “**ASBUILT**” text style included in the BWSC template should be used for proposed (design) and for as-built annotations.
- ✓ As-built and proposed annotations should be on the appropriate BWSC layer (see table above). Miscellaneous proposed annotations should be black.
- ✓ Street names must be at least 0.30 inch high on prints. The “Street Names” layer with color 180 should be used so that street names will be printed in black with a line width of 0.80 mm. No other entities should be present on this layer. Private streets must be named and annotated with the words “(PRIVATE WAY)”.
- ✓ Annotations should be set to print no smaller than 0,09 inch high from the layout (PAPER SPACE).
- ✓ Fonts used must be selected among the fonts present on the Autodesk CD. Fonts used for logos should be exploded.
- ✓ Windows default True Type Fonts Arial, Swiss, and Times are also acceptable.
- ✓ Size and type of pipes as well as year of installation should be noted.

- ✓ Hydrant manufacturer must be noted near hydrants.
- ✓ Valves manufacturer must be noted near water valves.
- ✓ Water meter number and MTU serial number must be noted near the meter if known.
- ✓ Sump manholes should be noted as such.

### **Depths**

- Rim elevations and inverts taken must refer to **Boston City Base (BCB)** elevation (NGVD Mean Sea Level Datum 1929 -5.65) or (NAVD 1988 +6.46)
- Depths on valves must be indicated as well as on tees, crosses, and bends.
- For all manholes, inverts must be noted. Inverts must start with the outlet of the manhole, then all inverts IN must be listed from the outlet in a clockwise order. If two or more inverts are the same, they all must be listed.
- Rim elevations must be taken and noted on plans for all proposed manholes and catch basins.

### **Stationing**

- If stationing has been performed, it should be left on the drawing(s) on a black (color 7) layer.
- When possible STA 0+00 should be aligned with the corner of the property line of the street where work is taking place.
- All manholes, valves, tees, crosses, bends and service connection must be stationed.

### **Symbols**

- ✓ Symbols provided in the BWSC template file and in the BWSC Symbol Library file must be used as indicated.
- ✓ Symbols are to be used as provided, scale 1:1 in model space, not exploded. The valve symbol may be scaled to fit pipe.
- ✓ Bends must be notes along water mains as horizontal or vertical. Complex situations should have a detailed view and/or picture.
- ✓ When manhole is not centered on the pipe, it must be shown as such.
- ✓ If other symbols (AutoCAD 2006-2016 dynamic blocks format only) are needed, request them from the Director of CAD, Denise Devlin at 617-989-7424 or at [devlindm@bwsc.org](mailto:devlindm@bwsc.org)

- ✓ Wye connections must be inserted so that they are in the direction of the flow.

### **Dimensions**

- ✓ The default “Standard” dimension style must not be used. The applicants must create their own dimension styles or use the As-Built dimension style provided.
- ✓ Swing ties must be taken to locate valves, tees, crosses, bends, manholes, catch basins, service connections, etc.
- ✓ Offsets from the property line must be taken at valves, tees, crosses, bends, manholes, service connections, and every 50 feet along the pipes.

### **Profiles**

- ✓ Profiles must be created for as-built sewers and drains and show the following:
  - Existing grade or finished grade must be shown and based on Boston City Base elevation.
  - Station number, rim, and invert elevations must be noted at each manhole.
  - If a profile is provided, the color of layers created by the software must be changed according to the above chart.

### **Pipes**

- ✓ Although the BWSC standard is to show pipes widths at real size, proposed and as-built pipes may be represented with a solid polyline with a printed width of at least  $\frac{1}{16}$ <sup>th</sup> of an inch (1.50 mm).
- ✓ Services pipes must be shown with service gates or corporation stop and up to the meter.
- ✓ Fire pipes must be shown up to the OS&Y valve or to the cross connection device.
- ✓ Abandoned services left in place should be noted on plans.
- ✓ Sewer and drain connections must be shown up to the building.

Questions about the BWSC CAD Standards should be directed to:

Denise Devlin  
Director of CAD  
Tel: 617-989-7424  
[devlindm@bwsc.org](mailto:devlindm@bwsc.org)

The Inspection Sign-Off Schedule must be included with each proposed and as-built site plan submission.

See AutoCAD template for form.

<b>INSPECTION SIGN-OFF SCHEDULE</b>				
<b>Service Connections</b>				
<b>To Be Submitted with Proposed Plans</b>			<b>To Be Submitted with As-Built Plans</b>	
<b>Item No.</b>	<b>Description of Service</b>	<b>Qty</b>	<b>BWSC Inspector/Date</b>	<b>Comments</b>
1	2" Domestic Service	1	Tom Krabey / 3.23.09	See GSA 1235
2	4" Fire Pipe Service	1	Tom Krabey / 3.23.09	See GSA 1236
3	6" Drain Overflow	1	Leo Grastorf / 3.24.09	Modified Installation
4	Infiltration (6' dia. Drywell)	1	Leo Grastorf / 3.24.09	GSA 1234
5	Particle Separator	1	Leo Grastorf / 3.24.09	Not Installed
6	Cut & Cap Water	1	Leo Grastorf / 3.24.09	Completed
7	Cut & Cap Sewer	1	Leo Grastorf / 3.24.09	Completed
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Sample Information Only

The As-Built Certification form must be included with each as-built site plan submission.  
See AutoCAD template for form.

## AS-BUILT PLAN CERTIFICATION

I certify that these plans were prepared in accordance with the Boston Water and Sewer Commission (“Commission”) minimum standards for As-built plans. The undersign further certifies that the survey measurements, materials, sizes, field conditions and related information are based on both a field survey and/or the latest plan of record available.

\_\_\_\_\_  
Engineer’s Name, P.E./P.L.S.

\_\_\_\_\_  
Date

P. E. Number: \_\_\_\_\_

Expiration Date: \_\_\_\_\_

### Construction Timetable

Actual Construction Start Date: \_\_\_\_\_

Actual Construction Completion Date: \_\_\_\_\_