WASD PIPELINE CAD AND GIS STANDARDS MANUAL

January 2026

Miami-Dade County Water and Sewer Department

Table of Contents

UPDATES

Some significant revisions have been made since 2024 version of the MDC WASD CAD standards. Please review entire manual:

- Additional layers have been added
    - The addition of multiple V-PNTS-LABL-* layers were added to improve label control and separation.
    - Added a new layer and line type for Lot Lines
- Survey layers have adjusted line weights.
    - When survey CAD files are XREF'd into a design drawing, survey layers will be plotted in grey color with thickness determined by their line weight.
- Civil 3D styles and label styles have been added and updated.
    - All point styles have adjusted display layers
    - Point Label Styles for pipeline appurtenances have been adjusted
    - Station Offset Labels for structures have been adjusted
    - Survey Figure Styles for buildings and vegetation have been added
- Model Space "Please Read" box has been reduced in size to only include pertinent information.
- Blocks have been updated to have wipeout frames.
- Description Keys Set "WASD_SURVEY_TOPO" has been updated.
    - New Description Keys for Utility Poles (concrete and wood)
    - New default Point Styles, Point Label Styles, and Layers have been applied
- As-built cover has been updated with new notes.
- Sketch and Legal sheets have been updated with new notes
- Survey Notes sheet has been updated to include additional dynamic fields and new Control Points Table
- Updated Section 3.3 General Plan and excluded the requirement for General Plans for larger projects (projects that require more than 6 sheets)
- Updated Section 3.6.2 Title Block requiring sheet naming to follow US NCS – UDS-Module 1 standards.
- Updated Section 3.7.2 Survey Callouts allowing for tabulated survey callouts if they produce excessive crowding when drafted into model space.
- Updated Figures 3.2, 3.2.2, 3.4.2, 3.5, 3.6, 3.6.2.1.a, 5.3.1
- Added language in Section 5.2 Layer Naming Conventions that specifies that layer naming shall follow US NCS standards.
- Added Chapter 7: AS-BUILT CAD REQUIREMENTS FOR GIS INTEGRATION
- Updated Appendix A and B
- Added additional Appendix, Appendix C REQUIRED GIS ATTRIBUTES FOR PIPELINE ASSETS
- Updated Exhibits A-D

INTRODUCTION

It is the County's intent that all electronic drawing files, regardless of what firm produces them, be similar in style and content. To this end, all consultants or contractors creating CAD drawings for Miami-Dade County Water and Sewer Department (MDC WASD) must conform to the following guidelines. The following shall be the minimum requirements for all CAD deliverables. Any drawings created for MDC WASD, which do not conform to these guidelines, will not be accepted. Any changes or variations to the guidelines must have prior approval by MDC WASD before implementation.

Please direct any questions or comments about this document to the CAD Manager of MDC WASD:

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Phone: 305-878-6051

CHAPTER 1: GENERAL REQUIREMENTS

1.1 SOFTWARE

MDC WASD currently uses the following CAD software products:

- Civil 3D 2025
- AutoCAD 2025

PLEASE NOTE:

Actual software version used by MDC WASD internally will change from time to time, therefore please refer to the specific project contract or contact the project manager for actual version and submission requirements.

1.2 FILE TYPE

All project submissions shall include the following file types:

- AutoCAD Drawing format (.dwg)
- Adobe Portable Document Format (.pdf)

PDF files shall be created from within the AutoCAD environment and contain Layer information. It is a requirement that each project drawing/sheet created for a project shall be published/plotted to DWG and PDF.

1.3 FILE NAMING (EXCLUDING AS-BUILT CAD FILES)

The following file naming standard for all CAD related files created, used, or submitted to the organization shall be followed.

Project ID	Title (Meaningful Key Words)	Company Abbreviation (Optional)	Date (YYYYMMDD)	Revision No.	File Extension

File Naming Example for Treatment Plants
Project ID_CDWWTP-TOPO_ COMPANYABBREVIATION_YYYYMMDD_REV#.ext
Project ID_SDWWTP-BOUNDARY-TOPO_YYYYMMDD_REV#.ext

File Naming Example for Pump Stations
Project ID_PS0475-TOPO_YYYYMMDD_REV#.ext
Project ID_PS0475- BOUNDARY-TOPO_YYYYMMDD_REV#.ext

File Naming Example for Intersections
Project ID_SW64CT_SW68ST-TOPO_YYYYMMDD_REV#.ext
Project ID_NE87ST_BISCAYNEBLVD-TOPO_YYYYMMDD_REV#.ext

CHAPTER 2: DRAFTING CONVENTIONS

2.1 DRAFTING BASEPOINT

All project data shall be georeferenced before submission and located on the following:

Horizontal Datum - North American Datum 1983 (NAD83), Florida East Zone 901 or as otherwise specified by the MDC WASD Project Manager.

Vertical Datum – North American Vertical Datum 1929 (NGVD29).

See **Figure 2.1** on which the drawing setting required for proper georeferencing.

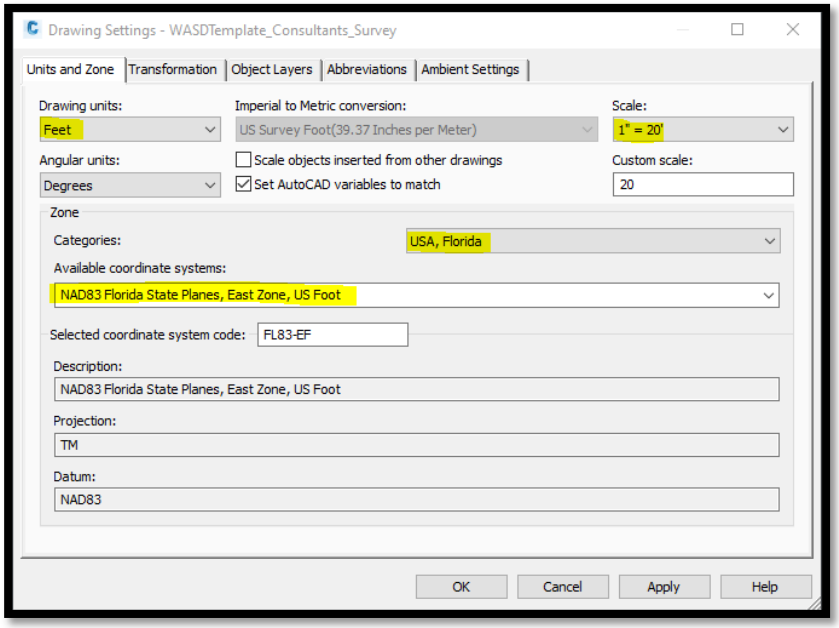


Figure 2.1

2.2 MODEL SPACE AND LAYOUTS

All drafting should be done in the model space at a 1"=1' scale. The design or topographic survey shall be referenced in a layout viewport prior to printing using appropriate scale factor, as necessary.

2.3 TEXT FONT AND ORIENTATIONS

The standard text font for water and wastewater design plans and topographic surveys shall be Simplex.

The orientation of design plans requires the placement of call out notes at various angles skewed to the horizontal position. The standard text or lettering orientation shall be as per **Figure 2.3**.

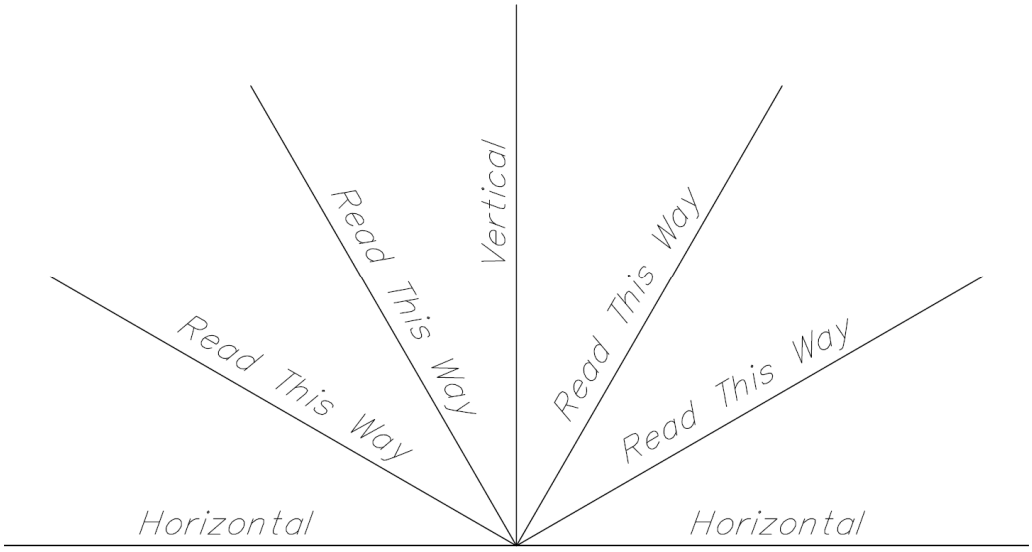


Figure 2.3

2.4 ANNOTATIONS

Unusually large text shall not be used, except decorative font on cover sheet. Center left justification shall be used for blocks of text. In addition, the following guidelines shall be used for annotations with features:

- Move annotation away from feature
- Line up annotations if possible
- Avoid odd abbreviations and squeezing text to fit
- Break leader lines at conflicts only
- Multiple leader lines may not intersect
- Group leader lines at about the same angle for neatness

2.5 DRAWING ORIENTATIONS

The orientation of the plan view should allow the placement of the design or topographic survey lengthwise along the plan sheet while orientating north generally towards the top or right side of the sheet **(Figure 2.5).**

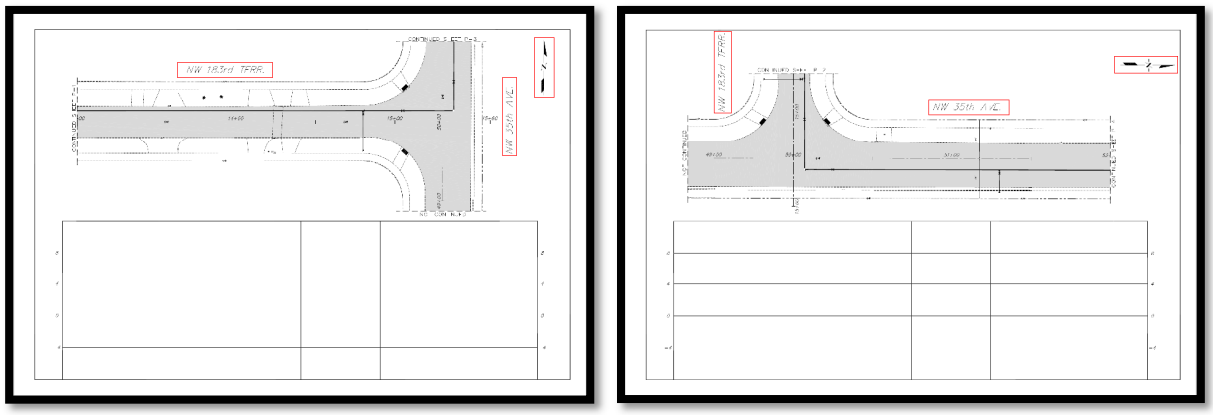


Figure 2.5

2.6 STATIONS

The project baseline shall be developed with a continuous one hundred foot stationing format. This stationing format provides the means of referencing pertinent points of construction and proposed appurtenances along with providing a reference between the plan and profile views. Typically, project baselines will begin with a ten stationing point (10+00) at the center of an intersection with a preceding stationing point 50 feet behind it (9+50) to account for any lagging appurtenances (starting at station 10+00 prevents a negative stationing reference when calling out lagging appurtenances). The baseline will then proceed to the project ending point.

Stationing direction should begin from west to east, or south to north. The west to east and south to north stationing configuration typically provides left to right reading of plans with north directed to the top or to the right. A typical stationing for water, wastewater, and topographic surveys project is shown in **Figure 2.6.**

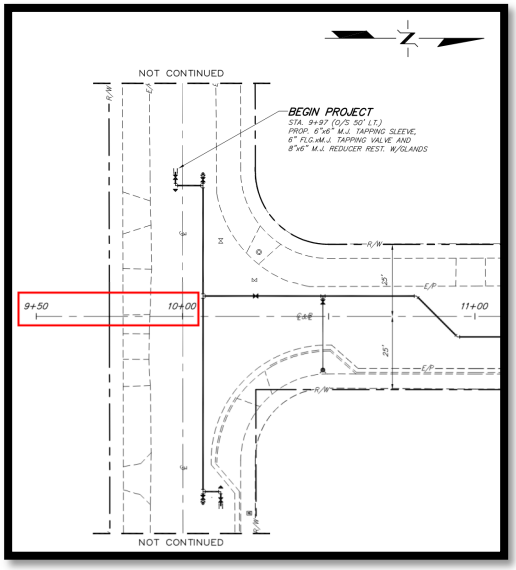


Figure 2.6

2.7 COORDINATES

Florida State Plane Coordinates (Northing and Easting) shall be shown at the beginning, ending, points of intersection (PI), points of Curvature (PC), points of tangency (PT) and other station points of major appurtenances (manhole, cleanout, wastewater access device). The starting station (10+00) may also be tied to the survey control points, as necessary. Ties to easily locatable objects such as valves caps or manhole covers may be used to locate the station (10+00).

2.8 CROSS UNDERGROUND UTILITIES

All underground cross utilities shall be shown in the profile with elevations as available.

2.9 SLOPE

Design slopes for all water and wastewater shall be to the nearest hundredth of a percent (Example: Slope 3.50%).

2.10 ELEVATIONS

All proposed elevations shall be to the nearest hundredth of a foot (Example: Elev. = 7.67').

2.11 INVERT ELEVATIONS

All water and wastewater flowlines shall be to the nearest hundredth of a foot in (Example: Elev.= 7.97').

2.12 DRAWING SCALES

CAD drawings shall be developed at a 1"=1' ratio and then plotted to the following scale unless otherwise approved by MDC WASD.

2.12.1 Horizontal Scale

All plans shall be plotted at a horizontal scale of 1"=20' to show sufficient plan details for congested project locations such as alleys, easements, or street right-of-way with numerous underground facilities. Generally 1"=20' is most preferable however, 1"=40' may also be used for projects where the utilities are less congested and for wider rights-of-ways.

2.12.2 Vertical Scale

Unless otherwise directed by MDC WASD, all profiles are to be plotted on the vertical scale of 1"=2' with major horizontal lines at four (4) foot intervals and to the same horizontal scale as the plan view. A vertical scale of 1" = 4' may be used only with MDC WASD approval and shall be clearly indicated on the drawing.

2.12.3 Variance

Special details, such as structures, may require the use of a scale which can provide greater detail than those available on the standard civil engineer scale. For these instances, the use of an appropriate architectural scale which provides greater detail is acceptable.

2.13 MATCHLINE

When a design spans more than one plan sheet, a design match line must be established to reference the continuation of the design from one sheet to another. The following guidelines should be followed when establishing the location of match marks:

- Match Marks are to be places at a half or full station point (e.g. 20+00 or 20+50). A quarter or three-quarter station points (e.g. 20+25 or 20+75) may also be acceptable, if necessary.
- Match Marks are to be perpendicular to the design alignment.
- When at all possible, place match marks outside of the street intersections, highway crossings, railroad crossings and areas of proposed construction by other than open cut.
- Place match marks to maximize the use of the available plan and profile space while considering any space requirements of location maps, general notes, construction details, etc.
- Analyze the profile section at the proposed match mark and ensure that the location of the match mark will not create any confusion in the profile view.

CHAPTER 3: DRAWING CONFIGURATION

3.1 PLAN AND PROFILE CONFIGURATION

Three plan and profile configurations are available for developing design plans:

1) Combined Plan and Profile Sheets
2) Full Plan Sheet
3) Full Profile Sheet

3.1.1 Combined Plan and Profile Sheet:

The combined plan and profile sheet is recommended for general use as it allows the placement of the design plan view and profile view on the same sheet.

3.1.2 Full Plan Sheet:

The full plan sheet may be used when a combined plan and profile sheet does not provide sufficient plan space or when a design can be developed independently of a profile or when developing structural details. When a design requires a full plan sheet and also needs a profile, then a full profile sheet must be included with the design. The design must be thoroughly referenced to file, sheet, and line designation between the plan sheet and the profile sheet.

3.1.3 Full Profile Sheet:

Full profile sheets may be used to provide supplemental profile space, if necessary.

3.2 COVER SHEET

All projects must have individual cover sheets. The cover sheet shall incorporate the project name, MDC WASD project, contract, and drawing number, project location map, design sheet index (for design deliverables), MDC logo, consultant company logo (if project was performed by MDC WASD consultant), and any other information described in this section. A typical sheet cover for a water and wastewater design project in shown in **Figure 3.2.**

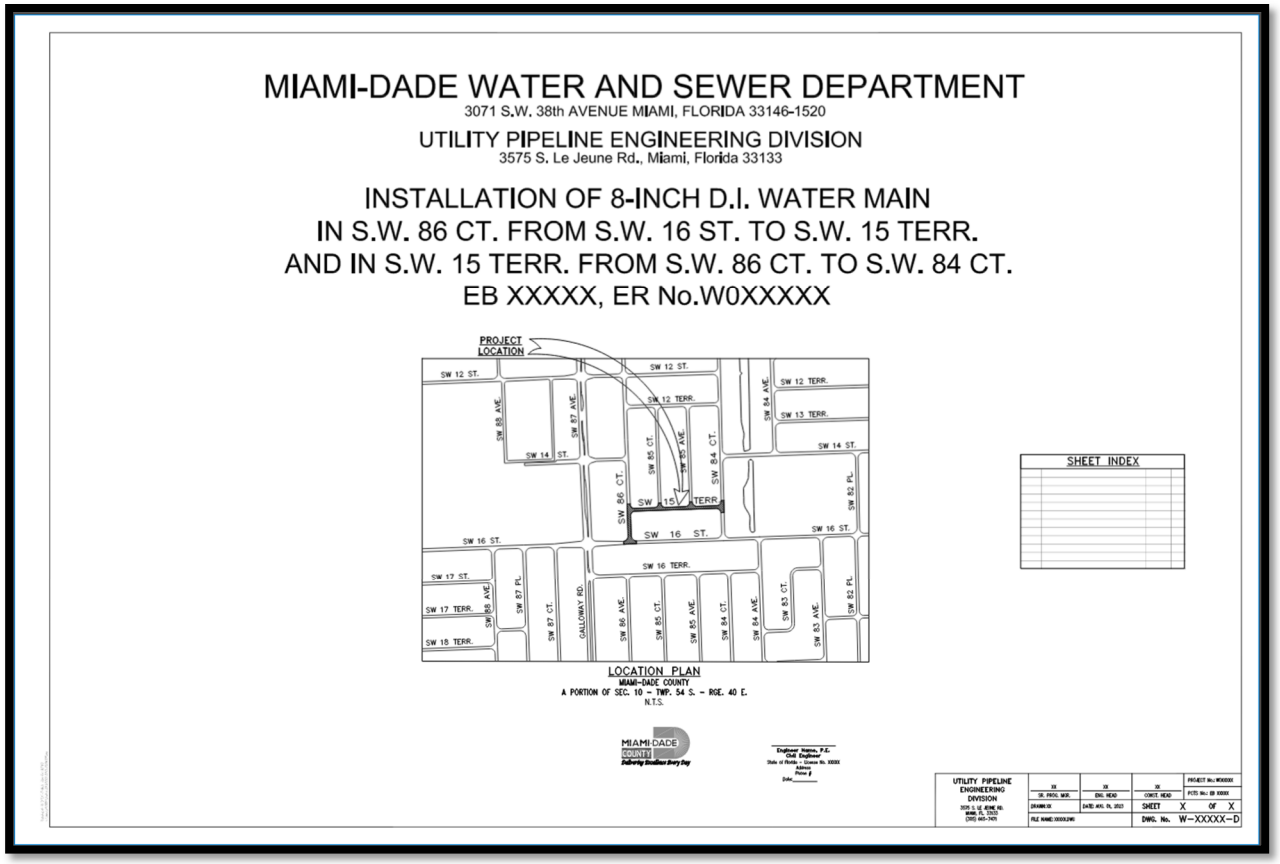


Figure 3.2

3.2.1 Major Single Utility Project:

A major pipeline project having six or more plan view sheets shall have a location key plan showing the overall layout of the project and indicate the limits of each design sheet. A typical cover sheet for a major utility project is shown under **Figure 3.2.1.**

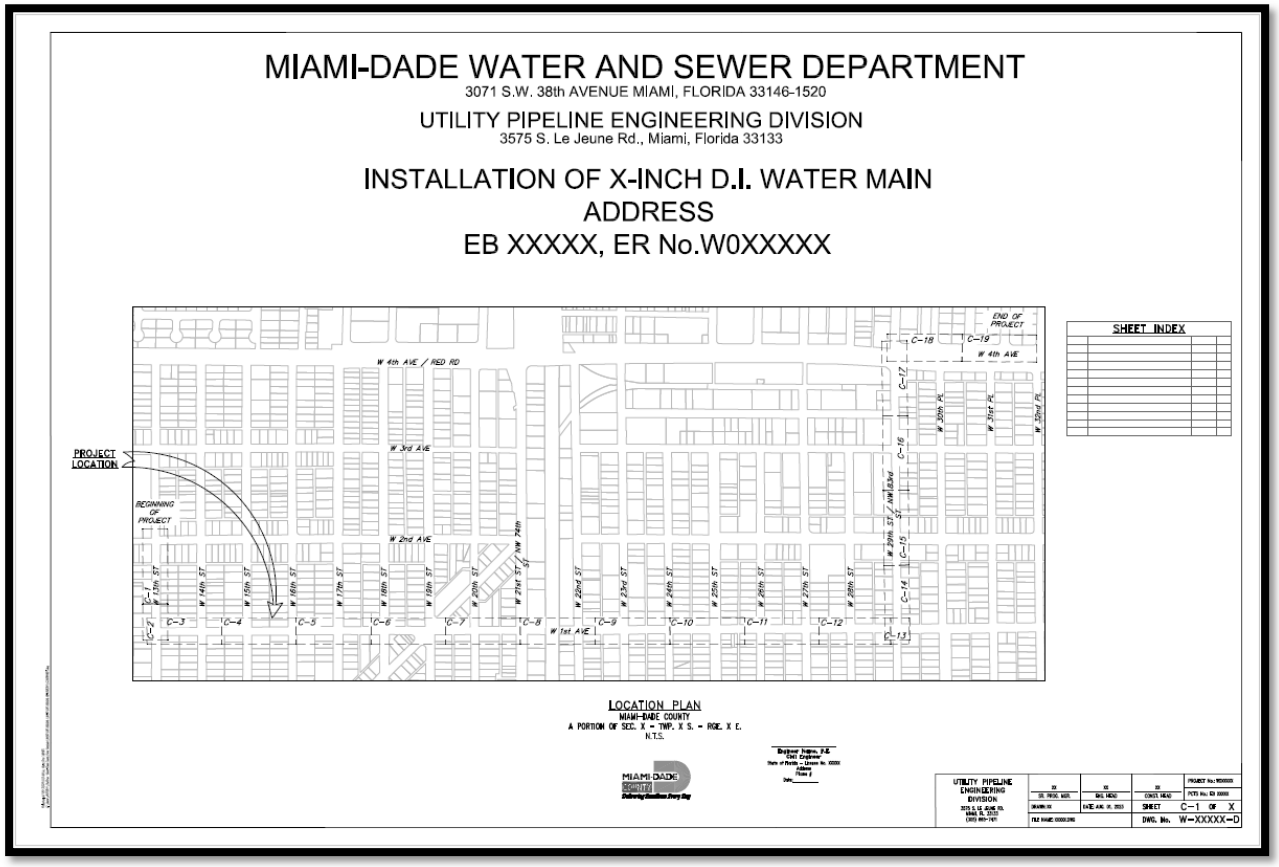


Figure 3.2.1

3.2.2 Standalone Survey:

For topographic or boundary surveys that will not be part of design deliverable, the cover sheet shall include survey notes (described **section 3.4**), location map, list of standard symbols and abbreviations, and a table for benchmarks and state plane coordinates used for the survey. A typical surveyor's notes sheet as shown in **Figure 3.2.2.**

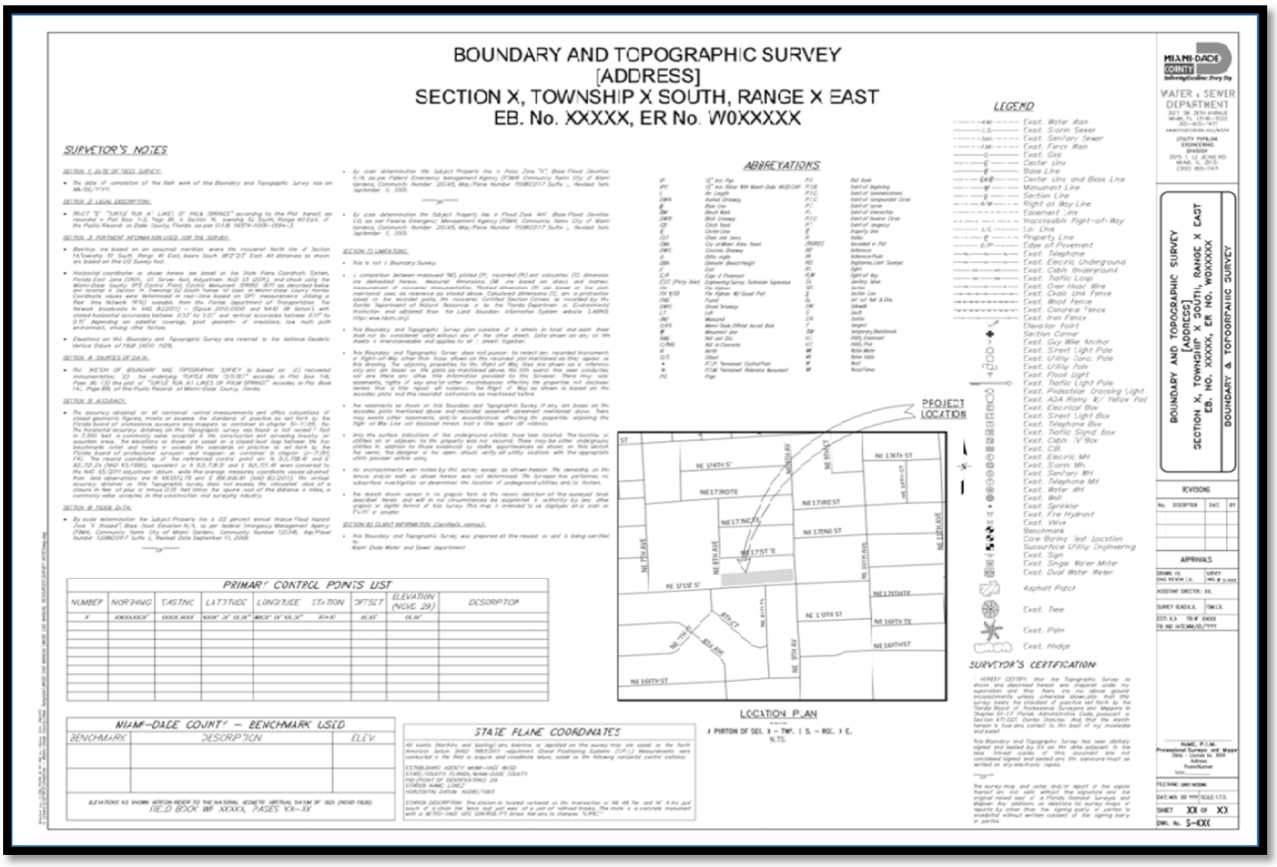


Figure 3.2.2

3.3 GENERAL PLAN

All water and sewer design projects shall include a general plan which contains the right of ways, pavement, surface elevations, lot and house numbers, property lines, general layout of the proposed design, and the beginning and ending of the project (station and offset). The general plan should also denote the sheet numbers of where the design plan and profile are in the drawing. A typical general plan is shown in **Figure 3.3.** For major pipeline projects, such as those outlined in Section 3.2.1, a general plan is not required.

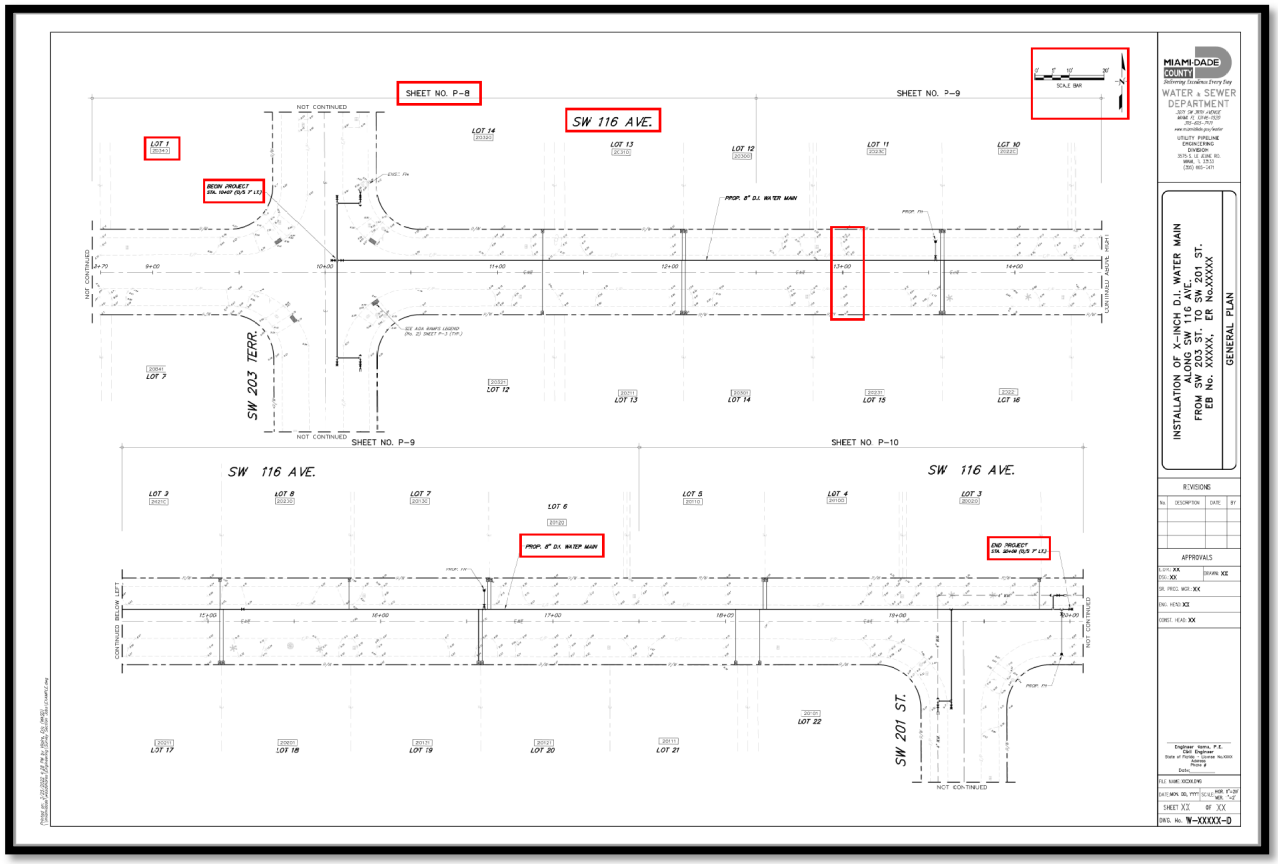


Figure 3.3

3.4 GENERAL NOTES

All water and sewer pipeline design projects must have a separate general notes sheet. General notes for topographic surveys which are part of design projects shall have their own dedicated sheet as well.

3.4.1 Water and Sewer Notes

All projects shall include a notes sheet. The template provided will include a notes sheet for both water and sewer projects however, the type of project will determine what notes sheet shall be used. The notes sheet is to incorporate notes regarding the following:

- General Notes
- RER-Derm Water-Sewer General Notes (Check RER website for latest revision)
- MDC WASD Design and Construction Standard Details
- Legend
- ADA Ramps Legend
- Requirements per Department of Health (water projects only)
- Sunshine Ticket Number

A typical water notes sheet is shown in **Figure 3.4.1.**

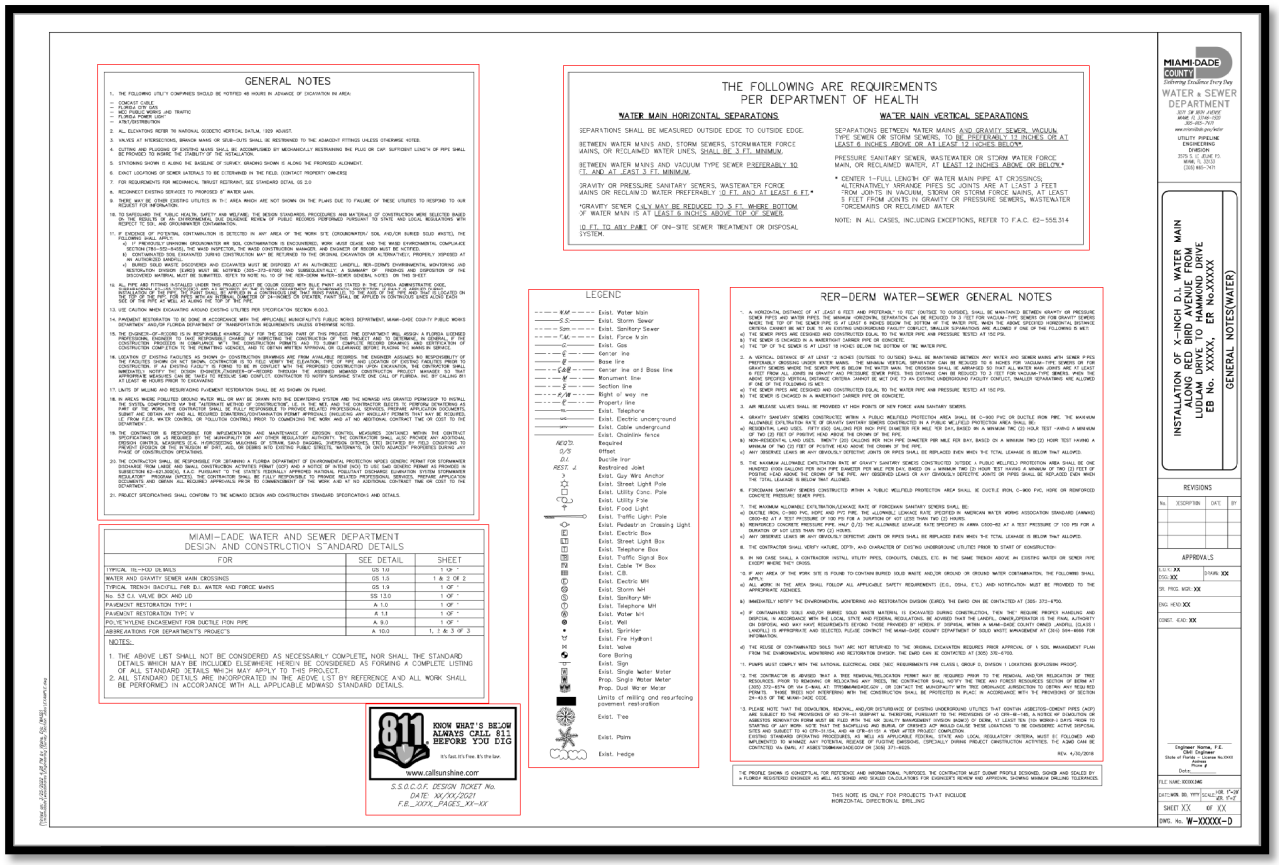


Figure 3.4.1.

3.4.2 Survey Notes Sheet

All survey projects submitted must have a separate surveyor's notes sheet. The surveyor's notes sheet is to incorporate notes regarding the following:

- Date of survey
- Survey limits
- Pertinent information
- Sources of data
- Accuracy
- Limitations
- Surveyor's certificate
- Requirement of survey to be signed and sealed

In addition, a list of standard symbols and abbreviations, and a table for benchmarks, primary control points, and state plane coordinates used for the survey must be incorporated in the notes sheet as well. A typical surveyor's notes sheet as shown in **Figure 3.4.2.**

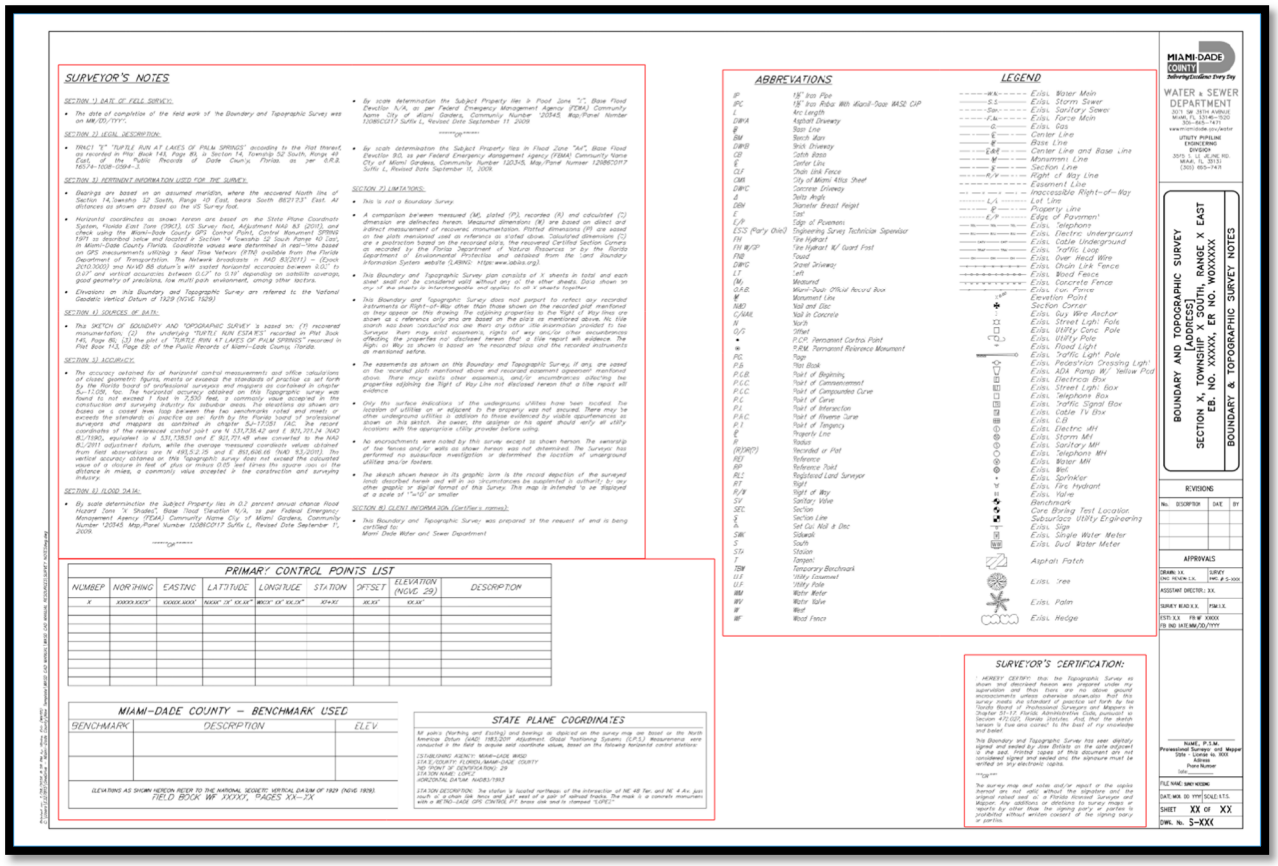


Figure 3.4.2

3.5 KEY MAP AND BASELINE AND REFERENCE POINT TABLE

A major survey project having four or more plan view sheets shall have a sheet containing a key map showing the beginning and end of the project. The map is to show the overall layout of the project and indicate the limits of each survey sheet. In addition, this sheet shall contain a baseline and primary control point table which will list all the baselines and control points found in the survey. In the case where the baseline and primary control points table go beyond the layout space of this sheet, the baseline and primary control point tables shall have a dedicated sheet on the following page. The Key Map sheet shall also contain a note regarding monumented change in direction, point of curvatures, point of tangencies, and street intersections with set nail and disc. A typical key map sheet as shown in **Figure 3.5.**

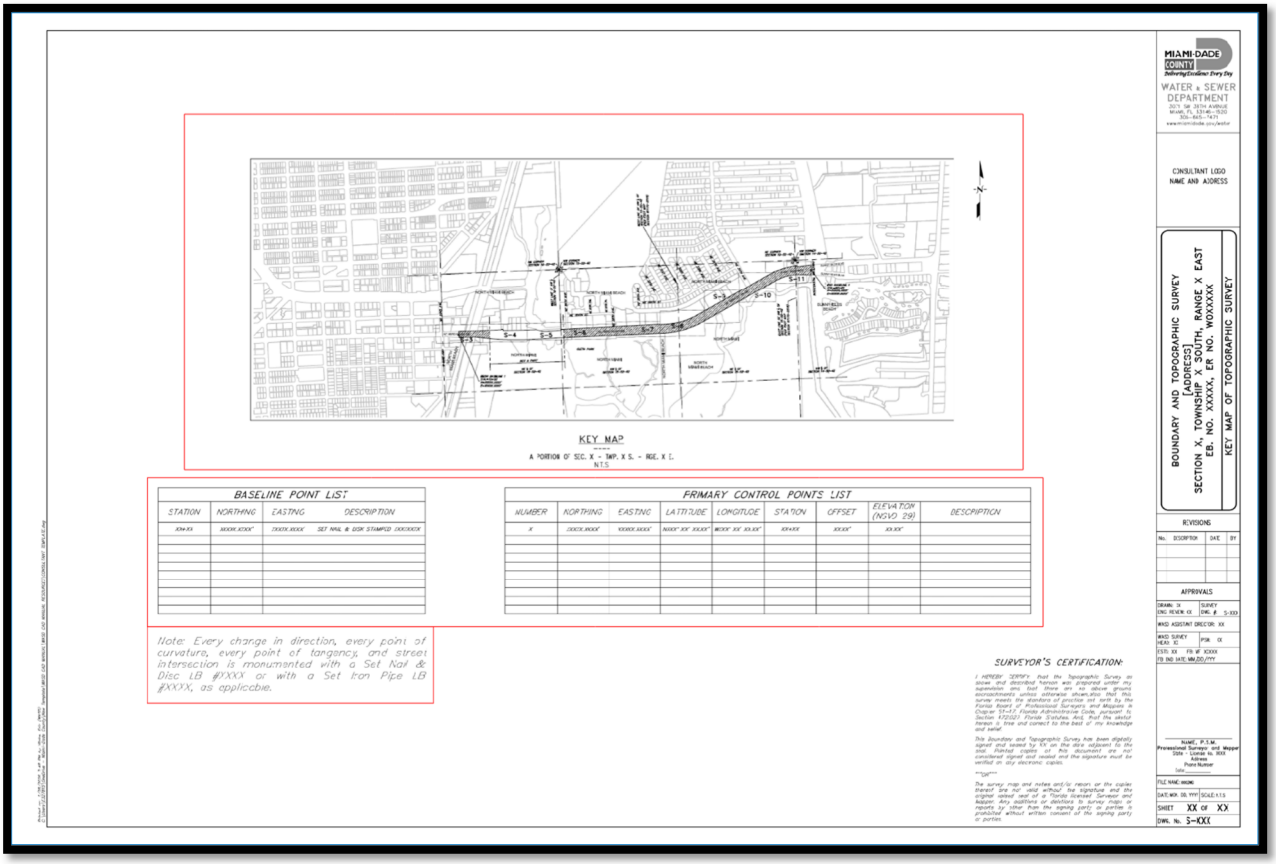


Figure 3.5

3.6 STANDARD DESIGN SHEET

All water and sewer design sheet shall be prepared strictly in accordance with MDC WASD standard format. Each sheet shall have standard horizontal and vertical bar scales for plan and profile as applicable. A typical standard design sheet is shown in **Figure 3.6** below.

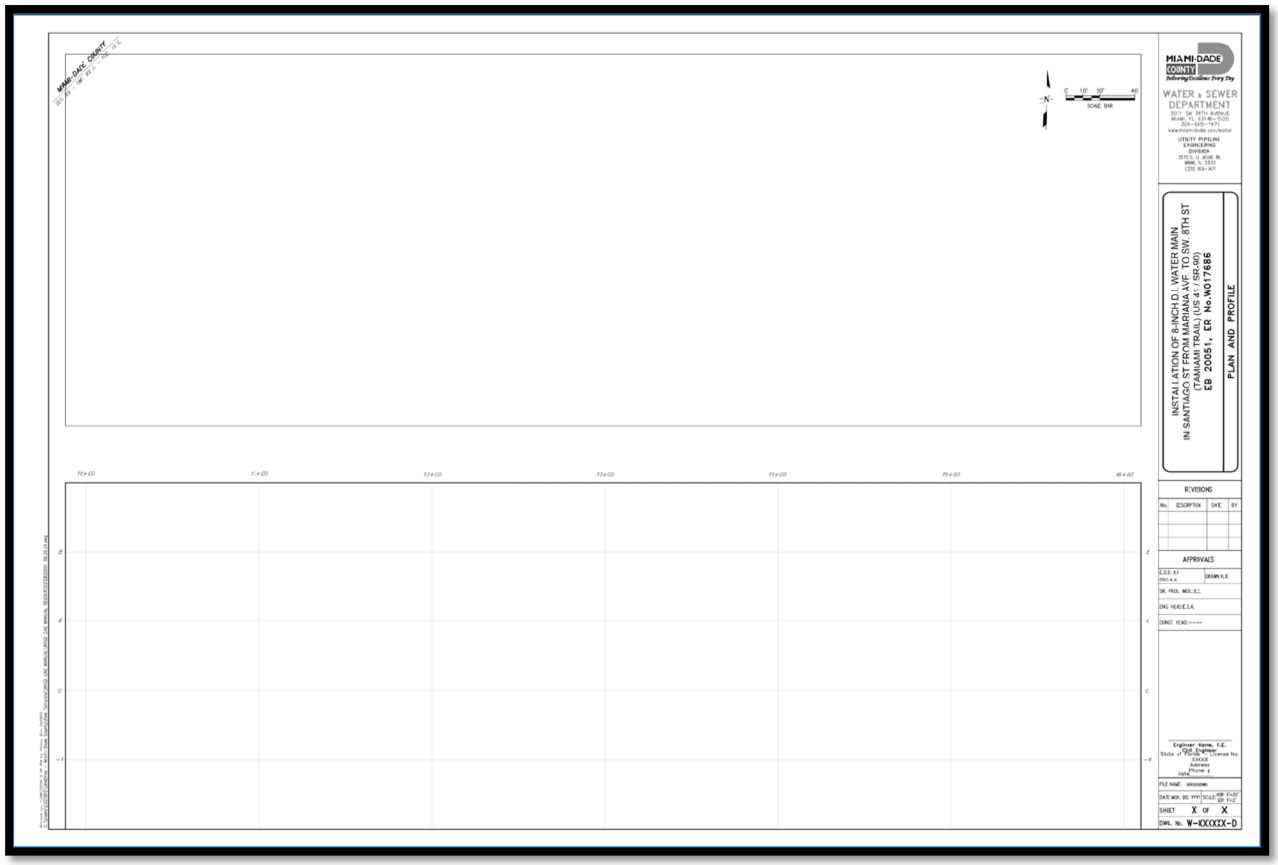


Figure 3.6.

3.6.1 Drawing Borders

The standard design and survey drawing shall be plotted on “D" sized paper (24”X36”) with a 22.5”X34” border on the sheet consisting of 1” spacing for the “file location” dynamic block on the left and 1” at the right, top, and bottom from the edge of the sheet as shown in **Figure 3.6.1.** All other sheet sizes may be acceptable upon prior approval by MDC WASD.

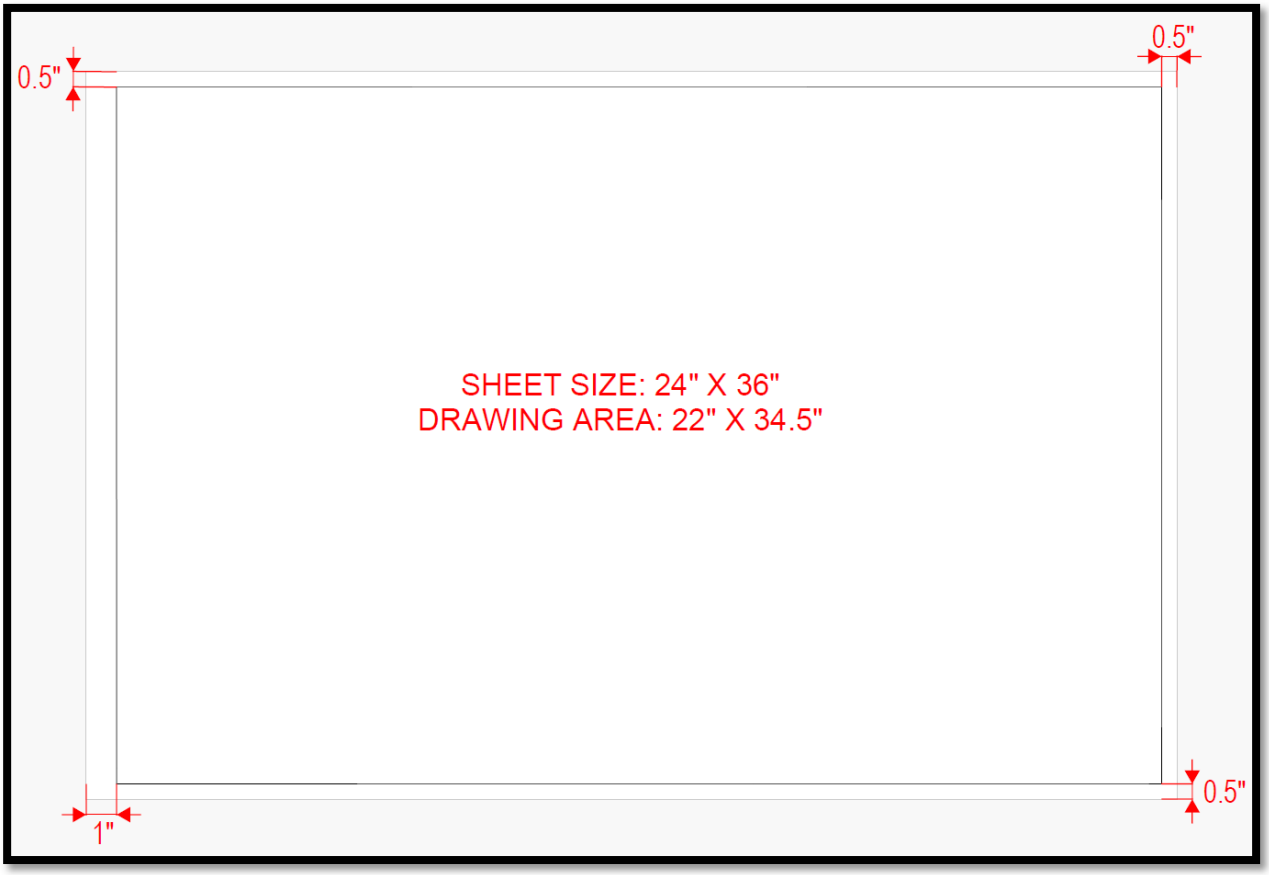


Figure 3.6.1

3.6.2 Title Block

Each sheet shall have a standard title block which shall include an area to conveniently list the pertinent project reference information as shown in **Figure 3.6.2 and Figure 3.6.2.1.a-3.6.2.1.c.** Additional title blocks for as-built submittals from **CIP pipeline contractors** and **county developers** are included within the template as AutoCAD blocks and shall be used in accordance with the applicable submission pathway.

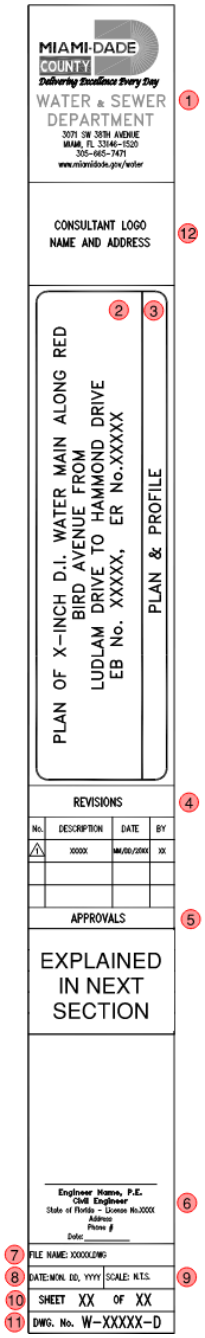


Figure 3.6.2

(1) MDC WASD LOGO: Included in provided template. Do not alter.

(2) PROJECT TITLE: Include size and/or type of project, project location, project limit, MDC WASD Project No. and ER No.

(3) SHEET NAME: Sheet name.

(4) REVISIONS: Include revision number, a brief description of what changed, date, and initials of drafter.

(5) APPROVALS: Approvals will be explained in following section

(6) ENGINEER/SURVEYOR SEAL: Location rasied seal for the of the engineer/ surveyor in charge. The engineer's seal may be physically, digitally, or electronically signed but must follow the FBPE standards for doing so. (fbpe.org/legal/signing-and-sealing-engineering-documents)

(7) FILE NAME: The file name should follow formatting as described in **Section 1.3**.

(8) DATE: Date shall be in abbreviated Month, day, and full year format.

(9) SCALE Scale of drawing on sheet.

(10) SHEET NUMBER: Sheet number shall follow US NCS - UDS-Module 1 unless otherwise specified by MDC WASD PM.

(11) DWG NUMBER: Drawing number as assigned by MDC WASD PM. Use letter "W" for water projects and letter "S" for sewer projects. The ending letter "D" stands for D sized sheet (24"X36").

(12) CONSULTANT LOGO: If project was done by a consultant there will be a space provided for consultant logo, name, address, phone number, and website. The size of this space shall not be altered.

3.6.2.1 Approvals

Depending on whether the drawing was done in house/by a consultant or if the sheet is for pipeline design/survey different approvals will be required. Approvals for in-house and consultant survey sheets, in house pipeline design sheets, and consultant pipeline design sheets will be explained and shown in **Figure 3.6.2.1.a., Figure 3.6.2.1.b., and Figure 3.6.2.1.c**. respectively.

IN-HOUSE/CONSULTANT SURVEY SHEETS

Figure 3.6.2.1.a

(1) DRAWN & REVIEWED BY: First and last initial of drafter and reviewer

(2) SURVEY DWG#: A drawing number will be assigned to consultant at the time of the project. This Drawing # is for MDC WASD records.

(3) ASSISTANT DIRECTOR: Contact MDC WASD PM for current Assist. Dir. Consultant Title block will have "WASD Assistant Director" instead

(4) SURVEY HEAD: The initials for this area will always be "J.C.C" Consultant Title block will have "WASD Survey Head" instead

(5) PROF. SURVEYOR&MAPPER: The initials for this area will always be "J.B."

(6) PARTY CHIEF & FIELD BOOK INFO: Include Party Chief initials, date of field book completion, and field book num

IN-HOUSE DESIGNED PIPELINE SHEETS

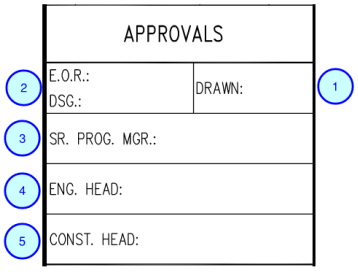


Figure 3.6.2.1.b

(1) DRAWN: First and last initial of drafter

(2) ENGINEER ON REVIEW & DESIGNER: Initials of EOR and Designer of the project

(3) SR. PROGRAM MANAGER: The initials of the Senior Program Manager of the in Utility Pipeline Design Department

(4) ENGINEERING HEAD: The initials for this area will be the Engineering Head Professional

(5) CONSTRUCTION HEAD: The initials of the Construction Head

CONSULTANT DESIGNED PIPELINE SHEETS

	APPROVALS
1	DRAWN BY: XX
2	CONSULTANT PM: XX
3	WASD PM: XX
4	OPERATIONS REVIEWER: XX
5	CONST. MGMT. REVIEWER: XX

Figure 3.6.2.1.c

(1) DRAWN BY: The initials initial of drafter.

(2) CONSULTANT PROJECT MANAGER: The initials of the consultant PM.

(3) WASD PROJECT MANAGER: The initials of the MDC WASD PM.

(4) OPERATIONS REVIEWER: The initials of the operations reviewer.

(5) CONSTRUCTION MGMT. REVIEWER: The initials of the construction reviewer.

3.6.3 Bar Scale

Each sheet shall have standard horizontal bar scales for plan views as applicable. The bar scale block is dynamic and editable so that you may change the scale from 1" = 20' to 1" = 40' or 1" = 60'. Profile scales will be preset in standard MDC WASD profile view styles.

3.6.4 As-built References

All the pertinent water and sewer as-built map reference numbers shall be mentioned for larger & complex projects or when required by MDC WASD's PM.

3.6.5 Benchmarks and Control Points

A minimum of two benchmarks (BM) per project and one benchmark per sheet. In addition, control points along with northing and eastings can also be shown as necessary.

3.6.6 Project Location Map:

Each project shall have a project location map on the cover sheet and oriented with a north arrow pointing to the top of the sheet. The scale of the location map is to be 1"=300' scale. The project location and its limit are to be identified. It is not necessary to include the location map on subsequent design sheets within the same project.

3.6.7 North Arrow:

Each design and survey sheet and location map shall have a standard arrow typically pointing North or to the East.

3.7 STANDARD CALLOUTS

All water and sewer main callouts and survey callouts shall be in accordance with the standards as stipulated in this section.

3.7.1 Water and Sewer Main Callouts:

All water and sewer main callouts shall be in accordance with the standards as stipulated in **Table 3.7.1** below:

Type	Sample Callouts	Notes
Begin Project / End project	**BEGIN/END PROJECT** STA. XX+XX (O/S XX' RT./LT.) PROP. XXXXXXX REST. W/GLANDS	Begin/End Project Station and Offset Prop Asset Begin/End Project is Tied To
Bends	STA. XX+XX (O/S XX' LT./RT.) PROP. XX"-90° M.J. BEND REST. W/GLANDS	Station and Offset Proposed Size, Angle, Joint Type (Rotation if Applicable) Connection Type
Fittings, Offsets, or Valves	STA. XX+XX (O/S XX' LT./RT.) PROP. XX"xXX" M.J. **[FITTING/OFFSET/VALVE]** REST. W/GLANDS	Station and Offset Proposed Size, Joint Type Connection Type
Tapping Sleeve with Valve	STA. XX+XX (O/S XX' LT./RT.) PROP. XX"xXX" M.J. TAPPING SLEEVE & XX" FLG.xM.J. TAPPING VALVE REST. W/GLANDS	Station and Offset Proposed Size, Joint Type Proposed Valve Size, Joint Type Connection Type
Plugs and Caps	PROP. XX" M.J. **[PLUG/CAP]** W/F.V.O. REST. W/GLANDS	Proposed Size, Joint Type (With F.V.O. if Applicable) Connection Type
A.R.V.s	PROP. A.R.V.	Proposed A.R.V.
Water Meters	PROP. 1" SERVICE AND **[SINGLE/DOUBLE]** METER BOX (SEE STD. DETAIL WS 2.10) LOCATION OF WATER METER BOX TO BE ADJUSTED IN THE FIELD AS REQUIRED (TYP.)	Proposed Water Meter (Service Line Size as needed) (Refer to STD. Detail as needed)
Hydrants	STA. XX+XX (O/S XX' LT./RT.) PROP. XX"x6" M.J. TEE, 6" M.J. GATE VALVE & F.H. ASSY. SEE STANDARD DETAIL WS 4.50	Proposed Size, Joint Type Valve and Assembly (Refer to STD. Detail)

Table 3.7.1

3.7.2 Survey Callouts:

All survey callouts shall be in accordance with the standards stipulated in **Table 3.7.2** below. If survey callouts result in excessive crowding on the drawing, the required information may be presented in a table on a separate sheet.

Type	Sample Callouts	Notes
Manholes and Catch Basins	MHSA RIM ELEV.=X.XX' 8" CLAY (E) INV. ELEV.=X.XX' 8" PVC (N) INV. ELEV.=X.XX' 8" CLAY (W) INV. ELEV.=X.XX' BOTTOM ELEV.=X.XX'	Name of Feature (i.e. MHSA, MHSS, CB) Rim Elevation Size of Pipe, Material, (Direction), and Invert Elevation Bottom Elevation
Reference Points	RP #1 SET PK W/WASD STA.=XX+XX.XX O/S=XX.XX' LT/RT N=XXXXXX.XXXX' E=XXXXXX.XXXX' ELEV.=X.XX'	Reference Point Number Nail and Disk Station Offset Northing Easting Elevation
Begin Baseline	BEGIN BASELINE X STA=XX+XX N=XXXXXX.XXXX' E=XXXXXX.XXXX'	Baseline Name Station Northing Easting

Table 3.7.2

CHAPTER 4: WORKING UNITS, STYLE, AND WEIGHT

4.1 GENERAL

This chapter addresses various computer aided drafting and design (CADD) elements, settings, and attributes as applicable to MDC WASD for pipeline design and survey using AutoCAD.

4.2 DRAWING UNITS

Drawing units for drafting shall be set to “Decimal” with the insertion scale set to “US Survey Feet”. **Figure 4.2** shows a typical set up of drawing units.

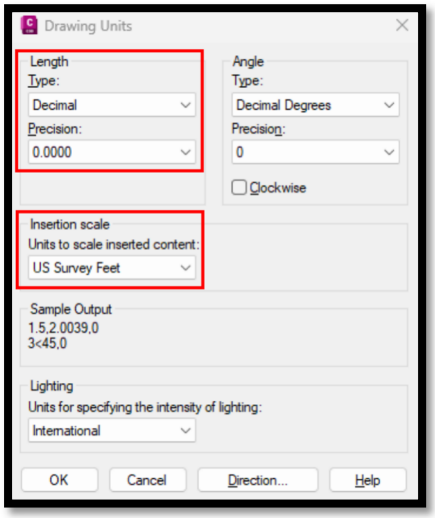


Figure 4.2

4.3 LINE STYLE

Predefined and standard linetypes available in the MDC WASD template shall be utilized, as necessary. All the MDC WASD linetypes are stored within the template file.

CHAPTER 5: LAYERS

5.1 GENERAL

This chapter discusses standard levels along with predefined attributes, consisting of specific colors, line styles, and line weights to be used for any project.

5.2 LAYER NAMING CONVENTIONS

MDC WASD will follow AIA CAD layer guidelines, as described in the United States National CAD Standards (NCS), for layer naming conventions. A typical MDC WASD layer shall be names as**:**

Discipline Designators_ Major Groups_ Minor Groups1_Minor Groups2

Where major category is the abbreviation for General (G), Civil (C), Architectural (A), Mechanical (M), (S) Structural, Electrical (E), Surveying (V) or other major categories.

Accordingly, a typical example of a predefined layer can be shown as follows:

V-ROAD-ALGN
C-SSWR -PIPE

5.3 PREDEFINED LAYERS

A detailed description of all the assigned levels with predefined attributes consisting of specific color, line style, and line weight, is included in **Appendix A**. All MDC WASD projects shall be designed utilizing the predefined layers.

5.3.1 Layering Schema

All CAD drawings should follow the layering schema as shown in **Figures 5.3.1-5.3.3**. The schema shows the appropriate layers, text, style, and leader style for common annotations and line types that appear in topographic drawings, pipeline design plan view, and pipeline design profile view.

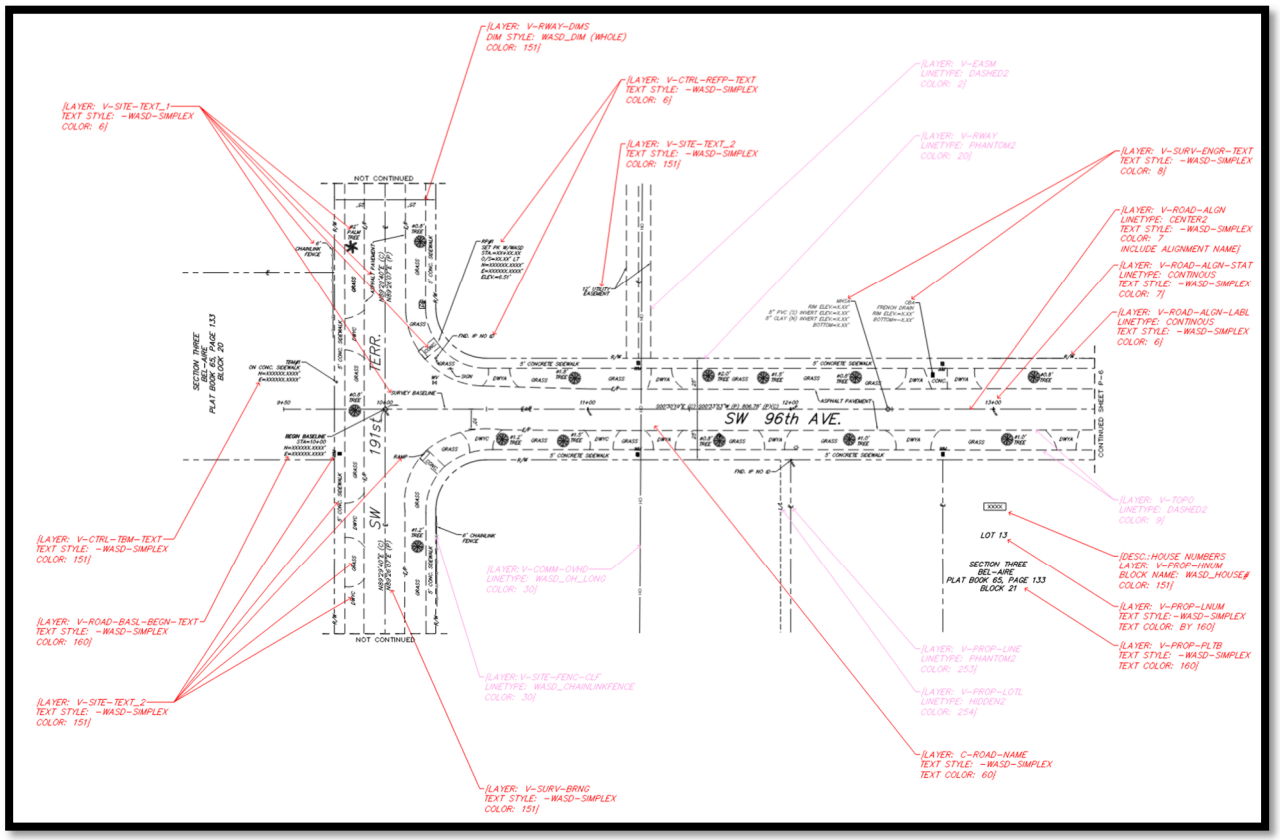


Figure 5.3.1
(Layer Schema for Topographic Survey Drawings)

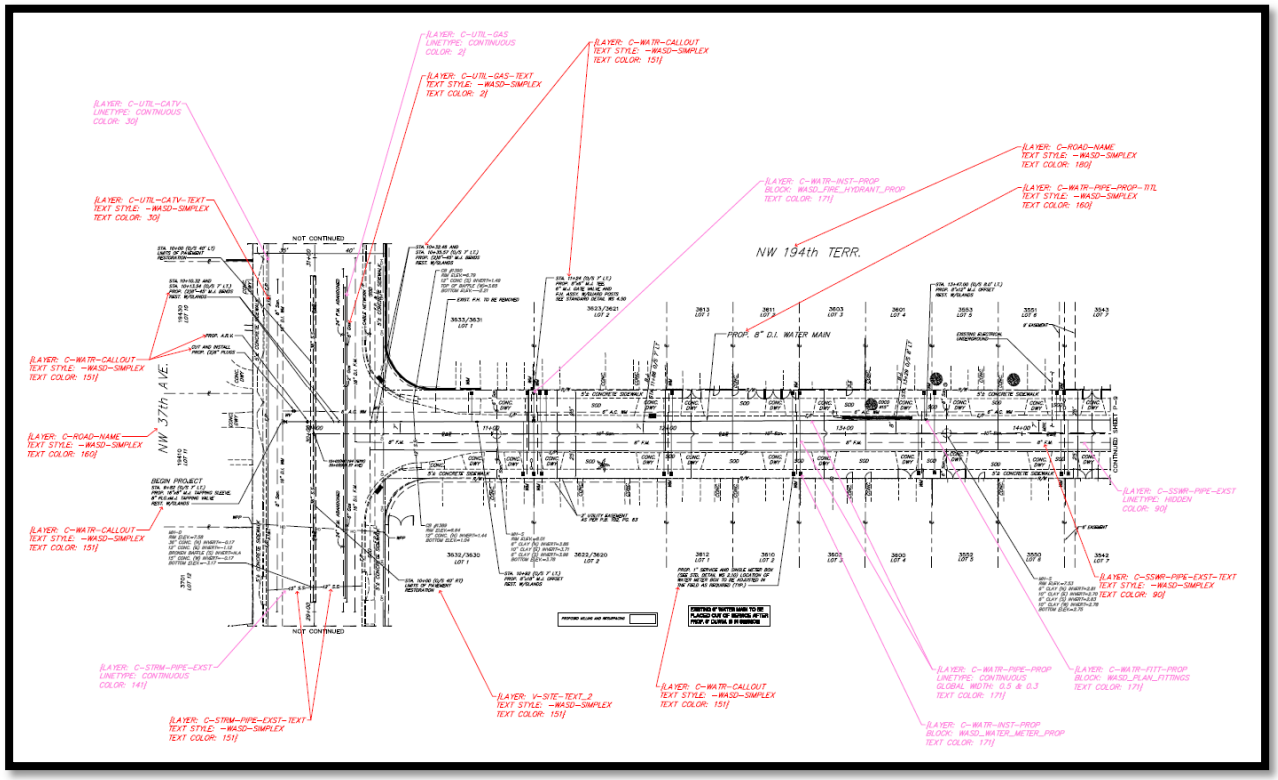


Figure 5.3.2
(Layer Schema for Pipeline Design Drawings, Plan View)

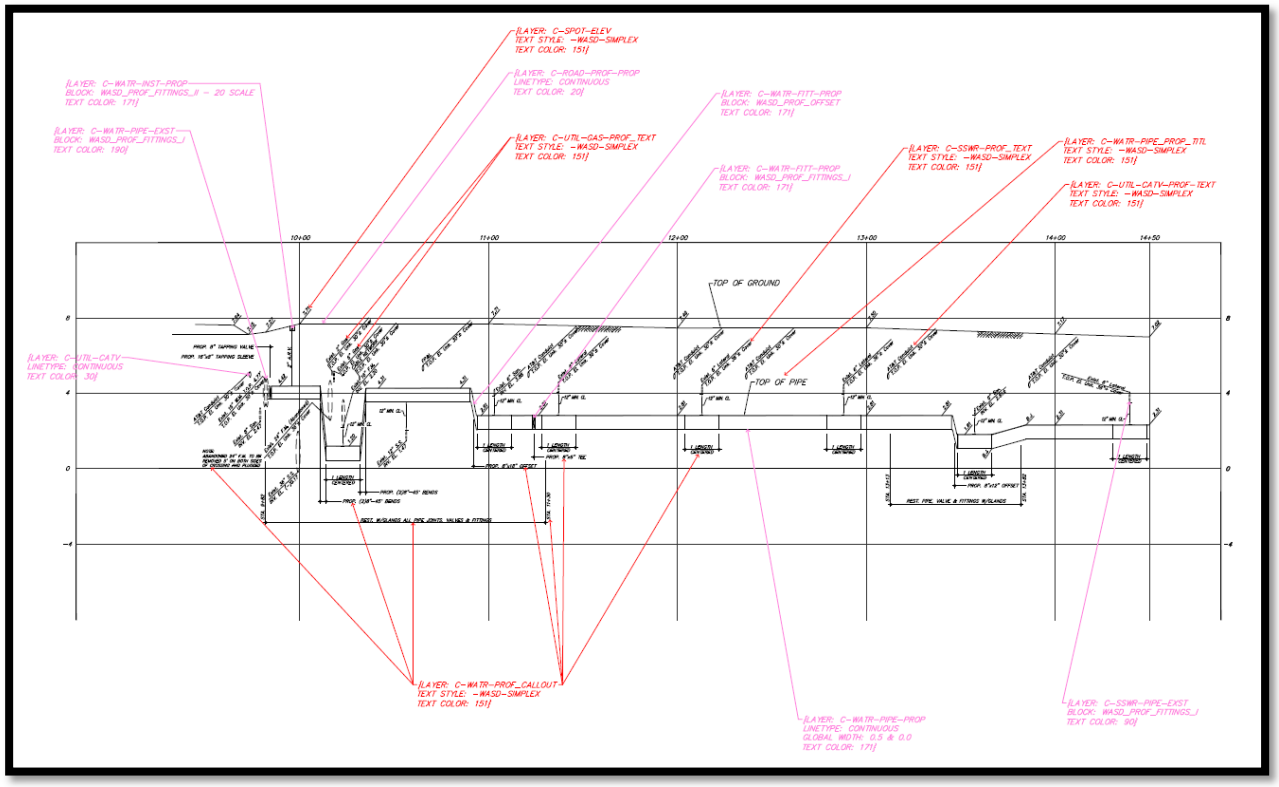


Figure 5.3.3
(Layer Schema for Pipeline Design Drawings, Profile View)

CHAPTER 6: AutoCAD and Civil 3D RESOURCE LIBRARIES

6.1 GENERAL

This chapter addresses MDC WASD specific AutoCAD and Civil 3D styles, fonts, dimension styles (all prefixed "WASD") and most of the standard MDC WASD annotation, design and survey layers needed for completion of MDC WASD projects.

6.2 PREDEFINED TEMPLATE FILES

MDC WASD has developed customized template files with AutoCAD predefined layers, blocks, styles, and linetypes, and Civil 3D styles and labels to facilitate a consistent drafting standard. **Table 6.2** lists all the required files to be used by the surveyors and the designers. These files can be obtained from the MDC WASD website.

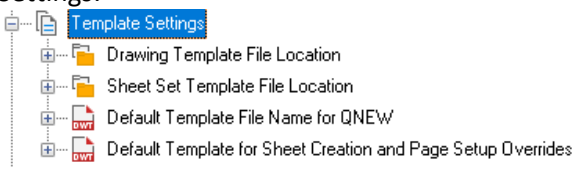
File Type (Read Only)	File Name	Note
Template File - Survey and As-built Drawings	WASDTemplate-Survey-Asbuilts.dwt	Users PCs should point to these files in the AutoCAD Options → Files Tab → Template Settings: 
Template File – Pipeline Design Drawings	WASDTemplate-Pipeline-Design.dwt	
Drawing File - WASD Blocks	WASD-Blocks.dwg	

Table 6.2

6.3 DESIGN SHEETS FILE

The sheets used for pipeline designs will have their own respective files where they can be pulled from using sheet sets. Alternatively, there are layouts already in the template files which can be used to produce sheets.

6.4 MDC WASD TEXT STYLES

A list of various text styles and standards of annotation are shown under **EXHIBITS B.1-B.2**.

6.5 MDC WASD BLOCKS

All WASD Blocks will be stored in the template files and the "WASD-Blocks.dwg" file.

6.6 MISCELLANEOUS DRAWING FEATURES

All drawings consisting of existing and proposed features shall be prepared in accordance with the MDC WASD standards.

6.6.1 Standard Symbols

A list of standard symbols is included under **EXHIBITS A.1 – A.8**.

6.6.2 Plan View: Property, Pavement and Utilities

Plan view of various existing and proposed property, pavement, utilities, and water and wastewater features are demonstrated under **EXHIBITS C.1-C.2 and D.1-D.4**

6.6.3 CIVIL 3D Objects, Styles, and Label Styles

The following design items must be created as AutoCAD Civil 3D objects and must be assigned MDC WASD Civil 3D Object Styles using the provided MDC WASD Civil 3D drawing template:

1) Alignments
2) Points
3) Surfaces
4) Pipes and Pressure Pipes

All MDC WASD Civil 3D Styles and Label Styles will be prefixed with the word “WASD” and will be explained in the proceeding sections.

6.6.3.1 CIVIL 3D Alignment Styles and Label Styles

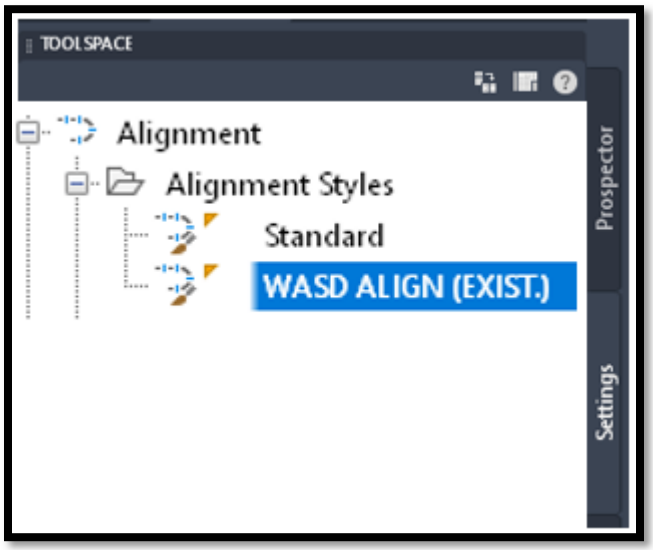


Figure 6.6.3.1.a (WASD Alignmtent Style)

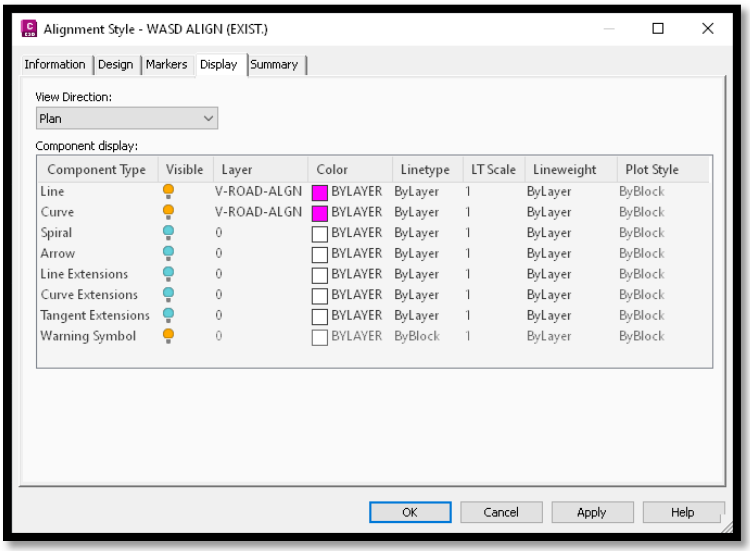


Figure 6.6.3.1.b
(WASD Alignment Style Display Settings)

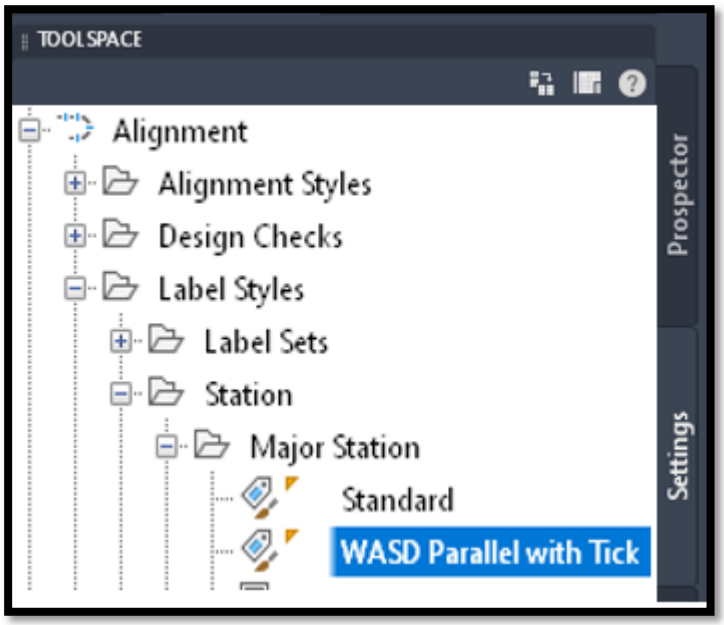


Figure 6.6.3.1.c
(WASD Alignment Label Style for Major Stations)

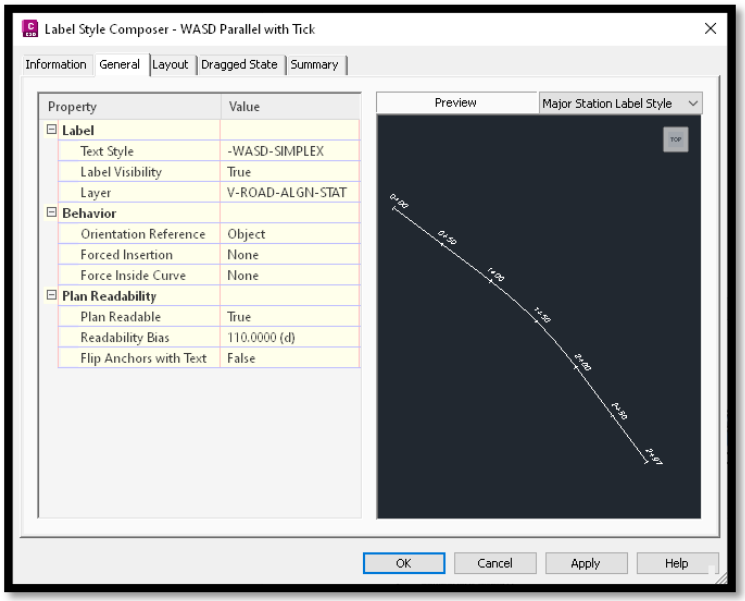


Figure 6.6.3.1.d
(WASD Alignment Label Style for Major Stations General Settings)

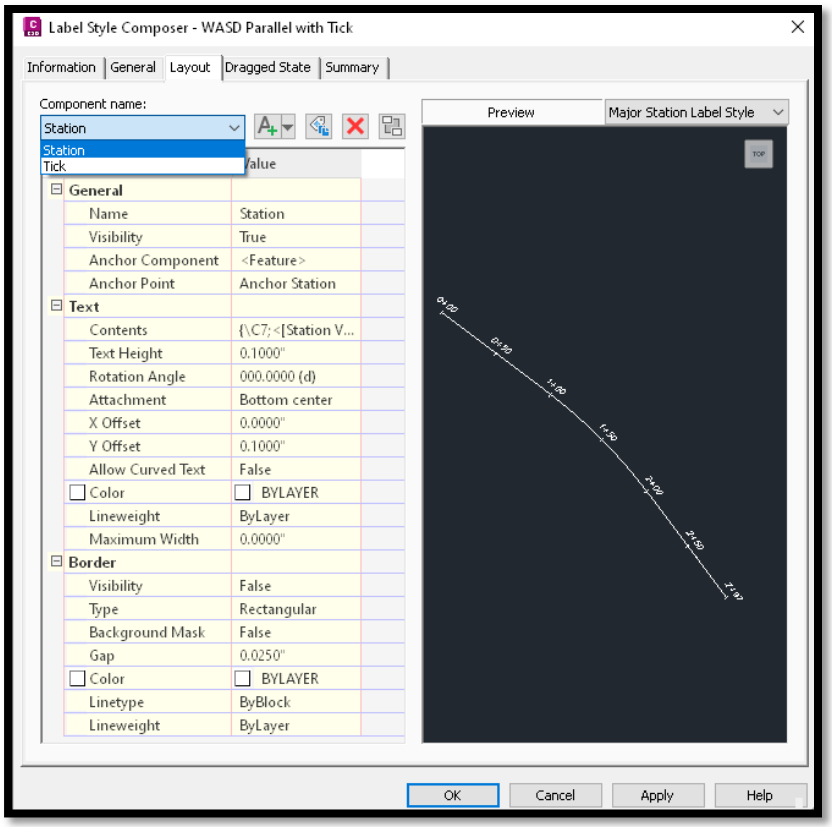


Figure 6.6.3.1.e
(WASD Alignment Label Style for Major Stations, "Station" Component Settings)

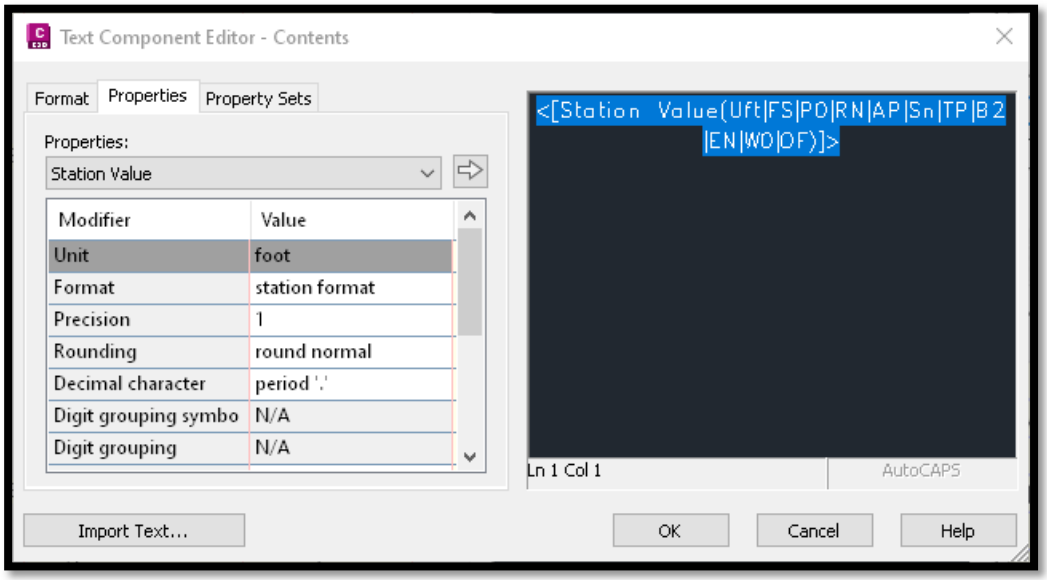


Figure 6.6.3.1.f
(WASD Alignment Label Style for Major Stations, "Station" Component Settings)

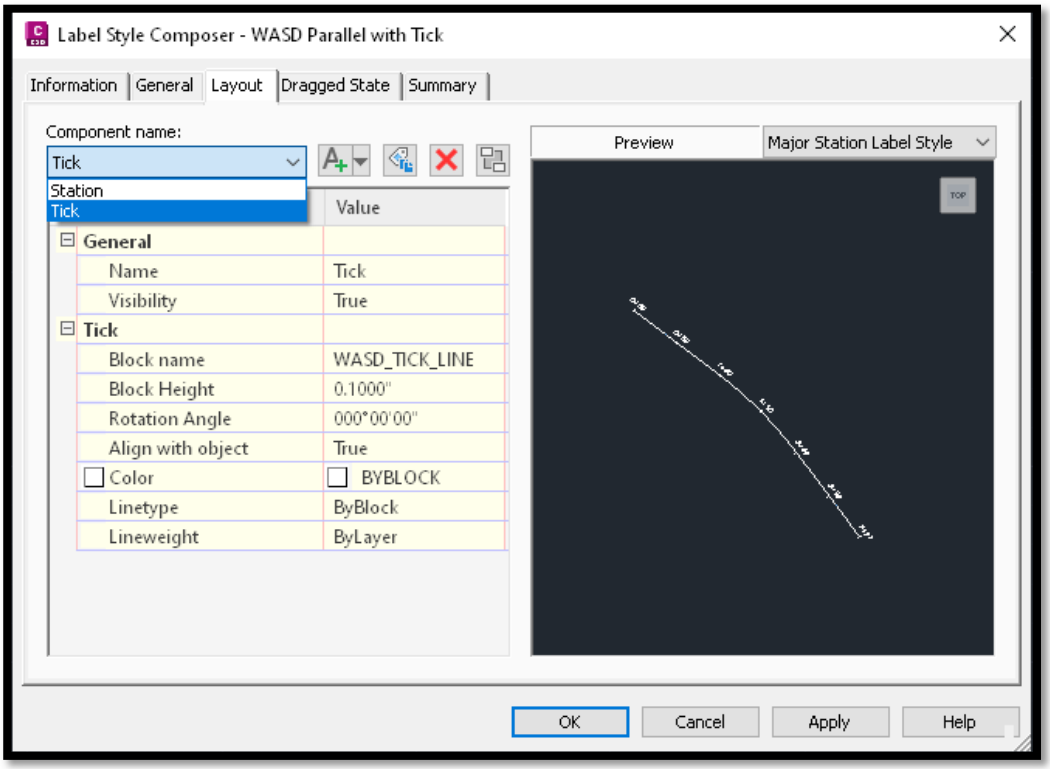


Figure 6.6.3.1.g
(WASD Alignment Label Style for Major Stations, "Tick" Component Settings)

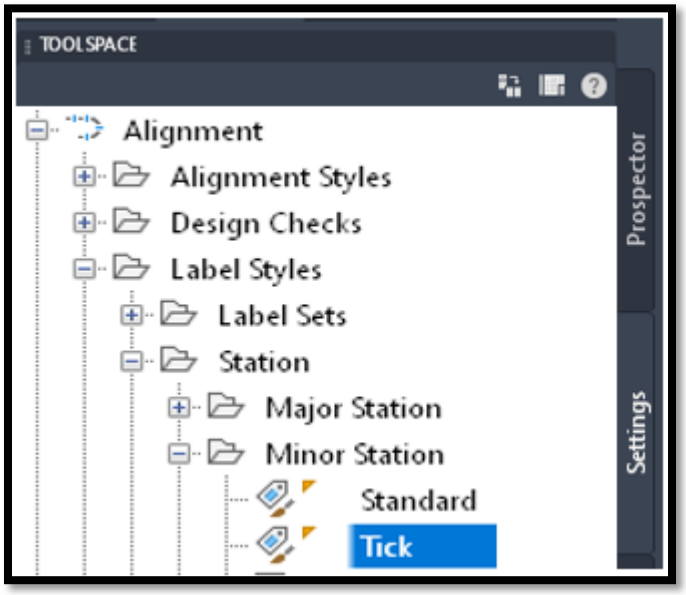


Figure 6.6.3.1.h
(WASD Alignment Label Style for Minor Stations)

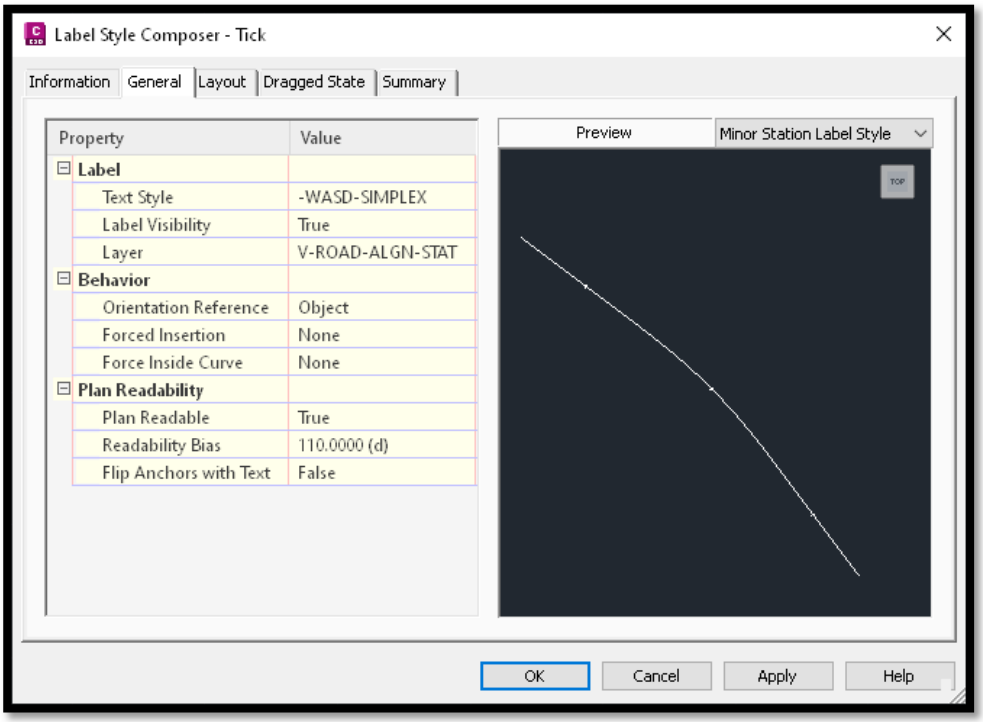


Figure 6.6.3.1.i
(WASD Alignment Label Style for Minor Stations, General Settings)

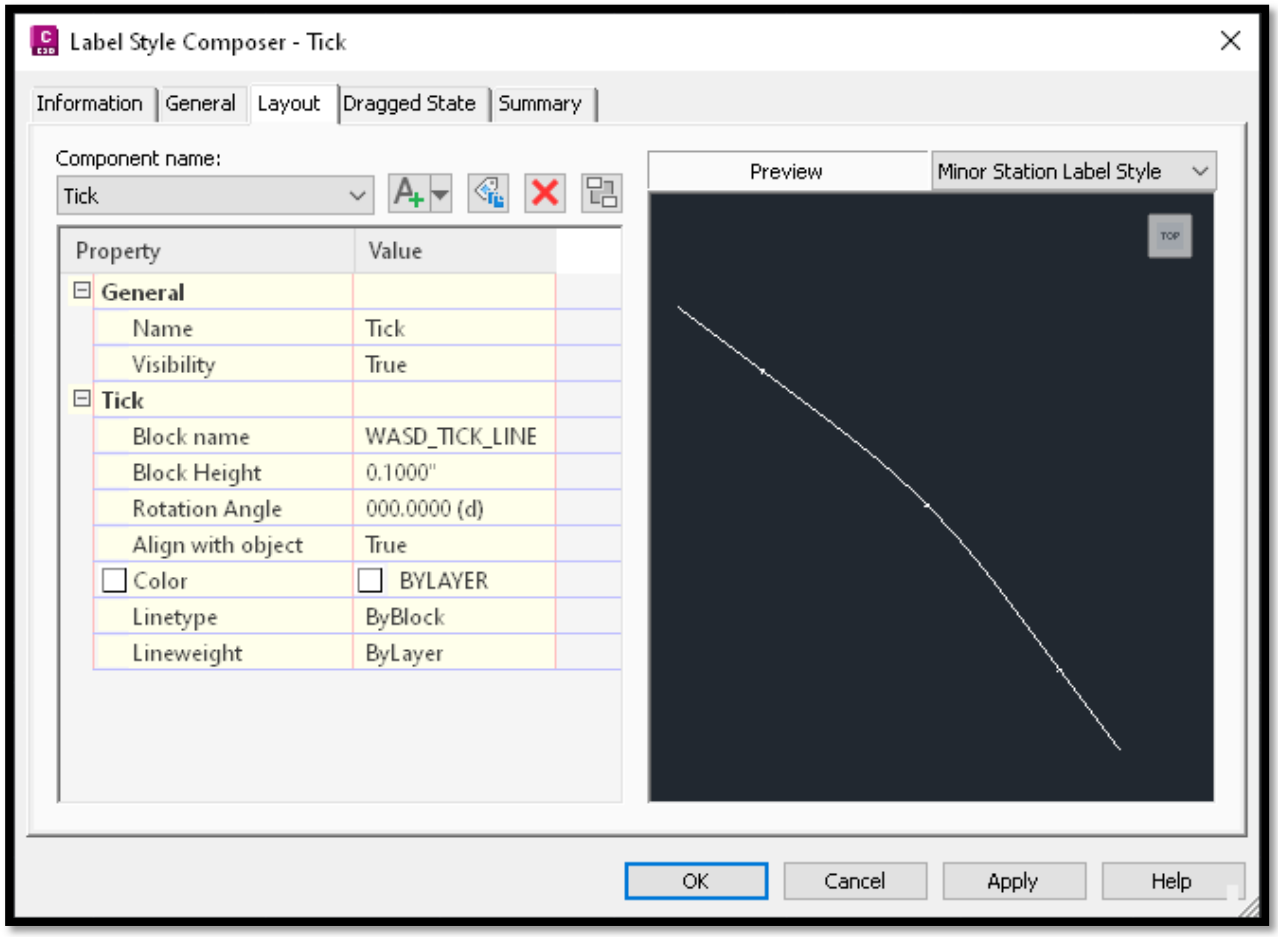


Figure 6.6.3.1.j
(WASD Alignment Label Style for Major Stations ,"Tick" Component Settings)

6.6.3.2 CIVIL 3D Point Styles and Label Styles

Final survey deliverables that include elevation points must be in the form of Civil 3D COGO Points that are in the following WASD point styles and label styles.

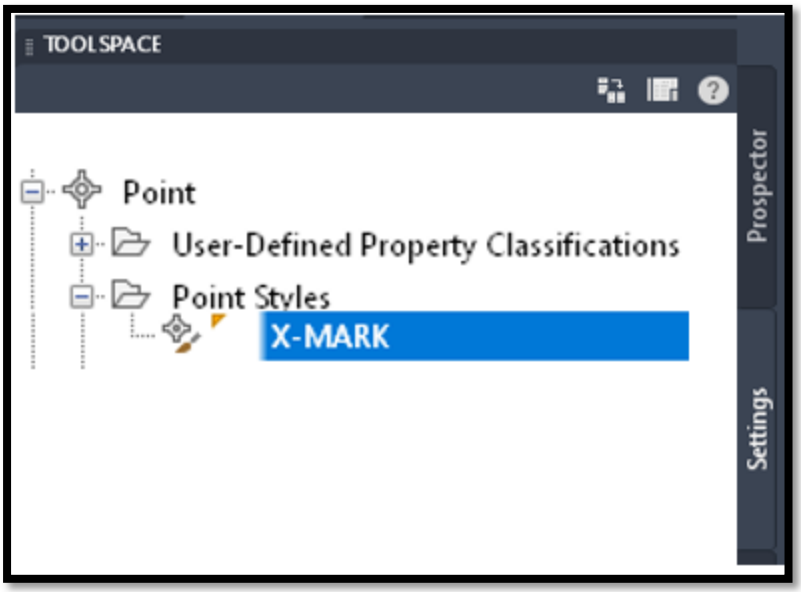


Figure 6.6.3.2.a (WASD Point Style for Point Elevations)

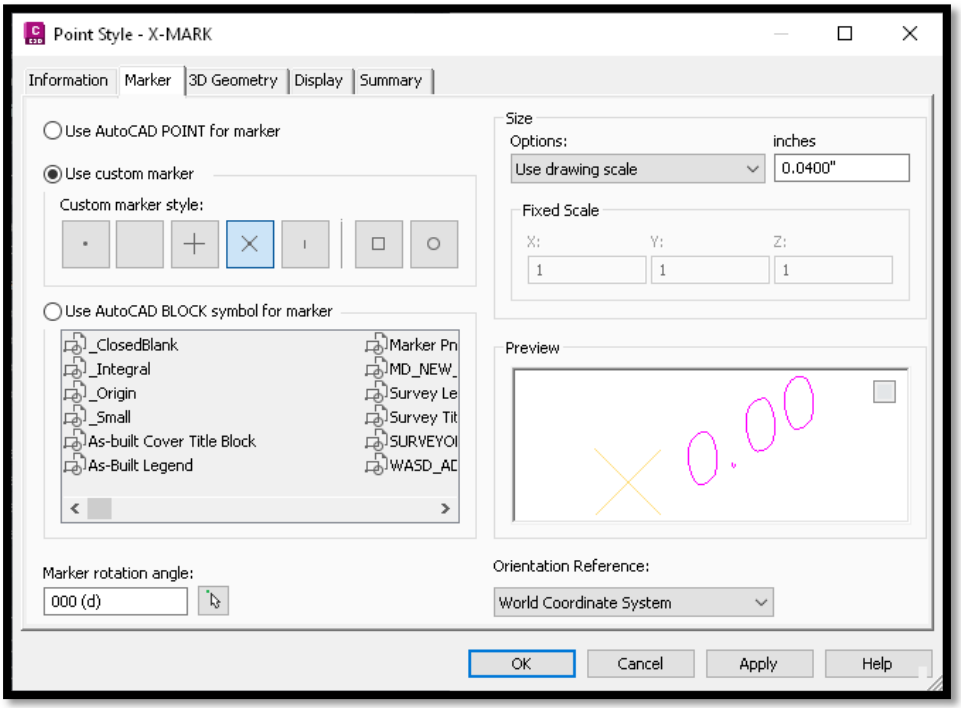


Figure 6.6.3.2.b (WASD Point Style for Point Elevations, Marker Settings)

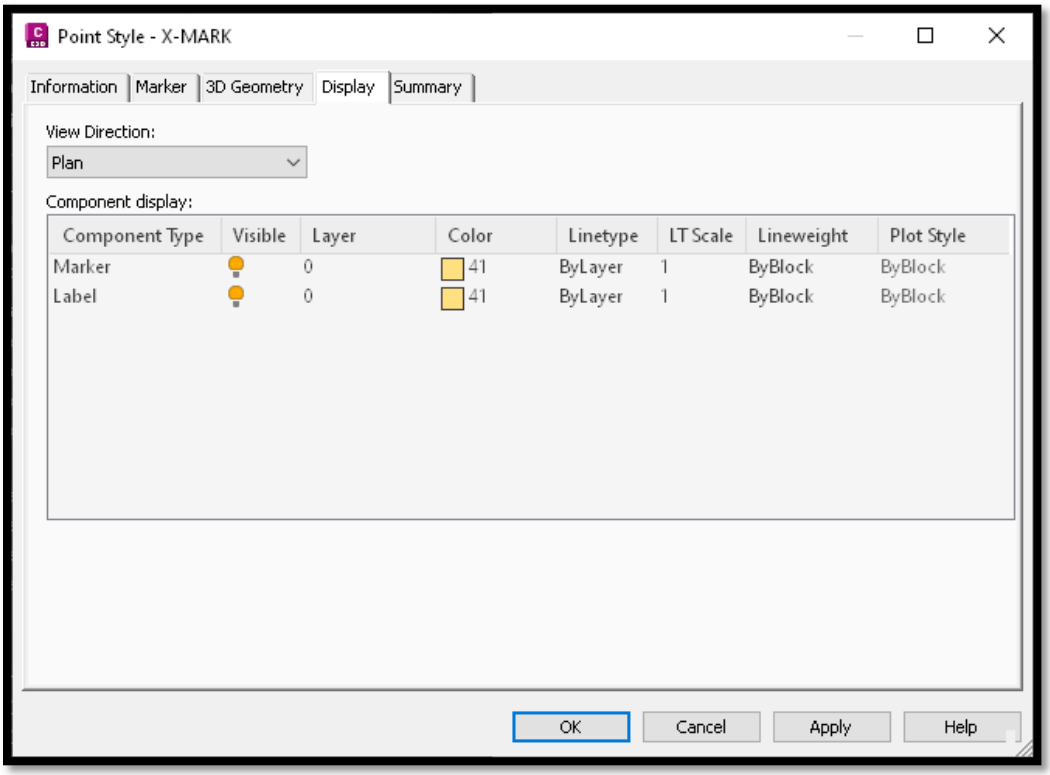


Figure 6.6.3.2.c (WASD Point Style for Point Elevations, Display Settings)

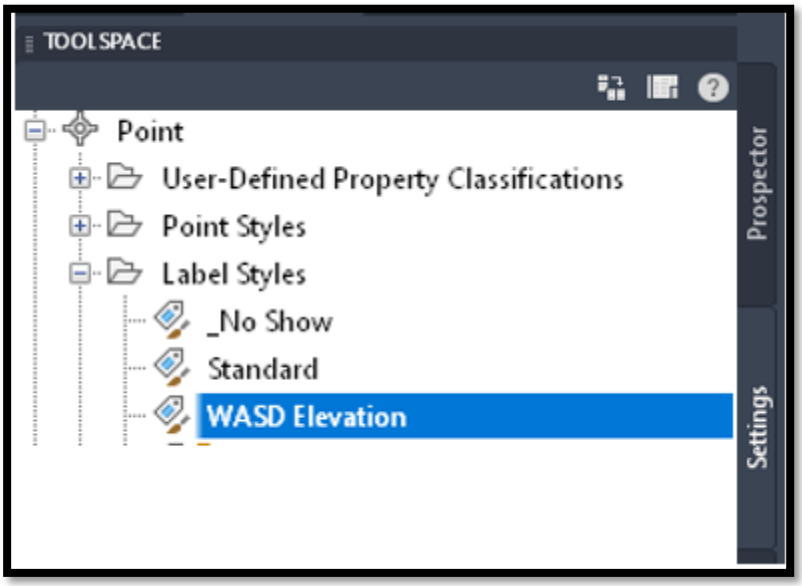


Figure 6.6.3.2.d (WASD Point Label Style for Point Elevations)

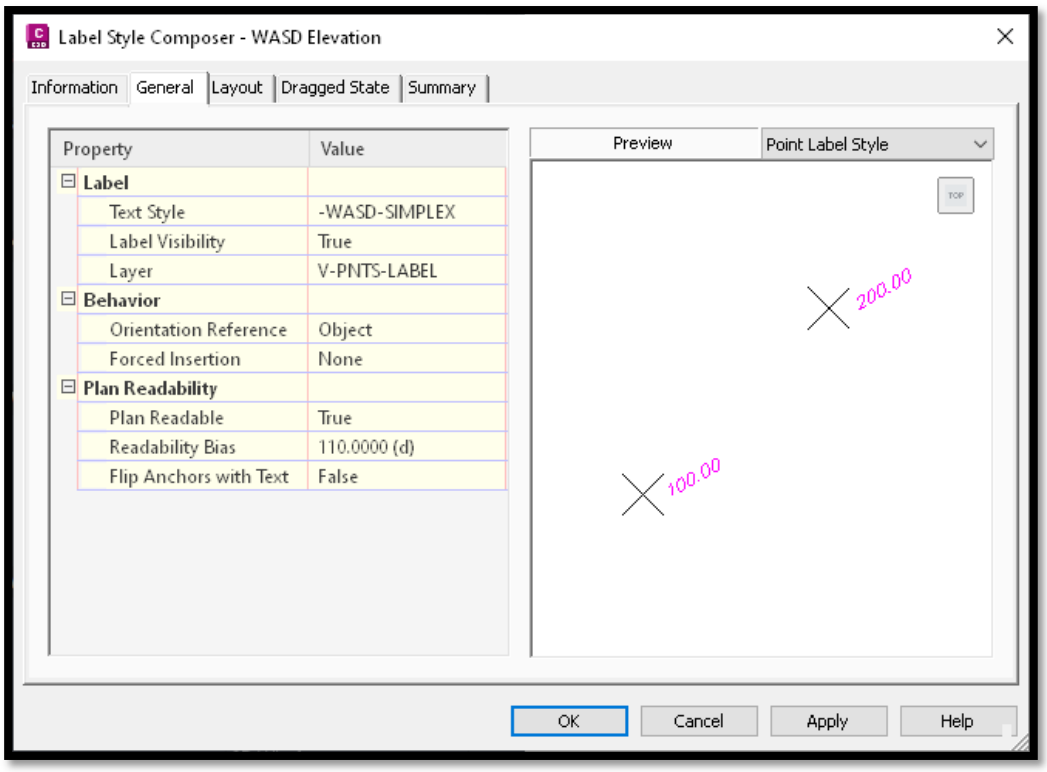


Figure 6.6.3.2.e
(WASD Point Label Style for Point Elevations, General Settings)

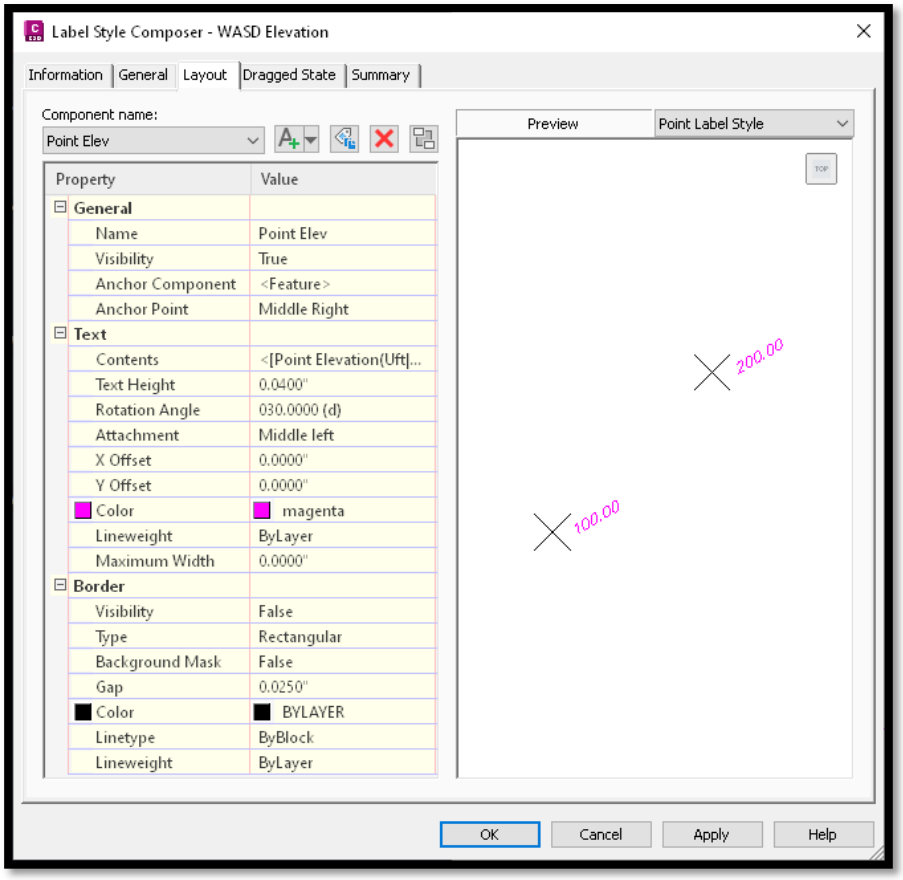


Figure 6.6.3.2.f
(WASD Point Label Style for Point Elevations, "Point Elev" Component Settings)

6.6.3.3 CIVIL 3D Surface Styles and Label Styles

Final survey deliverables that include existing grade surfaces must be in the form of Civil 3D Surfaces as a separate in XML file. The following figures describe the surface styles and parameters required for proper surface deliverable.

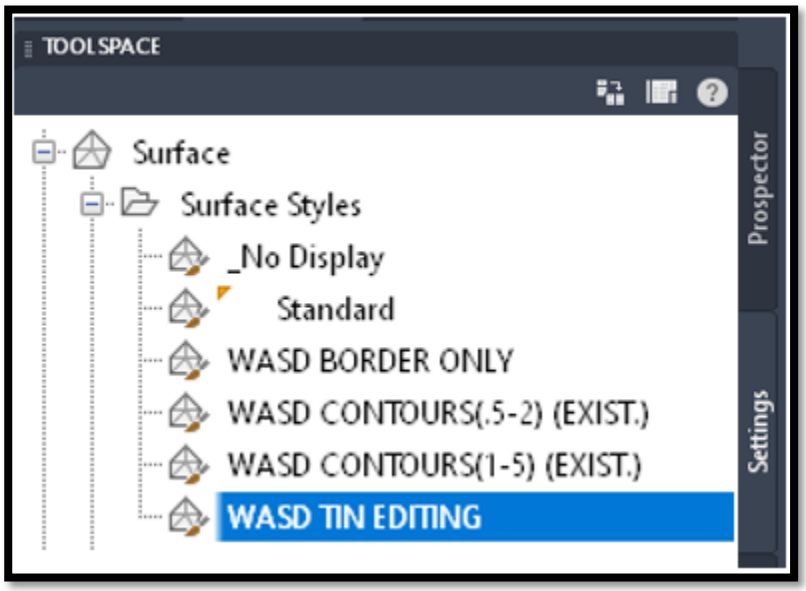


Figure 6.6.3.3.a (WASD Surface Style)

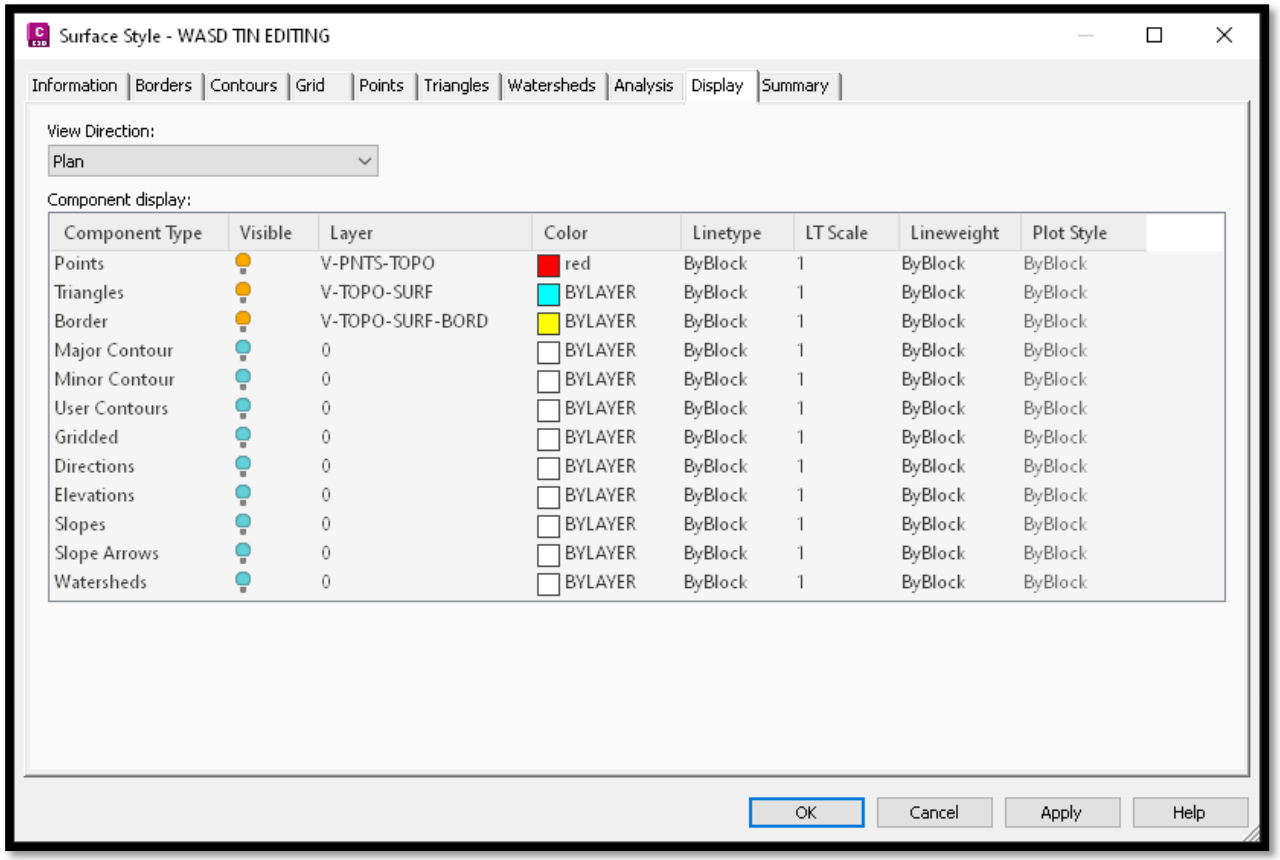


Figure 6.6.3.3.b (WASD Surface Style Display Settings)

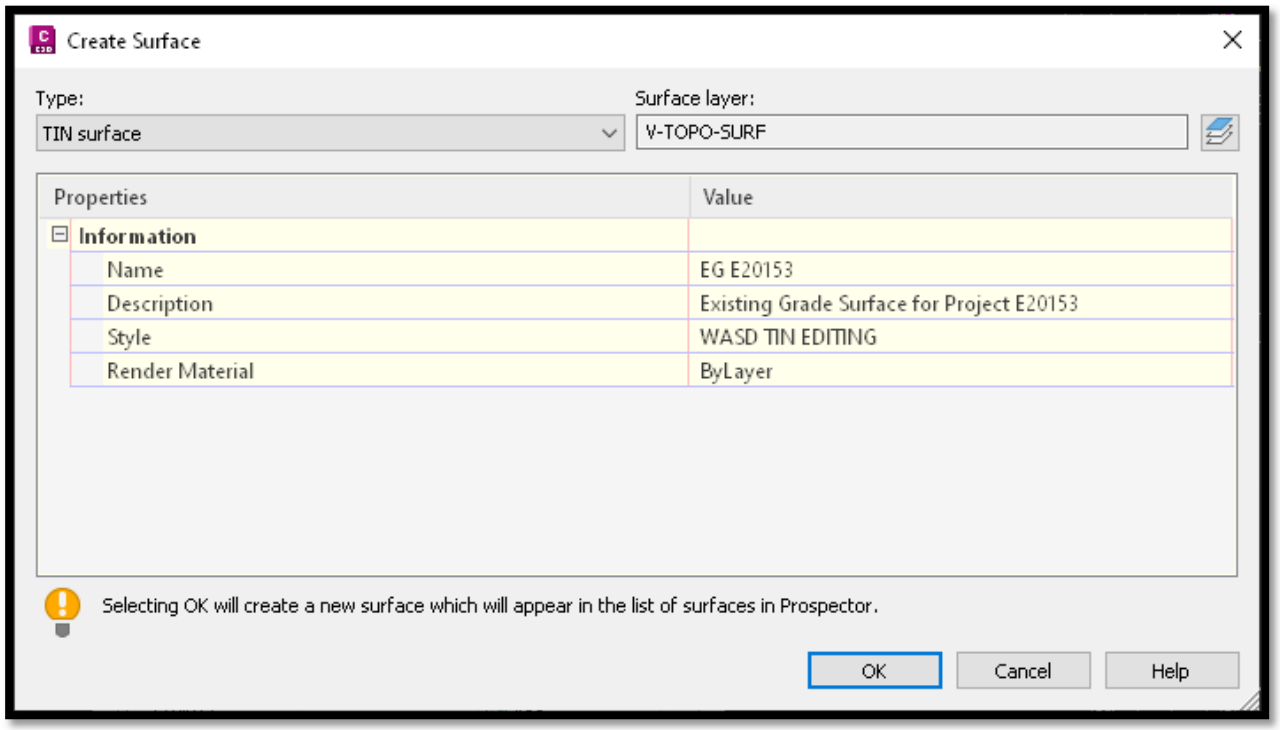


Figure 6.6.3.3.c (WASD Surface, Layer and Naming Convention)

Breaklines must be added to the Civil 3D Surface and connect data representing distinct surface features like ridge lines, edge of pavement, toe of slope, centerline of road, curbs, driveways, front of sidewalk, and back of sidewalks. **Figure 6.6.3.3.4** shows supplemental breakline factor that must be included in surface breaklines.

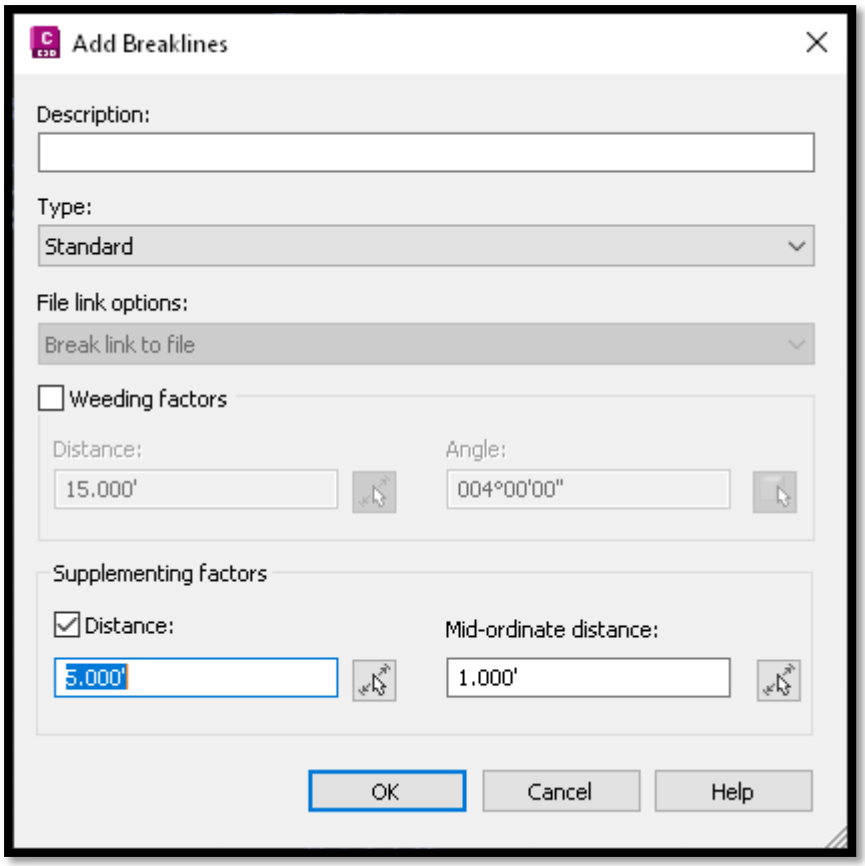


Figure 6.6.3.3.d (WASD Surface Breakline Supplementing Factor)

6.6.4 Description Keys

The correct description keys must be used when creating point files for the appropriately assigned MDC WASD blocks to populate the drawing. To prevent the impediment of survey workflow consultants may use their own description keys at their own discretion, however it is advised that keys are mapped to the appropriate MDC WASD blocks. The MDC WASD survey description keys are found in **Appendix B.**

CHAPTER 7: AS-BUILT CAD REQUIREMENTS FOR GIS INTEGRATION

7.1 PURPOSE AND APPLICABILITY

This chapter establishes the minimum CAD drafting requirements necessary for as-built drawings to be accepted for integration into the Miami-Dade County Water and Sewer Department (WASD) Geographic Information System (GIS). These requirements apply to:

- All consultants, contractors, and third parties submitting as-built CAD drawings to WASD.
- As-built drawings derived from design CAD files originally produced by consultants.
- Projects intended for permanent recordation in WASD's Enterprise GIS.

7.1.1 Governing Procedure

Detailed drafting procedures, quality control steps, and internal workflows are governed by:

SOP-SRS-007 – Drafting As-builts for GIS (Rev. 01)

7.2 CAD-TO-GIS WORKFLOW OVERVIEW

7.2.1 Design-to-As-Built Continuity

As-built drafting for CAD-to-GIS integration shall be performed using the official WASD As-Built CAD template, which establishes the required georeferencing, layer structure, GIS attributes, title blocks, and notes necessary for acceptance. This template shall serve as the default and authoritative drafting environment for all as-built submissions.

As-built drafting may be performed directly within an existing WASD-issued design CAD file only when the original design file was prepared by WASD and conforms to current WASD CAD Standards. Design CAD files prepared by external consultants or developers shall not be used as the base file for as-built drafting.

When as-built drafting is performed within a WASD-issued design CAD file by a developer, consultant, or CIP contractor, the drafter shall import and apply the appropriate as-built title block and notes from the WASD As-Built template corresponding to the applicable submission pathway. The imported title block and notes shall replace any existing design title block and notes prior to submittal.

Regardless of the base file used, all as-built drawings shall fully comply with the requirements of **Chapter 7** of this manual, including but not limited to template usage, georeferencing, layering, geometry, attribute population, content display restrictions, and file naming conventions.

7.2.2 Downstream Data Use and System Integration

All as-built CAD files submitted to WASD will be integrated into ArcGIS Pro, populate enterprise GIS feature classes, and be relied upon for operations, maintenance, capital planning, and emergency response activities.

7.3 MANDATORY CAD FILE REQUIREMENTS FOR GIS READINESS

7.3.1 Georeferencing

All as-built CAD files shall be georeferenced in accordance with the requirements set forth in **Section 2.1** of this manual. The horizontal and vertical datums, coordinate systems, and drawing settings defined in **Section 2.1** shall be strictly adhered to and maintained throughout the drafting of as-built conditions. Any alteration to the established coordinate system, basepoint, or georeferenced geometry is prohibited unless expressly approved in writing by WASD.

7.3.2 Use of WASD Templates

All as-built drawings shall be created using the official WASD CAD template files identified in **Section 6.2** of this manual. The use of substitute templates, custom layer schemas, or modified standards is not permitted. All predefined layers, blocks, styles, linetypes, and attribute structures contained within the WASD templates shall be used as provided and shall not be altered, removed, or replaced, as these elements are required to ensure consistency, data integrity, and compatibility with WASD's GIS integration processes.

7.3.3 Layering and Feature Classification

All plan view as-built features shall be drafted on their correct WASD-defined layers, and feature types shall not be combined on a single layer. The use of non-standard or undefined layers is not permitted. **Appendix A.3** identifies the GIS layers applicable to most pipeline assets and shall be used as the reference for proper feature classification and layer assignment when drafting plan view as-built pipeline assets. The official WASD CAD template includes a layer filter titled "GIS", which contains all WASD GIS layers to facilitate compliance with these requirements. All WASD GIS layers are identified by the suffix "_WASD" and are further subdivided by asset subtype through standardized prefixes. **Appendix A.3** presents the parent GIS layer structure, while the applicable drafting layers within the template reflect these subdivisions (e.g.**Bend**_SFitting_WASD, **Gate**_WManualControlValve_WASD, **Single**_WServicePointConnection_WASD).

7.4 GEOMETRY AND CONNECTIVITY REQUIREMENTS

7.4.1 Linear Features (Pipes and Mains)

All plan view as-built pipeline features shall be represented using single-line geometry drafted as either a line or a polyline. Each pipe segment shall connect basepoint-to-basepoint between fittings and appurtenances to ensure proper visual connectivity in GIS. Where a pipeline changes in diameter, material, or other defining characteristics, the pipe shall be represented as separate polylines, with each polyline corresponding to a single, uniform pipe segment.

7.4.2 Point Features (Fittings, Valves, Manholes, Meters)

All plan view as-built point features shall be placed using AutoCAD blocks / Civil 3D COGO Points, and block basepoints shall represent the surveyed location and shall not be altered. All connecting linework shall snap precisely to block basepoints to ensure proper visual connectivity and spatial accuracy in GIS.

7.4.3 As-Built Content and Display Requirements

As-built drawings shall depict only field-verified installed pipeline assets and information necessary to document the constructed work. The inclusion of unrelated or non-essential features is not permitted.

As-built drawings shall not include topographic features such as trees, signs, light poles, mailboxes, spot elevations, plan elevations, or similar items. Existing utilities that do not cross or directly conflict with the as-built pipeline shall not be shown.

Lot lines and edge of pavement lines shall not be displayed in as-built drawings. As-built drawings shall display existing installed conditions only; proposed or design information shall not be shown.

As-built pipeline features, property lines, rights-of-way, easement lines, and baselines shall be drafted in a bold, distinguishable manner using WASD-defined lineweights and styles, while all other linework shall be displayed in a faded or deemphasized style.

7.5 ATTRIBUTE DATA REQUIREMENTS

GIS-required attributes shall be embedded in plan view as-built lines/polylines and AutoCAD blocks / Civil 3D COGO Points representing pipeline and pipeline assets. Appropriate GIS-required attributes for pipeline assets will be described in **Appendix C**. Attribute values shall reflect field-verified as-built conditions, not design intent. Certain attribute fields are system-managed or optional and shall be left at their default values unless otherwise specified in **Appendix C**.

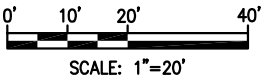
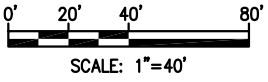
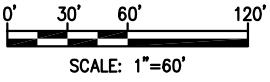
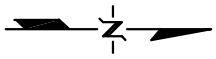
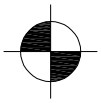
7.6 FILE NAMING (AS-BUILTS ONLY)

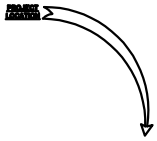
All as-built CAD drawing files submitted to WASD shall follow the standardized file naming convention outlined in this section. Each DWG file shall be named using the assigned as-built number and utility designation to ensure consistency, traceability, and proper records management. The file name format shall be as follows:

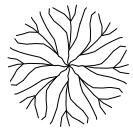
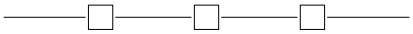
- As-Built Type
  (**E**-Water, **ES**-Sewer) | **As-Built Number** (6 digit with capability to extend) | **C/D** (Capital/Donation) | **Phase Number** (2 digits) | **Sub Phase** (Alphabet)

- As-Built Numbering Example
  (**EXXXXXXC01A**)

No deviations from this naming convention are permitted unless expressly approved by the WASD Project Manager. As-built CAD files that are not named in accordance with this standard, or that have not received prior approval for an alternate naming format, may be rejected and required to be corrected prior to acceptance.

Category	Feature	Symbol
General	Bar Scale: Horizontal: 1" = 20'	
General	Bar Scale: Horizontal: 1" = 40'	
General	Bar Scale: Horizontal: 1" = 60'	
General	North Arrow	
General	Logo: Miami-Dade County	
General	Benchmark	
General	Core Boring	
General	Subsurface Utility Engineering	
General	Iron Pin (Found and Set)	
General	Station	

Category	Feature	Symbol
General	Section Corner	
General	Property Corner Arrow	
General	Project Location Arrow	

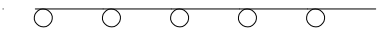
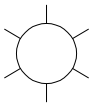
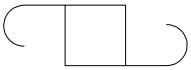
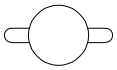
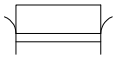
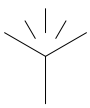
Category	Feature	Symbol
Topographic Features	Tree	
Topographic Feature	Palm	
Topographic Feature	Shrub	
Topographic Feature	Hedge	
Topographic Feature	Mailbox	
Topographic Feature	Bollards	
Topographic Feature	Chainlink Fence	
Topographic Feature	Wood Fence	
Topographic Feature	Concrete Fence	
Topographic Feature	Iron Fence	

MIAMI-DADE COUNTY
Delivering Excellence Every Day

WATER AND SEWER DEPARTMENT

SYMBOLS:
TOPOGRAPHIC FEATURES

EXHIBIT
A.2
1 OF 3

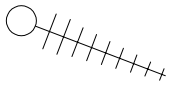
Category	Feature	Symbol
Topographic Feature	Guardrail	
Topographic Feature	Treeline	
Topographic Feature	Dense Vegetation	
Topographic Feature	Traffic Sign	
Topographic Feature	Traffic Signal Pole	
Topographic Feature	Street Light Pole	
Topographic Feature	Concrete Pole	
Topographic Feature	Pedestrian Crossing Light	
Topographic Feature	Bench	
Topographic Feature	Flood Light	

MIAMI-DADE COUNTY
Delivering Excellence Every Day

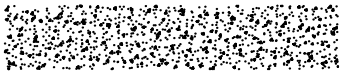
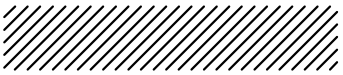
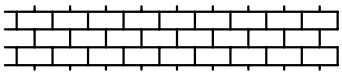
WATER AND SEWER DEPARTMENT

SYMBOLS:
TOPOGRAPHIC FEATURES

EXHIBIT
A.2
2 OF 3

Category	Feature	Symbol
Topographic Feature	Traffic Box	
Topographic Feature	Traffic Line	
Topographic Feature	Antenna	

MIAMI-DADE COUNTY Delivering Excellence Every Day WATER AND SEWER DEPARTMENT	SYMBOLS: TOPOGRAPHIC FEATURES	EXHIBIT A.2 3 OF 3

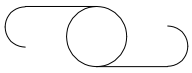
Category	Feature	Symbol
Paving	Propesed Pavement	
Paving	Concrete	
Paving	Patch	
Paving	Ground	
Paving	Pavers	

MIAMI-DADE COUNTY
Delivering Excellence Every Day

WATER AND SEWER DEPARTMENT

SYMBOLS:
PAVING

EXHIBIT
A.3

Category	Feature	Symbol
Utilities	Gas Line	GAS GAS
Utilities	Gas Manhole	
Utilities	Gas Valve	
Utilities	Underground Electrical Line	E/U E/U
Utilities	Overhead Electric Line	OH OH
Utilities	Utility Pole	
Utilities	Guy Wire Anchor	
Utilities	Light Box	
Utilities	Telephone Line	TEL TEL
Utilities	Telephone Manhole	

MIAMI-DADE COUNTY
Delivering Excellence Every Day

WATER AND SEWER DEPARTMENT

SYMBOLS: UTILITIES

EXHIBIT A.4
1 OF 2

Category	Feature	Symbol
Utilities	Telephone Box	
Utilities	Cable TV Line	
Utilities	Cable TV Box	
Utilities	Electric Manhole	
Utilities	Electric Box	
Utilities	Electric Panel	

MIAMI-DADE COUNTY
Delivering Excellence Every Day

WATER AND SEWER DEPARTMENT

SYMBOLS: UTILITIES

EXHIBIT A.4
2 OF 2

Category	Feature	Symbol	
		Existing	Proposed
Water Appurtenances	Water Meter		
Water Appurtenances	Dual Water Meter		
Water Appurtenances	Water Manhole		
Water Appurtenances	Fire Hydrant		
Water Appurtenances	Water Well		
Water Appurtenances	Sprinkler		
Water Appurtenances	Horizontal 11.25 Fitting		
Water Appurtenances	11.25 Fitting (rotated down)		
Water Appurtenances	11.25 Fitting (rotated up)		
Water Appurtenances	Horizontal 22.5 Fitting		

MIAMI-DADE COUNTY Delivering Excellence Every Day WATER AND SEWER DEPARTMENT	SYMBOLS: WATER APPURTENANCES	EXHIBIT A.5 1 OF 4

Category	Feature	Symbol	
		Existing	Proposed
Water Appurtenances	22.5 Fitting (rotated down)		
Water Appurtenances	22.5 Fitting (rotated up)		
Water Appurtenances	Horizontal 45 Fitting		
Water Appurtenances	45 Fitting (rotated down)		
Water Appurtenances	45 Fitting (rotated up)		
Water Appurtenances	Horizontal 90 Fitting		
Water Appurtenances	90 Fitting (rotated down)		
Water Appurtenances	90 Fitting (rotated up)		
Water Appurtenances	Vertical Bend (looking down)		
Water Appurtenances	Vertical Bend (looking up)		

MIAMI-DADE COUNTY
Delivering Excellence Every Day

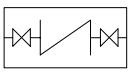
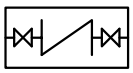
WATER AND SEWER DEPARTMENT

SYMBOLS:
WATER APPURTENANCES

EXHIBIT
A.5
2 OF 4

Category	Feature	Symbol	
		Existing	Proposed
Water Appurtenances	Vertical Offset		
Water Appurtenances	Cross		
Water Appurtenances	Tee		
Water Appurtenances	Tee (rotated down)		
Water Appurtenances	Tee (rotated up)		
Water Appurtenances	WYE		
Water Appurtenances	Solid Sleeve		
Water Appurtenances	Plug		
Water Appurtenances	Plug W/ Flush Valve Outlet		
Water Appurtenances	Air Release Valve		

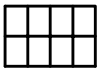
MIAMI-DADE COUNTY Delivering Excellence Every Day — WATER AND SEWER DEPARTMENT	SYMBOLS: WATER APPURTENANCES	EXHIBIT A.5 3 OF 4

Category	Feature	Symbol	
		Existing	Proposed
Water Appurtenances	Cap		
Water Appurtenances	Cap W/ Flush Valve Outlet		
Water Appurtenances	Reducer		
Water Appurtenances	Water Valve		
Water Appurtenances	Check Valve		
Water Appurtenances	Butterfly Valve		
Water Appurtenances	Ball Valve		
Water Appurtenances	Backflow Preventor		

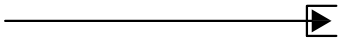
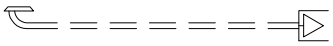
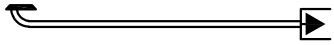
MIAMI-DADE COUNTY Delivering Excellence Every Day WATER AND SEWER DEPARTMENT	SYMBOLS: WATER APPURTENANCES	EXHIBIT A.5 4 OF 4

Category	Feature	Symbol	
		Existing	Proposed
Sewer Appurtenances	Sewer Manhole		
Sewer Appurtenances	Clean Out		
Sewer Appurtenances	Sewer Valve		
Sewer Appurtenances	Sewer Meter		

MIAMI-DADE COUNTY Delivering Excellence Every Day	WATER AND SEWER DEPARTMENT	SYMBOLS: SEWER APPURTENANCES
		EXHIBIT A.6

Category	Feature	Symbol	
		Existing	Proposed
Storm	Storm Sewer Manhole		
Storm	Catch Basin		

MIAMI-DADE COUNTY Delivering Excellence Every Day WATER AND SEWER DEPARTMENT	SYMBOLS: STORM	EXHIBIT A.7

Category	Feature	Symbol	
		Existing	Proposed
Profile	Air Release Valve		
Profile	Plug W/ Flushing Valve Outlet		
Profile	Bend		
Profile	Offset		
Profile	Valve		
Profile	Tapping Sleeve		
Profile	Solid Sleeve		
Profile	Tee Front View		
Profile	Tee Side View		
Profile	Bend Vertical		

MIAMI-DADE COUNTY Delivering Excellence Every Day WATER AND SEWER DEPARTMENT	SYMBOLS: PROFILE	EXHIBIT A.8 1 OF 2

Category	Feature	Symbol	
		Existing	Proposed
Profile	Bend Horizontal		
Profile	Concentric Reducer		
Profile	Eccentric reducer		

MIAMI-DADE COUNTY
Delivering Excellence Every Day

WATER AND SEWER DEPARTMENT

SYMBOLS: PROFILE

EXHIBIT A.8
2 OF 2

Element	Sample	Layer	Style	Color	Height	Just.	Weight
Match Mark	CONTINUED SHEET P-X	0-NOTES-TITL	-WASD-NOTE	7	0.1	C/C	0.006"
Pavement Label	ASPHALT PAVEMENT	V-SITE-TEXT_1	-WASD-SIMPLEX	6	1.6	C/C	0.004"
Design General Notes Title	General Notes	0-NOTES	-WASD-SIMPLEX	160	0.16	C/C	0.02"
Surveyor Notes Title	Surveyor's Notes:	0-NOTES	-WASD-TITL	151/250	0.08	L/C	0.008"
General Notes Text Body	19. PROJECT SPECIFICATIONS SHALL CONFORM TO THE MDWASD DESIGN AND CONSTRUCTION STANDARD SPECIFICATIONS AND DETAILS.	0-NOTES	-WASD-SIMPLEX	151/250	0.08	L/C	0.008"
Utility Annotation Plan View	X"G. X"S.S.	*By Layer*	-WASD-SIMPLEX	*By Layer*	1.6	C/C	By Layer
Topo Annotation (example 1)	ØX.X' PALM	V-SITE-TEXT_1	-WASD-SIMPLEX	6	1.6	L/C	0.004"
Topo Annotation (example 2)	X' CHAIN LINK FENCE X X X X	V-SITE-TEXT_1	-WASD-SIMPLEX	6	1.6	L/C	0.004"
Topo Annotation (example 3)	(X) OVERHEAD WIRES OH	V-SITE-TEXT_1	-WASD-SIMPLEX	6	1.6	L/C	0.004"

By Layer Utility annotation is to be on the same layer (+ the word "-text") and the same color as the utility it defines

MIAMI-DADE COUNTY Delivering Excellence Every Day WATER AND SEWER DEPARTMENT	TEXT STYLE: GENERAL PLAN VIEW	EXHIBIT B.1

Element	Sample	Layer	Style	Color	Height	Just.	Weight
Main Street/Avenue	SW 88th ST	C-ROAD-NAME	-WASD-SIMPLEX	50	5.0	C/C	0.03"
Side Street/Avenue	SW 137th AVE	C-ROAD-NAME	-WASD-SIMPLEX	40	3.5	C/C	0.02"
Property Block Number and Plat Book Info	"RICHMOND HEIGHTS ESTATES THIRD ADDITION" PB. 68, PG. 34 BLOCK 30	V-PROP-PLTB	-WASD-SIMPLEX	160	1.6	C/C	0.02"
Lot Number	Lot 11	V-PROP-LNUM	-WASD-SIMPLEX	160	1.6	C/C	0.02"
Property House Number	14830	V-PROP-HNUM	-WASD-SIMPLEX	151	1.6	C/C	0.008"

MIAMI-DADE COUNTY
Delivering Excellence Every Day

WATER AND SEWER DEPARTMENT

TEXT STYLE:
PROPERTY PLAN VIEW

EXHIBIT
B.2

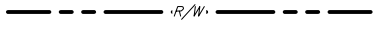
Element	Sample	Layer	Style	Color	Height	Just.	Weight
Water/ Wastewater Proposed & Existing Title	PROP. 8" D.I. WATER MAIN	C-WATR-PIPE-PROP-TITL	WASD-SIMPLEX	160	2.8	C/C	0.02"
	TO BE PLACED OUT OF SERVICE	C-WATR-PIPE-EXST-TEXT	WASD-SIMPLEX	190	1.6	C/C	0.006"
	PROP. 8" PVC-C900 FORCE MAIN	C-SSWR-PIPE-PROP-TITL	WASD-SIMPLEX	160	2.8	C/C	0.02"
	24" F.M. ABANDONED	C-SSWR-PIPE-EXST-TEXT	WASD-SIMPLEX	70	1.6	C/C	0.006"
Water/ Wastewater Plan Callout	STA. 20+67 (O/S 12.97' LT.) PROP. 6" M.J. SOLID SLEEVE REST. W/GLANDS	C-WATR-CALLOUT	WASD-SIMPLEX	151	1.6	L/C	0.008"
	PROP. 8"-90° M.J. BEND REST. W/GLANDS	C-SSWR-CALLOUT	WASD-SIMPLEX	151	1.6	L/C	0.008"
Existing Water/ Wastewater Line Label	—— —— X" D.I. W.M. —— ——	C-WATR-PIPE-EXST-TEXT	WASD-SIMPLEX	190	1.6	C/C	0.006"
	—— —— -X" F.M.- —— ——	C-SSWR-PIPE-EXST-TEXT	WASD-SIMPLEX	70	1.6	C/C	0.006"
Wasterwater Invert Information	MHSA RIM ELEV.=7.53' 6" CLAY (N) INV. ELEV.=2.81' 10" CLAY (E) INV. ELEV.=2.70' 6" CLAY (S) INV. ELEV.=2.83' BOTTOM ELEV.=2.75'	V-SURV-ENGR-TEXT	WASD-SIMPLEX	8	1.6	L/C	0.006"

MIAMI-DADE COUNTY
Delivering Excellence Every Day

WATER AND SEWER DEPARTMENT

TEXT STYLE:
WATER/WASTEWATER PLAN VIEW

EXHIBIT
B.3

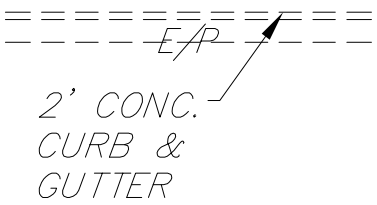
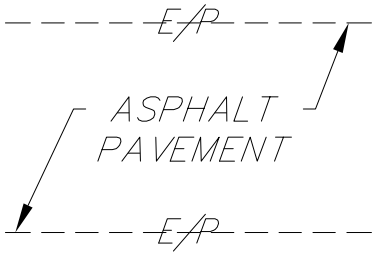
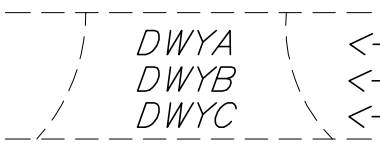
Element	Symbol	Layer	Color	Linetype	Weight
ROW Line		V-RWAY	20	PHANTOM2	0.02"
ROW Centerline		V-ROAD-CNTR	6	CENTER2	0.004"
Property Line		V-PROP-LINE	253	PHANTOM2	0.008"
Property Lot Line		V-PROP-LOTL	254	HDDEN2	0.002"
Easement Line		V-ESMT	2	DASHED2	0.002"
ROW Limited Acces		V-ROAD-LMTD-ACCS	4	WASD_ROAD_LIMIT	0.004"
Topographic (EOP, Sidewalk, Curb, etc.)		V-TOPO	9	DASHED2	0.002"
Monument Line		V-ROAD-MONL	143	CENTER2	0.004"
Section Line		V-ROAD-SECL	6	CENTER2	0.004"
Baseline		V-ROAD-BASL	211	Continuous	0.008"

MIAMI-DADE COUNTY
Delivering Excellence Every Day

WATER AND SEWER DEPARTMENT

PLAN VIEW:
PROPERTY LINES

EXHIBIT
C.1

Element	Symbol		Layer	Color	Linetype	Weight
EXISTING CONCRETE SIDEWALK		FRONT OF SIDEWALK	V-TOPO	9	DASHED2	0.002"
		BACK OF SIDEWALK	V-TOPO	9	DASHED2	0.002"
		ANNOTATION	V-SITE-TEXT_2	151		
EXISTING CURB AND GUTTER		CURB	V-TOPO	9	DASHED2	0.002"
		GUTTER	V-TOPO	9	DASHED2	0.002"
		ANNOTATION	V-SITE-TEXT_1	6		
EXISTING ASPHALT PAVEMENT		EDGE OF PAVEMENT	V-TOPO	9	DASHED2	0.002"
		ANNOTATION	V-SITE-TEXT_1	6		
EXISTING DRIVEWAY (ALL TYPES)		EDGE OF PAVEMENT	V-TOPO	9	DASHED2	0.002"
		ANNOTATION	V-SITE-TEXT_2	151		

MIAMI-DADE COUNTY
Delivering Excellence Every Day

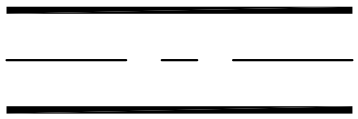
WATER AND SEWER DEPARTMENT

PLAN VIEW:
EXISTING PAVEMENT

EXHIBIT
C.2

Element	Symbol	Layer	Linetype	Width	Weight	Color
EXISTING WATER SERVICE	—— —— —— —— —— ——	C-WATR-PIPE-EXST	HIDDEN	0	0.006"	190
EXISTING WATER MAIN	—— —— X" D.I. WM —— ——	C-WATR-PIPE-EXST	HIDDEN	0	0.006"	190
EXISTING ABANDONED WATER MAIN	—— / —— / —— / —— / —— / ——	C-WATR-PIPE-EXST	WASD_ ABANDONED_ LINE	0	0.006"	190

MIAMI-DADE COUNTY Delivering Excellence Every Day WATER AND SEWER DEPARTMENT	PLAN VIEW: EXISTING WATER LINES	EXHIBIT D.1

Element	Symbol	Layer	Linetype	Width	Weight	Color
PROPOSED WATER SERVICE		C-WATR-PIPE-PROP	CONTINUOUS	0.3	0.012"	171
PROPOSED WATER MAIN		C-WATR-PIPE-PROP	CONTINUOUS	0.5	0.012"	171
PROPOSED WATER MAIN CENTER LINE 20" & LARGER WATER MAINS	 EDGE OF PIPE CENTER LINE	C-WATR-PIPE-PROP	CONTINUOUS DASHED2	0.5 0.0	0.012" 0.012"	171 171

MIAMI-DADE COUNTY
Delivering Excellence Every Day

WATER AND SEWER DEPARTMENT

PLAN VIEW:
PROPOSED WATER LINES

EXHIBIT
D.2

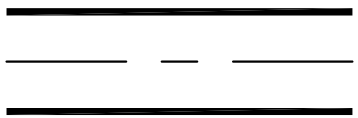
Element	Symbol	Layer	Linetype	Width	Weight	Color
EXISTING SEWER LATERAL	—— —— —— —— —— ——	C-SSWR-PIPE-EXST	HIDDEN	0	0.006"	70
EXISTING GRAVITY MAIN	—— —— —X"San.— —— ——	C-SSWR-PIPE-EXST	HIDDEN	0	0.006"	70
EXISTING FORCE MAIN	—— —— —X"F.M.— —— ——	C-SSWR-PIPE-EXST	HIDDEN	0	0.006"	70
EXISTING ABANDONED SEWER MAIN	—— / —— / —— / —— / —— / ——	C-SSWR-PIPE-EXST	WASD_ ABANDONED_ LINE	0	0.006"	70

MIAMI-DADE COUNTY
Delivering Excellence Every Day

WATER AND SEWER DEPARTMENT

PLAN VIEW:
EXISTING WASTEWATER LINES

EXHIBIT
D.3

Element	Symbol	Layer	Linetype	Width	Weight	Color
PROPOSED SANITARY LATERAL		C-SSWR-PIPE-PROP	CONTINUOUS	0.3	0.012"	90
PROPOSED FORCE MAIN		C-SSWR-PIPE-PROP	CONTINUOUS	0.5	0.012"	90
PROPOSED GRAVITY MAIN		C-SSWR-PIPE-PROP	CONTINUOUS	0.5	0.012"	90
WASTEWATER FORCE/GRAVITY MAIN CENTER LINE 20" & LARGER WATER MAINS	 EDGE OF PIPE CENTER LINE	C-SSWR-PIPE-PROP	CONTINUOUS DASHED2	0.5 0.0	0.012" 0.012"	90 90

MIAMI-DADE COUNTY Delivering Excellence Every Day WATER AND SEWER DEPARTMENT	PLAN VIEW: PROPOSED WASTEWATER LINES	EXHIBIT D.4

APPENDIX A.1: PREDEFINED LAYERS FOR ENGINEERING PIPELINE DESIGN

Name	Color	Linetype	Lineweight	Description
C-BRDG	151	Continuous	0.008"	BRIDGE
C-BRDG-TEXT	151	Continuous	0.008"	BRIDGE TEXT
C-ELEV-SPOT	151	Continuous	0.008"	SPOT ELEVATIONS
C-ENGR-DIM	151	Continuous	0.008"	ENGINEERING DIMENSIONS
C-MPIP-TEXT	151	Continuous	0.008"	UNKNOWN UNDERGROUND PIPE TEXT
C-ROAD-NAME	50	Continuous	0.030"	ROAD NAME
C-ROAD-NAME-MINR	40	Continuous	0.020"	ROAD NAME (SIDE STREETS)
C-ROAD-PROF-ELEV	151	Continuous	0.008"	PROFILE ELEVATION TEXT
C-ROAD-PROF-EXST	20	DASHED	0.020"	EXISTING ROAD OR GROUND PROFILE
C-ROAD-PROF-GRID-MAJR	41	Continuous	0.002"	PROFILE GRID LINES (MAJOR)
C-ROAD-PROF-GRID-	9	Continuous	0.002"	PROFILE GRID LINES (MINOR)
C-ROAD-PROF-PROP	20	Continuous	0.020"	PROPOSED ROAD OR GROUND PROFILE
C-ROAD-PROF-TEXT	151	Continuous	0.008"	ROAD OR GROUND PROFILE TEXT
C-ROAD-PROF-TITL	151	Continuous	0.008"	PROFILE TITLE
C-ROAD-PROF-TTLB	12	Continuous	0.020"	PROFILE BORDER AND TITLE BLOCK
C-SSWR	90	Continuous	0.012"	PROPOSED SANITARY SEWER
C-SSWR-CALLOUT	90	Continuous	0.012"	PROPOSED SANITARY SEWER CALLOUTS
C-SSWR-FITT-EXST	70	Continuous	0.006"	EXISTING SANITARY SEWER FITTINGS
C-SSWR-FITT-PROP	90	Continuous	0.012"	PROPOSED SANITARY SEWER FITTINGS
C-SSWR-INST-EXST	80	Continuous	0.002"	EXISTING SANITARY SEWER INSTRUMENTS (VALVES, ETC.)
C-SSWR-INST-PROP	90	Continuous	0.012"	PROPOSED SANITARY SEWER INSTRUMENTS (VALVES, ETC.)
C-SSWR-PIPE-EXST	70	HIDDEN	0.006"	EXISTING SANITARY SEWER PIPE
C-SSWR-PIPE-EXST-TEXT	70	Continuous	0.006"	EXISTING SANITARY SEWER PIPE TEXT
C-SSWR-PIPE-PROP	90	Continuous	0.012"	PROPOSED SANITARY SEWER PIPE
C-SSWR-PIPE-PROP-TITL	160	Continuous	0.020"	PROPOSED SANITARY SEWER PIPE TITLE (EX. 8" PROP. F.M.)
C-SSWR-PROF-	151	Continuous	0.008"	PROPOSED SANITARY SEWER PROFILE
C-SSWR-PROF-TEXT	151	Continuous	0.008"	EXISTING SANITARY SEWER PROFILE TEXT
C-SSWR-STRC-EXST	80	Continuous	0.002"	EXISTING SANITARY SEWER STRUCTURE
C-SSWR-STRC-PROP	90	Continuous	0.012"	PROPOSED SANITARY SEWER STRUCTURE
C-STRM-PIPE-EXST	141	HIDDEN	0.002"	EXISTING STORM SEWER PIPE
C-STRM-PIPE-EXST-TEXT	141	Continuous	0.002"	EXISTING STORM SEWER PIPE TEXT
C-STRM-PIPE-PROP	140	Continuous	0.012"	PROPOSED STORM SEWER PIPE

APPENDIX A.1: PREDEFINED LAYERS FOR ENGINEERING PIPELINE DESIGN (Cont.)

Name	Color	Linetype	Lineweight	Description
C-STRM-PROF-TEXT	151	Continuous	0.008"	EXISTING STORM SEWER PROFILE TEXT
C-STRM-STRC-EXST	141	Continuous	0.002"	EXISTING STORM SEWER STRUCTURE
C-STRM-STRC-PROP	140	Continuous	0.012"	EXISTING STORM SEWER STRUCTURE
C-UTIL-CATV	30	Continuous	0.002"	EXISTING UTILITY CABLE TV LINES
C-UTIL-CATV-PROF-	151	Continuous	0.008"	EXISTING UTILITY CABLE TV LINES PROFILE
C-UTIL-CATV-TEXT	30	Continuous	0.002"	EXISTING UTILITY CABLE TV LINES TEXT
C-UTIL-ELEC	30	Continuous	0.002"	EXISTING UTILITY ELECTRIC LINES
C-UTIL-ELEC-PROF-	151	Continuous	0.008"	EXISTING UTILITY ELECTRIC LINES PROFILE
C-UTIL-ELEC-TEXT	30	Continuous	0.002"	EXISTING UTILITY ELECTRIC LINES TEXT
C-UTIL-FPL	30	Continuous	0.002"	EXISTING UTILITY FPL LINES
C-UTIL-FPL-PROF-TEXT	151	Continuous	0.008"	EXISTING UTILITY FPL LINES PROFILE TEXT
C-UTIL-FPL-TEXT	30	Continuous	0.002"	EXISTING UTILITY FPL LINES TEXT
C-UTIL-GAS	2	Continuous	0.002"	EXISTING UTILITY GAS LINES
C-UTIL-GAS-PROF-TEXT	151	Continuous	0.008"	EXISTING UTILITY GAS LINES PROFILE TEXT
C-UTIL-GAS-TEXT	2	Continuous	0.002"	EXISTING UTILITY GAS LINES TEXT
C-UTIL-TELE	30	Continuous	0.002"	EXISTING UTILITY TELEPHONE LINES
C-UTIL-TELE-PROF-	151	Continuous	0.008"	EXISTING UTILITY TELEPHONE LINES PROFILE
C-UTIL-TELE-TEXT	30	Continuous	0.002"	EXISTING UTILITY TELEPHONE LINES TEXT
C-WATR	171	Continuous	0.012"	PROPOSED WATER
C-WATR-CALLOUT	151	Continuous	0.008"	PROPOSED WATER CALLOUTS
C-WATR-FITT-EXST	190	Continuous	0.006"	EXISTING WATER FITTINGS
C-WATR-FITT-PROP	171	Continuous	0.012"	PROPOSED WATER FITTINGS
C-WATR-INST-EXST	152	Continuous	0.006"	EXISTING WATER INSTRUMENTS (METERS, VALVES, ETC.)
C-WATR-INST-PROP	171	Continuous	0.012"	PROPOSED WATER INSTRUMENTS (METERS,
C-WATR-MHOL-PROP	171	Continuous	0.012"	PROPOSED WATER MANHOLE
C-WATR-MHOL-EXIST	152	Continuous	0.002"	EXISTING WATER MANHOLE
C-WATR-PIPE-EXST	190	HIDDEN	0.006"	EXISITNG WATER PIPE
C-WATR-PIPE-EXST-TEXT	190	Continuous	0.006"	EXISITNG WATER PIPE TEXT
C-WATR-PIPE-PROP	171	Continuous	0.012"	PROPOSED WATER PIPE
C-WATR-PIPE-PROP-TITL	160	Continuous	0.020"	PROPOSED WATER PIPE TITL (EX. 8" PROP. W.M.)
C-WATR-PROF-CALLOUT	151	Continuous	0.008"	PROPOSED WATER PROFILE CALLOUTS
C-WATR-PROF-TEXT	151	Continuous	0.008"	EXISTING WATER PROFILE TEXT

APPENDIX A.2: PREDEFINED LAYERS FOR TOPOGRAPHIC AND BOUNDARY SURVEYS

Name	Color	Linetype	Lineweight	Description
V-BLDG	9	Continuous	0.004"	BUILDING
V-COMM	30	Continuous	0.004"	COMMUNICATION FEATURES (TELE BOX, TELE MH, CATV BOX) FROM THE SURVEY
V-COMM-OVHD	30	WASD_OH_SHORT	0.004"	OVERHEAD LINES
V-CTRL-PRIM-TEXT	151	Continuous	0.008"	PRIMARY CONTROL POINTS TEXT
V-CTRL-REFP-TEXT	6	Continuous	0.004"	REFERENCE POINTS TEXT
V-CTRL-TBM-TEXT	151	Continuous	0.008"	TEMPORARY BENCHMARK TEXT
V-ELEC	30	Continuous	0.004"	EXISTING ELECTRIC FEATURES
V-ESMT	2	DASHED2	0.004"	EASMENT LINES
V-GAS	2	Continuous	0.002"	EXISTING GAS FEATURES
V-PNTS-CNTRL	7	Continuous	0.004"	SURVEY POINTS - STATION
V-PNTS-COMM	7	Continuous	0.004"	SURVEY POINTS - TELEPHONE, CABLE
V-PNTS-ELEC	7	Continuous	0.004"	SURVEY POINTS - ELECTRIC
V-PNTS-GAS	7	Continuous	0.004"	SURVEY POINTS - GAS
V-PNTS-GEN	7	Continuous	0.004"	SURVEY POINTS - GENERAL
V-PNTS-LABEL	7	Continuous	0.012"	SURVEY POINTS - LABELS
V-PNTS-LABL-ELEV	6	Continuous	0.004"	SURVEY POINTS - ELEVATION LABELS
V-PNTS-LABL-GAS	151	Continuous	0.008"	SURVEY POINTS - GAS FEATURES LABEL
V-PNTS-LABL-SSWR	151	Continuous	0.008"	SURVEY POINTS - SEWER FEATURES LABEL
V-PNTS-LABL-TREES	6	Continuous	0.004"	SURVEY POINTS - (TREES, PALMS, HEDGES, BUSHES) LABEL
V-PNTS-LABL-WATR	151	Continuous	0.008"	SURVEY POINTS - WATER FEATURES LABEL
V-PNTS-SSWR	7	Continuous	0.004"	SURVEY POINTS - SEWER FEATURES
V-PNTS-STA	7	Continuous	0.004"	SURVEY POINTS - STATION
V-PNTS-STRM	7	Continuous	0.004"	SURVEY POINTS - STORM SEWER FEATURES
V-PNTS-TOPO	7	Continuous	0.004"	SURVEY POINTS - (EP, SWKS, RAMPS, DRIVEWAYS)
V-PNTS-TREES	7	Continuous	0.004"	SURVEY POINTS - (TREES, PALMS, HEDGES, BUSHES)
V-PNTS-WATR	7	Continuous	0.004"	SURVEY POINTS - WATER
V-PNTS-XMRK	41	Continuous	0.004"	SURVEY POINTS - XMARK
V-PNTS-XS	7	Continuous	0.004"	SURVEY POINTS CROSS SECTION
V-PROP-HNUM	151	Continuous	0.008"	HOUSE NUMBER
V-PROP-IPF	6	Continuous	0.004"	FOUND IRON PIN
V-PROP-IPS	6	Continuous	0.004"	SET IRON PIN
V-PROP-LINE	253	PHANTOM2	0.004"	PROPERTY LINES

APPENDIX A.2: PREDEFINED LAYERS FOR TOPOGRAPHIC AND BOUNDARY SURVEYS (Cont.)

Name	Color	Linetype	Lineweight	Description
V-PROP-LNUM	160	Continuous	0.020"	LOT NUMBER
V-PROP-LOTL	254	HIDDEN2	0.012"	LOT LINES
V-PROP-PLTB	160	Continuous	0.020"	PLATBOOK INFO
V-ROAD-ALGN	7	CENTER2	0.012"	SURVEYED ROAD ALIGNMENT
V-ROAD-ALGN-STAT	7	Continuous	0.012"	STATIONING LABELS
V-ROAD-ALIGN-LABL	6	Continuous	0.004"	ROAD ALIGNMENT LABELS
V-ROAD-BASL	211	Continuous	0.008"	SURVEYED ROAD BASELINE
V-ROAD-BASL-BEGN-TEXT	160	Continuous	0.020"	SURVEYED ROAD BEGIN/END BASELINE TEXT (EX. BEGIN/END BASELINE)
V-ROAD-CNTR	6	CENTER2	0.004"	SURVEYED ROAD CENTER
V-ROAD-MONL	143	CENTER2	0.004"	SURVEYED ROAD MONUMENT LINE
V-ROAD-PROF	20	HIDDEN	0.020"	EXISTING ROAD OR GROUND PROFILE
V-ROAD-PROF-ELEV	151	Continuous	0.008"	PROFILE ELEVATION TEXT
V-ROAD-PROF-LABL	151	Continuous	0.008"	PROFILE LABEL TEXT
V-ROAD-SECL	6	CENTER2	0.004"	SURVEYED ROAD SECTION LINE
V-RWAY	20	PHANTOM2	0.020"	RIGHT OF WAY
V-RWAY-DIMS	151	Continuous	0.008"	RIGHT OF WAY DIMENSION
V-RWAY-LABL	6	Continuous	0.004"	RIGHT OF WAY LABEL
V-SITE-FENC-CLF	11	WASD_CHAINLINKFENCE	0.004"	FENCE CHAINLINK
V-SITE-FENC-CONC	11	WASD_CONCFENCE	0.004"	FENCE WOOD
V-SITE-FENC-IRON	11	WASD_IRONFENCE	0.004"	FENCE IRON
V-SITE-FENC-WOOD	11	WASD_WOODFENCE	0.004"	FENCE WOOD
V-SITE-GUARDRAIL_1	11	WASD_GUARD_R	0.004"	GUARDRAIL (Right)
V-SITE-GUARDRAIL_2	11	WASD_GUARD_L	0.004"	GUARDRAIL (Left)
V-SITE-TEXT_1	6	Continuous	0.004"	ANNOTATIONS FOR SURVEY
V-SITE-TEXT_2	151	Continuous	0.008"	ANNOTATIONS FROM SURVEY FOR DESIGN
V-SSWR	70	Continuous	0.006"	EXIST. SAN. SEWER FEATURES
V-SSWR-FITT	70	Continuous	0.006"	EXIST. SAN. SEWER FITTING
V-SSWR-INST	80	Continuous	0.004"	EXIST. SANITARY SEWER INSTRUMENTS (VALVES, ETC.)
V-SSWR-MHOL	80	Continuous	0.004"	EXIST. SAN. SEWER MANHOLE
V-SSWR-PIPE	70	HIDDEN	0.006"	EXIST. SAN. SEWER PIPE
V-SSWR-STRC	80	Continuous	0.004"	EXIST. SAN. SEWER STRUCTURES
V-STRM	141	Continuous	0.004"	EXIST. STORM SEWER FEATURES
V-STRM-PIPE	141	Continuous	0.004"	EXIST. STORM SEWER PIPE
V-STRM-STRC	141	Continuous	0.004"	EXIST. STORM SEWER STRUCTURES

APPENDIX A.2: PREDEFINED LAYERS FOR TOPOGRAPHIC AND BOUNDARY SURVEYS (Cont.)

Name	Color	Linetype	Lineweight	Description
V-SURV-BRNG	151	Continuous	0.008"	SURVEY BEARINGS AND DISTANCE
V-SURV-DIMS	151	Continuous	0.008"	SURVEY MEASUREMENTS AND
V-SURV-ENGR-TEXT	8	Continuous	0.008"	ANNOTATION FOR MANHOLE INVERTS
V-TOPO	9	DASHED2	0.004"	EXIST. TOPOGRAPHIC FEATURES (EOP,
V-TOPO-SURF	4	Continuous	0.010"	SURVEY SURFACE TRIANGLES
V-TOPO-SURF-BORD	2	Continuous	0.002"	SURVEY SURFACE BORDER
V-TOPO-SURF-MAJR	1	Continuous	0.010"	SURVEY MAJOR CONTOURS
V-TOPO-SURF-MINR	2	Continuous	0.002"	SURVEY MINOR CONTOURS
V-TREE-LINE	62	WASD_TREELINE_L	0.004"	EXIST. TREES, PALMS, HEDGES, SHRUBS, BUSHES AND OTHER PLANTS
V-TREE-LINE-2	62	WASD_TREELINE_R	0.004"	EXIST. TREES, PALMS, HEDGES, SHRUBS, BUSHES AND OTHER PLANTS
V-TREE-VEGE-1	112	WASD_VEGETATION_R	0.004"	EXIST. DENSE VEGETATION
V-TREE-VEGE-2	112	WASD_VEGETATION_L	0.004"	EXIST. DENSE VEGETATION
V-TREES	62	Continuous	0.004"	EXIST. TREES, PALMS, HEDGES, SHRUBS, BUSHES AND OTHER PLANTS
V-UTIL-CATV	30	WASD_CABLETV_LONG	0.004"	UTILITY UNDERGROUND CABLE TV LINES
V-UTIL-ELEC	30	WASD_ELEC_UGND_LONG	0.004"	UTILITY UNDERGROUND GAS LINES
V-UTIL-FORC	70	WASD_FORCE_MAIN_LONG	0.006"	UTILITY UNDERGROUND FORCE MAINS
V-UTIL-FPL	30	WASD_FPL_LONG	0.004"	UTILITY UNDERGROUND FPL LINES
V-UTIL-GAS	2	WASD_GAS_LONG	0.002"	UTILITY UNDERGROUND GAS LINES
V-UTIL-GRAV	70	WASD_GRAVITY_MAIN_LONG	0.006"	UTILITY UNDERGROUND GRAVITY MAINS
V-UTIL-SSWR-LATL	141	WASD_SAN_SHORT	0.004"	UTILITY UNDERGROUND STORM SEWER LINES
V-UTIL-STRM	141	WASD_STORM_LONG	0.004"	UTILITY UNDERGROUND STORM SEWER LINES
V-UTIL-TELE	30	WASD_TELEPHONE_LONG	0.004"	UTILITY UNDERGROUND TELEPHONE LINES
V-WATR	152	Continuous	0.006"	EXIST. WATER FEATURES
V-WATR-FITT	190	Continuous	0.006"	EXIST. WATER FITTING
V-WATR-INST	152	Continuous	0.006"	EXIST. WATER INSTRUMENTS (METERS, VALVES, ETC.)
V-WATR-MHOL	152	Continuous	0.006"	EXIST. WATER MANHOLE
V-WATR-PIPE	190	HIDDEN	0.006"	EXIST. WATER PIPE
V-WATR-STRC	152	Continuous	0.006"	EXIST. WATER STRUCTURE (WET WELL, DRY WELLS)

APPENDIX A.3: PREDEFINED LAYERS FOR WASD GIS

Name	Color	Linetype	Lineweight	Description
WAbandonedPipe_WASD	171	WASD_ABANDONED_LINE	0.012"	GIS LAYER FOR WATER ABANDONED LINES
WAccessManhole_WASD	171	Continuous	0.012"	GIS LAYER FOR WATER MANHOLES
WAutoControlValve_WASD	171	Continuous	0.012"	GIS LAYER FOR AUTO CONTROL VALVES
WDistribution_WASD	171	Continuous	0.012"	GIS LAYER FOR WATER MAINS
WFireLine_WASD	171	Continuous	0.012"	GIS LAYER FOR WATER FIRE LINES
WFitting_WASD	171	Continuous	0.012"	GIS LAYER FOR WATER FITTINGS
WHydrant_WASD	171	Continuous	0.012"	GIS LAYER FOR FIRE HYDRANT
WManualControlValve_WASD	171	Continuous	0.012"	GIS LAYER FOR WATER VALVES
WServiceLine_WASD	171	Continuous	0.012"	GIS LAYER FOR WATER SERVICE LINES
WServicePointConnection_WASD	171	Continuous	0.012"	GIS LAYER FOR WATER METERS
SAbandonedPipe_WASD	90	WASD_ABANDONED_LINE	0.012"	GIS LAYER FOR SEWER ABANDONED LINES
SAccessManhole_WASD	90	Continuous	0.012"	GIS LAYER FOR SEWER ACCESS MHs
SAirReleaseValve_WASD	90	Continuous	0.012"	GIS LAYER FOR SEWER AIR RELEASE VALVES
SCleanOut_WASD	90	Continuous	0.012"	GIS LAYER FOR SEWER CLEANOUTS
SFitting_WASD	90	Continuous	0.012"	GIS LAYER FOR SEWER FITTINGS
SFlowMeter_WASD	90	Continuous	0.012"	GIS LAYER FOR SEWER FLOW METERS
SForceMain_WASD	90	Continuous	0.012"	GIS LAYER FOR SEWER FORCE MAINS
SGravityMain_WASD	90	Continuous	0.012"	GIS LAYER FOR SEWER GRAVITY MAINS
SManhole_WASD	90	Continuous	0.012"	GIS LAYER FOR SEWER MANHOLES
SManualControlValve_WASD	90	Continuous	0.012"	GIS LAYER FOR SEWER MANUAL CONTROL VALVES
SSewerLateral_WASD	90	Continuous	0.012"	GIS LAYER FOR SEWER LATERALS
LPSCleanOut_WASD	90	Continuous	0.012"	GIS LAYER FOR LOW PRESSURE SYSTEM CLEANOUTS
LPSForceMain_WASD	90	Continuous	0.012"	GIS LAYER FOR LPS FORCE MAINS
LPSLateral_WASD	90	Continuous	0.012"	GIS LAYER FOR LPS LATERALS
LPSManualControlValve_WASD	90	Continuous	0.012"	GIS LAYER FOR LPS VALVES

Note: The GIS layers identified in Appendix A.3 are intended **exclusively for use when drafting as-built pipeline assets ** IN PLAN VIEW ONLY****. These layers correspond to WASD's enterprise GIS feature classes and shall not be used for design or survey drafting unless explicitly directed by WASD. Within the official WASD CAD template, the parent GIS layers shown in this appendix are further subdivided into asset-specific drafting layers through standardized prefixes, while retaining the "_WASD" suffix (e.g., Tee_SFitting_WASD, Gate_WManualControlValve_WASD).

Appendix B - Survey Description Keys

Description	Code	Style	Point Label Style	Format	Layer
Above Ground Vault	**AGV**	X-MARK	WASD Elevation	$*	V-PNTS-GEN
Asphalt	**ASP**	X-MARK	WASD Elevation	$*	V-PNTS-GEN
Backflow Preventor	**BFB**	Backflow Preventer	_No Show	$*	V-PNTS-WATR
Back of Curb	**CRBBK**	X-MARK	WASD Elevation	$*	V-PNTS-TOPO
Base Point	**BP**	X-MARK	WASD Elevation	$*	V-PNTS-GEN
Baseline	**BL**	X-MARK	WASD Elevation	$*	V-PNTS-STA
Below Ground Vault	**BGV**	X-MARK	WASD Elevation	$*	V-PNTS-GEN
Bench	**BNCH**	Bench	_No Show	$*	V-PNTS-GEN
Bench Mark	**BM**	<default>	WASD Elevation	$*	V-PNTS-CTRL
Bollard	**BOL**	Bollard	_No Show	$*	V-PNTS-GEN
Box	**BOX**	Box	WASD Elevation	UnknBox	V-PNTS-ELEC
Bridge	**BR**	X-MARK	WASD Elevation	$*	V-PNTS-GEN
Building	**BLDG**	X-MARK	_No Show	$*	V-PNTS-GEN
Building Overhang	**BOH**	X-MARK	_No Show	$*	V-PNTS-GEN
Bush	**BSH**	Shrub - 5ft	_No Show	$*	V-PNTS-TREES
Cable TV Box	**CTVB**	Cable TV Box	_No Show	$*	V-PNTS-COMM
Canopy	**CNPY**	X-MARK	<default>	$*	V-PNTS-GEN
Catch Basin	**CBA**	Catch Basin	_No Show	C.B.	V-PNTS-STRM
Clean Out	**CO**	Clean Out	_No Show	$*	V-PNTS-SSWR
Concrete	**CONC**	X-MARK	WASD Elevation	$*	V-PNTS-TOPO
Concrete Slab	**SLC**	X-MARK	WASD Elevation	$*	V-PNTS-GEN
Control Point	**CONTROL**	X-MARK	WASD Elevation	$*	V-PNTS-CTRL
Cross Section	**XS**	X-MARK	WASD Elevation	$*	V-PNTS-XS
Culvert	**CU**	X-MARK	<default>	$*	V-PNTS-WATR
Curb	**CRB**	X-MARK	WASD Elevation	$*	V-PNTS-TOPO
Driveway	**DWY***	X-MARK	WASD Elevation	$*	V-PNTS-TOPO
Dry Well	**DW**	X-MARK	WASD Elevation	$*	V-PNTS-WATR
Edge of Pavement	**EP***	X-MARK	WASD Elevation	$*	V-PNTS-TOPO
Elecrtic Manhole	**MHE**	Elec MH	_No Show	ElecMH	V-PNTS-ELEC
Electric Box	**BOXE**	Elec Box	_No Show	ElecBox	V-PNTS-ELEC

Appendix B - Survey Description Keys (Cont.)

Description	Code	Style	Point Label Style	Format	Layer
Electric Panel	**PAE**	Elec Panel	_No Show	$*	V-PNTS-ELEC
Embankment	**EMB**	X-MARK	WASD Elevation	$*	V-PNTS-TOPO
Fence	**FENC***	X-MARK	_No Show	$*	V-PNTS-GEN
Fire Hydrant	**FH***	Hydrant Exist	WASD FIRE HYDRANT	F.H.	V-PNTS-WATR
Fire Well	**FEW**	X-MARK	WASD Elevation	$*	V-PNTS-TOPO
Flag Pole	**FP**	X-MARK	<default>	$*	V-PNTS-GEN
Found Nail and Disk	**FND***	Iron Pin	_No Show	$*	V-PNTS-CTRL
FPL Manhole	**MHFPL**	Elec MH	_No Show	FPLMH	V-PNTS-ELEC
Gas Main	**MGA**	X-MARK	<default>	$*	V-PNTS-GAS
Gas Manhole	**GASMH**	Gas MH	_No Show	$*	V-PNTS-GAS
Gas Tank	**TG**	X-MARK	<default>	$*	V-PNTS-GAS
Gas Valve	**VG**	Gas Valve	WASD GAS VALVE	GasVlv	V-PNTS-GAS
Gate	**GE**	X-MARK	WASD Elevation	$*	V-PNTS-TOPO
Grass	**GRS**	X-MARK	WASD Elevation	$*	V-PNTS-GEN
Ground	**GRND**	X-MARK	WASD Elevation	$*	V-PNTS-TOPO
Guardrail	**GRL**	X-MARK	WASD Elevation	$*	V-PNTS-TOPO
Guy Pole	**GUY**	Guy Wire Anchor	_No Show	$*	V-PNTS-ELEC
Guy Wire Anchor	**GWA**	Guy Wire Anchor	_No Show	GuyPole	V-PNTS-ELEC
Hatch	**HACH**	X-MARK	<default>	$*	V-PNTS-TOPO
Hedge	**HE**	X-MARK	_No Show	$*	V-PNTS-TREES
Irrigation Control Valve	**VIC**	Water Meter Exist	WASD IRRIGATION VALVE	$*	V-PNTS-WATR
Landscapping	**LS**	X-MARK	WASD Elevation	$*	V-PNTS-GEN
Light Box	**BOXLI**	Light Box	_No Show	StLightBox	V-PNTS-ELEC
Light Pole Concrete	**LPC**	Light Pole	_No Show	LightPole	V-PNTS-ELEC
Light Pole Wood	**LPW**	Light Pole	_No Show	LightPole	V-PNTS-ELEC
Mailbox	**MBX**	Mailbox	_No Show	$*	V-PNTS-GEN
Mile Post	**MP**	X-MARK	<default>	$*	V-PNTS-GEN
Monitoring Well	**MWL**	Well	_No Show	Well	V-PNTS-WATR
Overhead Utility Lines	**OUL**	X-MARK	<default>	$*	V-PNTS-ELEC
Palm Tree	**PLM**	Palm Tree	WASD Palm	Ø$1	V-PNTS-TREES

Appendix B - Survey Description Keys (Cont.)

Description	Code	Style	Point Label Style	Format	Layer
Parking Meter	**PMR**	X-MARK	<default>	$*	V-PNTS-GEN
Patch	**PAH***	X-MARK	WASD Elevation	$*	V-PNTS-GEN
Pedestrian Crossing	**PEDX**	Traffic Signal Box	_No Show	PedX-ing	V-PNTS-ELEC
Post	**POST**	Post	<default>	Post	V-PNTS-TOPO
Power Pole	**PP**	Utility Pole	_No Show	ElecPole	V-PNTS-ELEC
Pump	**PMP**	X-MARK	<default>	$*	V-PNTS-GEN
Pump Out Pipe	**POP**	X-MARK	<default>	$*	V-PNTS-TOPO
R/R Crossing Signal	**RRS**	X-MARK	WASD Elevation	$*	V-PNTS-GEN
R/R Tracks	**RRT**	X-MARK	WASD Elevation	$*	V-PNTS-TOPO
Ramp	**RAMP**	X-MARK	WASD Elevation	$*	V-PNTS-TOPO
Sanitary Clean Out Plug	**CPL**	X-MARK	<default>	$*	V-PNTS-SSWR
Sanitary Lateral	**LSAN**	X-MARK	_No Show	$*	V-PNTS-SSWR
Sanitary Sewer Manhole	**MHSA**	Sanitary Sewer MH	_No Show	SanMH	V-PNTS-SSWR
Sewer Meter	**SMR**	Sewer Meter	WASD SEWER METER	$*	V-PNTS-SSWR
Sewer Valve	**VS**	Sewer Valve	WASD SEWER VALVE	SwrVlv	V-PNTS-SSWR
Sidewalk	**SWK***	X-MARK	WASD Elevation	$*	V-PNTS-TOPO
Sign	**SGN**	Sign (single pole)	_No Show	$*	V-PNTS-TOPO
Sprinkler	**SPK**	Sprinkler	_No Show	Sprinkler	V-PNTS-WATR
Stairs	**STR**	X-MARK	WASD Elevation	$*	V-PNTS-TOPO
Station Point	**STA***	STA	WASD Elevation	$*	V-PNTS-STA
Stop Sign	**STP***	Sign (single pole)	_No Show	$*	V-PNTS-TOPO
Storm Sewer Manhole	**MHSS**	Storm Sewer MH	_No Show	StmMH	V-PNTS-STRM
Street Apex	**APX**	X-MARK	WASD Elevation	$*	V-PNTS-TOPO
Telemetry Antenna	**TANT**	Telemetry Antenna	_No Show	$*	V-PNTS-COMM
Telephone Manhole	**MHT**	Tel MH	_No Show	TelMH	V-PNTS-COMM
Telephone Box	**BOXT**	Tel Box	_No Show	Telebox	V-PNTS-COMM
Telephone Panel	**PNLT**	Tel Box	_No Show	$*	V-PNTS-GEN
Telephone Splice Box	**SBT**	Tel Box	_No Show	PhoneBox	V-PNTS-COMM
Temporary Banchmark	**TBM***	Benchmark	_No Show	$*	V-PNTS-CTRL
Top of Bank	**TOPS**	X-MARK	WASD Elevation	$*	V-PNTS-GEN
Top of Slope	**TOE**	X-MARK	WASD Elevation	$*	V-PNTS-TOPO

Appendix B - Survey Description Keys (Cont.)

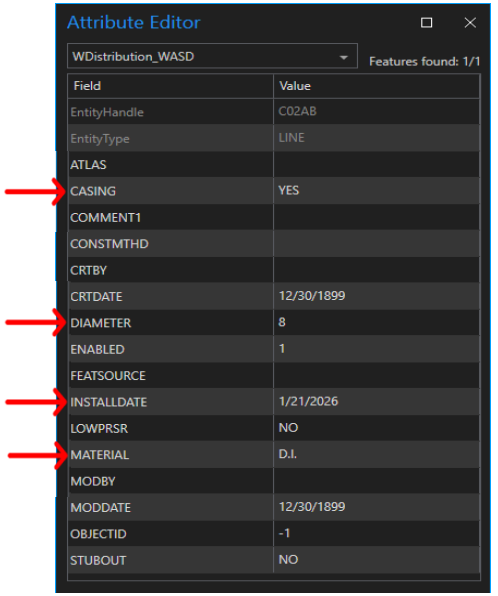
Description	Code	Style	Point Label Style	Format	Layer
Traffic Signal Box	**BTRS**	Traffic Signal Box	_No Show	TrafSigBox	V-PNTS-ELEC
Traffic Signal Panel	**PTRS**	X-MARK	_No Show	$*	V-PNTS-ELEC
Traffic Signal Pole	**PTL**	Traffic Signal Pole	_No Show	TrafSigPole	V-PNTS-ELEC
Tree	**TRE***	Tree	WASD Tree	Ø$1	V-PNTS-TREES
Tree Line	**TRELIN**	X-MARK	<default>	$*	V-PNTS-TREES
Utility Pole Concrete (round)	**PUC**	Utility Pole Concrete	WASD Utility Pole Concrete	Ø$1'	V-PNTS-ELEC
Utility Pole Concrete (square)	**PUSQ**	Utility Pole Concrete	WASD Utility Pole Concrete	$1'X$1'	V-PNTS-ELEC
Utility Pole Wood	**PUW**	Utility Pole	WASD Utility Pole	Ø$1'	V-PNTS-ELEC
Valley Gutter	**VGU**	X-MARK	WASD Elevation	$*	V-PNTS-TOPO
Vent Stack	**VST**	X-MARK	<default>	$*	V-PNTS-GAS
Wall	**WAL**	X-MARK	WASD Elevation	$*	V-PNTS-TOPO
Water Faucet	**WF**	X-MARK	<default>	$*	V-PNTS-WATR
Water Main	**MW**	X-MARK	<default>	$*	V-PNTS-WATR
Water Manhole	**MHWA**	Water MH	_No Show	WtrMH	V-PNTS-WATR
Water Meter Exist	**MRE**	Water Meter Exist	WASD WATER METER	WtrMtr	V-PNTS-WATR
Water Meter Exist	**WMR**	Water Meter Exist	WASD WATER METER	WtrMtr	V-PNTS-WATR
Water Valve	**VW**	Water Valve Exist	WASD WATER VALVE	$*	V-PNTS-WATR
Water Valve	**WV**	Water Valve Exist	WASD WATER VALVE	$*	V-PNTS-WATR
Yard Light	**YLI**	Flood Light	_No Show	$*	V-PNTS-ELEC

APPENDIX C.1:
REQUIRED GIS ATTRIBUTES FOR PIPELINE ASSETS (PIPES)

		Field Name				
Asset Type	**GIS Layer Name**	**CASING**	**DIAMETER**	**MATERIAL**	**FACILDESC**	**INSTALLDATE**
Water Pipeline	WAbandonedPipe_WASD	No Casing = [BLANK] Casing = Yes	Yes	Yes	N/A	N/A
	WDistribution_WASD		Yes	Yes	N/A	Yes
	WFireLine_WASD		Yes	Yes	Yes	Yes
	WServiceLine_WASD		Yes	Yes	N/A	Yes
Sewer Pipeline	SAbandonedPipe_WASD		Yes	Yes	N/A	N/A
	SForceMain_WASD		Yes	Yes	N/A	Yes
	SGravityMain_WASD		Yes	Yes	Yes	Yes
	SsewerLateral_WASD		Yes	Yes	N/A	Yes
	LPSForceMain_WASD		Yes	Yes	N/A	Yes
	LPSLateral_WASD		Yes	Yes	N/A	Yes

Note: The appearance and layout of the Attribute Editor user interface may change after the publication of this manual. Such changes do not alter the attribute requirements defined in this appendix.

Note: Attributes not explicitly identified in this appendix are either system-generated or optional and may display default or blank values. As illustrated in the example images, these fields shall be left at their default values unless otherwise directed by WASD.



APPENDIX C.2:
REQUIRED GIS ATTRIBUTES FOR PIPELINE ASSETS (FITTINGS)

		Field Name			
Asset Type	**GIS Layer Name**	**COMMENTS**	**FACILDESC**	**XCOORD**	**YCOORD**
Water Fittings	WFitting_WASD	Yes	Yes	Yes	Yes
Sewer Fittings	SFitting_WASD				

Example	Tee_WFitting_WASD	8"x8" TEE	13	882620.4497	496140.6889
	Bend_WFitting_WASD	6"x18" O/S BEND	2	882629.7023	496140.6889

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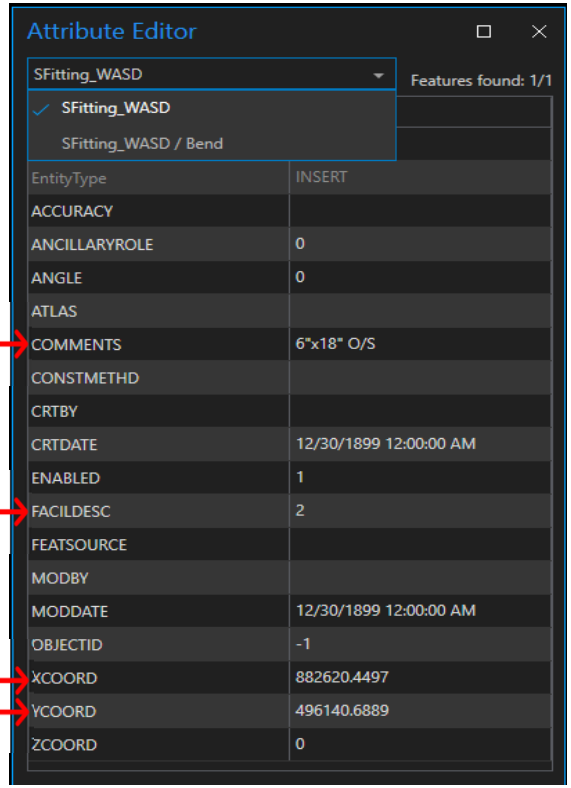
Note: The FACILDESC attribute field is automatically populated when the appropriate subtype layer is applied to the AutoCAD block representing the asset. Depending on the version of ArcGIS for AutoCAD in use, the FACILDESC value may display either the subtype name or its corresponding numerical code.



APPENDIX C.3:
REQUIRED GIS ATTRIBUTES FOR PIPELINE ASSETS (VALVES)

		Field Name				
Asset Type	**GIS Layer Name**	**VALVESIZE**	**FACILDESC**	**INSTALLDATE**	**XCOORD**	**YCOORD**
Water Valve	WAutoControlValve_WASD	Yes	Yes	Yes	Yes	Yes
	WManualControlValve_WASD					
Sewer Valve	SAirReleaseValve_WASD					
	SManualControlValve_WASD					
	LPSManualControlValve_WASD					

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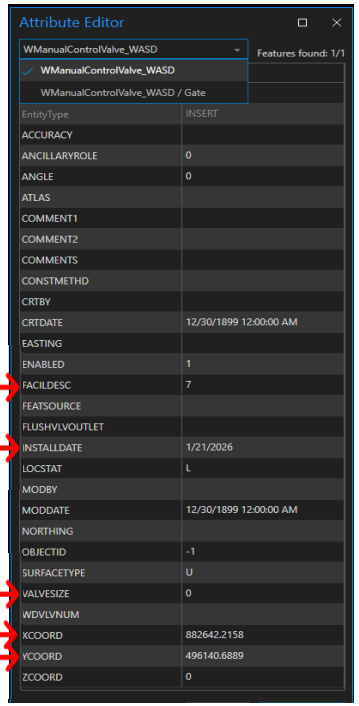
Note: The FACILDESC attribute field is automatically populated when the appropriate subtype layer is applied to the AutoCAD block representing the asset. Depending on the version of ArcGIS for AutoCAD in use, the FACILDESC value may display either the subtype name or its corresponding numerical code.



APPENDIX C.4:
REQUIRED GIS ATTRIBUTES FOR PIPELINE ASSETS (STRUCTURES)

		Field Name		
Asset Type	**GIS Layer Name**	**INSTALLDATE**	**XCOORD**	**YCOORD**
Water Structures	WAccessManhole_WASD	N/A	Yes	Yes
Sewer Structures	SAccessManhole_WASD	Yes		
	SManhole_WASD	Yes		
	SCleanOut_WASD	N/A		
	LPSCleanOut_WASD	Yes		

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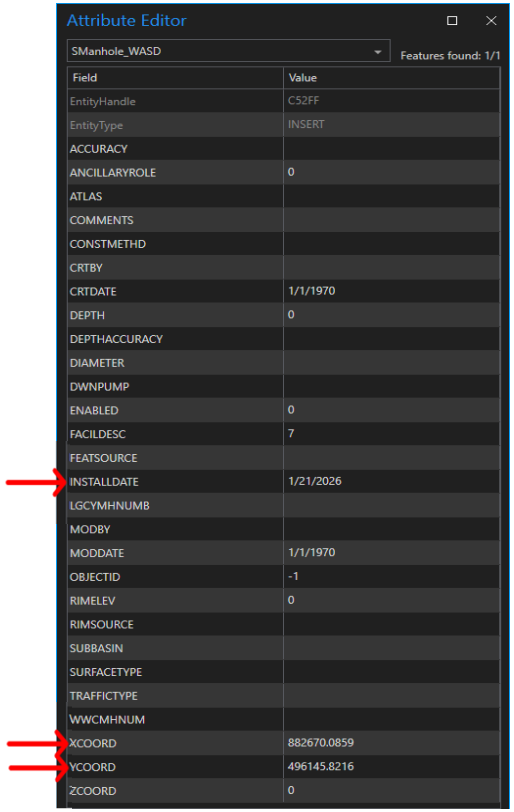

APPENDIX C.5:
REQUIRED GIS ATTRIBUTES FOR PIPELINE ASSETS (APPURTENANCES)

		Field Name				
Asset Type	**GIS Layer Name**	**DIAMETER**	**FACILDESC**	**INSTALLDATE**	**XCOORD**	**YCOORD**
Water Appurtenances	WServicePointConnection_WASD	Yes	Yes	N/A	Yes	Yes
	WHydrant_WASD	N/A	N/A	Yes		
Sewer Appurtenances	SFlowMeter_WASD	N/A	N/A	N/A		

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