GIS DIGITAL DATA SUBMISSION STANDARDS

FOR SURVEYING AND ENGINEERING CONSULTANTS

Abstract

The following guidelines in this document will limit error when updating the City's GIS system and improve the workflow for information sharing. Consequently, the intent for this policy is to allow Lenexa's GIS to be as current and accurate as possible. This accuracy is needed for emergency services and day to day operations by all departments within the City. As a result, Lenexa requires a GIS Site Plan Sheet and digital data in GIS or CAD format of the Final Plan Submittal.

Revision Summary Table

Date	Description
January 2020	Date of Implementation

Definitions and Acronyms

Term	Definition
Attribute data	Geographic description of the features in form of tabular data
CAD Data	CAD, or computer-aided design and drafting (CADD), is technology for design and technical documentation, which replaces manual drafting with an automated process
Coordinate system	A coordinate reference system (CRS) that defines the map projection
Coordinates	A set of horizontal axis (x) and vertical axis (y) values that defines a location
Datum	A model that measures locations relative to center of the earth
dBase table (dbf)	A file format that stores the attribute data
Digital Data	GIS data or CAD data submissions
Geographic Information System (GIS)	A geographic information system (GIS) is a framework for gathering, managing, and analyzing data. Rooted in the science of geography, GIS integrates many types of data. It analyzes spatial location and organizes layers of information into visualizations using maps and 3D scenes
GIS Control Points (GCP)	5-10 random control point locations that are evenly distributed across the project site for the submitted application. GCPs shall be tied to the Kansas State Plane North coordinate system using traditional surveying or GPS methods

GIS Data	Information about a location and shapes of geographic features
GIS Site Plan Sheet	The official document's site plan sheet that includes GIS Control Points (GCP)
Georeference	Associating an image to a known coordinate system
Map projection	Transforms coordinates on spherical earth to a flat and planar map
Monument Control Points (MCP)	Monument Control Points (MCP) of horizontal control in Johnson County's Public Land Survey System (PLSS) section corners or tied to at least five (5) points (not clustered) depicting physical features which are identifiable from the most recent Johnson County AIMS GIS utility structure data for spatial reference
Metadata	Information that describes the digital submittal
North American Datum (NAD)	NAD 83 is based on Geodetic Reference System 1980 ellipsoid with its measurement obtained from terrestrial and satellite data
Official Document (Plan submittal)	The document that is recorded with the City of Lenexa through the city's building permit process for a Plan submittal
Public Land Survey System (PLSS)	The Public Land Survey System (PLSS) is a way of subdividing and describing land in the United States. The PLSS typically divides land into 6-mile-square townships, which is the level of information included in the National Atlas. Townships are subdivided into 36 one-mile- square sections. Sections can be further subdivided into quarter sections, quarter-quarter sections, or irregular government lots Source:nationalmap.gov
Public Land Survey System (PLSS) Section Corners	Normally, a permanent monument, or marker, is placed at each section corner. Monuments are also placed at quarter-section corners and at other important points, such as the corners of government lots Source:nationalmap.gov
Shapefile	A format to store geographic information, shape, and attribute data of features
Thematic	A map or data that focuses on a specific theme or subject area such as a physical phenomena
Topologically Clean	Free of topological errors in data features (Appendix C)

GIS Digital Data Submission Standards
For *Surveying and Engineering Consultants*

1. Introduction

The mission of GIS in Lenexa is to establish a foundation of geographic information to support community decision-making. As a result, the geographic data in the GIS system represents features in the community and are not intended to convey legal boundaries of any kind. Therefore, the data submission guidelines in this document are intended to improve the process in maintaining the digital database of geographic information for the City of Lenexa.

In addition, the following guidelines will also limit human error when updating the City's GIS and improve the workflow of information sharing. This act assists City staff in its services to our community to achieve our Mission - *To provide exceptional service through a team of dedicated professionals working in partnership with the community.*

Therefore, the City of Lenexa requires GIS or CAD data of the plan submittal's site plan sheet to be submitted in digital format and a metadata file describing the data submission. The digital data submissions accompany the official document submittal process for the project.

Thus, the intent for this policy is to allow Lenexa's GIS to be as current and accurate as possible. Consequently, this accuracy is needed for emergency services, and day to day operations by all departments within the City. To this extent, providing the required information from this policy in a digital format will allow faster and more accurate updates to GIS layers.

Key components of this policy:

- **The recorded copy will continue to be the official document**
- **In addition to the official document, digital data in the format of GIS data or a CAD drawing must accompany the official document submittal process. (GIS format is preferred for the digital format)**
- **A "GIS Site Plan" sheet with GIS Control Points must be added to the official document**

As stated, the purpose of a digital submittal is to maintain the integrity of City of Lenexa's GIS system. Thus digital submittals will be accepted **only** if they adhere to the following criteria:

2. GIS Site Plan with GIS Control Points

Provide an additional site plan sheet called "GIS Site Plan" (Appendix B) with 5-10 random control point locations that are evenly distributed across the site plan area. With this in mind, a control point shall be tied to the Kansas State Plane North coordinate system using traditional surveying or GPS methods. Furthermore, if the site plan has limited information for geographic features for use as GCPs, then property corners for the project parcel are suitable for GCP locations.

- A GIS site plan sheet requires surveyed or existing GIS features as locations to serve as GIS control points
- All control point locations should be included in the GIS Control Point layer (GIS_CONTROL) as detailed in Appendix A
- Metadata about the location information describing the GCPs in the GIS Site Plan shall be noted in the metadata document accompany the data submission as highlighted in Appendix D
- The GIS Site Plan sheet should be an exact copy of the existing site plan sheet in the official document with the added GCPs
- The GIS Site Plan sheet should follow immediately after the original site plan sheet in the plan submittal.
- Less than five (5) GCP will be allowed, if the GCPs are surveyed locations of the property parcel corners for the project site

3. Submission for Digital Files Guidelines

Essentially, the digital version of the plan submittal must be of a high precision and accuracy so that it can be easily converted to the GIS system. Digital submittals that do not conform to these guidelines or files not readable by GIS staff will need to be re-submitted.

Submissions may be zipped and emailed with the Permit Number for the project in the subject field and contact information in the body of the email. This digital GIS and CAD data shall be an exact copy of the data represented on the submitted official document. The digital data should be emailed before or on the day of the official document submission.

Email: gis@lenexa.com

Also, email is the preferred method for data submissions under 10mb file size. If the file is over 10mb, you may use a free file transfer protocol website to send large files.

The file name for the submittal should correspond exactly to the subdivision or project name as represented on the permit application. The file name should contain the drawing's submittal or revision date (in MMDDYYYY format) as part of the name. There should be no spaces in the name, only underscores shall represent a space

For example: a submission for the Phase 3 of the Lenexa Public Campus - 2nd revised version was submitted on 23 June 2019. The file name for the zipped file is:

Lenexa_PublicCampus_Ph3_06232019_v2

The data submitted in the digital submission shall be consistent with ground surface measurements as shown on the original document and mapped digitally in 1:1 units and expressed in U.S. Survey Feet.

Furthermore, the digital line work must be topologically clean as identified in Appendix C. In short, lines must be geometrically continuous and boundaries must be geometrically closed with no "undershoots" or "dangles" where boundaries intersect. The digital line work must not include "sliver polygons" (gaps or overlaps between properties). All traverse features will be "snapped" closed at intersections.

GIS and CAD features must be translated to represent real world locations as referenced by the projected coordinates Kansas North, Zone 11, Datum NAD83, and Units Feet. Caution must be exercised in performing all conversions involving submitted data to ensure the correct use of the US Foot not International Foot.

> *Projected Coordinate System: NAD_1983_StatePlane_Kansas_North_FIPS_1501_Feet*
> *Projection: Lambert_Conformal_Conic*
> *False_Easting: 1312333.33333333*
> *False_Northing: 0.00000000*
> *Central_Meridian: -98.00000000*
> *Standard_Parallel_1: 38.71666667*
> *Standard_Parallel_2: 39.78333333*
> *Latitude_Of_Origin: 38.33333333*
> *Linear Unit: Foot_US*

Geographic Coordinate System: GCS_North_American_1983
Datum: D_North_American_1983
Prime Meridian: Greenwich
Angular Unit: Degree

Additionally, separate layers must exist for each distinct feature used in the digital data submission. GIS drawing features shall utilize the layer names suggested in Appendix A. The information presented in Appendix A is intended as additional layers to support the importation of features into the GIS systems. Layers names in Appendix A do not replace CAD standard nomenclature in a drawing, Appendix A supplement those policies.

For example (A): In a CAD drawing for a building outline layer name

- *CS-BLDG-OTLN (a CAD standard policy name)*
- *GIS_STRUCTURE (in addition to the CAD layer, the line work from that layer must be included in the GIS_STRUCTURE layer for a building/structure)*

For example (B): In a CAD drawing for water structures

- *CS-UTIL-WATR-VALV and CS-UTIL-WATR-EXTN-FEAT (a CAD standard policy name)*
- *GIS_WATER_VALVE (in addition to the CAD layers, the point information from the those layers must be included in the GIS_WATER_VALVE layer for a water features)*

So, in example A there are two (2) layers that identify a structure: one layer for CAD and another layer for GIS. In example B there are multiple layers that define water structures in the drawing though only one layer is needed for GIS.

Then only features that are thematically defined by the individual layer name (or description) shall not be included in that layer.

And all monument control point locations in the plan submittal should be included in the Monument Control Point layer (GIS_MONUMENT_CONTROL) as detailed in Appendix A. MCPs should be tied to one of the following:

- Four (4) horizontal control in Johnson County's Public Land Survey System (PLSS) section corners or state/federal monument benchmarks

- At least four (4) points (not clustered) depicting physical features which are identifiable from the most recent Johnson County AIMS GIS data for spatial reference

Finally, all digital data will be reviewed for the following criteria:

- Correct and complete layers
- Topologically clean features
- Verification that the digital data and the official document are consistent
- Correct spatial location in Kansas State Plane North coordinate system
- Required documentation

In the event that the City's GIS staff determines that the GIS or CAD data submission fails to meet these standards, City's GIS staff shall notify the party submitting of such determination in writing. The submitting party shall have thirty (30) days from the date of such notification and take on the responsibility to correct any errors and delivering the new correct digital file for approval. The failure to provide the corrected digital file and not adhering to the Data Submissions Standards will result in the permit being held.

As a result, Lenexa's GIS staff shall have thirty (30) days from the date of such submission to review and approve such GIS or CAD Data submission, otherwise the submission shall be deemed acceptable.

3.1. Submitting GIS Data

Moreover, the GIS data should be submitted in the ESRI file geodatabase or GIS shapefile (.shp and associated files) format. The submitted data should be an exact representation of the official document, and shall be free of any topological errors highlighted in Appendix C.

Also, layer names must be consistent with names identified in Appendix A.

3.2. Submitting CAD Drawing

The digital CAD format required, for the information represented in the official document, must be in the following format: dxf or .dwg. The drawing file must be in model space, not paper space.

In addition, the file name should contain the drawing's submittal or revision date (MMDDYYYY format) as part of the name. There should be no spaces in the name, use only an underscore to represent a space, as identified earlier in this section.

- Layer names must be clearly identifiable as to what that layer is representing. If applicable, a conversion chart that corresponds to the appropriate layer name (Appendix A) must be specified in the metadata file
- CAD systems that use a numbering system for layers instead of names shall also include a conversion chart explaining the layer number corresponding to the appropriate layer name must be specified in the metadata file
- 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
- The file shall include all layers and graphic elements included in the submitted as the official document
- No polylines or annotation shall be stored in blocks. Explode all blocks that do exist
- Structures, the endpoints of lines, and features that are represented as a "point" shall be input as points or nodes only
- <u>Do not use:</u> third-party symbols or line types in the .dwg or .dxf drawings as these are not be visible by staff when opening the drawings
- No duplicate linear or point elements
- All line features should be digitized as continuous solid lines with the following exceptions:
    - Water lines should be split and snapped at all system valves, control valves, and fittings
    - Sanitary sewer lines are straight two point lines that are split and snapped at Manholes
    - Storm water pipes are straight two point lines that are split and snapped at catch basins, junction boxes/manholes, and headwalls
    - Road lines should be split and snapped at all intersections. They should not be split anywhere except intersections
- All point features (i.e. manholes) will be inserted as points

- Line/Polyline features that are modeling polygons (i.e. boundaries) will be snapped closed at nodes or endpoints
- When displaying coordinates, the whole number for the coordinate will be shown (i.e. no constants will be applied)
- If you are submitting a project in phases, data between phases should match.

4. Metadata File

All digital data submissions will require a metadata file (Appendix D). This file shall be an ACSII (.txt) or .DOCX format with the name "Metadata.txt" or "Metadata.docx". This document provides the City with information regarding the digital submittal.

5. Waiver and Adjustments

The City of Lenexa may waive or adjust these requirements specified herein upon finding that adherence to the requirements does not facilitate or is contrary to the long-term maintenance of the City's GIS system.

6. Appendixes

Appendix A – GIS Layer Name Table
Appendix B – GIS Site Plan Sheet
Appendix C – GIS Topology Errors
Appendix D – Metadata File

7. References

Tippecanoe County, Indiana (2016) Ordinance No. 2006u04-CM
City of McCall, Idaho (2006)
Forsyth County, Georgia (2018)
Mackenzie Valley Land and Water Board (2016)
City of Indianapolis, Indiana (2019)
City of Thornton, Colorado (date unknown)
City of Augusta, Georgia (2013)
Kansas GIS Cadastral Standard Policy # 5120 (1998)
South Carolina Department of Archives and History (2018)
ESRI (2019)

GISGeography (2019)

GIS Digital Data Submission Standards
For Surveying and Engineering Consultants

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Appendix A – GIS Layer Name Table

Layer Name	Geometry Type	Feature Type	Layer Description	Surveyed
GIS_ADDRESS_TEXT		Text	Address number	No
GIS_CABLE_LINE_OH	Line	Line/Polyline	Overhead cable communication lines	Yes
GIS_CABLE_LINE_UG	Line	Line/Polyline	Underground cable communication lines	Yes
GIS_CONTROL	Point	Point	GIS site plan georeferencing control points (existing, surveyed, or GPS)	Yes
GIS_CONTROL_POINT_TEXT		Text	Control points	No
GIS_COURTS	Line	Line/Polyline	Recreational courts	Yes
GIS_DITCHES	Line	Line/Polyline	Ditch	Yes
GIS_DRIVEWAYS	Line	Line/Polyline	Driveways	Yes
GIS_ELECTRIC_LINE_OH	Line	Line/Polyline	Overhead electric lines	Yes
GIS_ELECTRIC_LINE_UG	Line	Line/Polyline	Underground electric lines	Yes
GIS_EOP_PARKING	Line	Line/Polyline	Edge of pavement paved parking	Yes
GIS_EOP_ROAD	Line	Line/Polyline	Edge of pavement paved road	Yes
GIS_EOP_UNPAVED_PARKING	Line	Line/Polyline	Edge of pavement unpaved parking	Yes
GIS_EOP_UNPAVED_ROAD	Line	Line/Polyline	Edge of pavement unpaved road	Yes
GIS_FIBER_LINE	Line	Line/Polyline	Fiber communication lines	Yes
GIS_FIRE_HYDRANT	Point	Point	Fire hydrant	Yes
GIS_GAS_LINE	Line	Line/Polyline	Gas mains	Yes
GIS_INGROUND_DECKS	Line	Line/Polyline	In ground hard surface decks	Yes
GIS_LOT_AREA		Text	Lot area in US acres	Yes
GIS_LOTNUMBER_TEXT		Text	Lot numbers	No
GIS_MISC_LINE	Line	Line/Polyline	Miscellaneous lines	No
GIS_MISC_TEXT		Text	Miscellaneous text	No

GIS_MONUMENT_CONTROL	Point	Point	Ground Control Points (existing, surveyed, or GPS), such as section corners, survey monuments, and geodetic control	Yes
GIS_PATIOS	Line	Line/Polyline	Patios	Yes
GIS_PLAYGROUNDS	Line	Line/Polyline	Playgrounds	Yes
GIS_PROJECT_BOUNDARY	Polygon	Line/Polyline	Boundary for the project	No
GIS_PROPERTY_LINE	Polygon	Line/Polyline	Parcels/common areas, including (street islands/community entrances, amenities, open spaces)	Yes
GIS_ROAD_CENTERLINE	Line	Line/Polyline	Street/road centerlines (paved and unpaved)	Yes
GIS_ROAD_SIGN_TEXT		Text	Text describing traffic signs	No
GIS_ROAD_TEXT		Text	Street/road name	No
GIS_ROW	Line	Line/Polyline	Rights of way delineating private/public land boundary	Yes
GIS_SEWER_CLEANOUT	Point	Point	Sanitary sewer cleanout	Yes
GIS_SEWER_FORCE_MAIN	Line	Line/Polyline	Sanitary sewer force main	Yes
GIS_SEWER_GREASE_TRAP	Point	Point	Grease traps	Yes
GIS_SEWER_LATERAL_LINE	Line	Line/Polyline	Sanitary sewer lateral line	Yes
GIS_SEWER_LINE	Line	Line/Polyline	Sanitary sewer gravity main	Yes
GIS_SEWER_MANHOLE	Point	Point	Sanitary sewer manholes	Yes
GIS_SEWER_PUMP_STATION	Point	Point	Sewer system pump stations	Yes
GIS_SEWER_TEXT		Text	Asset ID (Unique ID) text for sanitary sewer gravity mains, manholes and other sewer features	No

GIS_SEWER_VALVE	Point	Point	Sewer system and control valves	Yes
GIS_SIDEWALKS	Line	Line/Polyline	Sidewalks	Yes
GIS_STORM_BMP	Polygon	Line/Polyline	Hydrodynamic separator, forebay, underground detention, green roof, permeable pavement, water quality swale, etc.	Yes
GIS_STORM_CATCHBASIN	Point	Point	Storm drain structure (catch basin, drop inlet, pedestal inlet, weir inlet, yard inlet, junction box, etc.)	Yes
GIS_STORM_CULVERT	Line	Line/Polyline	Storm culvert	Yes
GIS_STORM_HEADWALL	Point	Point	Storm water headwall	Yes
GIS_STORM_LINE	Line	Line/Polyline	Storm water pipe, ditch, etc.	Yes
GIS_STORM_OCS	Point	Point	Weir wall, weir box, stand pipe	Yes
GIS_STORM_POND	Polygon	Line/Polyline	Storm water detention/retention pond	Yes
GIS_STORM_TEXT		Text	Asset ID (Unique ID) text for STORM_CATCHBASIN, STORM_OCS, STORM_HEADWALL, and STORM_LINE	No
GIS_STREET_LIGHTS	Point	Point	Street lights	No
GIS_STRUCTURE	Polygon	Line/Polyline	Building/structure outline or footprint for commercial structures	Yes
GIS_STRUCTURE_TXT		Text	Text describing the structure	No
GIS_SUBDIVISION_BOUNDARY	Polygon	Line/Polyline	Boundary for subdivision	Yes
GIS_TRAFFIC_SIGN	Point	Point	Traffic signs	No
GIS_TRAFFIC_SIGN_TEXT	Point	Point	Text describing the traffic sign	No

| GIS_UTILITY_EASEMENT	Line	Line/Polyline	Easement (utilities, transportation, storm drainage/detention, etc.)	Yes
GIS_UTILITY_EASEMENT_TEXT		Text	Type of easement (utility, transportation, storm, etc.)	No
GIS_UTILITY_POLE	Point	Point	Utility Poles (light, electric, telecommunications, etc.)	No
GIS_WATER_FITTING	Point	Point	Water fittings – bend, cap, coupling, cross, expansion joint, reducer, tap, tee, wye, dead man, tapping plug	No
GIS_WATER_LINE	Line	Line/Polyline	Water lines	No
GIS_WATER_METER	Point	Point	Water meter	Yes
GIS_WATER_SERVICE	Line	Line/Polyline	Water service lines	No
GIS_WATER_TEXT		Text	Text describing water system features	No
GIS_WATER_VALVE	Point	Point	Water system valves– includes gate, butterfly, and ball. Water control valves – altitude, air gap, air release, double check, pressure reducing RPZ, single check, blow-off, inflow	Yes

Appendix B – GIS Site Plan Sheet
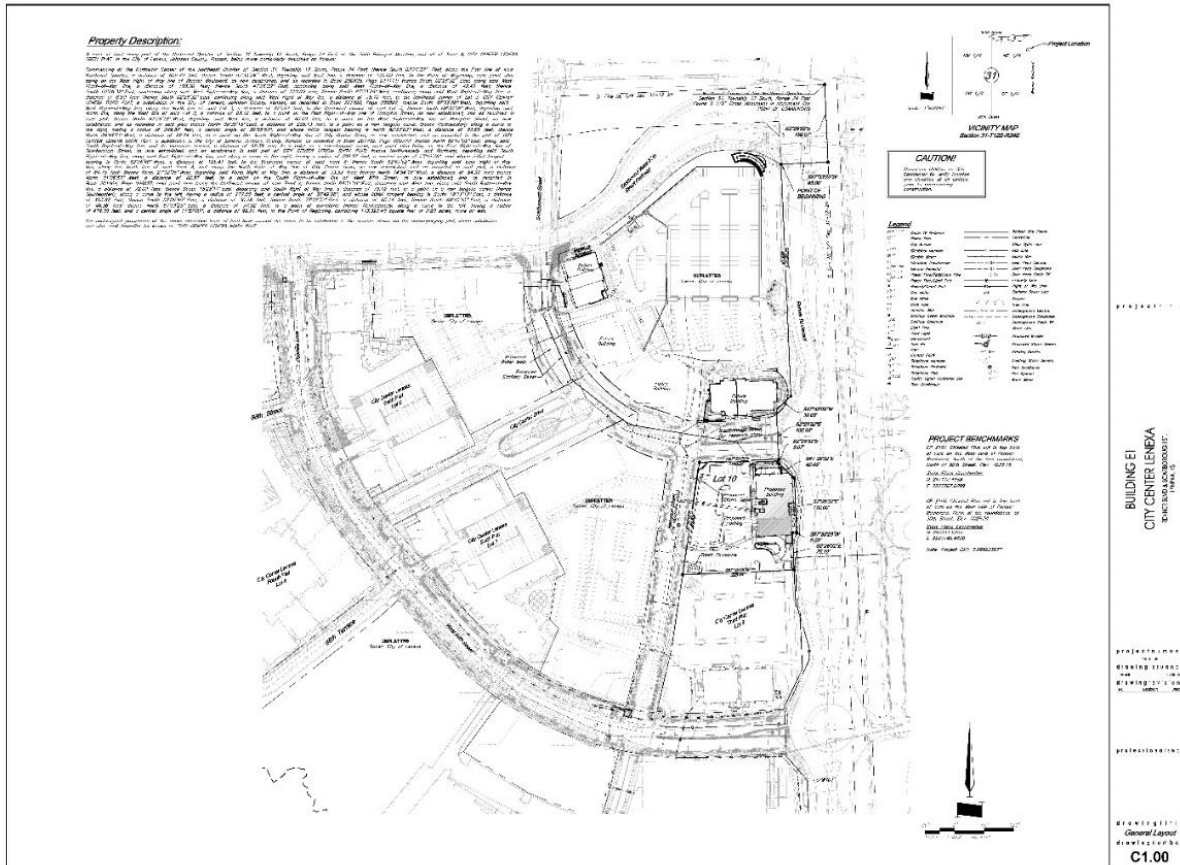
Figure 1. A traditional site plan sheet that was submitted as part of an official document of record for a plan submittal.

Figure 1. illustrates a typical site plan sheet in a plan submittal. In the GIS Digital Data Submission Standards, Lenexa is requiring an additional site plan sheet called "GIS Site Plan" (Figure 2). The GIS Site Plan shall be identical to the existing site plan sheet with the exception of the GIS controls points. The GIS Site Plan sheet should follow immediately after the original site plan sheet in the plan submittal.

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The end result of having a GIS site plan sheet with accurate control information is the ability to georeferenced the site plan into the GIS system (Figure 3).

Yet in Figure 4, this a site plan representing a plan that has limited information regarding geographic features that can effectively be used as GCPs. In a case such as this, property corners of the project site can be used as GCPs (Figure 5).
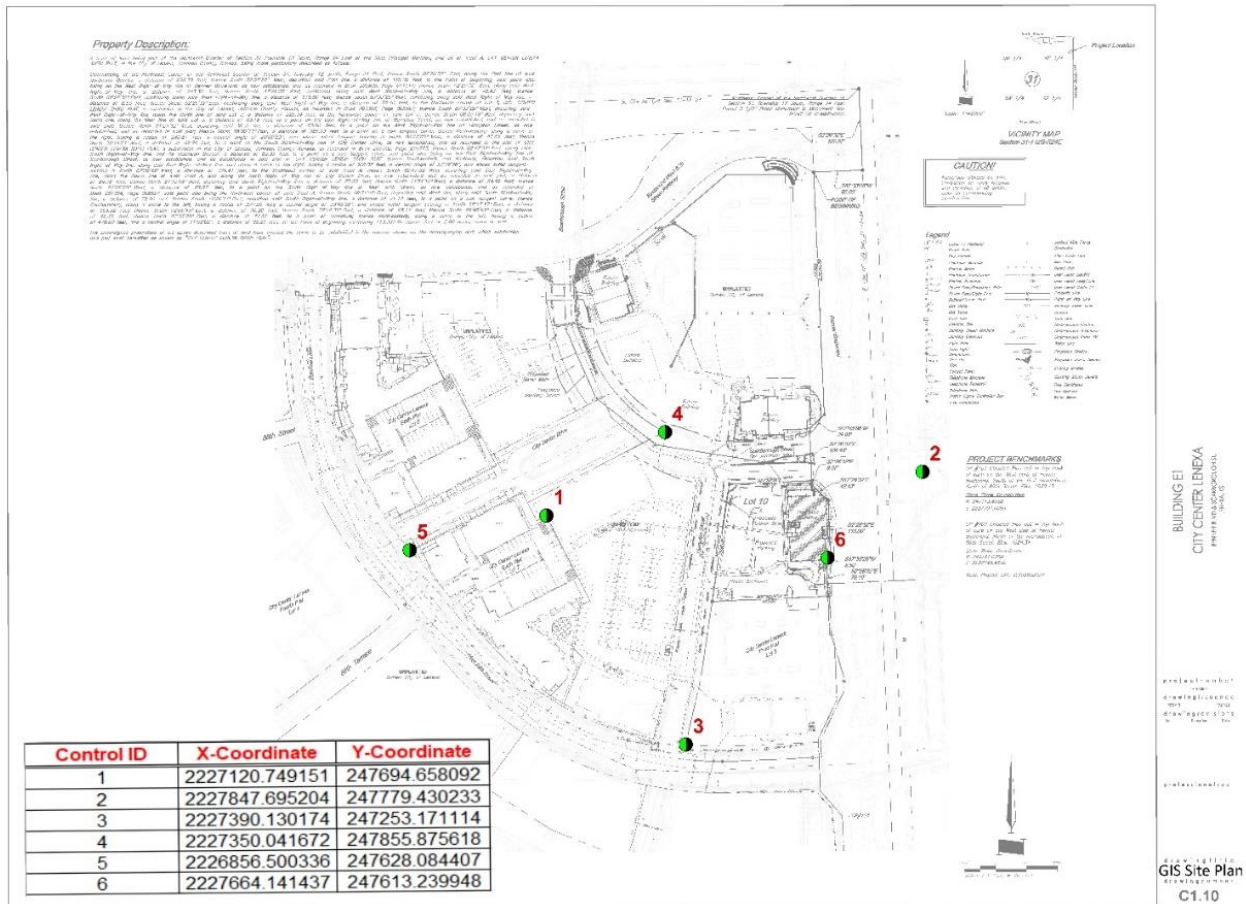

Figure 2. An example of a GIS Site Plan sheet.

Control ID	X-Coordinate	Y-Coordinate
1	2227120.749151	247694.658092
2	2227847.695204	247779.430233
3	2227390.130174	247253.171114
4	2227350.041672	247855.875618
5	2226856.500336	247628.084407
6	2227664.141437	247613.239948

Figure 3. An example of a GIS Site Plan sheet georeferenced into a GIS system.
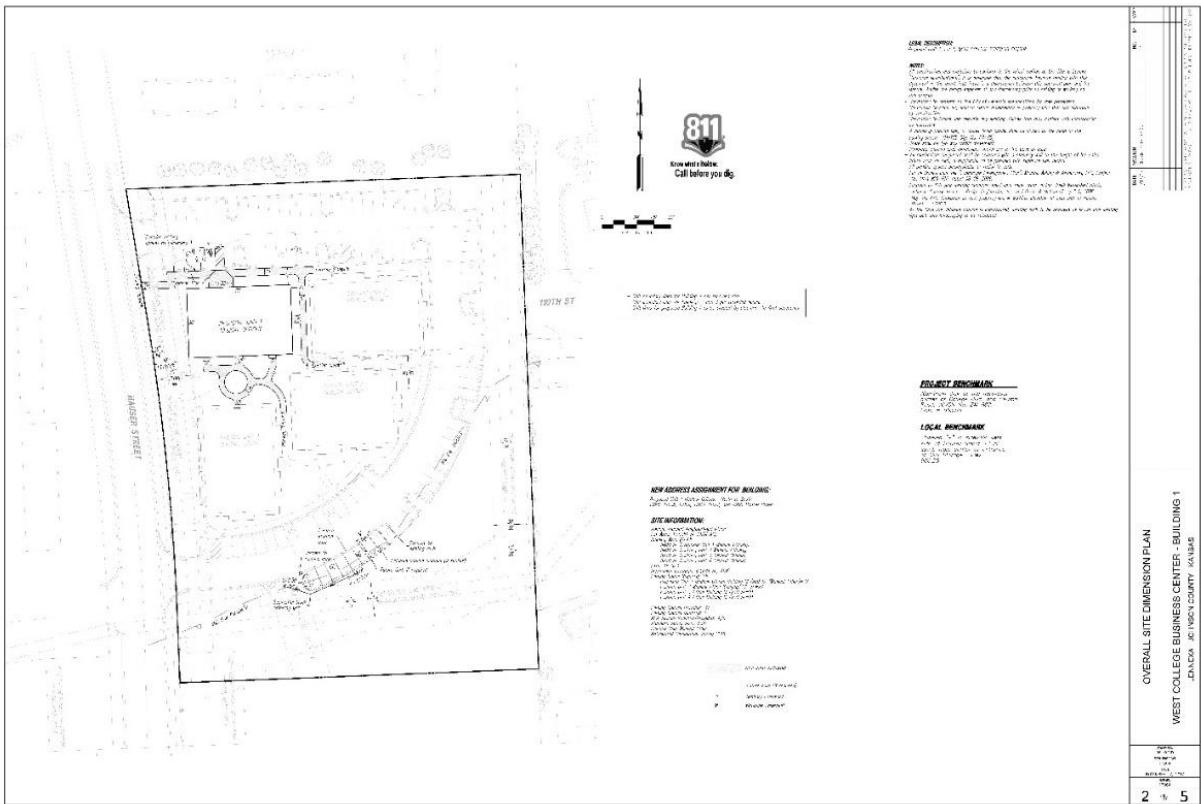
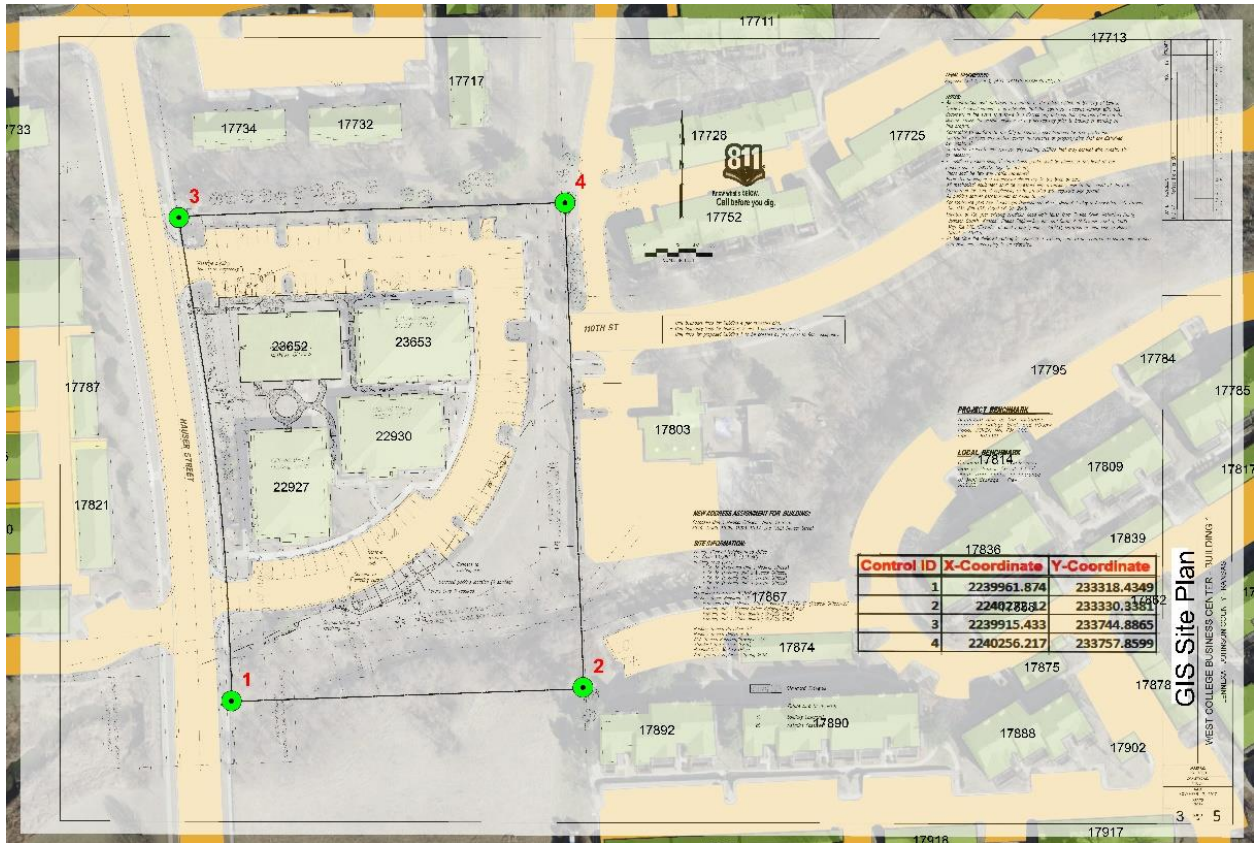Figure 4. A site plan that has limited information regarding geographic features for useful GCPs.
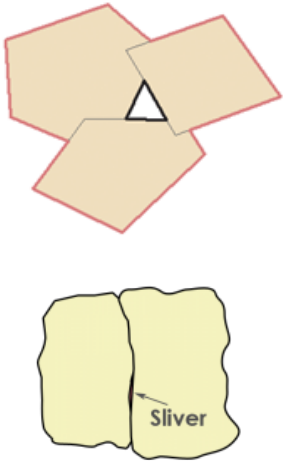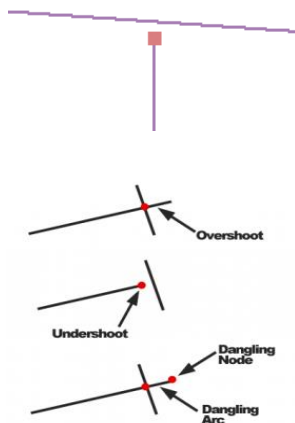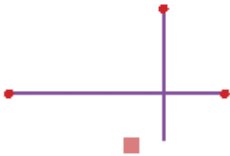
Figure 5. A site plan that has limited information for geographic features to be used as GCPs; however, the property corners for the project parcel are suitable for GCPs.

Polygon Features		
Must Not Overlap	Requires that the interior of polygons not overlap. The polygons can share edges or vertices. This rule is used when an area cannot belong to two or more polygons.	
Must Not Have Gaps and Slivers	This rule requires that there are no voids within a single polygon or between adjacent polygons. All polygons must form a continuous surface.	
Lines Features		
Must Not Overlap	Requires that lines not overlap with lines in the same feature class (or subtype). This rule is used where line segments should not be duplicated	

Must Not Have Dangles, Overshoots and Undershoots	Requires that a line feature must touch lines from the same feature class (or subtype) at both endpoints. An endpoint that is not connected to another line is called a dangle. This rule is used when line features must form closed loops, such as when they are defining the boundaries of polygon features. It may also be used in cases where lines typically connect to other lines, as with streets.	
Must Not Self-Overlap	Requires that line features not overlap themselves.	
Must Be Single Part	Requires that lines have only one part.	
Must Not Have Pseudo Nodes	Requires that a line connect to at least two other lines at each endpoint. Lines that connect to one other line (or to themselves) are said to have pseudo nodes.	

Point Features		
Must Be Covered By Endpoint Of	Requires that points in one feature class must be covered by the endpoints of lines in another feature class. This rule is similar to the line rule Endpoint Must Be Covered By except that, in cases where the rule is violated, it is the point feature that is marked as an error rather than the line.	
Point Must Be Covered By Line	Requires that points in one feature class be covered by lines in another feature class. It does not constrain the covering portion of the line to be an endpoint.	

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Appendix D – Metadata File

1. Project and Contact Information

Project and Contact Information
Project Name:
Permit Number (e.g. B19-1234):
Submittal File Name:
Submittal Date:
Parent Parcel Number:
Submitted Company name:
Submitted Contact name:
Submitted Phone number:
Surveyor/CAD/GIS provider information if different than Company name:

****
Note:
- Not all layers are used in all projects, please mark the layers included in your project and digital submission with a "[K]".
- Provide any attributes, description of the attributes and acronyms
****

2. GIS Site Plan Georeferencing Control Points

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

Control ID	X-Coordinate	Y-Coordinate

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3. *GIS Data Layers*

Please mark the layers included in your project and digital submission with a "[K]"

GIS_ADDRESS_TEXT		GIS_SEWER_FORCE_MAIN	
GIS_CABLE_LINE_OH		GIS_SEWER_GREASE_TRAP	
GIS_CABLE_LINE_UG		GIS_SEWER_LATERAL_LINE	
GIS_CONTROL		GIS_SEWER_LINE	
GIS_CONTROL_POINT_TEXT		GIS_SEWER_MANHOLE	
GIS_COURTS		GIS_SEWER_PUMP_STATION	
GIS_DITCHES		GIS_SEWER_TEXT	
GIS_DRIVEWAYS		GIS_SEWER_VALVE	
GIS_ELECTRIC_LINE_OH		GIS_SIDEWALKS	
GIS_ELECTRIC_LINE_UG		GIS_STORM_BMP	
GIS_EOP_PARKING		GIS_STORM_CATCHBASIN	
GIS_EOP_ROAD		GIS_STORM_CULVERT	
GIS_EOP_UNPAVED_PARKING		GIS_STORM_HEADWALL	
GIS_EOP_UNPAVED_ROAD		GIS_STORM_LINE	
GIS_FIBER_LINE		GIS_STORM_OCS	
GIS_FIRE_HYDRANT		GIS_STORM_POND	
GIS_GAS_LINE		GIS_STORM_TEXT	
GIS_INGROUND_DECKS		GIS_STREET_LIGHTS	
GIS_LOT_AREA		GIS_STRUCTURE	
GIS_LOTNUMBER_TEXT		GIS_STRUCTURE_TXT	
GIS_MISC_LINE		GIS_SUBDIVISION_BOUNDARY	
GIS_MISC_TEXT		GIS_TRAFFIC_SIGN	
GIS_MONUMENT_CONTROL		GIS_TRAFFIC_SIGN_TEXT	

GIS_PATIOS		GIS_UTILITY_EASEMENT	
GIS_PLAYGROUNDS		GIS_UTILITY_EASEMENT_TEXT	
GIS_PROJECT_BOUNDARY		GIS_UTILITY_POLE	
GIS_PROPERTY_LINE		GIS_WATER_FITTING	
GIS_ROAD_CENTERLINE		GIS_WATER_LINE	
GIS_ROAD_SIGN_TEXT		GIS_WATER_METER	
GIS_ROAD_TEXT		GIS_WATER_SERVICE	
GIS_ROW		GIS_WATER_TEXT	
GIS_SEWER_CLEANOUT		GIS_WATER_VALVE	

4. Additional Information