

Appendix D – Specifications for Electronic Submission (checklist)

Within a GIS, there are two types of data, spatial (graphic) and tabular. Graphic data will be extracted from the CADD/GIS file for mains, laterals, and manhole identification codes. Tabular data will be obtained separately in Excel format (.xls) for mains/pipes, manholes, and lateral information.

FILE REQUIREMENTS FOR CADD DRAWING EXCHANGE FILE (.dwg)

A. General File Specifications

1. A physical survey is required to obtain acceptable accuracy level. A level of accuracy consistent with that of a GPS (Global Positioning Systems) Survey ($\pm 1/2$ feet horizontal and vertical) is preferred. Provide GPS data for the following: lateral stakes, and manholes.
2. A geodetic control method must be provided. All plans must be in Pennsylvania State Plane Coordinate System North Zone, using the North American Datum of 1983 (NAD83) and the North American Vertical Datum of 1988 (NAVD88). Units shall be in US survey feet.
3. All digitally submitted CADD/Shapefiles-(Shapefiles are preferred) files must be spatially correct and the data tables must meet requirements as specified in Section C below.
4. Provide **.tiff** or **.pdf** format images for all sheets in drawing submission as specified in General Sewer Specifications.

B. Spatial Data Layers

The following data layers are to be provided as a CADD file, independent of the engineering firm's rendition of a completed CADD file. This CADD file should **only** include the following layers.

1. As-Built Sanitary Sewer Pipes
 - a. Defined layer must exist for all and only mains that are being designed for construction. This excludes existing mains.
 - b. This layer is named ASB_PIPE.
 - c. All lines are drawn in the direction of flow, or from upstream manhole to downstream manhole.
 - d. Lines must break at each manhole.
 - e. All lines must have snapped endpoints at the center of each manhole.
2. As-Built Manholes
 - a. Defined layer must exist for all and only manholes that are being designed for construction. This excludes existing manholes. The manholes point layer must be separate layer from the manhole annotation layer.

- b. This layer is named ASB_MH.
- c. Text with lower-left justification will be snapped to end of mains to create a manhole. The justification point is used in GIS to create a graphic point.
- d. The text must consist of the manhole-ID.
- e. The manhole ID is established from a prefix and manhole identification code. Prefixes are logically created based on subdivision name (i.e. Greenleaf Manor). New prefixes must be approved by UAJA in advance to avoid duplication (i.e. 'GM-22' may become 'GLM-22' if prefix 'GM' already exists in UAJA's system). If new development occurs in an existing subdivision, then communication with UAJA is necessary to ensure unique manhole IDs.

3. As-Built Laterals

- a. Defined layer must exist for all and only laterals that are being designed for construction. This excludes existing laterals.
- b. This layer is ASB_LAT.
- c. All lines are extended to/trimmed by the main from which it connects.
- d. All lines are drawn in the direction of flow, or from upstream endpoint to downstream connection to main.
- e. Every lateral must have a lower-left justified number snapped to the upstream endpoint that corresponds with the database information for that lateral. This number must also exist in the laterals database. This is essential to link the graphics with the database information.

4. Proposed Centerlines

- a. Defined layer must exist for all proposed street centerlines being designed for construction.
- b. This layer is named ASB_CL.

5. Proposed Pavement Edges

- a. Defined layer must exist for all proposed edges of pavement being designed for construction.
- b. This layer is named ASB_PVMT.

6. Existing Sanitary Sewer Pipes

- a. Defined layer must exist for all and only mains that are existing.
- b. This layer is named EX_PIPE.

7. Existing Laterals

- a. Defined layer must exist for all and only laterals that are existing.
- b. This layer is named EX_LAT.

8. Existing Manholes

- a. Defined layer must exist for all and only manholes that are existing.
- b. This layer is named EX_MH.

9. All Other Spatial Data

- a. Data layers including utility services, existing street centerlines, existing pavement, existing curbs, existing buildings, streams, and existing property lines may and should be included in the CADD file. These layers may include corresponding text layers (i.e. road names).

C. Tabular Data

Template data tables will be provided in spreadsheet form. UAJA will supply the correct Microsoft Excel (.xls) tables file, which contains individual spreadsheets for main line, manhole, and lateral data. Required data field headers are in **BOLD** print. This file, along with other files related to electronic submission, may be downloaded from our website (www.uaja.com).

1. As-Built Sanitary Sewer Pipes

- a. The following data fields must exist in the pipe/main table: UPMH, DNMH, RECLENGTH, DIAMETER, MATERIAL, SLOPE, UPELEV, DNELEV.
- b. Each data field must contain valid information for each main.

2. As-Built Manholes

- a. The following data fields must exist in a separate manhole table: MH_ID, Y (north GPS), X (east GPS), Z (vertical GPS), TC_ELEV, CLEANOUT, VENTPIPE, FLUSH, FLAPPERGATE, DISH, and PUMPSTA.
- b. Each data field must contain valid information for each manhole.

3. As-Built Laterals

- a. The following data fields must exist in the lateral table: ADDRESS, LOT_UNIT, WYE_STA, WYE_INV, END_LAT_ST, END_LAT_INV, LATERAL_LENGTH, WYE_INFO (lateral description), Y (north GPS), X (east GPS), Z (vertical GPS), POLELENGTH, DEPTH, and REDUCER.
- b. Each data field must contain valid information for each lateral.

FILE REQUIREMENTS FOR GIS SHAPEFILE (.shp)

A. General File Specifications

1. A physical survey is required to obtain acceptable accuracy level. A level of accuracy consistent with that of a GPS (Global Positioning Systems) Survey ($\pm 1/2$ feet horizontal and vertical) is preferred. Must provide any available GPS data.
2. A geodetic control method must be provided. All plans must be in Pennsylvania State Plane Coordinate System North Zone, using the North American Datum of 1983 (NAD83) and the North American Vertical Datum of 1988 (NAVD88). Units shall be in US survey feet.

3. All digitally submitted Shapefiles must be spatially correct and the data tables must meet requirements as specified in Section C below.
4. Provide **.tiff** or **.pdf** format images for all sheets in drawing submission as specified in General Sewer Specifications.

B. Spatial Data Layers

The following data layers are to be provided as a CADD file, independent of the engineering firm's rendition of a completed CADD file. This CADD file should **only** include the following layers.

1. Pipe, manhole, and lateral data layers shall be included with each submittal.
2. Each layer must contain all and only the data for that particular layer.
3. Files must be named so that "main", "lat", or "mh" is at the end of the file name and before the file extension. Examples: GLManormain.shp, GLManorlat.shp, GLManormh.shp.

C. Tabular Data

Template data tables will be provided in spreadsheet form. UAJA will supply the correct Microsoft Excel (.xls) tables file, which contains individual spreadsheets for main line, manhole, and lateral data. Data headers in these tables, and their ordering, must be used as the example for how the data in the shapefile will be organized. This file, along with other files related to electronic submission, may be downloaded from our website (www.uaja.com).

1. Corresponding database files (shapefile .dbf) must contain the same structure and exact header names as the template data tables.
2. Each applicable data field must contain valid information for each feature.