

# Concepts of sharing documents and network usage

Currently, CDOT is examining four methods of working together to build project files across the network and produce plan sets for construction.

Previous Practice: Each user or discipline stored their project files locally and project data was copied via email, floppy disks, CD's or other means of file transfer.

Current Practice: The Project Manager shares project files from a folder on his PC. With this method, the person responsible for the project files creates and manages a shared folder (directory structure) on the PC where he is the primary user.

Standard Practice: Using Networked File Servers for project data. With this method, the responsible person places the project files on a network file server which is then managed by others.

Future Practice: Using ProjectWise (or other document management software) to share files across the network. With this method, others are responsible for the system of project folder creation and access control.

Each of these practices has benefits and potential pitfalls associated with them. The intent of this document is to discuss each practice as thoroughly as possible so that the reader may fully understand the differences and make informed decisions.

## Previous Practice:

Users and some disciplines have complete control of the portion of each project for which they are responsible. For example, the Surveyor for a project is responsible for storage, protection and access control of all of the data files, field book data, drawings and plan sheet sets for his project. The Surveyor determines what data to send to whom and when. The data that he releases is certified by him, but is only a copy of the certified data and not the live data. If another specialty requires additional survey points, it takes a great deal of time to re-certify and re-issue the adjusted survey data.

This practice provides very strict access control of data. One person (or in some cases a small group of people) has complete control over all of the steps to achieve their final product. These individuals are responsible for the quality, safety and reliability of their data. Backing up data is left at the level of the discipline.

Data sharing becomes an issue when one discipline makes updates to their data and the data is not distributed to all of the other specialties that need it in a timely manner.

This practice allows the individual to be the most productive but may not be the most efficient way to run a project. An individual that has all the necessary data can complete their work on the project quickly and efficiently. An individual that does not have all the required data will probably spend a great deal of time waiting for the correct data to arrive during which time, very little is being accomplished by him.

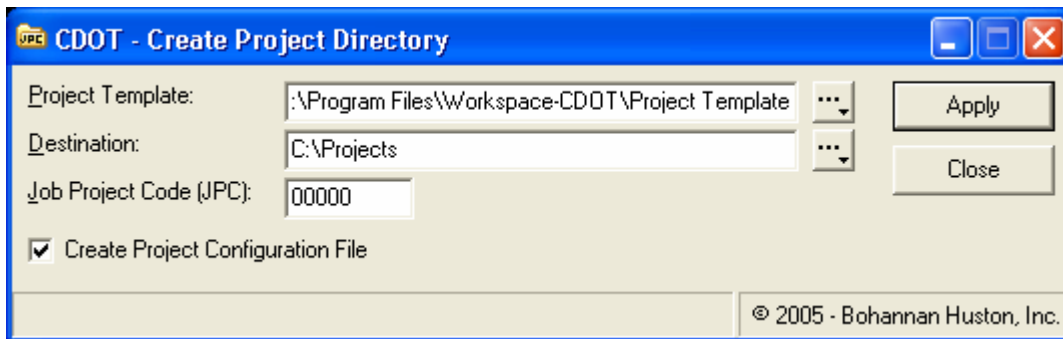
## Current Practice:

With the change in software from AutoCAD and MX or RoadCalc to MicroStation and InRoads, Project Managers have been instructed to create CDOT's "standard folder structure" on their own machines. Project Managers are then supposed to use Windows Folder Sharing to give individual members of the project's design team appropriate access to the folders for their disciplines. Since no guidelines have been written, each Project Manager may have a different interpretation of what this means.

In this context, the responsibility for proper creation, folder structure, access, file protection and backup is up to the sole discretion of the Project Manager.

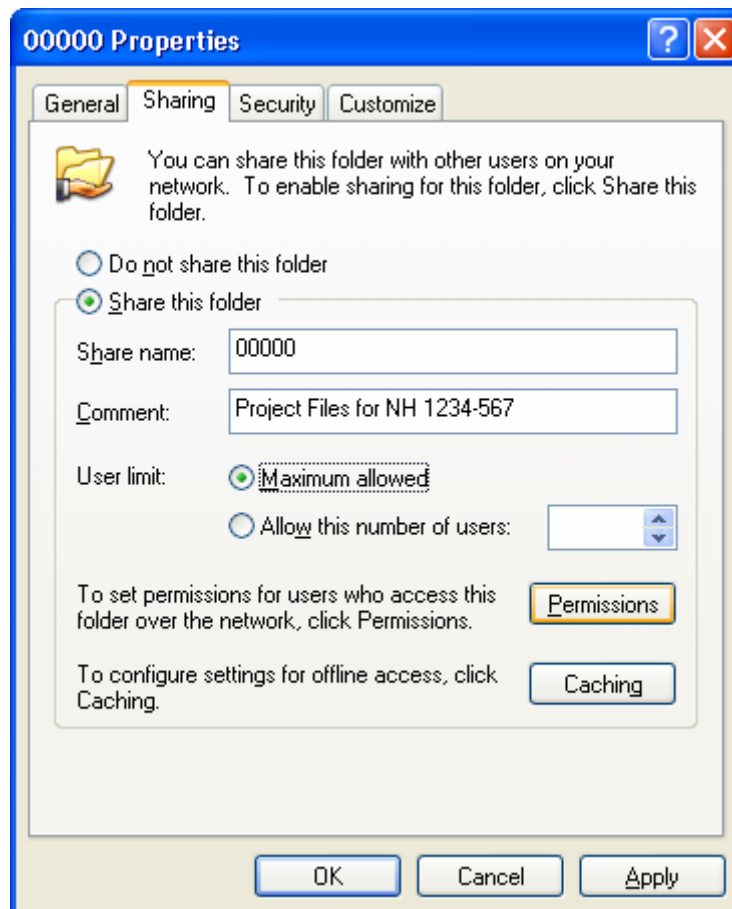
Following is a suggested method for creating and sharing a project folder structure.

1. The Project Manager (in this case he will have the username ManagerP) will run the utility for creating a standard project directory structure for a new project.



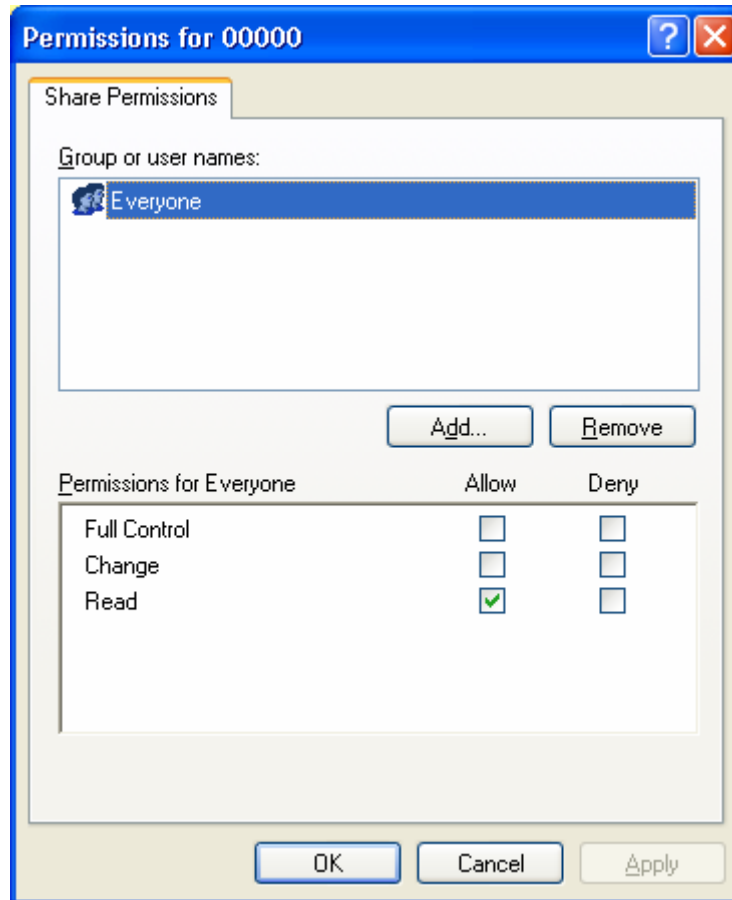
For this example we will use 00000 as the project code.

2. Input the project code and click the “Apply” button to accept the defaults to create the project folder.
3. Click the “Close” button to dismiss the dialog box.
4. Share the folder to the other members of the Design Team.
  - a. Use Windows Explorer to browse to the Projects folder.
  - b. In Windows Explorer right mouse click on the project folder (in this case 0000)
  - c. Select by clicking on “Sharing and Security” in the popup list.

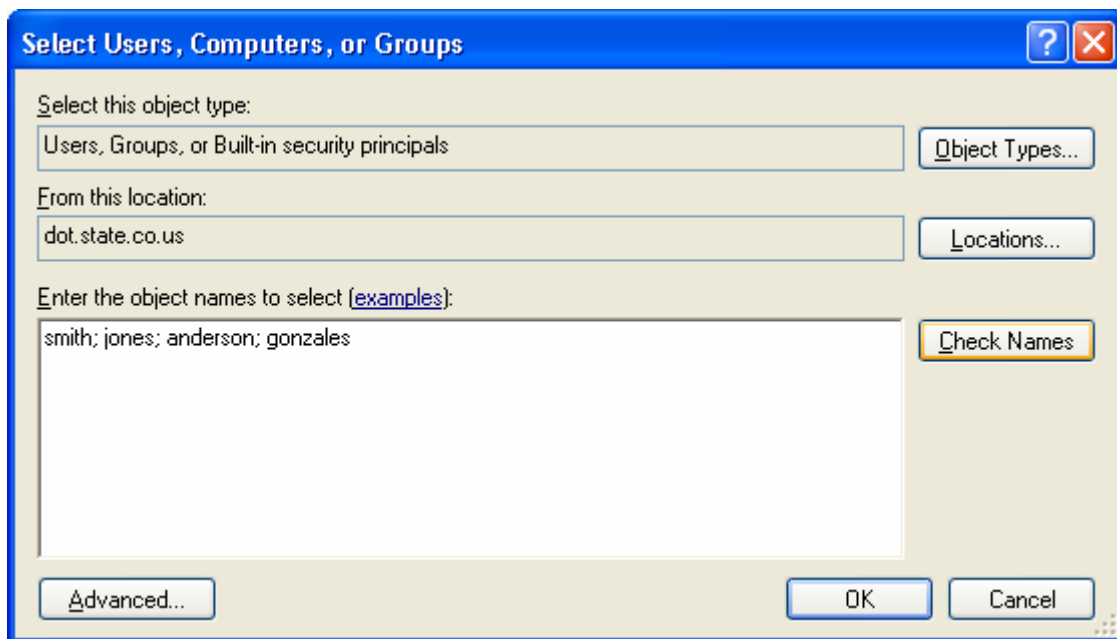


- d. Select by clicking on the “Share this folder” radio button.
- e. Fill out the Comment input field to better describe the shared folder.
- f. Ensure that the “Maximum allowed” radio button is selected.

- g. Click the "Permissions" button to assign permissions to individuals.

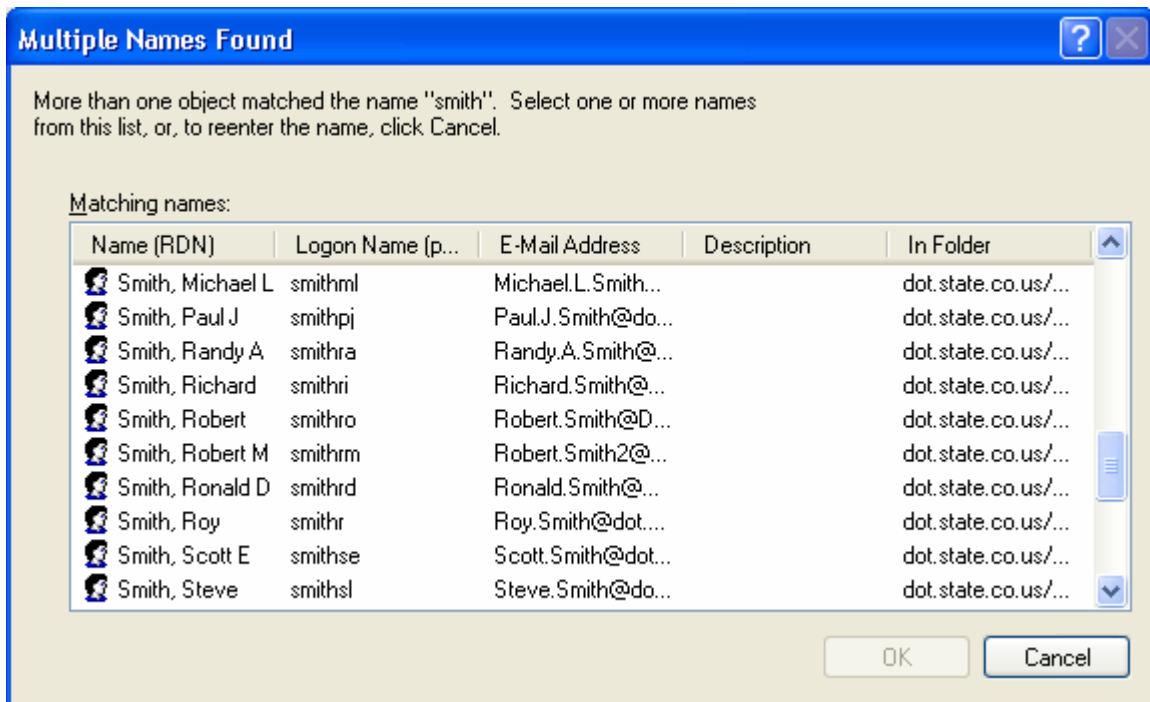


- h. Do not remove the Group named "Everyone" at this time.  
i. Select the "Add..." button to select users.

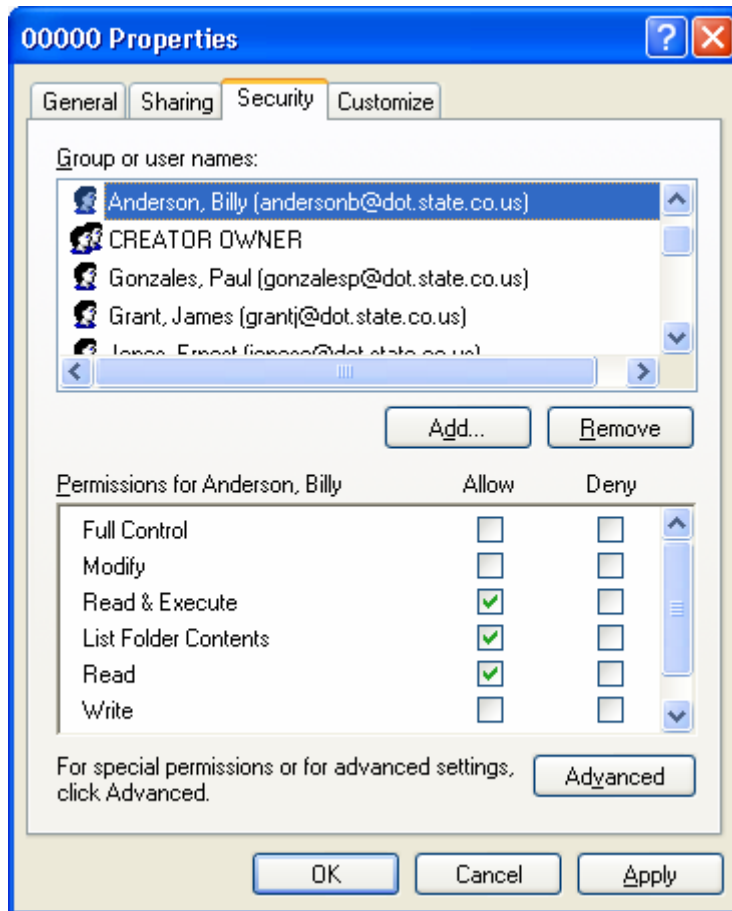


- j. In the Select Users, Computers, or Groups dialog box, type in the usernames of all of the people on the design team for this project, separated by semicolons. In this example we will use common last names to demonstrate the Check Names feature.

- k. Click the “Check Names” button to have the system look up the exact information of the names on the list.



- l. A separate Multiple Names Found dialog box will appear for every entry in the list that could be more than one person. Select from each dialog box the exact person intended and click the “OK” button each time.
- m. When finished selecting users, click on the “OK” button in the Select Users, Computers, or Groups dialog box.
- n. For each individual, select their name and assign them the appropriate permission. In this case, we are assigning permissions for the entire project and so each individual on the design team should have the Read “Allow” button checked and no other buttons.
- i. In many instances, the Project Manager may want to turn the “Everyone” access off. Before he does that, he should add himself to the list and ensure that he assigns himself “Full Control” access.
- o. When finished assigning permissions to the entire project folder, click the “OK” button on the permissions dialog box to close it.
- p. The Project Manager will need to do the exact same process on the “Security” tab of the Properties dialog box.



- q. The "Security" tab provides many more options for file access and control. Check each name on the list for proper access. In this case, since it is the entire project folder, all the users that have been added to the list should have Read & Execute "Allow", List Folder Contents "Allow", and Read "Allow" checked with everything else un-checked. Again, each individual user must be verified to have the correct access.
  - r. When finished assigning security permissions to each user, click the "OK" button to dismiss the dialog box.
5. The project folder is now shared to the users selected as the project design team. The icon for the folder has changed in Windows Explorer from the regular folder icon to one that shows a hand holding a folder.
  6. Since the access level of all the selected users on the list is Read-only for the entire project folder, specific access for groups of individuals on the design team will need to be created in much the same manner.
    - a. In Windows Explorer, browse to each discipline's folder and share it to the individuals responsible for that specialty with one change: Instead of assigning Read-only access, make sure that the specialists all have Full access on the folder for which they are responsible. Without full access, they will not be able to accomplish their work.
    - b. Remember to set "Allow" for Full Control for the specialty users on the "Security" tab as well.

Hint- Some groups of specialty users have already been assembled in the system. If the Project Manager knows that a Bridge Replacement project will be designed in-house by Staff Bridge but does not know who exactly in Staff Bridge will be doing the work, he can assign permissions to the Bridge folder to the username "\*HQ-Staff Bridge" and not have to worry about excluding anyone from Bridge from accessing the Bridge folder.

7. Once all of the permissions have been set, the Project Manager needs to remember that his machine is acting as the file server and not to turn it off when he leaves for the evening.
8. Other users will need to connect to the Project Manager's machine.
  - a. One method is to map a drive letter to a network drive. Each member of the design team will need one drive letter for the entire project (read-only) and another drive letter for their specialty. For

example: drive letter G: will be mapped to [\\ManagerP\00000](#) while drive H: would be mapped to [\\ManagerP\00000\Hydraulics](#) if the specialty person happened to be a Hydraulics Engineer.

- b. Another method is to set up a project file (\*.PCF file) on the user's machine that points directly to the network UNC of the project Managers machine and folders. On the user's machine in the Projects folder of CDOT's workspace (C:\Program Files\Workspace-CDOT\Standards-Local\Projects) create or copy one of the PCF files and edit the MS\_DEF= system variable to read: [MS\\_DEF=\\ManagerP/00000/](#)

Note: UNC stands for Universal Naming Convention, a standard for identifying servers, printers and other resources in a network, which originated in the Unix community. A UNC path uses double slashes or backslashes to precede the name of the computer. The path (disk and directories) within the computer are separated with a single slash or backslash, as in the following examples. Note that in the DOS/Windows example, drive letters (c:, d:, etc.) are not used in UNC names.

[//servername/path](#) Unix

[\\servername\path](#) DOS/Windows

System and configuration files for all Bentley products (MicroStation, InRoads, etc.) use the Unix method for UNC while all other CDOT software uses the DOS/Windows method.

- c. Users are also capable of connecting directly to the Project Manager's machine by using the UNC. This can be accomplished in a lot of different ways: from the start button, from an internet browser window, from Windows Explorer and even from Outlook and Adobe Acrobat. Wherever a user is comfortable putting in an internet web address, they can also put in a UNC for the network.

## Standard Practice:

File storage and sharing using network resources is not a new concept in the computer industry. Many of the most productive companies have been using a single mainframe computer with many terminals successfully for over fifty years. Since "dumb" terminals do not have local storage, any files or data must be stored on the mainframe. See wikipedia for more information about mainframes: [http://en.wikipedia.org/wiki/Mainframe\\_computer](http://en.wikipedia.org/wiki/Mainframe_computer).

The first computers at CDOT were of the mainframe variety. Many of the longtime CDOT employees will remember the VAX machines. The earliest CAD machines were also of the mainframe network type running "Series 5000" also referred to as "S5K" on Apollo brand equipment.

With the adoption of personal computers as workstations instead of dumb terminals, much of CDOT's internal culture has been directed away from shared network resources. On the other hand, the design consultants that do work for CDOT have moved in the opposite direction where project data and files are stored in a central location and the people that are doing the design and CADD work on the project store their files on a server.