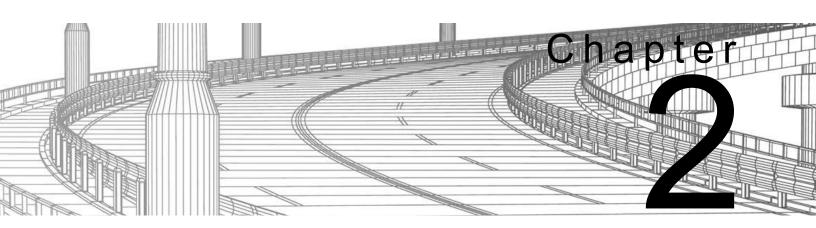
Autodesk CINI 3D 2020 Fundamentals



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Project Management

In this chapter, you learn about the various project structures that can be used inside of an Autodesk[®] Civil 3D[®] project. Then you create a new project and learn how to move between different projects. Using data shortcuts, you practice creating references to AEC objects to share design data, which ensures that you always have the most up-to-date design data in the current model.

Learning Objectives in this Chapter

- List the three different ways in which Autodesk Civil 3D project drawings can be organized.
- List the ways in which teams can collaborate with each other and share design information in the Autodesk Civil 3D software.
- Share design information with other members of the design team using data shortcuts.

Single-Design Drawing Projects

Multiple Drawings Sharing Data using Shortcuts

2.1 Autodesk Civil 3D Projects

There are multiple ways of organizing Autodesk Civil 3D project drawings. Three of the most common approaches are as follows:

Since Autodesk Civil 3D surfaces, alignments, and other AEC objects can be entirely drawing-based, you can have a single drawing file act as the repository for all design data. Realistically, this might only be feasible for smaller projects and/or those worked on by only one person. The only external data might be survey databases, and externally referenced (XREF) drawings.

This approach permits multiple existing conditions and design drawings to share data. For example, a surface could exist in one drawing and an alignment in another. A third could contain a surface profile based on the alignment and terrain model, and all could be kept in sync with each other using Data Shortcuts. This approach is usually preferable to the single-drawing approach, because it permits more than one user to work on the project at the same time (in the different design drawings) and keeps the drawings at more manageable sizes. Using data shortcuts is essential in larger projects to ensure that the regeneration time for drawings is at an acceptable speed. This approach does not create any external project data other than survey databases and XML data files that are used to share data between drawings.

Once an object has been referenced into the drawing and the drawing has been saved, the object is saved in the drawing. Therefore, it only needs access to the source drawing for validation and synchronization purposes if the source object changes. This makes it easy to share drawings with others because it ensures that the referenced objects display even if the source drawings are not available.

Shortcuts tend to be efficient for projects with a small number of drawings and project team members. Since the XML data files that connect drawings must be managed manually, keeping a large number of drawings and/or people in sync with shortcuts can be cumbersome. It is recommended that your BIM Manager establishes procedures to ensure that data is not unintentionally deleted or changed. These procedures need to be properly documented.

Multiple Drawings Sharing Data with Autodesk Vault

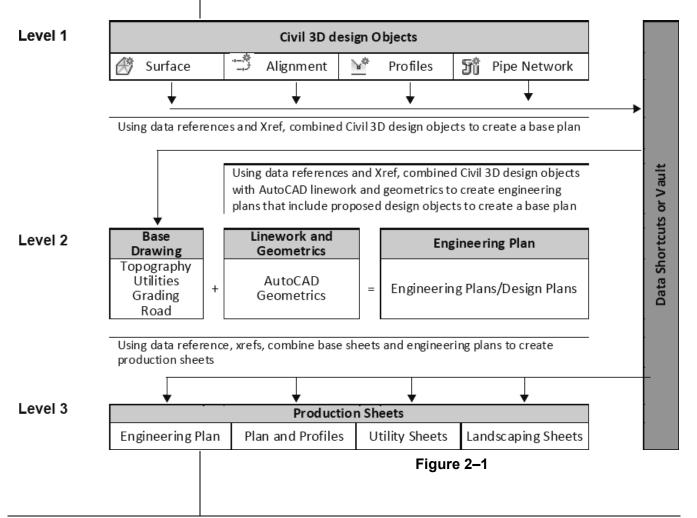
The Autodesk[®] Vault software is a data and document management system (ADMS). It is used in conjunction with other Autodesk[®] applications in different industries. When working with the Autodesk Vault software, all project drawings, survey databases, and references are managed and stored inside an SQL-managed database. Autodesk Vault consists of user-level access permissions, drawing check-in/out, project templates, automated backups, data versioning, etc. These benefits are offset by the additional time required to manage and administer the database, and in some cases purchasing additional hardware and software. If you work on large projects with multiple design drawings or have many team members (more than 10), you might find that the Autodesk[®] Vault is the best way to keep those projects organized.

2.2 Sharing Data

In the Autodesk Civil 3D workflow, you can use two methods of project collaboration to share Autodesk Civil 3D design data: Data Shortcuts and Vault references.

Autodesk Vault and Data Shortcuts can be used to share design data between drawing files in the same project, such as alignment definitions, profiles, corridors, surfaces, pipe networks, pressure networks, sample line groups, and View Frame Groups. They do not permit the sharing of profile views, assemblies, or other Autodesk Civil 3D objects. Drawing sets using shortcuts typically use XREFs and reference other line work and annotations between drawings. Whether using Vault Shortcuts or Data Shortcuts, the process is similar.

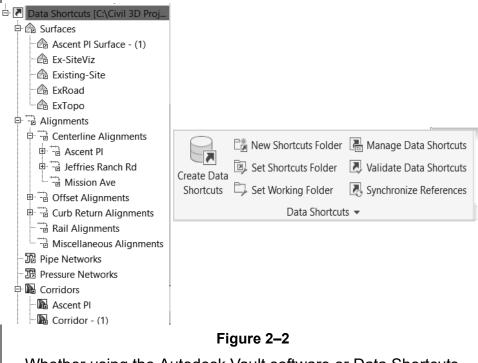
The example in Figure 2–1 shows the sharing of data in a project collaboration environment. The data is divided into three distinctive levels. Using either Data Shortcuts or Autodesk Vault, these levels can be accessed and contributed to, on a local or remote server or across a WAN.



2.3 Using Data Shortcuts for Project Management

Data Shortcuts can be used to share design data between drawing files through the use of XML files. Using Data Shortcuts is similar to using the Autodesk Vault software, but does not provide the protection of your data or the tracking of versions the way the Autodesk Vault software does.

Data Shortcuts are managed using the Toolspace, *Prospector* tab, under the *Data Shortcuts* collection or in the *Manage* tab>Data Shortcuts panel, as shown in Figure 2–2. The shortcuts are stored in XML files in one or more working folders that you create. They can use the same folder structure as the Autodesk Vault software. This method simplifies the transition to using the Autodesk Vault software at a future time.



Whether using the Autodesk Vault software or Data Shortcuts, the intelligent Autodesk Civil 3D object design data can be consumed and used on different levels. However, this referenced data only can be edited in the drawing that contains the original object. As referenced data can be assigned a different style than those in the source drawing, you can separate the design phase (where drawing presentation is not critical) from the drafting phase (where drawing presentation is paramount). Therefore, after the styles have been applied at the drafting phase, any changes to the design have minimal visual impact on the completed drawings. Changing the name of a drawing file that provides Data Shortcuts or the shortcut XML file itself invalidates the shortcut. In the *Manage* tab, there is a Data Shortcut Manager that is used to correct such issues as renamed re-pathing drawings or Autodesk Civil 3D.

Update Notification

If the shortcut objects are modified and the source drawing is saved, any drawings that reference those objects are updated when opened. If the drawings consuming the data referenced in the shortcuts are open at the time of the edit, a message displays to warn you of the changes, as shown in Figure 2–3.

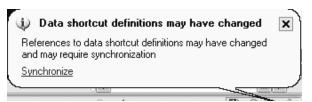


Figure 2–3

The following modifier icons help you to determine the state of many Autodesk Civil 3D objects.

P	The object is referenced by another object. In the Toolspace, Settings tab this also indicates that a style is in use in the current drawing.
7	The object is being referenced from another drawing file (such as through a shortcut or Autodesk Vault reference).
∇	The object is out of date and needs to be rebuilt, or is violating specified design constraints.
⊾	A Vault project object (such as a point or surface) has been modified since it was included in the current drawing.
⊿	You have modified a Vault project object in your current drawing and those modifications have not yet been updated to the project.

Figure 2–4 shows how the modifier icons are used with an Autodesk Civil 3D object as it displays in the Toolspace, *Prospector* tab.



Removing and Promoting Shortcuts

eTransmit Data References

Shortcut data can be removed from the Shortcut tree in the Toolspace, *Prospector* tab by right-clicking on it and selecting **Remove**, but this does not remove the data from the drawing. To do so, right-click on the object in the Toolspace, *Prospector* tab and select **Delete**. This removes the shortcut data from the current list, so that the item is not included if a Data Shortcut XML file is exported from the current drawing.

To update the shortcut data, select **Synchronize** in the balloon message or right-click on the object in the Toolspace, *Prospector*

tab and select Synchronize.

You can also promote shortcuts, which converts the referenced shortcut into a local copy without any further connection to the original. You can promote objects by right-clicking on them in the Toolspace, *Prospector* tab and selecting **Promote**.

Projects that use Data Shortcuts can be packaged and sent to reviewers, clients, and other consultants using the AutoCAD **eTransmit** command. With the **eTransmit** command, all of the related dependent files (such as XML files, XREFs, text fonts, etc.) are automatically included in the package. This reduces the possibility of errors and ensures that the recipient obtains all the pertinent data related to the drawing. A report file can be included in the package explaining what must be done with drawing-dependent files (e.g., XML, XREFs). The Create Transmittal dialog box is shown in Figure 2–5.

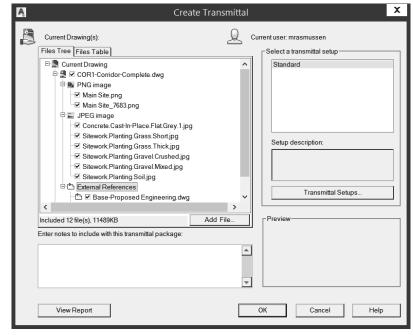


Figure 2–5

Data Shortcut Workflow	 In the Toolspace, <i>Prospector</i> tab, right-click on Data Shortcuts and select Set the Working Folder In the Toolspace, <i>Prospector</i> tab, right-click on Data Shortcuts and select New Data Shortcuts Folder to create a new project folder for all of your drawings. Create or import the data that you want to share in the source drawing and save it in the current working folder under the correct project folder. In the Toolspace, <i>Prospector</i> tab, right-click on Data Shortcuts and select Associate Project to Current Drawing. In the Toolspace, <i>Prospector</i> tab, right-click on Data Shortcuts and select Create Data Shortcuts. Select all of the items that you want to share, such as surfaces, alignments, profiles, etc., and click OK. Save the source drawing (and close, as required). Create and save a new drawing or open an existing drawing to receive the shortcut data. Expand the Data Shortcuts collection and the relevant object trees (<i>Surfaces</i>, <i>Alignments</i>, <i>Pipe Networks</i>, <i>View Frame Groups</i>, etc.). Highlight an item to be referenced, right-click and select Create Reference Repeat, for all of the objects, as required. You are prompted for the styles and other settings that are required to display the object in the current drawing. You might also want to add an XREF to the source drawing if there is additional AutoCAD[®] objects that you want to display in the downstream drawing. The Autodesk Civil 3D tools for Data Shortcuts are located in the <i>Manage</i> tab (as shown in Figure 2–6), and in the Toolspace, <i>Prospector</i> tab. 			
Workflow Details	 Set Working Folder: Sets a new working folder as the location in which to store the Data Shortcut projects is C:\Users\Public\Documents\Autodesk\Civil 3D Projects. Obviously, in a shared working environment, the working folder needs to be accessible by all project team members. Often working folders are named by the year of the project, or perhaps the major clients for the project. 			

	• The default working folder is also used for Autodesk Vault projects and local (non-Vault) Survey projects. If you work with the Autodesk Vault software, local Survey, and Data Shortcut projects, you should have separate working folders for each project type for ease of management.
	 New Shortcuts Folder: Creates a new folder for storing a set of related project drawings and Data Shortcuts.
	Create Data Shortcuts: Creates Data Shortcuts from the active drawing.
	Data Shortcuts are stored in the <i>_Shortcuts</i> folder for the active project and used to create data references to source objects in other drawings. Each Data Shortcut is stored in a separate XML file.
Advantages of Data Shortcuts	 Data Shortcuts provide a simple mechanism for sharing object data, without the added system administration needs of the Autodesk Vault software.
	 Data Shortcuts offer access to an object's intelligent data while ensuring that this referenced data can only be changed in the source drawing.
	 Referenced objects can have styles and labels that differ from the source drawing.
	 When you open a drawing containing revised referenced data, the referenced objects are updated automatically.
	• During a drawing session, if the referenced data has been revised, you are notified in the Communication Center and in the Toolspace, <i>Prospector</i> tab.
Limitations of	Data Shortcuts cannot provide data versioning.
Data Shortcuts	 Data Shortcuts do not provide security or data integrity controls.
	 Unlike the Autodesk Vault software, Data Shortcuts do not provide a secure mechanism for sharing point data or survey data.
	 Maintaining links between references and their source objects requires fairly stable names. However, most broken references can easily be repaired using the tools in the Autodesk Civil 3D software.

Practice 2a

Starting a Project

Practice Objective

 Create a new data shortcut project with the correct working folder for the project being worked on.

In this practice, you will walk through the steps of creating project-based Data Shortcuts folders.

Task 1 - Set the Working folder.

In this task, you will set up a new working folder as the location in which to store Data Shortcut projects. The default working folder for Data Shortcut projects is

C:\Users\Public\Documents\Autodesk\Civil 3D Projects.

- 1. Open **DS-A1-Shortcuts.dwg** from the *C:\Civil 3D Projects\Civil3D-Training\DataShortcuts* folder.
- 2. In the *Manage* tab>Data Shortcuts panel, click (Set Working Folder), as shown in Figure 2–7.

	Carlo New Shortcuts Folder
Create Data	📴 Set Shortcuts Folder 🛛 🔝 Validate Data Shortcuts
Shortcuts	
	Data Shortcuts 👻



3. In the Browse For Folder dialog box, select the *Civil 3D Projects\DataShortcuts* folder, right-click to create a new folder and name it *Chapter 2*. Click **Select Folder**.

Task 2 - Create new Shortcuts folders.

In this task, you will create a new folder for storing a set of related project drawings and Data Shortcuts. A second project folder is created to help you understand how to change the project in which you are working.

1. Continue working with the drawing from the previous task.

2. In the *Manage* tab>Data Shortcuts panel, click is (New Shortcuts Folder), as shown in Figure 2–8.

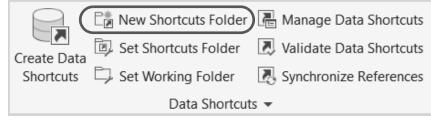
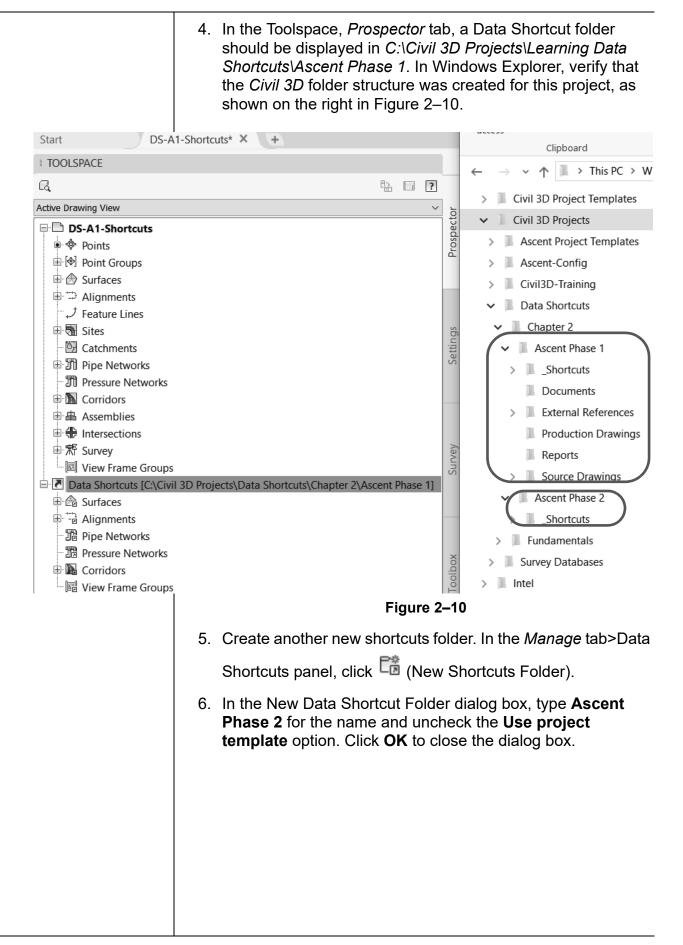


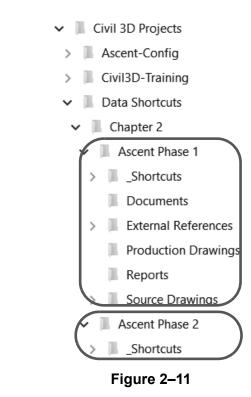
Figure 2–8

 In the New Data Shortcut Folder dialog box, type Ascent Phase 1 for the name and select the Use project template option. Templates are found in the default folder C:\Civil 3D Templates; however, you will be using customized project templates. Pick on the ellipses, as shown in Figure 2–9, and browse to C:\Civil 3D Projects\Ascent Project Templates. From the Project templates available, select Base Project. The Autodesk Civil 3D software will replicate this template folder structure and all included forms and documents in the AscentPhase 1 project folder. Click OK.

Working folder:	
C:\Civil 3D Projects\Data Shorto	cuts\Fundamentals
Name.	
Ascent Phase 1	
Description:	
✓ Use project template	
Project templates folder	
C:\Civil 3D Projects\Ascent F	Project Templates
C. (CIVII SD Projects (Ascent P	
Project template:	
Base Project Land Development Project	
Base Project Land Development Project Landscaping Project	
Base Project Land Development Project Landscaping Project Piping Project	
Base Project Land Development Project Landscaping Project Piping Project Rail Project	
Base Project Land Development Project Landscaping Project Piping Project	
Base Project Land Development Project Landscaping Project Piping Project Rail Project Roadways Project	
Base Project Land Development Project Landscaping Project Piping Project Rail Project Roadways Project	Date created:
Base Project Land Development Project Landscaping Project Piping Project Rail Project Roadways Project Survey Mapping Project Created by:	
Base Project Land Development Project Landscaping Project Piping Project Rail Project Roadways Project Survey Mapping Project	Date created: 3/16/2019 03:58 AM



You now have two projects in the working folder: *Ascent Phase 1* and *Ascent Phase 2*, as shown in Figure 2–11. Notice the additional folders in *Ascent Phase 1*. These have been copied from the *Base Project* project template.



Task 3 - Set up Shortcuts folder.

Setting the shortcut folder specifies the project path for Data Shortcuts. The path to the current *Data Shortcuts* folder (also known as the project folder) is specified in the Toolspace, *Prospector* tab, in the *Data Shortcuts* collection. The project folder typically contains both Data Shortcuts and source objects for data references.

- 1. Continue working with the drawing from the previous task.
- 2. In the *Manage* tab>Data Shortcuts panel, click **C** (Set Shortcuts Folder).

3.	The current <i>Data Shortcut</i> folder is indicated by a green circle
	with a checkmark. Select Ascent Phase 1 to make it current
	and click OK , as shown in Figure 2–12.

J.	Se	et Data Sho	rtcut Fol	der	X
	Name		Descript	tion	
	Ascent Phase 1				
۲	Ascent Phase 2				
	ler Name:			-	
Aso	cent Phase 1				
			ОК	Cancel	Help
			JK	Cuncer	Пер
		Figure	2–12		
In	the Toolspace, Pr	rospector t	ab riat	nt-click on l	Data
	nortcuts and selec	•	-		
Dr	r awing , as shown	in Figure	2–13.		
	Data Shortcuts	Create Dat	ta Shortc	uts	
	Surfaces	Set Data S	hortcuts	Project Folde	ar .
(±)	🕂 🗟 Alignments			s Project Fold	
	550 at 11 a	New Data	SHULLUL		
	Dipe Networ	New Data Set <u>W</u> orkir		- -	
	TB Pressure Net	Set <u>W</u> orkir	ng Folder		
	Pressure Net Corridors	Set <u>W</u> orkir Associate	ng Folder Project to	o Current Dra	wing
	TB Pressure Net	Set <u>W</u> orkir Associate	ng Folder Project to Project to	o Current Dra o Multiple Dr	wing
	Pressure Net Corridors	Set <u>W</u> orkir Associate Associate	ng Folder Project to Project to	o Current Dra o Multiple Dr	wing
	Pressure Net Corridors	Set <u>W</u> orkir Associate Associate <u>V</u> alidate D	ng Folder Project to Project to Pata Shor	o Current Dra o Multiple Dr	wing

Practice 2b

Manage File Sizes with Data Shortcuts

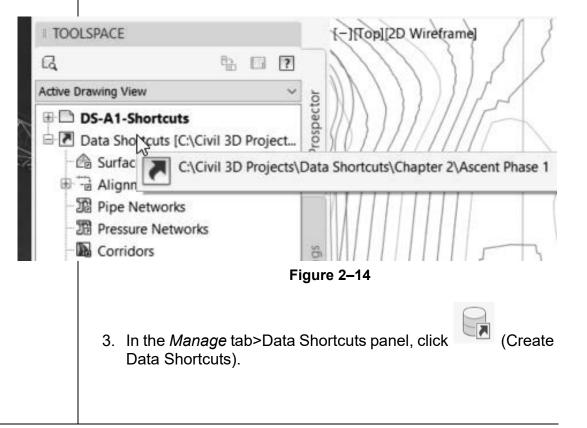
Practice Objective

• Create Data Shortcuts from objects in a drawing to share with other team members.

In this practice, you will walk through the steps of creating project-based *Data Shortcuts* folders. It simulates a situation in which the existing conditions and/or design work has been done and you now need to share elements of the design with team members.

Task 1 - Create Data Shortcuts.

- 1. Continue working with the drawing from the previous practice or open **DS-A1-Shortcuts.dwg**.
- In the Toolspace, *Prospector* tab, verify that the Data Shortcuts points to the correct folder, as shown in Figure 2–14. By hovering over the Data Shortcuts heading, the full path gets revealed in the tooltip. If it is not set to *Ascent Phase 1*, then repeat the steps from the previous exercise.



4.	If you receive a message that the drawing has not yet been
	saved, click OK . Save the drawing and start the Create Data
	Shortcuts command again.

 In the Create Data Shortcuts dialog box, a list of all of the available objects for use in shortcuts displays. Select Surfaces, Alignments, and Corridors (as shown in Figure 2–15), and then click OK.

A	Cre	eate Data Shortcu	uts	X	
Share Da	Share Data				
			nt to the same working folder. Th	lese	
s	hortcuts are available in the P	rospector.			
	Vhen you create a data shortc aselines.	ut of a corridor, data sho	rtcuts are automatically created	for its	
÷ 0	asennes.				
Object		Status	Description		
📮 🖧 🗹 S	urfaces				
	ExRoad	To be added	Description		
	🗹 ExTopo	To be added	Description		
	Existing-Site	To be added	Description		
	🗹 Ex-SiteViz	To be added	Copy of existing site	for	
	Ascent PI Surface - (1)	To be added			
	lignments				
	Jeffries Ranch Rd	To be added			
	Corridor - (1)	To be added			
····· 🌇 [Ascent Pl	To be added			
Hide alrea	ady published objects				
	ay papini ina objecto				
Pick in	Pick in drawing OK Cancel Help			Help	
			- <i>1</i> -	///.	
		Figure	2–15		

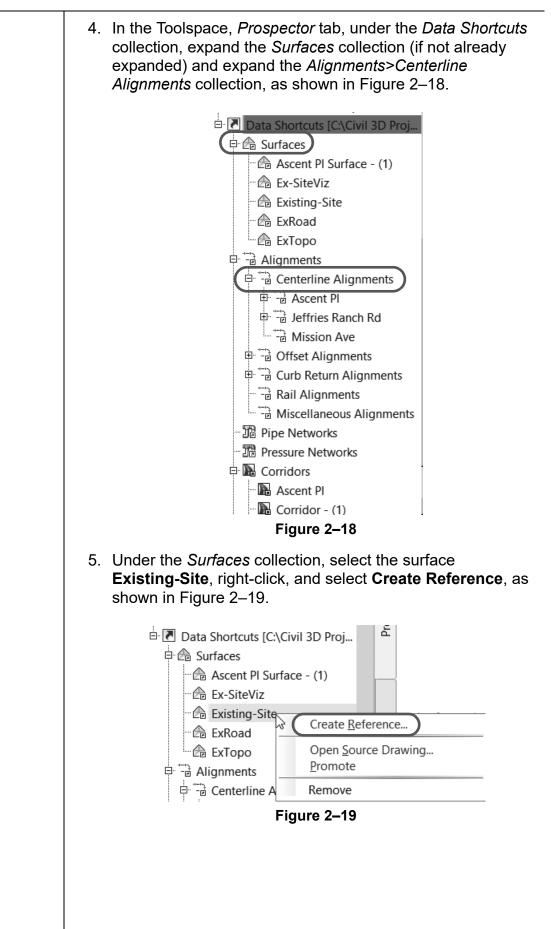
6. You have now created shortcuts for the surfaces, alignments, and corridors. This means that if the shortcuts and drawings are in a shared network folder, anyone on the network has access to these Autodesk Civil 3D objects.

Note that in the Toolspace, *Prospector* tab, under the *Data Shortcuts* and *Surfaces* collections, you can now access all of the surfaces. In the list view, the source filename and source path display, as shown in Figure 2–16.

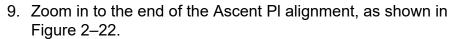
TOOLSPACE

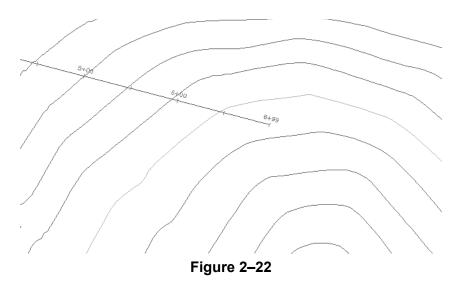
G.		E	63	?	
Active Drawing V	/iew			~	'n
🖻 🕭 Surfa				^	Prospector
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🖶 🕥 Pipe					S
D Press	sure Networks				
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由 ▲ Asse	mblies				
申 🏶 Inter	sections				
■常 Surve	ey				Survey
🗌 🖾 🖾	Frame Groups				Sur
🗄 🖪 Data Sh	ortcuts [C:\Civil 3D Proj	ects\Data Shortcuts\Chapter 2\Ascent Ph	ase 1]		
🖻 📾 Surfa	aces				
- 🖓 E)	kisting_Site				
- 🙆 E)	Road				
-@ E	Торо				×
🕀 🗟 Aligr	nments				Toolbox
- 🌃 Pipe	Networks				To
- 3 Press	sure Networks				
🕀 🖪 Corri	dors				
- 🐻 View	Frame Groups			~	
<)	•	
Name	Source File Name	Source Location	Desc	ripti	
Existing-Sit	DS-A1-Shortcuts	C:\Civil 3D Projects\\DataShortcuts	Desc	riptic	
		Figure 2–16			

Task 2 - Data-ref	ference Data Shortcuts.
NCS.dwt. Sav	rawing from _Autodesk Civil 3D (Imperial) ve the file in <i>C:\Civil 3D Projects\</i> <i>ng\DataShortcuts\</i> as Reference File.dwg .
point to the C.	ace, <i>Prospector</i> tab, ensure that <i>Data Shortcuts</i> :\Civil 3D Projects\Data Shortcuts\ cent Phase 1 folder.
Shortcuts and	ace, <i>Prospector</i> tab, right-click on Data d select Associate Project to Current shown in Figure 2–17.
 Data Shortcuts Surfaces Alignments Pipe Networ Pressure Net Corridors View Frame 	Set Working Folder
	Figure 2–17



0			
6. In the Create Surface Reference dialog box, do the following:			
	 Type ExSurface for the Name. 		
	Type Data referenced sur	face for the Description	
		•	
		5' (Background) for the <i>Style</i> ,	
	as shown in Figure 2–20.		
	 Click OK to close the dialo 	g box.	
	• Type ZE and press <enter< th=""><th>> to display the surface</th></enter<>	> to display the surface	
	reference.		
	A Create Surface	e Reference ×	
		surface layer:	
	Existing-Site	с-торо	
	Properties	Value	
	Information		
	Name Description	EXSurface Data referenced surface	
	Style	Contours 5' and 25' (Background)	
	Render Material		
	Figure	2–20	
8.	In the Create Alignment Refer default for the Name. Type Da the Description. Set the Align the Alignment label set to Maj when done, as shown in Figur	ata referenced alignment for ment style to Layout and set or and Minor only. Click OK re 2–21.	
	Alignment label set:		
	Major and Minor only		
		el Help	
	Figure	2–21	



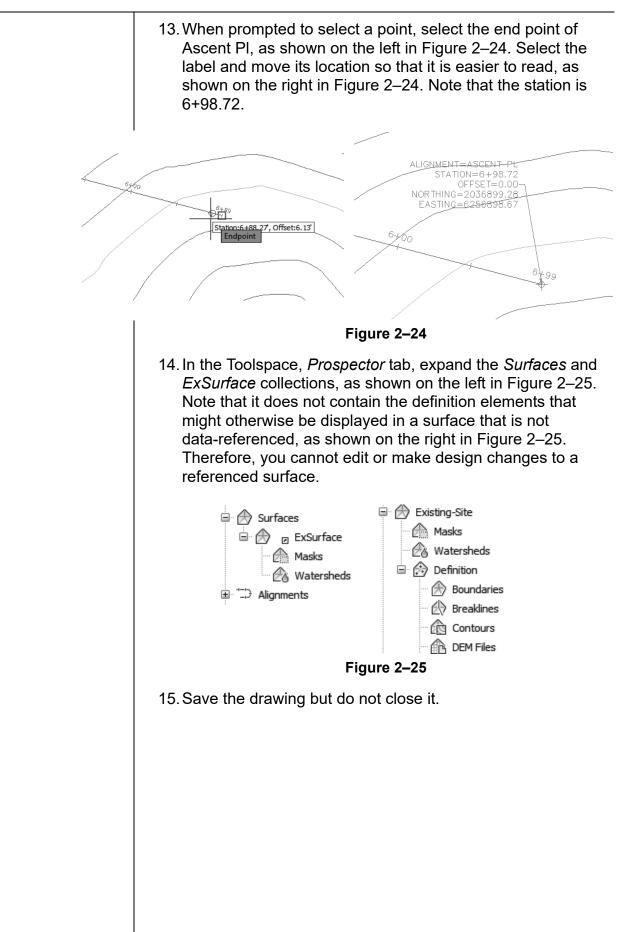


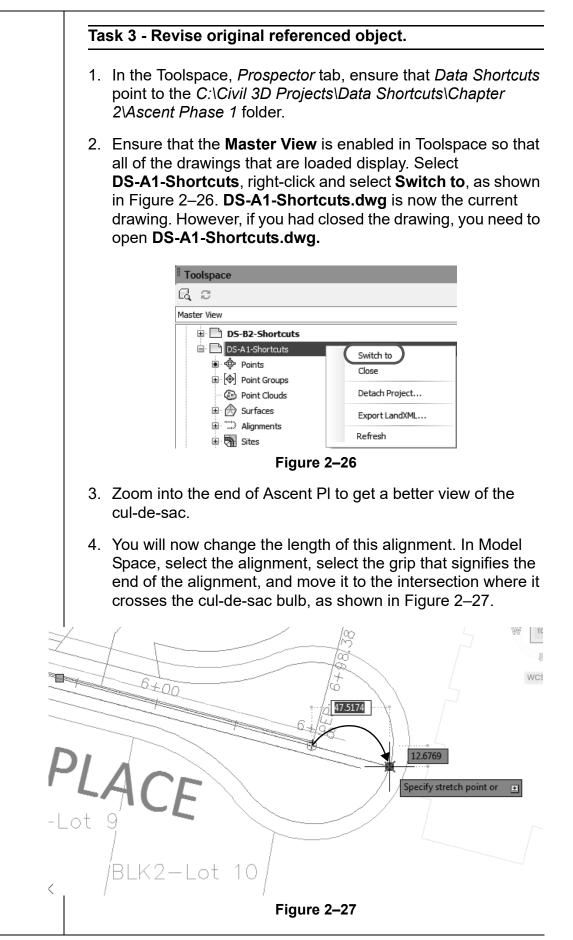
- 10. Create a data reference to the corridor: in the *Corridors* collection, right-click on **Ascent PI** and select **Create Reference**. Accept all of the defaults and then click **OK**.
- 11. In Model Space, select the **Ascent PI** referenced alignment.
- 12. In the contextual tab>Labels & Tables panel, expand Add Labels and select **Station/Offset - Fixed Point**, as shown in Figure 2–23.

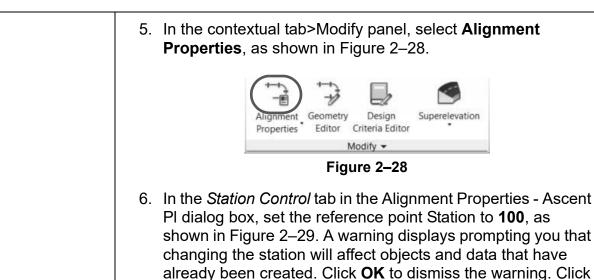




Note that there are no grips and you cannot graphically redefine this alignment. However, you can add labels using the contextual tab.







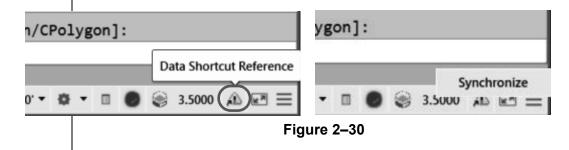
Information	Station Control	Masking Point of Intersection
Reference	ce point	
x:		Y:
62565	21.2052	2036643.0632

OK to close the Alignment Properties dialog box.

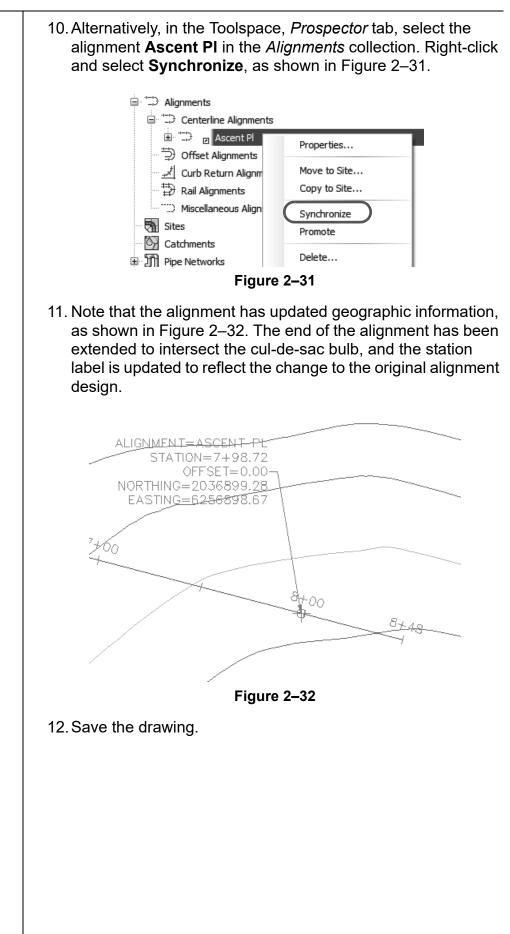


- 7. Save the drawing. This updates the Data Shortcut.
- 8. If you are continuing with the drawing from the previous task, ensure that the Master view is enabled in the Toolspace so that you can see all of the drawings that are loaded. Select **Reference File**, right-click, and select **Switch to**. **Reference File.dwg** is now the current drawing.
- 9. In the Status Bar, you should see 🔎 (Data Shortcut Reference), as shown on the left in Figure 2–30. To

synchronize your current drawing, right-click on see (Data Shortcut Reference) and select **Synchronize**, as shown on the right in Figure 2–30.



If you closed the drawing in Step 8, open the drawing **Reference** *File.dwg*.



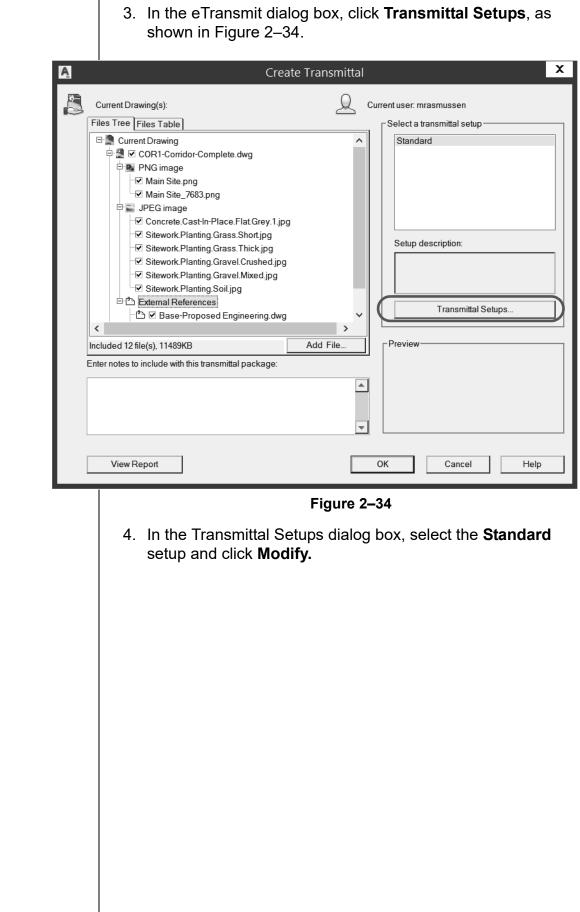
Practice 2c

Share Projects with Team Members Outside the Office Network

Practice Objective

- Create a transmittal package to send to other design professionals on the project team, which includes all of the referenced object drawings, XREFs, and other required files.
- 1. Continue working with the previously opened drawing **DS-B2-Shortcuts.dwg**.
- 2. Expand (Application Menu), expand Publish, and select **eTransmit**, as shown in Figure 2–33. If a Warning dialog box opens stating that the current drawing is not saved, click **Yes** to save it.





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5. In the Modify Transmittal Setup dialog box, accept the default for *Transmittal file folder*. Expand the Transmittal filename drop-down list and select **Prompt for a filename**. Select the **Keep files and folders as is** option. In the *Include options* area, select all of the options, as shown in Figure 2–35. Accept the remaining defaults and click **OK** to close the dialog box.

A	Modify Transmittal Setup	x			
Trar Zip File Kee V M Trar C:\0 Trar	Current user: mrasmussen Current transmittal setup: Standard smittal type and location nsmittal package type: (* zip) format ap existing drawing file formats Maintain visual fidelity for annotative objects nsmittal file folder: Civil 3D Projects\Civil3D-Training\DataShortcuts\ insmittal file name: mpt for a filename S-B2-Shortcuts - Standard zip				
	options Include options Use organized folder structure Include fonts Source root folder: Include files from materials C:\Civil 3D Projects\Civil3D-Training\DataShortcuts\ Include files from data links Place all files in one folder Include photometric web files Keep files and folders as is Include unloaded file references mittal setup description: OK				
	Figure 2–35				
	riyule 2=35				

- 6. Close the Transmittal Setups dialog box.
- 7. Click **OK** to close the Create Transmittal dialog box and create the transmittal.
- 8. When prompted for the filename for the transmittal file, accept the default and save it. The Autodesk Civil 3D software will create a compressed file of all of the relevant data.

Chapter Review Questions

- 1. In the Autodesk Civil 3D workflow, what are the two main methods of project collaboration (or the sharing of intelligent Autodesk Civil 3D design data)?
 - a. Windows Explorer and X-refs.
 - b. Data shortcuts and Vault references.
 - c. X-refs and Data shortcuts.
 - d. Vault references and X-refs.
- 2. Why would you want to use Vault references over Data Shortcuts?
 - a. Added security and version control.
 - b. Permit more people to have access.
 - c. It works more like regular AutoCAD.
 - d. It works better with multiple offices.
- 3. When sharing data in a project collaboration environment, what is the recommended number of levels into which the data should be broken?
 - a. 1 level
 - b. 2 levels
 - c. 3 levels
 - d. 4 levels
- 4. How can you edit an object referenced through Data Shortcuts?
 - a. Open the source drawing.
 - b. With grips.
 - c. Using the Panorama view.
 - d. You cannot.
- 5. What is the file format that Data Shortcuts use to share design data between drawing files?
 - a. .SHP
 - b. .DWT
 - c. .DWG
 - d. .XML

Command Summary

Button	Command	Location
~	Create Data	Ribbon: Manage tab>Data Shortcuts panel
	Shortcuts	Command Prompt: CreateDataShortcuts
Eå	New Shortcuts Folder	Ribbon: Manage tab>Data Shortcuts panel
-6		Command Prompt: NewShortcutsFolder
Ep	Set Shortcuts Folder	Ribbon: Manage tab>Data Shortcuts panel
		Command Prompt: SetShortcutsFolder
Ph	Set Working Folder	Ribbon: Manage tab>Data Shortcuts panel
		Command Prompt: SetWorkingFolder