Chapter Twenty-Two

R/W PLAN AND CADD PROCEDURE STANDARDS

MONTANA RIGHT-OF-WAY
DESIGN MANUAL

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Chapter Twenty-Two
R/W PLAN AND CADD PROCEDURE STANDARDS

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R/W PLAN AND CADD PROCEDURE STANDARDS

22-1 R/W CADD FILES

R/W files are developed before the R/W ID number is established. The PE number is used until federal funding has been approved. R/W files are created and named following MDT's standard naming convention and stored on DMS. There are several standard MicroStation files used in R/W.

1. Strip Map. The base design map file showing the entire project length in one view. It is referenced into the plan files in sections to allow a manageable print product.

2. Title Sheet. Typically, it is the first sheet of a plan set showing plan legend, project location and length, associated and related project numbers as well as other project notes and information. The R/W project length is shown to the nearest tenth of a mile.

3. Ownership Sheet. It's placed after the title sheet within the R/W plan set. It consists of ownership names, addresses and areas. Ownerships can be placed at the top of the plan sheets or on a separate ownership sheet. If there are more than seven (five for metric) total ownerships on the project, they should be shown on an ownership sheet.

4. Plan Sheet. They are the final portion of the r/w plan set. They display applicable standard r/w and all existing and final proposed r/w elements. In addition, they display other area's topography and certain design elements that directly impact the property acquisition. These include but are not limited to culvert, irrigation and storm drainage features, bridges, approaches, guardrail, sidewalk, curb and gutter, final construction limits, wetland boundaries with hatching, and wetland impact boundaries with cross hatching.

5. Area File. This file is used for calculation of all areas. It serves to display shading on exhibits and provides a record of how the areas were calculated.

6. Master Exhibit. It serves as a seed file for creating parcel exhibits resulting in less overall effort to complete exhibits. A file is created once from each plan sheet file having all exhibit adjustments made.

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7. Parcel Exhibit. Final parcel exhibit files including parcel specific information are created for each type of acquisition to correspond with the deed/easement form. If the shaded acquisition area is so small that it is difficult to detect, a detail of the area is prepared on the exhibit. An additional sheet may be necessary to display the detail.

8. PIM Map. It is created on an as-needed basis for displaying the phase each parcel acquisition is in by color. It's typically used for public meetings.

A Contract Plans Book (CPB) must be created for the design files comprising the R/W plan set on each project. Instructions for creating a CPB can be found in the ***Docuplot Users Manual*** located at "CADDSTD:\DOCUMENTATION\DOCUPLOT".

Note: It's always advisable to consult Right-of-Way prior to printing given there may be revisions in progress.

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22-2 PREFERRED R/W PLAN ABBREVIATIONS

Figure 22-1 shows the abbreviations for terms that are preferred when developing R/W plan sheets.

TERM	ABBREVIATION
Acre	(AC for ownership sheet) (acre(s) for deeds)
Aluminum Cap	A.C.
Angle Point	A.P.
Avenue	AVE.
Bearing	BRG.
Boulevard	BLVD.
Brass Cap	B.C.
Bureau of Land Management	B.L.M.
Centerline	C/L
Centimeter	cm
Channel Change	CH. CH.
Certificate of Survey	COS
Chain	CH.
Closing Corner	C.C.
Combination Scale Factor	C.S.F. or CSF
Concrete	CONC.
Construction Permit	CONST. PMT. or C.P.
Corner	COR.
County	CO.
Creek	CR.
Curve to Spiral	C.S. or CS
Degree	°
Description	DESC.
Easement	EASE.
East	E

PREFERRED R/W PLAN ABBREVIATIONS

Figure 22-1

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TERM	ABBREVIATION
Existing	EX.
Foot	ft. or (‘ for English plan sheets) or FT.
Found	FND. or FND
General Land Office	G.L.O.
Hectare	ha
Highway	HWY.
Inch	in. or ” or IN.
Incorporated	INC.
Kilometer	km
Left	LT.
Meter	m
Mile	mi.
Millimeter	mm
Mineral Survey	M.S.
Montana Department of Transportation	MDT
Monument	MON.
North	N
Number	NO. or No.
Point of Curve (Beginning)	P.C. or PC
Point of Tangent (End of Curve)	P.T. or PT
Point on Tangent	P.O.T. or POT
Present Traveled Way	P.T.W. or PTW
Property Line	P.L. or PROP. LINE
Railroad	R.R.
Range	R
Record	REC.
Reference	REF.
Reference Monument	R.M.
Reference Point	R.P. or RP
Right	RT.

PREFERRED R/W PLAN ABBREVIATIONS

Figure 22-1 (continued)

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TERM	ABBREVIATION
Right-of-Way	R/W
River	RIV.
Road	RD.
Route	RTE.
Section	SEC.
Section Line	SEC. LINE
South	S
Spiral to Curve	S.C. or SC
Spiral to Tangent	S.T. or ST
Square Feet	(SF for ownership sheet) or (sq. ft. for deeds)
Square Meter	m2
Station	STA.
Street	ST.
Subdivision	SUBD.
Survey	SURV.
Tangent to Spiral	T.S. or TS
Temporary	TEMP.
Township	T
Tract	TR.
U.S. Bureau of Land Management	B.L.M.
U.S. Forest Service	USFS or U.S.F.S.
U.S. Government Lot	U.S. GOVT. LOT
West	W
Witness Corner	W.C.

Note: There may be additional abbreviations not included on this list.

PREFERRED R/W PLAN ABBREVIATIONS

Figure 22-1 (continued)

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22-3 BUILDING R/W MICROSTATION FILES

The ***MDT CADD Standards Manual*** must be utilized throughout the design process. It can be found electronically at "CADDSTD:\DOCUMENTATION\CADD_STANDARDS".

22-3.1 Building Metric R/W Files Manually

This process is utilized to ensure that the road design files are compatible with the R/W files. Both road design and R/W files are referenced with each other; therefore, it is important that they are built the same.

22-3.1.1 Strip Map (METRIC)

Create the strip map using the following procedures:

1. Save the road design strip map file as a R/W strip map file following the standard naming convention: "_ _ _ _ROMAP001.dgn".

2. Open your renamed file in MicroStation.

3. Delete all the active elements in the file. You can use the "Delete Fence Contents" command or "Select All" from the "Edit" menu, then delete.

4. Reference the road design strip map file back in. Use logical name "rdmap1". Attach any additional strip map files as needed such as photogrammetry/survey files, etc.

5. Begin placement of found and unfound section lines, existing R/W & easement lines, existing found property pins and monuments, railroad R/W lines, property lines, county road easements, etc. in this file as necessary information becomes available. Refer to Chapter 23 — Preliminary Plan Preparation.

6. Set up the file as desired. Compress file and save settings.

22-3.1.2 Title Sheet (METRIC)

Create the title sheet using the following procedures:

1. Open MicroStation to the "MicroStation Manager" dialog window.

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2. Create a new file ("File", "New"). In the "Create Design File" window, use the select button to choose the "seedm.dgn" file. It is a two-dimensional metric design file with a Global Origin of 0, 0. Enter the title sheet file name following the standard naming convention: "_ _ _ _ROTTL001.dgn".

3. Open the new R/W title sheet file.

4. Attach the R/W standard title sheet border: "MTROSTD:METRWTI.REF". Use logical name "sht". Turn off level 40: "Level Information List". If this reference file does not reference in the appropriate area, you may have to move and perhaps scale the reference file to appear correctly.

5. Attach the road design title sheet file. Use logical name "rdttl". If the road design title sheet file comes in at the location of the third file matrix, the reference file must be moved to the first (bottom) sheet matrix.

6. The project location arrow from the road design title sheet needs to be copied. Turn off level 5 ("State Map") of the "sht" reference file. Place a fence around the location arrow and "THIS PROJECT" text. Copy the fence contents to the same location. Turn level 5 back on.

7. Attach the title sheet data field cell "mttidf" from the "RWMET.CEL" library and fill in as much information as possible in the data fields including the R/W ID, designation, project no., sheet nos., project length, county, associated project agreement no., related project nos, etc. Use the upper left corner of the title sheet border to place the cell.

8. Move the "rdttl" reference file to best fit the "County Location Map" and "Begin/End Project" text contents within the purple dashed boundary line on level 63 ("Tools", "Move"). Additional information may need to be added to the "County Location Map" such as section numbers for each section the project roadway enters, township and range indication, town names main roadways lead to, etc.

9. Turn all active levels on. Turn off active level 63. In the "sht" reference file, turn off levels 9, 32, 33, 40, 41, & 43 (if not a limited access project).

22-3.1.3 Ownership Sheet (METRIC)

Create the ownership sheet as follows:

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1. Save a plan sheet file as an ownership file following the standard naming convention: "_ _ _ _ROOWN001.dgn".

2. Detach all the reference files except "MTROSTD:METRWPL.REF" ("sht") and "MTRDSTD:PLANM.REF" ("sht1").

3. Delete all active elements inside the yellow plan sheet border. Do not delete the information in the upper right and lower right corners of the border.

4. To display the ownership table, turn on levels 4 and 21-32 as necessary in the "MTROSTD:METRWPL.REF" ("sht") reference file.

5. Attach data field cell "mtown" or "mtown5" from the "RWMET.CEL" library. Use the upper left corner of the title sheet border to place the "mtown" cell. Use the upper left corner of each group of 5 table lines to place the "mtown5" cell.

6. To place the "ASCII Files" note, use cell "crdgpk". Place at the upper right corner of the sheet border.

7. If this is a state plane coordinate project, place cell "spcnot" in the lower left portion of the sheet.

22-3.1.4 Plan Sheets (METRIC)

Create plan sheets using the following procedures:

1. Save the road design plan sheet file as a R/W plan sheet file following the standard naming convention: "_ _ _ _ROPLN001.dgn".

2. Open your renamed file in MicroStation.

3. Delete all the active elements in the file. You can use the "Delete Fence Contents" command or "Select All" from the "Edit" menu then delete.

4. Reference the road design plan sheet file back in for each sheet matrix used. Use logical names "rdpln1", "rdpln2", "rdpln3".

5. In the "Reference Files" window, "Display", "Snap", & "Locate" should be on for every reference file. Change the logical name of the road design sheet reference file from "sht" to "sht1".

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6. Attach the R/W standard sheet border “MTROSTD:METRWPL.REF”. Use logical name “sht”. If this reference file does not reference in the appropriate area, you may have to move and perhaps scale the reference file to appear correctly.

7. Place a fence around all sheet borders to be used. Clip bind reference files “sht” and “sht1” to trim extra information from view: “Tools”, “Clip Boundary”.

8. All levels need to be turned off except levels 1, 2 & 3 in the “sht1” “MTRDSTD:planm.ref” reference file.

9. Detach any profile files: “Tools”, “Detach”. This is a good time to clean up the reference files. You may identify duplicate or unnecessary reference files and/or want to revise logical names.

10. Particular reference files need to be moved to the center of the R/W plan sheets. They can be moved individually or all at once. Necessary files include road design plan files and all strip map files such as road design, photogrammetry, survey, traffic, etc. Choose the desired files from the “References” window, select the “Tools”, “Move” command, then type “DL=0,-140” in the command window and “Enter”.

11. Attach the plan sheet data field cell “mtpldf” from the “RWMET.CEL” library and fill in as much information as possible in the data fields. Use the upper left corner of the plan sheet border to place the cell. This cells contents will need to be included for each plan sheet matrix. To save effort, place the cell once, fill in all the information, and then copy it to the other sheet matrix positions.

12. Use the “Drop Element” command on each “mtpldf” cell after every sheet matrix is complete.

13. All strip map reference files need to be clipped using the purple outline located on level 63 as a guide. Your clip line may vary from the purple outline to avoid clipping a centerline station in half or to clip at an angle perpendicular to the centerline in a curve.

14. Clip bind the road design plan sheet at the orange outline located on level 62. Where the begin or end notes are shown, adjust the fence to clip off the leader lines referencing information included in the profile view.

15. Reference the R/W strip map file one (1) time for each sheet matrix used. Use logical names “romap1”, “romap2”, “romap3”. The R/W strip maps must be positioned and clipped exactly as the other strip maps for each file that needs to be attached.

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16. Attach the data field cell named “mtown5” if and when needed.

17. The levels should be turned on or off in the reference files.

22-3.1.5 Area File (METRIC)

Create area file as follows:

1. Save the R/W strip map file as the area file following the standard naming convention: “_ _ _ _ROARE001.dgn”.

2. Delete all the active elements in the file. You can use the “Delete Fence Contents” command or “Select All” from the “Edit” menu, then delete.

3. Reference the strip map file back in. Use the logical name “romap”.

22-3.1.6 Master Exhibit Files (METRIC)

Create master exhibit files as follows:

1. Save the R/W plan sheet file as an exhibit file following the standard naming convention: “_ _ _ _ROEXH001.dgn”.

2. Delete all the active elements in the file. You can use the “Delete Fence Contents” command or “Select All” from the “Edit” menu, then delete.

3. Reference the plan sheet file back in. Use the logical name “ropln”.

4. To display the proper exhibit sheet border, detach the reference file “MTROSTD:METRWPL.REF” and attach “MTROSTD:MDEED2.REF”. Use logical name “sht”. This exhibit sheet border is used in most standard situations. In the event there is a need to use another method “MTROSTD:MDEEDLL.REF” or “MTROSTD:MDEEDUL.REF” are also available. (See Section 22-6.1 for their use)

5. Place the exhibit data field cell “exhdf” from the “RWMET.CEL” library. Use the lower right corner of the exhibit sheet border to place the cell. This cell will need to be placed for each exhibit sheet matrix.

6. All levels containing elements not shown on an exhibit will need to be turned off such as construction limits, topography, construction permits and callouts, road approaches, etc. (See Section 25-1.1 – Parcel Exhibits for further information)

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7. Reference the area file one (1) time for each sheet matrix used. Use logical names “roare1”, “roare2”, “roare3”. The area files must be positioned and clipped exactly as the other strip maps.

8. Update the reference file sequence. From the “References” window, select “Settings”, “Update Sequence”. Choose all area reference files “roare1”, “roare2”, “roare3” and move them to the beginning to update first.

9. Turn off all area reference file levels.

10. Adjust the color overrides to show the area file shading grey scale. Within the “Level Manager” window, change the “Symbology” toggle to “Override”. Highlight all area reference files and levels within them. Click in the color column and choose color 252.

11. To activate the color overrides, choose “Settings”, “View Attributes”. Apply the “Level Overrides” option.

12. Repeat one (1) time for each plan sheet file.

13. Send files to DMS (Document Management System).

22-3.1.7 Parcel Exhibit Files (METRIC)

Process parcel exhibit files as follows:

1. Open the appropriate master exhibit file. Select “File”, “Save As” to save a new file as the parcel exhibit file. There is not a standard naming requirement for the parcel files. It is recommended to include the master exhibit file name, parcel number, and type of acquisition (e.g., “P1-_ _ _ _ROEXH001.dgn” or “P1-_ _ _ _ROEXH001-IRREASE.dgn”). See Section 25-3.1 — Saving Deeds and Exhibits for storing the parcel exhibit files.

2. Adjust the area reference file levels to display the appropriate shading.

3. Fill in the proper parcel and sheet numbers in the lower right portion of the exhibit sheet(s) using the “Fill in Single Enter-Data Field” command. Fill in the “Date Prepared” as it applies.

4. Place any additional parcel specific information in this file such as a tract of land description, extra section ties, easement hatching lines, DNRC or Railroad

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exhibit requirements, etc. See Section 25-1.1 — Parcel Exhibits and/or Section 25-4 — Deed and Exhibit Special Requirements for further explanation.

22-3.2 Building English R/W Files Manually

This process is utilized to ensure that the road design files are compatible with the R/W files. Both road design and R/W files are referenced with each other; therefore, it is important that they are built the same.

22-3.2.1 Strip Map (ENGLISH)

Create the strip map using the following procedures:

1. Create a new file using ENGLISH2D.dgn for the seed file.
   a. Choose the “New file” icon from the File Open dialog.
   b. Choose “Browse” to find the ENGLISH2D.dgn seed file (W:\SEED\ ENGLISH2D.dgn), then “Open”.
   c. Enter the design strip map file name following the standard naming convention “_ _ _ _ROMAP001.dgn”, then choose “Save”.
   d. Open the new strip map file.
2. Reference in the Road Design strip map and other reference files.
   a. Within the Reference dialog, choose “Tools”, “Attach”
   b. Within the Attach Reference dialog, select the Road Design strip map file, then choose “Open”.
   c. Select the Orientation “Coincident – World”. Enter the Logical Name following the standard naming convention (e.g., “RDMAP-1”). Adjust Nested Attachments option to “Copy Attachments”; then choose “OK”.
   d. Within the Reference dialog, double click each reference file as appropriate to include/correct Logical Names and Logical Prefix following the standard naming convention for all reference files (e.g., “RDMAP-1” and “MTRD:”, etc.)
3. Attach additional strip map files as needed (e.g., photogrammetry/survey files, etc.).
   a. Within the Reference dialog, choose “Tools”, “Attach”
   b. Within the Attach Reference dialog, select the strip map file, then choose “Open”.

c. Select the Orientation “Coincident – World”. Enter the Logical Name following the standard naming convention (e.g., “DIMAP-1”). Adjust Nested Attachments option to “No Nesting”; then choose “OK”.

d. Within the Reference dialog, double click each reference file as appropriate to include/correct Logical Names and Logical Prefix following the standard naming convention for all reference files (e.g., “DIMAP-1” and “MTDI:”, etc.)

4. Adjust level display and begin placement of design elements. (see Chapter 23 - Preliminary Plan Preparation for further information)

a. Within the Level Display dialog, turn on and off levels to display elements as needed.

b. Use MicroStation tools to begin design following the design standards.

5. Compress design and close file.

22-3.2.2 Title Sheet (ENGLISH)

Create the title sheet using the following procedures:

1. Create a new file using RWTTL.dgn for the seed file.

a. Choose the “New file” icon from the File Open dialog.

b. Choose “Browse” to find the RWTTL.dgn seed file (W:\SEED\RW\RWTTL.dgn); then “Open”.

c. Enter the title sheet file name following the standard naming convention “_ _ _ _ROTTL001.dgn”, then choose “Save”.

d. Open the new title sheet file.

2. Reference in the Road Design title sheet file.

a. Within the Reference dialog, choose “Tools”, “Attach”

b. Within the Attach Reference dialog, select the Road Design title sheet file, then choose “Open”.

c. Select the appropriate Orientations from the Saved Views category (e.g., RDTTL-1 and RDTTL-2). Adjust Nested Attachments option to “No Nesting”, then, choose “OK”. ①

d. Within the file, enter the center point once for each attachment (50600.000, 51880.000; 51700.000, 51100.000)

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e. Within the Reference dialog, double click each reference file to include the Logical Prefix for both reference files (e.g., “MTRD:”)

3. Set clip boundaries for Road Design title sheet reference files.

a. Within the Reference dialog, select the RDTTL-2 Road Design title sheet reference file, then choose “Tools”, “Move”.

b. Within the file, data point to center the county location map/project limits notes in the blue boundary. Place fence using blue boundary as a guide. (Adjust fence to keep map and project limits within fence area.)

c. Within the Reference dialog, select the RDTTL-2 Road Design title sheet reference file, then choose “Tools”, “Clip Boundary”.

d. Within the file, data point to accept fence clip boundary.

4. Adjust level display and fill in the data fields.

a. Fill in additional county location map information such as section numbers for each section the project enters, township and range labels, town names, etc.

b. Within the Level Display dialog, turn on and off levels to display elements as needed. (e.g., access control notes, appraisal only note, etc.)

c. Use the Data Field tools to enter project information. (e.g., Sheet Nos., R/W ID, Project No., Designation, County, See Ownership Sheet No., Retracement Note, State Plane Scale Factor, Associated and Related Projects, Project Length, etc.

5. Compress design and close file.

① If the Saved View options are not available, coordinate with the Road Designer to add them to the Road Design file you are referencing (there is a macro available for attaching saved views). Another option is to open the Road Design reference file and apply the Sheets>Save Sheet Views macro **or** open the Road Design reference file and select “Utilities”, “Saved Views”. Choose the Import Saved View icon. Navigate to find the R/W seed file (W:\SEED\RW\), then “Open”. Select the applicable saved views; then choose “OK”.

22-3.2.3 Ownership Sheet (ENGLISH)

Create the ownership sheet using the following procedures:

1. Create a new file using RWOWN.dgn for the seed file.

a. Choose the “New file” icon from the File Open dialog.

b. Choose “Browse” to find the RWOWN.dgn seed file (W:\SEED\RW\RWOWN.dgn), then “Open”.

c. Enter the ownership sheet file name following the standard naming convention “_ _ _ _ROOWN001.dgn”, then choose “Save”.

d. Open the new ownership sheet file.

2. Adjust level display and fill in the data fields.

a. Within the Level Display dialog, turn on and off levels to display elements as needed. (e.g., appraisal only note, etc.)

b. Use the Data Field tools to enter project information. (e.g., Sheet Numbers, R/W ID, Project No., Designation, County, See Ownership Sheet No., Retracement Note, State Plane Combination Scale Factor, Associated and Related Projects, Project Length, etc.

3. Compress design and close file.

22-3.2.4 Plan Sheets (ENGLISH)

Create the plan sheets using the following procedures:

1. Create a new file using RWPLN.dgn for the seed file.

a. Choose the “New file” icon from the File Open dialog.

b. Choose “Browse” to find the RWPLN.dgn seed file (W:\SEED\RW\RWPLN.dgn), then “Open”.

c. Enter the plan sheet file name following the standard naming convention “_ _ _ _ROPLN001.dgn”, then choose “Save”.

d. Open the new plan sheet file.

2. Reference in the Road Design plan sheet and other reference files.

a. Within the Reference dialog, choose “Tools”, “Attach”

b. Within the Attach Reference dialog, select the Road Design plan and profile sheet file, then choose “Open”.

c. Select the appropriate Orientations from the Saved Views category (e.g., RDPLP-1, RDPLP-2, RDPLP-3). Adjust Nested Attachments option to “Copy Attachments”; then choose “OK”. ①

d. Within the file, enter the center point once for each sheet (51750.0000, 51150.0000; 51750.0000, 53350.0000; 51750.0000, 55550.0000)

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e. Within the Reference dialog, double click each new reference file to include the Logical Prefix (e.g., “MTRD:”).

f. Select each occurrence of PLANE.REF; then choose “Tools”, “Detach”.

g. If the R/W strip map is not already attached: Within the Reference dialog, select each occurrence of the Road Design map reference file, then choose “Tools”, “Copy”.

h. Within the file, enter a point to copy from and the same point again to copy to.

i. Within the Reference dialog, double click each new reference file to revise the File Name, Logical Prefix, Logical Name, and Description (e.g., “_ _ _ _ROMAP001.dgn, MTRO:, ROMAP-1, ROW_MAP_FILE(BOT).

3. Set clip boundaries for design strip map reference files.

a. Within the file, place fence using purple boundary as a guide. (Adjust fence to avoid clipping centerline station or clip perpendicular to centerline at sheet ends.)

b. Within the Reference dialog, select the design strip maps attached at bottom position and choose “Tools”, “Clip Boundary”.

c. Repeat for strip maps attached at middle and top positions.

4. Adjust level display and fill in the data fields.

a. Within the Level Display dialog, turn on and off levels to display elements as needed. (e.g., 7-line ownership chart, plan scales, appraisal only note, design strip map elements, etc.)

b. Use the Data Field tools to enter project information. (e.g., Sheet Numbers, R/W ID, Project No., Designation, County, See Ownership Sheet No., Retracement Note, State Plane Combination Scale Factor, etc.)

5. Compress design and close file.

① If the Saved View options are not available, coordinate with the Road Designer to add them to the Road Design file you are referencing (there is a macro available for attaching saved views). Another option is to open the Road Design reference file and apply the Sheets>Save Sheet Views macro **or** open the Road Design reference file and select “Utilities”, “Saved Views”. Choose the Import Saved View icon. Navigate to find the R/W seed file (W:\SEED\RW\), then “Open”. Select the applicable saved views; then choose “OK”.

22-3.2.5 Area File (ENGLISH)

Create the area file using the following procedures:

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1. Create a new file using ENGLISH2D.dgn for the seed file.

    a. Choose the “New file” icon from the File Open dialog.

    b. Choose “Browse” to find the ENGLISH2D.dgn seed file (W:\SEED\RW\ ENGLISH2D.dgn), then “Open”.

    c. Enter the area file name following the standard naming convention “_ _ _ _ROARE001.dgn”, then choose “Save”.

    d. Open the new area file.

2. Reference in the Right-of-Way strip map.

    a. Within the Reference dialog, choose “Tools”, “Attach”

    b. Within the Attach Reference dialog, select the Right-of-Way strip map file, then choose “Open”.

    c. Select the Orientation “Coincident – World”. Enter the Logical Name following the standard naming convention (e.g., “ROMAP-1”). Adjust Nested Attachments option to “No Nesting”; then choose “OK”.

    d. Within the Reference dialog, double click the reference file to include/correct Logical Name and Logical Prefix following the standard naming convention (e.g., “ROMAP-1” and “MTRO:”, etc.)

3. Adjust level display and begin creation of areas.

    a. Within the Level Display dialog, turn on and off levels to display elements as needed.

    b. Use MicroStation tools to begin creation of areas following design standards. (See Section 22-4.13)

4. Compress design and close file.

22-3.2.6 Master Exhibit Sheets (ENGLISH)

Create the master exhibit sheets using the following procedures:

1. Create a new file using RWEXH.dgn for the seed file.

    a. Choose the “New file” icon from the File Open dialog.

    b. Choose “Browse” to find the RWEXH.dgn seed file (W:\SEED\RW\RWEXH.dgn), then “Open”.

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c. Enter the master exhibit sheet file name following the standard naming convention "_ _ _ _ROEXH001.dgn", then choose "Save".

d. Open the new master exhibit sheet file.

2. Reference in the Right-of-Way plan sheet and other reference files.

a. Within the Reference dialog, choose "Tools", "Attach"

b. Within the Attach Reference dialog, select the Right-of-Way plan sheet file, then choose "Open".

c. Select the Orientation "Coincident – World". Enter the Logical Name following the standard naming convention (e.g., "ROPLN-1"). Adjust Nested Attachments option to "Copy Attachments"; then choose "OK".

d. Within the Reference dialog, double click each reference file as appropriate to include/correct Logical Names and Logical Prefix following the standard naming convention for all reference files (e.g., "ROPLN-1" and "MTRO:", etc.)

e. Within the Reference dialog, select each occurrence of the road design plan and profile sheet, then choose "Tools", "Detach".

f. To attach the Area file: Within the Reference dialog, select each occurrence of the Right-of-Way design map reference file, then choose "Tools", "Copy".

g. Within the file, enter a point to copy from and the same point again to copy to.

h. Within the Reference dialog, double click each new reference file to revise the File Name, Logical Prefix, Logical Name, and Description.

i. Within the Reference dialog, choose "Settings", "Update Sequence".

j. Within the Update Sequence dialog, select each occurrence of the area file and move to the beginning of the sequence, then choose "OK". ②

k. Within the Reference dialog, select "REF1 or PLANE.ref", then choose "Tools", "Detach".

3. Adjust level display. (See Section 25-1.1 – Parcel Exhibits for further information)

a. Within the Level Display dialog, select all reference files. Select the filter RW EXHOFF. Right click on the levels and choose All Off. ③④

4. Compress design and close file.

② Adjust the color overrides to show the area file shading grey scale if the R/W reference files utilized old MicroStation V8 levels. Within the Level Manager, adjust Symbology to "Overrides". Select each occurrence of the area file and all of the levels within each. Click in the Color column and select color 40.

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③ Additional R/W levels may need to be turned off if the R/W reference files utilized MicroStation V8 levels.

④ Adjust levels to display appropriate scale from EXHREF1 if the R/W reference files utilized Plane.ref to display this information.

22-3.2.7 Parcel Exhibit Sheets (ENGLISH)

Create the parcel exhibit sheets using the following procedures:

1. Save the parcel exhibit file from master exhibit file. (see Section 25-3.1 - Saving Deeds and Exhibits for the location of the parcel exhibit files)

   a. Open the appropriate master exhibit file.

   b. Choose “File”, “Save As”. Navigate to the appropriate location. Enter the parcel exhibit file name, then choose “Save”. There is not a standard naming convention. It is recommended to include the master exhibit file name, parcel number, and type of acquisition (e.g., “P1-_ _ _ _ROEXH001.dgn” or “P1-_ _ _ _ROEXH001-IRREASE.dgn”).

2. Adjust level display and add parcel specific information. (see Section 25-1.1 – Parcel Exhibits for further information)

   a. Within the Level Display dialog, turn on and off levels to display elements as needed. (e.g., area file parcel shading, legend hatching, legend cross-hatching, etc.)

   b. Use the Data Field tools to enter parcel exhibit information. (e.g., Hatching and cross-hatching acquisition labels, parcel number, exhibit sheet numbers, date prepared, etc.)

   c. Use MicroStation tools to add additional parcel specific information as appropriate. (e.g., tract of land description, extra section ties, hatching, etc.)

3. Compress design and close file.

22-3.2.8 DNRC Parcel Exhibit Sheets (ENGLISH)

Create the DNRC parcel exhibit sheets using the following procedures:

1. Create a new file using RWTTLEXH for the seed file. (See Section 25-3.1 - Saving Deeds and Exhibits for the location of the parcel exhibit files)

   a. Choose the “New file” icon from the File Open dialog.

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b. Choose “Browse” to find the RWTTLEXH.dgn seed file (W:\SEED\RW\RWTTLEXH.dgn), then “Open”.
c. Enter the DNRC title exhibit sheet file name, then choose “Save”. There is not a standard naming convention. It is recommended to include the title sheet file name, parcel number, and type of acquisition (e.g., “P1-_ _ _ _ROTTLEXH.dgn” or “P1-_ _ _ _ROTTLEXH-COEASE.dgn”).
d. Open the new railroad exhibit sheet file.

2. Reference in the R/W Design title sheet file.

a. Within the Reference dialog, choose “Tools”, “Attach”
b. Within the Attach Reference dialog, select the R/W Design title sheet file, then choose “Open”.
c. Select the Orientation “Coincident – World”. Enter the Logical Name following the standard naming convention (e.g., “ROTTL-1”). Adjust Nested Attachments option to “Copy Attachments”, then, choose “OK”.
d. Within the reference dialog, select “REF1 or PLANE.REF”, then choose “Tools”, “Detach”.
e. Within the Reference dialog, double click each reference file as appropriate to include/correct Logical Names and Logical Prefix following the standard naming convention for all reference files (e.g., “ROTTL-1” and “MTRO:”, etc.)

3. Adjust level display and add parcel specific information. (see Section 25-4.1 – DNRC Parcels for further information)

a. Within the Level Display dialog, select all files. Select the filter RW EXHDNRCOFF. Right click on the levels and choose All Off. ③
b. Within the Level Display dialog, turn on levels to display elements as needed. (e.g.,signature block, etc.)
c. Use MicroStation tools to add additional parcel specific information as appropriate (e.g., parcel number, sheet numbers, etc.).

4. Compress Design File and close.

5. For additional sheets, refer to parcel exhibit sheet instructions. (see Section 25-4.1 – DNRC State of Montana for further requirements)

③ Additional R/W levels may need to be turned off if the R/W reference files utilized MicroStation V8 levels.

22-3.2.9 Railroad Parcel Exhibit Sheets (ENGLISH)

Create the railroad parcel exhibit sheets using the following procedures:

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1. Create a new file using RWTTLEXH for the seed file. (See Section 25-3.1 - Saving Deeds and Exhibits for the location of the parcel exhibit files)

   a. Choose the “New file” icon from the File Open dialog.
   b. Choose “Browse” to find the RWTTLEXH.dgn seed file (W:\SEED\RW\RWTTLEXH.dgn), then “Open”.
   c. Enter the railroad title exhibit sheet file name, then choose “Save”. There is not a standard naming convention. It is recommended to include the title sheet file name, parcel number, and type of acquisition (e.g., “P1-_ _ _ _ROTTLEXH.dgn” or “P1-_ _ _ _ROTTLEXH-COEASE.dgn”).
   d. Open the new railroad exhibit sheet file.

2. Reference in the R/W Design title sheet file.

   a. Within the Reference dialog, choose “Tools”, “Attach”
   b. Within the Attach Reference dialog, select the R/W Design title sheet file, then choose “Open”.
   c. Select the Orientation “Coincident – World”. Enter the Logical Name following the standard naming convention (e.g., “ROTTL-1”). Adjust Nested Attachments option to “Copy Attachments”, then, choose “OK”.
   d. Within the reference dialog, select “REF1 or PLANE.REF”, then choose “Tools”, “Detach”.
   e. Within the Reference dialog, double click each reference file as appropriate to include/correct Logical Names and Logical Prefix following the standard naming convention for all reference files (e.g., “ROTTL-1” and “MTRO:”, etc.)

3. Adjust level display and add parcel specific information. (see Section 25-4.2 – Railroad Parcels for further information)

   a. Within the Level Display dialog, select all reference files. Select the filter RW EXHRROFF. Right click on the levels and choose All Off. ③
   b. Within the Level Display dialog, turn on levels to display elements as needed. (e.g., stamp Exhibit “A”, etc.)
   c. Use MicroStation tools to add additional parcel specific information as appropriate (e.g., parcel number, sheet numbers, DOT number, milepost, etc.).

4. Compress Design File and close.

5. Create a new file using RWEXH.dgn for the seed file. (see Section 25-3.1 - Saving Deeds and Exhibits for the location of the parcel exhibit files)

   a. Choose the “New file” icon from the File Open dialog.
   b. Choose “Browse” to find the RWEXH.dgn seed file (W:\SEED\RW\RWEXH.dgn), then “Open”.

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c. Enter the railroad plan exhibit sheet file name, then choose “Save”. There is not a standard naming convention. It is recommended to include the plan sheet file name and parcel number (e.g., “P1-_ _ _ _ROPLN001.dgn”).

d. Open the new railroad parcel exhibit sheet file.

6. Reference in the Right-of-Way plan sheet and other reference files.

a. Within the Reference dialog, choose “Tools”, “Attach”

b. Within the Attach Reference dialog, select the Right-of-Way plan sheet file, then choose “Open”.

c. Select the Orientation “Coincident – World”. Enter the Logical Name following the standard naming convention (e.g., “ROPLN-1”). Adjust Nested Attachments option to “Copy Attachments”; then choose “OK”.

d. Within the Reference dialog, double click each reference file as appropriate to include/correct Logical Names and Logical Prefix following the standard naming convention for all reference files (e.g., “ROPLN-1” and “MTRO:”, etc.)

e. Within the Reference dialog, select each occurrence of the road design plan and profile sheet, then choose “Tools”, “Detach”.

f. To attach the Area file: Within the Reference dialog, select each occurrence of the Right-of-Way design map reference file, then choose “Tools”, “Copy”.

g. Within the file, enter a point to copy from and the same point again to copy to.

h. Within the Reference dialog, double click each new reference file to revise the File Name, Logical Prefix, Logical Name, and Description.

i. Within the Reference dialog, choose “Settings”, “Update Sequence”.

j. Within the Update Sequence dialog, select each occurrence of the area file and move to the beginning of the sequence, then choose “OK”. ②

k. Within the Reference dialog, select “REF1 or PLANE.ref”, then choose “Tools”, “Detach”.

7. Adjust level display and add parcel specific information. (see Section 25-4.2 – Railroad Parcels for further information)

a. Within the Level Display dialog, select all reference files. Select the filter RW EXHRROFF. Right click on the levels and choose All Off. ③④

b. Within the Level Display dialog, turn on levels to display elements as needed. (e.g., area file parcel shading, stamp Exhibit “A”, etc.)

c. Use the Data Field tools to enter parcel exhibit information. (e.g., parcel number, sheet numbers, etc.)

d. Use MicroStation tools to add additional parcel specific information as appropriate.

8. Compress design and close file.

② Adjust the color overrides to show the area file shading grey scale if the R/W reference files utilized old MicroStation V8 levels. Within the Level Manager, adjust Symbology to "Overrides". Select each occurrence of the area file and all of the levels within each. Click in the Color column and select color 40.

③ Additional R/W levels may need to be turned off if the R/W reference files utilized MicroStation V8 levels.

④ Adjust levels to display appropriate scale from EXHREF1 if the R/W reference files utilized Plane.ref to display this information.

22-3.2.10 Forest Service Parcel Exhibit Sheets (ENGLISH)

Create the forest service parcel exhibit sheets using the following procedures:

1. Create a new file using RWTTLEXH for the seed file. (See Section 25-3.1 - Saving Deeds and Exhibits for the location of the parcel exhibit files.)

   a. Choose the "new file" icon from the File Open dialog.
   b. Choose "Browse" to find the RWTTLEXH.dgn seed file (w:\SEED\RW\RWTTLEXH.dgn), then "Open".
   c. Enter the forest service title exhibit sheet file name, then choose "Save". There is not a standard naming convention. It is recommended to include the title sheet file name, parcel number, and type of acquisition (e.g., "P1-_ _ _ _ ROTTLEXH.dgn" or "P1-_ _ _ _ROTTLEXH-COEASE.dgn").
   d. Open the new forest service title exhibit sheet file.

2. Reference in the R/W Design title sheet file.

   a. Within the Reference dialog, choose "Tools", "Attach"
   b. Within the Attach Reference dialog, select the R/W Design title sheet file, then choose "Open".
   c. Select the Orientation "Coincident – World". Enter the Logical Name following the standard naming convention (e.g., "ROTTL-1"). Adjust Nested Attachments option to "Copy Attachments", then, choose "OK".
   d. Within the Reference dialog, select "REF1 or PLANE.ref", then choose "Tools", "Detach".
   e. Within the Reference dialog, double click each reference file as appropriate to include/correct Logical Names and Logical Prefix following the standard naming convention for all reference files (e.g., "ROTTL-1" and "MTRO:", etc.)

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3. Adjust level display and add parcel specific information. (See Section 25-4.3 – U.S. Forest Service for further information.)

   a. Within the Level Display dialog, select all files. Select the filter RW EXHFSOFF. Right click on the levels and choose All Off. ③
   b. Within the Level Display dialog, turn on levels to display elements as needed. (e.g., stamp Exhibit "A", Exhibit "B" or Exhibit "C", etc.)
   c. Use MicroStation tools to add additional parcel specific information as appropriate (e.g., parcel number, sheet numbers, etc.).

4. Compress Design File and close.

5. Create a new file using RWEXH.dgn for the seed file. (See Section 25-3.1 - Saving Deeds and Exhibits for the location of the parcel exhibit files.)

   a. Choose the "New file" icon from the File Open dialog.
   b. Choose "Browse" to find the RWEXH.dgn seed file (W:\SEED\RW\RWEXH.dgn), then "Open".
   c. Enter the forest service plan exhibit sheet file name, then choose "Save". There is not a standard naming convention. It is recommended to include the plan sheet file name, parcel number, and type of acquisition (e.g., "P1-_ _ _ _ ROEXH001.dgn" or "P1-_ _ _ _ROEXH001-coease.dgn").
   d. Open the new forest service parcel exhibit sheet file.

6. Reference in the Right-of-Way plan sheet and other reference files.

   a. Within the Reference dialog, choose "Tools", "Attach"
   b. Within the Attach Reference dialog, select the Right-of-Way plan sheet file, then choose "Open".
   c. Select the Orientation "Coincident – World". Enter the Logical Name following the standard naming convention (e.g., "ROPLN-1"). Adjust Nested Attachments option to "Copy Attachments"; then choose "OK".
   d. Within the Reference dialog, double click each reference file as appropriate to include/correct Logical Names and Logical Prefix following the standard naming convention for all reference files (e.g., "ROPLN-1" and "MTRO:", etc.)
   e. Within the Reference dialog, select each occurrence of the road design plan and profile sheet, then choose "Tools", "Detach".
   f. To attach the Area file: Within the Reference dialog, select each occurrence of the Right-of-Way design map reference file, then choose "Tools", "Copy".
   g. Within the file, enter a point to copy from and the same point again to copy to.
   h. Within the Reference dialog, double click each new reference file to revise the File Name, Logical Prefix, Logical Name, and Description.

i. Within the Reference dialog, choose “Settings”, “Update Sequence”.

j. Within the Update Sequence dialog, select each occurrence of the area file and move to the beginning of the sequence, then choose “OK”. ②

k. Within the Reference dialog, select “REF1 or PLANE.ref”, then choose “Tools”, “Detach”.

7. Adjust level display and add parcel specific information. (See Section 25-4.3 – U.S. Forest Service for further information).

   a. Within the Level Display dialog, select all reference files. Select the filter RW EXHFSOFF. Right click on the levels and choose All Off. ③④

   b. Within the Level Display dialog, turn on levels to display elements as needed. (e.g., area file parcel shading, stamp Exhibit “A”, Exhibit “B” or Exhibit “C”, etc.).

   c. Use MicroStation tools to add additional parcel specific information as appropriate (e.g., parcel number, sheet numbers, date prepared, NFSL, and NFSLREC Cells, etc.).

8. Compress design and close file.

② Adjust the color overrides to show the area file shading grey scale if the R/W reference files utilized old MicroStation V8 levels. Within the Level Manager, adjust Symbology to “Overrides”. Select each occurrence of the area file and all of the levels within each. Click in the Color column and select color 40.

③ Additional R/W levels may need to be turned off if the R/W reference files utilized MicroStation V8 levels.

④ Adjust levels to display appropriate scale from EXHREF1 if the R/W reference files utilized Plane.ref to display this information.

22-3.3 Building R/W Files With Macro

Macros have been developed to create R/W design CADD files. The program files must be located in the appropriate caddstd directory (W drive) on your network. This is a valuable time saving method to creating files; however, files can still be created manually. There may be an occasion when the macros will not work on a particular project or you choose to build the files manually.

Before you begin, make certain the road design title sheet, strip map and all plan and profile files are located on your “c:\dgn” directory. Perform the following:

1. Within any MicroStation CADD file, start the macro by choosing “R/W, RW Macros”.

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2. Create a .DAT file to contain project specific information by choosing the project information folder icon. Fill in the appropriate project information and save the file. This file can be added to DMS for use in easily updating revised project information in the plan sheet files.

3. To create the R/W CADD files, select the “Create DGN(S)” option and fill in all applicable information for the files to be created.

4. The title, ownership, plan and exhibit sheets need to be labeled with the project information by selecting the “Sheet” option, then “Sheet Labeler”.

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22-4 MISCELLANEOUS MICROSTATION PROCEDURES

22-4.1 Placing a Cell

Use the following procedures when placing cells:

1. Choose “Element”, “Cells”.

2. The “RWMET.CEL” (metric) or “RW.CEL” (english) libraries will need to be used for R/W plans. To attach the correct library, choose “File”, “Attach File” from the cell library display box. The path for the cell libraries is as follows: “caddstd:\workgroup\rwstd\cell\rwmet.cel” or “caddstd:\ workgroup\rwstd\cell\ rw.cel”.

3. Choose the appropriate cell by double clicking on the cell of choice or highlight it, select the “Placement” button, and then choose the “Place Active Cell” tool.

4. The active angle and/or scale may need to be adjusted as necessary. Various cells need to be rotated perpendicular to the centerline such as right of way, construction permit, easement, begin/end acquisition callouts, etc.

5. Data point in the file to place the cell; then reset to clear the cell. Some cell origins are positioned for using the plan sheet border lines as the cell placement point.

22-4.2 View Hidden Data Fields

Many R/W cells partially or completely contain data fields. The data fields can be manipulated but are invisible unless a setting is changed. Use the following procedures when viewing hidden data fields:

1. Choose “Settings”, “View Attributes”.

2. Within the “View Attributes” dialog, apply the “Data Fields” option. The data fields should be visible. The data fields will appear on the plan sheet if printed; therefore, the data fields display should be turned off before exiting or printing the file.

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22-4.3 File Referencing

Various CADD files are attached to the R/W design files on a regular basis. This allows frequent changes in other files to be available effortlessly. Use the following procedure to reference files:

1. To reference another design file into a specific file using the “Key-In” command window, type “rf=mtro:”, “rf=mtrd:”, “rf=mtsu:”, etc., then the reference file name. The file must be on the computer hard drive for this to work properly. Example: “rf=mtro:1234romap001.dgn”.

2. The “Reference Attachment Settings” dialog will appear. Enter the appropriate attachment settings, then “OK”; or

3. Within the “References” dialog (“File”, “References”). Choose “Tools”, “Attach”. Select the reference file.

4. The “Reference Attachment Settings” dialog will appear. Enter the appropriate attachment settings, then “OK”.

5. The correct prefix must be added. Double click on the reference file within the “References” dialog. Enter “mtro:”, “mtrd:”, “mtsu:” etc., as applicable for the file name prefix.

Strip maps are attached to plan files at a particular rotation with a custom clip volume. Additional strip maps must be attached in an identical manner.

1. Within the “References” dialog, select any strip map file already attached at the desired location, then choose “Tools”, “Copy”.

2. Within the file, enter a point to copy from and the same point again to copy to.

3. Within the Reference dialog, double click the new reference file to revise the File Name, Logical Prefix, Logical Name, and Description.

22-4.4 Move and Scale Reference Files

Occasionally, a reference file will attach at a peculiar location or even at the wrong scale. It may need to be moved and/or scaled. Use the following procedures:

1. To scale a reference file:

a. Within the “References” dialog, (“File”, “References”). Select the reference file to be scaled.

b. Select “Tools”, “Scale”. Adjust the scale factor in the “Scale Reference” dialog larger or smaller as appropriate.

c. Data point in the MicroStation file window at a point to scale the file about, then reset

2. To move a reference file:

a. Within the “References” dialog, (“File”, “References”). Select the reference file to be moved.

b. Choose “Tools”, “Move”.

c. Data point in the MicroStation file window at a point to move the reference file by. Data point again at the point to move the reference file to, then reset.

22-4.5 Grey Scale Levels

It may be necessary to grey scale particular information such as topography if the design area becomes too occupied. It helps to distinguish essential features of a plan from important but less significant features. Use the following procedures to grey scale:

1. Open the “Level Manager” window (“Settings”, “Levels”, “Manager”).

2. Change the “Symbology” toggle to “Override”.

3. Highlight the file(s) containing information to be grey scaled and the appropriate levels.

4. Data point within the color column and select any color in the third row of the color table (32-47), then “OK”.

5. To activate the color overrides, choose “Settings”, “View Attributes”. Apply the “Level Overrides” option. To deactivate the color overrides, simply turn off the “Level Overrides” option applied in this step.

6. Within the Reference dialog, update sequence to ensure the grey scaled topography reference files are at the beginning of the sequence.

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22-4.6 Apply Hatching or Cross Hatching

1. For an area with the perimeter consisting of straight lines:

    a. Set the element attributes to the correct level, line weight, style and color.

    b. Choose the “Hatch Area” or “Crosshatch Area” tool.

    c. Select the method “Points” and set applicable parameters.

    d. Tentative snap at each line end point around the area perimeter, then reset when complete. The crosshatch or hatch lines should be in place.

2. For an area with the perimeter consisting of curved lines:

    a. Use the “Place Fence” or “Element Selection” tools to copy the lines making up the border of the area to be hatched or crosshatched to a workable location.

    b. Delete unnecessary elements and modify the lines using the “Trim to Intersection” and/or “Trim to Element” tools to create a border.

    c. Create a complex shape. Use the “Create Complex Shape” tool. The fill type must be none.

    d. Move the shape to its exact original position using tentative snap. The “Use Fence” option should not be selected.

    e. Choose the “Hatch Area” or “Crosshatch Area” tool.

    f. Select the method “Element” and set applicable parameters, then data point on the shape twice. The crosshatch or hatch lines should be in place.

    g. Delete the complex shape border.

22-4.7 Place Ownership Dots

Ownership dots are placed as a line style along property boundaries. See Section 23-4.2.1 for additional information on ownership dots. Use the following procedures:

1. With the "Move Parallel" tool, copy the property line as applicable using the appropriate element attributes to the inside of each property boundary 5 ft (1.5 m). (See Section 22-4 Standard Element Attributes)

2. Use the "Trim to Intersection" command to clip the ownership dots at each corner.

22-4.8 Use Cell as Linear Pattern

Rather than repetitively placing a cell such as the access control symbols, this procedure saves time and is more effective:

1. Copy the line to be shown with the repeated cell at the same position or parallel 8 ft if placing existing access control.

   Note: Proper placement of existing access control symbology should result in a 3 ft. gap between the existing access control line and symbology.

2. Revise the element attributes of the copied line appropriately. See Appendix J.

3. Choose the "Linear Pattern" tool. Adjust the cycle to "Truncated". Enter the pattern cell. Adjust the scale as necessary. Tolerance is 0.

4. Select the copied line. The line should now be a repetitive series of the chosen cell.

22-4.9 Remove Fence Lock

Use the following procedure to remove fence lock:

1. Choose "Select All" from the "Edit" menu.

2. Choose "Unlock" from the "Edit" menu.

3. To unselect all items, choose "Select None" from the "Edit" menu.

22-4.10 Use "TRACT" Cell for English Projects

Use the following procedure to have the text automatically fit itself within the cell:

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1. Change the Text Editor Style to “Word Processor”: “Workspace”, “Preferences”, “Text”.

2. Place the “TRACT” cell from the “RW.CEL” library and drop status on it.

3. Select the “Edit Text” tool and click on the text in the “TRACT” cell to open the Word Processor.

4. Highlight any of the blank lines in the text box and begin typing.

   The text will automatically fit itself within the margins of the “TRACT” cell. If you exceed three lines of text, you may need to adjust the box or move the text accordingly.

22-4.11 Identify Element Level

The following procedures may be helpful in locating the specific level of a R/W design element:

1. Tentative on the element – a pop-up box will tell you the level name and the file that it’s in.

2. Alternatively, the “Element Information” button can be used. Click on the desired element. The level name and the file that it’s in will be displayed in the MicroStation “Message Center”.

3. InfoSnap is also a useful MicroStation tool for obtaining detailed element information, including level numbers. It can be found on the MDT Main toolbar. Tentative on any element and a box containing the element information will be displayed. The InfoSnap tool can be customized to display only the information the user is interested in.

22-4.12 Locate Levels in Level Display

To find a level in the Level Display when all or part of the level name or the level number is known, use the following procedures:

1. Within the Level Display, change the level filter to “All Levels”, then highlight the file that contains the level you are searching for.

2. If you know the level number: In the Level Display, click in the box directly below the “Number” column.

3. Type in the number of the level you are looking for and then “Enter”. The level will be displayed.

4. If you know all or part of the level name: In the Level Display, click in the box directly below the “Name” column.

5. Type in all or part of the level name you are looking for and then “Enter”. The levels containing the text you entered will be displayed.

22-4.13 Creating Areas

Area shapes need to be made for each parcel for the net r/w, existing easement, construction permit and easement areas. Put the shapes on the appropriate exhibit shading levels. The acquisition area shapes should be put on the level that corresponds with the parcel number. This may not always be possible. Use working levels 1-100 in these situations. If you are unable to show the appropriate shading on the exhibit, you will have to adjust the levels. Create areas using the following procedures:

1. Use the “Place Fence” or “Element Selection” tools to copy the lines making up the border of the area to be shaded to a workable location.

2. Delete unnecessary elements and modify the lines using the “Trim to Intersection” and/or “Trim to Element” tools to create a border.

3. Create a complex shape. Use the “Create Complex Shape” tool. The fill type must be “Opaque” and the fill color used must be “Color 32-47”.

4. Move the shape to its exact original position using tentative snap. The “Use Fence” option should not be selected.

5. The area shapes created in the area file are used to provide area calculations for the ownership sheet. Use the “Measure Area” tool. The method should be “Element”.

6. Repeat steps 1 thru 5 for each area to be created.

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22-5 R/W LEVELS

22-5.1 Metric Levels

Metric level standards were only developed using levels 1-63. See Appendix J to review the R/W level standards.

22-5.2 English Levels

R/W adopted a naming structure for all MicroStation levels used in designing English projects. This naming structure divides levels into four main categories: S (Standard), E (Existing), P (Proposed) and 1-100 (Working). Each level has a name, number and description. R/W level numbers are set up to allow you to organize levels in somewhat of a workflow order grouping similar types of levels. All design elements must be placed on these levels. See Appendix J to review the standard R/W levels.

22-5.2.1 Working Levels

Working design elements or elements without a defined level should be placed on levels 1 through 100.

22-5.2.2 S (Standard) Levels for R/W

The S (Standard) levels can be thought of as “behind-the-scenes” levels used to set up sheets. They are for elements that can be found outside of the design clip boundaries being sheet frames and project information that generally appears on all projects in the same location. R/W S-levels have an indicator in the second position of the file name to specify whether the level applies to the title, ownership, plan, exhibit, or multiple sheets (TTL, OWN, PLN, EXH or ALL).

Some examples of elements that are on these levels are sheet frames, r/w id, project no., designation, sheet nos., ascii file note, ownership information, project survey retracement note, state plane coordinate note, approval and revision dates, preliminary stamp, clip boundary lines, a/c resolution note, approach block, etc.)

22-5.2.3 E (Existing) Levels for R/W

The E (Existing) levels are used to display elements pertaining to features that already exist.

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Some examples of elements that would go on these levels are existing R/W lines, section lines, property lines, etc.

22-5.2.4 P (Proposed) Levels for R/W

The P (Proposed) levels are used to display design elements pertaining to features that are being proposed. Exhibit shading levels are reserved for acquisition areas in the area file.

Some examples of elements that would go on these levels are parcelization, alignment information, new lines and labels for right of way, easements, construction permits, etc.

22-5.2.5 Level Filters

Level filters are a way to display customized categories of levels. R/W level filters have been developed to allow the user to view just the S, E or P levels and also to turn off necessary levels all at once to complete exhibit sheet development. The following level filters are located in a drop-down list of the Level Display. See Figure 22-2.

Level Filter Name	Levels Displayed
RW	All R/W levels
RW Existing	R/W E-levels
RW Proposed	R/W P-levels
RW Standard	R/W S-levels
S_EXH	R/W S-levels for an exhibit sheet file.
S_OWN	R/W S-levels for an ownership sheet file.
S_PLN	R/W S-levels for a plan sheet file.
S_TTL	R/W S-levels for a title sheet file.
RW EXHOFF	All levels to be turned off on an exhibit.
RW EXHRROFF	All levels to be turned off on a railroad exhibit.

LEVEL FILTERS

Figure 22-2

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22-6 R/W ELEMENT ATTRIBUTE STANDARDS

Figure 22-3 shows the standard attributes to be used when developing R/W plans.

DESCRIPTION	FILE	LEVEL *	COLOR	STYLE	WEIGHT
Existing R/W Lines	Strip Map	E_ExistingRightofWay_Line *(30)*	-	0	1
Existing Non-Highway Easement Lines	Strip Map	E_ExistingNonHwyEase_Line *(41)*	-	0	0
Property Lines	Strip Map	E_PropertyLine *(34)*	-	0	1
Ownership Dots **MDT preference is to place ownership dots in Strip Map*	Plan Sheets or Strip Map *	E_OwnershipDots *(34)*	-	1	5
Proposed R/W Lines	Strip Map	P_NewRWandEase_Line *(31)*	-	7	3
Section Lines (Surveyed)	Strip Map	E_SectionLine_Exterior *(16)*	2 (Green)	3	2
Section Lines (Not Surveyed)	Strip Map	E_SectionLine_Exterior *(16)*	0 (White)	3	2
Interior Section Lines (16th)	Strip Map	E_SectionLine_Interior *(35)*	-	3	2
Existing Railroad R/W Lines	Strip Map	E_RailroadRightofWay_Line *(40)*	-	6	2
Proposed Easement Lines	Strip Map	P_NewNonHwyEase_Line *(31,38)*	-	0	3
Proposed Const. Permit Lines	Strip Map	P_ConstPmt_Line *(36)*	-	0	3

Note: *Levels shown in parenthesis are for metric projects.*

R/W ELEMENT ATTRIBUTE STANDARDS

Figure 22-3

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22-7 R/W CADDSTD FILES

The following files are standard reference files used when developing R/W plan files.

22-7.1 Metric Reference Files

1. METRWPL.REF. Standard R/W plan sheet, no border. See the ***MDT CADD Standards Manual*** for the level use associated with this reference file.

2. PLANM.REF. This is the shared road design file from ROSTD that is used to build the border in the R/W plan sheets. See the ***MDT CADD Standards Manual*** for the level use associated with this reference file.

3. METRWTI.REF. Standard R/W title sheet. See the ***MDT CADD Standards Manual*** for the level use associated with this reference file.

4. MDEED2.REF. Standard exhibit sheet, with title block in lower right corner, which is used generally.

5. MDEEDLL.REF. Standard exhibit sheet, with title block in lower left corner. Use if the drawing covers the standard placed title block area.

6. MDEEDUL.REF. Standard exhibit sheet, with title block in upper left corner. Use if the other blocks interfere with drawing.

22-7.2 English Reference Files

Only one standard reference file is used when creating MicroStation V8 English project files.

1. PLANE.REF. Standard sheet file for MicroStation V8 English projects. This reference file provides the plan border for all r/w and other design section plan sheets.

22-7.3 English Seed Files

Seed files are available for creating r/w sheets in MicroStation V8i for English projects. They contain a reference file that is located in a separate model but within the same file. All standard level elements are already placed but some need slight modification to complete project specific information or levels adjusted to display the appropriate notes.

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When adjusting standard levels, select both the active file and the referenced model (REF1 or EXHREF1).

1. RWTTL. Standard seed file for creating R/W title sheets.

2. RWOWN. Standard seed file for creating R/W ownership sheets.

3. RWPLN. Standard seed file for creating R/W plan sheets.

4. RWEXH. Standard seed file for creating R/W exhibit sheets.

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22-8 R/W CELLS

Cells are utilized to eliminate time and effort spent creating repetitive elements and to maintain a consistent appearance of plan sheets. See Appendix J for a preview of the standard R/W cells.

22-8.1 Metric Cell Libraries

1. RWMET.cel. Metric R/W cells used for plan development.

2. RWMETPIM.cel. Metric R/W cells used for public information meeting (PIM) map development.

22-8.2 English Cell Libraries

1. RW.cel. English existing and proposed design feature R/W cells used for plan development.

2. RWSHEETS.cel. English standard sheet R/W cells used to maintain seed files and re-place plan file cells if needed.

3. RWPIM.cel. English R/W cells used for public information meeting (PIM) map development.