Digital Data Submission Standards

Richland County has adopted geographic information systems (GIS) technologies to store, manage, and maintain spatially-related (geographic) data. The land development, engineering, and surveying communities have also embraced digital technologies in their respective professional communities. Because development plans are now created using computer aided design and drafting (CAD), it is the goal of Richland County to leverage such advanced techniques to expedite the design and plan review processes within the County. For such an effort to succeed, standards must be implemented to allow CAD data to be integrated into the County GIS while preserving the referential and positional accuracy of the original measurements.

These data submission standards are intended to improve the process of reviewing plans and help maintain a digital database of geographic information for the County. As the GIS program develops and foundation data are established, the County will be able to offer base layers to the development and engineering communities. The County understands that these GIS layers cannot be used for construction; however, the multiple layers of data are expected to provide potential users with descriptive information that will be invaluable in planning and property valuation. All fundamental geographic data elements in the County GIS will be a representation of features that comprise our community and is not intended to convey legal boundaries of any kind.

In addition to standard engineering submissions delivered to Richland County, several digital files relating to that submission will include:

- A completed original CAD drawing in .dwg or .dxf format named using the development name (ie. Earlewood_phases56.dxf). This file shall include all layers and graphic elements included in the submitted engineering document (geography, text, legend, scale, labels, etc.). This file will include features classified in the standard layers defined in Appendix A.

- A metadata text file containing information listed in Appendix B. This file includes submittal information as well as technical parameters that may be necessary to review if problems in data conversion occur. The ASCII text file will be named using the following convention: (subdivisionname_phasesXX_meta.txt).

- An ASCII text file containing elevation points. When submitting plans that include surveyed ground surfaces, a separate ASCII text file containing all elevation points shall be delivered. This file shall be named using the following convention: (subdivisionname_phasesXX_elev.txt)

To expedite the conversion of submitted data into the County GIS, the following requirements shall be met:

- All drawing elements shall be submitted referencing South Carolina State Plane (SCSP) Coordinates. Features in drawing files that are stored in drawing units must be translated to represent real world locations as referenced by SCSP coordinates. As specified in the SC Code of Laws Title 27, Chapter 2, elements referencing SCSP (formally identified as the South Carolina Coordinate System) will utilize the North American Datum of 1983 – 1986 Adjustment (NAD83 [1986]) for horizontal control and be measured in International Feet (not US Survey Foot). Vertical control will reference the North American Vertical Datum of 1988 (NAVD88) and shall include measures using the US Survey Foot. The SCSP system includes a single zone identified as Federal Information Processing Standard zone 3900 (FIPS 3900).

- Caution must be exercised in performing all conversions involving submitted data to ensure the correct use of the International Foot. Errors in conversion can exceed four linear feet. It is not the intention of Richland County to replicate legal surveys. With this in mind, control of plan features may be tied to the SCSP system using traditional surveying or GPS methods. The method employed to gain geodetic control shall be identified in the submitted metadata file.

- Drawing features shall include layer names as indicated in Appendix A. Features other than those thematically defined by the individual layer name/description shall not be included in that layer.

- No annotation shall be included in any feature layer and no feature shall be included in any annotation layer. Annotation for each layer shall be placed in annotation layers as specified in Appendix A.

- No polylines or annotation shall be stored in blocks. Explode all blocks that do exist.

- All points shall be stored as "POINT" or "BLOCK REFERENCE"

- All Richland County required layers shall be made visible prior to submission – all other layers can be turned off.

- Closure is critical in converting drawing elements to GIS features. Parcels/lots (layer #2 PARCEL1), subdivision boundaries (layer#3: SUBDIV1), rights-of-way (layer #4: ROW1), and common areas (layer #5: COMAREA1), Buildings (layer #7: BLDG1), Pavement Edge (Layer #16: PAVEDGE1), Easements (layer #26: EAS), Building Setbacks (layer #27 EASBLD), Buffers (layer #28 BUFF), Floodplains (layer #30: FP), Floodway (layer #31: FW) Wetlands, (layer #32 WETLANDS) must be snapped closed
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- Submitted digital files shall contain only complete parcel polygon features. All partial polygons (parcel boundaries) shown for reference in drawings are not to be included in the PARCEL1 layer (Appendix A). Such features can be included in an unnamed layer in the submitted .dwg or .dxf file.

- All elevation points shall be delivered in a single comma-delimited ASCII text file. Each line of the file shall contain values (in SCSP coordinates) for a single point as follows:

  Easting, Northing, Elevation
  2012374.63, 853633.30343, 447.52
  2012371.81, 853642.06532, 447.49
  2012370.56, 853651.25382, 447.62
  2012369.81, 853660.04853, 448.02
  …

- Additional layers (not identified in Appendix A) may utilize any open layer beyond the 60 reserved layers. As outlined above, a list of these layers shall also be submitted (ASCII text file labeled: 'subdivisionname_phasesXX_xlyrspec.txt').

Appendix A

Graphic File (.dwg or .dxf) Specifications

Layer Number	Layer Name	Feature Type	Layer Description
1			
2	PARCEL1	Polyline	Parcel/lot boundaries
3	SUBDIV1	Polyline	Subdivision boundaries
4	ROW1	Polyline	Rights of way delineating private/public land boundary
5	COMAREA1	Polyline	Public areas such as street islands/community entrances
6	GCP1	Point	Ground control points (existing, surveyed, or GPSed)
7	BLDG1	Polyline	Building/structure outline or footprint
8			
9			
10			
11			
12			
13			
14			
15			
16	PAVEDGE1	Polyline	Edge of pavement
17	CNTRLIN1	Polyline	Street/road centerlines (paved and unpaved)
18	SIDEWLK1	Polyline	Sidewalks (including ramps, if any)
19	CURB1	Polyline	Curb/gutter
20	CARPRK1	Polyline	Parking lots
21			
22	HYDLIN1	Polyline	Linear hydrography, creeks/streams
23	HYDPOL1	Polyline	Polygonal hydrography, lakes/ponds
24			
25			
26	EAS	Polyline	Utilities, wildlife, transp., storm drainage/detention, etc.
27	EASBLD	Polyline	Building setback
28	BUFF	Polyline	Buffers (riparian, vegetation, etc.)
29			
30	FP	Polyline	Flood plain
31	FW	Polyline	Flood way
32	WETLAND	Polyline	Wetlands
33			
34			
35	SDLINK	Polyline	Storm drain culvert, ditch, pipe, etc.
36	SDNODE	Point	Storm drain structure (manhole, junction box, etc.)
37	SDTEXT	Text	Annotation describing storm drainage (SD) features
38			
39	SSLINK	Polyline	Sanitary sewer pipe
40	SSNODE	Point	Sanitary sewer manholes, pumps, junctions, etc.
41	SSTEXT	Text	Annotation describing sanitary sewer (SS) features
42			
43	WTRLINK	Polyline	Water pipe
44	WTRNODE	Point	Water access/junction box, valves, etc.

45	FIREHYD	Point	Fire hydrant
46	WTRTEXT	Text	Annotation describing water service (WTR) features
47	CTOUR1	Polyline	Un-broken contour lines (* design/as-built)
48			
49			
50			
51	LOTNUM1	Text	Proposed parcel lot number
52	LOTDIM1	Text	Bearings, distances, acreage, and x/y of POB
53	SUBNAM1	Text	Subdivision name
54	RDNAME1	Text	Street/road name
55	RDNAME2	Text	Road number (Federal, State, County highways, etc.)
56	PAVTYPE1	Text	* Pavement type
57			
58			
59	EASTYPE	Text	Type of easement (utility, transp., wildlife, storm, etc.)
60	CTOURVAL	Text	Elevation of individual contours

* Level 56 - Pavement type (PAVTYPE1) shall include the following standard surface designations:
- Asphalt Concrete
- Bituminous Surfacing
- Concrete
- Gravel
- Dirt

Appendix B

Metadata Text File ('subdivisionname_phasesXX_meta.txt') Specifications

Subdivision Name: Submittal Date:
County:
City:

Parent Parcel #:
Number of Lots:

Type of Geodetic Control:

Monument Reference: Y / N

Traverse to Monument
Referenced Monument Name/Number:
Distance to Monument:

GPS
Unit Type:
PDOP of Control Points:
Differentially Corrected: Y / N
Elevation Reference: Y / N

Prepared by/Firm Name:
Engineer of Record:
Drawing/File Name:
Software/Version Used: