

CADD Standards Manual

City of Minneapolis Department of Public Works

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Introduction

Revised 8/23/17

Purpose of this Manual

The purpose of the *PW CADD Standards Manual* is to provide uniform standards for the computer aided design and drafting of Capital Improvement Projects. The manual is to be used in the generation of electronic plans by both internal users and consultants doing business with the City of Minneapolis.

The *PW CADD Standards Manual* is intended to be as complete as possible; however, it is not a textbook and does not exempt the user from performing responsible engineering and/or surveying. The user shall have final responsibility for the accuracy of all input and output of computer-based applications.

The documentation and use of CADD standards have the following benefits and results:

Benefit

Consistent appearance of plan sheets.

Data can be shared easily between projects.

Technicians can easily move between design teams.

Result

Ease of understanding.

Increased productivity.

Efficient use of labor.

The result of these benefits is the improved delivery of Capital Improvement Projects.

Associated Documents (Revised 12/26/19)

The City of Minneapolis *PW CADD Standards Manual* is one of several documents created to facilitate the implementation and integration of Public Works CADD software into a complete, efficient design solution. The other documents involved in this plan are as follows:

- [ArcGIS SME Manual](#)
- [InRoads SME Manual](#)
- [MicroStation SME Manual](#)
- [Project Process Manual](#)
- [ProjectWise SME Manual](#)
- [Trimble Survey SME Manual](#)

Support (Revised 6/13/19)

How to Resolve Problems

1. Try to resolve the problem yourself:

There are several places on the Internet where users can search for answers:

- **CADD Software Problem Database**

[0000-Project_Resource\CADD\CADD Software Problems\CADD Software Problems.mdb](#)

Database of problems and solutions encountered by Bentley users at The City of Minneapolis where users may search for solutions.

- **Bentley Select**

[Bentley Support Services](#)

Bentley Technical Support website where users may download Bentley product manuals and TechNotes/FAQs that deal with common problems.

- **Bentley Institute User Group Program**

[www.bentley.com/en/learn/for-users/training-programs/user-groups](#)

Discussion groups that cover the entire range of Bentley products where users from all over the world help each other with software problems.

- **Ask Inga**

[www.askinga.com](#)

MicroStation specific website where Bentley programmers contribute articles on a variety of topics.

2. Ask other users:

Several of our users have become subject matter experts for a variety of design tasks, so don't be afraid to ask the person sitting next to you or someone on another design team for help.

3. Ask the CADD Manager:

Jim Cleary, x3623, jim.cleary@minneapolismn.gov.

4. Ask Bentley Support:

Contact Bentley Support if none of the previously listed sources can help you.

a. Click the **CONNECTION Client** icon on your desktop.

b. Click **CONNECTION Center**.

c. Click **City of Minneapolis Public Works**.

d. Click **New Service Request**.

Below is a list of current Bentley software versions:

- InRoads Group V8i (SELECT series 2) 08.11.07.566
- MicroStation V8i (SELECT series 2) 08.11.07.443
- ProjectWise V8i (SELECT series 3) 08.11.09.129

What to Do When You Have Resolved a Problem

When you discover a solution or a procedure that you believe could benefit everyone, please share it with your fellow users and the CADD Manager.

PW CADD Standards Meeting (Revised 6/13/19)

- Currently on hiatus; meetings will be held as needed to discuss standards and procedures.
- To view items on past agendas, click on the following link: [PW CADD Standards Meeting Agenda.doc](#)
- For CADD standards requests contact the PW CADD Manager (Jim Cleary at jim.cleary@minneapolismn.gov, 612-673-3623).

PW CADD Standards Team (Revised 12/21/23)

- **PW CADD Manager:** Jim Cleary
- **SW&S Division Representative:** Ron Davidson
- **T&PS Division Representative:** TBD
- **TE&D Division Representative:** Spencer Evert (Design), Peter Behnk (Survey)
- **TP&P Division Representative:** TBD
- **WT&D Division Representative:** TBD

PW CADD Subject Matter Experts (Revised 12/21/23)

- **SW&S:** Ron Davidson (MicroStation, OpenRoads)
- **T&PS:** TBD
- **TE&D:** Hassan Nur (MicroStation, OpenRoads)
- **WT&D:** TBD

Responsibilities

- Develop, configure, maintain and support CADD standards.
- Develop and maintain documentation on design processes and CADD standards.
- Analyze and resolve CADD user issues.
- Provide CADD user training on proper procedures and system capabilities.
- Supervise, assign tasks, and provide direction to SMEs.

Tasks

- Gather and share information.
- Prioritize the opportunities for improvement.
- Determine realistic goals and develop an action plan to accomplish those goals.
- Communicate and implement the action plan.

PW CADD Change Request Process (Revised 4/25/22)

CADD users are encouraged to submit suggestions and comments for improvements. To request CADD changes contact the PW CADD Manager (Jim Cleary at jim.cleary@minneapolismn.gov, 612-673-3623).

- The request will be reviewed with the PW CADD Standards Team:
 - If the request is approved, the PW CADD Manager will proceed with the change.
 - If the request is denied, the PW CADD Manager will notify the requestor.

Disclaimer

Under no circumstances does The City of Minneapolis warrant or certify the information contained in this manual to be free of errors or deficiencies of any kind. The City of Minneapolis specifically disclaims all warranties, express or implied, including but not limited to the warranties of merchantability and fitness for a particular purpose.

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ProjectWise
Revised 12/8/22

ProjectWise is used to share and manage information for the design and construction of architecture, engineering, construction, and operations of infrastructure projects.

Capital Project Folder Structure (Revised 12/8/22)

The *Capital Project Folder Structure* is the standard folder structure that is used for capital projects in ProjectWise.

The purpose of this structure is to promote the use of standard file names, descriptions, and locations in an effort to improve the delivery of capital projects.

FOLDER NAME	SUBFOLDER NAME	SUB-SUBFOLDER NAME	SUB-SUB-SUBFOLDER NAME	SUB-SUB-SUBFOLDER NAME	DOCUMENT TYPE	DOCUMENT DESCRIPTION	FILE TYPE
Bid_Documents					BIDDOC	Bid Document	
					SPECS	Technical Specifications	
	Addendums					Addendum	
	Advertising					Advertising	
		Construction_Bulletin				Construction Bulletin	
		Finance_and_Commerce				Finance and Commerce	
		Web				Website	
	Contract_Documents				CONTRACT	Contract	
	PDF_Files						
		Contract_Documents			CONTRACT	Contract	.pdf
		Plans			PLAN	Miscellaneous Plan	.pdf
Budgeting							
	CBRs_and_CIP						
		Enter Year (-1)			CBR	Capital Budget Request	
		Enter Year (-2)			CBR	Capital Budget Request	
		Enter Year (-3)			CBR	Capital Budget Request	
		Enter Year (-4)			CBR	Capital Budget Request	
		Enter Year (-5)			CBR	Capital Budget Request	
	Federal_and_State_Funding					Federal and State Funding	
	Special_Assessments				SPASSESS	Special Assessments	
Concepts_and_Layouts					LAYOUT	Preliminary Layout	.cdr
Construction							
	Construction_Records					Construction Record	
		CRS_Backup				City Reporting System Backup	
	Cost_Tracking				ESTIMATE	Estimated Quantities	
					PROCEED	Design or Construction Proceed	
	Finalizing					Finalizing	
	Materials_Testing						
		Asphalt			TEST_AG	Aggregate Gradation Test	.pdf
					TEST_AGM	Asphalt Gyratory Mix Test	.pdf
					TEST_AMM	Asphalt Marshall Mix Test	.pdf
		Concrete			TEST_CSB	Compressive Strength Break Test	.pdf
		Soils			TEST_SG	Soil Gradation Test	.pdf
	SAs_and_COs				SA	Supplemental Agreement	
					CO	Change Order	
	Shop_Drawings				DESIGN	Design Drawing	.dgn
					DETAIL	Details and Standard Plates	.dgn
	Survey				SURV	Construction Survey Data	.fwd
		Sewer				Proposed Geometry Data	.dc
						Proposed Surface Data	.dtm
		Street				Proposed Geometry Data	.dc
						Proposed Surface Data	.dtm
		Survey			SURV	Construction Survey Data	.fwd

FOLDER NAME	SUBFOLDER NAME	SUB-SUBFOLDER NAME	SUB-SUB-SUBFOLDER NAME	SUB-SUB-SUB-SUBFOLDER NAME	DOCUMENT TYPE	DOCUMENT DESCRIPTION	FILE TYPE	
Consultant_Services						Consultant Services		
Correspondence								
	City				CONTRACT	Contract		
					LETTER	City Correspondence	.msg	
	Consultant				LETTER	Consultant Correspondence	.msg	
	Contractor				LETTER	Contractor Correspondence	.msg	
	Council				LETTER	Council Correspondence	.msg	
	Data_Transfer					Data Transfer		
	MnDOT				LETTER	MnDOT Correspondence	.msg	
	Other				LETTER	Other Correspondence	.msg	
Utility				LETTER	Utility Correspondence	.msg		
Council_Action						Council Action		
DCP_Forms (Delegated Contract Process)					DCP	Delegated Contract Process Forms		
Design								
	Alignments				ALIGN	Alignment	.alg	
	Calculations				CALC	Calculations	.xls	
	Cross_Sections				XSEC	Cross Sections	.dgn	
	Design_Files					DESIGN	Design Drawing	.dgn
						GRADING	Grading Plan	.dgn
						INTSCTDTL	Intersection Details	.dgn
						LAND	Landscape Plan	.dgn
						PLAN	Miscellaneous Plan	.dgn
						POND	Storm Retention Pond	.dgn
						PROF	Profile	.dgn
						RWAY	Right-of-Way	.dgn
						STAGING	Staging	.dgn
						WALL	Retaining Wall	.dgn
						WORKFILE	Working File	.dgn
	Documents				UTIL	Utility	.xls	
		Data					Data	
		Design_Decisions					Design Decisions	
		Laboratory					Laboratory Data	
		Project_Checklist					Project Checklist	.xlsx
	Hydraulics (for shared projects)							
		Sewer (for shared projects)				ALIGN	Alignment (for shared projects)	.alg
						DRNG	Storm Drainage (for shared projects)	.sdb
						SSWR	Sanitary Sewer (for shared projects)	.dgn
			STRM	Storm Sewer (for shared projects)	.dgn			
Street					DRNG	Storm Drainage	.sdb	
Water (for shared projects)					WATR	Water Plan (for shared projects)	.dgn	
				ALIGN	Alignment (for shared projects)	.alg		
Tabulations								
	Alignment_Tabulations				TAB_ALN	Alignment Tab	.xls	
		Reports			DOC	Reports	.doc	
	Existing_Utility_Tabulations				TAB_EUTIL	Existing Utilities Tab	.xls	
		Reports			DOC	Reports	.doc	
	Proposed_Structure_Tabulations				TAB_PSTRC	Proposed Structures Tab	.xls	
		Reports			DOC	Reports	.doc	
	Quantities				TAB_QTY	Quantities Tab	.xls	
		Reports			DOC	Reports	.doc	
		Soils			DOC	Soil Data	.doc	
Roadway_Corridor_Library					ROADLIB	Roadway Library	.rwl	
Surfaces					SURF	Surface	.dtm	
Template_Library					TEMPLIB	Template Library	.itl	
Traffic (for shared projects)					STRIPESIGN	Signing/Striping Plan (for shared projects)	.dgn	
					TRAF	Traffic (for shared projects)	.dgn	
					TRAFCTRL	Temporary Traffic Control (for shared projects)	.dgn	
	Lighting (for shared projects)				LTNG	Lighting Plan	.dgn	
	Signal (for shared projects)				SIGNAL	Signal Plan	.dgn	
Turning_Movement_Evaluations						AutoTURN Files		
Documents								
	Environmental				DOC	Environmental	.doc	

FOLDER NAME	SUBFOLDER NAME	SUB-SUBFOLDER NAME	SUB-SUB-SUBFOLDER NAME	SUB-SUB-SUBFOLDER NAME	DOCUMENT TYPE	DOCUMENT DESCRIPTION	FILE TYPE
	PRO (Project Rationale and Overview)				DOC	Document Project Rationale and Overview Document	.doc
	Proceed_Orders				DOC	Proceed Order	.doc
	Project_Memoranda				DOC	Project Memoranda	.doc
Existing					EXTOPO	Existing <u>Merged</u> Topographic Data	.dgn
					PHOTO	Image (descriptions to be entered by the user)	.jpg
	Bridge					Existing Bridge Data	
	Private_Uilities						
		Private_Uilities_Read_Only			EXUTIL	Existing Private Utility Data	.dgn
	Public_Transportation					Existing Public Transportation Data	
	Rail					Existing Rail Data	
	Right-of-Way						
		Encroachments				Existing Right-of-Way Encroachments	
		Issues				Existing Right-of-Way Issues	
		Right-of-Way_Read_Only			EXRWAY	Existing Right-of-Way Data	.dgn
	Sewer						
		Sewer_Read_Only			EXSEWR	Existing Sewer Data	.dgn
					WATRSHD	Watershed Drainage Area	.dgn
	Survey						
		Survey_Read_Only			EXSURF	Existing Surface	.dgn
					EXSURV	Existing Survey Data	.dc
					EXSURV	Existing Survey Data	.fwd
					EXMON	Existing Monuments	.dgn
					FIELDBOOK	Fieldbook	.fwd
	Topographic						
		Topographic_Read_Only			BLDGNMBR	Building Numbers	.dgn
					CLINE	Centerlines	.dgn
					CONTOUR	Contours	.dgn
					EXPOT	Existing Pothole Data	.dgn
					EXTOPO	Existing Topographic Data	.dgn
					LIDAR	LIDAR Points	.txt
					NBRHD	Neighborhood Area	.dgn
					ORTHO	Orthophoto	.dgn
					STNAME	Street Names	.dgn
	Traffic						
		Traffic_Read_Only			EXTRAF	Existing Traffic Data	.dgn
	Water						
		Water_Read_Only			EXWATR	Existing Water Data	.dgn
Mailings						Mailings	
Meetings							
	Construction					Construction Meeting	
	In-House					In-House Meeting	
	Pre-Construction_Conference					Pre-Construction Conference Meeting	
	Public					Public Meeting	
Photos_and_Multimedia							
	Photos						
		1-Preliminary			PHOTO	Photos (descriptions to be entered by the user)	.jpg
		2-Pre-Construction_Condition_Survey			PHOTO	Photos (descriptions to be entered by the user)	.jpg
		3-Construction			PHOTO	Photos (descriptions to be entered by the user)	.jpg
		4-Post-Construction			PHOTO	Photos (descriptions to be entered by the user)	.jpg
Plan_Sets							
	1-Preliminary_30%				30_PLAN	30% Plan Set	.pdf
		Review_Comments			30_PLAN	Review Comments	.pdf
	2-Preliminary_60%				60_PLAN	60% Plan Set	.pdf
		Review_Comments			60_PLAN	Review Comments	.pdf
	3-Preliminary_90%				90_PLAN	90% Plan Set	.pdf
		Review_Comments			90_PLAN	Review Comments	.pdf
	4-Preliminary_Final				100_PLAN	Final Plan Set (plan sets sent to the state for approval)	.pdf
		Review_Comments			FINAL	Review Comments	.pdf
	5-Final_Signed				FINAL	Final Signed Plan Set	.pdf
	6-Revised_Final_Signed				FINAL	Revised Final Plan Set	.pdf
Record_Drawings							
	Design						

FOLDER NAME	SUBFOLDER NAME	SUB-SUBFOLDER NAME	SUB-SUB-SUBFOLDER NAME	SUB-SUB-SUBFOLDER NAME	DOCUMENT TYPE	DOCUMENT DESCRIPTION	FILE TYPE	
		Alignments			ALIGN	Alignment	.alg	
		Documentation			DOC	Record Drawing Data	.doc	
		Hydraulics						
			Sewer		DRNG	Storm Drainage (for shared projects)	.sdb	
					SSWR	Sanitary Sewer (for shared projects)	.dgn	
					STRM	Storm Sewer (for shared projects)	.dgn	
		Tabulations						
		Field_Locate_Tabulations					.xls	
				Reports	DOC	Reports	.doc	
		GIS_Conversion_Tabulations					.xls	
				Reports	DOC	Reports	.doc	
		RD_Questions						
		Record_Drawing_Tabulations					.xls	
				Reports	DOC	Reports	.doc	
		Record_Drawing_Design_Files						
		Surfaces			SURF	Surface	.dtm	
	Final_Record_Drawings			RD	Final Record Drawings Plan Set	.pdf		
	Record_Drawing_SHT			PSET	Print Organizer	.pset		
				ESTIMATE	ESTIMATED QUANTITIES (Plan Sheet Title)	.dgn		
				SSWR	SANITARY SEWER PLAN AND PROFILE (Plan Sheet Title)	.dgn		
				SSWRDTL	SANITARY SEWER DETAILS (Plan Sheet Title)	.dgn		
				SSWRPLN	SANITARY SEWER PLAN (Plan Sheet Title)	.dgn		
				SSWRPROF	SANITARY SEWER PROFILE (Plan Sheet Title)	.dgn		
				TITLE	TITLE SHEET (Plan Sheet Title)	.dgn		
				TRAFCTRL	TRAFFIC CONTROL (Plan Sheet Title)	.dgn		
				TYPSEC	TYPICAL SECTIONS (Plan Sheet Title)	.dgn		
				XSEC	CROSS SECTIONS (Plan Sheet Title)	.dgn		
		Review_Comments			DOC	Review Comments	.doc	
	Survey			EXSURF	Existing Surface	.dgn		
				EXSURV	Existing Survey Data	.dc		
				EXSURV	Existing Survey Data	.fwd		
				EXMON	Existing Monuments	.dgn		
				FIELDBOOK	Fieldbook	.fwd		
SWS_Construction_Notes								
Right-of-Way_Documents				RWAY	Administrative Settlements			
				RWAY	Areaway Documentation			
				RWAY	Case Law			
				RWAY	Encroachment Permits			
				RWAY	Land Acquisition Cost Estimates			
				RWAY	Offer Letters			
				RWAY	Property Appraisals			
				RWAY	Property Surveys			
				RWAY	Purchase Offer Agreements			
				RWAY	Relocation Plans			
RWAY	Street Ordinance Data							
Schedule				PROJMGMT	Construction Schedule	.mpp		
				PROJMGMT	Project Schedule	.mpp		
SHT (Sheet Files)				PSET	Print Organizer	.pset		
				ALIGN	ALIGNMENT PLAN/CONTROL (Plan Sheet Title)	.dgn		
				DETAIL	DETAILS AND STANDARD PLATES (Plan Sheet Title)	.dgn		
				EROSTEMP	TEMPORARY EROSION CONTROL (Plan Sheet Title)	.dgn		
				ESTIMATE	ESTIMATED QUANTITIES (Plan Sheet Title)	.dgn		
				FIBR	FIBER PLAN (Plan Sheet Title)	.dgn		

FOLDER NAME	SUBFOLDER NAME	SUB-SUBFOLDER NAME	SUB-SUB-SUBFOLDER NAME	SUB-SUB-SUB-SUBFOLDER NAME	DOCUMENT TYPE	DOCUMENT DESCRIPTION	FILE TYPE
					GENNOTES	GENERAL NOTES (Plan Sheet Title)	.dgn
					LTNG	LIGHTING PLAN (Plan Sheet Title)	.dgn
					STRIPESIGN	STRIPING/ SIGNING (Plan Sheet Title)	.dgn
					PVNG	PAVING PLAN AND PROFILE (Plan Sheet Title)	.dgn
					SGNL	SIGNAL PLAN (Plan Sheet Title)	.dgn
					SSWR	SANITARY SEWER PLAN AND PROFILE (Plan Sheet Title)	.dgn
					TITLE	TITLE SHEET (Plan Sheet Title)	.dgn
					TRAFCTRL	TRAFFIC CONTROL (Plan Sheet Title)	.dgn
					TYPSEC	TYPICAL SECTIONS (Plan Sheet Title)	.dgn
					XSEC	CROSS SECTIONS (Plan Sheet Title)	.dgn
Revision_SHT					PSET	Iplot Organizer	.pset
					ALIGN	ALIGNMENT PLAN/CONTROL (Plan Sheet Title)	.alg
					DETAIL	DETAILS AND STANDARD PLATES (Plan Sheet Title)	.dgn
					EROSTEMP	TEMPORARY EROSION CONTROL (Plan Sheet Title)	.dgn
					ESTIMATE	ESTIMATED QUANTITIES (Plan Sheet Title)	.dgn
					GENNOTES	GENERAL NOTES (Plan Sheet Title)	.dgn
					LTNG	LIGHTING PLAN (Plan Sheet Title)	.dgn
					STRIPESIGN	STRIPING/ SIGNING (Plan Sheet Title)	.dgn
					PVNG	PAVING PLAN AND PROFILE (Plan Sheet Title)	.dgn
					SGNL	SIGNAL PLAN (Plan Sheet Title)	.dgn
					SSWR	SANITARY SEWER PLAN AND PROFILE (Plan Sheet Title)	.dgn
					SSWRDTL	SANITARY SEWER DETAILS (Plan Sheet Title)	.dgn
					SSWRPLN	SANITARY SEWER PLAN (Plan Sheet Title)	.dgn
					SSWRPROF	SANITARY SEWER PROFILE (Plan Sheet Title)	.dgn
					TITLE	TITLE SHEET (Plan Sheet Title)	.dgn
					TRAFCTRL	TRAFFIC CONTROL (Plan Sheet Title)	.dgn
					TYPSEC	TYPICAL SECTIONS (Plan Sheet Title)	.dgn
					XSEC	CROSS SECTIONS (Plan Sheet Title)	.dgn
Standards							
	Cell				CELLLIB	Cell Library	.cel
	Civil				CIVIL	Civil Features/Preferences	.xin
					HYDRO	Intensity Duration Frequencies	.idf
					SEWRSTRC	Sewer Structures	.dat
	Print_Organizer				PEN	Print Organizer Pen Table	.tbl
	Symb				FONTLIB	Font Library	.rsc
					LINELIB	Line Style Library	.rsc

Capital Project Folder Structure Security (Revised 4/25/22)

Note: All ProjectWise users have read access to all projects in ProjectWise. All requests for write access to a project must be approved by that project's Project Engineer.

PERMISSION	ABBREVIATION	DESCRIPTION
Full Control	FC	The user can perform every folder/document function.
Change Permissions	CH	The user can change folder/document permissions.
Create	C	The user can create sub-folders/documents.
Delete	D	The user can delete folders/documents.
Read	R	The folder is visible. The document is visible in Documents window and you can view the document's properties and attributes.
Write	W	The user can modify folder properties. The user can modify document properties and attributes.
Change Workflow State	CWS	The user can place a document in a specific state in the workflow.
File Read	FR	The user can open the file associated with the document in Read-only mode. You can copy out the document, but not check it out.
File Write	FW	The user can modify the file associated with the document. You can check out the document, make changes and check it back in.
Free	F	The user can free documents that other users have checked out or exported.
No Access	NA	The user has no access to the folder/document.

FOLDER NAME >SUBFOLDER NAME >>SUB-SUBFOLDER NAME >>>SUB-SUB-SUBFOLDER NAME >>>>SUB-SUB-SUB-SUBFOLDER NAME	GROUPS									
	ADMIN		PROJECT ENG		TEAM MEMBER		EVERYONE		FOLDER NAME	
	FOLD	DOC	FOLD	DOC	FOLD	DOC	FOLD	DOC	FOLD	DOC
Bid_Documents	FC	FC	C/D/R/W	C/D/R/W/FR/FW	R/W	C/D/R/W/FR/FW	R	R/FR		
>Addendums	FC	FC	C/D/R/W	C/D/R/W/FR/FW	R/W	C/D/R/W/FR/FW	R	R/FR		
>Advertising	FC	FC	C/D/R/W	C/D/R/W/FR/FW	R/W	C/D/R/W/FR/FW	R	R/FR		
>>Construction_Bulletin	FC	FC	C/D/R/W	C/D/R/W/FR/FW	R/W	C/D/R/W/FR/FW	R	R/FR		
>>Finance_and_Commerce	FC	FC	C/D/R/W	C/D/R/W/FR/FW	R/W	C/D/R/W/FR/FW	R	R/FR		
>>Web	FC	FC	C/D/R/W	C/D/R/W/FR/FW	R/W	C/D/R/W/FR/FW	R	R/FR		
>Contract_Documents	FC	FC	C/D/R/W	C/D/R/W/FR/FW	R/W	C/D/R/W/FR/FW	R	R/FR		
>PDF_Files	FC	FC	C/D/R/W	C/D/R/W/FR/FW	R/W	C/D/R/W/FR/FW	R	R/FR		
>>Contract_Documents	FC	FC	C/D/R/W	C/D/R/W/FR/FW	R/W	C/D/R/W/FR/FW	R	R/FR		
>>Plans	FC	FC	C/D/R/W	C/D/R/W/FR/FW	R/W	C/D/R/W/FR/FW	R	R/FR		

Budgeting (Finance group)	FC	FC	C/D/R/W	C/D/R/W/FR/FW	R/W	C/D/R/W/FR/FW	R	R/FR	R/W	C/D/R/W/FR/FW
>CBRs_and_CIP (Finance group)	FC	FC	C/D/R/W	C/D/R/W/FR/FW	R/W	C/D/R/W/FR/FW	R	R/FR	R/W	C/D/R/W/FR/FW
>> Enter Year (-1)	FC	FC	C/D/R/W	C/D/R/W/FR/FW	R/W	C/D/R/W/FR/FW	R	R/FR	R/W	C/D/R/W/FR/FW
>> Enter Year (-2)	FC	FC	C/D/R/W	C/D/R/W/FR/FW	R/W	C/D/R/W/FR/FW	R	R/FR	R/W	C/D/R/W/FR/FW
>> Enter Year (-3)	FC	FC	C/D/R/W	C/D/R/W/FR/FW	R/W	C/D/R/W/FR/FW	R	R/FR	R/W	C/D/R/W/FR/FW
>> Enter Year (-4)	FC	FC	C/D/R/W	C/D/R/W/FR/FW	R/W	C/D/R/W/FR/FW	R	R/FR	R/W	C/D/R/W/FR/FW
>> Enter Year (-5)	FC	FC	C/D/R/W	C/D/R/W/FR/FW	R/W	C/D/R/W/FR/FW	R	R/FR	R/W	C/D/R/W/FR/FW
>Federal_and_State_Funding (Finance group)	FC	FC	C/D/R/W	C/D/R/W/FR/FW	R/W	C/D/R/W/FR/FW	R	R/FR	R/W	C/D/R/W/FR/FW
>Special_Assessments (Special Assessments group)	FC	FC	R	R/FR	R	R/FR	R	R/FR	R/W	C/D/R/W/FR/FW

Concepts_and_Layouts	FC	FC	C/D/R/W	C/D/R/W	R/W	C/D/R/W	R	R/FR	R/W	C/D/R/W
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FOLDER NAME >SUBFOLDER NAME >>SUB-SUBFOLDER NAME >>>SUB-SUB-SUBFOLDER NAME >>>>SUB-SUB-SUB-SUBFOLDER NAME	GROUPS									
	ADMIN		PROJECT ENG		TEAM MEMBER		EVERYONE		FOLDER NAME	
	FOLD	DOC	FOLD	DOC	FOLD	DOC	FOLD	DOC	FOLD	DOC
(Concepts and Layouts group)			W	W/FR/F W		W/FR/F W				W/FR/F W

Construction	FC	FC	C/D/R/ W	C/D/R/ W/FR/F W	R/W	C/D/R/ W/FR/F W	R	R/FR		
>Construction_Records	FC	FC	C/D/R/ W	C/D/R/ W/FR/F W	R/W	C/D/R/ W/FR/F W	R	R/FR		
>>CRS_Backup	FC	FC	C/D/R/ W	C/D/R/ W/FR/F W	R/W	C/D/R/ W/FR/F W	R	R/FR		
>Cost_Tracking	FC	FC	C/D/R/ W	C/D/R/ W/FR/F W	R/W	C/D/R/ W/FR/F W	R	R/FR		
>Finalizing	FC	FC	C/D/R/ W	C/D/R/ W/FR/F W	R/W	C/D/R/ W/FR/F W	R	R/FR		
>Materials_Testing (Materials Testing group)	FC	FC	R	R/FR	R	R/FR	R	R/FR	R/W	C/D/R/ W/FR/F W
>>Asphalt (Materials Testing group)	FC	FC	R	R/FR	R	R/FR	R	R/FR	R/W	C/D/R/ W/FR/F W
>>Concrete (Materials Testing group)	FC	FC	R	R/FR	R	R/FR	R	R/FR	R/W	C/D/R/ W/FR/F W
>>Soils (Materials Testing group)	FC	FC	R	R/FR	R	R/FR	R	R/FR	R/W	C/D/R/ W/FR/F W
>SAs_and_COs	FC	FC	C/D/R/ W	C/D/R/ W/FR/F W	R/W	C/D/R/ W/FR/F W	R	R/FR		
>Shop_Drawings	FC	FC	C/D/R/ W	C/D/R/ W/FR/F W	R/W	C/D/R/ W/FR/F W	R	R/FR		
>Survey	FC	FC	C/D/R/ W	C/D/R/ W/FR/F W	R/W	C/D/R/ W/FR/F W	R	R/FR		
>>Sewer (Construction Survey Sewer group)	FC	FC	R	R/FR	R	R/FR	R	R/FR	R/W	C/D/R/ W/FR/F W
>>Street (Construction Survey Street group)	FC	FC	R	R/FR	R	R/FR	R	R/FR	R/W	C/D/R/ W/FR/F W
>>Survey (Construction Survey group)	FC	FC	R	R/FR	R	R/FR	R	R/FR	R/W	C/D/R/ W/FR/F W

Consultant_Services	FC	FC	C/D/R/ W	C/D/R/ W/FR/F W	R/W	C/D/R/ W/FR/F W	R	R/FR
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Correspondence (Correspondence group)	FC	FC	C/D/R/ W	C/D/R/ W/FR/F W	R/W	C/D/R/ W/FR/F W	R	R/FR	R/W	C/D/R/ W/FR/F W
>City (Correspondence group)	FC	FC	C/D/R/ W	C/D/R/ W/FR/F W	R/W	C/D/R/ W/FR/F W	R	R/FR	R/W	C/D/R/ W/FR/F W
>Consultant (Correspondence group)	FC	FC	C/D/R/ W	C/D/R/ W/FR/F W	R/W	C/D/R/ W/FR/F W	R	R/FR	R/W	C/D/R/ W/FR/F W

FOLDER NAME >SUBFOLDER NAME >>SUB-SUBFOLDER NAME >>>SUB-SUB-SUBFOLDER NAME >>>>SUB-SUB-SUB-SUBFOLDER NAME	GROUPS									
	ADMIN		PROJECT ENG		TEAM MEMBER		EVERYONE		FOLDER NAME	
	FOLD	DOC	FOLD	DOC	FOLD	DOC	FOLD	DOC	FOLD	DOC
>Contractor (Correspondence group)	FC	FC	C/D/R/ W	C/D/R/ W/FR/F W	R/W	C/D/R/ W/FR/F W	R	R/FR	R/W	C/D/R/ W/FR/F W
>Council (Correspondence group)	FC	FC	C/D/R/ W	C/D/R/ W/FR/F W	R/W	C/D/R/ W/FR/F W	R	R/FR	R/W	C/D/R/ W/FR/F W
>Data_Transfer (Correspondence group)	FC	FC	C/D/R/ W	C/D/R/ W/FR/F W	R/W	C/D/R/ W/FR/F W	R	R/FR	R/W	C/D/R/ W/FR/F W
>MnDOT (Correspondence group)	FC	FC	C/D/R/ W	C/D/R/ W/FR/F W	R/W	C/D/R/ W/FR/F W	R	R/FR	R/W	C/D/R/ W/FR/F W
>Other (Correspondence group)	FC	FC	C/D/R/ W	C/D/R/ W/FR/F W	R/W	C/D/R/ W/FR/F W	R	R/FR	R/W	C/D/R/ W/FR/F W
>Utility (Correspondence group)	FC	FC	C/D/R/ W	C/D/R/ W/FR/F W	R/W	C/D/R/ W/FR/F W	R	R/FR	R/W	C/D/R/ W/FR/F W

Council_Action	FC	FC	C/D/R/ W	C/D/R/ W/FR/F W	R/W	C/D/R/ W/FR/F W	R	R/FR
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DCP_Forms	FC	FC	C/D/R/ W	C/D/R/ W/FR/F W	R/W	C/D/R/ W/FR/F W	R	R/FR
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Design	FC	FC	C/D/R/ W	C/D/R/ W/FR/F W	R/W	C/D/R/ W/FR/F W	R	R/FR		
>Alignments	FC	FC	C/D/R/ W	C/D/R/ W/FR/F W	R/W	C/D/R/ W/FR/F W	R	R/FR		
>Calculations	FC	FC	C/D/R/ W	C/D/R/ W/FR/F W	R/W	C/D/R/ W/FR/F W	R	R/FR		
>Cross_Sections	FC	FC	C/D/R/ W	C/D/R/ W/FR/F W	R/W	C/D/R/ W/FR/F W	R	R/FR		
>Design_Files	FC	FC	C/D/R/ W	C/D/R/ W/FR/F W	R/W	C/D/R/ W/FR/F W	R	R/FR		
>Documents	FC	FC	C/D/R/ W	C/D/R/ W/FR/F W	R/W	C/D/R/ W/FR/F W	R	R/FR		
>>Data	FC	FC	C/D/R/ W	C/D/R/ W/FR/F W	R/W	C/D/R/ W/FR/F W	R	R/FR		
>>Design_Decisions	FC	FC	C/D/R/ W	C/D/R/ W/FR/F W	R/W	C/D/R/ W/FR/F W	R	R/FR		
>>Laboratory	FC	FC	C/D/R/ W	C/D/R/ W/FR/F W	R/W	C/D/R/ W/FR/F W	R	R/FR		
>>Project_Checklist	FC	FC	C/D/R/ W	C/D/R/ W/FR/F W	R/W	C/D/R/ W/FR/F W	R	R/FR		
>Hydraulics	FC	FC	C/D/R/ W	C/D/R/ W/FR/F W	R/W	C/D/R/ W/FR/F W	R	R/FR		
>>Sewer (Design Hydraulics Sewer group)	FC	FC	R	R/FR	R	R/FR	R	R/FR	R/W	C/D/R/ W/FR/F

FOLDER NAME >SUBFOLDER NAME >>SUB-SUBFOLDER NAME >>>SUB-SUB-SUBFOLDER NAME >>>>SUB-SUB-SUB-SUBFOLDER NAME	GROUPS									
	ADMIN		PROJECT ENG		TEAM MEMBER		EVERYONE		FOLDER NAME	
	FOLD	DOC	FOLD	DOC	FOLD	DOC	FOLD	DOC	FOLD	DOC
										W
>>Street (Design Hydraulics Street group)	FC	FC	R	R/FR	R	R/FR	R	R/FR	R/W	C/D/R/ W/FR/F W
>>Water (Design Hydraulics Water group)	FC	FC	R	R/FR	R	R/FR	R	R/FR	R/W	C/D/R/ W/FR/F W
>Tabulations	FC	FC	C/D/R/ W	C/D/R/ W/FR/F W	R/W	C/D/R/ W/FR/F W	R	R/FR		
>>Alignment_Tabulations	FC	FC	C/D/R/ W	C/D/R/ W/FR/F W	R/W	C/D/R/ W/FR/F W	R	R/FR		
>>>Reports	FC	FC	C/D/R/ W	C/D/R/ W/FR/F W	R/W	C/D/R/ W/FR/F W	R	R/FR		
>>Existing_Utility_Tabulations	FC	FC	C/D/R/ W	C/D/R/ W/FR/F W	R/W	C/D/R/ W/FR/F W	R	R/FR		
>>>Reports	FC	FC	C/D/R/ W	C/D/R/ W/FR/F W	R/W	C/D/R/ W/FR/F W	R	R/FR		
>>Proposed_Structure_Tabulations	FC	FC	C/D/R/ W	C/D/R/ W/FR/F W	R/W	C/D/R/ W/FR/F W	R	R/FR		
>>>Reports	FC	FC	C/D/R/ W	C/D/R/ W/FR/F W	R/W	C/D/R/ W/FR/F W	R	R/FR		
>>Quantities	FC	FC	C/D/R/ W	C/D/R/ W/FR/F W	R/W	C/D/R/ W/FR/F W	R	R/FR		
>>>Reports	FC	FC	C/D/R/ W	C/D/R/ W/FR/F W	R/W	C/D/R/ W/FR/F W	R	R/FR		
>>Soils	FC	FC	C/D/R/ W	C/D/R/ W/FR/F W	R/W	C/D/R/ W/FR/F W	R	R/FR		
>Roadway_Library	FC	FC	C/D/R/ W	C/D/R/ W/FR/F W	R/W	C/D/R/ W/FR/F W	R	R/FR		
>Surfaces	FC	FC	C/D/R/ W	C/D/R/ W/FR/F W	R/W	C/D/R/ W/FR/F W	R	R/FR		
>Template_Library	FC	FC	C/D/R/ W	C/D/R/ W/FR/F W	R/W	C/D/R/ W/FR/F W	R	R/FR		
>Traffic (Design Traffic group)	FC	FC	R	R/FR	R	R/FR	R	R/FR	R/W	C/D/R/ W/FR/F W
>>Lighting (Design Traffic group)	FC	FC	R	R/FR	R	R/FR	R	R/FR	R/W	C/D/R/ W/FR/F W
>>Signal (Design Traffic group)	FC	FC	R	R/FR	R	R/FR	R	R/FR	R/W	C/D/R/ W/FR/F W
>Turning_Movement_Evaluations	FC	FC	C/D/R/ W	C/D/R/ W/FR/F W	R/W	C/D/R/ W/FR/F W	R	R/FR		
Documents	FC	FC	C/D/R/ W	C/D/R/ W/FR/F W	R/W	C/D/R/ W/FR/F W	R	R/FR		

FOLDER NAME >SUBFOLDER NAME >>SUB-SUBFOLDER NAME >>>SUB-SUB-SUBFOLDER NAME >>>>SUB-SUB-SUB-SUBFOLDER NAME	GROUPS									
	ADMIN		PROJECT ENG		TEAM MEMBER		EVERYONE		FOLDER NAME	
	FOLD	DOC	FOLD	DOC	FOLD	DOC	FOLD	DOC	FOLD	DOC
>Environmental	FC	FC	C/D/R/W	C/D/R/W/FR/FW	R/W	C/D/R/W/FR/FW	R	R/FR		
>PRO	FC	FC	C/D/R/W	C/D/R/W/FR/FW	R/W	C/D/R/W/FR/FW	R	R/FR		
>Proceed_Orders	FC	FC	C/D/R/W	C/D/R/W/FR/FW	R/W	C/D/R/W/FR/FW	R	R/FR		
>Project_Memoranda	FC	FC	C/D/R/W	C/D/R/W/FR/FW	R/W	C/D/R/W/FR/FW	R	R/FR		

Existing	FC	FC	R	R/FR	R	R/FR	R	R/FR		
>Bridge	FC	FC	R	R/FR	R	R/FR	R	R/FR		
>Private_Uilities	FC	FC	R	R/FR	R	R/FR	R	R/FR		
>>Private_Uilities_Read_Only (Existing Private Utilities group)	FC	FC	R	R/FR	R	R/FR	R	R/FR	R/W	C/D/R/W/FR/FW
>Public_Transportation	FC	FC	R	R/FR	R	R/FR	R	R/FR		
>Rail	FC	FC	R	R/FR	R	R/FR	R	R/FR		
>Right-of-Way	FC	FC	R	R/FR	R	R/FR	R	R/FR		
>>Encroachments	FC	FC	R	R/FR	R	R/FR	R	R/FR		
>>Issues	FC	FC	R	R/FR	R	R/FR	R	R/FR		
>>Right-of-Way_Read_Only (Existing Right-of-Way group)	FC	FC	R	R/FR	R	R/FR	R	R/FR	R/W	C/D/R/W/FR/FW
>Sewer	FC	FC	R	R/FR	R	R/FR	R	R/FR		
>>Sewer_Read_Only (Existing Sewer group)	FC	FC	R	R/FR	R	R/FR	R	R/FR	R/W	C/D/R/W/FR/FW
>Survey	FC	FC	R	R/FR	R	R/FR	R	R/FR		
>>Survey_Read_Only (Existing Survey group)	FC	FC	R	R/FR	R	R/FR	R	R/FR	R/W	C/D/R/W/FR/FW
>Topographic	FC	FC	R	R/FR	R	R/FR	R	R/FR		
>>Topographic_Read_Only (Existing Topographic group)	FC	FC	R	R/FR	R	R/FR	R	R/FR	R/W	C/D/R/W/FR/FW
>Traffic	FC	FC	R	R/FR	R	R/FR	R	R/FR		
>>Traffic_Read_Only (Existing Traffic group)	FC	FC	R	R/FR	R	R/FR	R	R/FR	R/W	C/D/R/W/FR/FW
>Water	FC	FC	R	R/FR	R	R/FR	R	R/FR		
>>Water_Read_Only (Existing Water group)	FC	FC	R	R/FR	R	R/FR	R	R/FR	R/W	C/D/R/W/FR/FW

Mailings	FC	FC	C/D/R/W	C/D/R/W/FR/FW	R/W	C/D/R/W/FR/FW	R	R/FR
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Meetings	FC	FC	C/D/R/W	C/D/R/W/FR/FW	R/W	C/D/R/W/FR/FW	R	R/FR
>Construction	FC	FC	C/D/R/W	C/D/R/W/FR/FW	R/W	C/D/R/W/FR/FW	R	R/FR
>In-House	FC	FC	C/D/R/W	C/D/R/W/FR/FW	R/W	C/D/R/W/FR/FW	R	R/FR

FOLDER NAME >SUBFOLDER NAME >>SUB-SUBFOLDER NAME >>>SUB-SUB-SUBFOLDER NAME >>>>SUB-SUB-SUB-SUBFOLDER NAME	GROUPS									
	ADMIN		PROJECT ENG		TEAM MEMBER		EVERYONE		FOLDER NAME	
	FOLD	DOC	FOLD	DOC	FOLD	DOC	FOLD	DOC	FOLD	DOC
>Pre-Construction_Conference	FC	FC	C/D/R/ W	C/D/R/ W/FR/F W	R/W	C/D/R/ W/FR/F W	R	R/FR		
>Public	FC	FC	C/D/R/ W	C/D/R/ W/FR/F W	R/W	C/D/R/ W/FR/F W	R	R/FR		

Photos_and_Multimedia (Photos and Multimedia group)	FC	FC	C/D/R/ W	C/D/R/ W/FR/F W	R/W	C/D/R/ W/FR/F W	R	R/FR	C/D/R/ W	C/D/R/ W/FR/F W
>Photos (Photos and Multimedia group)	FC	FC	C/D/R/ W	C/D/R/ W/FR/F W	R/W	C/D/R/ W/FR/F W	R	R/FR	C/D/R/ W	C/D/R/ W/FR/F W
>>1-Preliminary (Photos and Multimedia group)	FC	FC	C/D/R/ W	C/D/R/ W/FR/F W	R/W	C/D/R/ W/FR/F W	R	R/FR	C/D/R/ W	C/D/R/ W/FR/F W
>>2-Pre-Construction_ Condition_Survey (Photos and Multimedia group)	FC	FC	C/D/R/ W	C/D/R/ W/FR/F W	R/W	C/D/R/ W/FR/F W	R	R/FR	C/D/R/ W	C/D/R/ W/FR/F W
>>3-Construction (Photos and Multimedia group)	FC	FC	C/D/R/ W	C/D/R/ W/FR/F W	R/W	C/D/R/ W/FR/F W	R	R/FR	C/D/R/ W	C/D/R/ W/FR/F W
>>4-Post-Construction (Photos and Multimedia group)	FC	FC	C/D/R/ W	C/D/R/ W/FR/F W	R/W	C/D/R/ W/FR/F W	R	R/FR	C/D/R/ W	C/D/R/ W/FR/F W

Plan_Sets	FC	FC	C/D/R/ W	C/D/R/ W/FR/F W	R/W	C/D/R/ W/FR/F W	R	R/FR		
>1-Preliminary_30%	FC	FC	C/D/R/ W	C/D/R/ W/FR/F W	R/W	C/D/R/ W/FR/F W	R	R/FR		
>>Review_Comments (Review Comments group)	FC	FC	C/D/R/ W	C/D/R/ W/FR/F W	R/W	C/D/R/ W/FR/F W	R	R/FR	C/D/R/ W	C/D/R/ W/FR/F W
>2-Preliminary_60%	FC	FC	C/D/R/ W	C/D/R/ W/FR/F W	R/W	C/D/R/ W/FR/F W	R	R/FR		
>>Review_Comments (Review Comments group)	FC	FC	C/D/R/ W	C/D/R/ W/FR/F W	R/W	C/D/R/ W/FR/F W	R	R/FR	C/D/R/ W	C/D/R/ W/FR/F W
>3-Preliminary_90%	FC	FC	C/D/R/ W	C/D/R/ W/FR/F W	R/W	C/D/R/ W/FR/F W	R	R/FR		
>>Review_Comments (Review Comments group)	FC	FC	C/D/R/ W	C/D/R/ W/FR/F W	R/W	C/D/R/ W/FR/F W	R	R/FR	C/D/R/ W	C/D/R/ W/FR/F W
>4-Preliminary_Final	FC	FC	C/D/R/ W	C/D/R/ W/FR/F W	R/W	C/D/R/ W/FR/F W	R	R/FR		
>>Review_Comments (Review Comments group)	FC	FC	C/D/R/ W	C/D/R/ W/FR/F W	R/W	C/D/R/ W/FR/F W	R	R/FR	C/D/R/ W	C/D/R/ W/FR/F W
5-Final_Signed	FC	FC	C/D/R/ W	C/D/R/ W/FR/F W	R/W	C/D/R/ W/FR/F W	R	R/FR		
6-Revised_Final_Signed	FC	FC	C/D/R/ W	C/D/R/ W/FR/F W	R/W	C/D/R/ W/FR/F W	R	R/FR		

Record_Drawings	FC	FC	C/D/R/ W	C/D/R/ W/FR/F W	R/W	C/D/R/ W/FR/F W	R	R/FR		
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FOLDER NAME >SUBFOLDER NAME >>SUB-SUBFOLDER NAME >>>SUB-SUB-SUBFOLDER NAME >>>>SUB-SUB-SUB-SUBFOLDER NAME	GROUPS									
	ADMIN		PROJECT ENG		TEAM MEMBER		EVERYONE		FOLDER NAME	
	FOLD	DOC	FOLD	DOC	FOLD	DOC	FOLD	DOC	FOLD	DOC
>Design	FC	FC	C/D/R/ W	C/D/R/ W/FR/F W	R/W	C/D/R/ W/FR/F W	R	R/FR		
>>Alignments	FC	FC	C/D/R/ W	C/D/R/ W/FR/F W	R/W	C/D/R/ W/FR/F W	R	R/FR		
>>Documentation	FC	FC	C/D/R/ W	C/D/R/ W/FR/F W	R/W	C/D/R/ W/FR/F W	R	R/FR		
>>Hydraulics	FC	FC	C/D/R/ W	C/D/R/ W/FR/F W	R/W	C/D/R/ W/FR/F W	R	R/FR		
>>>Sewer (Record Drawings Hydraulics Sewer group)	FC	FC	R	R/FR	R	R/FR	R	R/FR	R/W	C/D/R/ W/FR/F W
>>Surfaces	FC	FC	C/D/R/ W	C/D/R/ W/FR/F W	R/W	C/D/R/ W/FR/F W	R	R/FR		
>>Tabulations	FC	FC	C/D/R/ W	C/D/R/ W/FR/F W	R/W	C/D/R/ W/FR/F W	R	R/FR		
>>>Field_Locate_Tabulations	FC	FC	C/D/R/ W	C/D/R/ W/FR/F W	R/W	C/D/R/ W/FR/F W	R	R/FR		
>>>>Reports	FC	FC	C/D/R/ W	C/D/R/ W/FR/F W	R/W	C/D/R/ W/FR/F W	R	R/FR		
>>>>GIS_Conversion_Tabulations	FC	FC	C/D/R/ W	C/D/R/ W/FR/F W	R/W	C/D/R/ W/FR/F W	R	R/FR		
>>>>Reports	FC	FC	C/D/R/ W	C/D/R/ W/FR/F W	R/W	C/D/R/ W/FR/F W	R	R/FR		
>>>>RD_Questions	FC	FC	C/D/R/ W	C/D/R/ W/FR/F W	R/W	C/D/R/ W/FR/F W	R	R/FR		
>>>>Record_Drawing_Tabulations	FC	FC	C/D/R/ W	C/D/R/ W/FR/F W	R/W	C/D/R/ W/FR/F W	R	R/FR		
>>>>Reports	FC	FC	C/D/R/ W	C/D/R/ W/FR/F W	R/W	C/D/R/ W/FR/F W	R	R/FR		
>Final_Record_Drawings	FC	FC	C/D/R/ W	C/D/R/ W/FR/F W	R/W	C/D/R/ W/FR/F W	R	R/FR		
>Record_Drawing_SHT	FC	FC	C/D/R/ W	C/D/R/ W/FR/F W	R/W	C/D/R/ W/FR/F W	R	R/FR		
>>Review_Comments	FC	FC	C/D/R/ W	C/D/R/ W/FR/F W	R/W	C/D/R/ W/FR/F W	R	R/FR		
>Survey (Record Drawings Survey group)	FC	FC	R	R/FR	R	R/FR	R	R/FR	R/W	C/D/R/ W/FR/F W
SWS_Construction_Notes (SWS Construction Notes group)	FC	FC	R	R/FR	R	R/FR	R	R/FR	R/W	C/D/R/ W/FR/F W
Right-of-Way_Documents	FC	FC	C/D/R/ W	C/D/R/ W/FR/F W	R/W	C/D/R/ W/FR/F W	R	R/FR		

FOLDER NAME >SUBFOLDER NAME >>SUB-SUBFOLDER NAME >>>SUB-SUB-SUBFOLDER NAME >>>>SUB-SUB-SUB-SUBFOLDER NAME	GROUPS									
	ADMIN		PROJECT ENG		TEAM MEMBER		EVERYONE		FOLDER NAME	
	FOLD	DOC	FOLD	DOC	FOLD	DOC	FOLD	DOC	FOLD	DOC
Schedule	FC	FC	C/D/R/W	C/D/R/W/FR/FW	R/W	C/D/R/W/FR/FW	R	R/FR		

SHT	FC	FC	C/D/R/W	C/D/R/W/FR/FW	R/W	C/D/R/W/FR/FW	R	R/FR
>Revision_SHT	FC	FC	C/D/R/W	C/D/R/W/FR/FW	R/W	C/D/R/W/FR/FW	R	R/FR

Standards	FC	FC	C/D/R/W	C/D/R/W/FR/FW	R/W	C/D/R/W/FR/FW	R	R/FR
>Cell	FC	FC	C/D/R/W	C/D/R/W/FR/FW	R/W	C/D/R/W/FR/FW	R	R/FR
>Civil	FC	FC	C/D/R/W	C/D/R/W/FR/FW	R/W	C/D/R/W/FR/FW	R	R/FR
>Print_Organizer	FC	FC	C/D/R/W	C/D/R/W/FR/FW	R/W	C/D/R/W/FR/FW	R	R/FR
>Symb	FC	FC	C/D/R/W	C/D/R/W/FR/FW	FC	R/W	C/D/R/W/FR/FW	R

Document Types (Revised 3/27/23)

Maximum Length: 11 characters

NAME	DESCRIPTION
100_PLAN	100% Plan Set (Signed plan set sent to the State for approval)
30_PLAN	30% Plan Set
60_PLAN	60% Plan Set
90_PLAN	90% Plan Set
ALG	InRoads Alignment Geometry File
ALIGN	ALIGNMENT PLAN/CONTROL (Plan Sheet Title) Alignment Tabulation
BIDDOC	Bid Document
BLDGNUMBR	Building Numbers
CALC	Calculations
CBR	Capital Budget Request
CELLLIB	Cell Library
CIVIL	Civil Features/Preferences
CLINE	Centerlines
CO	Change Order
CONTOUR	Contours
CONTRACT	Contract
CTRL	Control
DCP	Delegated Contract Process
DELIN	Delineation Plan
DESIGN	Design Drawing
DETAIL	DETAILS AND STANDARD PLATES (Plan Sheet Title)
DIM	Dimensions
DOC	Document
DRNG	Storm Drainage
EROSTEMP	TEMPORARY EROSION CONTROL PLAN (Plan Sheet Title)
ESMT	EASEMENT PLAN (Plan Sheet Title) Easement Tabulation
ESTIMATE	ESTIMATED QUANTITIES (Plan Sheet Title) Estimated Quantities Tabulation
EXMON	Existing Monuments
EXPOT	Existing Pothole Data
EXRWAY	Existing Right-Of-Way Data
EXSEWR	Existing Sewer Data
EXSURF	Existing Surface
EXSURV	Existing Survey Data
EXTOPO	Existing Topographic Data
EXTRAF	Existing Traffic Data
EXUTIL	EXISTING UTILITY PLAN (Plan Sheet Title) Existing Utility Data Existing Utility Tabulation
EXWATR	Existing Water Data
FIBR	FIBER PLAN (Plan Sheet Title)
FIELDBOOK	Fieldbook
FINAL	Final Signed Plan Set
FONTLIB	Font Library
GENNOTES	GENERAL NOTES (Plan Sheet Title)
GRADING	GRADING PLAN (Plan Sheet Title)
HYDRO	Intensity Duration Frequencies
INTSCTDTL	INTERSECTION DETAILS (Plan Sheet Title) Intersection Details Tabulation

NAME	DESCRIPTION
LAND	LANDSCAPE PLAN (Plan Sheet Title)
LAYOUT	Preliminary Layout
LETTER	Letter
LIDAR	LIDAR Points
LINELIB	Line Style Library
LTNG	LIGHTING PLAN (Plan Sheet Title) Lighting Tabulation
MAP	Map
MTCHLI	Match Lines
NBRHD	Neighborhood Area
ORTHO	Orthophoto
PEDRAMP	Pedestrian Ramp
PEN	Iplot Pen Table
PHOTO	Photograph
PLAN	Miscellaneous Plan
POND	Storm Retention Pond
PROCEED	Design or Construction Proceed
PROF	Profile
PROJDEF	Project Defaults
PROJMGMT	Project Schedule
PSET	Print Set
PVNG	PAVING PLAN/PROFILE (Plan Sheet Title)
PVNGAR	Paving Area
PVNGLI	Paving Line
RD	Record Drawing
RD_ALG	Record Drawing Alignment Geometry File
RD_DFT_PRT	Record Drawing Draft Print
RD_FINAL	Record Drawing Final Deliverable PDF
RD_FLDBK	Record Drawing Fieldbook
RD_GIS_FLD	Record Drawing GIS Field
RD_GIS_FINL	Record Drawing GIS Final
RD_RPT_MAX	Record Drawing Report Maximo
RD_RPT_SDB	Record Drawing Report InRoads Sewer Database
RD_SDB	Record Drawing InRoads Sewer Database
RD_SEWRSTRC	Record Drawing Sewer Structure
RD_SSWR	SANITARY SEWER RECORD DRAWING (Plan Sheet Title)
RD_STRM	STORM SEWER RECORD DRAWING (Plan Sheet Title)
RD_SURF	Record Drawing Surface DTM File
RD_SURV	Record Drawing Survey
RD_TAB_GIS	Record Drawing Tabulation GIS Conversion
RD_TAB_PLN	Record Drawing Tabulation Plan Sheet
REMOVAL	Removal
ROADLIB	Roadway Library
RPT_ALN	Report Alignment
RPT_SDB	Report Sewer Database
RPT_SURF	Report Surface
RWAY	Right-of-Way
RWAYEDIT	Right-of-Way Edit
SA	Supplemental Agreement
SDB	InRoads Sewer Database
SETTINGS	Iplot Settings
SEWRSTRC	Sewer Structures
SGNL	SIGNAL PLAN (Plan Sheet Title) Signal Tabulation

NAME	DESCRIPTION
SHOPDWG	Shop Drawing
SPASSESS	Special Assessments Document
SPECS	Technical Specifications
SSWR	SANITARY SEWER PLAN/PROFILE (Plan Sheet Title)
STAGING	Staging
STRM	STORM SEWER PLAN/PROFILE (Plan Sheet Title)
STRMMAIN	STORM MAIN PLAN/PROFILE (Plan Sheet Title)
STRIPSIGN	STRIPING/SIGNING PLAN (Plan Sheet Title)
SURF	Surface
SURV	Survey Data
TAB_ALN	Alignment Tab
TAB_CPT	Control Point Tab
TAB_EUTIL	Existing Utilities Tab
TAB_PSTRC	Proposed Structures Tab
TAB_QTY	Quantities Tab
TEMPLIB	Template Library
TEST_AG	Aggregate Gradation Test
TEST_AGM	Asphalt Gyratory Mix Test
TEST_AMM	Asphalt Marshall Mix Test
TEST_CSB	Compressive Strength Break Test
TEST_SG	Soil Gradation Test
TITLE	TITLE SHEET (Plan Sheet Title)
TRAF	Traffic
TRAFCTRL	TEMPORARY TRAFFIC CONTROL PLAN (Plan Sheet Title)
TYPSEC	TYPICAL SECTIONS (Plan Sheet Title)
UTIL	Utility Tabulation
UTILCALL	Utility Callouts
WALL	Retaining Wall
WATR	WATER PLAN (Plan Sheet Title)
WATRSHD	Watershed Drainage Area
WORKFILE	Working File
XSEC	CROSS SECTIONS (Plan Sheet Title)

Project Resource Files (Revised 8/23/17)

Project Resource Files are the files that are necessary for the design of Capital Improvement Projects.

PROJECT SPECIFIC FILE LOCATION	FILE (XXXX= PROJ. NO.)	DESCRIPTION	MPLS CADD STANDARD FILE LOCATION
ProjectWise\ XXXX - Project Name\ Design\Hydraulics	XXXX-HYDRO-001.sdb	Storm Drainage	Project Specific File
ProjectWise\ XXXX - Project Name\ Design\Roadway_ Corridor_Library	XXXX-ROADLIB-001.rwl	Roadway Library	Project Specific File
ProjectWise\ XXXX - Project Name\ Design\Surfaces	XXXX-SURF-001.dtm	Surface	Project Specific File
ProjectWise\ XXXX - Project Name\ Design\Template_ Library	XXXX-TEMPLIB-001.itl	Template Library	Project Specific File
ProjectWise\ XXXX - Project Name\ Existing\Private_ Utilities\Private_ Utilities_Read_Only	XXXX-EXUTIL-001.dgn	Existing Utility Features	Project Specific File
ProjectWise\ XXXX - Project Name\ Existing\Right-of- Way\Right-of- Way_Read_Only	XXXX-EXRWAY-001.dgn	Existing Right-of-Way Features & Building Numbers	Project Specific File
ProjectWise\ XXXX - Project Name\ Existing\Sewer\Sewer_ Read_Only	XXXX-EXSEWR-001.dgn	Existing Sanitary & Storm Sewer Features	Project Specific File
ProjectWise\ XXXX - Project Name\ Existing\Sewer\Sewer_ Read_Only	XXXX-WATRSHD- 001.dgn	Existing Watershed Drainage Areas	Project Specific File
ProjectWise\ XXXX - Project Name\ Existing\Survey\Survey_ Read_Only	XXXX-EXMON-001.fwd	Existing Monument Data	Project Specific File
ProjectWise\ XXXX - Project Name\ Existing\Survey\Survey_ Read_Only	XXXX-EXSURV-001.fwd	Existing Survey Data	Project Specific File
ProjectWise\ XXXX - Project Name\ Existing\Topographic\ Topographic_Read_ Only	XXXX-CLINE-001.dgn	Centerlines & Street Names	Project Specific File
ProjectWise\ XXXX - Project Name\ Existing\Topographic\ Topographic_Read_	XXXX-EXTOPO-001.dgn	Existing Planimetric Features	Project Specific File

PROJECT SPECIFIC FILE LOCATION	FILE (XXXX= PROJ. NO.)	DESCRIPTION	MPLS CADD STANDARD FILE LOCATION
Only			
ProjectWise\ XXXX - Project Name\ Existing\Topographic\ Topographic_Read_Only	XXXX-LIDAR-001.txt	LIDAR Features	Project Specific File
ProjectWise\ XXXX - Project Name\ Existing\Topographic\ Topographic_Read_Only	XXXX-NBRHD-001.dgn	Neighborhood Areas	Project Specific File
ProjectWise\ XXXX - Project Name\ Existing\Topographic\ Topographic_Read_Only	XXXX-ORTHO-001.dgn	Orthophotos	Project Specific File
ProjectWise\ XXXX - Project Name\ Existing\Traffic\ Traffic_Read_Only	XXXX-EXTRAF-001.dgn	Existing Traffic Features	Project Specific File
ProjectWise\ XXXX - Project Name\ Existing\Water\ Water_Read_Only	XXXX-EXWATR-001.dgn	Existing Water Features	Project Specific File
ProjectWise\ XXXX - Project Name\ Standards\ Cell	XXXX-CELLLIB-001.cel	Cell Library	L:\Enterprise Engineering\Bentley\Workspace\Standards\ Cell
ProjectWise\ XXXX - Project Name\ Standards\ Civil	XXXX-CIVIL-001.xin	Civil Features & Preferences	L:\Enterprise Engineering\Bentley\ Civil
ProjectWise\ XXXX - Project Name\ Standards\ Civil	XXXX-HYDRO-001.idf	Intensity Duration Frequencies	L:\Enterprise Engineering\Bentley\ Civil
ProjectWise\ XXXX - Project Name\ Standards\ Civil	XXXX-SEWRSTRC-001.dat	Storm & Sanitary Sewer Structures	L:\Enterprise Engineering\Bentley\ Civil
ProjectWise\ XXXX - Project Name\ Standards\ Civil	.xls	Style Sheet	L:\Enterprise Engineering\Bentley\Civil\ XML Data
ProjectWise\ XXXX - Project Name\ Standards\ Print_Organizer	XXXX-PEN-001.tbl	Pen Table	L:\Enterprise Engineering\Bentley\Workspace\Standards\Tables\ Pen
ProjectWise\ XXXX - Project Name\ Standards\ Symb	XXXX-LINELIB-001.rsc	Line Style Library	L:\Enterprise Engineering\Bentley\Workspace\Standards\ Symb
ProjectWise\ XXXX - Project Name\ Standards\ Symb	XXXX-FONTLIB-001.rsc	Font Library	L:\Enterprise Engineering\Bentley\Workspace\Standards\ Symb

MicroStation

Revised 3/16/21

MicroStation is used to model, document, draft, and map projects. It also supports discipline-specific applications from Bentley and other software vendors.

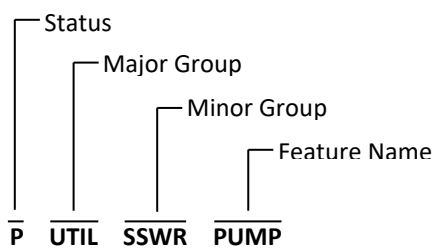
Levels & Symbology (Revised 2/27/13)

To promote the consistent appearance of plan sheets and to ensure that data can be shared easily between projects, a standard has been established for the placement of features in MicroStation design files. This standard determines the *level name*, *feature name*, *line style*, *cell/fill*, *color* and *weight*, for each feature.

MicroStation *By Level* symbology has been adopted to establish consistent CADD standards for the creation of plan sets for Capital and Non-Capital Improvement Projects. *By Level* symbology uses one level for each feature and each level has *color*, *line style* and *line weight* assigned automatically. Level names are based on the name of the feature.

Organizing Concept

Levels are organized in a hierarchy, from the general to the specific. Level names are alphanumeric and use standard abbreviations. The hierarchy is organized as follows:



Status

E	Existing
P	Proposed
R	Removal
RD	Record Drawing

Major Group

BNDY	Boundary
DFTG	Drafting
EROS	Erosion Control
HYDR	Hydrography
PKBD	Park Board
PLAN	Planning
RWAY	Right-of-Way
SPRT	Sports & Recreation
STRC	Structure
SURF	Surface
SURV	Survey
TRAN	Transportation
UTIL	Utility
VEG	Vegetation

Minor Group

BRDG	Bridge
CL	Centerline
COMM	Communication
GAS	Gas
POWR	Power

RAIL	Railroad
ROAD	Roadway
SSWR	Sanitary Sewer
STM	Steam
STRM	Storm Sewer
SWLK	Sidewalk
TRAF	Traffic
TRL	Trail
WATR	Water

For a complete listing of feature names, cells, line styles, InRoads features and InRoads Survey features that are used in the design of Capital Improvement Projects see: [Mpls PW CADD Levels & Symbolology](#).

OBSOLETE LINE STYLES

DO NOT USE!

Revised 11/29/12

FEATURE NAME	OBSOLETE LINE STYLE	NEW LINE STYLE
Dashed Line	(Dashed)	DFTG_DASH_LI
Dotted Line	(Dot)	DFTG_DOT_LI
Hidden Line	(Hidden)	DFTG_HDN_LI
Existing/Proposed Traffic Conduit Fiber Optic	(FO)	E_UTIL_TRAF_COND_FIBR_1 E_UTIL_TRAF_COND_FIBR_2 E_UTIL_TRAF_COND_FIBR_3 E_UTIL_TRAF_COND_FIBR_4 P_UTIL_TRAF_COND_FIBR_1 P_UTIL_TRAF_COND_FIBR_2 P_UTIL_TRAF_COND_FIBR_3 P_UTIL_TRAF_COND_FIBR_4
Proposed Traffic Conduit Polyvinyl Chloride (1")	1" PROP PVC	P_UTIL_TRAF_COND_PVC_1
Proposed Traffic Conduit Steel (1")	1" PROP STEEL	P_UTIL_TRAF_COND_STL_1
Existing Traffic Conduit Steel (1")	1" STEEL	E_UTIL_TRAF_COND_STL_1
Proposed Traffic Conduit Polyvinyl Chloride (2")	2" PROP PVC	P_UTIL_TRAF_COND_PVC_2
Proposed Traffic Conduit Steel (2")	2" PROP STEEL	P_UTIL_TRAF_COND_STL_2
Existing Traffic Conduit Steel (2")	2" STEEL	E_UTIL_TRAF_COND_STL_2
Proposed Traffic Conduit Polyvinyl Chloride (3")	3" PROP PVC	P_UTIL_TRAF_COND_PVC_3
Proposed Traffic Conduit Steel (3")	3" PROP STEEL	P_UTIL_TRAF_COND_STL_3
Existing Traffic Conduit Steel (3")	3" STEEL	E_UTIL_TRAF_COND_STL_3
Proposed Traffic Paint Broken Line White (4")	4" Broken White	P_UTIL_TRAF_PNT_BRKN_LI_WHT_4
Proposed Traffic Paint Broken Line Yellow (4")	4" Broken Yellow	P_UTIL_TRAF_PNT_BRKN_LI_YEL_4
Existing Water Pipe Abandoned	abandon water	E_UTIL_WATR_PIPE_ABAN
Abandoned Duct	Abandoned Duct	N/A
Existing Gas Pipe	Abandoned Gas	E_UTIL_GAS_PIPE_ABAN
Existing Sanitary Sewer Pipe Abandoned	Abandoned Storm	E_UTIL_STRM_PIPE_ABAN
Existing/Proposed/ Remove Building Area	Building	N/A

OBSOLETE LINE STYLES

DO NOT USE!

Revised 11/29/12

FEATURE NAME	OBSOLETE LINE STYLE	NEW LINE STYLE
Existing/Proposed/ Remove Building Area	Buildingcc	E_STRC_BLDG P_STRC_BLDG R_STRC_BLDG
Existing/Proposed Communication Cable TV Conduit	CATV	E_UTIL_COMM_CATV_COND P_UTIL_COMM_CATV_COND
Existing/Proposed/ Remove Sanitary/Storm Sewer Pipe-in-Pipe	Combined Sewer	E_UTIL_SSWR_PIPE_IN_PIPE P_UTIL_SSWR_PIPE_IN_PIPE R_UTIL_SSWR_PIPE_IN_PIPE E_UTIL_STRM_PIPE_IN_PIPE P_UTIL_STRM_PIPE_IN_PIPE R_UTIL_STRM_PIPE_IN_PIPE
Existing/Proposed/ Remove Roadway Curb and Gutter B612/B612 Modified/ B624/B624 Modified/ B660/ B824/D424/ Parkway/ Renovation B612/ Renovation B612 Modified/ Renovation B624/ Renovation B624 Modified/ Renovation B660/ Renovation B824/ Renovation D424/ Renovation Parkway Left	Curb/Gutter Left	E_TRAN_ROAD_C_G_B612_LT E_TRAN_ROAD_C_G_B612_MOD_LT E_TRAN_ROAD_C_G_B612_TIP_LT E_TRAN_ROAD_C_G_B618_LT E_TRAN_ROAD_C_G_B624_LT E_TRAN_ROAD_C_G_B624_MOD_LT E_TRAN_ROAD_C_G_B624_TIP_LT E_TRAN_ROAD_C_G_B660_LT E_TRAN_ROAD_C_G_B824_LT E_TRAN_ROAD_C_G_D412_LT E_TRAN_ROAD_C_G_D424_LT E_TRAN_ROAD_C_G_PKWY_LT P_TRAN_ROAD_C_G_B612_LT P_TRAN_ROAD_C_G_B612_MOD_LT P_TRAN_ROAD_C_G_B612_TIP_LT P_TRAN_ROAD_C_G_B618_LT P_TRAN_ROAD_C_G_B624_LT P_TRAN_ROAD_C_G_B624_MOD_LT P_TRAN_ROAD_C_G_B624_TIP_LT P_TRAN_ROAD_C_G_B660_LT P_TRAN_ROAD_C_G_B824_LT P_TRAN_ROAD_C_G_D412_LT P_TRAN_ROAD_C_G_D424_LT P_TRAN_ROAD_C_G_PKWY_LT P_TRAN_ROAD_C_G_REN_B612_LT P_TRAN_ROAD_C_G_REN_B612_MOD_LT P_TRAN_ROAD_C_G_REN_B612_TIP_LT P_TRAN_ROAD_C_G_REN_B618_LT P_TRAN_ROAD_C_G_REN_B624_LT P_TRAN_ROAD_C_G_REN_B624_MOD_LT P_TRAN_ROAD_C_G_REN_B624_TIP_LT P_TRAN_ROAD_C_G_REN_B660_LT P_TRAN_ROAD_C_G_REN_B824_LT P_TRAN_ROAD_C_G_REN_D412_LT P_TRAN_ROAD_C_G_REN_D424_LT P_TRAN_ROAD_C_G_REN_PKWY_LT R_TRAN_ROAD_C_G_B612_LT R_TRAN_ROAD_C_G_B612_MOD_LT R_TRAN_ROAD_C_G_B612_TIP_LT R_TRAN_ROAD_C_G_B618_LT

OBSOLETE LINE STYLES

DO NOT USE!

Revised 11/29/12

FEATURE NAME	OBSOLETE LINE STYLE	NEW LINE STYLE
		R_TRAN_ROAD_C_G_B624_LT R_TRAN_ROAD_C_G_B624_MOD_LT R_TRAN_ROAD_C_G_B624_TIP_LT R_TRAN_ROAD_C_G_B660_LT R_TRAN_ROAD_C_G_B824_LT R_TRAN_ROAD_C_G_D412_LT R_TRAN_ROAD_C_G_D424_LT R_TRAN_ROAD_C_G_PKWY_LT
Existing/Proposed/ Remove Roadway Curb and Gutter B612/B612 Modified/ B624/B624 Modified/ B660/ B824/D424/ Parkway/ Renovation B612/ Renovation B612 Modified/ Renovation B624/ Renovation B624 Modified/ Renovation B660/ Renovation B824/ Renovation D424/ Renovation Parkway Right	Curb/Gutter Right	E_TRAN_ROAD_C_G_B612_RT E_TRAN_ROAD_C_G_B612_MOD_RT E_TRAN_ROAD_C_G_B612_TIP_RT E_TRAN_ROAD_C_G_B618_RT E_TRAN_ROAD_C_G_B624_RT E_TRAN_ROAD_C_G_B624_MOD_RT E_TRAN_ROAD_C_G_B624_TIP_RT E_TRAN_ROAD_C_G_B660_RT E_TRAN_ROAD_C_G_B824_RT E_TRAN_ROAD_C_G_D412_RT E_TRAN_ROAD_C_G_D424_RT E_TRAN_ROAD_C_G_PKWY_RT P_TRAN_ROAD_C_G_B612_RT P_TRAN_ROAD_C_G_B612_MOD_RT P_TRAN_ROAD_C_G_B612_TIP_RT P_TRAN_ROAD_C_G_B624_RT P_TRAN_ROAD_C_G_B624_MOD_RT P_TRAN_ROAD_C_G_B624_TIP_RT P_TRAN_ROAD_C_G_B660_RT P_TRAN_ROAD_C_G_B824_RT P_TRAN_ROAD_C_G_D412_RT P_TRAN_ROAD_C_G_D424_RT P_TRAN_ROAD_C_G_PKWY_RT P_TRAN_ROAD_C_G_REN_B612_RT P_TRAN_ROAD_C_G_REN_B612_MOD_RT P_TRAN_ROAD_C_G_REN_B612_TIP_RT P_TRAN_ROAD_C_G_REN_B624_RT P_TRAN_ROAD_C_G_REN_B624_MOD_RT P_TRAN_ROAD_C_G_REN_B624_TIP_RT P_TRAN_ROAD_C_G_REN_B660_RT P_TRAN_ROAD_C_G_REN_B824_RT P_TRAN_ROAD_C_G_REN_D412_RT P_TRAN_ROAD_C_G_REN_D424_RT P_TRAN_ROAD_C_G_REN_PKWY_RT R_TRAN_ROAD_C_G_B612_RT R_TRAN_ROAD_C_G_B612_MOD_RT R_TRAN_ROAD_C_G_B612_TIP_RT R_TRAN_ROAD_C_G_B624_RT R_TRAN_ROAD_C_G_B624_MOD_RT R_TRAN_ROAD_C_G_B624_TIP_RT R_TRAN_ROAD_C_G_B660_RT R_TRAN_ROAD_C_G_B824_RT R_TRAN_ROAD_C_G_D412_RT R_TRAN_ROAD_C_G_D424_RT

OBSOLETE LINE STYLES

DO NOT USE!

Revised 11/29/12

FEATURE NAME	OBSOLETE LINE STYLE	NEW LINE STYLE
		R_TRAN_ROAD_C_G_PKWY_RT
Existing Sanitary Sewer Pipe	E_SSWR_PIPE	E_UTIL_SSWR_PIPE
Existing Storm Sewer Pipe	E_STRM_PIPE	E_UTIL_STRM_PIPE
Existing Roadway Edge Unpaved	E_TRAN_ROAD_EDGE_UPVD	E_TRAN_ROAD_EDG_UPVD
Existing Traffic Conduit Empty (1")	E_UTIL_TRAF_COND_EMPTY_1IN	E_UTIL_TRAF_COND_EMPTY_1
Existing Traffic Conduit Empty (2")	E_UTIL_TRAF_COND_EMPTY_2IN	E_UTIL_TRAF_COND_EMPTY_2
Existing Traffic Conduit Empty (3")	E_UTIL_TRAF_COND_EMPTY_3IN	E_UTIL_TRAF_COND_EMPTY_3
Existing Traffic Conduit Empty (4")	E_UTIL_TRAF_COND_EMPTY_4IN	E_UTIL_TRAF_COND_EMPTY_4
Existing Traffic Conduit Fiber Optic (2")	E_UTIL_TRAF_COND_FIBR_2IN	E_UTIL_TRAF_COND_FIBR_2
Existing Traffic Conduit Fiber Optic (3")	E_UTIL_TRAF_COND_FIBR_3IN	E_UTIL_TRAF_COND_FIBR_3
Existing Traffic Conduit Fiber Optic (4")	E_UTIL_TRAF_COND_FIBR_4IN	E_UTIL_TRAF_COND_FIBR_4
Existing Traffic Conduit Interconnect (1")	E_UTIL_TRAF_COND_IC_1IN	E_UTIL_TRAF_COND_IC_1
Existing Traffic Conduit Interconnect (2")	E_UTIL_TRAF_COND_IC_2IN	E_UTIL_TRAF_COND_IC_2
Existing Traffic Conduit Interconnect (3")	E_UTIL_TRAF_COND_IC_3IN	E_UTIL_TRAF_COND_IC_3
Existing Traffic Conduit Interconnect (4")	E_UTIL_TRAF_COND_IC_4IN	E_UTIL_TRAF_COND_IC_4
Existing Traffic Conduit Lighting (1")	E_UTIL_TRAF_COND_LITE_1IN	E_UTIL_TRAF_COND_LITE_1
Existing Traffic Conduit Lighting (2")	E_UTIL_TRAF_COND_LITE_2IN	E_UTIL_TRAF_COND_LITE_2
Existing Traffic Conduit Lighting (2-1/2")	E_UTIL_TRAF_COND_LITE_21/2IN	E_UTIL_TRAF_COND_LITE_2.5
Existing Traffic Conduit Lighting (3")	E_UTIL_TRAF_COND_LITE_3IN	E_UTIL_TRAF_COND_LITE_3
Existing Traffic Conduit Lighting (4")	E_UTIL_TRAF_COND_LITE_4IN	E_UTIL_TRAF_COND_LITE_4
Existing Traffic Conduit Signal (1")	E_UTIL_TRAF_COND_SIGNAL_1IN	E_UTIL_TRAF_COND_SGNL_1

OBSOLETE LINE STYLES

DO NOT USE!

Revised 11/29/12

FEATURE NAME	OBSOLETE LINE STYLE	NEW LINE STYLE
Existing Traffic Conduit Signal (2")	E_UTIL_TRAF_COND_SIGNAL_2IN	E_UTIL_TRAF_COND_SGNL_2
Existing Traffic Conduit Signal (3")	E_UTIL_TRAF_COND_SIGNAL_3IN	E_UTIL_TRAF_COND_SGNL_3
Existing Traffic Conduit Signal (4")	E_UTIL_TRAF_COND_SIGNAL_4IN	E_UTIL_TRAF_COND_SGNL_4
Existing Traffic Conduit Source-of-Power (1")	E_UTIL_TRAF_COND_SOP_1IN	E_UTIL_TRAF_COND_SOP_1
Existing Traffic Conduit Source-of-Power (2")	E_UTIL_TRAF_COND_SOP_2IN	E_UTIL_TRAF_COND_SOP_2
Existing Traffic Conduit Source-of-Power (3")	E_UTIL_TRAF_COND_SOP_3IN	E_UTIL_TRAF_COND_SOP_3
Existing Traffic Conduit Source-of-Power (4")	E_UTIL_TRAF_COND_SOP_4IN	E_UTIL_TRAF_COND_SOP_4
Existing Traffic Loop Detector Lead	E_UTIL_TRAF_LOOP_LEAD	E_UTIL_TRAF_LOOP_CON_LEAD
Enclosed Copper Bus-Bar Riser	ECBR	N/A
Existing/Proposed Power Conduit	Electric Line	E_UTIL_POWR_COND P_UTIL_POWR_COND
Existing/Proposed Traffic Conduit Fiber Optic (3")	FIBER 3"	E_UTIL_TRAF_COND_FIBR_3 P_UTIL_TRAF_COND_FIBR_3
Existing/Proposed Traffic Conduit Fiber Optic (4")	FIBER 4"	E_UTIL_TRAF_COND_FIBR_4 P_UTIL_TRAF_COND_FIBR_4
Existing/Proposed Gas Pipe	gas	E_UTIL_GAS_PIPE P_UTIL_GAS_PIPE
Existing/Proposed Gas Pipe	Gas Line	E_UTIL_GAS_PIPE P_UTIL_GAS_PIPE
Existing/Proposed Plant Hedge	hdg	E_VEG_HDG P_VEG_HDG
Existing/Proposed Plant Hedge	Hedge	E_VEG_HDG P_VEG_HDG
Existing Traffic Conduit Interconnect (2")	IC 2"	E_UTIL_TRAF_COND_IC_2
Existing Traffic Conduit Interconnect (3")	IC 3"	E_UTIL_TRAF_COND_IC_3
Existing Traffic Conduit Interconnect (4")	IC 4	E_UTIL_TRAF_COND_IC_4
Existing Water Pipe	inplace water	E_UTIL_WATR_PIPE
Unknown	ISADS	N/A

OBSOLETE LINE STYLES

DO NOT USE!

Revised 11/29/12

FEATURE NAME	OBSOLETE LINE STYLE	NEW LINE STYLE
Existing Sanitary Sewer Pipe	ISAS	E_UTIL_SSWR_PIPE
Existing Storm Sewer Pipe	ISD	E_UTIL_STRM_PIPE
Unknown	ISDTN	N/A
Existing Traffic Conduit Lighting (1")	LITE 1"	E_UTIL_TRAF_COND_LITE_1
Existing Traffic Conduit Lighting (2")	LITE 2"	E_UTIL_TRAF_COND_LITE_2
Existing Traffic Conduit Lighting (2-1/2")	LITE 2.5"	E_UTIL_TRAF_COND_LITE_2.5
Existing Traffic Conduit Lighting (3")	LITE 3"	E_UTIL_TRAF_COND_LITE_3
Existing Traffic Loop Detector Connector	Loop Detector Con	N/A
Existing Sanitary Sewer Pipe	P_SSWR_PIPE	E_UTIL_SSWR_PIPE
Proposed Storm Sewer Pipe	P_STRM_PIPE	P_UTIL_STRM_PIPE
Proposed Erosion Control Wall Curtain	P_TOPO_EROS_WALL_CURTAIN	P_EROS_WALL_CURTN
Proposed Roadway Curb Left	P_TRAN_ROAD_CURB_LT	P_TRAN_ROAD_CRB_LT
Proposed Roadway Curb Right	P_TRAN_ROAD_CURB_RT	P_TRAN_ROAD_CRB_RT
Proposed Roadway Saw Cut Bituminous Full Depth	P_TRAN_ROAD_SAW_CUT_BIT_FULL_DEPTH	P_TRAN_ROAD_SAW_CUT_BIT_FULL
Proposed Roadway Saw Cut Concrete Full Depth	P_TRAN_ROAD_SAW_CUT_CONC_FULL_DEPTH	P_TRAN_ROAD_SAW_CUT_CONC_FULL
Proposed Traffic Conduit Signal	P_UTIL_TRAF_COND_SIGNAL	E_UTIL_TRAF_COND_SGNL_1 E_UTIL_TRAF_COND_SGNL_2 E_UTIL_TRAF_COND_SGNL_3 E_UTIL_TRAF_COND_SGNL_4 P_UTIL_TRAF_COND_SGNL_1 P_UTIL_TRAF_COND_SGNL_2 P_UTIL_TRAF_COND_SGNL_3 P_UTIL_TRAF_COND_SGNL_4
Proposed Traffic Conduit Signal Temporary	P_UTIL_TRAF_COND_SIGNAL_TEMP	N/A
Proposed Traffic Loop Detector Lead	P_UTIL_TRAF_LOOP_LEAD	N/A
Proposed Traffic Paint Broken Line White (4")	P_UTIL_TRAF_PAINT_BRKN_LN_WHIT_4IN	P_UTIL_TRAF_PNT_BRKN_LI_WHT_4
Proposed Traffic Paint Broken Line Yellow	P_UTIL_TRAF_PAINT_BRKN_LN_YELO_4IN	P_UTIL_TRAF_PNT_BRKN_LI_YEL_4

OBSOLETE LINE STYLES

DO NOT USE!

Revised 11/29/12

FEATURE NAME	OBSOLETE LINE STYLE	NEW LINE STYLE
(4")		
Proposed Traffic Paint Parking Line	P_UTIL_TRAF_PAINT_PRKG_LN	P_UTIL_TRAF_PNT_PRKG_LI
Proposed Traffic Paint Solid Line White (4")	P_UTIL_TRAF_PAINT_SOLID_LN_WHIT_4IN	P_UTIL_TRAF_PNT_SLD_LI_WHT_4
Proposed Traffic Paint Solid Line White (6")	P_UTIL_TRAF_PAINT_SOLID_LN_WHIT_6IN	P_UTIL_TRAF_PNT_SLD_LI_WHT_6
Proposed Traffic Paint Solid Line Yellow (4")	P_UTIL_TRAF_PAINT_SOLID_LN_YELO_4IN	P_UTIL_TRAF_PNT_SLD_LI_YEL_4
Proposed Traffic Paint Stop Bar (12")	P_UTIL_TRAF_PAINT_STOP_BAR_12IN	P_UTIL_TRAF_PNT_STOP_BAR_12
Proposed Traffic Conduit Interconnect (1")	PROP I.C. 1"	P_UTIL_TRAF_COND_IC_1
Proposed Traffic Conduit Interconnect (2")	PROP I.C. 2"	P_UTIL_TRAF_COND_IC_2
Proposed Traffic Conduit Interconnect (3")	PROP I.C. 3	P_UTIL_TRAF_COND_IC_3
Proposed Traffic Conduit Signal (1")	PROP SIGNAL 1	P_UTIL_TRAF_COND_SGNL_1
Proposed Traffic Conduit Signal (2")	PROP SIGNAL 2	P_UTIL_TRAF_COND_SGNL_2
Proposed Traffic Conduit Signal (3")	PROP SIGNAL 3	P_UTIL_TRAF_COND_SGNL_3
Existing Right-of-Way Property Line	Property Line	E_RWAY_PROP_LI
Proposed Roadway Curb and Gutter B612/B612 Modified/ B624/B624 Modified/ B660/ B824/D424/ Parkway/ Renovation B612/ Renovation B612 Modified/ Renovation B624/ Renovation B624 Modified/ Renovation B660/ Renovation B824/ Renovation D424/ Renovation Parkway Left	Proposed Curb/Gutter Left	P_TRAN_ROAD_C_G_B612_LT P_TRAN_ROAD_C_G_B612_MOD_LT P_TRAN_ROAD_C_G_B612_TIP_LT P_TRAN_ROAD_C_G_B618_LT P_TRAN_ROAD_C_G_B624_LT P_TRAN_ROAD_C_G_B624_MOD_LT P_TRAN_ROAD_C_G_B624_TIP_LT P_TRAN_ROAD_C_G_B660_LT P_TRAN_ROAD_C_G_B824_LT P_TRAN_ROAD_C_G_D424_LT P_TRAN_ROAD_C_G_PKWY_LT P_TRAN_ROAD_C_G_REN_B612_LT P_TRAN_ROAD_C_G_REN_B612_MOD_LT P_TRAN_ROAD_C_G_REN_B624_LT P_TRAN_ROAD_C_G_REN_B624_MOD_LT P_TRAN_ROAD_C_G_REN_B660_LT P_TRAN_ROAD_C_G_REN_B824_LT P_TRAN_ROAD_C_G_REN_D412_LT P_TRAN_ROAD_C_G_REN_D424_LT P_TRAN_ROAD_C_G_REN_PKWY_LT
Proposed Roadway Curb and	Proposed Curb/Gutter Right	P_TRAN_ROAD_C_G_B612_RT P_TRAN_ROAD_C_G_B612_MOD_RT

OBSOLETE LINE STYLES

DO NOT USE!

Revised 11/29/12

FEATURE NAME	OBSOLETE LINE STYLE	NEW LINE STYLE
Gutter B612/B612 Modified/ B624/B624 Modified/ B660/ B824/D424/ Parkway/ Renovation B612/ Renovation B612 Modified/ Renovation B624/ Renovation B624 Modified/ Renovation B660/ Renovation B824/ Renovation D424/ Renovation Parkway Right		P_TRAN_ROAD_C_G_B612_TIP_RT P_TRAN_ROAD_C_G_B618_RT P_TRAN_ROAD_C_G_B624_RT P_TRAN_ROAD_C_G_B624_MOD_RT P_TRAN_ROAD_C_G_B624_TIP_RT P_TRAN_ROAD_C_G_B660_RT P_TRAN_ROAD_C_G_B824_RT P_TRAN_ROAD_C_G_D412_RT P_TRAN_ROAD_C_G_D424_RT P_TRAN_ROAD_C_G_PKWY_RT P_TRAN_ROAD_C_G_REN_B612_RT P_TRAN_ROAD_C_G_REN_B612_MOD_RT P_TRAN_ROAD_C_G_REN_B612_TIP_RT P_TRAN_ROAD_C_G_REN_B618_RT P_TRAN_ROAD_C_G_REN_B624_RT P_TRAN_ROAD_C_G_REN_B624_MOD_RT P_TRAN_ROAD_C_G_REN_B624_TIP_RT P_TRAN_ROAD_C_G_REN_B660_RT P_TRAN_ROAD_C_G_REN_B824_RT P_TRAN_ROAD_C_G_REN_D412_RT P_TRAN_ROAD_C_G_REN_D424_RT P_TRAN_ROAD_C_G_REN_PKWY_RT
Proposed Sanitary Sewer Pipe	Proposed Sanitary	P_UTIL_SSWR_PIPE
Proposed Storm Sewer Pipe	Proposed Storm	P_UTIL_STRM_PIPE
Remove Roadway Curb and Gutter B612/B612 Modified/ B624/B624 Modified/ B660/ B824/D424/ Parkway/ Renovation B612/ Renovation B612 Modified/ Renovation B624/ Renovation B624 Modified/ Renovation B660/ Renovation B824/ Renovation D424/ Renovation Parkway Left	R_TRAN_ROAD_CURB_LT	R_TRAN_ROAD_C_G_B612_LT R_TRAN_ROAD_C_G_B612_MOD_LT R_TRAN_ROAD_C_G_B612_TIP_LT R_TRAN_ROAD_C_G_B618_LT R_TRAN_ROAD_C_G_B624_LT R_TRAN_ROAD_C_G_B624_MOD_LT R_TRAN_ROAD_C_G_B624_TIP_LT R_TRAN_ROAD_C_G_B660_LT R_TRAN_ROAD_C_G_B824_LT R_TRAN_ROAD_C_G_D412_LT R_TRAN_ROAD_C_G_D424_LT R_TRAN_ROAD_C_G_PKWY_LT
Remove Roadway Curb and Gutter B612/B612 Modified/ B624/B624 Modified/ B660/	R_TRAN_ROAD_CURB_RT	R_TRAN_ROAD_C_G_B612_RT R_TRAN_ROAD_C_G_B612_MOD_RT R_TRAN_ROAD_C_G_B612_TIP_RT R_TRAN_ROAD_C_G_B618_RT R_TRAN_ROAD_C_G_B624_RT R_TRAN_ROAD_C_G_B624_MOD_RT

OBSOLETE LINE STYLES

DO NOT USE!

Revised 11/29/12

FEATURE NAME	OBSOLETE LINE STYLE	NEW LINE STYLE
B824/D424/ Parkway/ Renovation B612/ Renovation B612 Modified/ Renovation B624/ Renovation B624 Modified/ Renovation B660/ Renovation B824/ Renovation D424/ Renovation Parkway Right		R_TRAN_ROAD_C_G_B624_TIP_RT R_TRAN_ROAD_C_G_B660_RT R_TRAN_ROAD_C_G_B824_RT R_TRAN_ROAD_C_G_D412_RT R_TRAN_ROAD_C_G_D424_RT R_TRAN_ROAD_C_G_PKWY_RT
Existing/Proposed/ Remove/ Railway Railroad Track	Rail Road	E_TRAN_RAIL_RR_TRAK P_TRAN_RAIL_RR_TRAK R_TRAN_RAIL_RR_TRAK
Remove Roadway Curb and Gutter B612/B612 Modified/ B624/B624 Modified/ B660/ B824/D424/ Parkway/ Renovation B612/ Renovation B612 Modified/ Renovation B624/ Renovation B624 Modified/ Renovation B660/ Renovation B824/ Renovation D424/ Renovation Parkway Left	Removal Curb/Gutter Left	R_TRAN_ROAD_C_G_B612_LT R_TRAN_ROAD_C_G_B612_MOD_LT R_TRAN_ROAD_C_G_B612_TIP_LT R_TRAN_ROAD_C_G_B618_LT R_TRAN_ROAD_C_G_B624_LT R_TRAN_ROAD_C_G_B624_MOD_LT R_TRAN_ROAD_C_G_B624_TIP_LT R_TRAN_ROAD_C_G_B660_LT R_TRAN_ROAD_C_G_B824_LT R_TRAN_ROAD_C_G_D412_LT R_TRAN_ROAD_C_G_D424_LT R_TRAN_ROAD_C_G_PKWY_LT
Remove Roadway Curb and Gutter B612/B612 Modified/ B624/B624 Modified/ B660/ B824/D424/ Parkway/ Renovation B612/ Renovation B612 Modified/ Renovation B624/ Renovation B624 Modified/ Renovation B660/ Renovation B824/	Removal Curb/Gutter Right	R_TRAN_ROAD_C_G_B612_RT R_TRAN_ROAD_C_G_B612_MOD_RT R_TRAN_ROAD_C_G_B612_TIP_RT R_TRAN_ROAD_C_G_B618_RT R_TRAN_ROAD_C_G_B624_RT R_TRAN_ROAD_C_G_B624_MOD_RT R_TRAN_ROAD_C_G_B624_TIP_RT R_TRAN_ROAD_C_G_B660_RT R_TRAN_ROAD_C_G_B824_RT R_TRAN_ROAD_C_G_D412_RT R_TRAN_ROAD_C_G_D424_RT R_TRAN_ROAD_C_G_PKWY_RT

OBSOLETE LINE STYLES

DO NOT USE!

Revised 11/29/12

FEATURE NAME	OBSOLETE LINE STYLE	NEW LINE STYLE
Renovation D424/ Renovation Parkway Right		
Proposed Roadway Curb and Gutter Renovation B612/ Renovation B612 Modified/ Renovation B624/ Renovation B624 Modified/ Renovation B660/ Renovation B824/ Renovation D424/ Renovation Parkway Left	Renovation Curb/Gutter Left	P_TRAN_ROAD_C_G_REN_B612_LT P_TRAN_ROAD_C_G_REN_B612_MOD_LT P_TRAN_ROAD_C_G_REN_B612_TIP_LT P_TRAN_ROAD_C_G_REN_B618_LT P_TRAN_ROAD_C_G_REN_B624_LT P_TRAN_ROAD_C_G_REN_B624_MOD_LT P_TRAN_ROAD_C_G_REN_B624_TIP_LT P_TRAN_ROAD_C_G_REN_B660_LT P_TRAN_ROAD_C_G_REN_B824_LT P_TRAN_ROAD_C_G_REN_D412_LT P_TRAN_ROAD_C_G_REN_D424_LT P_TRAN_ROAD_C_G_REN_PKWY_LT
Proposed Roadway Curb and Gutter Renovation B612/ Renovation B612 Modified/ Renovation B624/ Renovation B624 Modified/ Renovation B660/ Renovation B824/ Renovation D424/ Renovation Parkway Right	Renovation Curb/Gutter Right	P_TRAN_ROAD_C_G_REN_B612_RT P_TRAN_ROAD_C_G_REN_B612_MOD_RT P_TRAN_ROAD_C_G_REN_B612_TIP_RT P_TRAN_ROAD_C_G_REN_B618_RT P_TRAN_ROAD_C_G_REN_B624_RT P_TRAN_ROAD_C_G_REN_B624_MOD_RT P_TRAN_ROAD_C_G_REN_B624_TIP_RT P_TRAN_ROAD_C_G_REN_B660_RT P_TRAN_ROAD_C_G_REN_B824_RT P_TRAN_ROAD_C_G_REN_D412_RT P_TRAN_ROAD_C_G_REN_D424_RT P_TRAN_ROAD_C_G_REN_PKWY_RT
Proposed Roadway Saw Cut Bituminous/Concrete/ Full Depth	Saw Cut	P_TRAN_ROAD_SAW_CUT_BIT P_TRAN_ROAD_SAW_CUT_BIT_FULL P_TRAN_ROAD_SAW_CUT_CONC P_TRAN_ROAD_SAW_CUT_CONC_FULL
Existing/Proposed/ Remove Sanitary/Storm Sewer Pipe-in-Pipe	Sewer in Sewer	E_UTIL_SSWR_PIPE_IN_PIPE P_UTIL_SSWR_PIPE_IN_PIPE R_UTIL_SSWR_PIPE_IN_PIPE E_UTIL_STRM_PIPE_IN_PIPE P_UTIL_STRM_PIPE_IN_PIPE R_UTIL_STRM_PIPE_IN_PIPE
Existing Sanitary Sewer Pipe	sewer line	E_UTIL_SSWR_PIPE
Existing Traffic Conduit Signal	SIGNAL	E_UTIL_TRAF_COND_SGNL_1 E_UTIL_TRAF_COND_SGNL_2 E_UTIL_TRAF_COND_SGNL_3 E_UTIL_TRAF_COND_SGNL_4 P_UTIL_TRAF_COND_SGNL_1 P_UTIL_TRAF_COND_SGNL_2 P_UTIL_TRAF_COND_SGNL_3

OBSOLETE LINE STYLES

DO NOT USE!

Revised 11/29/12

FEATURE NAME	OBSOLETE LINE STYLE	NEW LINE STYLE
		P_UTIL_TRAF_COND_SGNL_4
Existing Traffic Conduit Signal (1")	SIGNAL 1"	E_UTIL_TRAF_COND_SGNL_1
Existing Traffic Conduit Signal (2")	SIGNAL 2"	E_UTIL_TRAF_COND_SGNL_2
Existing Traffic Conduit Signal (3")	SIGNAL 3"	E_UTIL_TRAF_COND_SGNL_3
Existing Traffic Conduit Signal (4")	SIGNAL 4"	E_UTIL_TRAF_COND_SGNL_4
Proposed Erosion Control Fence Silt	Silt Curtain	P_EROS_FENC_SILT
Existing Traffic Conduit Source-of-Power (1")	SOP 1"	E_UTIL_TRAF_COND_SOP_1
Existing Traffic Conduit Source-of-Power (2")	SOP 2"	E_UTIL_TRAF_COND_SOP_2
Existing Traffic Conduit Source-of-Power (3")	SOP 3"	E_UTIL_TRAF_COND_SOP_3
Existing Traffic Conduit Source-of-Power (4")	SOP 4"	E_UTIL_TRAF_COND_SOP_4
Proposed Sanitary Sewer Connection	sscon	P_UTIL_SSWR_CON
Existing/Proposed-Remove Sanitary Sewer Tunnel	SSWR_TUNNEL	E_UTIL_SSWR_TUNL P_UTIL_SSWR_TUNL R_UTIL_SSWR_TUNL
Existing Storm Sewer Tunnel	stm drn tunnel	E_UTIL_STRM_TUNL
Existing Storm Sewer Pipe	storm drain	E_UTIL_STRM_PIPE
Existing/Proposed Surface Breakline	SURF_BRKL	E_SURF_BRKL P_SURF_BRKL
Existing/Proposed Surface Breakline Inferred	SURF_BRKL_INFER	E_SURF_BRKL_INFER P_SURF_BRKL_INFER
Existing/Proposed Surface Contour Major	SURF_CONTOUR_MAJR	E_SURF_CONTOUR_MAJR P_SURF_CONTOUR_MAJR
Existing/Proposed Surface Contour Major Depression	SURF_CONTOUR_MAJR_DEPRESS	E_SURF_CONTOUR_MAJR_DEPRESS P_SURF_CONTOUR_MAJR_DEPRESS
Existing/Proposed Surface Contour Minor	SURF_CONTOUR_MINR	E_SURF_CONTOUR_MINR P_SURF_CONTOUR_MINR
Existing/Proposed Surface Contour Minor Depression	SURF_CONTOUR_MINR_DEPRESS	E_SURF_CONTOUR_MINR_DEPRESS P_SURF_CONTOUR_MINR_DEPRESS

OBSOLETE LINE STYLES

DO NOT USE!

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FEATURE NAME	OBSOLETE LINE STYLE	NEW LINE STYLE
Existing/Proposed Surface Cut	SURF_CUT	E_SURF_CUT P_SURF_CUT
Existing/Proposed Surface Datum Line	SURF_DAT_LI	E_SURF_DAT_LI P_SURF_DAT_LI
Existing/Proposed Surface Elevation	SURF_ELEV	E_SURF_ELEV P_SURF_ELEV
Existing/Proposed Surface Fill	SURF_FILL	E_SURF_FILL P_SURF_FILL
Existing/Proposed Surface Grid Primary	SURF_GRID_PRI	E_SURF_GRID_PRI P_SURF_GRID_PRI
Existing/Proposed Surface Grid Secondary	SURF_GRID_SEC	E_SURF_GRID_SEC P_SURF_GRID_SEC
Existing/Proposed Surface Legend	SURF_LGND	E_SURF_LGND P_SURF_LGND
Existing/Proposed Surface Lidar Line	SURF_LIDAR_LI	E_SURF_LIDAR_LI P_SURF_LIDAR_LI
Existing/Proposed Surface Perimeter	SURF_PERIM	E_SURF_PERIM P_SURF_PERIM
Existing/Proposed Surface Slope	SURF_SLOPE	E_SURF_SLOPE P_SURF_SLOPE
Existing/Proposed Surface Triangles	SURF_TRI	E_SURF_TRI P_SURF_TRI
Existing/Proposed Survey Alignment Line	SURV_ALN_LI	E_SURV_ALN_LI P_SURV_ALN_LI
Existing/Proposed Survey Berm Bottom	SURV_BERM_BOTM	E_SURV_BERM_BOTM P_SURV_BERM_BOTM
Existing/Proposed Survey Centerline	SURV_CL	E_SURV_CL P_SURV_CL
Existing Communication Telephone Conduit	Telephone	E_UTIL_COMM_PHON_COND
Existing Plant Tree Line	Tree Line	E_VEG_WDS_EDG
Existing/Proposed/ Remove Wall/Block/Concrete/ Wood/ Left/Right	Wall	E_STRC_WALL E_STRC_WALL_BLK_LT E_STRC_WALL_BLK_RT E_STRC_WALL_CONC_LT E_STRC_WALL_CONC_RT E_STRC_WALL_LT E_STRC_WALL_RT E_STRC_WALL_WD_LT E_STRC_WALL_WD_RT P_STRC_WALL_BLK_LT P_STRC_WALL_BLK_RT P_STRC_WALL_CONC_LT P_STRC_WALL_CONC_RT P_STRC_WALL_LT P_STRC_WALL_RT P_STRC_WALL_WD_LT

OBSOLETE LINE STYLES

DO NOT USE!

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FEATURE NAME	OBSOLETE LINE STYLE	NEW LINE STYLE
		P_STRC_WALL_WD_RT R_STRC_WALL_BLK_LT R_STRC_WALL_BLK_RT R_STRC_WALL_CONC_LT R_STRC_WALL_CONC_RT R_STRC_WALL_LT R_STRC_WALL_RT R_STRC_WALL_WD_LT R_STRC_WALL_WD_RT
Existing/Proposed/ Remove Wall/Block/Concrete/ Wood/ Left	WALL LEFT	E_STRC_WALL_BLK_LT E_STRC_WALL_CONC_LT E_STRC_WALL_LT E_STRC_WALL_WD_LT P_STRC_WALL_BLK_LT P_STRC_WALL_CONC_LT P_STRC_WALL_LT P_STRC_WALL_WD_LT R_STRC_WALL_BLK_LT R_STRC_WALL_CONC_LT R_STRC_WALL_LT R_STRC_WALL_WD_LT
Existing/Proposed/ Remove Wall/Block/Concrete/ Wood/ Right	WALL RIGHT	E_STRC_WALL_BLK_RT E_STRC_WALL_CONC_RT E_STRC_WALL_RT E_STRC_WALL_WD_RT P_STRC_WALL_BLK_RT P_STRC_WALL_CONC_RT P_STRC_WALL_RT P_STRC_WALL_WD_RT R_STRC_WALL_BLK_RT R_STRC_WALL_CONC_RT R_STRC_WALL_RT R_STRC_WALL_WD_RT
Existing/Proposed/ Remove Fence Wire	Wire Fence	E_STRC_FENC_WIRE P_STRC_FENC_WIRE R_STRC_FENC_WIRE
Existing/Proposed/ Remove Fence Wood	Wood Fence	E_STRC_FENC_WD P_STRC_FENC_WD R_STRC_FENC_WD
Existing/Proposed Power Conduit	XCEL	E_UTIL_POWR_COND P_UTIL_POWR_COND
Existing/Proposed Power Conduit	{ -E- }	E_UTIL_POWR_COND P_UTIL_POWR_COND
Batten Insulation	{ Batten }	N/A
Diamond	{ Diamond }	N/A
Existing/Proposed Roadway Ground Line	{ Ground Line }	E_TRAN_ROAD_GRND_LI P_TRAN_ROAD_GRND_LI
Half Dash	{ Half Dash }	N/A
Leader Line	{ Leader Line }	DFTG_LDR_LI
Proposed Roadway	{ Offset Lines }	P_TRAN_ROAD_ALN_OFF_LI

OBSOLETE LINE STYLES

DO NOT USE!

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FEATURE NAME	OBSOLETE LINE STYLE	NEW LINE STYLE
Alignment Offset Line		
Origin Line	{ Origin Line }	N/A
Tapered Dash	{ Tapered Dash }	N/A
Wide Dash	{ Wide Dash }	N/A
Existing/Proposed Gas Pipe	{-G-}	E_UTIL_GAS_PIPE P_UTIL_GAS_PIPE
Existing/Proposed Power Line Overhead	{-OE-}	E_UTIL_POWR_LI_OVHD P_UTIL_POWR_LI_OVHD
Existing Communication Telephone Line Overhead	{-OT-}	E_UTIL_COMM_PHON_LI_OVHD P_UTIL_COMM_PHON_LI_OVHD
Existing Power Conduit	{-UE-}	E_UTIL_POWR_COND P_UTIL_POWR_COND
Existing/Proposed Communication Telephone Cable Buried/Conduit	{-UT-}	E_UTIL_COMM_PHON_CABL_BUR E_UTIL_COMM_PHON_COND P_UTIL_COMM_PHON_CABL_BUR P_UTIL_COMM_PHON_COND
Existing Sanitary Sewer Pipe	{San Swr}	E_UTIL_SSWR_PIPE
Existing Storm Sewer Pipe	{Stm Swr}	E_UTIL_STRM_PIPE
Existing/Proposed/Remove Water Pipe	{SWTR}	E_UTIL_WATR_PIPE P_UTIL_WATR_PIPE R_UTIL_WATR_PIPE
Existing/Proposed Communication Telephone Cable Buried	{T-C}	E_UTIL_COMM_PHON_CABL_BUR P_UTIL_COMM_PHON_CABL_BUR
Existing/Proposed Surface Breakline	SURF_BRKL	E_SURF_BRKL P_SURF_BRKL
Existing/Proposed Surface Breakline Inferred	SURF_BRKL_INFER	E_SURF_BRKL_INFER P_SURF_BRKL_INFER
Existing/Proposed Surface Contour Major	SURF_CONTOUR_MAJR	E_SURF_CONTOUR_MAJR P_SURF_CONTOUR_MAJR
Existing/Proposed Surface Contour Major Depression	SURF_CONTOUR_MAJR_DEPRESS	E_SURF_CONTOUR_MAJR_DEPRESS P_SURF_CONTOUR_MAJR_DEPRESS
Existing/Proposed Surface Contour Minor	SURF_CONTOUR_MINR	E_SURF_CONTOUR_MINR P_SURF_CONTOUR_MINR
Existing/Proposed Surface Contour Minor Depression	SURF_CONTOUR_MINR_DEPRESS	E_SURF_CONTOUR_MINR_DEPRESS P_SURF_CONTOUR_MINR_DEPRESS
Existing/Proposed Surface Cut	SURF_CUT	E_SURF_CUT P_SURF_CUT
Existing/Proposed	SURF_DAT_LI	E_SURF_DAT_LI

OBSOLETE LINE STYLES

DO NOT USE!

Revised 11/29/12

FEATURE NAME	OBSOLETE LINE STYLE	NEW LINE STYLE
Surface Datum Line		P_SURF_DAT_LI
Existing/Proposed Surface Elevation	SURF_ELEV	E_SURF_ELEV P_SURF_ELEV
Existing/Proposed Surface Fill	SURF_FILL	E_SURF_FILL P_SURF_FILL
Existing/Proposed Surface Grid Primary	SURF_GRID_PRI	E_SURF_GRID_PRI P_SURF_GRID_PRI
Existing/Proposed Surface Grid Secondary	SURF_GRID_SEC	E_SURF_GRID_SEC P_SURF_GRID_SEC
Existing/Proposed Surface Legend	SURF_LGND	E_SURF_LGND P_SURF_LGND
Existing/Proposed Surface LIDAR Line	SURF_LIDAR_LI	E_SURF_LIDAR_LI P_SURF_LIDAR_LI
Existing/Proposed Surface Perimeter	SURF_PERIM	E_SURF_PERIM P_SURF_PERIM
Existing/Proposed Surface Slope	SURF_SLOPE	E_SURF_SLOPE P_SURF_SLOPE
Existing/Proposed Surface Triangles	SURF_TRI	E_SURF_TRI P_SURF_TRI
Existing/Proposed Survey Alignment Line	SURV_ALN_LI	E_SURV_ALN_LI P_SURV_ALN_LI
Existing/Proposed Survey Berm Bottom	SURV_BERM_BOTM	E_SURV_BERM_BOTM P_SURV_BERM_BOTM
Existing/Proposed Survey Centerline	SURV_CL	E_SURV_CL P_SURV_CL

Standard Scales

Design

All designs **1:1**

Printing (Revised 2/3/15)

Plan **1:40**

Profile **1:40** (Horizontal); **1:8** (Vertical)

Cross Section **1:20; 1:10**

Standard Colors (Revised 3/16/21)

CATEGORY	COLOR NUMBER	R	G	B
STATUS				
EXISTING	160	105	105	105
REMOVE	192	75	75	75
PROPOSED	B	0	0	0
RECORD DRAWING	13	128	0	160

CATEGORY	COLOR NUMBER	R	G	B
BOUNDARY				
BNDY	12	0	254	160

CATEGORY	COLOR NUMBER	R	G	B
DRAFTING				
DFTG	0	255	255	255
GRID_MAJR	B	0	0	0
GRID_MINR	160	105	105	105
GRND_LI	11	160	224	0
SYMB_AUTO	24	240	240	240
SYMB_BUS_STOP	35	225	0	0
TICK_MAJR	B	0	0	0
TICK_MINR	160	105	105	105
UTIL_CALLOUT_E	10	254	0	96
UTIL_CALLOUT_P	11	160	224	0
UTIL_CALLOUT_R	12	0	254	160
UTIL_CALLOUT_UNID	15	0	240	240

CATEGORY	COLOR NUMBER	R	G	B
EROSION CONTROL				
EROS	11	160	224	0

CATEGORY	COLOR NUMBER	R	G	B
HYDROGRAPHY				
HYDR	1	0	0	255
IMPERV	7	0	255	255
PERV	13	128	0	60
WATRSHD_TC	0	255	255	255
WATRSHD_TC_ALLEY_CHNL	7	0	255	255
WATRSHD_TC_ALLEY_SHLW	23	0	240	240
WATRSHD_TC_ALLEY_SHT	39	0	225	225
WATRSHD_TC_OVLND_CHNL	4	255	255	0
WATRSHD_TC_OVLND_SHLW	20	240	240	0
WATRSHD_TC_OVLND_SHT	36	225	225	0
WATRSHD_TC_PIPE_CHNL	2	0	255	0
WATRSHD_TC_RFTP_CHNL	6	255	127	0
WATRSHD_TC_RFTP_SHLW	22	240	122	0
WATRSHD_TC_RFTP_SHT	38	225	117	0
WATRSHD_TC_ST_CHNL	1	0	0	255
WATRSHD_TC_ST_SHLW	17	0	0	240
WATRSHD_TC_ST_SHT	33	0	0	225

CATEGORY	COLOR NUMBER	R	G	B
PARK BOARD				
PKBD	11	160	224	0

CATEGORY	COLOR NUMBER	R	G	B
RIGHT-OF-WAY				
RWAY	12	0	254	160
PROP_LI_PERM	81	0	0	180
PROP_LI_TEMP	82	0	180	0
SPCL_ASSESS_AR_NON_RES	241	204	255	255
SPCL_ASSESS_AR_RES	243	255	153	204
SPCL_ASSESS_AR_NOT	244	255	255	153
SPCL_ASSESS_AR_MIX	246	255	204	153

CATEGORY	COLOR NUMBER	R	G	B
SPORTS & RECREATION				
SPRT	11	160	224	0

CATEGORY	COLOR NUMBER	R	G	B
STRUCTURE				
STRC	11	160	224	0

CATEGORY	COLOR NUMBER	R	G	B
SURFACE				
SURF	11	160	224	0
SLOPE_CATCH_PT	1	0	0	255
SLOPE_SOURCE	3	255	0	0
SLOPE_XFER	7	0	255	255

CATEGORY	COLOR NUMBER	R	G	B
SURVEY				
SURV	10	254	0	96
NON_PRT	0	255	255	255

CATEGORY	COLOR NUMBER	R	G	B
TRANSPORTATION BRIDGE				
BRDG	5	255	0	255

CATEGORY	COLOR NUMBER	R	G	B
TRANSPORTATION CL				
ALLEY	192	75	75	75
CNTY	0	255	255	255
INTST	3	255	0	0
MIL	102	165	97	0
MUNI NONEXST	0	255	255	255
PKBD	2	0	255	0
PRVT	96	165	165	165
RAIL_LRT RAIL_RR	0	255	255	255
RAIL_STCAR	192	75	75	75
RWAY	0	255	255	255
STATE	1	0	0	255

CATEGORY	COLOR NUMBER	R	G	B
TRL	0	255	255	255
TXT	96	165	165	165
UMN	195	75	0	0
WATR	7	0	255	255

CATEGORY	COLOR NUMBER	R	G	B
TRANSPORTATION RAIL				
RAIL	197	75	0	75

CATEGORY	COLOR NUMBER	R	G	B
TRANSPORTATION ROAD				
ROAD	5	255	0	255
LYR_WEAR_CONC	96	165	165	165
LYR_WEAR_CONC_PERV	100	165	165	0
LYR_WEAR_PAVES_PERV	164	105	105	0
P_TRAN_ROAD_ALN_CL	35	225	0	0
P_TRAN_ROAD_ALN_EDG	10	254	0	96
P_TRAN_ROAD_ALN_HORZ	109	165	0	165
P_TRAN_ROAD_ALN_OFF_LI	66	0	195	0
P_TRAN_ROAD_C_G	17	0	0	240
P_TRAN_ROAD_CRB				
P_TRAN_ROAD_CUT				
P_TRAN_ROAD_FILL				
P_TRAN_ROAD_DRIV_CONC	22	240	122	0
P_TRAN_ROAD_DRIV_CONC_8	70	195	107	0
P_TRAN_ROAD_GRD	162	0	105	0
P_TRAN_ROAD_LYR_BASE_AGGR	134	135	87	0
P_TRAN_ROAD_LYR_CMMN_BORROW	179	90	0	0
P_TRAN_ROAD_LYR_CMMN_EXCV	86	180	102	0
P_TRAN_ROAD_LYR_NON_WEAR	198	75	67	0
P_TRAN_ROAD_LYR_SUBGRD	144	120	120	120
P_TRAN_ROAD_LYR_WEAR_BIT	115	150	0	0
R_TRAN_ROAD_PVMT_LIM				
P_TRAN_ROAD_LYR_WEAR_BIT_4L	250	64	64	64
P_TRAN_ROAD_LYR_WEAR_BIT_5L				
R_TRAN_ROAD_LYR_WEAR_BIT	52	210	210	0

CATEGORY	COLOR NUMBER	R	G	B
TRANSPORTATION SWLK				
SWLK	101	165	0	165
P_TRAN_SWLK_BCK_BOTM	39	0	225	225
P_TRAN_SWLK_BRKL				
P_TRAN_SWLK_CONC	15	0	240	240
P_TRAN_SWLK_CONC_6	95	0	165	165
P_TRAN_SWLK_RAMP_PED	51	210	0	0

CATEGORY	COLOR NUMBER	R	G	B
TRANSPORTATION TRL				
TRL	5	255	0	255

CATEGORY	COLOR NUMBER	R	G	B
UTILITY COMMUNICATION (Alarm, Cable TV, Fiber Optic, Signal, Telephone)				

CATEGORY	COLOR NUMBER	R	G	B
COMM	6	255	127	0
COMM_CATV	30	240	122	0
COMM_FIBR	54	210	112	0
COMM_PHON	78	195	107	0

CATEGORY	COLOR NUMBER	R	G	B
UTILITY GAS (Gas, Oil, Petroleum, Gaseous Materials)				
GAS	52	210	210	0

CATEGORY	COLOR NUMBER	R	G	B
UTILITY POWER (Power, Lighting)				
POWR	3	255	0	0

CATEGORY	COLOR NUMBER	R	G	B
UTILITY SANITARY SEWER				
SSWR	2	0	255	0
NON_PRT	0	255	255	255
RD	77	195	0	195

CATEGORY	COLOR NUMBER	R	G	B
UTILITY STEAM				
STM	100	165	165	0

CATEGORY	COLOR NUMBER	R	G	B
UTILITY STORM SEWER				
STRM	98	0	165	0
STRM_PRVT	138	0	135	0
NON_PRT	0	255	255	255
RD	13	128	0	160

CATEGORY	COLOR NUMBER	R	G	B
UTILITY TRAFFIC				
TRAF	7	0	255	255
COMM COND_IC HHOL_COFFIN	21	240	0	240
CABL_BUR COND_NOTE HHOL_PKBD LITE POLE_LITE	18	0	240	0
GRND PNT_BRKN_LI_YEL PNT_SLD_LI_YEL POWR SERV SOP TXT	20	240	240	0
HHOL_MNDOT HHOL_MPLS LOOP	19	240	0	0

CATEGORY	COLOR NUMBER	R	G	B
POLE SGNL				
COND COND_NOTE POLE_WD PNT_MSG SIGN	0	255	255	255
COND_CL COND_ESMT COND_PVC	95	0	165	165
COND_EMPTY	123	150	0	0
COND_FIBR HHOL_JBOX HHOL_MHOL	22	240	122	0
COND_STL	15	0	240	240
CTRL SIGN	38	225	117	0
SIGN	34	0	225	0
	33	0	0	225
	118	150	92	0
	35	225	0	0
	36	225	225	0
	11	160	224	0

CATEGORY	COLOR NUMBER	R	G	B
UTILITY WATER (Potable Water)				
WATR	1	0	0	255
	97	0	0	165
	193	0	0	75
NON_PRT	0	255	255	255

CATEGORY	COLOR NUMBER	R	G	B
VEGETATION				
VEG	18	0	240	0
NON_PRT	0	255	255	255

Standard Line Weights

MICROSTATION LINE WEIGHT	DESCRIPTION	PRINTED LINE WEIGHT 11"x17" SHEET SIZE using MplsSewer.pen, MplsStreet.pen, MplsWater.pen pen tables (ISO Standard Metric Line Widths) mm	USED FOR
0		0.13	Centerline Contour Minor Datum Line Dimension Line Grid Minor Leader Line Surface Triangle Tick Minor
1	Thin Line	0.18	EXISTING
2	Medium Line	0.25	REMOVAL
3	Thick Line	0.35	PROPOSED
4		0.50	
5		0.70	
6		1.00	
7		1.40	
8		2.00	
Default		0.13	

MicroStation Resource Files (Revised 8/23/17)

Seed File (L:\Enterprise Engineering\Bentley\Workspace\Standards\Seed\ **MplsSeed.dgn**) (Revised 10/22/13)

Note: This seed file is automatically selected when creating new MicroStation design files.

For a complete listing of levels used in the design of Capital Improvement Projects see: [Mpls PW CADD Levels & Symbology](#)

Cell Libraries (L:\Enterprise Engineering\Bentley\Workspace\Standards\Cell) (Revised 12/2/13)

- DFTG.cel
- EROS.cel
- PKBD.cel
- RWAY.cel
- SSWR.cel
- STRC.cel
- STRM.cel
- SURF.cel
- SURV.cel
- TRAF.cel
- TRAN.cel
- UTIL.cel
- VEG.cel
- WATR.cel

For a complete listing of cells see: [Mpls PW CADD Levels & Symbology](#)

Border Sheets (Revised 3/10/20)

The City of Minneapolis standard border sheets are now cells within the standard cell library (L:\Enterprise Engineering\Bentley\Workspace\Standards\Cell\ **DFTG.cel**) with the following names:

Note: *These cells support Titleblock Integration when used within ProjectWise.*

- DFTG_BRDR_17X11 (Border 17"x11")
- DFTG_BRDR_CONSLT_17X11 (Border Consultant 17"x11")
- DFTG_BRDR_GEN_NOTES_17X11 (Border General Notes 17"x11")
- DFTG_BRDR_GEN_NOTES_CONSLT_17X11 (Border General Notes Consultant 17"x11")
- DFTG_BRDR_GEN_NOTES_TED_17X11 (Border General Notes TE&D 17"x11")
- DFTG_BRDR_GEN_NOTES_TED_CONSLT_17X11 (Border General Notes TE&D Consultant 17"x11")
- DFTG_BRDR_RD_17X11 (Border Record Drawing 17" x 11")
- DFTG_BRDR_SWPPP_1_17X11 (Border Storm Water Pollution Protection Plan Sheet 1 17" x 11")
- DFTG_BRDR_SWPPP_1_CONSLT_17X11 (Border Storm Water Pollution Protection Plan Sheet 1 Consultant 17" x 11")
- DFTG_BRDR_SWPPP_2_17X11 (Border Storm Water Pollution Protection Plan Sheet 2 17" x 11")
- DFTG_BRDR_SWPPP_2_CONSLT_17X11 (Border Storm Water Pollution Protection Plan Sheet 2 Consultant 17" x 11")
- DFTG_BRDR_SWPPP_3_17X11 (Border Storm Water Pollution Protection Plan Sheet 3 17" x 11")
- DFTG_BRDR_SWPPP_3_CONSLT_17X11 (Border Storm Water Pollution Protection Plan Sheet 3 Consultant 17" x 11")
- DFTG_BRDR_TITLE_17X11 (Border Title 17"x11")
- DFTG_BRDR_TITLE_CONSLT_17X11 (Border Title, Consultant, 17"x11")
- DFTG_BRDR_TRAF_17X11 (Border Traffic 17"x11")
- DFTG_BRDR_TRAF_ASBUILT_B (Border Traffic As Built B (1:1))
- DFTG_BRDR_TRAF_ASBUILT_D (Border Traffic As Built D (1:1))
- DFTG_BRDR_XSEC_11X17 (Border Cross Section 11"x17")
- DFTG_BRDR_XSEC_17X11 (Border Cross Section 17"x11")
- DFTG_BRDR_XSEC_CONSLT_11X17 (Border Cross Section, Consultant, 11"x17")
- DFTG_BRDR_XSEC_CONSLT_17X11 (Border Cross Section, Consultant, 17"x11")

Line Style Library (L:\Enterprise Engineering\Bentley\Workspace\Standards\Symb\ **MplsLine.rsc**) (Revised 10/22/13)

For a complete listing of line styles see: [Mpls PW CADD Levels & Symbology](#)

Pen Tables (L:\Enterprise Engineering\Bentley\Workspace\Standards\tables\Pen) (Revised 4/25/22)

The standard pen tables remap City of Minneapolis Public Works CADD *standard design symbology* to City of Minneapolis Public Works CADD *standard print symbology*:

- **MplsColor.tbl** (used for printing plan sets in color)
- **MplsSewer.tbl** (used for printing plan sets designed by the Surface Waters & Sewer division)
- **MplsStreet.tbl** (used for printing plan sets designed by the Transportation Engineering & Design division)
- **MplsTraffic.tbl** (used for printing plan sets designed by the Traffic & Parking Services division)
- **MplsWater.tbl** (used for printing plan sets designed by the Water Treatment & Distribution division)

The pen tables control the following:

- Prints the date and time on the left edge of the plan sheet.
- Resymbolizes MicroStation line weights to ISO standard metric line widths (units = mm): (e.g. *weight 1 = 0.18mm*, *weight 2 = 0.25mm*, *weight 3 = 0.35mm*, etc.).
- Resymbolizes MicroStation color, weight, and display priority by level name including:
 - Pattern features
 - Drafting features
 - Surface features
 - Survey features
 - Roadway features
 - Utility features
 - Sanitary Sewer features
 - Storm Sewer features

Print Styles (Revised 3/16/21)

The standard print styles remap City of Minneapolis Public Works CADD *standard design symbology* to City of Minneapolis Public Works CADD *standard print symbology*:

Note: Print Styles are contained within Mpls.dgnlib.

- **MplsColor_PDF** (used for printing plan sets to PDF in color)
- **MplsColor_PSB_400_North1** (used for printing plan sets to the PSB_400_North1 printer in color)
- **MplsColor_PSB_400_North2** (used for printing plan sets to the PSB_400_North2 printer in color)
- **MplsColor_PSB_400_South1** (used for printing plan sets to the PSB_400_South1 printer in color)
- **MplsColor_PSB_400_South2** (used for printing plan sets to the PSB_400_South2 printer in color)
- **MplsSewer_PDF** (used for printing SW&S plan sets to PDF)
- **MplsSewer_PSB_400_North1** (used for printing SW&S plan sets to the PSB_400_North1 printer)
- **MplsSewer_PSB_400_North2** (used for printing SW&S plan sets to the PSB_400_North2 printer)
- **MplsSewer_PSB_400_South1** (used for printing SW&S plan sets to the PSB_400_South1 printer)
- **MplsSewer_PSB_400_South2** (used for printing SW&S plan sets to the PSB_400_North2 printer)
- **MplsStreet_PDF** (used for printing TE&D plan sets to PDF)
- **MplsStreet_PSB_400_North1** (used for printing TE&D plan sets to the PSB_400_North1 printer)
- **MplsStreet_PSB_400_North2** (used for printing TE&D plan sets to the PSB_400_North2 printer)
- **MplsStreet_PSB_400_South1** (used for printing TE&D plan sets to the PSB_400_South1 printer)
- **MplsStreet_PSB_400_South2** (used for printing TE&D plan sets to the PSB_400_South2 printer)
- **MplsStreetXSEC_PDF** (used for printing TE&D cross section sheets to PDF)
- **MplsStreetXSEC_PSB_400_North1** (used for printing TE&D cross section sheets to the PSB_400_North1 printer)
- **MplsStreetXSEC_PSB_400_North2** (used for printing TE&D cross section sheets to the PSB_400_North2 printer)
- **MplsStreetXSEC_PSB_400_South1** (used for printing TE&D cross section sheets to the PSB_400_South1 printer)
- **MplsStreetXSEC_PSB_400_South2** (used for printing TE&D cross section sheets to the PSB_400_South2 printer)
- **MplsTraffic_BOR-100-TRAF355** (used for printing T&PS plan sets to the BOR-100-TRAF355 printer)
- **MplsTraffic_PDF** (used for printing T&PS plan sets to PDF)
- **MplsWater_PDF** (used for printing WT&D plan sets to PDF)
- **MplsWater_PDF_1** (used for printing WT&D plan sheets without standard borders to PDF)

Standard Fonts (Revised 12/2/13)

True Type fonts shown below in **bold** are the City of Minneapolis PW CADD standard fonts:

- Arial
- Arial Narrow

OBSOLETE FONTS DO NOT USE! L:\Enterprise Engineering\Bentley\Workspace\Standards\Symb\ MplsFont.rsc		
OBSOLETE FONT NAME	OBSOLETE FONT NUMBER	OBSOLETE FONT DESCRIPTION
MNDOT-000	0	MnDOT Font 0/Bentley Font 0
MNDOT-001	1	MnDOT Font 1
BNTLY-002	2	Bentley Font 2
BNTLY-003	3	Bentley Font 3
MNDOT-005	5	MnDOT Font 5
MNDOT-007	7	MnDOT Font 7/Bentley Font 7
MNDOT-009	9	MnDOT Font 9
BNTLY-015	15	Bentley Font 15
BNTLY-016	16	Bentley Font 16
BNTLY-017	17	Bentley Font 17
MNDOT-020	20	MnDOT Font 20
MNDOT-021	21	MnDOT Font 21
MNDOT-023	23	MnDOT Font 23/Bentley Font 23
BNTLY-026	26	Bentley Font 26 (Greek)
MNDOT-028	28	MnDOT Font 28
BNTLY-030	30	Bentley Font 30
BNTLY-031	31	Bentley Font 31
BNTLY-032	32	Bentley Font 32
MNDOT-033	33	MnDOT Font 33
MNDOT-034	34	MnDOT Font 34
MNDOT-035	35	MnDOT Font 35
MNDOT-036	36	MnDOT Font 36
MNDOT-041	41	MnDOT Font 41/Bentley Font 41
MNDOT-042	42	MnDOT Font 42/Bentley Font 42
BNTLY-050	50	Bentley Font 50
BNTLY-060	60	Bentley Font 60
MNDOT-071	71	MnDOT Font 71
MNDOT-072	72	MnDOT Font 72
MNDOT-073	73	MnDOT Font 73 (Century Schoolbook)
MNDOT-074	74	MnDOT Font 74 (Century Schoolbook Italic)
MNDOT-075	75	MnDOT Font 75/Bentley Font 43
MNDOT-076	76	MnDOT Font 76
BNTLY-081	81	Bentley Font 81
BNTLY-082	82	Bentley Font 82
BNTLY-100	100	Bentley Font 100
BNTLY-101	101	Bentley Font 101
BNTLY-102	102	Bentley Font 102
BNTLY-105	105	Bentley Font 105
BNTLY-106	106	Bentley Font 106
BNTLY-107	107	Bentley Font 107

OBSOLETE FONTS DO NOT USE! L:\Enterprise Engineering\Bentley\Workspace\Standards\Symb\ MplsFont.rsc		
<u>OBSOLETE</u> FONT NAME	<u>OBSOLETE</u> FONT NUMBER	<u>OBSOLETE</u> FONT DESCRIPTION
BNTLY 108	108	Bentley Font 108
MNDOT 127	127	MnDOT Font 127/Bentley Font 127
MNDOT 135	135	MnDOT Font 135
MNDOT 136	136	MnDOT Font 136
MPLS 137 ARIAL NRW BLD	137	Arial Narrow Bold
MPLS 151 ARIAL	151	MnDOT Font 180 (Arial)
MPLS 164 ARIAL ITALIC	164	MnDOT Font 183 (Arial Italic)
MNDOT 173	173	MnDOT Font 173
MNDOT 180	180	MnDOT Font 180 (Arial)
MPLS 181 ARIAL BLD	181	MnDOT Font 181 (Arial Bold)
MPLS 182 ARIAL BLD ITALIC	182	MnDOT Font 182 (Arial Bold Italic)
MNDOT 183	183	MnDOT Font 183 (Arial Italic)
MPLS 189 ARIAL NRW	189	Arial Narrow
MPLS 190 TIMES	190	MnDOT Font 190 (Times New Roman)
MPLS 191 TIMES BLD	191	MnDOT Font 191 (Times New Roman Bold)
MPLS 192 TIMES BLD ITALIC	192	MnDOT Font 192 (Times New Roman Bold Italic)
MPLS 193 TIMES ITALIC	193	MnDOT Font 193 (Times New Roman Italic)
MPLS 199 SAS	199	Statistical Analysis System
MPLS 209 CLARENDON BLD CN	209	Clarendon Bold Condensed
MPLS 210 CLARENDON	210	Clarendon

Text/Dimension Styles

- Text is to be placed in the design file at the font, level, weight, color and line style in which it will be plotted.
- Text properties are not to be altered using a pen table.
- Line Spacing is to be used when placing notes that require multiple lines of text.
- These are the only text sizes permitted for use.
- If it is necessary to create plan sheets at a scale not shown, users must use a multiple of the values in this table.

Other Text Standards:

- All text shall be capitalized.
- All Excel spreadsheet quantities text shall be 7-point Arial.

Text Styles (Revised 1/23/20)

(The values in this table are subject to revision by the CADD Management Team.)

TEXT STYLE	DESCRIPTION	TEXT SIZE	FONT	HEIGHT (1"=40')	WIDTH (1"=40')	LINE SPACING (1"=40')	JUST	CLR
.0625	.0625" Text Use with Annotation Scale only!	1/16"	True Type Arial	2.5'	2.5'	0.5	Center Center	N/A
.078125	.078125" Text Use with Annotation Scale only!	5/64"	True Type Arial	3.125'	3.125'	0.5	Center Center	N/A
.09375	.09375" Text Use with Annotation Scale only!	3/32"	True Type Arial	3.75'	3.75'	0.5	Center Center	N/A
.109375	.109375" Text Use with Annotation Scale only!	7/64"	True Type Arial	4.375'	4.375'	0.5	Center Center	N/A
.125	.125" Text Use with Annotation Scale only!	1/8"	True Type Arial	5'	5'	0.5	Center Center	N/A
.25	.25" Text Use with Annotation Scale only!	1/4"	True Type Arial	10'	10'	0.5	Center Center	N/A
.375	.125" Text Use with Annotation Scale only!	3/8"	True Type Arial	15'	15'	0.5	Center Center	N/A
1/16	1/16" Text	1/16"	True Type Arial	2.5'	2.5'	0.5	Center Center	N/A
5/64	5/64" Text	5/64"	True Type Arial	3.125'	3.125'	0.5	Center Center	N/A
3/32	3/32" Text	3/32"	True Type Arial	3.75'	3.75'	0.5	Center Center	N/A
7/64	7/64" Text	7/64"	True Type Arial	4.375'	4.375'	0.5	Center Center	N/A
1/8	1/8" Text	1/8"	True Type Arial	5'	5'	0.5	Center Center	N/A
1/4	1/4" Text	1/4"	True	10'	10'	0.5	Center	N/A

TEXT STYLE	DESCRIPTION	TEXT SIZE	FONT	HEIGHT (1"=40')	WIDTH (1"=40')	LINE SPACING (1"=40')	JUST	CLR
			Type Arial				Center	
3/8	3/8" Text	3/8"	True Type Arial	15'	15'	0.5	Center Center	N/A
A-LegendText	Bentley Default Text DO NOT USE!	0.410105"	True Type Arial	16.4042'	16.4042'	0.5	Left Top	N/A
ALN_NAME	Alignment Name (Used for Dimension Style ALN_NAME -- Use with Place Note tool)	3/32"	True Type Arial	3.75'	3.75'	0.5	Left Center	N/A
ALN_NAME ANOT	Alignment Name Annotation (Used for Dimension Style ALN_NAME_ANOT -- Use with Place Note tool)	3/32"	True Type Arial	3.75'	3.75'	0.5	Left Center	N/A
Coordinate	Bentley Default Text DO NOT USE!	0.000205"	True Type Arial	0.0082'	0.0082'	1	Center Top	N/A
Detail Marker Label	Bentley Default Text DO NOT USE!	0.00041"	True Type Arial	0.0164'	0.0164'	2.5	Left Bottom	N/A
DFTG_TXT_MTCH_LI	Drafting Text Match Line	3/32"	True Type Arial	3.75'	3.75'	0.5	Center Center	N/A
DFTG_TXT_PLAN	Drafting Text Plan	1/8"	True Type Arial	5'	5'	0.5	Center Center	N/A
DIM_DRIV	Dimension Driveway (Used for Dimension Style DIM_DRIV -- Terminators Inside/Text Above)	5/64"	True Type Arial	3.125'	3.125'	0.5	Center Center	N/A
DIM_DRIV ANOT	Dimension Driveway Annotation (Used for Dimension Style DIM_DRIV_ANOT -- Terminators Inside/Text Above)	5/64"	True Type Arial	3.125'	3.125'	0.5	Center Center	N/A
E_DIM_ST	Existing Dimension Street (Used for Dimension Style E_DIM_ST -- Terminators Inside/Text Inline)	1/16"	True Type Arial	2.5'	2.5'	0.5	Center Center	N/A
E_DIM_ST ANOT	Existing Dimension Street Annotation (Used for Dimension Style E_DIM_ST_ANOT - Terminators Inside/Text Inline)	1/16"	True Type Arial	2.5'	2.5'	0.5	Center Center	N/A
E_SURV_BM	Existing Benchmark	3/32"	True	3.75'	3.75'	0.5	Left	N/A

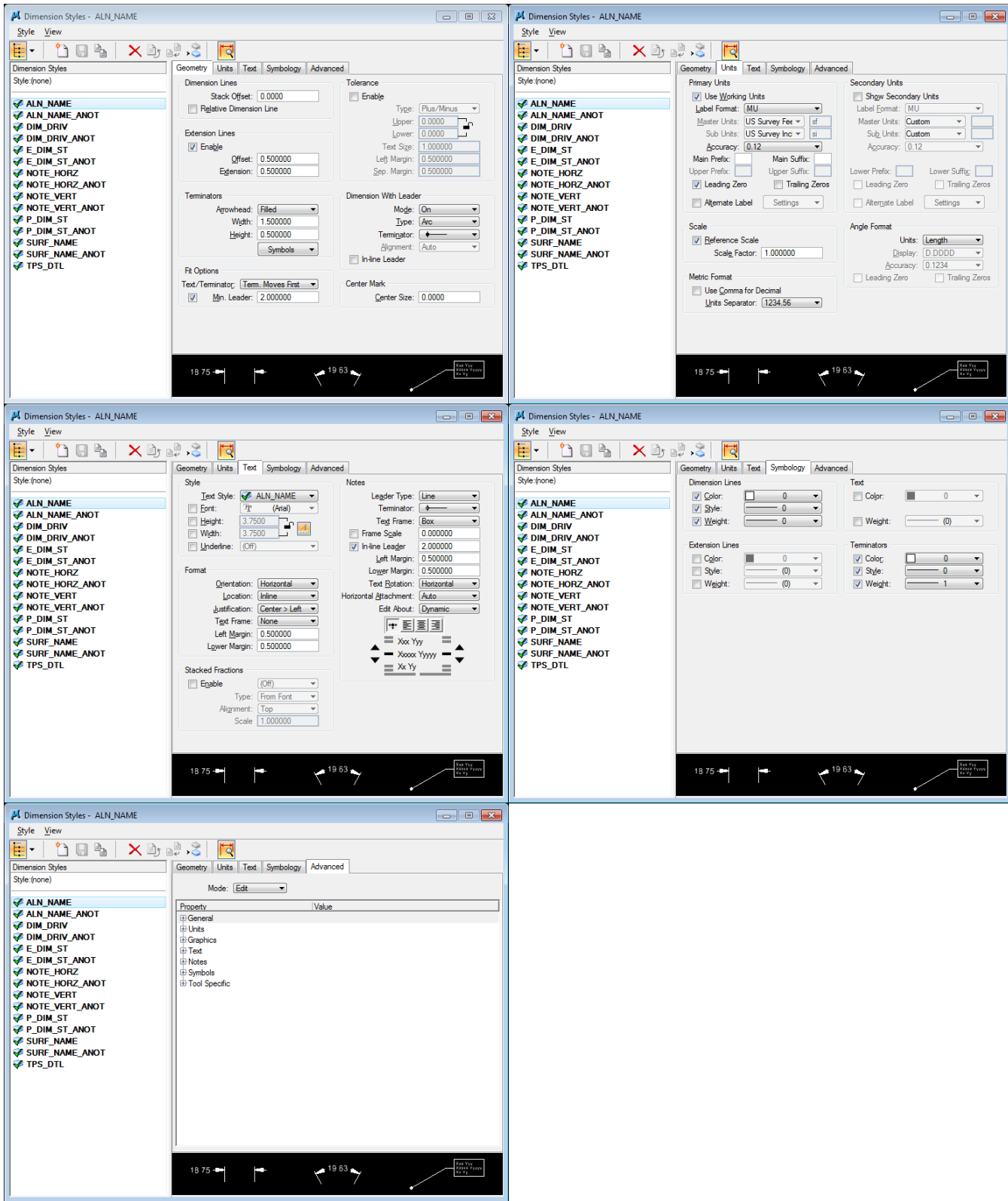
TEXT STYLE	DESCRIPTION	TEXT SIZE	FONT	HEIGHT (1"=40')	WIDTH (1"=40')	LINE SPACING (1"=40')	JUST	CLR
	Text		Type Arial				Center	
E_TEXT	Existing Text	1/16"	True Type Arial	2.5'	2.5'	0.5	N/A	N/A
E_TEXT_ANOT	Existing Text Annotation	1/16"	True Type Arial	2.5'	2.5'	0.5	N/A	N/A
E_TEXT_MASK	Existing Text Mask	1/16"	True Type Arial	2.5'	2.5'	0.5	N/A	N/A
E_XSEC_TEXT	Existing Cross Section Text	1/16"	True Type Arial	2.5'	2.5'	0.5	Left Center	N/A
EXTRACT_TEXT	Extraction Text	1/8"	True Type Arial	5'	5'	0.5	Center Bottom	12
HIGHWAYCPLUS	SignCAD Text USED FOR SIGNS ONLY!	0.0000"	Highway C Plus	0.0000'	0.0000'	1	Left Top	N/A
HIGHWAYDPLUS	SignCAD Text USED FOR SIGNS ONLY!	0.0000"	Highway D Plus	0.0000'	0.0000'	1	Left Top	N/A
HIGHWAYEPLUS	SignCAD Text USED FOR SIGNS ONLY!	0.0000"	Highway E Plus	0.0000'	0.0000'	1	Left Top	N/A
HIGHWAYSIGNCADPLUS	SignCAD Text USED FOR SIGNS ONLY!	0.0000"	Highway SignCAD Plus	0.0000'	0.0000'	1	Left Top	N/A
NOTE	Note Text	1/16"	True Type Arial	2.5'	2.5'	0.5	Left Center	N/A
NOTE_HORZ	Note Horizontal (Used for Dimension Style NOTE_HORZ -- Use with Place Note tool)	5/64"	True Type Arial	3.125'	3.125'	0.5	Left Center	N/A
NOTE_HORZ_ANOT	Note Horizontal Annotation (Used for Dimension Style NOTE_HORZ_ANOT -- Use with Place Note tool)	5/64"	True Type Arial	3.125'	3.125'	0.5	Left Center	N/A
NOTE_VERT	Note Vertical (Used for Dimension Style NOTE_VERT -- Use with Place Note tool)	5/64"	True Type Arial	3.125'	3.125'	0.5	Left Center	N/A
NOTE_VERT_ANOT	Note Vertical Annotation (Used for Dimension Style NOTE_VERT_ANOT -- Use with Place Note tool)	5/64"	True Type Arial	3.125'	3.125'	0.5	Left Center	N/A
P_DIM_ST	Proposed Dimension Street (Used for Dimension Style P_DIM_ST -- Terminators Inside/Text	3/32"	True Type Arial	3.75'	3.75'	0.5	Center Center	N/A

TEXT STYLE	DESCRIPTION	TEXT SIZE	FONT	HEIGHT (1"=40')	WIDTH (1"=40')	LINE SPACING (1"=40')	JUST	CLR
	Inline)							
P_DIM_ST_ANOT	Proposed Dimension Street Annotation (Used for Dimension Style P_DIM_ST_ANOT - Terminators Inside/Text Inline)	3/32"	True Type Arial	3.75'	3.75'	0.5	Center Center	N/A
P_TEXT	Proposed Text	5/64"	True Type Arial	3.125'	3.125'	0.5	N/A	N/A
P_TEXT_ANOT	Proposed Text Annotation	5/64"	True Type Arial	3.125'	3.125'	0.5	N/A	N/A
P_TEXT_MASK	Proposed Text Mask	5/64"	True Type Arial	3.125'	3.125'	0.5	N/A	N/A
P_XSEC_TEXT	Proposed Cross Section Text	3/32"	True Type Arial	3.75'	3.75'	0.5	Left Center	N/A
PLAN_TITLE	Plan View Title	1/8"	True Type Arial	5'	5'	0.5	Center Bottom	N/A
Print Preparation Text	Bentley Default Text DO NOT USE!	0.000205"	True Type Arial	0.0082'	0.0082'	1	Left Top	N/A
PROF_TEXT	Proposed Profile Text	5/64"	True Type Arial	3.125'	3.125'	0.5	Left Center	N/A
PROF_TITLE	Profile View Title	1/8"	True Type Arial	5'	5'	0.5	Center Bottom	N/A
RD_TEXT	Record Drawing Text	3/32"	True Type Arial, Bold Italics	3.75'	3.75'	0.5	Center Bottom	13
ST_NAME	Street Name	1/8"	True Type Arial	5'	5'	0.5	Center Center	N/A
START_END_PROJ		1/8"	True Type Arial	5'	5'	0.5	Center Center	N/A
SURF_NAME	Surface Name (Used for Dimension Style SURF_NAME -- Use with Place Note tool)	3/32"	True Type Arial	3.75'	3.75'	0.5	Left Center	N/A
SURF_NAME_ANOT	Surface Name Annotation (Used for Dimension Style SURF_NAME_ANOT -- Use with Place Note tool)	3/32"	True Type Arial	3.75'	3.75'	0.5	Left Center	N/A
TEXT_10	Text 10'H x 10'W	1/4"	True Type	10'	10'	0.5	Center Center	N/A

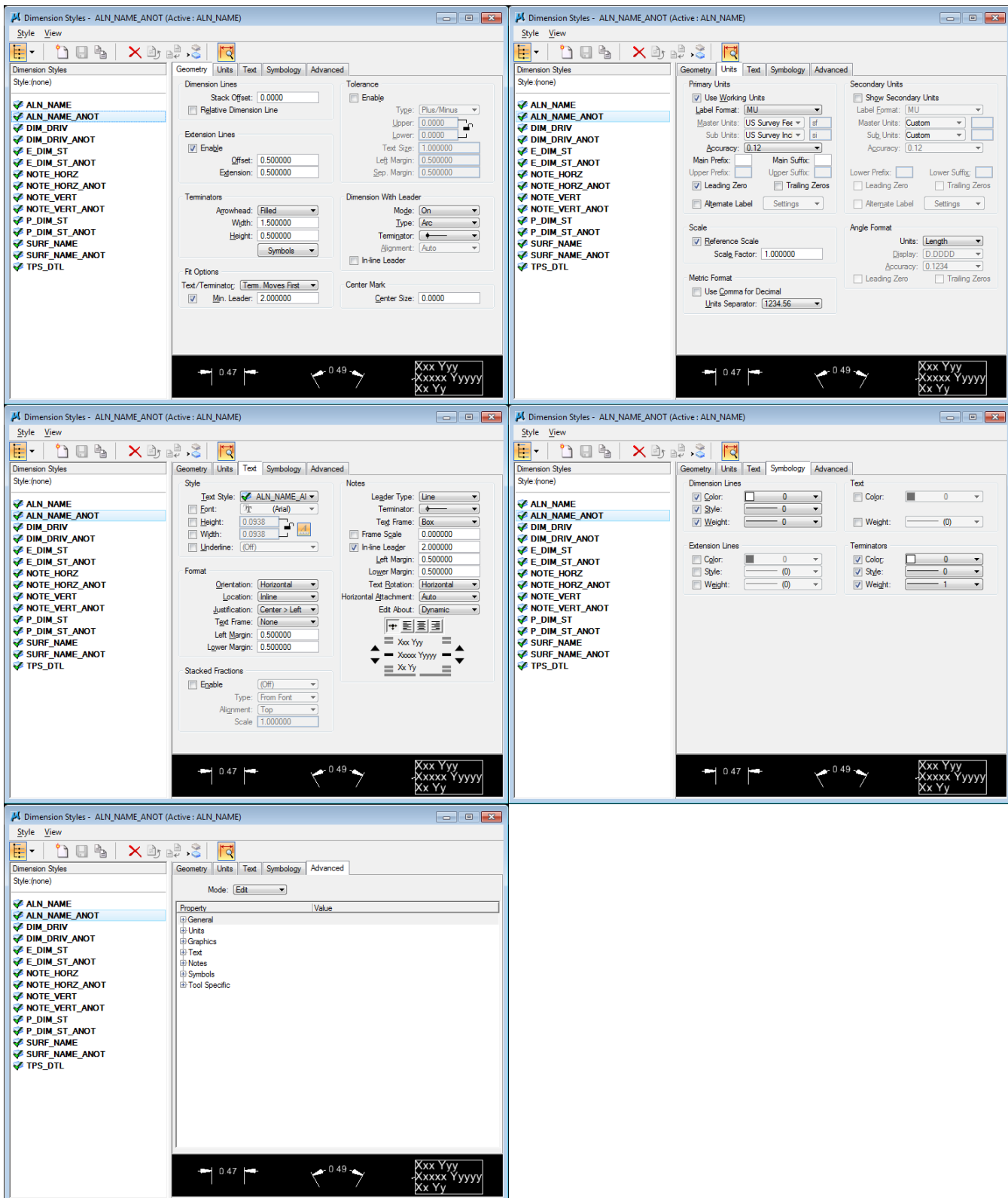
TEXT STYLE	DESCRIPTION	TEXT SIZE	FONT	HEIGHT (1"=40')	WIDTH (1"=40')	LINE SPACING (1"=40')	JUST	CLR
			Arial					
TEXT_15	Text 15'H x 15'W	3/8"	True Type Arial	15'	15'	0.5	Center Center	N/A
Title Block	Bentley Default Text DO NOT USE!	0.000205"	True Type Arial	0.0082'	0.0082'	0	Left Top	N/A
TRAF_NOTE_1/16	Traffic Notes	1/16"	True Type Arial	2.5'	2.5'	0.50	Left Center	4
TRAF_NOTE_5/64	Traffic Notes	5/64"	True Type Arial	3.125'	3.125'	0.50	Left Center	4
TRAFFIC	Traffic Text for Conduit Notes, General Notes, Leader Notes, Revision Notes	5/64"	True Type Arial	3.125'	3.125'	0.5	Left Center	N/A
Viewport Label	Bentley Default Text DO NOT USE!	0.00041"	True Type Arial	0.0164'	0.0164'	1	Left Bottom	129

Dimension Styles (Revised 1/23/20)

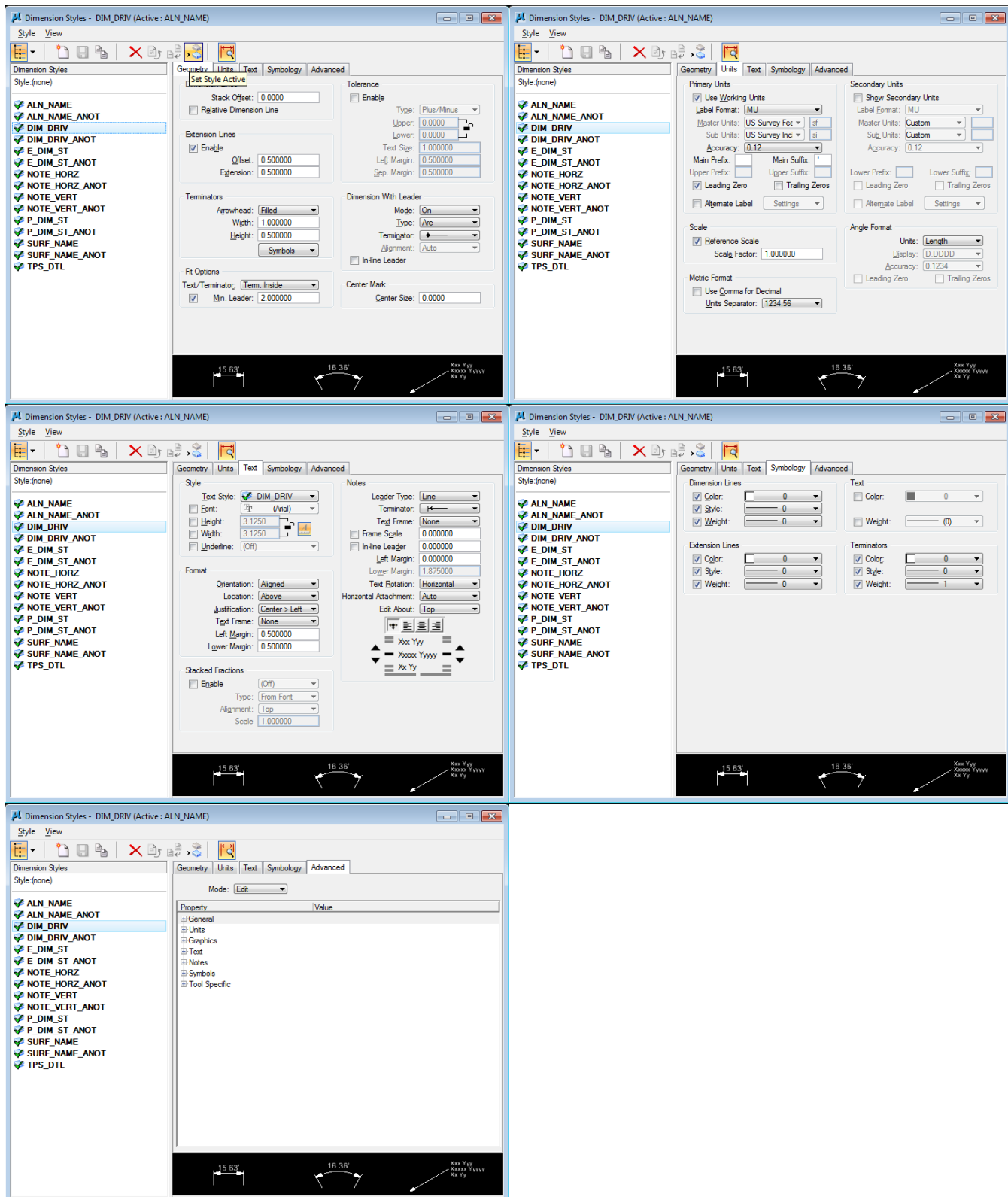
ALN_NAME (Alignment Name)



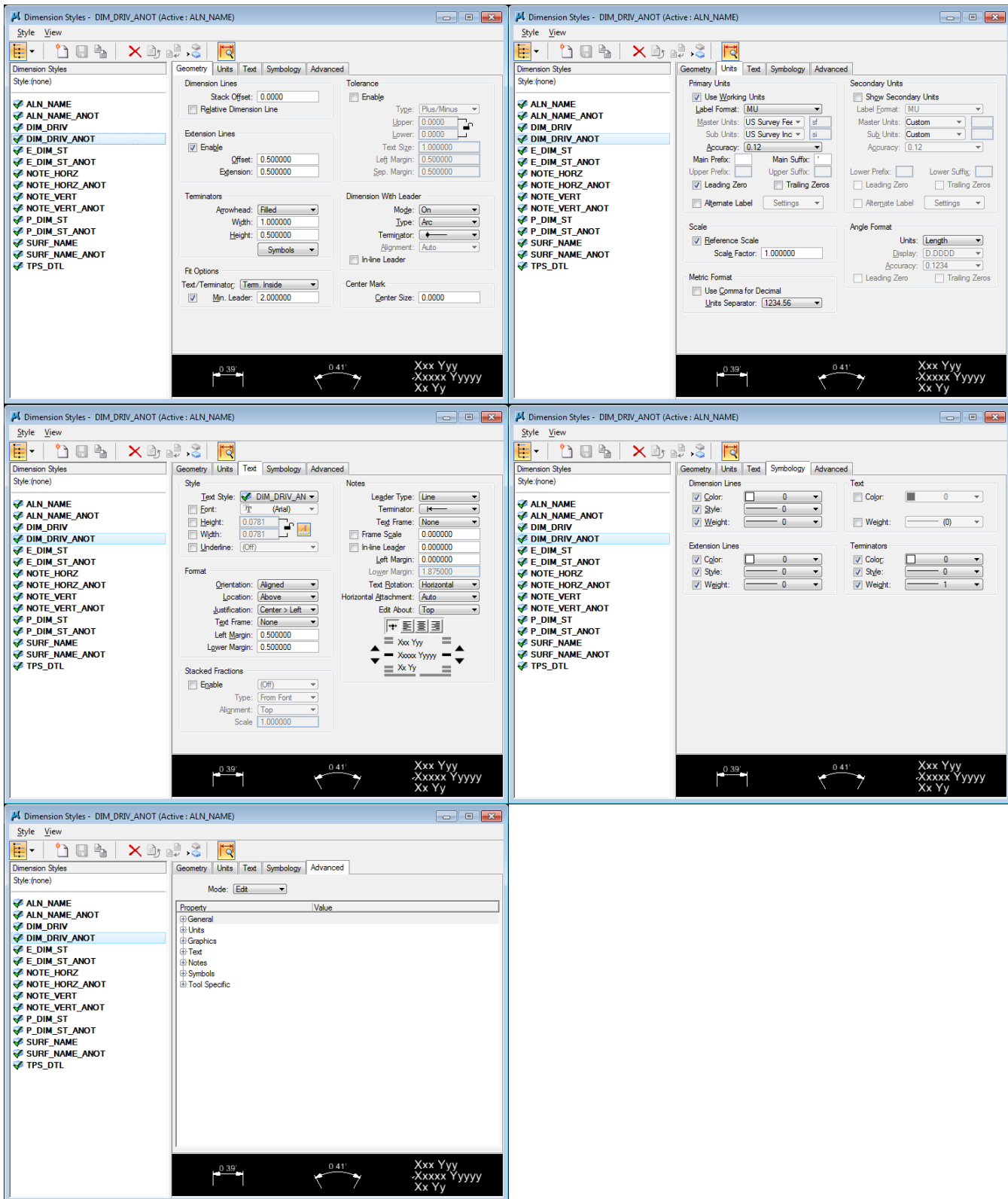
ALN_NAME_ANOT (Alignment Name Annotation)



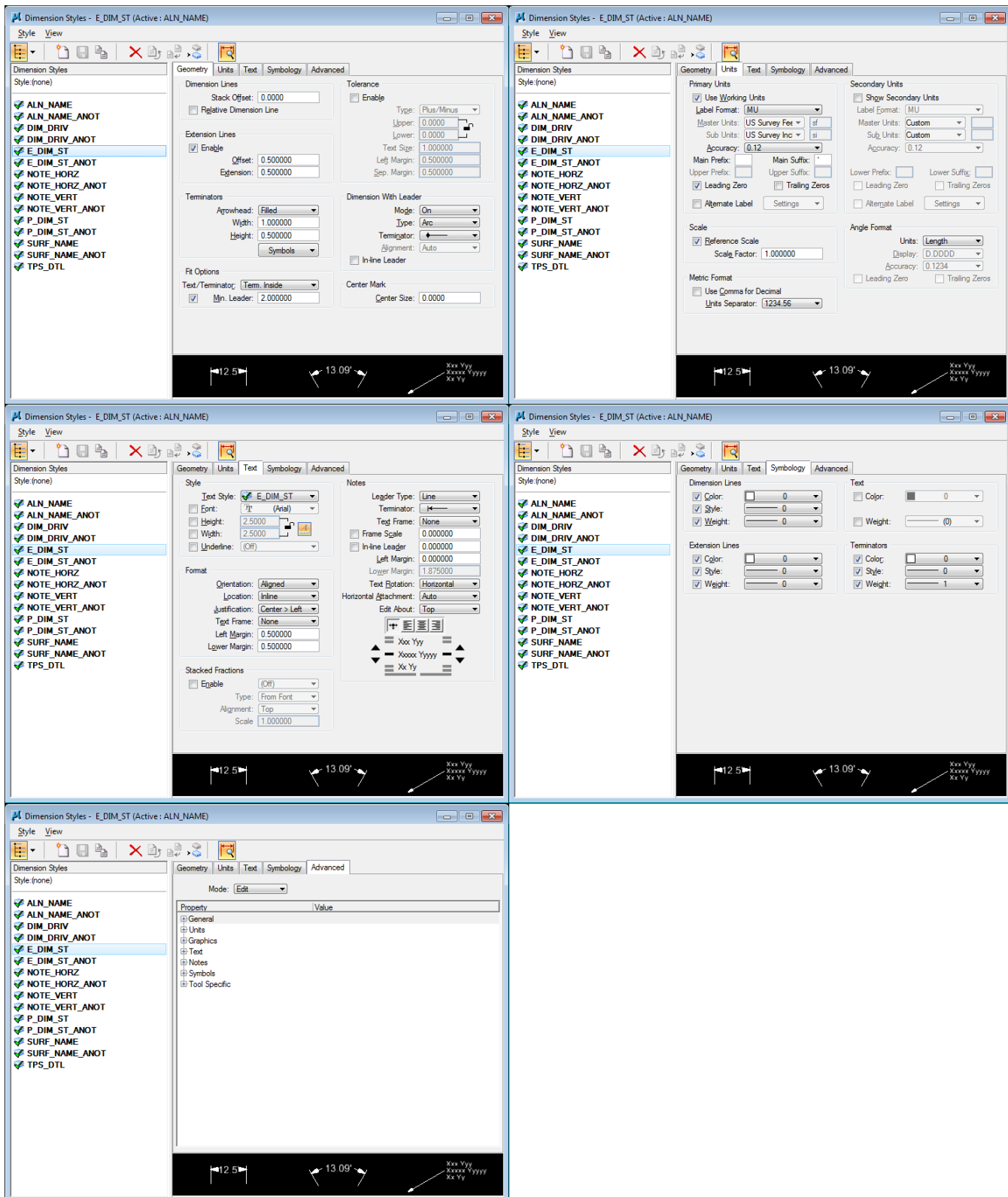
DIM_DRIV (Dimension Driveway)



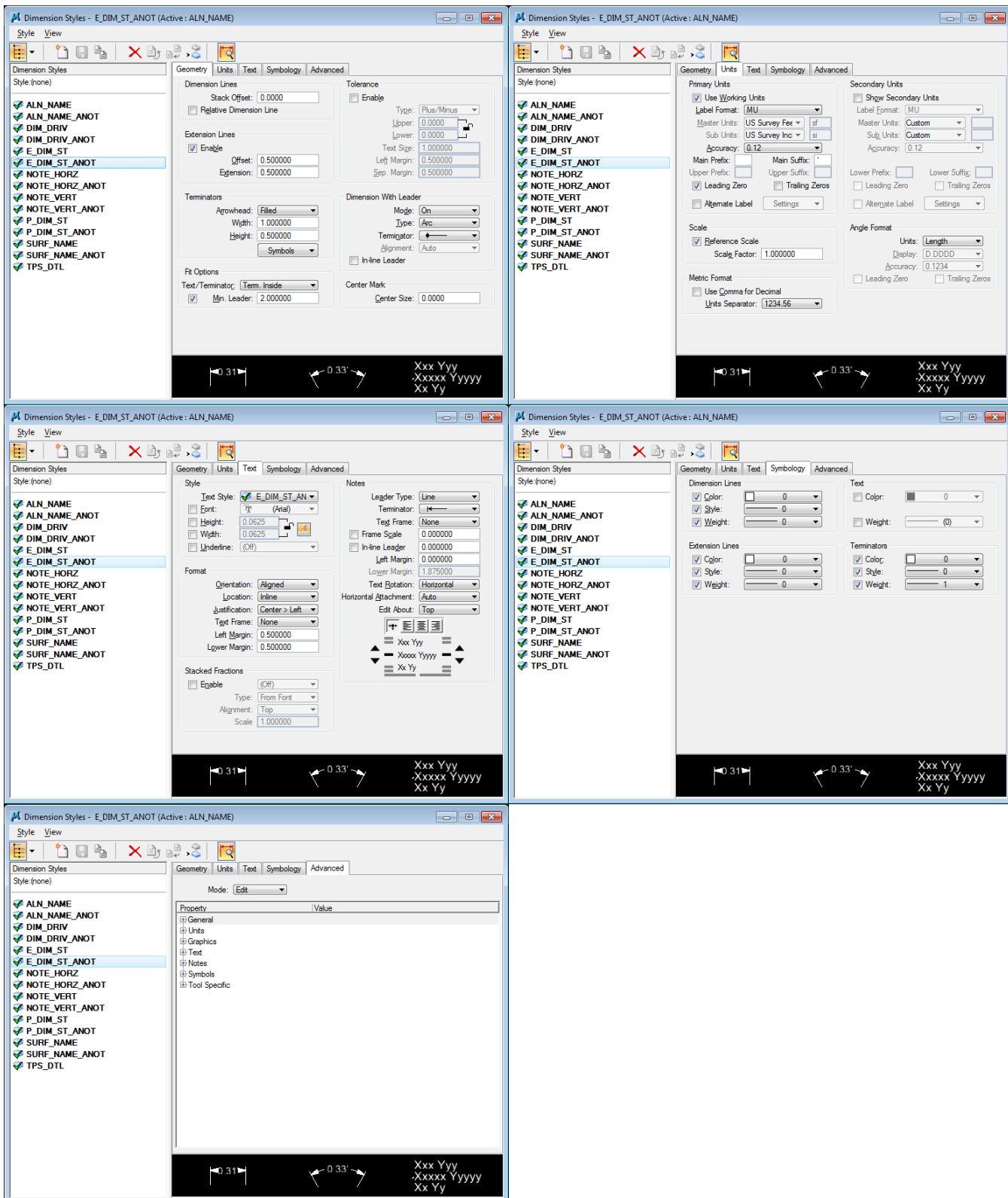
DIM_DRIV_ANOT (Dimension Driveway Annotation)



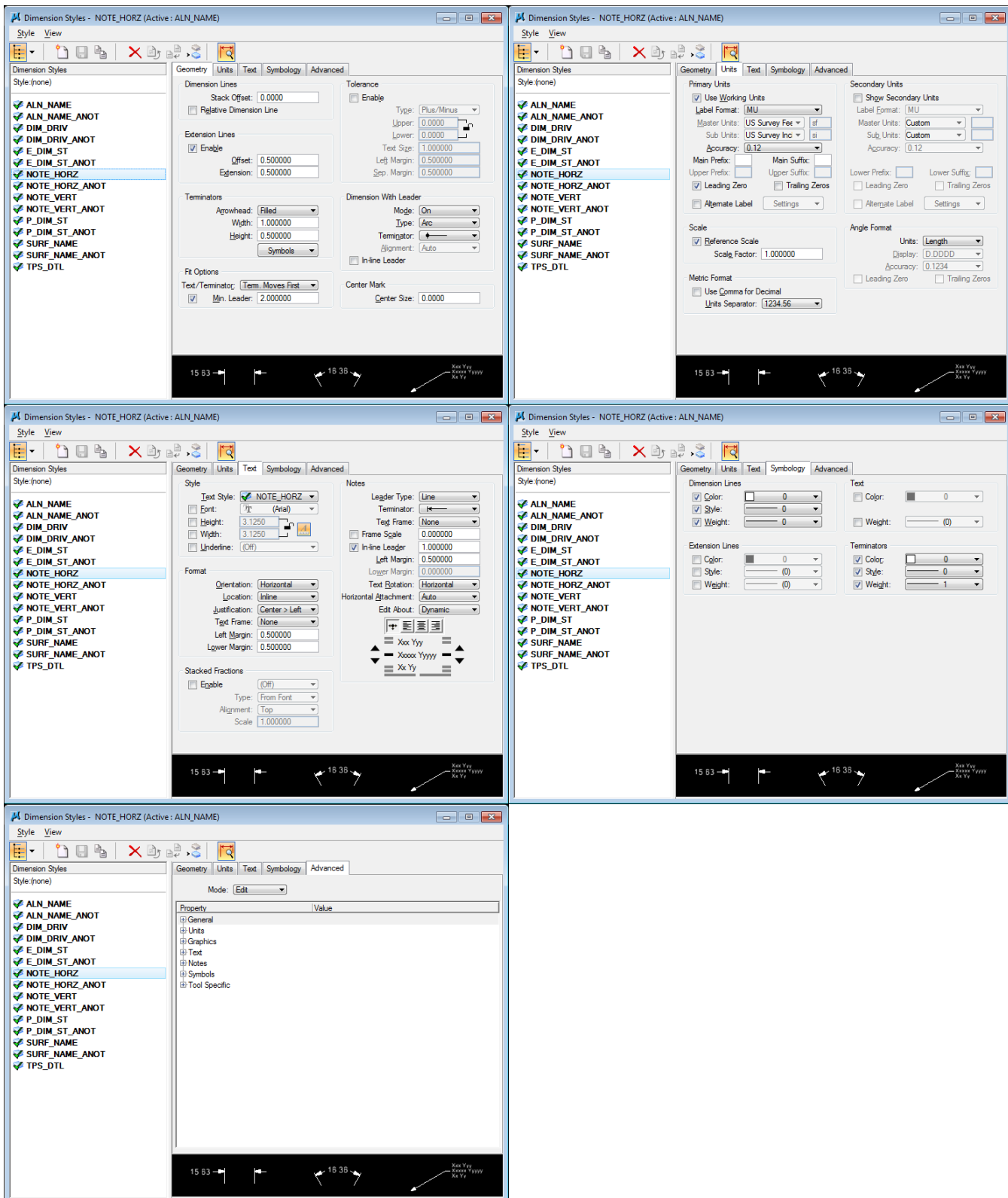
E_DIM_ST (Existing Dimension Street)



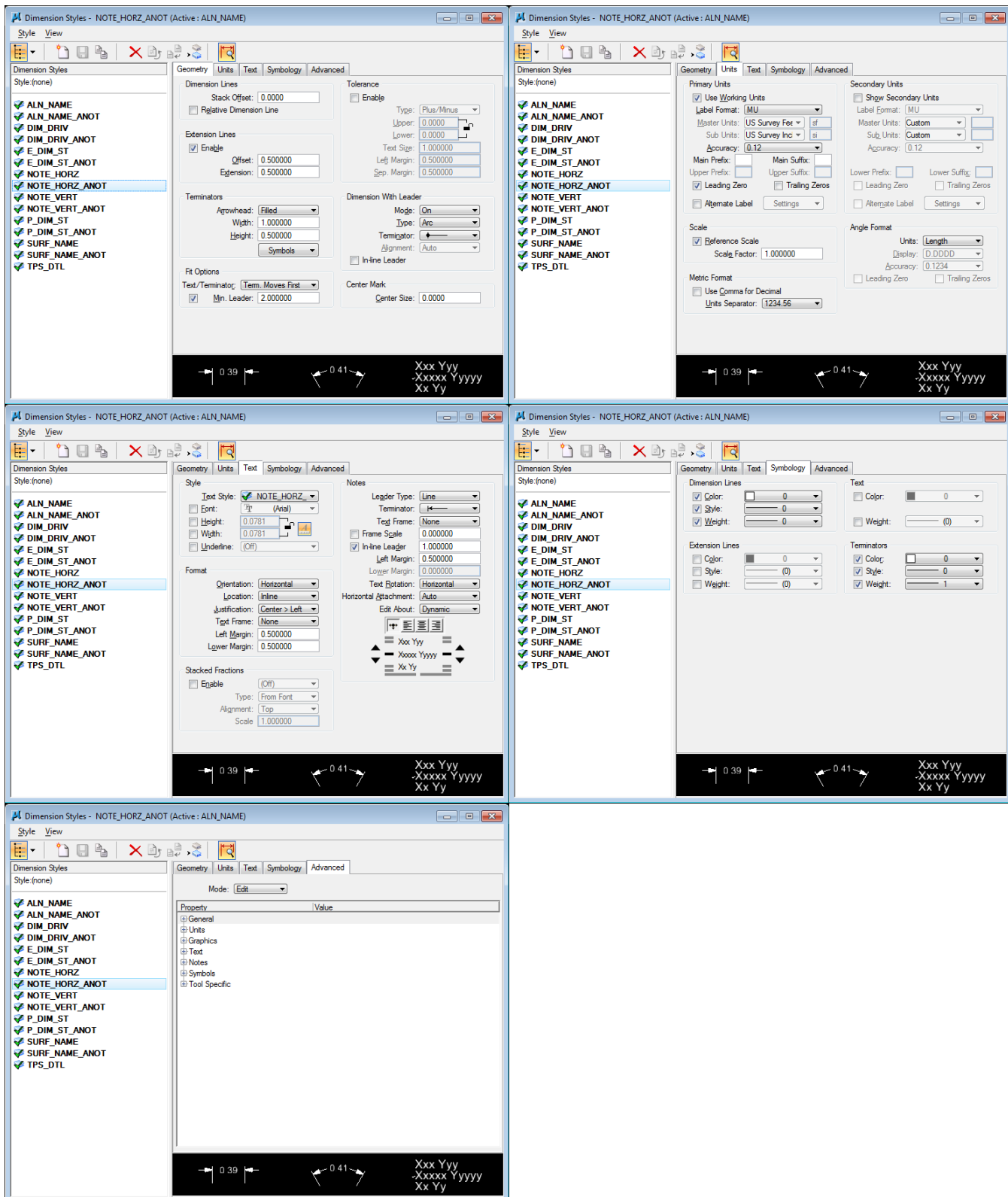
E_DIM_ST_ANOT (Existing Dimension Street Annotation)



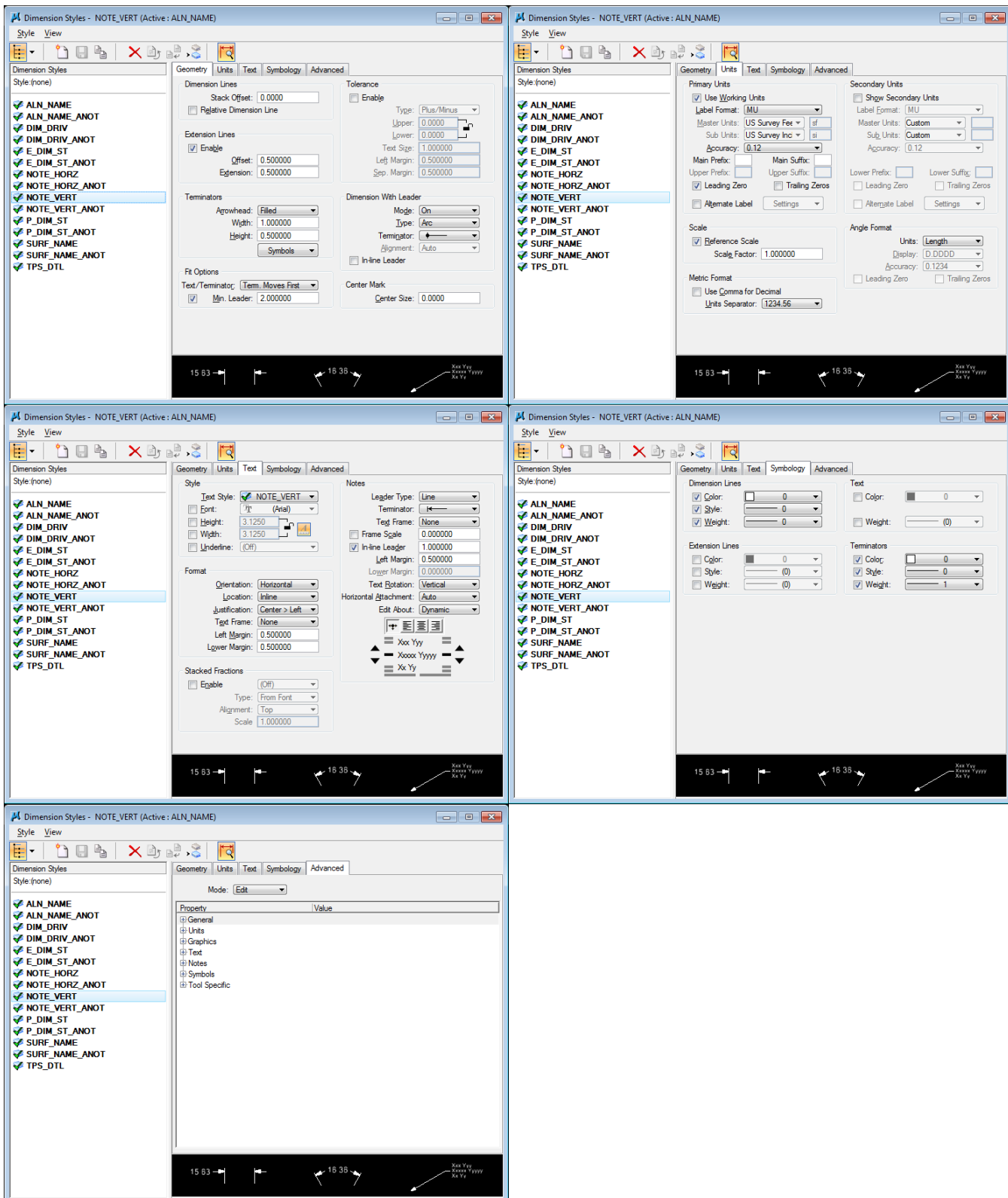
NOTE_HORZ (Note Horizontal)



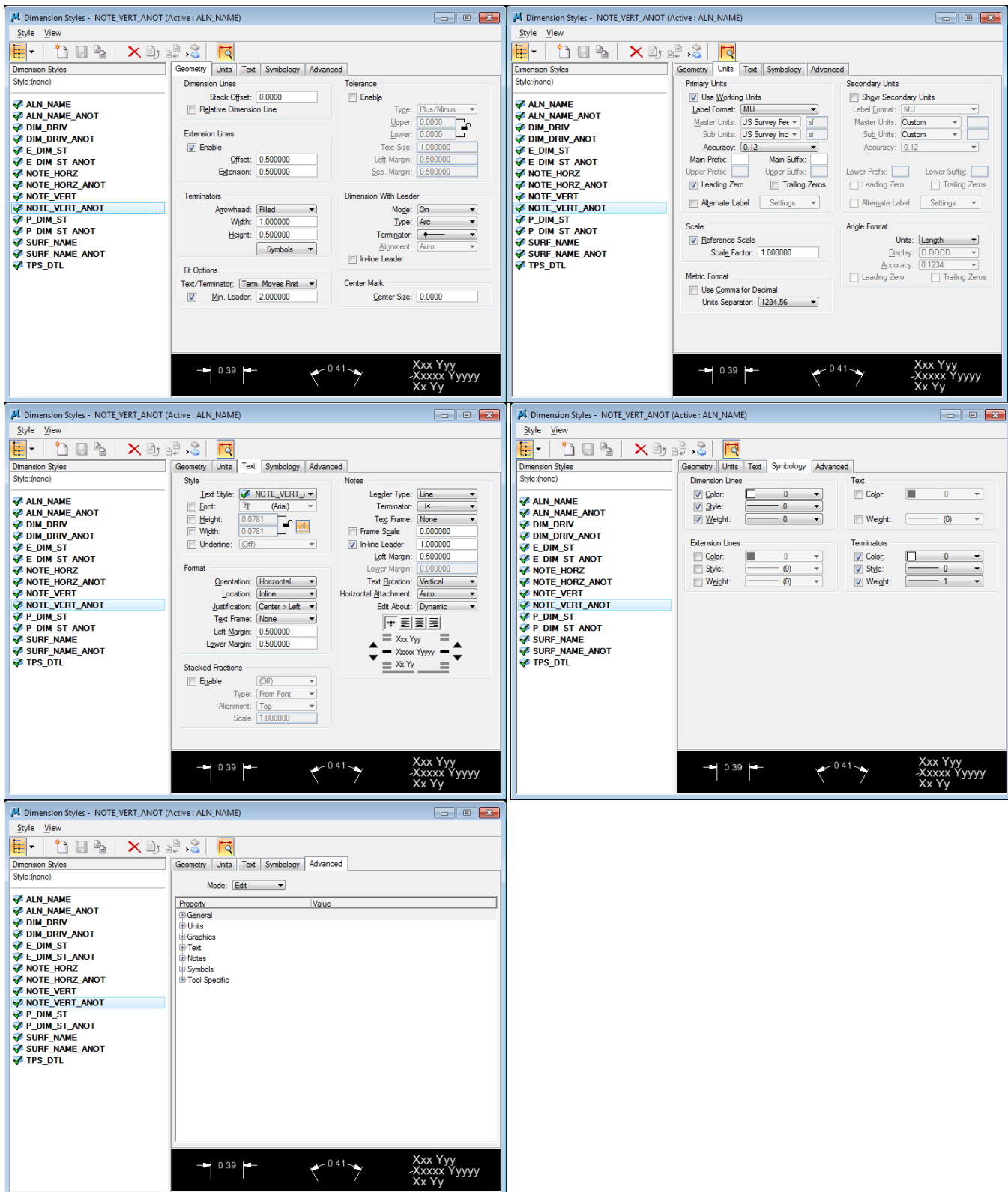
NOTE_HORZ_ANOT (Note Horizontal Annotation)



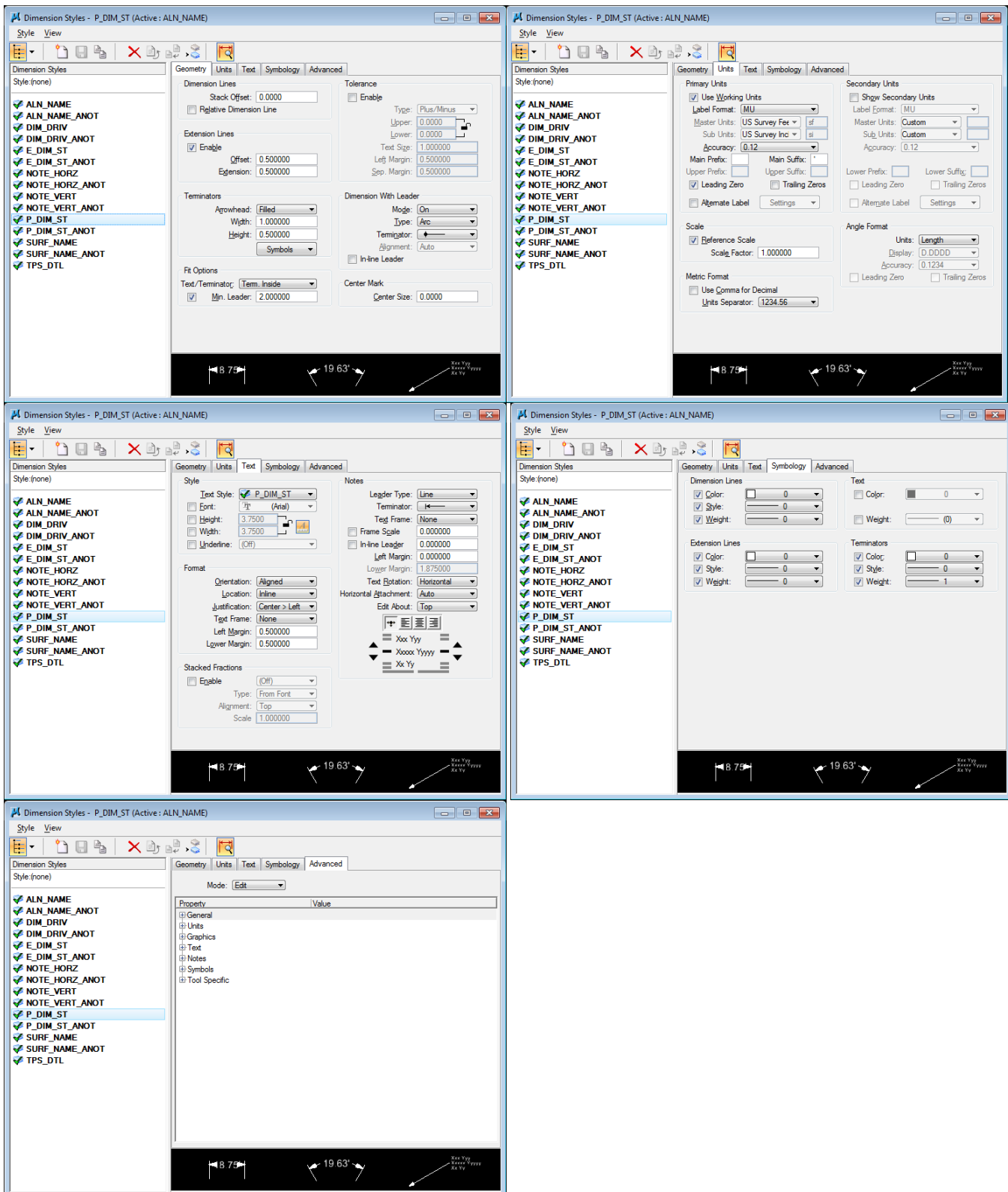
NOTE_VERT (Note Vertical)



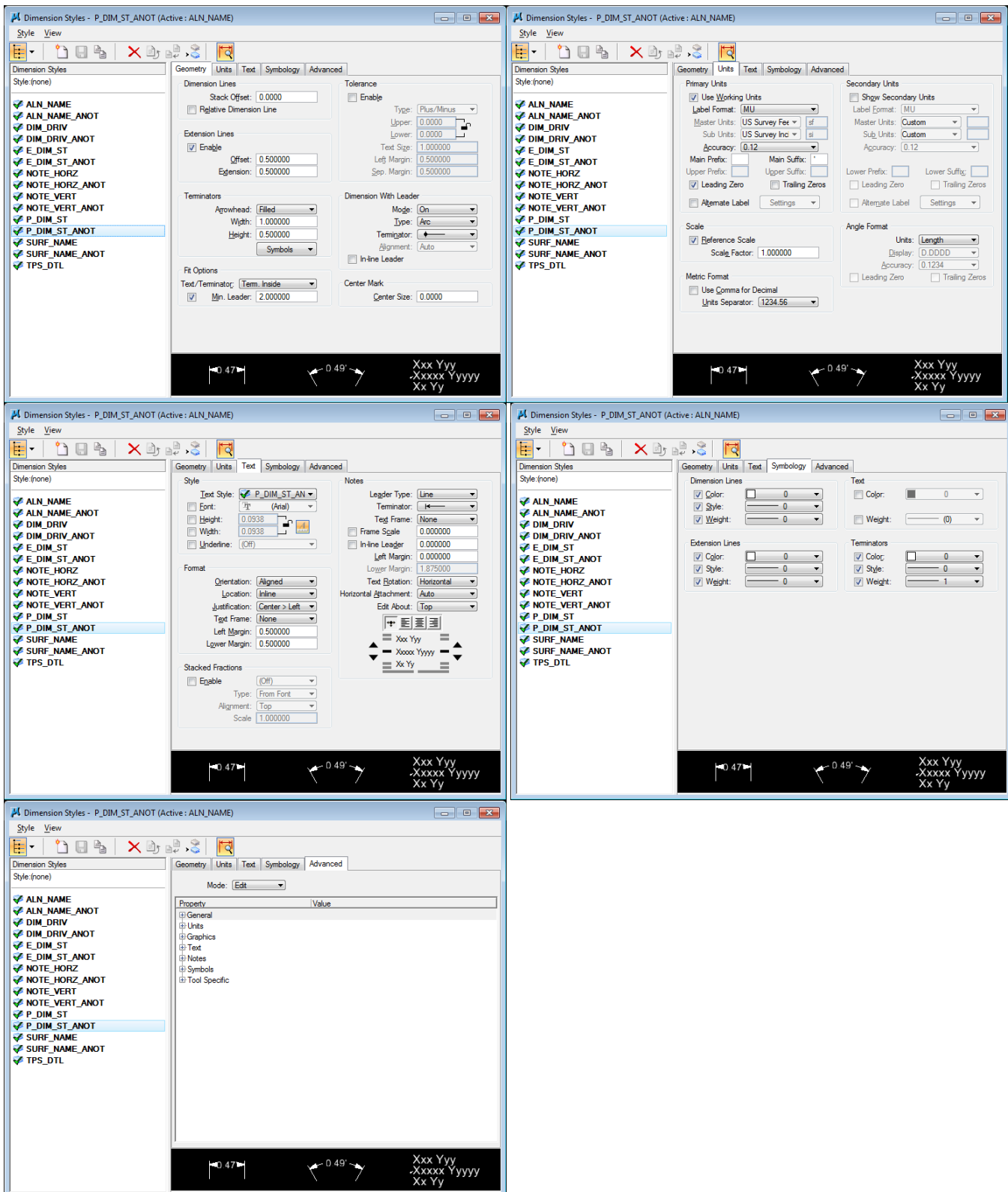
NOTE_VERT_ANOT (Note Vertical Annotation)



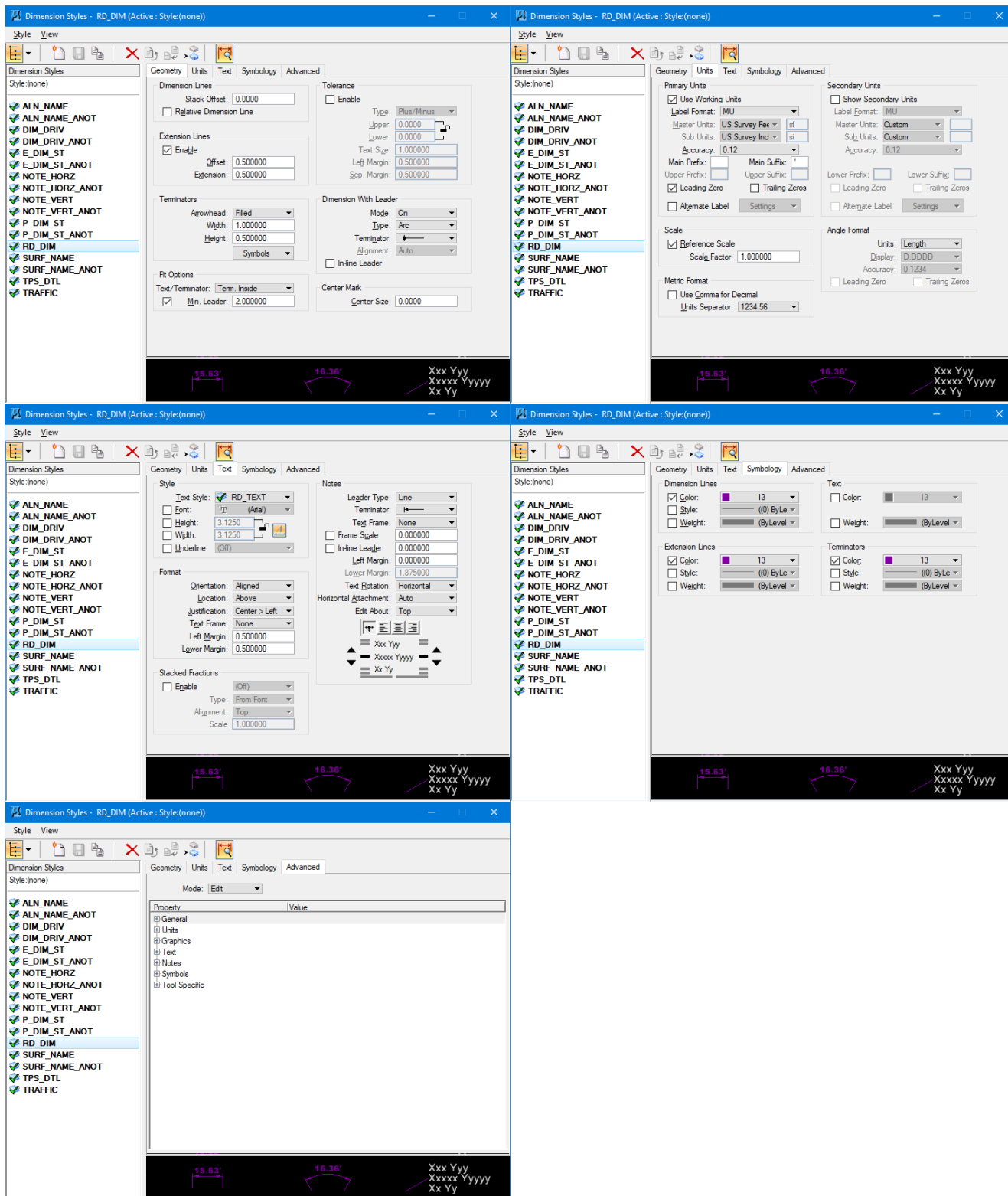
P_DIM_ST (Proposed Dimension Street)



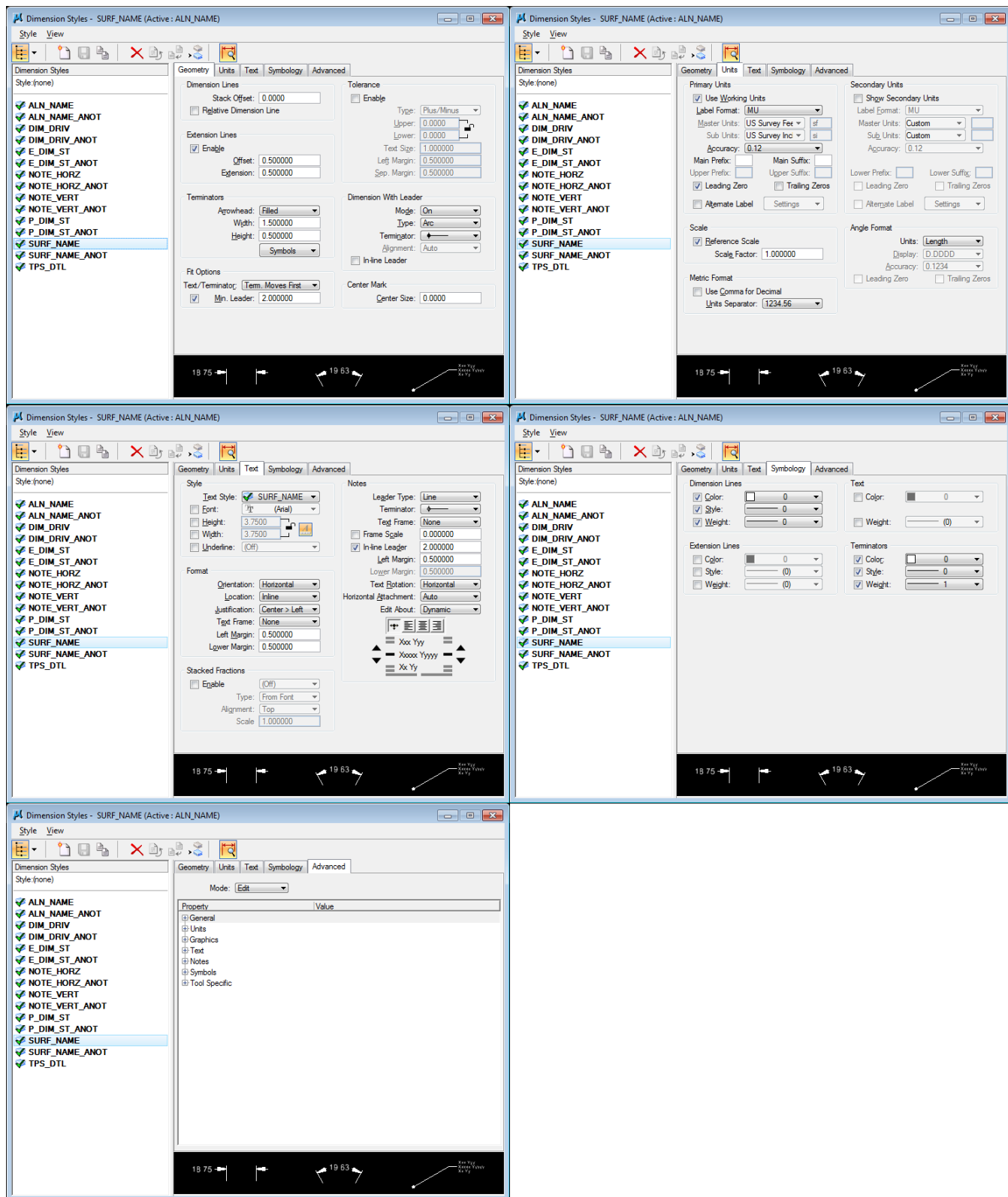
P_DIM_ST_ANOT (Proposed Dimension Street)



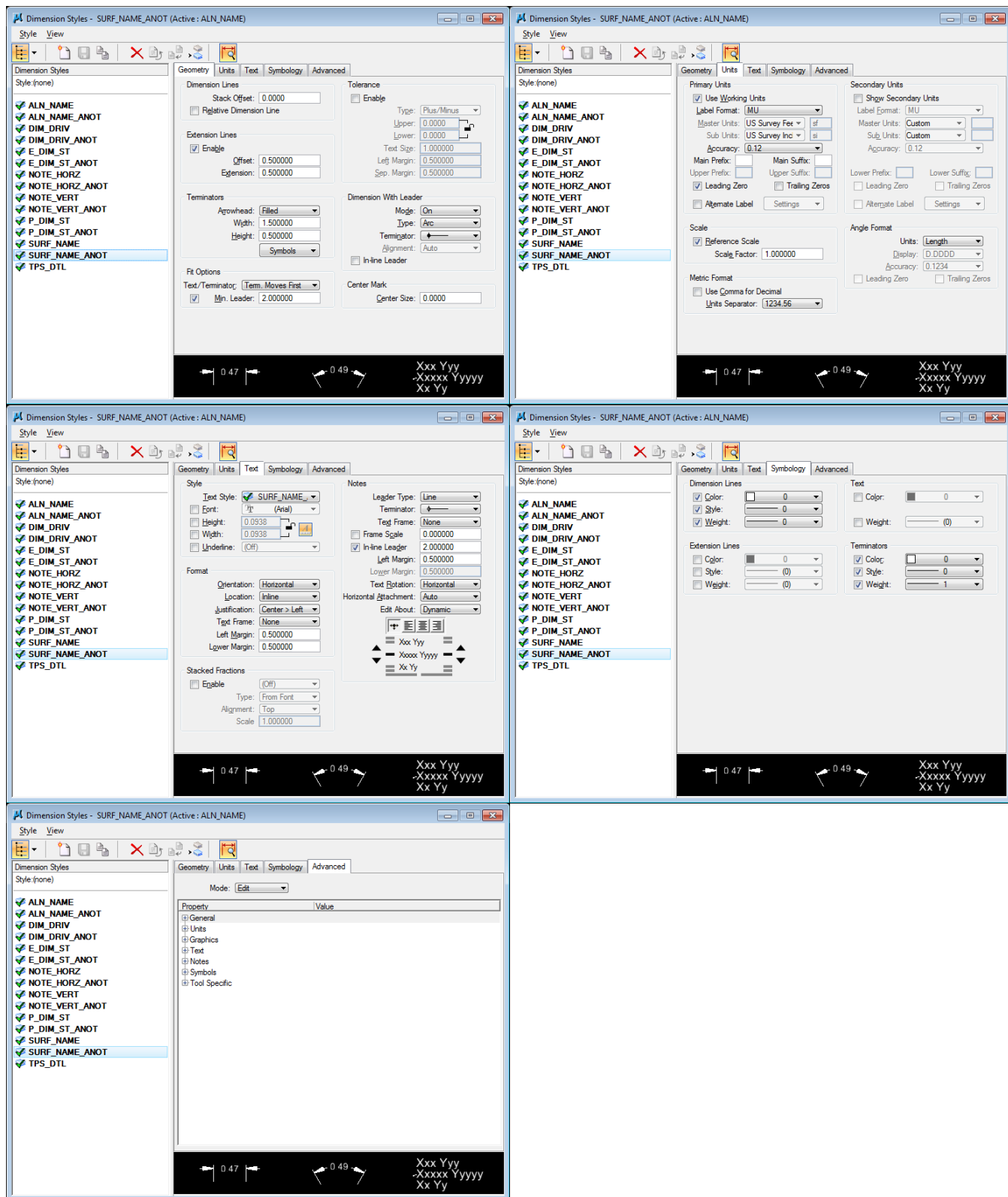
RD_DIM (Record Drawing)



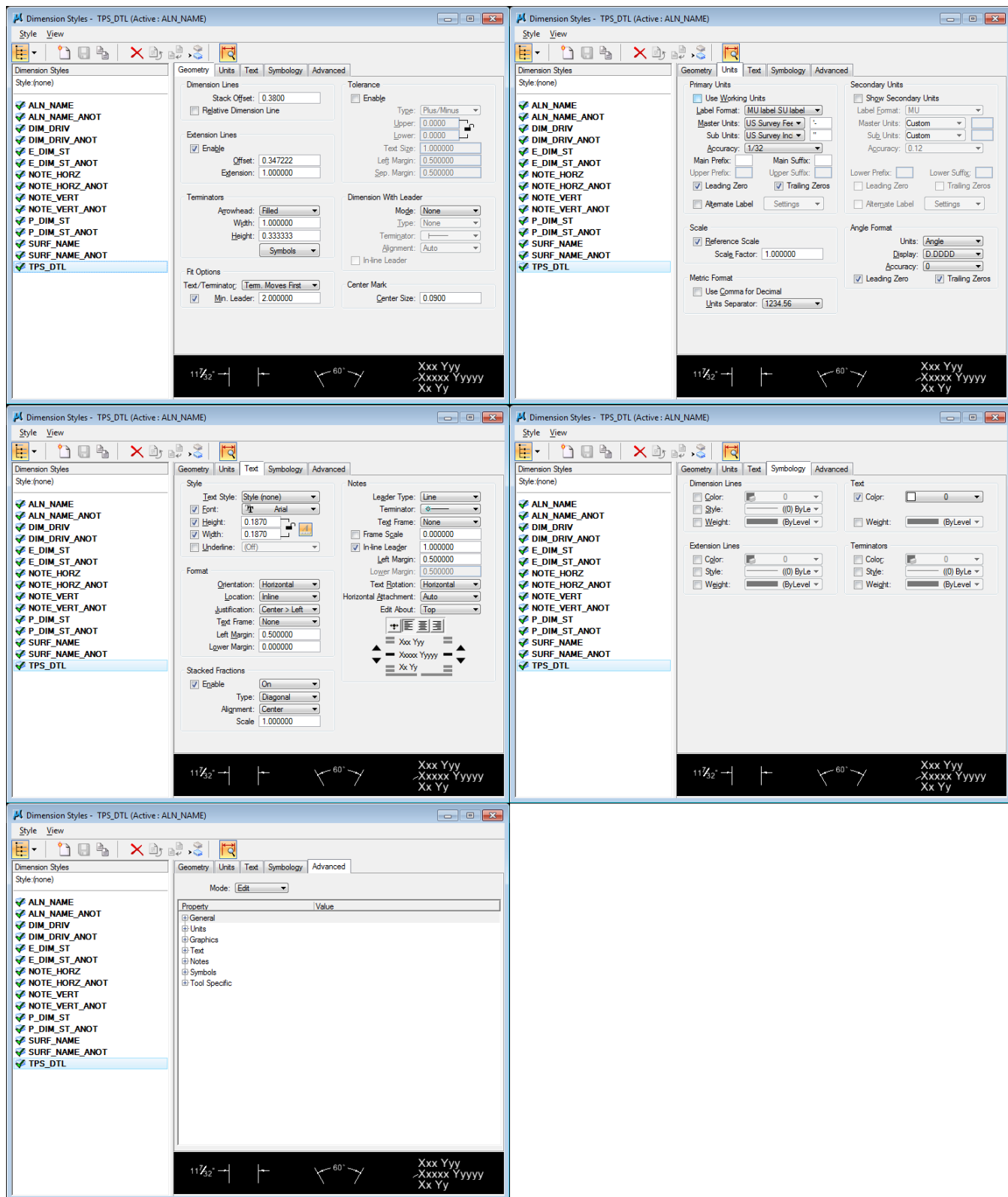
SURF_NAME (Surface Name)



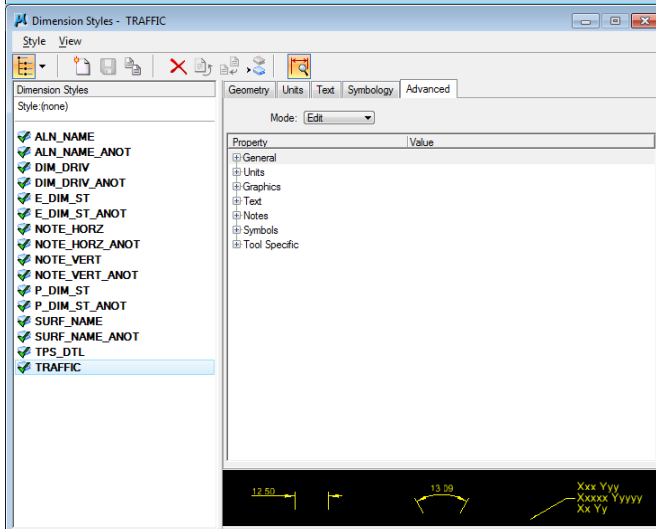
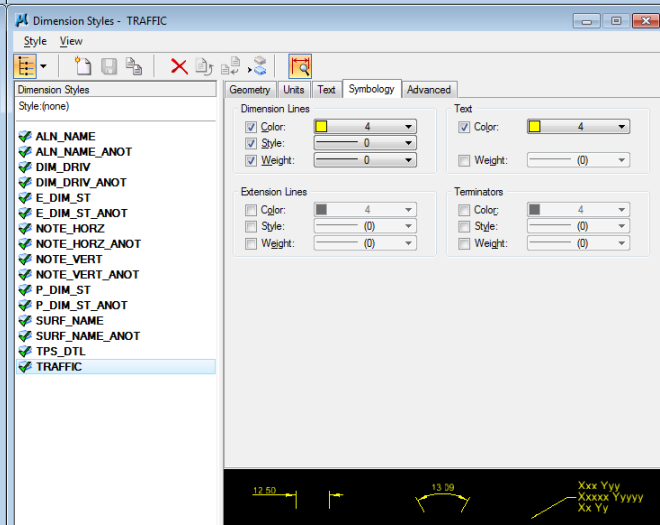
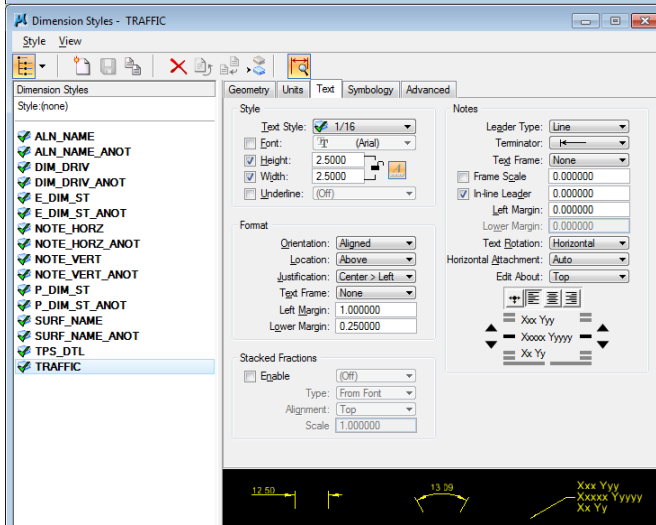
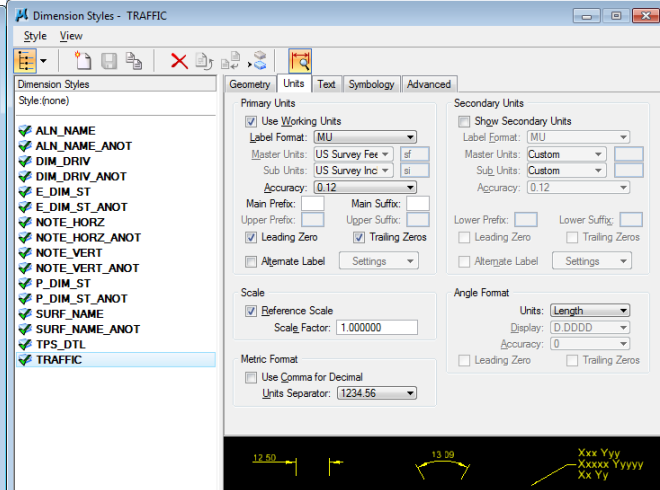
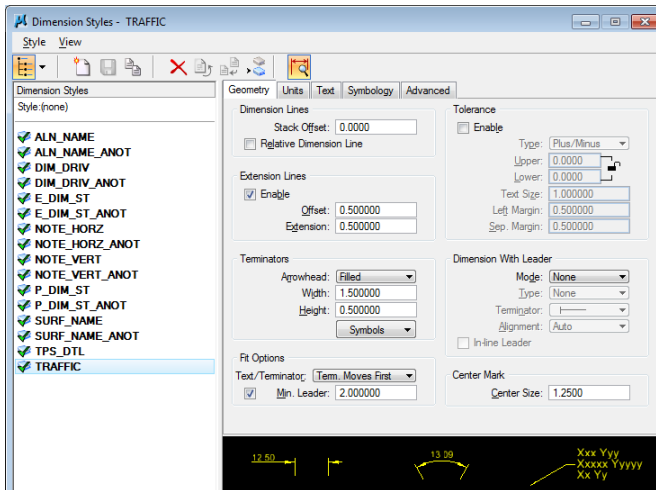
SURF_NAME_ANOT (Surface Name Annotation)



TPS_DTL (Traffic & Parking Services Detail)



TRAFFIC (Traffic)



Utility Callouts (Revised 8/20/19)

The following number ranges must be used for utility callouts on all plans:

Note: The use of 4-digit numbers requires the use of ellipses.

NUMBER		DESCRIPTION
Use Monument Number		Monuments
1-499		Control Points
500-999		Unknown Features
1000-1999		Existing Sanitary Sewer Features
2000-2999		Existing Storm Sewer Features
3000-3999		Existing Water Features
4000-4999		Existing Traffic Features
5000-5999	5000-5299	Existing Private Utility Features
	5300-5499	Existing Private Communication Features
	5500-5699	Existing Private Gas Features
	5700-5799	Existing Private Power Features
	5800-5899	Existing Private Sanitary Sewer Features
	5900-5999	Existing Private Storm Sewer Features
6000-6999		Existing Private Steam Features
7000-7999		Proposed Sanitary Sewer Features
8000-8999		Proposed Storm Sewer Features
9000-9999		Proposed Water Features
		Proposed Traffic Features

Bentley Descartes

Revised 4/10/14

Bentley Descartes adds additional raster operations to MicroStation, including the ability to enhance, transform, mosaic, color mask, edit, vectorize, drape, and add texture to images. It also allows users to convert text and cells from raster to vector and register images and vector data.

Bentley Map
Revised 4/10/14

Bentley Map is a GIS (geographic information system) that supports the creation, maintenance, analysis, and sharing of geospatial information.

Bentley Navigator

Revised 4/10/14

Bentley Navigator is used to add comments, suggest changes, and mark up a document, without altering the original document's content (the markup is stored in a new document, called the overlay document, while the original document is referred to as the reviewed document).

InRoads
Revised 8/30/17

Running atop MicroStation, InRoads provides drafting capabilities, mapping tools, and design automation for civil engineering road and transportation infrastructure.

InRoads Resource Files

- **Sewer Structures File** (L:\Enterprise Engineering\Bentley\Civil\Mpls.dat)
- **Drafting Notes** (L:\Enterprise Engineering\Bentley\Civil\Mpls.dft)
- **Feature and Attribute Library** (L:\Enterprise Engineering\Bentley\Civil\Mpls.fxl)
- **Intensity-Duration-Frequency File** (L:\Enterprise Engineering\Bentley\Civil\Mpls.idf)
- **Template Library** (L:\Enterprise Engineering\Bentley\Civil\Mpls.itl)
- **Preference File** (L:\Enterprise Engineering\Bentley\Civil\Mpls.xin)
Note: For a complete listing of feature names that are used in the design of Capital Improvement Projects see:
[Mpls PW CADD Levels & Symbology](#)
- **Project Defaults** (L:\Enterprise Engineering\Bentley\Civil\Mpls_Standard_Project_Defaults.reg)

InRoads Bridge

Revised 4/10/14

InRoads Bridge provides tools to define complex bridge geometry, as well as simple span bridges, including capabilities for definition of slab fascia, abutments, piers, bearing, and girder.

InRoads Storm & Sanitary

Revised 4/10/14

InRoads Storm & Sanitary generates a network model of storm drainage systems for engineering design and analysis. It provides tools for evaluating, managing, and expanding storm drainage networks in a graphics environment.

InRoads Storm & Sanitary Resource Files

- **Intensity-Duration-Frequency File** (L:\Enterprise Engineering\Bentley\Civil\Mpls.idf)
- **Sewer Structures File** (L:\Enterprise Engineering\Bentley\Civil\Mpls.dat)

InRoads Survey
Revised 4/2/24

InRoads Survey enables users to transfer data from electronic fieldbooks to MicroStation with interactive data editing capabilities.

Survey Feature Codes (L:\Enterprise Engineering\Bentley\Civil\Mpls.xin) (Revised 4/2/24)

The City of Minneapolis standard survey feature table listed below contains the following features:

DESCRIPTION	FEATURE CODE	FEATURE TYPE	SYMBOL TYPE	SHOT LOCATION	FEATURE INSERTION POINT
HYDROGRAPHY					
Existing Hydrography Waterbody	WTR	Breakline	Line		Edge of waterbody
Existing Park Board Bench	PBB	Random/ Exclude from Triangulation	Point		Center of bench
Existing Park Board Paint	PBS	Breakline/ Exclude from Triangulation	Line		Center of paint
Proposed Park Board Rock (for tree plantings)	PBR	Random/ Exclude from Triangulation	Point	Corner of area	
RIGHT-OF-WAY					
Existing Right-of-Way Line	ROW	Do Not Include	Line		Center of right-of-way line
Existing Right-of-Way Property Corner	PCR	Random/ Exclude from Triangulation	Point		Center of property corner
STRUCTURE					
Existing Structure Building	BLD	Interior	Line	Perimeter, clockwise	Edge of building, counterclockwise
Existing Structure Building Left	BLL	Interior	Line	Perimeter, clockwise	Edge of building, counterclockwise
Existing Structure Building Right	BLR	Interior	Line	Perimeter, clockwise	Edge of building, clockwise
Existing Structure Bus Shelter	BUS	Interior	Line		Edge of bus shelter
Existing Structure Fence Chain-link	CFC	Breakline	Line	Breaks along fence	Center of chain-link fence
Existing Structure Fence Ornamental	OFC	Breakline	Line	Breaks along fence	Center of ornamental fence
Existing Structure Fence Wood	WDF	Breakline	Line	Breaks along fence	Center of wood fence
Existing Structure Fence Wire	WRF	Breakline	Line	Breaks along fence	Center of wire fence
Existing Structure Flagpole	FPL	Random/ Exclude from Triangulation	Point		Center of flagpole
Existing Structure Guy Wire	GUY	Random/ Exclude from Triangulation	Point		Center of guy wire

DESCRIPTION	FEATURE CODE	FEATURE TYPE	SYMBOL TYPE	SHOT LOCATION	FEATURE INSERTION POINT
Existing Structure Handrail	HRL	Do Not Include	Line		Center of handrail
Existing Structure Mailbox	MBX	Breakline/ Exclude from Triangulation	Line		Edge of mailbox
Existing Structure Post	PST	Random/ Exclude from Triangulation	Point	Offset to center	Center of post
Existing Structure Steps	STE	Breakline/ Exclude from Triangulation	Line		Edge of steps
Existing Structure Unidentified Areaway	ARW	Breakline/ Exclude from Triangulation	Line		Edge of areaway
Existing Structure Unidentified Cabinet	CAB	Breakline/ Exclude from Triangulation	Line		Edge of cabinet
Existing Structure Unidentified Manhole	MUK	Random	Point		Center of manhole
Existing Structure Unidentified Pipe	PUK	Breakline/ Exclude from Triangulation	Line		Center of pipe
Existing Structure Unidentified Vault	VLT	Breakline/ Exclude from Triangulation	Line		Edge of vault
Existing Structure Wall Left	WLL	Breakline	Line	Front of wall at breaks	Edge of wall, counterclockwise
Existing Structure Wall Right	WLR	Breakline	Line	Front of wall at breaks	Edge of wall, clockwise
SURFACE					
Existing Surface Breakline	BRK	Breakline	Line		Edge of breakline
SURVEY					
Existing Survey Berm Bottom (Toe of Slope)	BBM	Breakline	Line		Bottom edge of berm
Existing Survey Benchmark	BMK	Random	Point		Center of benchmark
Existing Survey Centerline	CLS	Breakline	Line		Center of line
Existing Survey Center Center	CCR	Random	Point		Center of center
Existing Survey Control Point	CPT	Random	Point		Center of control point
Existing Survey Joint	JNT	Breakline/ Exclude from Triangulation	Line		Center of line
Existing Survey Monument	MON	Random	Point		Center of survey monument
Existing Survey PK Nail	PKN	Random	Point		Center of PK nail
Existing Survey Resection Point	RPT	Random/ Exclude from Triangulation	Point		Center of resection point
Existing Survey Shot Door	DOR	Random	Point		Center of door shot
Existing Survey Shot Spot	SPT	Random	Point		Center of spot shot

DESCRIPTION	FEATURE CODE	FEATURE TYPE	SYMBOL TYPE	SHOT LOCATION	FEATURE INSERTION POINT
Existing Survey Target	TGT	Random/ Exclude from Triangulation	Point		Center of survey target
BRIDGE					
Existing Bridge Edge	BRG	Breakline	Line		Edge of bridge
RAILWAY					
Existing Railway Railroad Ballast Bottom	BRB	Breakline	Line		Bottom edge of ballast
Existing Railway Railroad Track	RRD	Breakline	Line		Center of railroad track
Existing Railway Railroad Track Top	TOR	Random	Point		Top of railroad track
Existing Railway Railroad Crossing Arm	XNG	Do Not Include	Point		Center of railroad crossing arm
ROADWAY					
Existing Roadway Boring Soil	BOR	Random/ Exclude from Triangulation	Point		Center of soil boring
Existing Roadway Curb and Gutter Edge	GUT	Breakline	Line	Flowline	Edge of curb and gutter
Existing Roadway Curb Top	TOC	Breakline	Line		Edge of curb top
Existing Roadway Driveway Area	DRV	Breakline	Line	Perimeter	Edge of driveway area
Existing Roadway Edge Pavement	EOP	Breakline	Line		Edge of pavement
Existing Roadway Edge Pavement Bituminous	EPB	Breakline	Line		Edge of pavement
Existing Roadway Edge Pavement Concrete	EPC	Breakline	Line		Edge of pavement
Existing Roadway Edge Unpaved	DRT	Breakline	Line		Edge of unpaved road
Existing Roadway Flowline	FLN	Breakline	Line		Edge of flowline
Existing Roadway Guardrail	GRL	Breakline	Line		Edge of guardrail, counterclockwise
Existing Roadway Pad Concrete	CPD	Interior	Line		Edge of concrete pad
Existing Roadway Wear Gravel	GRV	Break Line	Line		Edge of gravel road
Existing Roadway Wear Paver Brick	PVR	Break Line	Line		Edge of brick paver road
SIDEWALK					
Existing Sidewalk Back	SWB	Breakline	Line		Back of sidewalk
Existing Sidewalk Edge	SWK	Breakline	Line		Edge of sidewalk
Existing Sidewalk Front	SWF	Breakline	Line		Front of sidewalk
TRAIL					
Existing Trail Edge	TRL	Breakline	Line		Edge of trail
COMMUNICATION					
Existing Communication Conduit	UTL UTLI UTLII	Breakline/ Exclude from Triangulation	Line		Center of conduit

DESCRIPTION	FEATURE CODE	FEATURE TYPE	SYMBOL TYPE	SHOT LOCATION	FEATURE INSERTION POINT
	UTLIII UTLIV				
Existing Communication Manhole	MTL	Random	Point		Center of manhole
Existing Communication Telephone Box	TBX	Random/ Exclude from Triangulation	Point		Center of telephone box
Existing Communication Telephone Cell Tower	CEL	Do Not Include	Point		Center of cell tower
Existing Communication Vault	CVT	Breakline/ Exclude from Triangulation	Line		Edge of vault
Existing Communication Vault Cover	CVC	Breakline/ Exclude from Triangulation	Line		Edge of vault cover
GAS					
Existing Gas Manhole	MGS	Random	Point		Center of manhole
Existing Gas Meter	GMT	Random/ Exclude from Triangulation	Point		Center of meter
Existing Gas Pipe	UGS UGSI UGSII UGSIII UGSIV	Breakline/ Exclude from Triangulation	Line		Center of pipe
Existing Gas Valve	MGG	Random/ Exclude from Triangulation	Point		Center of valve
POWER					
Existing Power Conduit	UPW UPWI UPWII UPWIII UPWIV	Breakline/ Exclude from Triangulation	Line		Center of conduit
Existing Power Manhole	MEL	Random	Point		Center of manhole
Existing Power Meter	MTR	Do Not Include	Point		Center of meter
Existing Power Outlet	OUT	Do Not Include	Point		Center of outlet
Existing Power Pole	PPL	Random/ Exclude from Triangulation	Point	Offset to center	Center of power pole
SANITARY SEWER					
Existing Sanitary Sewer Drillhole	SAD	Random/ Exclude from Triangulation	Point		Center of drillhole
Existing Sanitary Sewer Manhole	SAM	Random	Point		Center of manhole
Existing Sanitary Sewer Manhole Blind	MBA	Random	Point		Center of manhole
Existing Sanitary Sewer Manhole Cleanout	SMC	Random	Point		Center of manhole
Existing Sanitary Sewer Pipe	USA	Breakline/	Line		Center of pipe

DESCRIPTION	FEATURE CODE	FEATURE TYPE	SYMBOL TYPE	SHOT LOCATION	FEATURE INSERTION POINT
	USAI USAI USAI USAI	Exclude from Triangulation			
Existing Sanitary Sewer Pipe Connector Bend	SPB	Random/ Exclude from Triangulation	Point		Center of pipe connector bend
Existing Sanitary Sewer Structure Abandoned	ASA	Random/ Exclude from Triangulation	Point		Center of structure
Record Drawing Sanitary Sewer Bulkhead	RSB	Random/ Exclude from Triangulation	Point		
Record Drawing Sanitary Sewer Manhole	RSM	Random	Point		Center of manhole
Record Drawing Sanitary Sewer Manhole Blind	RSE	Random	Point		Center of manhole
Record Drawing Sanitary Sewer Manhole Cleanout	RSD	Random	Point		Center of manhole
Record Drawing Sanitary Sewer Pipe	RSP RSP RSP RSP RSP	Breakline/ Exclude from Triangulation	Line		Center of pipe
Record Drawing Sanitary Sewer Pipe Connector Bend	RSC	Random/ Exclude from Triangulation	Point		Center of pipe connector bend
Record Drawing Sanitary Sewer Pipe Invert	RSI	Random/ Exclude from Triangulation	Point		Center of cross
Record Drawing Sanitary Sewer Structure Abandoned	RSA	Random/ Exclude from Triangulation	Point		Center of structure
STEAM					
Existing Steam Manhole	STM	Random	Point		Center of manhole
Existing Steam Pipe	STP STP STP STP STP	Breakline/ Exclude from Triangulation	Line		Center of pipe
STORM SEWER					
Existing Storm Sewer Drillhole	SDH	Random/ Exclude from Triangulation	Point		Center of drillhole
Existing Storm Sewer Grit Chamber	GRT	Random/ Exclude from Triangulation	Point		Center of grit chamber
Existing Storm Sewer Grit Chamber Circular	CGC	Random/ Exclude from Triangulation	Point		Center of circular grit chamber
Existing Storm Sewer Inlet Catch Basin	MCB	Random/ Exclude from	Point		Center of catch basin

DESCRIPTION	FEATURE CODE	FEATURE TYPE	SYMBOL TYPE	SHOT LOCATION	FEATURE INSERTION POINT
		Triangulation			
Existing Storm Sewer Inlet Catch Basin Circular	CCB	Random/ Exclude from Triangulation	Point		Center of circular catch basin
Existing Storm Sewer Inlet Catch Basin Circular Manhole	CCM	Random/ Exclude from Triangulation	Point		Center of circular catch basin manhole
Existing Storm Sewer Inlet Catch Basin Manhole	DMC	Random/ Exclude from Triangulation	Point		Center of manhole
Existing Storm Sewer Lift Station	PMP	Exclude from Triangulation	Point		Center of lift station
Existing Storm Sewer Manhole	SDM	Random	Point		Center of manhole
Existing Storm Sewer Manhole Blind	MBB	Random	Point		Center of manhole
Existing Storm Sewer Manhole Cleanout	STC	Random	Point		Center of manhole
Existing Storm Sewer Manhole Structure	DMS	Random	Point		Center of manhole structure
Existing Storm Sewer Outfall Structure	OTF	Random/ Exclude from Triangulation	Point		Center of outfall structure
Existing Storm Sewer Outfall Structure Private	DOP	Random/ Exclude from Triangulation	Point		Center of outfall structure
Existing Storm Sewer Pipe	UST USTI USTII USTIII USTIV	Breakline/ Exclude from Triangulation	Line		Center of pipe
Existing Storm Sewer Pipe Connector Bend	DPB	Random/ Exclude from Triangulation	Point		Center of pipe connector bend
Existing Storm Sewer Structure Abandoned	AST	Random/ Exclude from Triangulation	Point		Center of structure
Record Drawing Storm Sewer Bulkhead	RDB	Random/ Exclude from Triangulation	Point		
Record Drawing Storm Sewer Grit Chamber	RDG	Random/ Exclude from Triangulation	Point		Center of grit chamber
Record Drawing Storm Sewer Grit Chamber Circular	RDH	Random/ Exclude from Triangulation	Point		Center of circular grit chamber
Record Drawing Storm Sewer Inlet Catch Basin	RCB	Random/ Exclude from Triangulation	Point		Center of catch basin
Record Drawing Storm Sewer Inlet Catch Basin Circular	RDJ	Random/ Exclude from Triangulation	Point		Center of circular catch basin

DESCRIPTION	FEATURE CODE	FEATURE TYPE	SYMBOL TYPE	SHOT LOCATION	FEATURE INSERTION POINT
Record Drawing Storm Sewer Inlet Catch Basin Circular Manhole	RDK	Random/ Exclude from Triangulation	Point		Center of circular catch basin manhole
Record Drawing Storm Sewer Inlet Catch Basin Manhole	RMC	Random/ Exclude from Triangulation	Point		Center of manhole
Record Drawing Storm Sewer Manhole	RDM	Random	Point		Center of manhole
Record Drawing Storm Sewer Manhole Blind	RDE	Random	Point		Center of manhole
Record Drawing Storm Sewer Manhole Cleanout	RDD	Random	Point		Center of manhole
Record Drawing Storm Sewer Outfall Structure	RDO	Random/ Exclude from Triangulation	Point		Center of outfall structure
Record Drawing Storm Sewer Pipe	RDP RDPI RDPII RDPIII RDPIV	Breakline/ Exclude from Triangulation	Line		Center of pipe
Record Drawing Storm Sewer Pipe Connector Bend	RDC	Random/ Exclude from Triangulation	Point		Center of pipe connector bend
Record Drawing Storm Sewer Pipe Invert	TDI	Random/ Exclude from Triangulation	Point		Center of cross
Record Drawing Storm Sewer Structure Abandoned	RDA	Random/ Exclude from Triangulation	Point		Center of structure
TRAFFIC					
Existing Traffic Conduit	UTR UTRI UTRII UTRIII UTRIV	Breakline/ Exclude from Triangulation	Line		Center of conduit
Existing Traffic Handhole	HHL	Random/ Exclude from Triangulation	Point		Center of handhole
Existing Traffic Lighting	STL	Random/ Exclude from Triangulation	Point	Offset to center	Center of light pole
Existing Traffic Lighting Luminaire	VLP	Random/ Exclude from Triangulation	Point		Center of luminaire
Existing Traffic Loop Detector	LOP	Random/ Exclude from Triangulation	Point		Center of loop detector
Existing Traffic Paint	PMK	Breakline/ Exclude from Triangulation	Line		Center of paint
Existing Traffic Parking Meter Single Space	PMT	Random/ Exclude from Triangulation	Point	Offset to center	Center of single-space parking meter

DESCRIPTION	FEATURE CODE	FEATURE TYPE	SYMBOL TYPE	SHOT LOCATION	FEATURE INSERTION POINT
Existing Traffic Parking Meter Multi-Space	PMM	Random/ Exclude from Triangulation	Point	Offset to center	Center of multi- space parking meter
Existing Traffic Signal Base	TSB	Random/ Exclude from Triangulation	Point		Center of signal base
Existing Traffic Signal Mastarm	SPM	Random/ Exclude from Triangulation	Point		End of mastarm
Existing Traffic Signal Pedestrian Pushbutton Stationary	TPB	Random/ Exclude from Triangulation	Point		Center of pushbutton pedestal
Existing Traffic Sign	SGN	Random/ Exclude from Triangulation	Point	Offset to center	Center of sign face (sign faces east)
Existing Traffic Sign Edge	SDG	Breakline/ Exclude from Triangulation	Line		Edge of sign
WATER					
Existing Water Hydrant	HYD	Random/ Exclude from Triangulation	Point		Center of hydrant
Existing Water Loop	WLP	Breakline/ Exclude from Triangulation	Line		Center of pipe
Existing Water Manhole	MWT	Random	Point		Center of manhole
Existing Water Pipe	WLN WLN I WLN II WLN III WLN IV	Breakline/ Exclude from Triangulation	Line		Center of pipe
Existing Water Sprinkler	WSP	Random/ Exclude from Triangulation	Point		Center of sprinkler
Existing Water Stop Box	STB	Random/ Exclude from Triangulation	Point		Center of stop box (pipe faces east)
Existing Water Structure Abandoned	WSA	Random/ Exclude from Triangulation	Point		Center of structure
Existing Water Valve Check	WVL	Random/ Exclude from Triangulation	Point		Center of valve
Existing Water Valve Control Irrigation	IRR	Do Not Include	Point		Center of valve
Existing Water Well	WEL	Random/ Exclude from Triangulation	Point		Center of well
VEGETATION					
Existing Vegetation Edge	VDG	Breakline	Line		Edge of vegetation
Existing Vegetation Hedge	HDG	Breakline	Line		Center of hedge
Existing Vegetation Rock Ornamental	RCK	Random/	Point		Center of rock

DESCRIPTION	FEATURE CODE	FEATURE TYPE	SYMBOL TYPE	SHOT LOCATION	FEATURE INSERTION POINT
		Exclude from Triangulation			
Existing Vegetation Shrub	BSH	Random/ Exclude from Triangulation	Point		Center of shrub
Existing Vegetation Tree Coniferous	CTR	Random/ Exclude from Triangulation	Point	Offset to center	Center of tree
Existing Vegetation Tree Deciduous	DTR	Random/ Exclude from Triangulation	Point	Offset to center	Center of tree
Existing Vegetation Tree Stump	VTS	Random/ Exclude from Triangulation	Point		Center of stump
Existing Vegetation Woods Edge	WDS	Breakline	Line		Edge of woods

Survey Control Codes
Mpls.xin

CONTROL CODE	DESCRIPTION
ADJ	Add to Adjustment Set
CL	Close
CLSRECT	Close Rectangle
DIST	Distance
DNC	Exclude from Triangulation
JNC	Join Nearest Code
JPT	Join Point
NT	Non-Tangent Curve
PC	Point of Curvature
PT	Point of Tangency
RECT	Rectangle
RND	Random
ST	Start
TMPL	Template
XS	Cross Section

Station Status Codes (Fieldbook Data Dialog Box)

STATUS CODE	DESCRIPTION
N	The point has notes
E	The point has been edited
F	The point is a keyed-in (fixed) coordinate
A	The point has attributes
V	At least one of the attributes has a value
I	An inserted point
C	An adjusted point

Plan Sets
Revised 7/16/14

Sheet Numbers

- Plan sets shall be numbered according to the standard numbering convention (e.g., 1 of 100, 2 of 100, etc.).

Sheet Size

- Plan sheets shall be printed on size “B” sheets (11”x17”).

North Arrows

- North arrows shall be oriented as follows:
 - Title Sheet: The north arrow shall always point toward the top of the sheet.
 - Plan Sheet: The north arrow shall point in a direction that will produce the best fit for the information being presented.

Alignments

- Alignments shall be oriented as follows:
 - From West to East (stationing starts at 50).
 - From South to North (stationing starts at 10).

Forms
Revised 12/26/19

- [Mpls Capital Project Status Form](#)
- [Mpls City Engineer Sign Off Cover Sheet](#)
- [Mpls Electronic Map Disclaimer and Indemnity Agreement](#)
- [Mpls Plan Review and Distribution Form](#)
- [Mpls Preliminary Survey Request Form](#)
- [Mpls Project Archive Form](#)
- [Mpls Project Number Request Form](#)
- [Mpls ProjectWise Project and Data Request Form](#)
- [Mpls PW Catch Basin Survey Form](#)
- [Mpls PW Storm Sanitary Manhole Information Form](#)
- [Mpls Special Service District Petition](#)
- [Mpls Survey Control Monument Inspection Form](#)
- [Mpls TE&D Engineering & Design Services Request Form](#)

Resources
Revised 11/3/23

Abbreviations (Revised 11/3/23)

ABBREVIATION	DESCRIPTION
ABAN	Abandoned
ABUT	Abutment
ABV	Above
ACCOM	Accommodation
ACCRET	Accretion
ACCSS	Access
ADD	Additional
ADJ	Adjust
ADMIN	Administration
AFLD	Airfield
AGGR	Aggregate
AHD	Ahead
ALG	InRoads Survey Alignment File
ALN	Align, Alignment
ANCH	Anchorage
ANG	Angle, Angular
ANOT	Annotation
APP	Application
APRN	Apron
APROX	Approximate
APT	Apartment
AQUA	Aquaplane
AR	Area
ARCH	Architectural
ARW	Arrow
ARWY	Areaway
ASPH	Asphalt
ASSESS	Assessment
ASSY	Assembly
ATT	Attach, Attached
ATTR	Attribute
AUX	Auxiliary
AVE	Avenue
AZ	Azimuth
BAL	Balance
BARE	Bareroot
BARR	Barrier, Barricade
BB	Balled and Burlapped
BBRD	Billboard
BCK	Back
BCKWSH	Backwash
BDR	Binder
BEG	Begin
BENT	Bentley
BIT	Bituminous
BIZ	Business

ABBREVIATION	DESCRIPTION
BKWY	Bikeway
BLDG	Building
BLK	Block
BLND	Blind
BLNKT	Blanket
BLLRD	Bollard
BLLST	Ballast
BLT	Built
BLVD	Boulevard
BLW	Below
BM	Benchmark
BNCH	Bench
BNDR	Binder
BNDY	Boundary
BOC	Back of Curb
BORE	Boring
BOTM	Bottom
BPR	Bumper
BR	Brick
BRDG	Bridge
BRDR	Border
BRK	Break
BRKL	Breakline
BRKN	Broken
BRNG	Bearing
BRRW	Borrow
BS	Back Sight
BSHLD	Backshield
BTH	Booth
BTWN	Between
BULKHD	Bulkhead
BUR	Buried
CC	Center Center
C_G	Curb and Gutter
CAB	Cabinet
CABL	Cable
CADD	Computer Aided Drafting and Design
CAL	Caliper
CAM	Camera
CARR	Carriage
CAST	Casting
CATCH	Catchment
CATV	Cable TV
CB	Catch Basin
CBOX	Curb Box
CCFRPM	Centrifugally Cast Fiberglass-Reinforced Polymer Mortar
CERT	Certificate
CHG	Change
CHK	Check
CHMBR	Chamber
CHN	Chain
CHNL	Channel, Channelizer
CI	Cast Iron, Corrugated Iron

ABBREVIATION	DESCRIPTION
CIP	Capital Improvement Project; Cast-in-Place, Cured-in-Place
CIR	Circle, Circular
CIRC	Circuit
CL	Centerline
CLR	Clearing, Clearance
CM	Corrugated Metal
CMMN	Common
CMRCL	Commercial
CNCP	Concept, Conceptual
CNTR	Center, Centered
CNTRWELL	Centerwell
CNTY	County
COFN	Coffin
COMB	Combination, Combined
COMM	Communication
COMP	Component, Compress, Compressive
CON	Connector, Connection
CONC	Concrete
COND	Condition, Conduit
CONIF	Coniferous
CONST	Construction
CONSLT	Consultant
CONT	Container
COORD	Coordinate
CORR	Corridor
COVR	Cover
CRNR	Corner
CP	Clay Pipe, Corrugated Polyethylene
CR	Cross
CRB	Curb
CRDNL	Cardinal
CRK	Crack
CSO	Combined Sewer Overflow
CT	Court
CTRL	Control, Controlled
CTY	City
CULV	Culvert
CURTN	Curtain
CURV	Curve
CUST	Customer
CVR	Cover
DAYLITE	Daylight
DBL	Double
DC	Data Collector
DECID	Deciduous
DESC	Description
DET	Detector
DETL	Detail
DETR	Detour
DFT	Draft
DFTG	Drafting
DGN	Design
DI	Ductile Iron

ABBREVIATION	DESCRIPTION
DIAPH	Diaphragm
DIM	Dimensions
DIR	Direction, Directional
DISCON	Disconnect
DIST	District, Distance
DIV	Divided, Division
DPTH	Depth
DRIV	Driveway
DRK	Dark
DRL	Drill
DRLHOL	Drillhole
DRM	Drum
DRN	Drain
DRNG	Drainage
DSND	Decender
DTCH	Ditch
DTL	Detail
DTM	Digital Terrain Model
DTWN	Downtown
DVC	Device
DWG	Drawing
DYN	Dynamic
E	East, Existing
EDG	Edge
ELEM	Element, Elementary
ELEV	Elevation
ELIP	Elliptical
ENCL	Enclosure
ENF	Enforced
ENGR	Engineer
ENT	Entrance
ENTMT	Entertainment
EOP	Edge of Pavement
EQN	Equation
ER	End Radius
EROS	Erosion Control
ESMT	Easement
EST	Estimate, Estimated
EVNT	Event
EVP	Emergency Vehicle Pre-Signal
EXAG	Exaggerate, Exaggerated
EXCV	Excavation
EXCP	Exception
EXPN	Expansion
EXT	Exterior
EXTN	Extension
FASC	Fascia
FEAT	Feature
FED	Federal
FENC	Fence
FIBR	Fiber Optic
FILT	Filter
FINL	Final

ABBREVIATION	DESCRIPTION
FL	Flow, Flowline
FLD	Field
FLDBK	Fieldbook
FLSH	Flasher
FNDN	Foundation
FNL	Final
FNSH	Finish, Finished
FOC	Face of Curb
FRNT	Front
FS	Freestanding
FT	Foot
FTNG	Fitting, Footing
FULL	Full Depth
FWY	Freeway
GA	Gauge
GALV	Galvanized
GARDRL	Guardrail
GEN	General
GEOM	Geometry
GIS	Geographic Information System
GRB	Grubbing
GRD	Grade
GRND	Ground
GRDNG	Grading
GRN	Green
GRNWY	Greenway
GRP	Group
GRPH	Graph, Graphic
GRT	Grate
GRVL	Gravel
GUT	Gutter
GYRA	Gyratory
H	Height
HAZ	Hazardous
HDG	Hedge
HDN	Hidden
HDPE	High Density Polyethylene
HDR	Header
HGHT	Height
HHOL	Handhole
HI	High
HNDCP	Handicapped
HOL	Hole
HORZ	Horizontal
HRD	Hard
HT	Height
HWY	Highway
HYD	Hydrant
HYDR	Hydrography
IC	Interconnect
ID	Identification
IMP	Import, Imported
IMPERV	Impervious

ABBREVIATION	DESCRIPTION
IMPRV	Improvement
IN	Incoming
INCDNT	Incidental
IND	Indicator
INDCT	Induction
INDUS	Industrial
INDX	Index
INFO	Information
INLT	Inlet
INSP	Inspection
INST	Institute, Institution
INSUL	Insulation
INT	Interior, Integrant
INTCPT	Intercept, Interceptor
INTSCT	Intersection, Intersecting
INTST	Interstate
INV	Invert
ISO	Isolating
JCT	Junction
JBOX	Junction Box
JCHMBR	Junction Chamber
JCK	Jacked
JNT	Joint
JRSY	Jersey
L	Large, Length
LABL	Label, Labeler
LAND	Land Use
LAT	Latitude
LEAD	Lead-in Connector
LDR	Leader
LGND	Legend
LI	Line
LIDAR	Light Detection and Ranging
LIN	Linear
LITE	Light
LK	Lake
LMT	Limit
LN	Lane
LNK	Link
LT	Left
LMP	Lamp
LMPHOL	Lamphole
LNK	Link
LOC	Location, Locator
LOOP	Loop Detector
LOW	Low-Level
LRT	Light Rail Transit
LT	Left
LTRL	Lateral
LUM	Luminaire
LVL	Level
LYR	Layer
M	Medium

ABBREVIATION	DESCRIPTION
MAINT	Maintenance
MAJR	Major
MAST	Mastarm
MATL	Material
MAX	Maximum
MCES	Metropolitan Council Environmental Services
MEDN	Median
METR	Meter
MC	Metropolitan Council
MHOL	Manhole
MIL	Military
MILL	Milling
MIN	Minimum
MINR	Minor
MISC	Miscellaneous
MIX	Mixed
MKR	Marker
MNDOT	Minnesota Department of Transportation
MNTD	Mounted
MOD	Modified
MON	Monument
MONITOR	Monitor, Monitoring
MPLS	Minneapolis
MRKG	Marking
MRKR	Marker
MRSH	Marshall
MSG	Message
MSTR	Master
MTCH	Match
MULTI	Multiple
MUNI	Municipal
N	None, North
NAV	Navigation
NBRHD	Neighborhood
NM	Non-Metallic
NONEXST	Non-Existing
NTS	Not to Scale
NTWK	Network
NUM	Number
NWI	National Wetlands Inventory
OBJ	Object
OBS	Observation
OCS	Overhead Catenary System
OFF	Offset
OPT	Option
ORNG	Orange
ORNMTL	Ornamental
ORTHO	Orthophoto
OTFL	Outfall
OTHR	Other
OTLI	Outline
OTLT	Outlet
OUT	Outgoing

ABBREVIATION	DESCRIPTION
OVHD	Overhead
OVLND	Overland
OVR	Over
P	Proposed
PA	Pipe Arch
PANL	Panel
PARK	Park Board
PB	Push Button
PC	Point of Curvature (Beginning of Curve)
PCC	Point of Compound Curve
PE	Polyethylene, Professional Engineer, Project Engineer
PED	Pedestrian
PDSTL	Pedestal
PERF	Perforated
PERM	Permanent
PERV	Pervious
PHAN	Phantom
PHON	Telephone
PI	Point of Intersection
PILE	Piling
PK	Parker-Kalon (manufacturer of masonry nails used in surveying)
PKBD	Park Board
PKWY	Parkway
PLACE	Pl
PLAN	Planning
PLAY	Playground
PLN	Plan
PLNG	Planning
PLNT	Plant
PLNTR	Planter
PMP	Pump
PNL	Panel
PNT	Paint
POC	Point on Curve
POT	Point on Tangent
POWR	Power
PP	Polypropylene
PRC	Point of Reverse Curve
PRCST	Precast
PRESS	Pressure, Pressurized
PRI	Primary
PRKG	Parking
PRNNL	Perennial
PROF	Profile
PROG	Program
PROJ	Project, Projected
PROP	Property
PROTECT	Protection
PRT	Print
PRVT	Private
PT	Point, Point of Tangency (End of Curve)
PTR	Pointer
PT25IN	.25"

ABBREVIATION	DESCRIPTION
PT5IN	.5"
PT75IN	.75"
PTRN	Pattern
PUB	Public
PULL	Pull Box
PUSH	Pushbutton
PVC	Polyvinyl Chloride
PVMT	Pavement
PVNG	Paving
QTR	Quarter
QTY	Quantity, Quantities
R	Remove
RRFB	Rectangular Rapid Flasher Beacon
RAD	Radius, Radial
RAIL	Railway
RBAR	Reinforcing Bar
RC	Reinforced Concrete
RD	Record Drawing
RDGLI	Ridgeline
REC	Recreation, Recreational
RECONST	Reconstruct, Reconstruction
RECT	Rectifier
REDUC	Reducer
REF	Reference
REFL	Reflector
REG	Regulator
REHAB	Rehabilitation
REL	Related
REMV	Remove, Removed
REN	Renovation
RENF	Reinforce
REPL	Replace, Replacement
RES	Residence, Residential
RESIST	Resistant
RESTR	Restaurant
RESURF	Resurface, Resurfacing
RFTP	Rooftop
RIVR	River
RLD	Rain Leader
RLNG	Railing
RND	Round
ROAD	Roadway
ROT	Rotation, Rotating
RPT	Report
RR	Railroad
RRAP	Riprap
RSC	Rigid Steel Conduit
RSRV	Reserved
RSTR	Restore
RSVR	Reservoir
RT	Right
RTWL	Retaining Wall
RWAY	Right-of-Way

ABBREVIATION	DESCRIPTION
S	Small, South
SAMP	Sampling
SAN	Sanitation
SAP	State Aid Project
SB	Stopbox
SCH	School
SCRN	Screen
SDB	InRoads Sewer Database
SEC	Secondary
SECT	Section
SEED	Seeding
SEG	Segment
SERV	Service
SEWR	Sewer
SFTY	Safety
SGNL	Signal
SHFTHOL	Shafthole
SHLD	Shoulder
SHLTR	Shelter
SHLW	Shallow
SHP	Shape
SHT	Sheet
SIG	Signature
SIGN	Sign
SING	Single
SKWY	Skyway
SLCT	Select
SLD	Solid
SLV	Sleeve
SLVG	Salvage
SM	Small
SOP	Source of Power
SPCL	Special
SPKL	Sprinkler
SPRT	Sport
SPRL	Spiral
SSWR	Sanitary Sewer
ST	Street
STA	Station
STAT	Stationary
STCAR	Streetcar
STD	Standard
STIPL	Stipple
STL	Steel
STM	Steam
STMP	Stump
STNDPIPE	Standpipe
STOR	Storage
STR	Straight
STRC	Structure
STRM	Storm Sewer
STRP	Stripe
SUBGRD	Subgrade

ABBREVIATION	DESCRIPTION
SUBSTRC	Substructure
SUBSURF	Subsurface
SUPELEV	Superelevation
SUPSTRC	Superstructure
SURF	Surface
SURV	Survey
SWLK	Sidewalk
SYMB	Symbol
SYS	System
TAB	Tabulation
TAN	Tangent
TARG	Target
TAXLOT	Tax Division Line
TEMP	Template, Temporary
THRU	Through
TOC	Top of Curb
TOPO	Topography
TRAF	Traffic
TRAK	Track
TRAN	Transportation
TRANS	Transformer, Transition
TRAV	Traverse
TREE	Tree
TRI	Triangle
TRL	Trail or Path
TRRN	Terrain
TRTMNT	Treatment
TRX	Transceiver
TUNL	Tunnel
TURF	Turf
TWN	Town
TWP	Township
TXT	Text
TYP	Typical
UMN	University of Minnesota
UNCTRL	Uncontrolled
UNDR	Underground
UNID	Unidentified
UPVD	Unpaved
UTIL	Utility
VAC	Vacant, Vacated
VAR	Variable
VC	Vitrified Clay
VEH	Vehicle
VERT	Vertical, Vertice
VLV	Valve
VLT	Vault
VOL	Volume
W	West, Width
WALLPK	Wall Pack
WATR	Water
WATRBDY	Waterbody
WATRSHD	Watershed

ABBREVIATION		DESCRIPTION	
WD		Wood	
WHSE		Warehouse	
WHT		White	
WORK		Work, Working	
XFER		Transfer	
XING		Crossing	
XSEC		Cross Section	
XTWN		Cross Town, Crosstown	
YEL		Yellow	
YR		Year	
ZN		Zone	

Utility Tab Structures Abbreviations

EXISTING CODE	PROPOSED CODE	STRUCTURE
BUS	PBUS	Bus Shelter
CFC	PCFC	Chain Link Fence
OFC	POFC	Ornamental Fence
WDF	PWDF	Wood Fence
WRF	PWRF	Wire Fence
FPL	PFPL	Flagpole
GUY	PGUY	Guy Wire
MBX	PMBX	Mailbox
PST	PPST	Post
WLL	PWLL	Wall Left
WLR	PWLR	Wall Right
ARW	PARW	Unidentified Areaway
CAB	PCAB	Unidentified Cabinet
MUK	PMUK	Unidentified Manhole
VLT	PVLT	Unidentified Vault
MON	PMON	Survey Monument
MTL	PMTL	Communication Manhole
TBX	PTBX	Communication Telephone Box
CVT	PCVT	Communication Vault
CVC	PCVC	Communication Vault Cover
MGS	PMGS	Gas Manhole
GMT	PGMT	Gas Meter
MGG	PMGG	Gas Valve
MEL	PMEL	Power Manhole
PPL	PPPL	Power Pole
SAD	PSAD	Sanitary Sewer Drillhole
SAM	PSAM	Sanitary Sewer Manhole
MBA	PMBA	Sanitary Sewer Manhole Blind
ASA	PASA	Sanitary Sewer Structure Abandoned
STM	PSTM	Steam Manhole
SDH	PSDH	Storm Sewer Drillhole
GRT	PGRT	Storm Sewer Grit Chamber
CGC	PCGC	Storm Sewer Grit Chamber Circular
MCB	PMCB	Storm Sewer Inlet Catch Basin
CCB	PCCB	Storm Sewer Inlet Catch Basin Circular
DMC	PDMC	Storm Sewer Inlet Catch Basin Manhole
PMP	PPMP	Storm Sewer Lift Station
SDM	PSDM	Storm Sewer Manhole
MBB	PMBB	Storm Sewer Manhole Blind
DMS	PDMS	Storm Sewer Manhole Structure
OTF	POTF	Storm Sewer Outfall Structure
DOP	PDOP	Storm Sewer Outfall Structure Private
AST	PAST	Storm Sewer Structure Abandoned
HHL	PHHL	Traffic Handhole
STL	PSTL	Traffic Lighting
VLP	PVLP	Traffic Lighting Luminaire
PMT	PPMT	Traffic Parking Meter Single Space
PMM	PPMM	Traffic Parking Meter Multi-Space
TSB	PTSB	Traffic Signal Base
SPM	PSPM	Traffic Signal Mastarm

TPB	PTPB	Traffic Signal Pedestrian Pushbutton Stationary
SGN	PSGN	Traffic Sign
HYD	PHYD	Water Hydrant
WLP	PWLP	Water Loop
MWT	PMWT	Water Manhole
WSP	PWSP	Water Sprinkler
STB	PSTB	Water Stop Box
WSA	PWSA	Water Structure Abandoned
WVL	PWVL	Water Valve Check
WEL	PWEL	Water Well

Definitions (Revised 3/10/20)

ProjectWise Glossary

Advanced Wizard

The Advanced Document Creation Wizard is used to walk you through the process of creating documents. You can use the wizard to create a single document, or to create multiple documents simultaneously. Whether you use the wizard or not is a matter of preference, but it is typically used when you need to create multiple documents simultaneously, and you want the new documents to be created using the same general criteria.

Attribute

An attribute is data about the file (metadata) such as *Date*, *Drawn By*, *Checked By*, etc.

Audit Trail

A folder's audit trail provides you with a list of all activities that have taken place for the folder and documents within the folder. An audit trail record is created as an action or activity takes place. You can view the document's audit trail report by clicking the Audit Trail tab in the Document Properties dialog box, and you can customize it as needed.

Custom Folders

A custom folder is an alternative view of ProjectWise.

Free

The free operation unlocks a document without updating the server copy.

Global Folder

An alternative view of documents and folders. Global folders are visible to all users and are created by the ProjectWise Administrator.

Organizer

A tool used to manage files in your working directory.

Private Folders

An alternative view of documents and folders. Private folders are visible only to the user who created them.

MicroStation Glossary (Revised 3/10/20)

Absolute

The relative setting that places a graphic cell on the same level on which it was created.

Accept

To click the Data button to approve the placement of a data point at the location of a tentative point or to confirm the identification of an element that is highlighted.

AccuDraw

Drafting aid used to apply precision to geometry without affecting the flow of drafting or sacrificing the interactivity afforded by dynamic update.

AccuSnap

A snapping mode that may be used by itself, or in combination with AccuDraw, to reduce the number of button presses required during a design session. AccuSnap provides graphical assistance - a smart pointer – for snapping to elements. (MicroStation V8 only).

ACS

Auxiliary Coordinate System.

ACS Plane Lock

A setting that, when turned on, forces each data point to lie on the X-Y plane of the active auxiliary coordinate system, setting all Z-coordinates to zero. This concept applies only to 3D files.

ACS Plane Snap Lock

A setting that, when turned on, causes MicroStation to try to find a point on the X-Y plane of the auxiliary coordinate system to snap to when a tentative point is entered. This lock applies only to 3D files.

ACS Triad

At the time an auxiliary coordinate system is defined, MicroStation displays this three-arrow representation (in 3D) to indicate the X and Y axes and origin.

Action String

Defines the action MicroStation performs when a tool is selected, or a menu item is chosen.

Active Angle

The angle, in degrees, used with cell placement and text placement tools that require an angle specification.

Active Attributes

The setting that determines the color, line style, and line weight of an element upon placement.

Active Cell

The cell that is placed with the cell placement tools.

Active Class

Placement of the active pattern cell (at the active pattern angle, scale, and spacing) in an area bounded by a shape, ellipse, circle, fence, or complex shape. The cell is repeated in a rectangular array spacing as many times as necessary to fill the area.

Active Color

The setting that determines the color of an element upon placement.

Active Color Table

The set of up to 256 colors from which the active color can be selected. The active color table is modified, attached, and saved in the Color Table dialog box.

Active Command

The command that has most recently been activated from a toolbox, menu, or key-in.

Active Control Indicator

The dotted rectangle that indicates the input focus in dialog boxes.

Active Depth

The depth within the view cube of the plane upon which data points are entered. The plane is perpendicular to the Z-axis of the view. There is an active depth associated with each view.

Active DGN File

The DGN file currently opened for viewing and/or manipulation.

Active Entity

The row in the database table that is linked to a graphic element when a database attachment is executed.

Active Font

The setting that determines the font of a text element upon placement.

Active Level

The setting that determines the level upon which an element is placed.

Active Pattern Angle(s)

The setting that determines the angle at which the active pattern cell is placed by Pattern Area, the angle of the lines placed using Hatch Area, or two settings that determine the angles of the lines placed using Crosshatch Area.

Active Pattern Cell

The setting that determines the cell that is used for patterning.

Active Pattern Scale

The setting that determines the scale at which the active pattern cell is placed during area patterning and linear patterning.

Active Pattern Spacing

The distance(s) between adjacent pattern cells placed using Pattern Area. The distance(s) between lines placed using Hatch Area or Crosshatch Area.

Active Point

The setting that determines whether a cell, symbol, or zero-length line is drawn by the point placement tools.

Active Scale Factor(s)

The setting that determines the amount of scaling applied to a cell when placed, to selected elements, or to the fence contents when using scale. The scale factors in the X-, Y-, or Z-direction can be identical, or each can be different.

Active Line Style

The setting that determines the line style of an element upon placement.

Active Line Style

The setting that determines the height of text upon placement.

Active Text Width

The setting that determines the width of text upon placement.

Active Line Weight

The setting that determines the line weight of an element upon placement.

AEC Dimension Format

Dimensions that conform to architectural, engineering, and construction conventions.

Align View

To make one view display the same area (in 2D) or the same volume (in 3D) as another view.

Alphanumeric

A string of characters that takes the form of letters, numbers, and some symbols (e.g. @, \$, and punctuation).

Alternate Key-in

A short cut way to enter a key-in command. For example, AA= is an alternate key-in for ACTIVE ANGLE.

Ambient Light

Light that emanates from all directions, and thus illuminates all surfaces equally, regardless of their orientation.

Application Software

Software that allows you to perform specific tasks more efficiently with MicroStation. These applications include MDL applications, key-in scripts, and macros.

Arc

A regularly curved open element that has a constant radius around a single center point.

Area Attribute

Whether an area is a solid or a hole.

Area Filling

See fill.

Aspect Ratio

Height divided by width.

Associated Dimensions

Dimensions that update automatically as the element they dimension is modified.

Association Lock

The setting that, when turned on, causes element associations to be created when an element is snapped to while using Place Multi-line, a dimensioning tool, or a cell placement tool (with Use Shared Cells on).

Association Point

A point created by snapping while using Place Multi-line, a dimensioning tool, or a cell placement tool (with Use Shared Cells on) when Association Lock is turned on. An association point does not have its own coordinates but is positioned by the coordinates of the point it is associated with.

Attach

To activate a (paper, cursor button, or sidebar) menu. To define (a cell library, color table, or reference) for use with a DGN file.

Attributes

Line color, line style, line weight, and fill color (for closed elements).

Auxiliary Coordinate System (ACS)

A coordinate system with user-specified origin and orientation that can be defined, activated, saved, and recalled during a design session.

Axis Increment

The setting that determines, in conjunction with axis start angle, the possible axes for data points when Axis Lock is on. For example, if axis increment is 45 degrees and axis start angle is 0 degrees, the possible axes are 0, 45, 90, 135, 180, 225, 270, and 315 degrees.

Axis Lock

The lock that forces data points to be placed at axes that are at specific angles from the most recent data point or tentative point, constraining the movement of elements or placement to multiples of the axis increment from the axis start angle.

Axis of Revolution

The axis about which an object is revolved by the commands that create surfaces and volumes of revolution. This concept is used in 3D designs.

Axis Start Angle

The setting that determines (in conjunction with axis increment) the possible axes for data points when axis lock is on. For example, if axis increment is 60 degrees and axis start angle is 30 degrees, the possible axes are 30, 90, 150, 210, 270, and 330 degrees.

CALS

The United States Department of Defense Computer-aided Acquisition and Logistic Support Initiative, which was created to integrate and standardize all digital data received from Department of Defense suppliers. MicroStation supports CALS compliance by providing corresponding settings files.

Camera

Like the function of an actual camera, the camera in MicroStation defines the portion of the design that is displayed when using perspective projection. The camera can be positioned and oriented in any manner required. Various lenses are available to modify the resulting image.

Camera Position

When using the view camera, the position from which the model is viewed.

Camera Settings

When using the view camera, the settings you adjust to control projection.

Camera View

Any view in which the camera is on (perspective projection is active).

Cascade

The arrangement of stacked views of windows or views in numerical order, with the lowest numbered view entirely visible and the title bars of all other views visible.

Cavity Wall

An architectural term for a wall that is not solid.

Cell

A complex element composed of a group of primitive or other complex elements that is stored in a cell library for repeated placement.

Cell Definition

The graphical elements that make up a cell.

Cell Library

A file that is used to store cells. To access cells in a cell library, the library must be attached to the active DGN file, except if the Cell Selector dialog box is used.

Cell Origin

The point specified during cell creation, about which the cell is placed (the origin corresponds to the data point when the cell is placed in the design).

CGM

Computer Graphics Metafile, which is an ANSI standard for the exchange of picture data between different graphics software that is device and environment independent.

Chamfer

To cut a line across two linear elements, connecting the elements and modifying either one or both original elements.

Check Box

A square box in a dialog or setting box that can be clicked to toggle the associated setting.

Class

An element attribute, usually primary or construction.

Click

To press or tap once on a cursor or mouse button; to press a push button in a dialog box.

Clip

To divide an area, elements, or portions of elements in a design from the rest for manipulation or display.

Clipping Boundary

A boundary (established with a fence or from a named view) that separates the part of a reference that is displayed from the part that is hidden.

Clip Mask

Used with the Raster Manager or Reference tools, a clip mask allows you to clip out a portion of the image. Masking can be used, for example, to clear an area for text display.

Clipping Plane

A plane that defines the front or back of the view cube, the portion of a 3D design displayed in a view.

Closed

Elements that completely enclose the area within their boundaries.

Closed B-Spline

A complex curve that starts and ends at the same point and encloses an area.

Coincidentally

Attaching a reference by aligning the coordinates of its design plane with those of the active DGN file, without any rotation, scaling, or offset.

Coincident Reference Attachment

A coincidentally attached reference has a one-to-one correspondence between its design plane and the design plane of the active DGN file. If the working units' settings and global origin are identical in the two files, the coordinates in working units are identical as well.

Color Fill

An attribute that, when applied to a closed element, indicates the element's enclosed area as a solid shape of color.

Color Table

In a DGN file, the color table determines the correspondence between the 256 color attribute values and display colors. It is displayed in a dialog box.

Column

In a database table or file, a column or field represents the properties of objects (which are represented by records or rows).

Command

An instruction that tells MicroStation what to do. Commands are activated with tools in toolboxes, pull down menus, settings and dialog boxes, key-ins, and function keys. All commands can be activated with a key-in.

Command Button

The button on a mouse or digitizing tablet cursor (puck) that is pressed to select a menu block in a paper menu.

Command File

A text file containing an SQL statement.

Command Menu

Paper mounted on the surface of a digitizing menu with blocks of varying sizes and shapes.

Compass

A square or circle used to indicate the AccuDraw drawing plane origin, axes, and coordinate system. Color-coded hash marks indicate the positive X and Y axes.

Complex Chain

An open complex element that is formed from a series of open elements, such as lines, line strings, and arcs.

Complex Element

An element created by combining several primitive elements.

Complex Shape

A closed complex element formed from a series of open primitive elements.

Components

Groups of settings that comprise a drawing settings group. Component types are linear, text, cell, point, area pattern, hatching, dimension, and multi-line.

Cone

An element composed of two circles on parallel planes with a surface connecting the two circles. A cone can be a solid (capped on both ends) or surface (not capped) element.

Configuration Variable

Equivalence strings that define where MicroStation is to look for certain files or classes of files. Configuration variables are tools for customizing your MicroStation working environment. For example, MicroStation knows to search for references in the directory (or semicolon-separated list of directories) specified in the configuration variable MS_RFDIR.

Constant Shading

A memory and time-efficient method of shading a rendered image by using only one color per polygon. The color of each polygon is calculated only once from the surface configuration and lighting source, producing a tiled effect in the final image.

Construction

A type of element that is placed as a guideline from which to compose actual elements comprising a design.

Control Net

A rectangular array of vertices that, together with the B-spline order, define the shape of a B-spline surface.

Control Polygon

A polygon whose vertices, together with the B-spline order, define the shape of a B-spline curve.

Control Table

A special table in each database to which linkages are established, also known as MSCATALOG.

Controls

Parts of a dialog box such as field texts, check boxes, and option menus.

Coordinate

Location of a point in the design plane along the X (horizontal), Y (vertical), and Z (depth [3D only]) axes relative to the global origin.

Coordinate Readout

Format and precision with which coordinate, measurement, and angle data is displayed in the status bar and in settings and dialog boxes.

Cross Section

A view of the interior of an object as it is sliced along a plane.

Crosshair

The crosshair located on the digitizing tablet cursor is used as the positioning target to select a menu block from a paper menu. The crosshair pointer on the screen is used with element placement tools.

Crosshatch

The process of constructing two sets of evenly spaced lines in a closed area bounded by a complex shape, closed element, or fence at the active pattern angles and spacing.

CSV File

Comma-separated values file: The CSV file format is an interchange format for tabular data, such as the contents of a flat file database or a table in a relational database. In this text file format, the first line contains the database field (column) names separated by commas. Each successive line corresponds to a database record (row). On each such line, the subject record's field values are separated by commas.

Cursor

Hand-held tablet cursor. Commonly called a "puck."

Cursor Button Menu

A set of actions assigned to buttons on a tablet cursor.

Cylinder

A cone element in which the circles that define each end have the same radius.

Cylindrical ACS

Auxiliary coordinate system in which positions are described by two magnitudes (R and Z) and an angle.

Data Button

The button on a mouse or digitizing tablet that is pressed to enter data points, identify elements for manipulation, accept a previous action, select tools, and operate dialog box controls.

Data Point

Input entered using the pointing device that designates a point in the design.

Database

See relational database, non-graphical database.

Database Attributes

Information stored in a database manager and linked to an element in a DGN file.

Database Interface

Where associated data is stored in a separate relational database that is linked to elements in the DGN file.

Database Linkage

A relationship that allows data to be transferred between an element and a database table.

Database Server

A software program that handles database functions and runs in parallel with MicroStation.

Default Font

The font used to display a text element in the design when the font with which the element was placed is not found.

Degrees of Freedom

Freedom to vary placement of constraints from the model.

Delay Unit

A period of waiting time inserted into plotter output to accommodate output devices that cannot properly handle communications using baud rates of 9600 or higher.

Delete

To remove an element(s) from the DGN file.

Derived Cell

A cell in a design that is derived from a dimension-driven cell.

Design Cube

The space in which elements are created in a 3D design.

DGN Workmode

The default MicroStation workmode in which the full functionality of the application is enabled.

DGN File

MicroStation document file that contains one or more models. These models may be design models or sheet models.

Design Composition

A working collection of references used in the performance of engineering tasks. Design compositions are used by engineers and other technical professionals to communicate through the visual content of their designs.

Design Geometry

The construction geometry and the constraints that make up a complete design.

Design History

The historical record of changes to the DGN file. Enables you to restore earlier revisions of a DGN file. When you create a revision, Design History captures the state of the DGN file at that moment.

Design Model

A model is a container for elements. Models can be either 2D or 3D, but they are most useful in their 3D form. It may be helpful to think of a DGN file as a stack of cards, with each card being a model. Every model has its own set of eight views. The model whose views are displayed or available for display at a given time is the active model.

Design Plane

The area in which elements are created in a 2D design.

Design Session

The period during which a DGN file is active.

Destination View

A view that can be designated for attaching saved attributes and displays from a source view.

Dialog Box

A window displayed on the screen that presents various controls that can be manipulated to set values that MicroStation will use.

Digital Certificate

DGN files can be protected by certificates. Users can be granted access to that certificate and all the rights to the file associated with the certificate.

Digital Rights

The type of rights (i.e. view, edit, export, etc.) to a protected file assigned to a user.

Digital Signatures

The mechanism for indicating one's approval of DGN files to other users and communicating approval in a verifiable manner.

Digitizing

The process of coding graphic information from paper sources (such as a map or other drawing) into a DGN file using a tablet.

Digitizing Partition

The area of a digitizing tablet in which the tablet cursor controls the screen pointer only within the part of the design in which features of the hard copy are being mapped. See partition, screen partition.

Dimension

A label in a design owing a linear, angular, or radial distance or angle measurement.

Dimension Attributes

The settings for all components of dimension elements, including text (color, weight, font, height, and width), lines (color, style, weight, and alternates), and level.

Dimension Driven Cell

A cell that can be placed throughout a design and adjusts dynamically to reflect relationships defined at its creation.

Dimension Element

An element that contains all the lines, arcs, terminators, and text in a dimension.

Dimension Line Terminators

Symbols placed at the end of dimension lines that clarify the meaning of the dimensions.

Dimension Line

The line component of a dimension that is usually parallel to and the same length as the object being dimensioned.

Dimension Mark

Symbols placed with dimension text that clarify the meaning of the dimension text.

Dimensional Constraints

The constraints that define the exact dimensions of a construction.

Display Cube

In a 3D design, the volume of the design that appears in a view.

Display Depth

Collectively, the front and back of the view cube.

Display Mode

Determines whether the contents of a view are continuously rendered and, if so, the type of rendering.

Displayable Attribute

A tool that allows automatic text annotation of drawings. Attributes are stored in an underlying database and are inserted into text nodes in the drawing which serve as placeholders.

Displayable Attribute Table

Specifies the display format for each type of displayable attribute text node.

Displayable Attribute Text Node

You can place a copy of some, or all an element's database attributes as text in the DGN file in a displayable attribute text node. Selected attributes are loaded into the displayable attribute text node based on an SQL SELECT statement.

Distant Light

A type of light cell that casts light in a single direction.

Dithering

The process of alternating two or more colors pixel by pixel across the screen to seemingly create a third color not available in the color palette.

Double-click

To press or tap twice in quick succession on a cursor button or mouse button, or to press on a list box item in a dialog box twice in quick succession.

Drawing Composition

A method in which views of the model are attached to a sheet model as references. Sheet files with attached references can also be established independent of the design model file so that a wider range of individuals may access these files.

Drawing Plane

The plane on which data points are previewed with AccuDraw. In 3D, all data points will lie on this plane unless supplied by tentative point snap or by precision input key-in.

Drawing Plane Coordinate System

The coordinate system (Rectangular or Polar) that defines the orientation of the drawing plane.

Drawing Plane Origin

The origin of the drawing plane coordinate system.

Drop Complex Element

To return the primitive elements composing a complex element to their primitive element status.

DXF

A drawing exchange file format supported by most CAD packages. MicroStation reads and writes DXF files. A DXF file, when opened and subsequently modified in MicroStation is automatically saved as DXF.

DWG Files

AutoCAD binary files that may be directly opened in MicroStation.

DWG Workmode

The MicroStation workmode in which certain functionality is disabled by default in order to restrict MicroStation to creating only engineering data that can be stored in DWG format. DWG workmode is enabled by default when a DWG file is opened.

Dynamic Display

A temporary representation, which moves when the pointer moves, that MicroStation displays until the placement is complete.

Fast Display

A view attribute setting in which the display changes to an abbreviated form of the information which would normally be displayed. The nature of the information in the design does not change; only the presentation of it in the view changes. Fast display can be selected for cells, curves, text, and fonts.

Feature Control Frames

Indicators of geometric tolerancing in a design.

Fence

A polygonal boundary that designates multiple elements for simultaneous manipulation using fence tools.

Fence Contents

The elements and portions of elements operated on by fence tools determined by the fence selection mode. These elements can be enclosed by, outside of, or overlap the fence.

Fence Filter

A criterion (SQL SELECT statement) based on non-graphical data associated with elements that can be used to restrict the elements that are selected for fence operations.

Fence Manipulation

Tools that operate on the fence contents.

Fence Selection Mode

A setting that determines the fence contents.

Field

In a dialog box, an area into which a filename or other keyboard input can be entered. In a non-graphical database, a column.

Filename

Denotes the string used when calling for a generic file.

Filled

Element that is colored within the planar element boundaries, as opposed to being displayed as just an outline.

Filled Hidden Line

A rendering method that generates a surface model in which each visible surface is filled with the element color.

Fillet

An arc constructed between and tangent to two converging lines.

Filter

A filename pattern that limits filenames displayed in a list to those fitting the pattern. For example, DGN.

Fit

A viewing operation that expands the area seen within a view to include all elements on all levels turned on in the view.

Fitted View

View that shows all elements on the levels turned on in the view.

Flag

A bitmapped image (raster element) with or without an associated explanatory message used for annotating a design with reminders or suggestions for future changes.

Flashbulb

A light source located at the camera position which illuminates any visible object.

Floating

A dialog box, toolbox, or other part of MicroStation's graphical user interface that can be positioned freely on screen.

Fog

A type of atmospheric cueing in which the shaded images are faded to the fog color as their distance from the eye increases.

Folding

The process of attaching a view about an orthogonal axis of a line defined by two data points.

Font

A style of lettering. Fonts are identified by both a number and a font name.

Font Library

A file that contains fonts for use by MicroStation or other applications. These fonts may include TTF and SHX formats.

Function Keys

Application keys that are programmable; located at the top of the keyboard.

Function Key Menu

A way to assign actions to the function keys on the keyboard.

Geometric Tolerancing

Specification of how much a manufactured object can deviate from the geometry shown in a design.

Geometry

Type of entity that defines physical shapes, including points, curves, surfaces, solids, and relations (collections of similarly structured entities).

Global Origin

Location of the origin of the Cartesian coordinate system in design plane coordinates. When design plane positions are specified or reported in working units, they are relative to the global origin.

Gouraud Shading

See smooth shading.

Graphic

A type of cell in which the symbology (color, line style, and line weight) is determined when it is created.

Graphic Element

A graphic component of the design. Referred to in user documentation as simply an “element.”

Graphic Group

A permanent grouping of elements (primitive or complex). An element can be a member of only one graphic group at a time.

Graphic Group Lock

The setting that, when on, causes all elements in a graphic group to be manipulated whenever one member of the graphic group is manipulated. For example, if an element in a graphic group is deleted with Graphic Group Lock on, all elements in the graphic group are likewise deleted.

Grid Lock

The setting that, when on, forces all graphically entered data points to the grid point nearest to the specified point.

Grid

A matrix of grid points (dots) and grid references (crosses) at user-defined intervals, used as a visual aid or in conjunction with the Grid Lock setting for precision input.

Grid Points

Evenly spaced points in the design plane located at integer multiples of the grid units from the global origin.

Grid References

Reference crosses spaced at user-defined intervals on the grid.

Grid Units

The settings that specify the distance between adjacent grid points and the number of grid points between grid references.

Group

A complex element (an unnamed cell) that is not defined in a cell library. Groups can be created to keep elements together, or to be copied for repeated placement in a design.

Handles

Small squares drawn on (or sometimes near) elements to indicate that they have been selected. This provides an alternative to highlighting.

Hatch

The process of constructing a set of evenly spaced lines in a closed area.

Help Articles

Text that displays in the Help window to explain concepts, features, and procedures in MicroStation.

Help Topics

A list of the areas covered by help articles that displays in the Help window.

Hidden Line

A rendering method that generates a surface model. See filled hidden line.

Hidden Line Removal

The process of removing the lines in a 3D design that are hidden by surfaces. See edges hidden line removal.

Highlight Color

The color in which an element is displayed upon identification for manipulation.

Hole Elements

Elements whose area attribute is set to hole, as opposed to solid.

Hypertext

The text that appears in color in the online help and allows you to jump from topic to topic by selecting it.

Identify

To enter a data point on an element to distinguish it for manipulation or modification.

IGDS

Interactive Graphics Design Software, the software that ran on Intergraph VAX-based CAD systems.

IGES

Initial Graphics Exchange Specification, a public domain, ANSI standard, neutral file format that is intended as an international standard for the exchange of product definition data between different CAD/CAM systems.

Input Focus

The settings or dialog box control upon which the next keystroke will act has the input focus.

Insert Mode

If on, new characters are inserted at the insertion point.

Insertion Point

The point, represented by a vertical bar, at which new characters are inserted.

Inside

Elements completely enclosed in a fence are inside the fence.

Instance

An occurrence of a shared cell that is placed in a design.

Isometric

The standard view that shows top, left, and front facets of a design.

Isometric Lock

The setting that, when turned on, forces each data point to lie on the isometric drawing plane.

Isometric (Iso) View

Standard view in a 3D design where the top, left, and front faces of a cube drawn orthogonal to the design cube axes are equally inclined to the screen surface.

Item

In a dialog box, any control such as a text field, check box, or option menu.

Joints

Intersections of multi-lines.

Key-in

An instruction entered into the Key-in window to control MicroStation. Most key-ins have GUI control equivalents.

Key-in Window

A window used to scroll through lists of key-ins, construct key-ins, and submit key-ins to MicroStation. Opens when Key-in is chosen from the Utilities menu.

Keypoint

Points on an element to which a tentative point will snap when Snap Lock is on activated within Keypoint mode.

Keypoint Snap Mode

If active, entering a tentative point close enough to an element causes the tentative point to snap to a keypoint on the element.

Level

In the MicroStation DGN file format, the number of levels is unlimited, and the minimum number of levels is 1. You can delete unused levels. All levels are named and have default colors, line weights, and line styles, providing the foundation for numerous enhancements. An important benefit of the level system is the ability to standardize level structures across DGN files.

Level Filter

Filtering the level entries in the list boxes in the Level Display and Level Manager dialog boxes allows you to search and sort these entries.

Level Group

A set of levels that can be collectively manipulated and displayed.

Level Lock

The setting that, when turned on, prevents selection or manipulation of any element that is not on the active level.

Level Structure

The hierarchical organization of levels after they are grouped.

Level Symbology

A view setting that, when turned on, causes all elements on a level to be displayed with the same element symbology.

Library

See cell library.

Light Cell

A cell containing a light source.

Light Source

A point in a design that is not visible, but casts light that is visible in a shaded view.

Line String

An open graphic element composed of line segments connected at the vertices.

Line Style

A part of the symbology of an element, for example, whether a line is solid, continuous dashes, dots and dashes, and so on. Each element can have its own line style, or each can be defined by separate symbology. You can create custom line styles.

Line Style Component

Any of the properties such as stroke patterns, point symbols, and compound components that apply to a line style.

Line Style Definition

A line style name and its corresponding line style components stored in a line style library.

Line Style Modifiers

Properties that can be applied to a line style to modify it as elements are placed, without requiring separate line style definitions.

Line Terminator

A cell placed at the end of an open element, oriented in the direction of the element. A commonly used line terminator is an arrowhead placed at the end of a line segment.

Line Weight

An index in the range 0 to 31 that designates the weight or thickness of the lines used to draw or plot a graphic element. Each element has its own line weight.

Linear Patterning

The repetitive placement of the active pattern cell along a line, line string, shape, arc, circle, ellipse, or curve element.

Linkage Mode

The setting that determines how the active entity is treated when a graphic element is linked to it. Settings include new (unique row required for each linkage), duplicate (same row used for each linkage), information (no table rows added or deleted when linked element is copied or deleted), and none (no linkages can be created).

List Box

Rectangular areas in which files, directories, or other items are listed for selection or reference.

Locate

To find an element in the DGN file.

Locate Tolerance

A setting that determines the size of the area surrounding the element selection or identification pointer in which MicroStation can locate elements.

Locks

Settings that you selectively enable or disable. Locks affect the way MicroStation interprets and reacts to your input.

Macro

A software program that automates an often-used, usually short sequence of operations.

Macro Language

Used to represent macro code - a dialect of BASIC with MicroStation-specific extensions.

Manipulate

To copy, move, rotate, scale, mirror, or delete an element or group of elements.

Mark

See dimension mark.

Mask

An area of a reference that is not displayed.

Master Units

The largest units in common use in a model.

Material Assignment Table

Assigns a material to elements on a level(s) with a color(s) in the design.

Material Characteristics

Information for mapping color indices and levels to surface characteristics, such as reflectivity, finish, and color.

Material Definition

The attributes related to color, texture, transparency, and finish that may be applied to surfaces.

Material Palette

Contains material definitions including pattern maps, bump maps, or combinations of both.

Material Tables

Files that contain material characteristics. With material tables, simple textures, or materials such as "flatmetal" or "plastic" can be simulated as part of a final rendering.

Matrix Menus

Paper (mounted on the surface of a digitizing tablet) menus that contain menu blocks of a fixed size organized in rows and columns.

Maximized

When a dialog box or window is drawn to the largest scale that will fit on the selected paper size.

Mechanical Dimension Format

Dimensions that conform to mechanical design conventions.

Menu

One method for activating a MicroStation command, including pull-down menus, toolboxes, function key menus, and paper menus.

Menu Block

An area in a paper (comm and or matrix) menu defining a region that is selected to perform a specific task.

Menu Cell

A cell in a cell library that contains the special information needed for a paper menu.

Menu Control Information

Information specified with user commands that controls how menu actions are taken when menu options are selected.

Menu DGN File

A MicroStation DGN file in which menu cells are created for custom menus.

Menu Item

Any of the list of options on a pull-down menu.

MicroStation Development Language (MDL)

Allows programmers to execute C language code within MicroStation.

Mirror

A manipulation that reverses the geometry of graphic elements about a horizontal, vertical, or specified arbitrary line.

Mnemonic Access Character

The underlined character in each menu name and menu item.

Model

A DGN file component that contains elements. Design models can be either 2D or 3D, but they are most useful in their 3D form. Sheet models, which are flat and used for drawing composition, are ordinarily 2D. By default, the view windows of a design model have black backgrounds, and the view windows of a sheet model have white backgrounds.

Modifier Key

The <Ctrl>, <Alt>, and <Shift> keys, which may be used in conjunction with the function keys to create new function key definitions.

Module

A subdirectory tree under MicroStation's directory that contains data files in the sample workspaces.

Monument Point

A known landmark point in the design plane. Monument points are used to orient references.

MSCATALOG

A table that must be contained in every non-graphical database with linkages to elements. MSCATALOG contains information associated with each table that is used by the database server.

Multi-line Element

A set of two or more parallel lines treated as a single object, commonly used for drawing walls in floor plans. A multi-line element can be defined to include up to 16 separate lines, each with its own symbology, level, and class.

Nested

When part of a cell is used as part of an additional cell.

Nested Reference Attachments

MicroStation provides live nested reference attachments as an alternative to flattening all reference attachments in the active model. When this option is enabled, changes to reference attachments in designs that are referenced to other designs are reflected the next time either the active model's views are updated, or the file is reopened.

Node

Shorthand for text node. Also, a computer in a network.

Non-coincidental Reference Attachment

A non -coincidentally attached reference is offset, rotated, or scaled from the active DGN file.

Non-graphic Database

A collection of tables representing objects that, unlike DGN file elements, are not conveniently represented in pictorial form.

Noun-verb

A manner of operating MicroStation; to select an element in the design before selecting a tool to act upon it.

NURBs

Non-Uniform Rational B-splines.

Offset

In a compound line style component, the value that specifies the distance measured perpendicularly from the working line to where the component is displayed.

Opaque

A type of fill that is displayed as a solid shape of the active color.

Open B-spline

A B-spline that starts at its first pole and ends at its last pole; its ends do not meet.

Option Menu

A menu in a dialog box that allows only one value to be selected.

Oracle Linkage

See database linkage.

Order

Integer value associated with a B-spline that determines the smoothness of the B-spline and the number of points in the control polygon, influencing the path of the curve at a given position. The higher the order, the smoother the curve, and the more points in the control polygon influencing the path of the curve.

Origin

See cell origin or global origin.

Orphan Linkage

Linkages without associated rows in the database.

Orthogonal

Constructed with right angles or perpendicular lines. An orthogonal shape contains only right angles.

Outline

A type of fill that displays lines in the active Color forming a wireframe view of the closed element.

Overlap

A fence selection mode that includes only the elements inside or overlapping the fence.

Override

The mode that allows you to override the Snap Mode.

Overwrite Mode

The mode of text entry in which each new character overwrites an existing character.

Panning

To scroll a view over the design plane.

Paper Menus

Menus printed on paper and mounted on the surface of a digitizing tablet. The Command button on the tablet cursor is used to select an item on a paper menu.

Parabola

A plane curve generated by a point moving so that its distance from a fixed point is equal to its distance from a fixed line.

Parallel Projection

A view of a 3D design in which each element is projected to the screen along a line parallel to the Z-axis of the view. (Compare perspective projection.)

Parameter

See settings.

Particle Tracing

Provides photo-realistic lighting solutions. An alternative to traditional radiosity solving, it has significantly lower memory requirements.

Partition

To separate the digitizing tablet into two regions.

Path Configuration Variable

A type of configuration variable that tells MicroStation in which directories to find files, MS_DEF, for example.

Pattern Element

An element with a class attribute of pattern. It can be placed only with a patterning tool.

Patterning

See area patterning.

Perspective Projection

View of a 3D design in which each element is projected to the screen along a line that intersects with the eyepoint. Elements that are further from the front of the view thus appear smaller. (Compare parallel projection.)

Phong Shading

A method of shading a rendered image that recalculates the color for each pixel in the final image. Phong shading produces high quality images but increases rendering time.

Picture Data

In file exchange, the graphical information that draws a picture.

Pixel

PICture ELeMENT, the smallest dot of light that a monitor can display.

Place SmartLine

The tool used to place a line, line string, shape, arc, or circle or a combination thereof.

Plotfile

The file generated by MicroStation that contains plotter commands that, when sent to an output device, will cause it to print out the desired portion of the design plane.

Plotter Driver File

A file containing information needed to generate plotfiles for an output device. These files have the form *.PLT.

Point

See data point, tentative point, or active point.

Point Cell

A cell with a single, snappable point. Point cells are commonly used for symbols and to establish monument points. The snappable point in a point cell is the cell origin. Point cells are always placed relative to the active level with the active symbology.

Point Curve

A type of curve that has no settings that control the curve's shape.

Point Element

A special case of a line element that has no length.

Point Light

A type of light cell that radiates light in all directions from a single location.

Point Light Source

Light emanating from a point. Point light sources illuminate surfaces differently depending on their orientation.

Point of Intersection

The point at which two non-parallel lines intersect or would intersect if the lines were extended.

Point Symbols

A type of line style component.

Pointer

The small icon on the screen that moves in response to user inputs and indicates the position where input is supplied to MicroStation.

Pointers

Variables used by MicroStation and other applications to place, locate, and process elements in the DON file.

Polar Array

The set of copies of an element placed in a circular pattern in a design.

Polar Coordinates

The coordinates used in a spherical (auxiliary) coordinate system or in AccuDraw to specify distances and angles.

Pole

A vertex of a B-spline curve.

Polygon Hidden Line

A type of rendering performed by MicroStation.

PopSet

A feature that prevents the display of the selected tool's settings window when you are finished adjusting its controls. PopSet allows you to reclaim valuable screen real estate and reduce pointer movement.

PowerSelector

A tool that simplifies the process of defining attribute-based element selection criteria.

Precision Input Key-ins

A means of entering data points at precise locations either by specifying the coordinates or by specifying the distance from the most recent data point or tentative point.

Preferences

Settings that customize MicroStation to your machine and desired mode of operation.

Primary Elements

Elements whose class attribute is primary (as opposed to construction).

Primary Key

The MSLINK column in a database with linkages. Any row can be uniquely specified solely by its MSLINK column value.

Primitive Elements

The simplest type of element.

Private Key

An encryption/decryption key known only to the parties exchanging messages.

Product-definition Data

In file exchange, graphical information that describes a design.

Profile Element

A planar cross-section of an actual element that can be projected or rotated to draw the final element.

Project

A type of configuration variable file that is set by a site or project manager to facilitate using MicroStation in workgroups. A project can also be the component workspaces and the data files used for a discipline or undertaking.

Projection

A type of action that may be taken on a planar profile element formed by extruding a line string, curve, shape, ellipse, complex chain, or complex shape to create a surface of projection.

Prolog

Text file used to provide the header for a PostScript file.

Prompt

The text in the status bar that tells you what to do next.

Properties

Element criteria that may be searched, including the area attribute (Solid or Hole), whether an element can be snapped to, whether it is locked, and whether it has been modified.

Public Key

With a private key derived from the public key you can effectively encrypt messages with a digital signature.

Raster Background

A bitmapped picture that can be used as the backdrop for a rendering.

Raster Fonts

Fonts used to display text in the status bar, dialog boxes, toolboxes, and each view window's title bar.

Receiving Application

In file exchange, the application into which a file exported from MicroStation will be imported.

Record

The equivalent of a row in a database table, representing an individual object.

Rectangular ACS

An auxiliary coordinate system that uses standard (Cartesian) axes.

Reference

A model attached to and displayed with the active model for printing or construction purposes. A reference cannot be modified. You can attach, as a reference, a model that resides in either the open DGN file or some other DGN file.

Relational Database

A software package that stores, manipulates, and reports on non-graphical information. It acts on collections of tables or files that represent objects, their properties, and relationships between the objects.

Rendering

To produce an image of a 3D model that looks more realistic than a wireframe image. Includes hidden line and surface shading.

Report Files

Text files that report output from MicroStation.

Report Table

A file containing the database attributes of elements in a fenced area. A report table is structured identically to the master table from which the data was derived.

Reset

A placement action that, with most tools, backs up one step. In some cases, a Reset operation completes an action; in other cases, it cancels an action or rejects an identified element.

Reset Button

The button on a mouse or digitizing table cursor that is pressed to enter a Reset.

Resetting

Entering a Reset.

Resize Border

The frame around each view that permits the view to be resized. When the pointer is placed on the resize border, it becomes a double arrow, and that border can be pulled or pushed to expand or contract the size of the view.

Resolution

The number of addressable points across a given area. For example, output device resolution is measured in lines per inch, while screen resolution is usually given with two numbers indicating the number of pixels across the width and height of the largest image that can be displayed.

Resource

The default specifications for menus and dialog boxes.

Resource File

File containing the default specifications for dialog boxes.

Revision

A specific version of a saved DGN file. With each file save operation, Design History captures the state of the DON file at that moment by recording your user ID, the current time and date, the incremental changes to the elements in the design, and optional comments.

Revolution

A type of action that may be taken on a planar profile element formed by rotating a line string, curve, shape, ellipse, 8 -spline curve, complex chain, or complex shape.

Right Isometric

The view showing the top, right and front faces of a cube.

Row

See record.

Rubberbanding

See dynamic update.

Saved

The kinds of settings, such as working units and view configuration, that are kept between sessions.

Saved View

A named view definition saved in a DON file for later recall or for attaching to another model file as a reference.

Scale

To resize an element or elements by the active scale factors. In plotting, the ratio between distance in the DGN file master units and distance represented on the output device.

Screen Element

One of the pieces that make up MicroStation's graphical user interface, such as the desktop, a window border, or a button.

Screen Menus

Pull-down menus, tool frames, dialog boxes, and sidebar menus.

Screen Partition

The area of a digitizing tablet in which the tablet cursor controls the screen pointer normally across the entire screen. See partition, compare to digitizing partition.

Search Criteria

Element attributes for which MicroStation can search.

Section

Part of a drawing that shows interior detail that is too complex to see clearly in a wireframe view.

Seed DGN File

A template file that contains the appropriate default settings and attributes.

Seed Sheet Model

A seed file from which sheet models can be created.

Select

To distinguish an element, identify a list box entry on which to operate, or activate a tool or view control.

Select Range

See locate tolerance.

Select Settings Window

Used to adjust the active settings and select a drawing tool.

Selection Set

A group of selected elements. Selected elements are displayed with handles.

Sending Application

In file exchange, application that created a file that is to be imported into MicroStation.

Separator Bar

A horizontal line across a menu that logically subdivides menu items in the same menu.

Server Model

Defines the interaction between MicroStation, a database package, and the database server.

Settings

Values that determine how MicroStation displays a design or handles user input.

Settings File

An import or export file that stores all settings for a conversion as they were when the settings file was created or last saved. Also, a type of module data (.stg files) that specifies active settings and drawing tool selections; used with the Select Settings window.

Shadow Map

A file containing an image created in the first step in rendering shadows, used to determine whether surfaces are illuminated or in shadow.

Shape

A closed primitive element composed of linear segments.

Shared Cell

A cell whose elements are stored only once in the DON file, regardless of how often the cell is placed. Any change made to one instance of a shared cell reflects in all instances of that shared cell.

Shared Cell Definition

The elements comprising the shared cell.

Sheet File

A 3D DON file in which views of the model file(s), including visible edges and sections, are attached.

Sidebar Menu

A menu that displays onscreen and presents commands for selection in a text-based, hierarchical form. Although sidebar menus are still supported, toolboxes have taken their place.

Single Shot

Selecting a tool for one-time use by double-clicking it.

Sink

To put a window just below the lowest view.

Site

A type of configuration variable set by a system or site manager to facilitate using MicroStation in workgroups.

Sky Opening

Not a light in the traditional sense but acts as a control when using Solar, Distant and Sky lights. A sky opening generates more efficient solutions for indoor scenes lit with sky or sun light through an opening such as a skylight, window, or door. Processing time is reduced because testing for shadows is carried out in the directions of the sky openings, as opposed to testing the entire sky.

Slab

A volume of projection with a rectangular cross section.

SmartLine

See place SmartLine.

Smooth Shading

A method of shading a rendered image by calculating the color of the polygons at their boundaries and blending those colors across the polygon interiors.

Snap

Use of the tentative point to position a data point at an exact point on the target element. Tentative points snap to an element when Snap Lock is on.

Snap Divisor

The setting that determines the positioning of keypoints on linear segments. The number of keypoints per segment is one greater than the snap divisor. If the snap divisor is one, only endpoints of a linear segment are keypoints. If the snap divisor is two or a multiple of two, the center point is also a keypoint.

Snap lock

The setting that, when on, causes MicroStation to try to find an element or element intersection to snap to when a tentative point is entered. See also keypoint snap mode.

Snap Lock Divisor

The number of keypoints on each segment of a linear element plus one.

Solar Light

Lighting that approximates illumination from the sun. MicroStation allows solar light to be approximated at any time of day between sunrise and sunset, on any date, and at any latitude.

Solar Time Stamp

You can display the current solar time and date information while rendering a view. This lets you produce solar studies, for example, in which the time and date appear. A special cell, SLRTIM, contains enter data fields into which you can place variables that are replaced with the required information which then appears during rendering.

Solid

A type of complex element specific to 3D, along with surfaces.

Solid of Projection

A solid formed by moving a closed planar shape along a linear trajectory to a second parallel plane. The shape at the target plane is rotated by the active Angle and scaled by the active Scale. The profile elements are connected at their keypoints by linear rule elements.

Solid of Revolution

A solid formed by sweeping a closed planar element around an axis of revolution. The profile elements are connected at their keypoints by circular arc rule elements.

Source View

A view created, set up, and saved to use as a model view.

Spherical ACS

Auxiliary coordinate system in which positions are determined by one magnitude and two angles.

Spot Light

A type of light cell that casts a conical beam of light.

SQL

Standard Query Language, a simple, powerful language that is the industry standard for database access and data manipulation.

Stacked Dimensions

A group of dimensions that have at least one witness line in common.

Standard Views

The eight commonly used views of a 3D design (Isometric, Right Isometric, Top, Bottom, Left, Right, Front, and Back).

Startup Application

The MDL application that is active when a DGN file is not opened.

Status Bar

The strip at the bottom of the application window (or screen) that displays messages, prompts, and status information. The area on the screen where messages such as tool prompts, errors, and the status of MicroStation settings (snaps, levels, element selection, and DGN file disk status) are displayed.

Stereo Imagery

Human vision uses the difference between the image seen by the left and right eyes to perceive distance. MicroStation can duplicate this effect by rendering two different images from slightly differing camera positions, and then superimposing the two images on one screen in different colors. When the composite image is viewed with 3D glasses, it appears to have depth.

Stream Angle

A setting that causes a sampled stream point to be saved if the angle formed by the sampled point and the two most recently sampled points exceeds the setting.

Stream Area

A setting that causes a sampled stream point to be saved if the area of a triangle formed from the sampled stream point and the two most recently saved points exceeds the setting.

Stream Delta

A setting that determines when the pointer position is a sampled point. If the distance from the previous sampled point to the current pointer position is greater than the stream delta, the point is considered a sampled point and the stream angle, stream area, and stream tolerance settings are tested to see if the point should be recorded as a data point.

Stream Tolerance

A setting that causes a sampled stream point to be saved if the distance from the sampled stream point to the most recently saved point exceeds the setting.

Stroke Pattern

A line style component comprising dash strokes and gap strokes.

Stroke Tolerance

The setting that determines the size of polygons into which curved surfaces are broken for rendering.

Style

A multi-line definition or set of dimension attributes that can be saved in a settings file for later recall.

Subunits

Units that master units are divided into in the working unit definition. For example, if master units are feet, a convenient subunits setting would be inches. The number of subunits per master unit and a one- or two-character abbreviation for the subunit name is specified in the working unit definition.

Suffix

See extension.

Surface

A 3D geometric construction that can partition space but cannot enclose a volume.

Surface Description

A relationship between an element color and a surface color, reflectivity, and roughness. See also material tables.

Surface Description File

The file that contains surface descriptions for one or more element colors. The surface description file is used by MicroStation's surface shading.

Surface of Projection

A surface formed by moving a planar profile element along a linear trajectory to a second parallel plane. The profile at the target plane is rotated by the active Angle and scaled by the active Scale. The profile elements are connected at their keypoints by linear rule elements.

Surface of Revolution

A surface formed by sweeping a planar profile element about an axis of revolution. The profile elements are connected at their keypoints by circular arc rule elements.

Surface Shading

Process of creating a lifelike image where the visible surfaces are filled with colors calculated from their surface descriptions and the ambient and point light sources.

Symbol

A character placed from a MicroStation symbol font.

Symbol Font

A font that contains special use geometric construction s rather than alphanumeric characters. A typical use is to hold symbols for dimension line terminators and dimension marks, and geometric tolerancing.

Symbol Library

MicroStation uses the term cell library to refer to what may be known as a symbol library in other applications.

Symbology

See element symbology, level symbology, or attributes.

System

Type of configuration variable.

Tags

Non-graphical attributes that may be attached to elements drawn in designs.

Tag Set

Set of associated tags.

Tag Set Definition

Information that specifies, for each tag in a tag set, several tag attributes, such as whether the tag is displayed and its default value, if any.

Tentative Button

The button that is pressed to enter a tentative data point. The tentative button may also shift the location of the AccuSnap selection.

Tentative Point

A graphic input that is used to preview the location of the next data point, define a point of reference, and/or create an association point. Tentative points may appear with AccuSnap.

Terminal Control Block (TCB)

A global data area of memory in which MicroStation stores settings.

Terminator

See dimension line terminators or line terminator.

Text Attributes

The color, weight, font, height, and width of text.

Text Element

MicroStation places text in DON files as a distinct type of element.

Text Node

A group of multiple text elements grouped in a complex element. MicroStation automatically forms a text node when multi-line text is placed.

Text Node Lock

A setting that, when turned on, forces subsequently entered text to be attached to empty text nodes. If an empty node is not available, no text is placed.

Text Style

Comprises a group of text attributes such as font type, width, height, and color. Text styles allow you to place text within a model file in a consistent and automated manner. The fonts that are supported natively in MicroStation are True Type and AutoCAD fonts (SHX).

3D Data Point

A method of entering a data point in a 3D design by first shooting a boreline in one view, and then selecting a position along the boreline from another, non-parallel view. This combination of steps identifies a unique point in the design cube.

3D Tentative Point

A method of entering a tentative point in a 3D design by first shooting a boreline in one view, and then selecting a position along the boreline from another, non-parallel view. This combination of steps identifies a unique point in the design cube.

Tile

To arrange views and toolboxes so that they do not overlap.

Toggle Tool

A type of setting that has only two states, such as off and on. Used as a verb, to change the state of a toggle.

Tool

A drawing function or the screen icon used to represent that function in a toolbox.

Toolbox

Icon-based screen menus from which tools and view controls are selected.

Tool Frame

A toolbox that has child toolboxes.

Tool Settings

Special settings that apply to certain tools, such as length and angle settings for the Place Line tool.

Tool Settings Window

The window that contains controls for adjusting the selected tool's settings.

Top

The orientation in which the positive X-axis points right and the positive Y-axis points up.

Trigger

An SQL procedure that loads a screen form with the correct information from the database when the user reviews attributes or loads displayable attributes.

Unit Lock

The setting that, when on, forces all graphically entered data points to the nearest point that is an integer multiple of the unit distance from the global origin in the X, Y, and (in 3D files) Z directions.

Unit Distance

The setting that specifies the spacing between points that data points will be restricted to when Unit Lock is turned on.

Unshared Cell

A cell whose definition is placed in the DGN file each time the cell is placed.

Update

To redraw the contents of a view window(s).

User

A type of configuration variable that determines which project configuration file is processed.

User Configuration File

The file that contains the active workspace components.

User Interface

A customized user interfaced (defined in Modification resource files in subdirectories under MicroStation's workspace user interface).

User Preference

See preferences.

V7 Workmode

The MicroStation workmode in which certain functionality is disabled by default to restrict MicroStation to creating only engineering data that can be stored in the MicroStation v7 (MicroStation/J) design file format.

Verb-noun

A manner of operating MicroStation: choosing a tool before identifying an element in the design for it to act upon.

Visible Surface Shading

See surface shading.

Void

A fence selection mode that selects elements or parts of elements outside the fence, rather than within the fence.

Void-clip

A fence mode in which only the elements that are completely outside the fence and those parts of elements outside or overlapping the fence are included in the fence contents.

Void-overlap

A fence mode in which only the elements outside or overlapping the fence are included in the fence contents.

Volume of Projection

See solid of projection.

Volume of Revolution

See solid of revolution.

Window

A bordered rectangular region on the screen displaying a toolbox, dialog box, view, or sidebar menu.

Window Control Menu

A menu opened by clicking the window menu button on the left end of a window's title bar.

Window Origin

The position in the design plane of the lower-left corner of a view.

Windowing

A method of selecting new contents for a view.

Wireframe

A display mode in which surfaces are displayed as their outlines, and elements behind surfaces are displayed as though the surfaces did not exist.

Wiremesh

A rendered display like wireframe except that curved surfaces are represented by a polygonal mesh for increased realism.

Witness Lines

See extension lines.

Work Line

The line in a multi-line element connected to the pointer during placement.

Working Set

A temporary grouping of elements that need not be close together. Fence manipulation tools operate on working sets.

Working Units

Real-world units that the design plane is configured to.

Vertex

The highest point or apex of a figure, the intersection of lines or curves, or the endpoint of an element.

View

Collectively, the portion of the active model (and its attached references) and displayed in a view window and the display orientation.

View Axis

For element placement, the axis relative to the view.

View Configuration

The arrangement of view windows on the screen and the area of the model displayed in each view.

View Control Bar

The bar at the bottom border of each view window from which commonly used view controls can be selected.

View Controls

Graphically operated controls that affect the portion of the design or the orientation of the information in a view.

View Cube

The portion of the design cube in a view.

View Delta

The extent, in working units, of a view along its horizontal and vertical axes.

View Dependent Settings

Settings that affect the presentation of information in a view.

View Group

A set of view window layouts applicable to a model within the open DGN file. A view group is also a set of views placed on a sheet file in a sheet model.

View Independent Text

A text element that displays at its angle of placement regardless of how the view is rotated.

Viewing Pyramid

A dynamic that shows you what will be included in a view with perspective projection.

View Volume

The volume displayed in a 3D view.

View Window

A window displaying a view.

Visible Edge

A form of rendering in which the edges of surfaces are made visible.

Visible Edges DGN File

DGN file created using edges hidden line removal.

Working Unit Settings

The settings that designate the working units and working resolution. In the current implementation, MicroStation uses IEEE 64-bit floating point storage, which allows for a high degree of accuracy and a working volume with each axis roughly 2 million times larger than the axes in V7.

Workmode

An operating mode of MicroStation such as DGN, DWG, and V7 workmodes.

Workspace

A custom MicroStation environment or configuration.

Zoom

To decrease (zoom in) or increase (zoom out) the portion of the design displayed in a view.

InRoads Glossary

New

Allows you to create different types of files in memory for use in inroads. These file types include surfaces (DTM), geometry (ALG), typical section (TML), and roadway libraries (RWL).

Open

Allows you to open and load several types of data files used in Inroads from disk into memory. These files include Project (RWK), Surfaces (DTM), Geometry (ALG), Typical Sections (TML), Roadway libraries (RWL), Preferences (INI), and Styles (INI).

Save

Commands, which write information to disk such as the project files, surfaces, geometry project, roadway library, and template or typical section library.

- **Project**
Saves project data including coordinate geometry, surfaces, typical sections libraries, roadway libraries, preferences, survey database and styles in an ASCII file with an RWK extension.
- **Surface**
Saves surfaces data in memory to disk with a DIM extension.
- **Geometry Project**
Saves geometry data in memory to disk with an ALG extension. This includes the overall geometry project, horizontal alignments, vertical alignments, and superelevations.
- **Typical Section Library**
Saves the template library data in memory to disk with an TML Extension. This file contains the templates, cut and fill tables, and decision tables.
- **Roadway Library**
Saves the roadway library in memory to disk with an RWL extension. This file contains the stations and template assignments used when running the roadway modeler.

Save As

Allows you to Save Inroad data, projects, surfaces, geometry, typical sections, and roadway libraries by using the browse button to save as a new name on the disk.

Project Defaults

Commands used to set the variables that assign the working directory when running inroads when opening and saving files.

Import

Commands, which allow you to bring in, various types of files to create surfaces, geometry and templates used in InRoads.

- **Surface**
Imports various types of surface files into memory to create digital terrain models. These types include, ASCII, Digital Elevation Mode (DEM), Graphics elements, and Interactive graphics roadway Design Systems (IGRDS)
- **Geometry**
Imports graphical elements into geometry data such as horizontal alignments, horizontal and vertical alignments, event points, and cogo points. It will also import ASCII files, ics cogo files and create vertical alignments from surface data.
- **Template**
Imports graphical elements such as line-strings and complex strings into the Inroads template library which represents a cross section of a road with curb and gutter.

Export

Commands to allow you to send data to ASCII files from surface information or geometry data.

- **Surface**
Allows you to export surface data point types to an ASCII file.
- **Geometry**

Allows you to export geometry project by specifying the horizontal or vertical alignment to an ASCII file; to an INR file, or to Surface (DTM) data.

Translators

To load data from other vendors by processing XML ASCH files.

- **Land XML Translators**

Imports / Export data from LAND Extensible Markup Language (XML) files from inroads and to import geometry and DTM surfaces created by other vendors.

Exit

Command which will exit the product but keep your CAD platform running.

Surface

Commands, which let you work with and manipulate various types of surface data in a DTM.

- **View Surface**

Command which let you display various elements of a surface.

- **Perimeter**
Displays the outermost edge of a triangulated digital terrain model.
- **Triangles**
Displays all or a portion of the triangles in the active surface.
- **Contours**
Generates and displays the elevation contours for the active surface.
- **Label Contours**
This command interactively labels the elevation contours in a digital terrain model
- **Features**
Displays the surface features at exact x, y, and z location in plan view using the feature style defined for each type in the surface.
- **Annotate Feature**
Places text describing northing, easting, elevation, station, offset, feature name, description, and style of any given feature.
- **Surface Elevations**
Finds and displays the elevation of any point in the surface.
- **Slope Vectors**
This command displays vector lines and arrowheads to show the downhill direction and degree of slope at various points throughout a surface.
- **Single Point**
Commands, which find the elevation and slope vector of an identified point on a surface.
 - **Surface Elevations**
Displays the elevation of an individual identified point on the surface.
 - **Slope Vectors**
Displays a single vector line and arrowhead to show the downhill direction and degree of slope at an individual identified point.
- **Two Point Slope**
Allows you to display the slope between two points you enter on the surface.
- **Crossing Segments**
Views a shape at the point where two breaklines cross and another shape where breaklines have different elevations at a common x, y coordinate.
- **Inferred Breaklines**
Views implied breaklines in a surface that were created by the Generate inferred breaklines command during triangulation.
- **Profiled Model**
Provides an alternative method to visualize the relief in a digital terrain model. Showing the grid lines and datum lines, which can be user defined.
- **Gridded Model**
Generates a network of evenly spaced horizontal and vertical lines onto a surface that you can use to visualize the relief of a surface.
- **Color-Coded Aspects**
Command colors triangles in the DTM based on the directions in which the triangle faces (e.g. you can color all the triangles

- between N 45 E and S 45 E with one color).
 - **Color-Coded Elevations**
Command colors triangles in the DTM based on elevation for each triangle in the DTM.
 - **Color-Coded Slopes**
Command colors triangles in the DTM based on grade of slope for each triangle.
 - **Visualization**
Creates a graphical representation of a digital terrain model. Simple shapes are generated using symbology from features located with the DTM.
- **Fit Surface**
Fits the drawing design view to the active min/max coordinates of the surface.
- **Triangulate Surface**
Creates triangles from the surface points by running the triangulation algorithm. Using the x, y, z coordinates of the points triangle vertices create a triangular plane to use for contour interpolation.
- **Design Surface**
Commands, which modify and manipulate the surface of your model.
 - **Place Feature**
Creates or modifies features in the surface.
 - **Generate Transverse Feature**
Creates a new feature between two elements, which are 3d. The features connect the primary and secondary features and can be created at user defined intervals for the new feature
 - **Generate Longitudinal Feature**
Creates a new longitudinal (length) feature in the DTM from existing features or graphics elements. The new feature can be defined by absolute elevations, slope, derived from other elements or features.
 - **Set Slope Along Feature**
This command changes the elevations of feature points at a specified slope along a given range of the feature in the DTM. This may be specified as a slope or elevation.
 - **Drape Feature**
Projects features or graphic elements to the elevation of the specified surface and then redisplay those elements. You can drape lines, polylines, circles, arcs, points, 3-d faces, shapes, and any combination of these elements. You can also drape cells and text to the surface.
 - **Fillet Feature**
Places fillets (curve) at the intersection where one feature crosses another in the DTM.
 - **Generate Sloped Surface**
Projects single or multiple slopes from a graphic element or feature in a DTM to the surface. You can get the slope in either cut or fill situations.
 - **Apply Decision Table**
Creates longitudinal features in a DTM representing roadways, ditches, retaining walls, landfills, earth dams, etc. from a series of options in the table to fine tune the toe of slope. These options can contain cut or fill slopes, or any hard feature such as a wall and then apply some cut or fill option to seek the toe of slope.
 - **Set Elevation**
Changes the elevation (z value) of all the vertices of a feature or graphic Element
 - **Project Line to Surface**
Places a 3d line in the graphics file, which start at the point you identify and ends where the line intersects with a specified surface. You can identify the endpoint of the line, direction, and slope of the line.
 - **Generate Isopach Surface**
Annotates the difference in elevations between two surfaces. The elevations difference data is placed in a third surface called the isopach surface. This surface can be triangulated, and you can create contours showing the elevations changes between the two surfaces.
- **Design Pad**
Allows you to create new surfaces which model pads that can be defined as portions of your surface. Pads may represent parking lots, retention ponds, building footprints etc.

- **Place Pad**
Model design surfaces representing building pads, parking lots, retention ponds, etc. creating new surfaces with features to display contours and toe of slopes.
- **Move Pad Horizontal**
Moves the modeled pad DTM in the horizontal plan and automatically computes the new toe of slope.
- **Move Pad Vertical**
Modifies the elevation of points in a pad DTM shape and automatically updates associated side slopes.
- **Rotate Pad**
Rotates a pad DTM around an arbitrary point to display dynamically the new triangles or contours and toe of slope intersection with the existing DTM.
- **Edit Surface**
Commands that allow you to modify and manipulate surface data to individual points, triangles, and portions of a surface.
 - **Copy Single Feature**
Copies a feature in a DTM to create a second feature in the same or different DTM.
 - **Edit Feature Point**
Edit or change the individual positions, northing, easting, or elevation of points within a feature in the DTM.
 - **Divide Feature**
Modifies a feature in the DTM by adding points along the feature at regular intervals.
 - **Reverse Feature Direction**
Will reverse the order of points along a feature, making the first point the last point.
 - **Delete Feature**
Deletes selected features from the surface.
 - **Partial Delete**
Deletes a portion of the feature in the DTM creating a discontinuous feature.
 - **Break Feature**
Breaks one feature in the DTM into two distinct features.
 - **Join Features**
Combines two features in a DTM into one.
 - **Trim Features**
Removes a portion of a feature in the DTM based on the intersection of that feature and a specified graphic element.
 - **Extend Features**
Adds points in the DTM to a feature; extending it so that it intersects with a specified graphic element or another feature.
 - **Intersect Features**
Extends two features to a point of intersection in the DTM or in Two different DTM's.
 - **Copy Portion of Surface**
Copies all or part of one surface into another surface.
 - **Merge Surface**
Combines data in one surface with data in another surface to create a new surface.
 - **Transform Surface**
Modifies the coordinates; northing, easting, elevation, and rotation of random, breakline, interior boundary and exterior boundary points.
 - **Delete Triangles**
Deletes one or more triangles, but not the points that define the DTM.
- **Feature**
A named set of points in a digital terrain model (DTM) A feature can be one of 6 types corresponding the type in a DTM: random, breakline, exterior, boundary, interior boundary, or contour
 - **Feature Properties**
Allows you to edit and review features in a DTM, including the feature name, feature type, feature style, and point density interval. You can also exclude features from triangulation
 - **Feature Selection Filter**
Creates a selection set by name based on a set of rules for the purpose of building a filter to apply to the commands so that only the features in the select filter will be affected in the DTM.

- **Surface Properties**

Displays information associated with any surface loaded in memory. You can review the number of points, triangles, as well as the range extent of northing, easting, and elevation.

- **Active Surface**
Makes any existing surface loaded the active surface for display, edit, etc.
- **Copy Surface**
Copies a surface and all its contents, creating a new one.
- **Delete Surface**
Will remove all data from within a loaded surface or completely delete the surface and all of its data from memory
- **Rename Surface**
Will change the name and/or description of and surface that is currently open
- **Utilities**
Commands, which provide several tools for manipulating surface data. Commands to manipulate existing data or make existing data more manageable.
 - **Compress Surface**
Will remove points, which have been marked as deleted in a surface model. This will reduce the size of the surface model stored on disk and in memory.
 - **Thin Surface**
Will remove unnecessary random points from a surface to reduce the number of points needed to create the surface.
 - **Form Gridded Model**
Creates new surfaces with points laid out in a user defined grid Format. This command will copy data from an existing surface to reformat the data in a grid pattern as specified by the user.
 - **Generate Surface**
Adds points to a digital terrain surface model and creates a variety of geometric configurations using an equation rather than survey data. Methods to add data include planar, random, pyramid, conic, eastward, westward, northward, and southward sloping data.
 - **Generate Inferred Breaklines**
Are break lines created during triangulation which are added to the digital terrain model to assist in the creation of better contour lines.
 - **Change Triangle Color**
Allows the changing the color of surface triangles.
- **Geometry**
Commands which let you view and manipulate cogo points, lines and angles in your project which contain alignments, superelevations, and defining points.
 - **View Geometry**
To view various aspects of horizontal and vertical geometry in your project.
 - **Active Horizontal**
This command displays the active horizontal alignment in your drawing file showing the points and elements in the alignment.
 - **Active Vertical**
This command displays the active vertical alignment in your drawing file in the profile window showing the points and elements in the alignment.
 - **Horizontal Annotation**
This command displays the annotation of horizontal points and alignment information on the active horizontal alignment in plan view.
 - **Vertical Annotation**
This command displays the annotation of vertical points and alignment information on the active vertical alignment in profile.
 - **Closed Areas**
Annotates the name, description, and area of an alignment or cogo figure, which closes back on the same starting point.

- **Stationing**
Displays the distance as a number along the active horizontal alignment at regular intervals, including all PC's PT's, PI' s and cardinal points.
- **3-D Alignments**
Displays a horizontal and vertical alignment in a geometry project as a x, y, z polyline in graphics.
- **Station Based/Clearance Annotation**
Annotates the horizontal alignment at a given interval for station, offset and elevation.
- **Curve Set Annotation**
Annotates the horizontal alignments curve data showing the curve number, station, nothing, easting, radius, degree of curvature, arc length, superelevation, spiral length, constant, P, X's, Y's, Delta, tangent length, and external distance.
- **Vertical Change In Plan**
Annotates the horizontal alignments showing where the vertical points, stations, and curve data, on active vertical alignments appear.
- **Points Tab**
Parameters to define the abbreviations of annotation in switch plan height.
- **Geometry Style Manager**
Customizes the annotation symbology and display of lines, curves, and spirals.
- **Point Symbology**
The use of symbols to display PC, PI, CC, PT, TS, SC, CS, ST, SPI, POE, EVT, POT, POC, POS, Cogo, PVC, PVI, PVCC , PCC, SS, EQN, POB, POVT, POVC, VEVT, VLOW, VHIGH points defines in geometry projects.
- **Fit Alignment**
Resizes the view in graphics to display the extents of a horizontal alignment.
- **Horizontal Curve Set**
Place and edit elements, curves, and lines on the horizontal alignments.
 - **Create/Edit Alignment by Component**
Modify horizontal alignments by point and bearing, or by two points.
- **Vertical Curve Set**
Place and edit elements, curves, and Lines on the vertical alignments.
 - **Add PI**
Adds a new point at the beginning or end of the active horizontal or vertical alignment.
 - **Insert PI**
Creates a new point in between two existing points in the active horizontal or vertical alignment.
 - **Move PI**
Moves a point of intersection in the active horizontal or vertical alignment.
 - **Delete PI**
Removes a point of intersection in the active horizontal or vertical alignment.
 - **Define Curve**
Creates new curve sets for active horizontal and vertical alignments.
 - **Stationing**
A point on a horizontal or vertical alignment which defines a number which represents the distance along that alignment from the beginning of a given point.
 - **Station Equation**
A point on a horizontal alignment, which defines the ahead distance from that point and the back distance from that point along the alignment.
 - **Events**
Cogo points on a Horizontal or Vertical alignments, which are at a given station relative to that alignment.
- **Horizontal Element**
A component in the active Horizontal alignment, this element may be a line, curve, or spiral and may be connected or disconnected as it is defined.
- **Vertical Element**
A component in the active Vertical alignment, this element may be a line, curve, or spiral and may be connected or disconnected as it is defined.
 - **Add Fixed Line**
To place a horizontal or vertical straight element in an alignment.

- **Add Floating Line**
To attach to a horizontal or vertical straight-line element to and existing curve or spiral horizontal or vertical.
- **Add Free Line**
To attach a linear horizontal or vertical straight-line element between two existing nonlinear horizontal or vertical elements.
- **Add Fixed Curve**
To define a transition spiral between two existing horizontal or vertical elements. They can be a tangent and a curve, or between two curves.
- **Define Spiral**
To tie together existing curves or tangents on a plane that wind around a fixed center point at a continuously increasing or decreasing distance from the point in the active horizontal or vertical alignment.
- **Connect Elements**
To move one selected horizontal or vertical element and connect it to a second element.
- **Cut Elements**
To cut an existing horizontal or vertical element into two pieces.
- **Join Elements**
To bring together two coincident, collinear elements to form a new singular element for horizontal or vertical components.
- **Move Element**
To change the location of an existing horizontal or vertical element to a specified new location.
- **Copy Element**
To reproduce a linear, circular or spiral element in a horizontal or vertical Alignment
- **Edit Element**
To modify an existing horizontal or vertical geometry elements in the active alignment
- **Delete Element**
To remove selected horizontal or vertical elements from an active alignment.
- **Check Integrity**
To identify geometry quality or condition of horizontal and vertical alignments to reorder elements, fix transpositions, and delete extraneous elements in an alignment.
- **Review Horizontal**
Displays and updates detailed information about the elements in any specified horizontal alignment.
- **Review Vertical**
Displays and updates detailed information for the geometry of the active vertical alignment or any vertical element in a vertical alignment.
- **Review Geometry Points**
Displays and updates information for the geometry points in the active project.
- **Cogo Points**
Numbers stored in a project buffer from 1 to 9999.
 - **New**
Generates a new coordinate geometry point.
 - **Edit**
Modifies the coordinates, description, and style of an existing coordinate geometry.
 - **Copy**
Copies an existing coordinate geometry point to a different point name, elevation, description, and style.
 - **Delete**
Removes coordinate geometry points from the cogo buffer.
 - **Center Point**
This command places an existing cogo point in the center of the selected window screen to view.
- **Locate**
The creation of new cogo points by determining intersection of lines, circles, alignments, tangents, and angles.
 - **Intersection**
To locate and create a new cogo point by six different methods, bearing/bearing intersection, bearing /distance intersection, distance/distance intersection, bearing/Alignment intersection, and Alignment/Alignment intersection.
 - **Fit Curve**
To locate and create a new cogo point from three points of curvature or three points of intersection and a radius.
 - **Tangents**

Making contact at a single point along a line or curve, which is touching, but not intersecting. This command locates 2 points by known points or two radii.

- **Angle Resection**

To locate new a cogo point based on 3 known points and the angles between them.

- **Traverse**

To create new cogo points or alignments based on 3 methods, Angle/deflection, Direction, and Curved

- **Active Geometry**

To change the active geometry project, horizontal, vertical and superelevation alignment to another and make active.

- **Copy Geometry**

To reproduce from existing geometry projects a new geometry project. Copies All or selected project data, horizontal alignments, vertical alignments, superelevations and cogo points from the existing project to the new one.

- **Delete Geometry**

To remove from memory all geometry data in a project.

- **Rename Geometry**

To change the name of a geometry projects containing horizontal, vertical alignments, superelevations and cogo points.

- **Utilities**

To provide several tools for manipulating geometry points and alignments.

- **Create/Edit Alignment by Cogo Point**

To create new alignments or modify existing alignments using cogo points.

- **Join**

This command connects alignments together as to make one continuous alignment.

- **Trim Alignment**

To clip and alignments back to the point where it intersects with another alignment.

- **Extend Alignment**

To extend or shorten an alignment to the intersection point with another alignment.

- **Multicenter Curve**

Curved alignments with one or more centers at the intersection of two alignments. New alignments are created.

- **Cul-de-sac**

Is a dead-end street; new alignments will be created in the shape of bulb, offset or knuckle.

- **Parallel Horizontal by Element**

This command creates a horizontal alignment equal distance apart based on two selected elements in an existing alignment.

- **Parallel Horizontal by Station**

This command creates a horizontal alignment equal distance apart based on start and stop stations from an existing alignment.

- **Parallel Vertical by Element**

This command creates a vertical alignment equal distance apart between two selected elements.

- **Parallel Vertical by Station**

This command creates a vertical alignment equal distance apart between two selected station intervals.

- **Transpose**

To reverse all data within the selected Horizontal Alignment. The first element becomes that last and so forth.

- **Inverse Direction**

This command will calculate the distance and direction based on two given points.

- **Transform Geometry**

This command translates, rotates, and scales points and alignments.

- **Assign Names**

This command assigns, reassigns, or deletes names for geometry points.

- **Assign Elevations**

This command defines and revises the elevation for cogo points and Horizontal Alignments.

- **Evaluation**

Commands used to assess aspect of the design.

- **Profile**

Extracts, displays, and annotates aspects of the surface data along an alignment or graphic element.

- **Create Profile**

Extracts profiles along alignments, elements or user defines paths and generates profiles windows in graphics to view the data.

- **Annotate Profile**
Adds textual and graphical information to the existing profiles in the graphics file.
- **Annotate Feature In Profile**
Annotates features such as guardrail, utilities, etc. found in the profile set.
- **Update Profile**
It allows surface, offset and features in an existing profile to be refreshed or removed for the profile view.
- **Add Surface to Profile**
This command adds a profile surface data line to an existing profile set. You can do this by drawing a graphics into the profile window or by selecting a graphics element already drawn in the profile window.
- **Profile to Surface**
Adds 3-D surface points form a profile to a specified digital terrain model (DTM).
- **Points to Profile**
Projects cogo points to a profile window.
- **Survey Points to Profile**
Projects survey point-type data to a profile and creates a vertical alignment based on those projected points.
- **Alignments to Profile**
Projects the vertical alignment form one horizontal alignment onto a profile extracted from another horizontal alignment.
- **Rename Profile Set**
Assigns a new name to the profile set.
- **Cross-Sections**
Extracts, displays and annotates aspects of the surface data by cutting a plane through the surface at right angles to the alignment or graphic element.
 - **Create Cross-Sections**
Extracts cross sections along horizontal alignments, graphical elements, or user specified paths and display the results graphically.
 - **Annotate Cross-Sections**
Adds textual and graphical information to existing cross sections in the graphics file.
 - **Update Cross-Sections**
Modifies existing cross sections using any of the 3 methods, updating graphics that were already displayed in the cross section, displaying graphics that were not already there, or removing graphical data to reflect the status of the DTM information.
 - **Cross Section Viewer**
Allows you to window in on specified cross sections in the graphics file. You can also view a series of cross sections one after another.
 - **Place Feature in Cross-Section**
Represents a 3-d line, poly line or cell in a set of existing cross sections, at the correct station, offset and elevation. This feature may represent any utilities, guardrail, etc. which may be on, above or below the surface. This feature may be excluded or included in the triangulating of the DTM and the new feature may be displayed in plan view as well as cross section view.
 - **Edit Feature in Cross-Section**
This command modifies features based on the edits made to the features in the cross section.
 - **Add Surface to Cross-Section**
Creates a cross section surface from graphics drawn in the cross section set.
 - **Cross-Section to Surface**
Adds 3-D points from a cross section to a specified Digital Terrain Model (DTM).
 - **Rename Cross Section Set**
Renames cross section sets.
 - **Edit Cross Section**
Modifies cross-section surfaces using s variety if parameters that describe the slope, width, and position of segments in the cross section.
- **Volumes**
The amount of space occupied by two surfaces loaded in memory expressed in cubic units.
 - **Triangle Volumes**
Calculates the exact volume between two surfaces. This is the most accurate of the three volume-calculation methods.
 - **Triangle Volumes by Station**

Calculates the volumes (cut, fill, and net) between the original surface and a design surface based on the station interval and left and right offset distances (from the centerline).

- **Grid Volume**

Estimates the volume between two surfaces by overlaying the two surfaces with a grid mesh, and then computing the volume of the cells formed between the grid points.

- **End-Area Volumes**

Performs the traditional end-area volume calculation to compute cut, fill, and net volumes using a series of cross sections along a previously defined alignment.

- **Mass-Haul Diagram**

Generates a diagram that shows cumulative total of cut and fill volume along a horizontal alignment. The diagram is based on calculated end-area volumes.

- **Surface Area**

The extend of a planar region or of the surface of a solid, measured in square units for both true and planar area.

- **Modeler**

The Modeler commands are used to create roadway models.

- **Define Typical Section**

Defines templates and controls side slopes by means of templates, cut-and-fill tables, material tables, and decision tables.

- **Copy Typical Section**

Copies a typical section to another library.

- **Rename Typical Section Library**

Changes the name of a Typical Section Library.

- **Define Roadway**

Defines and controls roadway definitions parameters, such as the station interval for placing templates, and the method of controlling side-slope grades, and which templates to use.

- **Rename Roadway Library**

Changes the name of a Roadway Library.

- **Superlevation**

Calculates how much banking to apply to curves in the horizontal alignment to help offset centrifugal force.

- **Rate Calculator**

Calculates a superelevation rate for each curve in a range of the active horizontal alignment according to such parameters as friction and design speed.

- **Build Transition**

Calculates superelevation transitions along a range of the active horizontal alignment.

- **Vertical Control Alignments**

Generates vertical alignments to be used as independent controls for defining superelevation transitions.

- **Roadway Modeler**

Generates a 3-D corridor model, incorporating independent controls, following right-of-way restrictions, and applying superelevation.

- **Express Modeler**

Generates a simple 3-D corridor model by specifying the horizontal alignment, vertical alignment, and template.

- **Drive Roadway**

Generates a simple 3-D corridor model, which is viewed in graphics.

- **Drafting**

Commands for placing additional drafting annotation on plan, profiles, cross-sections and plan and profile sheets.

- **Place Plan Note**

Used to place an annotation note in the design file in plan view.

- **Place Profile Note**

Used to place an annotation note in profile.

- **Place Cross-Section Note**

Used to place an annotation note in cross-section view.

- **Place Alignment Intersection Note**

Used to place an annotation note in the design file where two alignments intersect.

- **Update Plan Note**

Used to update a note previously placed in plan view.

- **Update Profile Note**

Used to update a note previously placed in profile.

- **Update Cross Section Note**
Used to update a note previously placed in cross section.
- **Move Note**
Used to move an existing note placed, the frame, text and leader are all moved.
- **Plan and Profile Generator**
Use the Plan and Profile Generator command to automatically generate plan views and profile views, assemble the alignment- based sheets, and then store their definitions in an ASCII file called the View Definition File (VDF).

- **Tools**

The Tools commands specify general product interaction, including toolbars, locks, reports, system settings, preferences, and customization.

- **Reports**
Generates reports on different aspects of the active geometry project or general reports to an ASCII file using a DBaseAccess template.
- **XML Reports**
Creates reports from inroads using ASCII Extensible Markup Language (XML) formats using a style sheet and format sheet.
- **View XML Reports**
Views in a web browser the results from XML data to be printed.
- **Tracking**
Dynamically reports station, offset, elevation, northing, easting, slope, and grade information based on the active surface and horizontal and vertical alignments.
 - **Tracking**
Dynamically displays the northing and easting coordinates of the cursor location, the surface elevation, slope, and aspect, and the station and offset along the active horizontal alignment.
 - **Horizontal Alignments**
Dynamically displays the station along a horizontal alignment, the elevation from the associated vertical alignment, and the offset to another specified alignment.
 - **Vertical Alignments**
Dynamically displays the station along the associated horizontal alignment, the elevation and grade along the vertical alignment, and the vertical offset between the vertical alignment and your cursor.
- **Symbology Manager**
Adds, edits, deletes, and copies named symbologies, which control the appearance of points, lines, and text in plan view, profiles, and cross sections.
- **Preference Manager**
Allows you to add, edit, and delete preferences across the entire product, all from a single dialog box. This would affect file, surface, geometry, evaluation modeler and tools setting.
- **Preference**
Are names which can be given and stored for each setting which inroads uses. An example would be "40 scale" when loaded it would set all the text, scale setting to work and display at what a 1:40 scale drawing would be.
- **Feature Style Manager**
Adds, edits, copies, renames, and deletes feature styles, which control whether features may be displayed in plan view or in cross section, and what the features will look like when they do get displayed.
- **Style**
A name associated with the way features are displayed graphically, controlling level, color, weight, line style, and symbol of a feature.
- **Highlight All Pencil**
Highlights all graphics that were drawn in pencil mode.
- **Highlight All Ink**
Highlights all graphics that were drawn in pen mode.
- **Convert Pencil to Ink**
Takes all graphics that were originally drawn in pencil and redraws them in ink.
- **Locks**
Various global settings that affect numerous commands.
 - **Feature Filter**
This command turns on or off the Feature Filter lock. The Feature Filter lock is a global setting that either allows the active feature filter to take effect (when the lock is on) or ignores the active feature filter (when the lock is off).

- **Style**
The main concept behind the Style lock is data-driven symbology. The Style locks affects two groups of commands:
 1. All the View Surface commands.
 2. The Annotate Cross Section command.
- **Pen/Pencil**
This command toggles the Pencil/Pen lock between Pencil mode which the system will erase when the commands is executed and Pen mode which will leave a permeate drawing in graphics and must be deleted using the CAD commands.
- **Delete Ink**
The Delete Ink lock allows redisplayed graphics to replace even graphics that were drawn in Pen mode.
- **Write**
The Write lock generates graphics in one of two modes: display and write, or display-only.
- **Locate**
The lock applies when you use a locate button to specify a position in the graphics file.
- **Point Snap**
The Point Snap lock enables or disables your ability to snap or lock onto any point contained in the geometry project.
- **Element Snap**
The Element Snap lock enables or disables your ability to snap or lock onto any geometry element.
- **Station**
The Station lock is applicable only when the first station specified on the horizontal alignment is an odd-numbered station (for example, 2+38) the lock will round up to even station or remain the same by just adding 100 to the station if off. (e.g. the station above would be 2+38, 3+38, 4+38 instead of 2+38, 3+00, 4+00 etc.).
- **Report**
The Report lock is used by several commands to control whether the command displays output in a dialog box as the command calculations are performed.
- **Toolbar**
This command toggles the display of the Locks toolbar on or off for display.
- **Run Macro**
This command allows you to run a Visual Basic macro created following the Macro Sample format delivered with your InRoads application.
- **Application Add-ins**
This command lets you simultaneously run multiple applications in the InRoads family that are installed on your machine.
- **Customize**
This command customizes your toolbars, menus, and shortcut keys and assigns macros to menu items.

- **Options**

The Options dialog box controls parameters that affect system-wide operation.

- **Precision**
The Precision tab allows you specify the number of decimal places to display for various system parameters.
- **General**
The General tab allows you to specify general parameters for settings.
- **Units and Format**
The Units and Format tab allows you to specify the units to use for linear and angular elements within your design session and the format you want to use for stations, angles, slopes, and aspects.
- **Geometry**
The Geometry tab controls system-wide parameters that affect geometry.
- **Tolerances**
The Tolerances tab allows you to specify various tolerances used for display and coordinate geometry commands.
- **Affixes**
The Affixes tab controls the prefixes and suffixes used in annotation.
- **Factors**
The Factors tab allows you to specify the default scaling factors for common elements.
- **Substitution**
The Substitution tab allows you to configure representations for the following mathematical entities: Infinity, Per Mille, and Delta.
- **Access Control**

The Access Control tab specifies whether horizontal alignments and cogo buffers are opened as read-write or read-only by default.

- **Global Scale Factor**

Global Scale Factors command gives you convenient access to the scale factors for text, cells, and line styles.

MicroStation Key-ins

Note: Key-ins are not case sensitive.

KEY IN	RESULT
ANGLE	
AA=	Active Angle. Sets the active angle.
AUXILIARY COORDINATE SYSTEMS	
AD=	Active Delta. Places relative data points; delta X, Y along ACS axes.
AX=	Places absolute data points (X, Y coordinates from ACS origin).
PX=	Deletes an ACS.
RX=	Attaches an ACS.
SX=	Saves & names the current ACS.
CELLS	
AC=	Active Cell. Sets the Active Cell and activates the Place Cell tool.
AP=	Active Pattern. Sets the active pattern cell.
AR=	Active Cell Relative. Sets the Active Cell and activates Place Cell Relative.
CC=	Create Cell. Creates cell from fence or selection set.
CD=	Cell Delete. Deletes cell from the attached cell library.
CM=	Cell Matrix. Creates an array of cells.
CR=	Cell Rename. Renames cell in the attached cell library (old name, new name).
LT=	Line Terminator. Sets the active line terminator cell.
PT=	Active Point. Sets the active point used with the Place Point command.
RC=	Attaches a cell library.
COLOR	
CT=	Attach Color Table. Attaches a color table.
CO=	Change Active Color. Sets the active color.
DATABASE	
AE=	Active Entity. Defines an active entity.
DA=	Display Attribute. Sets the display attribute type.
DB=	Attaches a database to the design file.
DS=	Sets database search criteria.
FI=	Defines an active entity in a database.
RA=	Sets the name of an SQL statement for review.
RS=	Sets the name of the database report table.
DIMENSIONING	
LD=	Assign Dimension Level. Sets the level for dimension data.
TV=	Sets the dimensioning tolerance limits.
ELEMENT SYMBOLOGY	
CO=	Change Active Color. Sets the active color.
LC=	Sets the active line style.
WT=	Sets the active line weight.
FILES	
EL=	Creates an element list file.
FF=	Copies the contents of a fence to a new or existing file.
RD=	Retrieve Drawing. Opens another design file.
RF=	Reference File. Attaches a reference file.
SF=	Moves the contents of a fence to a new or existing file.
XD=	Exchanges the active file with a reference file.
GRIDS	
GR=	Grid Reference. Sets the active grid reference spacing.
GU=	Grid Units. Sets the distance of the grid dots in working units.
UR=	Unit Round Off. Sets the unit round off distance.
LINE TERMINATORS	

LT=	Line Terminator. Sets the active line terminator cell.
TS=	Terminator Scale. Sets the scale factor for the active terminator.
LEVELS	
LV=	Change Active Level. Sets the active level.
OF=	Turns level off.
ON=	Turns level on.
MENUS	
AM=	Attach Menu.
AT=	Attaches a screen tutorial.
PATTERNS	
AP=	Active Pattern. Sets the active pattern cell.
PA=	Pattern Angle. Sets the pattern angle for pattern cells.
PD=	Sets the pattern spacing (row, column delta).
PS=	Pattern Scale. Sets the active pattern scale.
PRECISION INPUT	
DI=	Places a data point at a given distance and direction (view coordinates).
DL=	Places a data point at a given X, Y, and Z distance along the design axes (drawing coordinates).
DX=	Places a data point at a given X, Y, and Z distance along the view axes (view coordinates).
XY=	Places a data point using absolute coordinates.
SCALE	
AS=	Active Scale. Sets the active scale, X, Y, and Z.
XS=	X Scale. Sets the active X scale.
YS=	Y Scale. Sets the active Y scale.
ZS=	Z Scale. Sets the active Z scale.
STREAM DIGITIZING	
SD=	Stream Delta. Sets the stream delta.
ST=	Stream Tolerance. Sets the stream tolerance.
TEXT	
DF=	Display Fonts Window. Opens the fonts dialog box.
DR=	Displays a text file.
FT=	Set Active Font. Sets the active font.
LL=	Line Length. Sets the maximum line length for text.
LS=	Line Spacing. Sets the line spacing for multiple lines of text.
NN=	Node Number. Sets the active text node number.
TB=	Sets the tab spacing when importing text.
TH=	Text Height (sets the text height)
TI=	Text Increment. Sets the copy and increment value.
TW=	Text Width. Sets the text width.
TX=	Text Size. Sets both the height and width of the text.
USER COMMANDS	
OX=	Attaches a user command index.
UC=	User Command. Activates a user command.
UCC=	Compiles a user command.
UCI=	Runs a user command by index number.
VIEW CONTROL	
DV=	Delete Saved View. Deletes a named or a saved view.
RV=	Rotate View. Rotates a view.
SV=	Save View. Saves a view; must respond to prompt "Select View."
VI=	Attaches a saved view.
WO=	Window Origin. Sets the window origin.
VIEW CONTROL – 3D	
AZ=	Active Z Depth. Sets the active depth – absolute.
DD=	Display Depth. Changes the display depth – relative.
DP=	Sets the display depth – absolute.
DZ=	Delta Z Depth. Changes the active depth – relative.

MISCELLANEOUS	
GO=	Global Origin. Locates the global origin.
KY=	Keypoint Snap Devisor. Sets the keypoint snap divisor.

MicroStation Shortcuts

Note: Key-ins are not case sensitive.

SHORTCUT	RESULT
Ctrl+F	Saves settings in current drawing.
Ctrl+N	Creates a new file.
Ctrl+O	Opens another file.
Ctrl+W	Closes the current drawing and opens MicroStation Manager.
Ctrl+P	Opens Print/Plot window.
Ctrl+Z	Undoes last operation.
Ctrl+R	Redoes last Undo – must be used immediately after Undo.
Ctrl+X	Cuts selected elements from the drawing to the clipboard.
Ctrl+C	Copies selected elements from the drawing to the clipboard.
Ctrl+V	Pastes clipboard contents into the file.
Ctrl+G	Groups selected elements.
Ctrl+U	Ungroups selected elements.
Ctrl+L	Locks selected elements.
Ctrl+M	Unlocks selected elements.
Ctrl+I	Activates the Element Information (Analyze) function.
Ctrl+E	Displays the Levels window.
Ctrl+B	Displays View Attributes.
Ctrl+T	Toolbox choices.
Alt+F, A	Opens the Save As dialog box.
Alt+F, M	Compresses the design file.
Alt+F, R	Opens the Reference settings dialog box.
Alt+E, M	Sets mark in Undo buffer.
Alt+E, H, T	Undoes to the last mark in the buffer.
Alt+E, H, A	Undoes all operations in the buffer.
Alt+E, X	Opens the Replace Text window.
Alt+L, A	Opens the Element Attributes dialog box.
Alt+L, C	Opens the Cell Library window.
Alt+L, X	Opens the Text window.
Alt+S, D	Opens the Design File settings.
Alt+S, S, U	Opens the Snaps button bar.
Alt+U, K	Opens the Utilities Key-in window (if not currently open).
Alt+K, P	Opens Workspace Preferences.
Alt+W, O, D	Opens the settings box to Open/Close views.
Alt+W, T	Tiles open views.
Alt+W, S	Toggles scroll bars on and off.

AccuDraw Shortcuts

Note: Key-ins are not case sensitive.

SHORTCUT	RESULT
Enter	Smart Lock. In Rectangular coordinates, locks X to 0 if the pointer is on the drawing plane y-axis or Y to 0 if the pointer is on the x-axis. In Polar coordinates, locks Angle to 0°, 90°, -90°, or 180° if the pointer is on a drawing plane axis or otherwise locks Distance to its last entered value.
Space Bar	Change Mode. Switches between Rectangular and Polar coordinates.
O	Set Origin. Moves the drawing plane origin to the current pointer position.
V	View Rotation. Rotates the drawing plane to align with the view axes. Pressing this key a second time restores context-sensitive rotation.
T	Top Rotation. Rotates the drawing plane to align with the axes in a standard Top view. Pressing this key a second time restores context-sensitive rotation.
F	Front Rotation. Rotates the drawing plane to align with the axes in a standard Front view. Pressing this key a second time restores context-sensitive rotation.
S	Side Rotation. Rotates the drawing plane to align with the axes in a standard Side view. Pressing this key a second time restores context-sensitive rotation.
B	Base Rotation. Rotates the drawing plane to align with the active ACS, or if you set up a rotation in the dialog, it will return you to that rotation. In a new file, where you haven't used an ACS yet, it will be the rotation of the view.
E	Cycle Rotation. Rotates between three main planes: Top, Front, and Side, 3D only. This also works when your original plane is an ACS or context rotation, so you do not have to use RX, RY to rotate to a 90° plane.
X	Lock X. Toggles the lock status for the X value.
Y	Lock Y. Toggles the lock status for the Y value.
Z	Lock Z. Toggles the lock status for the Z value.
D	Lock Distance. Toggles the lock status for the Distance value.
A	Lock Angle. Toggles the lock status for the Angle value.
L, A	Lock ACS Plane. Toggles the ACS Plane lock.
L, I	Lock Index. Locks the current index state. If an axis or distance is not indexed, indexing is disabled; if an axis or distance is indexed, it is locked. The effect is temporary, lasting until a data point is entered or the shortcut is run again; this is useful if you need to index to one axis but not the other, or to enter a data point very close to an axis but not on the axis.
L, P	Lock ACS Grid Plane. Toggles the ACS Grid Plane lock, which toggles the ACS Plane and ACS Plane Snap locks, and the Grid view attribute for all views.
L, S	Lock ACS Plane Snap. Toggles the ACS Plane Snap lock.
L, Z	Lock Sticky Z. Toggles the Sticky Z lock, which is used in conjunction with ACS Plane Snap to force a series of snap points to lie on the active ACS' XY plane (Z=0).
R, Q	Rotate Quick. Used to rotate the drawing plane quickly and temporarily. The procedure is described in the Rotate Quick keyboard shortcut.
R, A	Rotate ACS. Used to permanently rotate the drawing plane. Because it rotates the current ACS, this rotation will still be active after the tool in use is exited. If on, the tool setting Use Current Origin causes the drawing plane origin to be used as the x-axis origin, thereby eliminating the need to enter an extra data point. Of course, in many cases it is desirable to be able to define the x-axis origin at a different location than the drawing plane origin.
R, C	Rotates the drawing plane to the current ACS.
R, E	Rotates the drawing plane to match the orientation of a selected element.
R, V	Rotates the active view to match the current drawing plane.
R, X	Rotates the drawing plane 90° about its x-axis.
R, Y	Rotates the drawing plane 90° about its y-axis.
R, Z	Rotates the drawing plane 90° about its z-axis.
?	Opens the AccuDraw Shortcuts window.
~	Bump Tool Settings. Bumps an item in the tool settings dialog. It finds the first enabled item in the tool settings dialog that is a toggle button or an option button, and either toggles it or bumps it to the next valid value. For instance, if you are drawing a Smart Line and the focus is in the AccuDraw window, you can just press the ~ key and it switches to arcs

	without moving the focus from the AccuDraw window. Key-in: ACCUDRAW BUMP TOOLSETTING.
G, T	Go to Tool Settings. Moves the focus to the Tool Settings window.
G, K	Go to Key-in. Opens (or moves the focus to) the Key-in window (same as choosing Utilities > Key-in).
G, S	Go to Settings. Opens (or moves the focus to) the AccuDraw Settings dialog box (same as choosing Settings > AccuDraw).
G, M	Go to More Settings
G, A	Get ACS. Opens the Get ACS dialog box, which lets you select a saved Auxiliary Coordinate System.
W, A	Write to ACS. Opens the Write to ACS dialog box, which lets you save the drawing plane alignment as an ACS.
P	Point Key-in (single). Opens the Data Point Key-in dialog box for entering a single data point.
M	Point Key-in (multi). Opens the Data Point Key-in dialog box for entering multiple data points.
I	Intersect Snap. Activates the Intersect snap mode.
N	Nearest Snap. Activates the Nearest snap mode.
C	Center Snap. Activates the Center snap mode.
K	Keypoint Snap Divisor. Opens the Keypoint Snap Divisor dialog box, which is used to set the Snap Divisor for keypoint snapping.
H, A	Suspends AccuDraw for the current tool operation. Selecting a new tool, or entering a Reset re-enables AccuDraw.
H, S	Toggles AccuSnap on/off.
H, U	Suspends AccuSnap for the current tool operation. Selecting a new tool, or entering a Reset re-enables AccuSnap.
Q	Quit AccuDraw. Deactivates AccuDraw.

ORD Shortcuts, Tips, & Tricks

Note: Key-ins are not case sensitive.

SHORTCUT	RESULT
Alt Key	Hold down the Alt Key, left click on another line to match its attributes.
Ctrl+A	Selects everything.
Ctrl+B	Opens the View Attributes box.
Ctrl+F	Opens the Find box.
Ctrl+I	Opens the Properties box.
Ctrl+S	Save Settings.
Ctrl+T	Toolbox Settings.
Enter	Opens the key-in box.
F12	Create Template.
Space Bar	Opens the Drawing toolbox.

- Drag & drop an element on the Level or Color field to change them to the element's attributes.
- The green arrow in the lower left-hand corner of the file will take you back to the previous file you had opened.
- The "house" in the lower right-hand corner shows that you are in the "home state" (not in the middle of a command).
- Right-click on the ORD icon in the task bar, then select OpenRoads Designer CE to open a second DGN.
- Right-click and hold to access view controls, other tools.
- Save Settings "remembers" where you are in the design file.

Windows Shortcuts

Note: Key-ins are not case sensitive.

SHORTCUT	RESULT
Alt+F4	Closes a focused settings box.
Esc	Cancels a dialog box
Alt+Tab	Switches to another Windows task.
Ctrl+Esc	Opens the taskbar Start menu.
Ctrl+Alt+Delete	Opens the Windows NT Security dialog box.

Standard Sheet Sizes

NAME	SIZE
A	8.5"x11"
B	11"x17"
C	17"x22"
D	22"x34"
E	34"x44"
ARCH-A	9"x12"
ARCH-B	12"x18"
ARCH-C	18"x24"
ARCH-D	24"x36"
ARCH-E	36"x48"

Decimal Equivalents (Revised 4/15/15)

FOOT	INCH	DECIMAL
	1/16"	0.005208333...125
	1/8"	0.01041666...25
1/64	3/16"	0.015625
	¼"	0.0208333...25
	5/16"	0.026041666...5625
1/32	3/8"	0.03125
	7/16"	0.036458333...1875
	½"	0.041666...7
3/64	9/16"	0.046875
	5/8"	0.05208333...125
	11/16"	0.057291666...4375
1/16	¾"	0.0625
	13/16"	0.067708333...0625
	7/8"	0.07291666...375
5/64	15/16"	0.078125
	1"	0.08333...
3/32	1-1/8"	0.09375
	1-3/16"	0.098958333...
	1-1/4"	0.1041666...58
7/64	1-5/16"	0.109375
	1-3/8"	0.11458333...
	1-7/16"	0.119791666...5208
1/8	1-1/2"	0.125
9/64	1-11/16"	0.140625
	1-3/4"	0.1458333...
5/32	1-7/8"	0.15625
	1-15/16"	0.161458333...
	2"	0.1666...
11/64	2-1/16"	0.171875
	2-1/8"	0.17708333...262
3/16	2-1/4"	0.1875
13/64	2-7/16"	0.203125
	2-1/2"	0.208333...
7/32	2-5/8"	0.21874999...791
	2-3/4"	0.2291666...
15/64	2-13/16"	0.234375
1/4	3"	0.25
17/64	3-3/16"	0.265625
	3-1/4"	0.2708333...25
9/32	3-3/8"	0.28125
	3-1/2"	0.291666...7
19/64	3-9/16"	0.296875
5/16	3-3/4"	0.3125
	3-7/8"	0.322916...
21/64	3-15/16"	0.328125
	4"	0.333...
11/32	4-1/8"	0.34375
23/64	4-5/16"	0.359375
3/8	4-1/2"	0.375

FOOT	INCH	DECIMAL
	4-5/8"	0.38541666...
25/64	4-11/16"	0.390625
13/32	4-7/8"	0.40625
	5"	0.41666...
27/64	5-1/16"	0.421875
7/16	5-1/4"	0.4375
29/64	5-7/16"	0.453125
	5-1/2"	0.458333...
15/32	5-5/8"	0.46875
31/64	5-13/16"	0.484375
1/2	6"	0.5
	6-1/2"	0.541666...7
	7"	0.58333...
	7-1/2"	0.625
	8"	0.666...
	8-1/4"	0.6874999...25
	8-1/2"	0.708333...
3/4	9"	0.75
	10"	0.8333...
	11"	0.91666...
1	12"	1.0

1" = 40' Equivalents (Revised 7/15/08)

INCH	FOOT
1	40
15/16	37.5
7/8	35
13/16	32.5
3/4	30
11/16	27.5
5/8	25
9/16	22.5
1/2	20
7/16	17.5
3/8	15
5/16	12.5
1/4	10
15/64	9.375
7/32	8.75
13/64	8.125
3/16	7.5
11/64	6.875
5/32	6.25
9/64	5.625
1/8	5
7/64	4.375
3/32	3.75
5/64	3.125
1/16	2.5
3/64	1.875
1/32	1.25
1/64	0.625