



# **City of Morgan Hill GIS/CAD Developer Submittal Standards**

Updated: July 1, 2021

Effective: August 1, 2021

The City of Morgan Hill maintains a Geographic Information System (GIS) for use by all City Departments. Major components of the GIS are parcels and public works facilities. To improve the efficiency of data collection and use in city operations such as development processing services, public works maintenance and operations, public safety activities (Police/Fire) and habitat protection, the City of Morgan Hill requires the submission of digital copies along with the required number of hardcopies for the submittal of all Final Maps, Grading Plans, and Improvement Plans. These requirements do not affect in any way existing requirements of other departments regarding map/plan processing.

City staff will review developer submittals and may reject any submittals that do not meet these requirements. Development projects that are not required to submit Improvement Plans are not subject to these submission requirements. Additional exceptions from these requirements may be made with the express permission of the Public Services Director.

For further information or clarification of this specification, contact:

Engineering & Utilities Department  
City of Morgan Hill  
17575 Peak Avenue  
Morgan Hill, CA 9503

408-778-6480

## **1.0 FORMAT OF DATA FOR DIGITAL SUBMITTAL**

- a) AutoCAD 2017 .dwg record drawings showing street, sidewalk, buildings and all required attribute data as detailed herein for new/existing utilities highlighting all changes made from the approved drawings.
- b) Survey data in 2017 AutoCAD .dwg file format with benchmarks, surveyed points, and feature codes.
- c) Coordinate text files (PNEZ) of survey points for all new utility features in .csv format, including feature code of each point in the spreadsheet.

## **2.0 BASIS OF BEARINGS AND COORDINATE REFERENCE**

All survey data shall be collected by a California Licensed Land Surveyor. The Consultant or Contractor is responsible to setup all control points needed to perform the survey work. The accuracy for all survey data shall be +/- 1cm.

All survey points shall be collected using the California State Plane Coordinate System Zone 3 in units of feet.

The basis of bearings and all coordinates of data submitted to the City must be in reference to the

California Coordinate System 1983, Zone III, 1991.35 Epoch, North American Datum of 1983 (NAD83). All coordinates and line work will be scaled to ground distances and be within 0.5 feet of the true California Coordinate System values.

For vertical control, the NAVD 88 datum should be used.

### **3.0 REQUIRED AUTOCAD CONVENTIONS**

In order to streamline conversion of AutoCAD to GIS by City staff, the following AutoCAD conventions are required. AutoCAD submitted to the City that does not meet these requirements will not be accepted.

- Layers shall be properly prepared in AutoCAD so that each feature type, such as water mains, laterals, valves, etc., has its own layer. Different feature types should not be combined into the same layer.
- Line segments shall be properly drawn/merged in CAD so that each line segment represents a separate pipe (also called feature-to-feature segments or point-to-point), not an artificial break due to drawing.
- Hatch boundaries are required for any hatch symbols. A feature cannot be represented by the hatch symbol alone.

Improvement Plans - will consist of:

- file(s) of the entire plan submittal area;
- layers description (digital file/ hard copy)

Grading Plans - will consist of:

- file(s) of the entire plan submittal area;
- layers description (digital file/ hard copy)

Note: The model space of the submitted drawings should contain the entire project (showing property lines, improvements, etc.) and it should not be divided into sheets (used for plotting purposes.)

The City of Morgan Hill Standard layers are as described in Tables 3.1 (Final Maps, Parcel Maps), 3.2 (Improvement Plans), and 3.3 (Grading Plans).

**TABLE 3.1 FINAL MAPS, PARCEL MAPS**

LAYER NAME	LAYER CONTENTS
ACREAGE	net acreage text
BASE	north arrow, location map, etc.
COORD	coordinate values & tic marks
COV	cover sheet information
EASE	public/private easement lines
FLOOD	100 year flood lines and text
HATCH	hatching & shading
LOTS	lot lines, other property lines, and associated text
MON	monumentation markers and associated text
POS	procedure of survey lines and associated text
ROW	right-of-way easement lines and associated text
STCL	street centerline lines and associated text
STREAM	streams
STROW	street right-of-way lines and associated text
THALWEG	watercourse thalwegs

**TABLE 3.2 IMPROVEMENT PLANS**

LAYER NAME	LAYER CONTENTS
ACCESS	access covers (size, type, % grade)
APN	assessor parcel number text
BASE	north arrow, location map, etc.
COORD	coordinate values & tic marks
COV	cover sheet information
CURB	curbs, berms, sidewalks
EASE	public/private easement lines
EXGRDIDX	existing grade index contours & text
EXTGRADE	existing grade contours and text
FINGRADE	finished grade contours and text
FINGRIDIDX	finish grade index contours & text
FLOOD	100 year flood lines and associated text
FLOW	swales, direction of flow
FTPRINT	footprints of buildings
GRID	grid & grid numerical values for street & utility profiles
HATCH	hatching & shading
INOUT	inlets/outlets
IRRCOND	irrigation conduit
IRRCONTR	irrigation controllers
IRRPIPE	irrigation pipe
LANDSCPLT	landscape planting
LANDSCTXT	landscape text
LOTS	lot lines, other property lines, and associated text
MEDIAN	medians
MON	monumentation markers and associated text
PERCENT	percentages
POS	procedure of survey text and associated text
PUBELECOH	public utilities - electrical: overhead
PUBELECUG	public utilities - electrical: underground
PUBHYDR	public utilities - fire hydrants
PUBTELE	public utilities - telephone boxes
PUBTV	public utilities - cable TV
PUBWATER	public utilities - water supply
RAMP	ramps
RECWPROF	reclaimed water profile
ROW	right-of-way easement lines
SEWERSYS	sewer main and associated text
SEWPROF	sewer profile

**TABLE 3.2 IMPROVEMENT PLANS (Continued)**

LAYER NAME	LAYER CONTENTS
SPOTELEV	spot elevations markers and text
STCL	street centerline lines and associated text
STLIGHT	electroliers
STLTCOND	street lighting conduits & junction boxes
STORMDRN	culvert and storm drain profiles and associated text
STPROF	street profile
STREAM	streams
STRMPROF	storm drain profile
STROW	street right of way lines and associated text
STSIGN	street name signs
STSTRIPE	traffic striping
THALWEG	watercourse thalwegs
TREE	trees (4" diameter or greater)
TSIGCOND	traffic signal conduit
TSIGN	regulatory & advisory signs
TSIGNAL	traffic signals
TSIGNAL	traffic signals and associated text
WALKS	footprints of walks
WATPROF	water line profile
XTREE	trees to be removed

**TABLE 3.3 GRADING PLANS**

LAYER NAME	LAYER CONTENTS
ACCESS	access covers (size, type, % grade)
APN	assessor parcel number text
BASE	north arrow, location map, etc.
COORD	coordinate values & tic marks
COV	cover sheet information
CURB	curbs, berms, sidewalks
EASE	public/private easement lines
EXGRDIDX	existing grade index contours & text
EXTGRADE	existing grade contours and text
FINGRADE	finished grade contours and text
FINGRDIDX	finish grade index contours & text
FLOOD	100 year flood lines and text
FLOW	swales, direction of flow
FTPRINT	footprints of buildings
HATCH	hatching & shading
INOUT	inlets/outlets
LANDSCPLT	landscape planting
LANDSCTXT	landscape text
LOTS	lot lines, other property lines, and associated text
MEDIAN	medians
PERCENT	percentages
POS	procedure of survey text and
PUBHYDR	associated text public utilities - fire
PUBTELE	hydrants public utilities - telephone
PUBWATER	boxes public utilities - water supply
RAMP	ramps
ROW	right-of-way easement lines and associated text
SEWERSYS	sewer main and associated text
SPOTELEV	spot elevations markers and text
STCL	street centerline lines and associated text
STORMORN	culvert and storm drain profiles and associated text
STREAM	streams
STROW	street right-of-way lines and associated text
THALWEG	watercourse thalwegs
TREE	trees (4" diameter or greater)
TSIGNAL	traffic signals
TSIGNAL	traffic signals and associated text
WALKS	footprints of walks
XTREE	trees to be removed

#### **4.0 ACCEPTABLE MEDIA**

Digital submittals are to follow the City of Morgan Hill layer format.

1. The City will accept submissions of the required digital files on the following media:
  - Flash/thumb Drive (preferred)
  - PC-formatted DVD
2. The submitter will be responsible for archival of the digital data until final acceptance.  
If possible do not archive (compress) the files.
3. Please include all the necessary files on your submittal media (i.e. XREF-ed files, fonts). (The easiest way to accomplish this is by using the *Pack'n Go* or *E-Transmit* feature from AutoCAD).
4. All media will be submitted with labels indicating the following information:
  - *Project Name/Number Date*
  - *Company*
  - *Contact Name/Telephone Number/Email*
  - *File Names*

## 5.0 REQUIRED ATTRIBUTE DATA FOR UTILITY FEATURES

The following attribute data is to be included on the full size redline record drawings:

<b>1. Mains: Required Data</b> Pipe Diameter Pipe Material Pipe SDR or Pipe Class Pipe Install Date (date pipe went in the ground) Pipe Installed Method Pipe Length Pipe Manufacturer Pipe Manufacturer Code Pipe Depth Pipe Installer Name Pipe Test Date and Time Pipe Pressure Test Data Abandon Date or Removal Date (if applicable)	<b>5. Other Features: Required Data</b> Pipe Fitting Type Pipe Fitting Connection Type Pipe Fitting Size Pipe Fitting Manufacture Pipe Fitting Manufacture Code Pipe Fitting Depth EFV Equipment Manufacture EFV Size ID EFV Trip Point
<b>2. Services/Laterals: Required Data</b> Pipe Diameter Pipe Material Pipe SDR or Pipe Class Pipe Function Type Pipe Install Date (date pipe went in the ground) Pipe Installed Method Pipe Length Pipe Manufacturer Pipe Manufacturer Code Pipe Depth Pipe Installer Name Service Connection Method to Mains Marker Ball Abandon Date or Removal Date (if applicable)	<b>6. Valves: Required Data</b> Valve Install Date (date valve went in the ground) Valve Installer Name Valve Application Valve Type Valve Manufacturer Valve Model Valve Serial Operable Valve Actuator Type Valve Access Type Valve Function Type Valve Lid Type Valve Depth (valve cover to top of nut) Abandon Date or Removal Date (if applicable)
<b>3. Manholes: Required Data</b> Manhole Install Date (date MH went in the ground) Manhole Installer Name Manhole Material Manhole Type Manhole Depth Abandon Date or Removal Date (if applicable)	<b>7. Meters: Required Data</b> Meter Install Date (date meter went in the ground) Meter Installer Name Meter Number Meter Type Meter Location Meter Box Model Backflow Device Abandon Date or Removal Date (if applicable)
<b>4. Cleanouts: Required Data</b> Cleanout Install Date (date CO went in the ground) Cleanout Installer Name Backflow Device Abandon Date or Removal Date (if applicable)	

## 6.0 FEATURE CODES AND FEATURE CAPTURE-POSITIONS

Use CPAU WGW Engineering's "feature codes" for naming convention and refer to the feature capture-positions in the attached 'Feature Codes and Feature Capture-Positions' list.

Feature Description	Feature Code	Feature Capture-Position
<b>SURVEY REFERENCE POINT</b>		
Benchmark	BM	
Back Site Point	BSPT	
<b>ROAD FEATURES</b>		
Back of Curb	BOC	Back of curb
Back of Rolling Curb	BORC	Back of rolling curb
Bridge, Edge	BREDGE	Edges of bridge outline
Back of Sidewalk	BSW	End pts. on straight alignment & every turning pt.
Back of Valley Gutter	BVG	At flow line
Crown of Street	CROWN	End pts. on straight alignment & every turning pt.
Ditch	DITCH	At flow line
Driveway	DWY	Edge of driveway both sides
Edge of Pavement	EOP	Both ends of the block and every turning pt.
Fence	FENCE	End pts. on straight alignment & every turning pt.
Flow Line	FL	End pts. on straight alignment & every turning pt.
Face of curb	FOC	End pts. on straight alignment & every turning pt.
Lip of Gutter	LOG	End pts. on straight alignment & every turning pt.
Loop Detector	LOOPDE	As needed
Street Monument	MONSTR	Center of lid/cover
Swale at Flow Line	SWALE	As needed
Traffic Speed Control	TRSPCN	As needed
Traffic Speed Donut	TRSPDON	As needed
Street Turn Around	TURNARO	As needed
Guard Rail	GUARDR	As needed
Parking Lot	PARKING	Edges of parking lot
Speed Bumps	SPEEDB	As needed
<b>BUILDING</b>		
Building	BLDG	Building corners
<b>WATER</b>		
Air Relief Valve	WTARV	Center of valve
Detector Check Valve	WTDCV	Center of valve
Fire Hydrant	WTFH	Center of hydrant at ground elevation
Water Main	WMAIN	End pts. on straight alignment & every turning pt.
Water Main Tapping Tee	WTTEE	Service connection point to main
Water Service	WTSVC	End pts. on straight alignment & every turning pt.
Water Valve - Main	WTVMAIN	Center of lid/cover
Water Valve - Service	WTVSVC	Center of lid/cover
Water Valve - Fire Hydrant	WTVFH	Center of lid/cover
Water Valve - Blow-Off	WTVBO	Center of lid/cover
Water Meter	WTM	Center of meter

<b>WASTEWATER</b>		
Wastewater Main	WWMAIN	End pts. on straight alignment & every turning pt.
Wastewater Main Tapping Tee	WWTEE	Lateral connection point to main
Wastewater Lateral	WWLAT	End pts. on straight alignment & every turning pt.
Wastewater Clean Out	WWCO	Center of lid/cover
Wastewater Flushing Inlet	WWFI	Center of lid/cover
Wastewater Lamp Hole	WWLH	Center of lid/cover
Wastewater Manhole	WWMH	Center of lid/cover
<b>ELECTRIC</b>		
Electrical Vault 1,2,3,4 Lids	ELVLT	Center of vault
Electrical Manhole	EMH	Center of lid/cover
Fiber Optic Manhole	FMH	Center of lid/cover
Fiber Optic Vault	FVAULT	Center of vault
Telephone MH	TELMH	Center of lid/cover
Telephone Vault	TELVAULT	Center of vault
<b>STORM DRAIN</b>		
Box Culvert	BOXCLV	Center line
Catch Basin	CB	Center of grate
SD Headwall	SDHW	As needed
SD Inlet	SDIN	As needed
SD Manhole	SDMH	Center of lid/cover