

PLANNING AND CONTROL
USING
MICROSOFT® PROJECT 2013, 2016 or 2019
&
PMBOK® GUIDE SIXTH EDITION
BY
PAUL EASTWOOD HARRIS

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978-1-925185-67-6 – B5 Paperback

978-1-925185-68-3 – eBook

2 February 2019

SUMMARY

The book was written so it may be used as:

- A training manual for a two-day training course, or
- A self-teach book, or
- A reference manual.

The book has been written to be used as the basis of a two-day training course and includes exercises for the students to complete at the end of each chapter. Unlike many training publications, this course book may then be used by the students as a reference book.

This publication is ideal for people who would like to quickly gain an understanding of how the software operates and how the software differs from Oracle Primavera Project Manager, P3, SureTrak and Asta Powerproject thus making it ideal for people who wish to convert from these products.

CUSTOMIZATION FOR TRAINING COURSES

Training organizations or companies that wish to conduct their own training may have the book tailored to suit their requirements. This may be achieved by removing, reordering or adding content to the book and by writing their own exercises. This book is available in both A4 spiral bound, which lies flat on the desk for training and/or self-teaching, and in B5 paperback as a reference manual. Please contact the author to discuss this service.

AUTHOR'S COMMENT

As a professional project planner and scheduler I have used a number of planning and scheduling software packages for the management of a range of project types and sizes.

The first books I published were user guides/training manuals for Primavera SureTrak and P3 users. These were well received by professional project managers and schedulers, so I decided to turn my attention to Microsoft Project 2000, 2002, 2003, 2007, 2010, 2013, 2016 and now Microsoft Office Project 2019. This book follows the same proven layout of my previous books. I trust this book will assist you in understanding how to use Microsoft Project on your projects. Please contact me if you have any comments on this book.

SPECIAL THANKS

I would like to thank:

- Martin Vaughn for reviewing my draft book and making valuable comments that I have used to improve the quality of this publication.
- Liam Harris for his assistance in updating this text from Microsoft Project 2010 to Microsoft Project 2013.
- Jessica Yabo for her assistance in editing and preparing the final version of earlier books.
- Thomas Grant for his valuable proof reading the book.
- My wife Sue Harris for her support.

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1	INTRODUCTION	1
1.1	Purpose	1
1.2	Required Background Knowledge	2
1.3	Purpose of Planning	2
1.4	Definition of Planning and Control	3
1.5	PMBOK® Guide Process Groups and Knowledge Areas	3
1.6	Project Planning	4
1.7	Levels of Planning	5
1.8	Monitoring and Controlling a Project	6
1.9	Project Planning Metrics	7
1.10	Planning Cycle	8
1.11	PMBOK® Guide Processes and Microsoft Project	9
2	CREATING A PROJECT SCHEDULE	21
2.1	Understanding Planning and Scheduling Software	21
2.2	Understanding Your Project	22
2.3	Level 1 – Planning without Resources	23
2.3.1	<i>Creating Projects</i>	23
2.3.2	<i>Defining Calendars</i>	23
2.3.3	<i>Defining the Project WBS Using Outlining</i>	24
2.3.4	<i>Defining Other Project Breakdown Structures</i>	25
2.3.5	<i>Project Breakdown Structure Functions in Microsoft Project</i>	25
2.3.6	<i>Defining Activities</i>	27
2.3.7	<i>Adding Tasks to the Schedule</i>	27
2.3.8	<i>Adding the Logic Links</i>	28
2.3.9	<i>Developing a Closed Network</i>	29
2.3.10	<i>Constraints</i>	30
2.3.11	<i>Risk Analysis</i>	30
2.3.12	<i>Stakeholder Analysis</i>	30
2.3.13	<i>Scheduling the Project and Understanding Float (Slack)</i>	30
2.3.14	<i>Formatting the Display – Views, Tables and Filters</i>	31
2.3.15	<i>Printing and Reports</i>	31
2.3.16	<i>Issuing and Optimizing the Schedule</i>	31
2.4	Level 2 – Tracking Progress without Resources	32
2.4.1	<i>Setting the Baseline</i>	32
2.4.2	<i>Tracking Progress</i>	32
2.4.3	<i>Managing Changes</i>	33
2.4.4	<i>Performance Measurement and Reporting</i>	34
2.4.5	<i>Corrective Action</i>	34
2.5	Level 3 – Planning With Resources	35
2.5.1	<i>Types of Resourced Schedule</i>	35
2.5.2	<i>Creating and Using Resources</i>	36
2.5.3	<i>Task Types</i>	36
2.5.4	<i>Schedule Optimization</i>	36
2.5.5	<i>Microsoft Project Server</i>	36
2.6	Level 4 – Tracking Progress of a Resourced Schedule	37
2.6.1	<i>Updating Projects with Resources</i>	37
2.6.2	<i>Reporting Progress and Performance</i>	37
2.7	Tools and Techniques for Scheduling	38
2.8	The Balance Between the Number of Activities and Resources	38
2.9	Managing Portfolios, Projects and Work Package Plans	38

3	NAVIGATION AND SETTING THE OPTIONS MICROSOFT PROJECT	39
3.1	Starting Microsoft Project Professional and Standard	39
3.2	Identify the Parts of the Project Screen	41
3.3	Customizing the Screen	42
3.3.1	<i>Ribbon Toolbar</i>	42
3.3.2	<i>Quick Access Toolbar</i>	43
3.3.3	<i>Exporting and Importing Toolbars</i>	44
3.4	Microsoft Project Windows	45
3.4.1	<i>Understanding Windows in Microsoft Project</i>	45
3.4.2	<i>Creating a New Window</i>	45
3.4.3	<i>Managing Windows</i>	45
3.4.4	<i>Resizing Windows</i>	46
3.4.5	<i>Splitting Views</i>	46
3.4.6	<i>Managing Details Forms</i>	47
3.5	Status Bar	47
3.6	Forms Available from the Ribbon Groups	48
3.7	Right-clicking with the Mouse	48
3.8	Finding the Task Bars in the Gantt Chart	48
3.9	Setting up the Options	48
3.9.1	<i>General Tab</i>	49
3.9.2	<i>Schedule Tab – Scheduling options for this project:</i>	50
3.9.3	<i>Schedule Tab – Advanced Options</i>	51
3.10	Mouse Pointers	52
3.11	Select All Button	52
3.12	Short Cut Keys	53
3.13	Help and Tell me what to do	53
3.14	Workshop 1 – Navigation and Setting Your Project Options	55
4	CREATING PROJECTS AND TEMPLATES	61
4.1	Starting Microsoft Project	61
4.2	Creating a Blank Project	61
4.3	Opening an Existing Project	63
4.4	Re-opening a Project	63
4.5	Creating a Project Template	64
4.5.1	<i>Setting the Personal Template Directory</i>	64
4.5.2	<i>Creating a Personal Template</i>	65
4.6	Creating a New Project from a Template	66
4.7	PMBOK® Guide File Naming Convention	67
4.8	Saving Additional Project Information	67
4.9	Using the Alt Key and Keystrokes to Access Commands	68
4.10	Saving a Project	68
4.11	Closing Microsoft Project	68
4.12	Workshop 2 - Creating a Project	69
5	DEFINING CALENDARS	73
5.1	Understanding Calendars	73
5.2	Calendars and the PMBOK® Guide	74
5.3	Editing Calendars	74
5.3.1	<i>Editing Working Days to Create Holidays</i>	74
5.3.2	<i>Editing a Calendar to Create an Exception</i>	76
5.4	Creating a New Calendar	77
5.5	Assigning a Calendar to a Project	77
5.6	Calculation of Tasks in Days	78
5.7	Effect on 2007 Calendars When Saving to 2000 – 2003	79

5.8	Selecting Dates	79
5.9	Renaming, Deleting and Copying Calendars Using Organizer	80
5.10	Workshop 3 - Maintaining the Calendars	81
6	ADDING TASKS	83
6.1	Understanding Tasks	83
6.2	Adding New Tasks	84
6.2.1	<i>Adding a Task Under an Existing Task</i>	84
6.2.2	<i>Inserting a Task Between Existing Tasks</i>	85
6.3	Understanding Change Highlight	85
6.4	Copying and Pasting Tasks	85
6.5	Copying Tasks from Other Programs	86
6.6	Milestones	88
6.7	Reordering Tasks by Dragging	88
6.8	Sorting Tasks	89
6.9	Task Information Form	89
6.10	Elapsed Durations	91
6.11	Indicators Column	91
6.12	Assigning Calendars to Tasks	91
6.12.1	<i>Assigning a Calendar Using the Task Information Form</i>	91
6.12.2	<i>Assigning a Calendar Using a Column</i>	92
6.13	Workshop 4 - Adding Tasks	93
7	ORGANIZING TASKS USING OUTLINING	95
7.1	Understanding Outlining	95
7.2	Creating an Outline	95
7.3	Promoting and Demoting Tasks	96
7.4	Summary Task Duration Calculation	97
7.5	Summarizing Tasks	97
7.5.1	<i>Summarize and Expand Summary Tasks to Show and Hide Subtasks</i>	97
7.5.2	<i>Roll Up All Tasks to an Outline Level</i>	98
7.6	Project Summary Task	98
7.7	Workshop 5 - Entering Summary Tasks	99
8	FORMATTING THE DISPLAY	101
8.1	Formatting the Columns	102
8.1.1	<i>Understanding Custom Fields</i>	102
8.1.2	<i>Column Names</i>	102
8.1.3	<i>Inserting Columns</i>	102
8.1.4	<i>Format Columns Group</i>	103
8.1.5	<i>Hiding Columns</i>	103
8.1.6	<i>Adjusting the Width of Columns</i>	104
8.1.7	<i>Moving Columns</i>	104
8.1.8	<i>Formatting Columns Using the Table Function</i>	104
8.2	Formatting Time Units	106
8.3	Formatting the Bars	107
8.3.1	<i>Formatting All Task Bars Using the Bar Styles Form</i>	107
8.3.2	<i>Format Bar Styles Group Menu</i>	109
8.3.3	<i>Gantt Chart Styles Group Menu</i>	110
8.3.4	<i>Formatting Bars Using the Gantt Chart Wizard</i>	110
8.3.5	<i>Placing Dates and Names on Bars</i>	110
8.4	Row Height	111
8.4.1	<i>Setting Row Heights</i>	111
8.4.2	<i>Wrap Text Command</i>	111

8.5	Format Fonts	112
8.5.1	<i>Format Individual Cells Font Command</i>	112
8.5.2	<i>Format Text Styles</i>	112
8.6	Format Timescale	113
8.6.1	<i>Zoom Slider</i>	113
8.6.2	<i>Ribbon Menu</i>	113
8.6.3	<i>Format Timescale Command</i>	114
8.6.4	<i>Format Timescale Font</i>	116
8.7	Format Gridlines	116
8.8	Format Colors	117
8.9	Format Links, Dependencies, Relationships, or Logic Lines	118
8.10	Workshop 6 - Formatting the Bar Chart	119
9	ADDING TASK DEPENDENCIES	123
9.1	Understanding Dependencies	123
9.2	Understanding Leads and Lags	126
9.3	Restrictions on Summary Task Dependencies	127
9.4	Assigning Dependencies	128
9.4.1	<i>Graphically Adding a Dependency</i>	128
9.4.2	<i>Using the Link and Unlink Buttons</i>	128
9.4.3	<i>Task Linking Using the Keyboard</i>	129
9.4.4	<i>Relationship Listing Issues</i>	129
9.4.5	<i>Adding and Deleting Predecessors with the Task Information Form</i>	130
9.4.6	<i>Predecessor and Successor Details Forms</i>	131
9.4.7	<i>Editing or Deleting Dependencies Using the Task Dependency Form</i>	131
9.4.8	<i>Autolink New Inserted Tasks or Moved Tasks</i>	131
9.4.9	<i>Editing Relationships Using the Predecessor or Successor Columns</i>	132
9.5	Scheduling the Project	132
9.6	Workshop 7- Adding the Relationships	133
10	NETWORK DIAGRAM VIEW	135
10.1	Understanding the Network Diagram View	136
10.2	Adding and Deleting Tasks in the Network Diagram View	136
10.3	Adding, Editing and Deleting Dependencies	137
10.4	Formatting the Task Boxes	137
10.5	Formatting Individual Boxes	138
10.6	Formatting the Display and Relationship Lines	138
10.7	Early Date, Late Date and Float/Slack Calculations	140
10.8	Workshop 8 - Scheduling Calculations	141
11	CONSTRAINTS	143
11.1	Assigning Constraints	145
11.1.1	<i>Using the Task Information Form</i>	145
11.1.2	<i>Using the Constraint Type and Constraint Date Column</i>	146
11.1.3	<i>Typing a Date into the Task Information or Details Form</i>	146
11.1.4	<i>Using the Task Details Form</i>	146
11.2	Deadline Date	147
11.3	Changing Manually Scheduled Tasks to Auto Scheduled	148
11.4	Task Notes	148
11.5	Completed Schedule Check List	150
11.6	Workshop 9 - Constraints	151

12	FILTERS	153
12.1	Understanding Filters	153
12.2	Understanding the Filter Menu	154
12.3	Applying an Existing Filter	155
12.4	Creating and Modifying Filters	156
12.5	Defining Filter Criteria	158
12.5.1	<i>Simple Filters, Operator and Wild Cards</i>	158
12.5.2	<i>And/Or Filters</i>	160
12.5.3	<i>Multiple And/Or</i>	161
12.5.4	<i>Interactive Filter</i>	161
12.6	AutoFilters	162
12.7	Adding New Filters to the Global	163
12.8	Copy a Filter to and from Another Open Project	163
12.9	Workshop 10 - Filters	165
13	TABLES, CUSTOM FIELDS AND GROUPING TASKS	169
13.1	Understanding Project Breakdown Structures	169
13.2	Tables	170
13.2.1	<i>Applying a Table to a View</i>	171
13.2.2	<i>Creating and Editing a Table</i>	171
13.3	Custom Fields	173
13.4	Grouping	175
13.4.1	<i>Group by: Function</i>	176
13.4.2	<i>Using a Predefined Group</i>	177
13.4.3	<i>Creating a New Group</i>	177
13.4.4	<i>Grouping Resources in the Resource Sheet</i>	178
13.4.5	<i>Grouping with AutoFilter</i>	179
13.5	Workshop 11 - Reorganizing the Schedule	181
14	VIEWS AND DETAILS	185
14.1	Understanding Views	188
14.2	Creating a New View	189
14.2.1	<i>Creating a New Single View</i>	189
14.2.2	<i>Creating a Combination View</i>	190
14.2.3	<i>Copying and Editing a View</i>	191
14.2.4	<i>Copying a View to and from Another Project</i>	191
14.3	Details Form	192
14.4	Timeline View	192
14.4.1	<i>Microsoft Project 2013 Timeline</i>	192
14.4.2	<i>Understanding Microsoft Project 2016 Timeline Bars</i>	193
14.4.3	<i>Formatting Microsoft Project 2016 Timeline Bars</i>	194
14.5	A Logical Process for Developing a View	195
14.6	Workshop 12- Organizing Your Data Using Views and Tables	197
15	PRINTING AND REPORTS	201
15.1	Printing	201
15.2	File, Print Form	202
15.2.1	<i>Print and Printer</i>	202
15.2.2	<i>Settings</i>	202
15.2.3	<i>Buttons at the Bottom Right Hand Side of Print Form</i>	203
15.3	Page Setup	203
15.3.1	<i>Page Tab</i>	205
15.3.2	<i>Margins Tab</i>	206
15.3.3	<i>Header, Legend and Footer Tabs</i>	206
15.3.4	<i>Legend Tab</i>	208

15.3.5	<i>View Tab</i>	209
15.4	Manual Page Breaks	210
15.5	Understanding Reports	211
15.6	Visual Reports	211
15.7	Microsoft Project Reports	212
15.7.1	<i>Understanding the Microsoft Project Reports</i>	212
15.7.2	<i>Displaying and Formatting Microsoft Project Reports</i>	213
15.7.3	<i>Creating New Microsoft Project Report</i>	213
15.8	Workshop 13 – Printing	215
16	TRACKING PROGRESS	217
16.1	Setting the Baseline	218
16.1.1	<i>Setting Baseline Dates</i>	218
16.1.2	<i>Clearing and Resetting the Baseline</i>	219
16.1.3	<i>Displaying the Baseline Data</i>	219
16.2	Practical Methods of Recording Progress	220
16.3	Understanding Tracking Progress Concepts	221
16.3.1	<i>Task Lifecycle</i>	221
16.3.2	<i>Actual Start Date Assignment</i>	222
16.3.3	<i>Calculation of Actual & Remaining Durations of an In-progress Task</i>	222
16.3.4	<i>Calculating the Early Finish Date of an In-Progress Task</i>	223
16.3.5	<i>Updating Completed tasks</i>	224
16.3.6	<i>Summary Bars Progress Calculation</i>	225
16.3.7	<i>Understanding the Current Date, Status Date & Update Project Date</i>	225
16.4	Updating the Schedule	226
16.4.1	<i>Move Project</i>	227
16.4.2	<i>Using Update Project</i>	227
16.4.3	<i>Update Tasks Form</i>	228
16.4.4	<i>Updating Tasks Using the Task Information Form</i>	229
16.4.5	<i>Updating Tasks Using the Task Details Form</i>	230
16.4.6	<i>Updating Tasks Using Columns</i>	230
16.4.7	<i>Reschedule Uncompleted Work To Start After</i>	231
16.4.8	<i>Updating Tasks Using Task, Schedule Functions</i>	233
16.4.9	<i>Reschedule Work Function</i>	233
16.4.10	<i>Updating Milestones Issues</i>	234
16.4.11	<i>Physical % Complete</i>	234
16.5	Simple Procedure for Updating a Schedule	235
16.6	Procedure for Detailed Updating	235
16.7	Comparing Progress with Baseline	237
16.8	In-Progress Schedule Check List	239
16.9	Corrective Action	240
16.10	Workshop 14 - Updating the Schedule and Baseline Comparison	241
17	CREATING RESOURCES AND COSTS	247
17.1	Creating Resources in the Resource Sheet	248
17.2	Grouping Resources in the Resource Sheet	249
17.3	Resource Information Form	250
17.3.1	<i>General Tab</i>	250
17.3.2	<i>Costs Tab</i>	251
17.3.3	<i>Notes</i>	251
17.3.4	<i>Custom Fields</i>	251

17.4	Resource Calendars	252
17.4.1	<i>Editing a Resource calendar</i>	252
17.4.2	<i>Resource Calendars Calculations</i>	252
17.4.3	<i>Issues Using Resource Calendars</i>	254
17.5	Workshop 15 - Defining Resources	255
18	ASSIGNING RESOURCES AND COSTS TO TASKS	257
18.1	Fixed Costs	258
18.2	Assigning Work without a Resource	259
18.3	Resource Definitions	259
18.4	Task Type and Effort-Driven	260
18.4.1	<i>Task Type – Fixed Duration, Fixed Units, Fixed Work</i>	260
18.4.2	<i>Effort-Driven</i>	260
18.5	Resource Calendars	261
18.6	Assigning Resources using the Resource Assignment Form	261
18.7	Assigning Resources Using the Task Details Form	263
18.8	Assigning Resources Using the Task Information Form	264
18.9	Assigning Resources from the Resource Column	264
18.10	Assignment of Resources to Summary Tasks	264
18.11	Resource Engagement	265
18.12	Rollup of Costs and Hours to Summary Tasks	265
18.13	Contour the Resource Assignment	266
18.14	Workshop 16 - Assigning Resources to Tasks	267
19	RESOURCE OPTIMIZATION	271
19.1	Resource Graph Form	271
19.2	Resource Graph View	272
19.3	Resource Tables View	274
19.4	Detailed Styles Form	275
19.5	Creating an S-Curve from Microsoft Project	275
19.6	Team Planner View	276
19.7	Printing Resource Profiles and Tables	277
19.8	Creating Resource Graphs, Crosstab Tables, S-Curves in a Spreadsheet	277
19.8.1	<i>Export Time Phased Data to Excel Using Visual Reports</i>	277
19.8.2	<i>Export Using Time Phased Data Copy and Paste</i>	278
19.8.3	<i>Creating S-Curves in Excel</i>	279
19.9	Resource Optimization	280
19.9.1	<i>Resource Optimization through Leveling</i>	280
19.9.2	<i>Other Methods of Resolving Resource Peaks and Conflicts</i>	280
19.9.3	<i>Resource Leveling Function</i>	281
19.9.4	<i>Resource, Level group Ribbon Commands</i>	282
19.10	Workshop 17 – Resource Graphs and Tables	283
20	UPDATING PROJECTS WITH RESOURCES	285
20.1	Understanding Baseline Dates, Duration, Costs and Hours	286
20.2	Understanding the Status Date	287
20.3	Formatting the Current Date and Status Date Lines	288
20.4	Information Required to Update a Resourced Schedule	289
20.5	Updating Dates and Percentage Complete	289
20.6	Updating Resources	289
20.6.1	<i>Updating Tasks with Fixed Costs Only</i>	290
20.6.2	<i>Forecasting Resource Hours</i>	290
20.6.3	<i>Forecasting Resource Hours and Costs Form</i>	292
20.6.4	<i>Using the Task Usage and Resource Usage Views</i>	293





20.7	Splitting Tasks	294
20.8	Summary Tasks and Earned Value	295
20.9	Workshop 18 – Updating a Resourced Schedule	297
21	PROJECT OPTIONS	305
21.1	General	306
21.1.1	<i>User Interface Options</i>	306
21.1.2	<i>Project view</i>	306
21.1.3	<i>Personalize your copy of Microsoft Office</i>	307
21.1.4	<i>Start up options</i>	307
21.2	Display	307
21.2.1	<i>Calendar</i>	308
21.2.2	<i>Currency options for this project:</i>	308
21.2.3	<i>Show indicators and options buttons for:</i>	308
21.2.4	<i>Show these elements</i>	308
21.3	Schedule	309
21.3.1	<i>Calendar options for this project:</i>	309
21.3.2	<i>Schedule</i>	311
21.3.3	<i>Scheduling options for this project:</i>	311
21.3.4	<i>Schedule Alerts</i>	314
21.3.5	<i>Calculation</i>	315
21.3.6	<i>Calculation Options for this project:</i>	315
21.4	Proofing	317
21.5	Save	318
21.5.1	<i>Save projects</i>	318
21.5.2	<i>Save templates</i>	319
21.5.3	<i>Cache</i>	319
21.6	Language	319
21.7	Advanced	320
21.7.1	<i>General</i>	320
21.7.2	<i>Project Web App</i>	321
21.7.3	<i>Planning Wizard</i>	321
21.7.4	<i>General Options</i>	321
21.7.5	<i>Edit</i>	322
21.7.6	<i>Display</i>	322
21.7.7	<i>Display Options for this Project</i>	323
21.7.8	<i>Cross project linking options for this project:</i>	324
21.7.9	<i>Earned Value options for this project:</i>	324
21.7.10	<i>Calculation options for this project:</i>	325
21.8	Customize Ribbon	326
21.9	Quick Access Toolbar	326
21.10	Add-Ins	327
21.11	Trust Center	328
21.11.1	<i>Macro Settings</i>	328
21.11.2	<i>Legacy Formats.</i>	329
21.11.3	<i>Privacy Options</i>	329
21.12	Authors Recommended Setup for New Projects	330
21.13	Commands Removed From the Microsoft Project 2007 Options, View Form	330
22	MICROSOFT PROJECT ONLINE AND SERVER	331
22.1	Understanding Microsoft Project Online and Microsoft Project Server	331
22.2	Changes for Schedulers and Project Managers	332
22.3	How Microsoft Project Online and Server Operates	333
22.3.1	<i>Connection</i>	333

22.3.2	Security	333
22.3.3	Check out/Check in	334
22.3.4	Publishing	334
22.3.5	Centralized Global Template	335
22.3.6	Centralized Resource Pool	336
22.3.7	Modelling of resource effort and cost	337
22.3.8	Updating Schedules Properly	338
22.3.9	Project Inter-Dependencies	338
22.4	New Functions for Project Managers not found in Microsoft Project Professional	339
22.5	Tips for EPM Implementers	340
22.6	Accessing Project Schedules from Microsoft Project Online or Server	340
22.6.1	Opening a Schedule from Microsoft Project Professional	340
22.6.2	Accessing Schedules through the Web App	342
22.7	Reporting using Microsoft Project Online and Project Server	343
22.8	Tips for schedule reporting	344
24	MORE ADVANCED SCHEDULING	345
24.1	Working with Hourly Calendars	345
24.1.1	Adjusting Calendar Default Working Hours	345
24.1.2	Creating Calendar Periods with Alternate Working Hours	346
24.1.3	Working with Calendars with Different Hours per Day	347
24.1.4	Understanding Default Start and Default End Time	348
24.2	Managing Calendars	349
24.2.1	Deleting a Calendar	349
24.2.2	Copying Calendars between Projects	349
24.2.3	Renaming a Calendar	349
24.2.4	Copying a Base Calendar to Global.mpt for Use in Future Projects	349
24.2.5	Printing the Calendar	350
24.2.6	Display Times in 24-Hour Clock	350
24.3	Adding Tasks	351
24.3.1	Task Scheduling Mode – Manually Scheduled or Auto Scheduled	351
24.3.2	Copying Tasks from Other Programs	353
24.3.3	Dynamically Linking Cells to Other Programs	354
24.3.4	Milestones with a Duration	355
24.3.5	Splitting an In-progress Task	355
24.4	Formatting Bars	356
24.4.1	Format One or More Specific Task Bars	356
24.4.2	Hiding the Task Bar	357
24.4.3	Layout Form – Format Bars Options (Date, Height and Rollup)	357
24.5	Task Splitting	359
24.5.1	Splitting Tasks	359
24.5.2	Show bars splits	359
24.5.3	Bar Split Dates.	359
24.5.4	Split Task Duration	359
24.6	Logic	360
24.6.1	Unique ID Predecessor or Unique ID Successor Columns	360
24.6.2	Reviewing Relationships Using WBS Predecessor or Successor Columns	360
24.6.3	Task Drivers	360
24.6.4	Manually Scheduled Relationships	362
24.6.5	Schedule From Project Finish Date	362
24.6.6	Move Project	363

24.7	Custom Outline Codes and WBS	364
24.7.1	<i>Custom Outline Codes</i>	364
24.7.2	<i>Define a Custom Outline Code</i>	364
24.7.3	<i>Outline Codes</i>	368
24.7.4	<i>User Defined WBS Function</i>	368
24.8	Sharing Resources with Other Projects	370
24.9	Tracking Progress	371
24.9.1	<i>Setting an Interim Baseline</i>	371
24.9.2	<i>Resetting the Baseline Using “Roll Up Baselines”</i>	372
24.9.3	<i>Status Date Calculation Options - New Tasks</i>	375
24.9.4	<i>Status Date Calculation Options - When Updating a Schedule</i>	377
24.9.5	<i>Stop and Resume Dates</i>	377
24.9.6	<i>Marking Up Summary Tasks</i>	378
24.9.7	<i>Moving Tasks Using Task, Tasks group Move</i>	379
24.9.8	<i>Progress Lines and Variance Columns</i>	380
25	TOOLS AND TECHNIQUES FOR SCHEDULING	381
25.1	Understanding Menu Options	381
25.2	Cut, Copy and Paste Row	381
25.3	Cut, Copy and Paste Cell	381
25.4	Copy Picture	382
25.5	Fill Down	382
25.6	Clear Contents	383
25.7	Find and Replace	383
25.8	Go To	383
25.9	Insert Recurring Task	383
25.10	Copy or Cut-and-Paste to and from Spreadsheets	384
25.11	Paste Link – Cell Values in Columns	384
25.12	Unique Task, Resource and Assignment ID	384
25.12.1	<i>Task Unique ID</i>	384
25.12.2	<i>Resource Unique ID</i>	385
25.12.3	<i>Resource Assignment Unique ID</i>	385
25.13	Organizer	385
25.14	File Types	386
25.15	Recording a Macro	387
26	APPENDIX 1 – SCREENS USED TO CREATE VIEWS	389
27	INDEX	401

8 FORMATTING THE DISPLAY

This chapter covers the following topics, which are used to format the on-screen display which are also reflected in print preview and printouts:

Topic	Menu Command
Inserting Columns	<ul style="list-style-type: none"> Highlight a column and strike the Ins Key, or Select Format, Columns group, Insert Column, or Right-click and select Insert Column.
Deleting Columns	<ul style="list-style-type: none"> Highlight a column and strike the Delete key, or Select Format, Columns group, Column Settings, Hide Column, or Right-click and select Hide Column.
Adjusting the Width and Moving Columns	<ul style="list-style-type: none"> Grab the right header border line with the mouse and drag or resize. Double click on the right hand edge of the column header to optimize the header size.
Table – formatting the columns of data	<ul style="list-style-type: none"> View, Data group, Tables,  More tables... or Select a column and right-click to insert, or Right-click on a column header and select Field Settings.
Formatting One Column	<ul style="list-style-type: none"> Right-click on the column title and select Field Settings.
Format Bars	<ul style="list-style-type: none"> Open the Bar Styles form by left clicking in the Gantt Chart, or Format, Bar Styles group, or Format, Gantt Chart Styles group, or The Gantt Chart Wizard. This should only be used with projects created with Microsoft Project 2010 and earlier.
Formatting Time Units	<ul style="list-style-type: none"> Select File, Options, Advanced Default options for this project:
Row Height	<ul style="list-style-type: none"> Drag one or more selected rows with the mouse, or Edit the Table, or Wrap Text command found on the Format, Columns group, Column Settings,  Wrap Text which automatically adjusts the row height to fit the text into the available column width. Ensure you select the column when turning on or off this function.
Timescale	<ul style="list-style-type: none"> Zoom Slider at the bottom right-hand side of the screen, or Double-click on the timescale opening the Timescale form, or Use the   Zoom buttons.
Gridlines	<ul style="list-style-type: none"> Format, Format group, Gridlines, Gridlines...
Relationship Lines	<ul style="list-style-type: none"> Format, Format group, Layout
Format Text Font	<ul style="list-style-type: none"> Select the text to be formatted and right-click.

The formatting is applied to the current **View** only and is automatically saved as part of the View when another View is selected. Views are covered in more detail in the **VIEWS AND DETAILS** chapter.

8.1 Formatting the Columns

Microsoft Project has some column formatting functions which are intended to make it simple to add and format new columns. There are two methods of formatting the columns:

- Inserting, editing and deleting columns of data using the **Column Definition** form.
- **Tables** – A table may be created or an existing table edited with required columns using the **Table Definition** form. You may set up the data columns in the way you want to see the information on the screen and in printouts. Therefore **Tables** may be created, edited and deleted and you may select which one is used to display the data with each View. A Table may be assigned to multiple Views.



As time progresses with the option **File, Options, Advanced, Automatically add new views, tables, filters, and groups to the global** activated, a project that is created from the **Blank Project** will have many Views, Tables and Filters from old projects that may be irrelevant to the current project and it is suggested this be turned off.

8.1.1 Understanding Custom Fields

A Custom Field is a task or resource field that may be renamed and user defined data entered in columns. These fields are preformatted only to accept specific data such as dates, costs, durations or text. These are covered in more detail in the **TABLE AND GROUPING TASKS** chapter.



8.1.2 Column Names

Some of the Microsoft Project column names are confusing or difficult to find and the table below identifies some of the more common names and what they are to enable you to find columns more quickly:

Microsoft Project Field Name	Common Name	Location
Name	Task Name	Gantt Chart
Task Calendar	Calendar	Gantt Chart
Task Start	Start	Bars form
Task Finish	Finish	Bars form

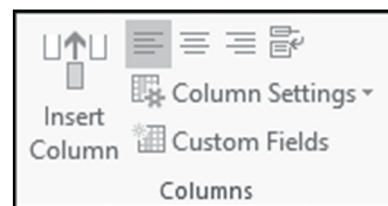
8.1.3 Inserting Columns

Insert a column by clicking on the column title where you require the new column. This will highlight the column. To insert a new column:

- Select **Format, Columns** group, **Insert, Column...** , or
- Hit the **Ins** Key, or
- Right-click and select **Insert Column...** .






Then select the column from the drop-down list. –





- You may immediately start typing, which will take you to the appropriate position in the list.
- In Microsoft Project 2013 and 2016, when a column name that does not exist is typed into the header, then an existing Text column will be renamed with the new title. Therefore the inserted column is a renamed text **Custom Field**.

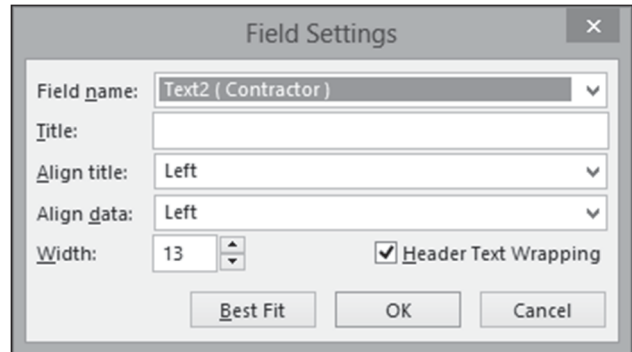


8.1.4 Format Columns Group

The **Format, Columns** group has the following functions:




-  – Aligns the text to the left, center or right,
-  – **Wrap Text** and increases the row height so all text is visible,
-  – **Column Settings** has:
 -  – **Hide Column** which hides a column but does not delete the data.
 -  – **Field Settings** that opens the **Field Settings** form:

NOTE: The picture displays **Text2** Custom Field that has been renamed **Contractor**.
 -  – **Data type** which allows the data type of a Custom Field to be changed.
 -  – **Display Add New Column** is a function that was new to Microsoft Project 2010. A column may be permanently displayed on the right-hand side of the screen titled **Add New Column** and clicking on this column will open up a drop-down box for the selection of the data type. This option will display or hide this column.
 -  – **Insert Column** inserts a new column.
-  **Custom Fields** opens the **Custom Fields** form covered in the **TABLE AND GROUPING TASKS** chapter.



8.1.5 Hiding Columns

Hiding a column does not delete the data as in Excel; the software is just not reading the data from the database. Hiding a column may be achieved by highlighting the column or by clicking on the title and then:

- Select  **Column Settings**,  **Hide Column**,
- Hit the **Delete** key, or
- Right-click and select  **Hide Column**.



1. There will be no confirmation of hiding a column, but you are allowed to undo the hiding.
2. The term “hide” means the column is removed from the Table in this project but the data is not deleted as in Excel when a column is deleted.

8.1.6 Adjusting the Width of Columns

You may adjust the width of the column either manually or automatically.

- For manual adjustment, move the mouse pointer to the right vertical line of the column in the header. A \leftrightarrow mouse arrow will then appear and enable the column to be adjusted.

Task Name	Duration	Start	Finish
Task 1	3days	01 Jan	03 Jan
Task 2	2days	06 Jan	07 Jan

- For automatic adjustment, once again position the mouse pointer to the right vertical line of the column in the header and double left-click the mouse. The column width will automatically adjust to the best fit.

8.1.7 Moving Columns

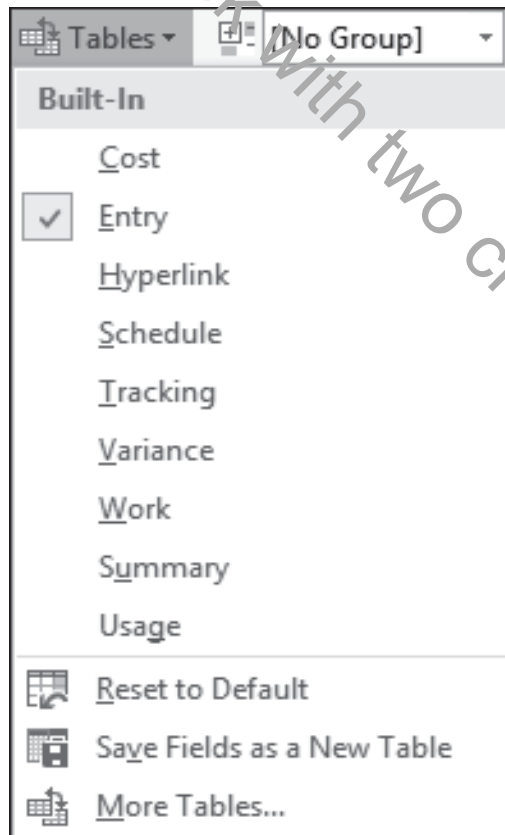
Columns in a Table may be moved by clicking on the column header. The mouse pointer will change to a




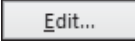
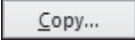
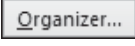

and the column may be dragged to a new location.

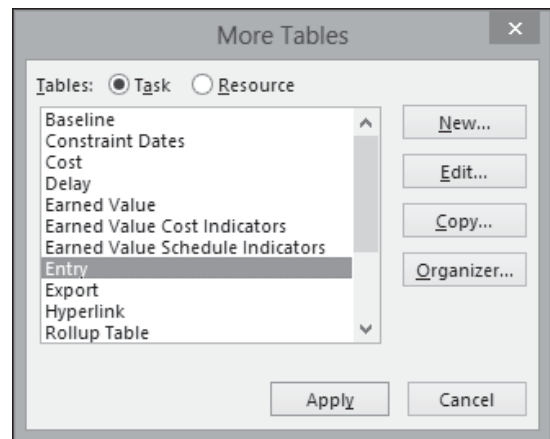
8.1.8 Formatting Columns Using the Table Function


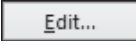
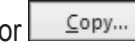
- Select **View, Data** group, **Tables**, and select from the list of predefined **Tables** listed on the menu. Select the table you want to display:

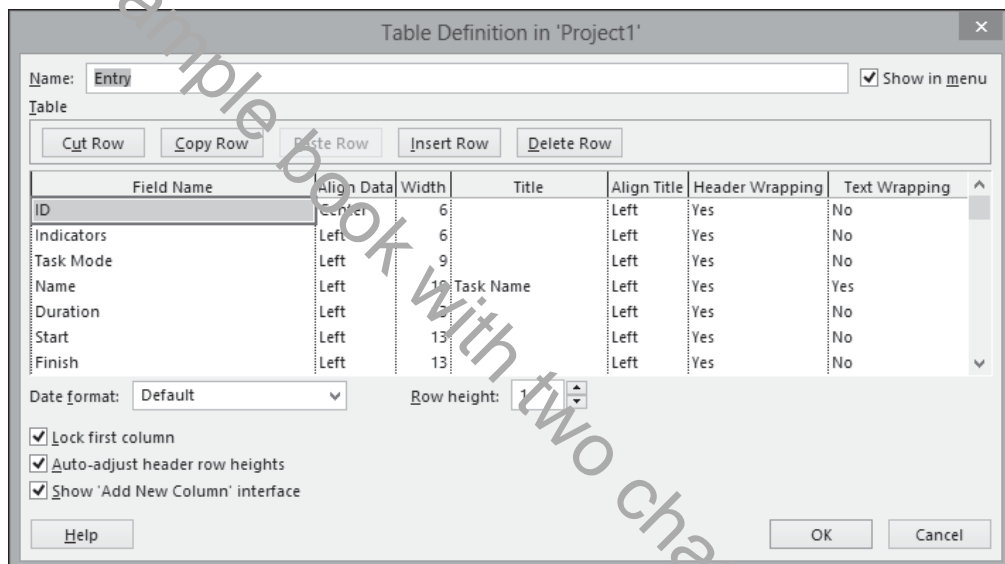


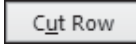
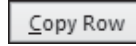

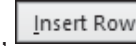

- Select **View, Data** group, **Tables, More Tables...** to open the **More Tables** form:

-  – To create a new Table.
-  – To edit the highlighted Table.
-  – To copy the highlighted Table.
-  – Opens the Organizer form which enables you to copy a Table from one opened project to another or to the Global Project.
-  – Applies the selected Table making it visible on the screen.



- When you select ,  or  you will be presented with the **Table Definition** form:



- Click on the **Show in menu** box to display the Table in the **View, Data** group, **Tables** menu.
- The columns of data will be displayed on screen from left to right in the same order as the rows in the form.
- Highlight a row and then you may use the , , ,  or  buttons.
- The data to be displayed may be selected from the drop-down box in the **Field Name** column.
- **Align Data** and **Width** are used for formatting the data in the columns.
- The Microsoft Project **Field Name** may be replaced by typing your own title in the **Title** box.
- The **Date format**: drop-down box is used to change the format for this table only.



This is a very useful function to ensure that other users of the project file see the intended date format and not their system default date format.

- **Row Height:** sets the default height of all the rows in this table. A row height may be changed by dragging the cell boundary line once a task has been created.
 - **Lock first column** prevents the first column from scrolling and is useful when the first column contains the Task Name.
 - **Auto-adjust header row heights** will automatically adjust header row heights to the width of the column.
 - **Show 'Add New Column' interface** hides or displays the **Add New Column** column (new function to Microsoft Project 20103) on the right-hand side of the columns in all Views, used for adding new columns.

To save a table for use in all your new projects, copy the table to the **Global.mpt** template using **File, Info, Organizer** and select the **Tables** tab. This will not copy the new names of renamed fields.

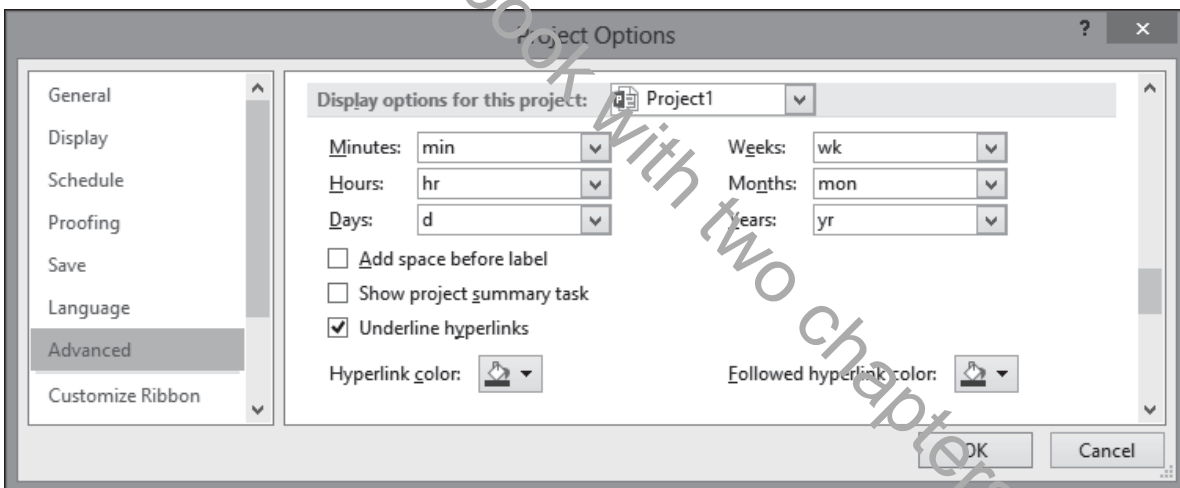
You may also copy a **Table** to another open project or rename a **Table** using **File, Info, Organizer** and selecting the **Tables** tab.



Applying a Table to a View will permanently change the View unless the file is not saved. The Gantt Chart View has the Entry Table assigned by default.

8.2 Formatting Time Units

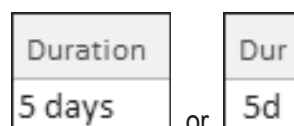
Select **File, Options, Advanced, Display options for this project:**



- The **Display options for this project:** always specifies the time units, for example **day, dy** or **d**.
- Uncheck the **Add space before label** check box to remove a space between the value and label in date columns which allows a narrower Duration column to be displayed.



To make the Duration column width narrow, **Days:** should be set to **d** and the **Add space before label** unchecked. The column header could also be edited to **Dur** to ensure the header is also narrow. This will provide more space for other data:



8.3 Formatting the Bars

Microsoft Project has several options for bar formatting:

- All the bars may be formatted to suit user definable parameters, or
- Individual bars may be formatted.

This section will cover the formatting of all bars and the next section will cover formatting individual bars. Most formatting only affects the current View.

All bars in the Gantt Chart may be formatted to suit your requirements for display by:

- Opening the **Bar Styles** form by double-clicking anywhere in the Gantt Chart area, or
- **Format, Bar Styles** group, or
- **Format, Gantt Chart Styles** group, or
- The **Gantt Chart Wizard**, which is a simple way to format bars.

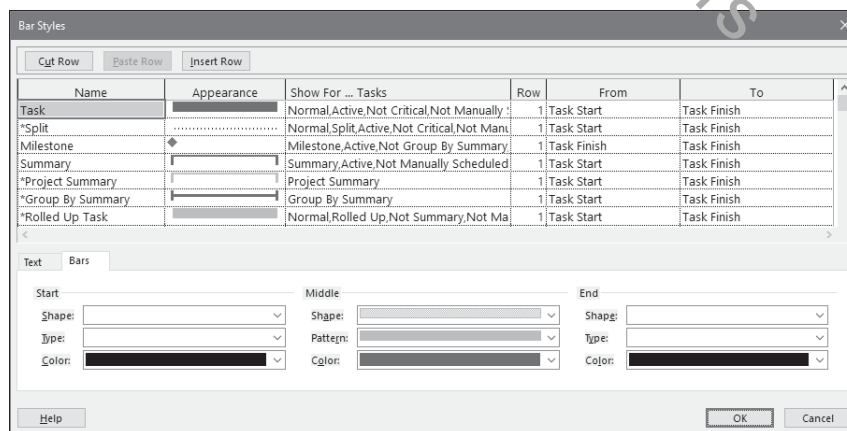


As in Microsoft Project 2010, many of the formatting menu options in Microsoft Project 2013, 2016 and 2019 are designed for a schedule created from a Microsoft Project 2013 or 2016 or 2019 template. Some formatting menu options will not operate as expected if you have opened a project created in an earlier version of Microsoft Project. For example, when a Microsoft Project 2007 file is opened it with Microsoft Project 2013, the author found the display Baseline bar found on the Ribbon command **Format, Bar styles, Baseline** was incompatible with projects created in earlier versions of Microsoft Project and resulted in the Baseline bar being drawn over the Current Schedule bar. Users may have to use the manual method of formatting bars by opening the bars form or use the **Gantt Chart Wizard** to format bars created in earlier versions of Microsoft Project.

8.3.1 Formatting All Task Bars Using the Bar Styles Form

To format all the bars you must open the **Bar Style** form by:

- Double-click anywhere in the Gantt Chart area, but not on an existing bar, as this will open the **Format Bar** form for formatting an individual bar, or
- Select **Format, Bar Styles** group, **Format, Bar Styles**, the picture below displays the default **Bar Styles** when Microsoft Project is loaded:



The picture above shows a typical default Microsoft Project Bar Styles setting from a default load of Microsoft project.

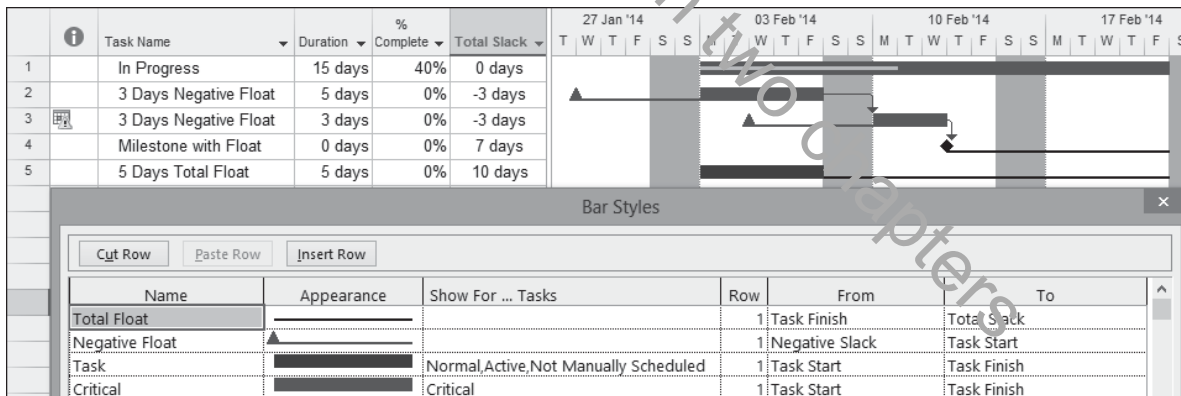
The following notes are the main points for using this function. Detailed information is available in the Help facility by searching for “Bar styles dialog box.”

- Each bar listed in the table will be displayed on the bar chart.
- Bars may be deleted with the **Cut Row** button, pasted using the **Paste Row** button and new bars inserted using the **Insert Row** button.
- The **Name** is the title you may assign to the bar and is displayed in the printout legend. To hide the bar on the legend precede the **Name** with an *. There are many bars with an * by them as default, as displayed in the picture above.
- The appearance of each bar is edited in the lower half of the form. The bar’s start point, middle and end points may have their color, shape, pattern, etc. formatted.
- When a new Milestone is created, the **From** and **To** must both be set to **Task Finish**.
- **Show For ... Tasks** allows you to select which tasks are displayed, similar to a filter. More than one task type may be displayed by separating each type with a “,”. Bar types not required are prefixed with “Not.” For example, the **Normal,Rolled Up,Split,Not Summary** bar would not display a bar for a summary task. Should you leave this cell blank then all task types will be displayed in this format.



The bars may be placed on one of four rows numbered from 1 to 4, top to bottom. If multiple bars are placed on the same row then the bar at the top of the list will be drawn first and the ones lower down the list will be drawn over the top, thus potentially hiding the ones below in the list.

- **From** and **To** allow you to establish where the bars start and finish. The picture below shows how to format **Total Float**, **Free Float** and **Negative Float**. Unlike some other planning and scheduling software, the Negative Float is drawn from the Start Date of a task and not the Finish Date and therefore a separate bar is required for Negative and Positive Float.



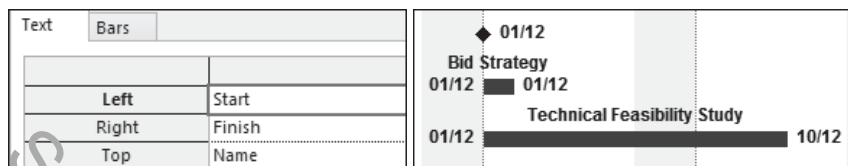
By default Microsoft project only displays the **Free Float Bar** with the **Format, Bar Styles** group, **Slack** button not the **Total Float** bar that would normally be expected.

Also the Negative Float bar is not automatically displayed by any Microsoft Project function, nor is it included in any View. These are two of the most important bars to show when a project finish date has been set using a constraint and these bars must always be manually created. There are some options to resolve this:

- You may wish to consider recording a macro to create these bars and this can be run when a negative float bar is required. Recording a macro is covered in para 25.15.

- The author has found that these bars produce a better presentation and do not interfere with the drawing of relationships when created at the bottom of the list in the **Bar Styles** form.
- You may download an Eastwood Harris Microsoft Project 2013 and 2016 template project from the Eastwood Harris web site at www.eh.com.au **SOFTWARE AND DOWNLOADS** page. This has an inbuilt View which displays both the Total and Negative Float bars. Also other issues with Microsoft Project 2013, 2016 and 2019 have been resolved and are covered in the template description.

- The **Text** tab allows you to place text inside or around the bar:



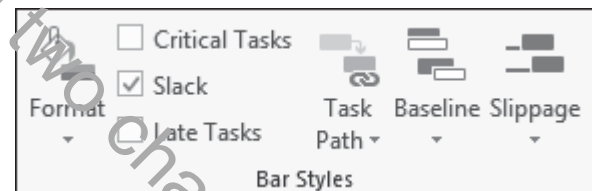
- It is not possible to format the font in the **Bar Styles** form. Select **Format, Format group Text Styles** to open the **Text Styles** form and select the bar text font.

To show Critical and Non-critical tasks, the bars should be formatted as shown below, with particular attention paid to the **Show For... Tasks** column. Non-critical Tasks are formatted as **Normal, Non-critical** and Critical Tasks as **Normal, Critical**.

Name	Appearance	Show For ... Tasks	Row	From	To
Task		Normal, Noncritical, Active, Not Manually S	1	Task Start	Task Finish
Critical		Normal, Critical, Active, Not Placeholder	1	Task Start	Task Finish

8.3.2 Format Bar Styles Group Menu

Select the **Format, Bar Styles** group to view this group of commands:



- **Format** has two options:
 - **Bar** opens the **Bars** form which is used to format of one or more selected bars and is self-explanatory. The formatting here overrides all formatting set in the **Bars** form and is removed by the **Reset** button.
 - **Bar Styles** opens the **Bar Styles** form as discussed above to format all bars.
- The other buttons in the **Format, Bar Styles** groups will hide or display the bars as indicated, but these may not give the expected results with a project created in an earlier version of Microsoft Project.
 - **Critical Tasks** shades the Critical Tasks red.
 - **Slack** displays the Free Float and **NOT** Total Float bar which were displayed in earlier versions on Microsoft Project when the Gant Chart wizard was run.
 - **Late Tasks** displays tasks that are late compared to the **Status Date**.
 - **Baseline** displays the Baseline bar.
 - **Slippage** displays how much time the task is behind the Baseline.
 - **Task Path** allow the highlighting of Predecessors, Critical Predecessors, Successors and Critical Successors.

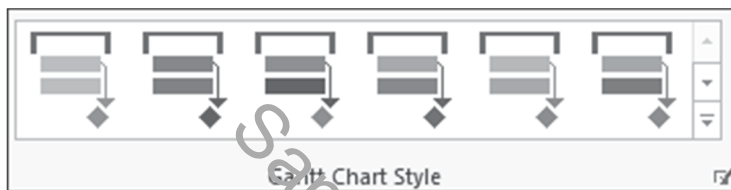


Many of the formatting menu options are designed for a schedule created from a Microsoft Project 2013 template. Some menu options will not operate as expected if you have opened a project created in an earlier version of Microsoft Project. For example, the author found the baseline bar was placed on top of the current schedule bar using the Ribbon commands. Users may have to use the manual method of formatting bars by opening the bars form or using the **Gantt Chart Wizard**.

8.3.3 Gantt Chart Styles Group Menu

Select **Format, Gantt Chart Styles** group to see the option for coloring bars. This function was new to Microsoft Project 2010.

The button at the bottom right-hand side opens the **Bar Styles** form.



Click here to open the Bar Styles form



See warning above.

8.3.4 Formatting Bars Using the Gantt Chart Wizard

The Gantt Chart Wizard is a popular function for people who used earlier versions of Microsoft Project. The wizard will overwrite any formatting you may have created. This is a straightforward method of formatting your bars and often this is the best method of formatting bars. It is very simple to use but will not display the **Negative Float** and **Free Float** bars. These will have to be added manually using the **Bar Style** form as described in the **Bar Styles** form section.



If the **Gantt Chart Wizard** button is not on your Microsoft Project default toolbars then this may be added to either the **Quick Access Toolbar** or the **Ribbon**.

The author found that projects formatted with the **Gantt Chart Wizard** and projects created in earlier versions of Microsoft Project will have formatting that is incompatible with the Microsoft Project 2013, 2016 and 2019 **Format, Bar Styles** group buttons. The use of the **Baseline** button resulted in the Baseline bar covering the current schedule bar so only the Baseline bar was visible. To resolve this issue, users should either use only **Gantt Chart Wizard** or only the new Microsoft Project 2013, 2016 and 2019 **Format, Bar Styles** group buttons, but not both. This issue may be rectified with software updates.

8.3.5 Placing Dates and Names on Bars

To place a name and or dates on the **Task bars** and **Milestones** create two bars at the bottom of the list in the bars form as per the picture below which neither displays a bar:

Name	Appearance	Show For ... Tasks	Row	From	To
Task Name on Bar		Not Milestone	1	Task Start	Task Finish
Task Name on Milestones		Milestone	1	Task Finish	Task Finish

Text		Bars
Left	Start	No Bar is displayed
Right	Finish	
Top	Name	

From and To must be Task Finish for the Milestone	
---	--

8.4 Row Height


8.4.1 Setting Row Heights

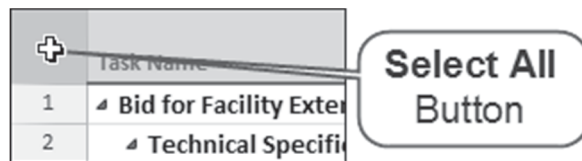
Row heights may be adjusted to display text that would otherwise be truncated by a narrow column.

Row heights are adjusted by whole lines and not points as in Excel.


The row height may be set in the **Table Definition** form by selecting **View, Data group Tables, More Tables...** From this view select the table in which you wish to edit the row height in and click on the **Edit...** button. Once the **Table Definition** form is open select the row height from the drop-down box next to **Row height**:

The row height of one or more columns may also be adjusted in a similar way to adjusting row heights in Excel, by clicking on the row and dragging with the mouse:

- Highlight one or more rows that need adjusting by dragging or Ctrl-clicking.
- If all the rows are to be adjusted, then click on the **Select All** button above row number 1, to highlight all the tasks.
- Then move the mouse pointer to the left-hand side of a horizontal row divider line. The pointer will change to a double-headed arrow . Click and hold with the left mouse button and drag the row or rows to the required height.

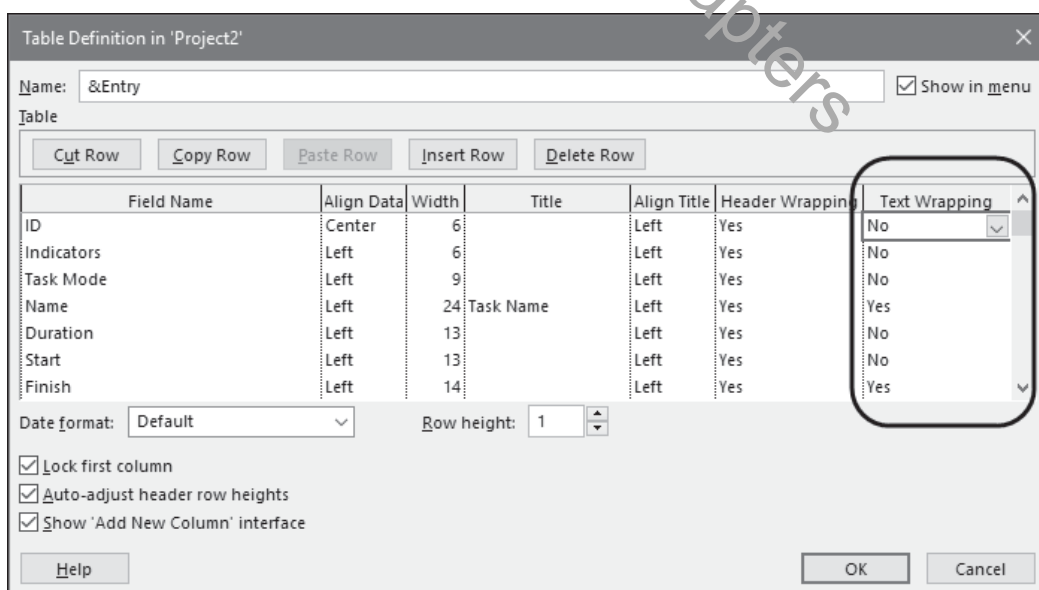


8.4.2 Wrap Text Command

Microsoft Project 2010 has introduced a **Wrap Text** command found on the **Format, Columns** group, **Column Settings**,  **Wrap Text** which automatically adjusts the row height to fit the text into the available column width.

Ensure you select the column when turning on or off this function and when it is not highlighted it is turned off.

Wrap Text may also be turned on or off for any column using the **Table Definition** form.



8.5 Format Fonts

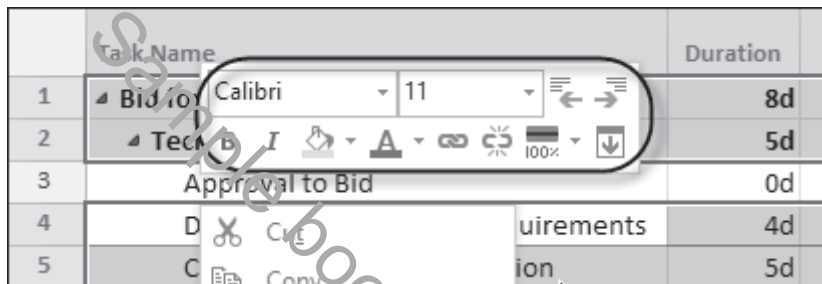
There are two basic options for formatting fonts:

- Either individual cells may be selected by Ctrl-clicking or dragging with the mouse and formatted, or
- The fonts of tasks that meet pre-set criteria, such as critical tasks may be formatted using the text **Styles** command.

8.5.1 Format Individual Cells Font Command

The **Format, Font...** function from Microsoft 2007 and earlier has been replaced with a right-click option and allows you to format any selected text in selected cells, rows or columns:

- Select the text to be formatted,
- Right-click and two toolbars are opened. The upper toolbar in the picture below has four buttons that may be used for formatting individual cells:

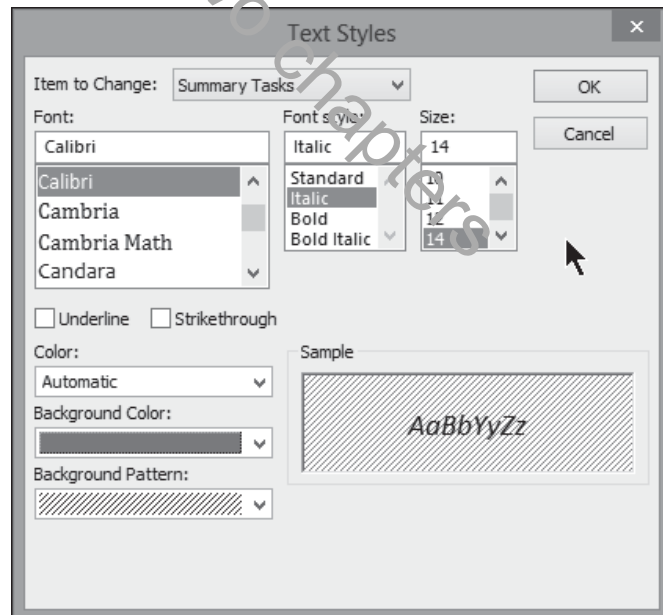


8.5.2 Format Text Styles

The **Format, Format group, Text Styles** command opens the **Text Styles** form and allows you to select a text type from the **Item to Change:** drop-down box and apply formatting to the selected item:

Text may be formatted by using any of the styles listed below:

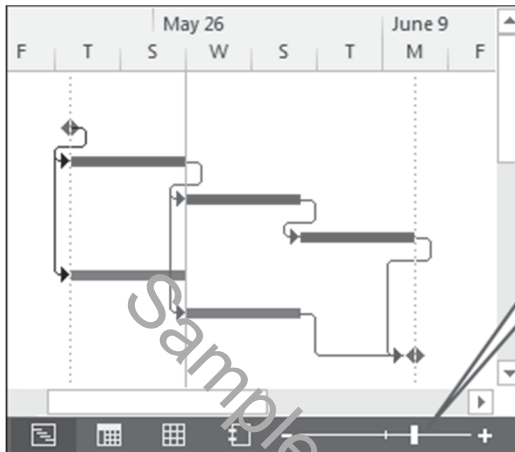
- **All:** This is all text including columns and rows,
- **Non-critical, Critical, Milestone, Summary, Project Summary, Marked, Highlighted and External tasks,**
- **Row and Column titles,**
- **Top, Middle and Bottom Timescale Tiers,** and
- **Bar Text** left, right, below, above and inside.



8.6 Format Timescale

8.6.1 Zoom Slider

The **Zoom Slider** was introduced with Microsoft Project 2010 and replaced the **View, Zoom...** function. This may be found at the bottom right-hand side of the screen and provides a simple way of scaling the time scale in the Gantt Chart and all other time scaled views such as the Calendar, Usage and Network Diagram View.



This function works differently than other scheduling software in that it changes the scale and the displayed time units at the same time and may result in some undesirable time units being displayed.

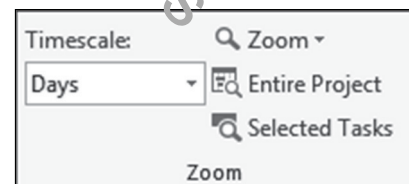
Once this function is used, your original timescale date formatting will be lost and may only be recovered with undo as this function applies its own formatting such as date formats.

The author has found that more predictable results are achieved by using the traditional **Zoom In** and **Zoom Out** functions which may be added to the **Quick Access Toolbar**.

8.6.2 Ribbon Menu

There are some new commands available with Microsoft Project 2010 on the **Ribbon**:

- The **Timescale:** option is a quick method of selecting the **Minor Timescale**, the lower line in the Timescale,
- Zoom opens a self-explanatory menu,
- **Entire Project** zooms the timescale to fit the whole project Gantt Chart to fit in the available space,
- **Selected Tasks** zooms the timescale to fit the bars of selected tasks to fit in the available space,

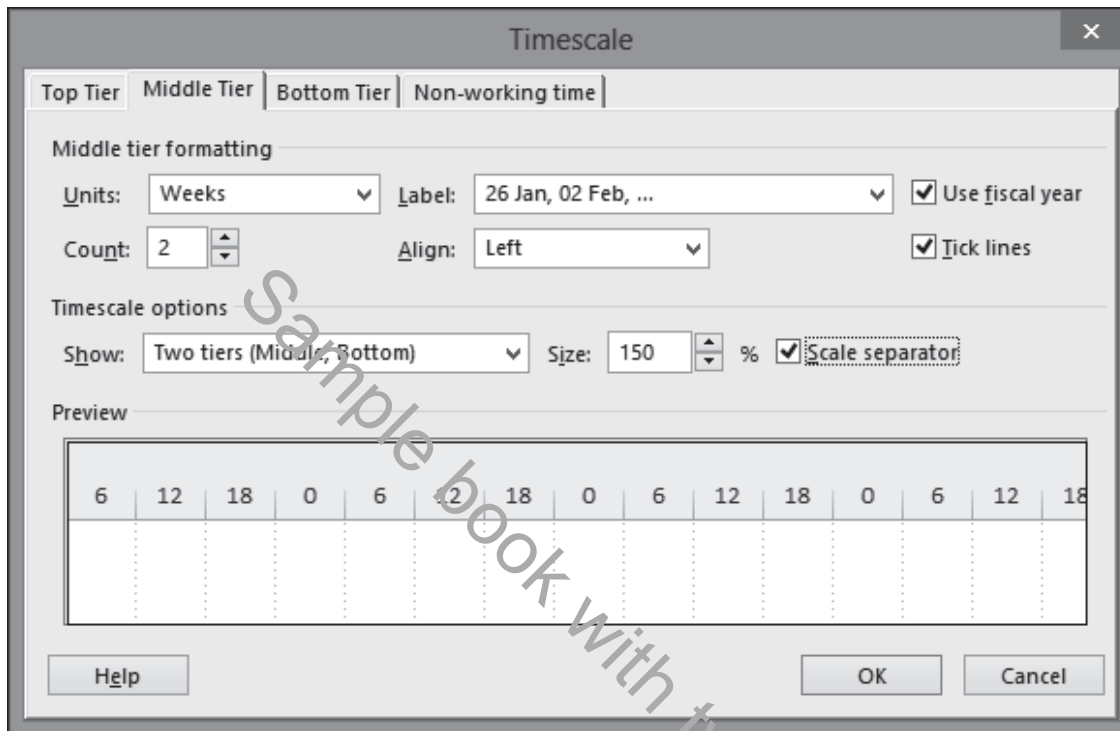


8.6.3 Format Timescale Command

The **Timescale** form provides a number of options for timescale display, which is located above the Bar Chart, and the shading of **Nonworking** time.

To open the **Timescale** form:

- Double-click on the timescale, or
- Add the **Timescale** button to the Ribbon or Quick Access Toolbar.



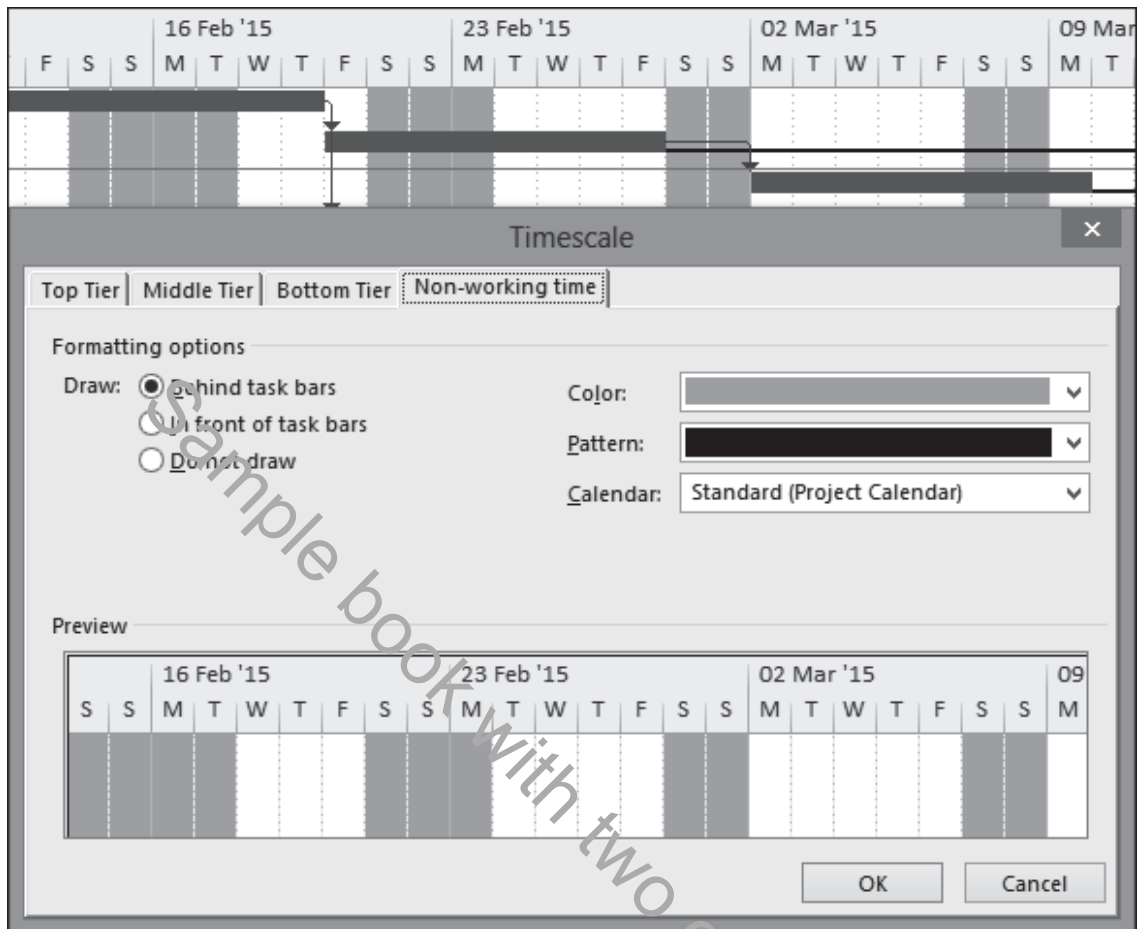
There are many options here which are intuitive and will not be described in detail.

Top Tier, Middle Tier and Bottom Tier Tab

- These three timescales may have different scales. These are often set at “weeks and days” or “months and weeks.” By default, the Top Tier timescale has been disabled. You may enable the three tiers together by selecting Three Tiers (Top, Middle, Bottom) from the **Timescale options, Show**.
- The **Label** will affect how much space the timescale will occupy, so the selection of a long label will result in longer Task bars.
- **Tick lines** and **Scale separator** hide and display the lines between the text.
- **Size**: controls the horizontal scale of the timescale and in association with the **Label**: are the two main tools for scaling the horizontal axis in the Gantt Chart.
- Choose the **Use fiscal year** function to display the financial year and then select the **File, Options, Calendar** tab to choose the month in which the fiscal year starts.
- Should you wish to number the time periods, for example; **Week 1, Week 2**, etc., there are a number of sequential numbering options available at the bottom of the label list.

Nonworking Time Tab

The **Nonworking time** tab allows you to format how the nonworking time is displayed. You may select only one calendar. The nonworking time may be presented as shading behind the bars, in front of the bars or hidden.



By default this is set to the Standard Calendar for each view and does not change when the Project Default Calendar is changed.

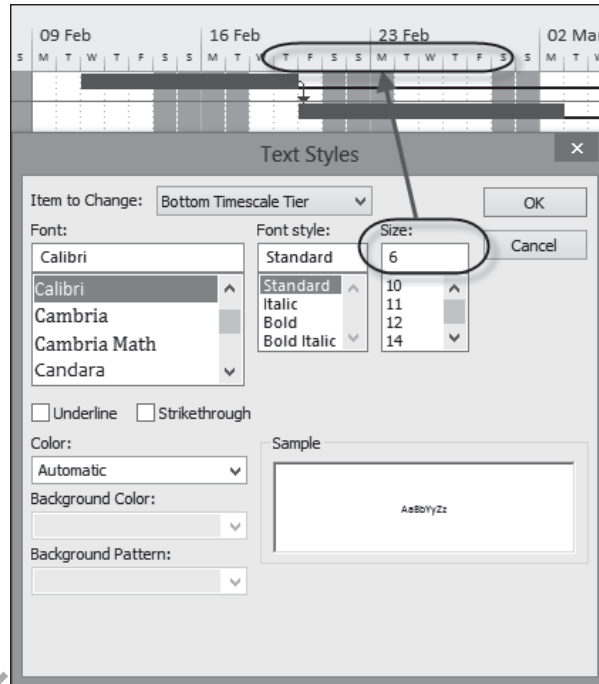
Therefore if you change the Project Base calendar in the **Project Information** and you wish to see this new calendar in all views you will have to edit all the views.

8.6.4 Format Timescale Font

To format the Timescale font, the **Format, Format group, Text Styles** command opens the **Text Styles** form:

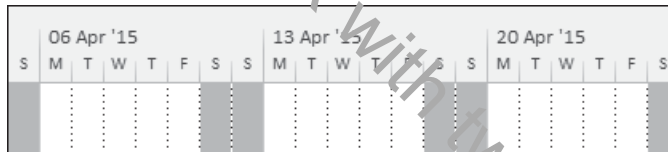
The timescale fonts may be formatted separately by selecting the appropriate line item under **Item to Change:**

A very tight timescale may be achieved by making the Bottom Timescale Tier a small font as displayed in the picture.

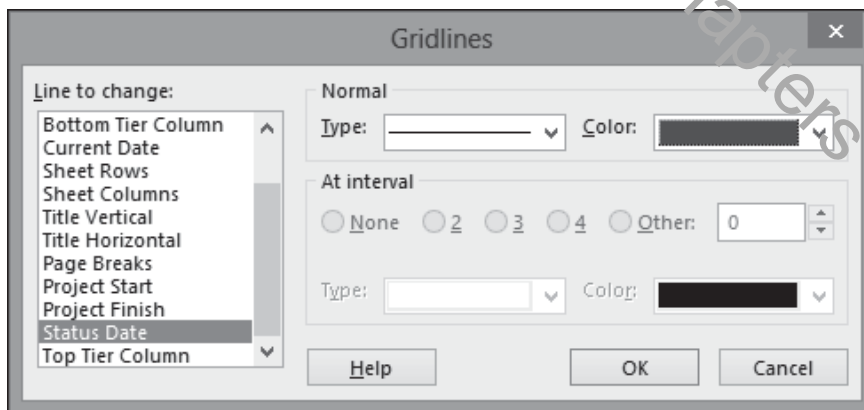


8.7 Format Gridlines

Gridlines are important to help divide the visual presentation of the Bar Chart. This example shows **Middle Tier Gridlines** every week and **Bottom Tier Gridlines** every day.




To format the Gridline select **Format, Format group, Gridlines, Gridlines...** or **Right click** in the **Gant Chart** and select **Gridlines** to open the **Gridlines** form:



- Select the gridline from the drop-down box under **Line to change:**
- Select color and type from under **Normal**.
- Some gridlines may be set to occur at intervals using the **At interval** option. Thus if you only want a line every 4th row then under the **Normal** heading set the Grid Line as a blank and set the **At Interval** line to 4 and set the **Type** and **Color** as required.

Some of the titles for the gridlines are not intuitive, so some interpretation is given below:

- For Data Column and Row dividing lines, use **Sheet Rows** and **Sheet Columns**.
- For Timescale and Column Titles, use **Horizontal** and **Title Vertical**.
- Gantt Chart area, including lines for **Project Start** and **Finish Date**, **Current** and **Status Date**, are clearly described.
- **Page Breaks** will only display manually-inserted breaks. You may need to add the **Insert Page Break**  button on the **Quick Access** Toolbar.



The earlier Microsoft Project option **Manual page breaks** check box in the **Print** form, which allowed printing and ignoring manual page breaks, has been removed from Microsoft Project 2013.

Microsoft Project has two dates that may be used to identify the **Data Date**, the date that the data has been collected for updating a project schedule. These two dates are the **Status Date** and **Current Date** which are set in the **Project Information** form:

- When a new project is created using the Global.mpt Microsoft Project displays the **Current Date** as a dark dotted vertical line but the **Current Date** is reset to the computer's system date each time the project file is opened. It is suggested that this line be removed using the **Gridline** form and the **Current Date** is not used to identify the date the schedule is being update on because the software changes it every time the schedule is opened.
- The **Status Date** never changes once set and therefore it is suggested that this line should be displayed as per the picture above and use to identify the date at which the schedule is being updated on.



Many laser printers will not print light gray lines clearly, so it is often better to use dark gray or black Sight Lines for better output.

8.8 Format Colors

Colors are formatted in a number of forms and there is no single form for formatting all colors:

- **Nonworking time** colors in the Gantt Chart are formatted in the **Timescale** form, double-click on the timescale.
- **Text** colors are formatted in the **Text Styles** and **Font** forms, found in the **Format**, **Format** groups, **Text Style**.
- **Gridline** colors are formatted in the **Gridlines** form, also found under the **Format**, **Format** group, **Gridlines**.
- **Hyperlink** colors are formatted under **File**, **Options**, **Advanced**, **Display options for this project**:
- **Timescale** colors are with the **File**, **Options**, **General** tab, **User Interface Options**, **Color scheme**: option.
- The **Logic Lines**, also known as **Dependencies**, **Relationships**, or **Links**, inherit their color from the predecessor's bar color in the Gantt Chart view and may be formatted in the Network Diagram view by selecting **Format**, **Format** group, **Layout**.

8.9 Format Links, Dependencies, Relationships, or Logic Lines

The Links, also known as Dependencies, Relationships, or Logic Lines, may be displayed or hidden by using the **Layout** form.

- Select **Format**, **Format** group, **Layout** to open the **Layout** form and click on one of the three radio buttons under **Links** to select the style you require:

The color of the **Link** is inherited from the color of the predecessor task.

- To display Critical Path on the relationship lines you will need to format the bars with a different color. This is often set to red.



The color of the successors' relationship lines is adopted from the task bar color. Therefore, re-formatting critical bars with the **Format Bar** form will also re-format the color of the successors' relationship lines and they may no longer display the Critical Path color on the Logic Lines. This will effectively mask the Critical Path and could provide misleading results.

The highest bar in the Bars form dictates the color of the relationship line and may not be the same as the color displayed in the Gantt Chart View.

Oracle Primavera products format the relationship separately from the bars and are able to identify the Critical, Driving and Non-Driving relationships, which is not possible with Microsoft Project.

- **Always roll up to Gantt bars** will summarize subtasks using the **Bars Styles for Rolled Up Task** formatting:



- **Round bars to whole days** adds visibility to short duration tasks.
- **Show bar splits** should be left checked to show tasks that have been split.
- **Show drawings** allows the hiding of any graphics inserted on the Gantt Chart.

8.10 Workshop 6 - Formatting the Bar Chart



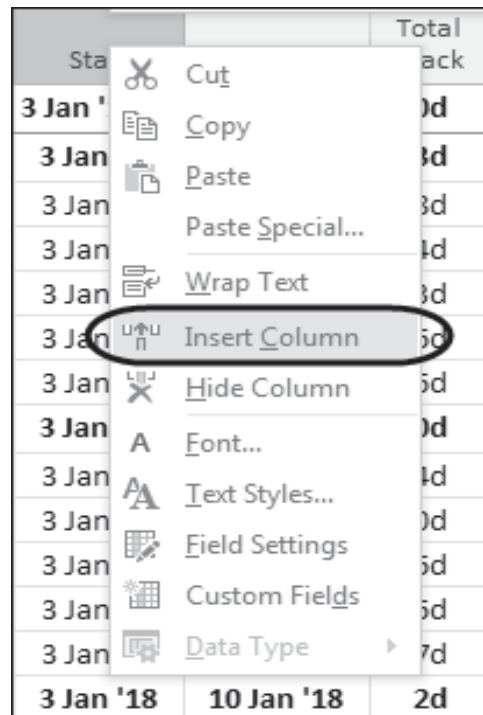
Background

Management has received your draft report and requests some changes to the presentation.

If you are using the Eastwood Harris template then most of the formatting requirements you need to make are made in the template in the **Gantt Chart Inc Total Float and Neg Float** view. The following attributes have been changed from the standard settings:



- **File, Options, Schedule and Advanced** have been edited in line with the Author's recommendations in his book.
- Two new Views titled **Gantt Chart Inc Negative and Total Float** and **Gantt Chart Name on Bars**
- **Columns:** Total Float added and Resources removed from the **Gantt Chart Inc Total Float and Neg Float** view.
- **Grid lines:** Middle and Bottom Timescale Tiers, Project Start, Project Finish and Status Date displayed and Current Date removed.
- **Bars:**
 - Total Float (Total Slack) and Negative Float added and all text removed from all bars.
 - Bar display in the Legend: Many bars have been hidden in the Legend (but not deleted) by placing an "*" at the front of the Bar description in the Bars form.
- **Printing:** some project information is drawn from the Advanced Properties form. Also all project data has been removed from the Legend so the Legend may be hidden if not required, thus leaving all project data displayed if the Legend is hidden.
- A Custom Field has been added to the **Tracking Table** titled **Status Check** that indicates when activities have been updated correctly. NOTE: You must set the "Status Date" in the "Project Information" form for this field to calculate correctly.

4. Apply the **Gant Chart** view.
5. Ensure that the **Entry Table** is displayed by selecting **View, Data group, Tables, Entry table**.
6. Apply the **Costs** table,
7. Then apply the **Tracking** table,
8. Reapplying the **Gant Chart Inc Total Float and Neg Float** view.
9. Insert the **Task Calendar** column between **Duration** and **Start** columns in the **Table Definition** form by using the right click command:



10. Your answer show be as per the pictures below:

ID	Task Name	Duration	Task Calendar	Start	Finish	Total Slack	6 Dec '21							13 Dec '21										
							S	M	T	W	T	F	S	S	M	T	W	T						
1	▲ Bid For Facility Extension	8d	None	6 Dec '21	15 Dec '21	0d																		
2	▲ Technical Specification	5d	None	6 Dec '21	10 Dec '21	3d																		
3	Approval to Bid	0d	None	6 Dec '21	6 Dec '21	8d																		
4	Determine Installation Requirements	4d	None	6 Dec '21	9 Dec '21	4d																		
5	Create Technical Specification	5d	None	6 Dec '21	10 Dec '21	3d																		
6	Identify Supplier Components	2d	None	6 Dec '21	7 Dec '21	6d																		
7	Validate Technical Specification	2d	None	6 Dec '21	7 Dec '21	6d																		
8	▲ Delivery Plan	8d	None	6 Dec '21	15 Dec '21	0d																		
9	Document Delivery Methodology	4d	None	6 Dec '21	9 Dec '21	4d																		
10	Obtain Quotes from Suppliers	8d	None	6 Dec '21	15 Dec '21	0d																		
11	Calculate the Bid Estimate	3d	6 Day Weel	6 Dec '21	8 Dec '21	6d																		
12	Create the Project Schedule	3d	6 Day Weel	6 Dec '21	8 Dec '21	6d																		
13	Review the Delivery Plan	1d	None	6 Dec '21	6 Dec '21	7d																		
14	▲ Bid Document	6d	None	6 Dec '21	13 Dec '21	2d																		
15	Create Draft of Bid Document	6d	None	6 Dec '21	13 Dec '21	2d																		
16	Review Bid Document	4d	None	6 Dec '21	9 Dec '21	4d																		
17	Finalize and Submit Bid Document	2d	None	6 Dec '21	7 Dec '21	6d																		
18	Bid Document Submitted	0d	None	6 Dec '21	6 Dec '21	8d																		


11. Add the  **Zoom In** and  **Zoom Out** buttons to the **Quick Access Toolbar** if these icons are not present on the toolbar and test their function.
12. Leave the scaling at months and weeks with **Size** in the **Timescale** form of 150%.
13. Save your **OzBuild Bid** project.

13 TABLES, CUSTOM FIELDS AND GROUPING TASKS

Outlining was discussed earlier as a method of organizing detail tasks under summary tasks. There are alternative data fields and functions available in Microsoft Project for recording task information, then organizing, grouping and displaying task information:

- Text Columns, Custom Fields and Grouping
- Custom Outline Codes – covered in the **MORE ADVANCED SCHEDULING** chapter.
- User Defined WBS (Work Breakdown Structure) – covered in the **MORE ADVANCED SCHEDULING** chapter.

These functions are addressed in this book but are not examined in detail. These functions enable the presentation of the tasks under other project breakdown structures outlined in *PMBOK® Guide section Project Communications Management* to create reports.

Topic	Menu Command
<ul style="list-style-type: none"> • Applying a Table to a View 	<ul style="list-style-type: none"> • Click the Select All button (see paragraph 3.11) and right-click, or • Select View, Data group, Tables and select a Table from the list in the menu.
<ul style="list-style-type: none"> • Creating or Editing a Table 	Select View, Data group, Tables and open the More Tables form.
<ul style="list-style-type: none"> • Create a Custom Field 	Adding the  Custom Fields button to your Ribbon or Quick Access Toolbar .
<ul style="list-style-type: none"> • Grouping 	Select View, Data group, Group by :

13.1 Understanding Project Breakdown Structures

The main breakdown structure of a project is the WBS which is usually represented with Outlining. Some organizations have highly organized and disciplined structures with “rules” for creating and coding the elements of the structure.

Other Project Breakdown Structures are required to represent the breakdown of a project into other logical functional elements. Some clients also impose a WBS code on a contractor for reporting and/or claiming payments. The following list shows examples of such structures:

- WBS **Work Breakdown Structure**, breaking down the project into the elements of work required to complete a project.
- PBS **Product Breakdown Structure**, used in the PRINCE2™ Project Management Methodology.
- OBS **Organization Breakdown Structure**, showing the hierarchical management structure of a project.
- CBS **Contract Breakdown Structure**, showing the breakdown of contracts.
- SBS **System Breakdown Structure**, showing the elements of a complex system.

We will discuss the Text Columns, Custom Fields and Grouping functions available in Microsoft Project to represent these structures in your schedule.

13.2 Tables

A table selects and formats the columns of data to be displayed in a View. The formatting of tables is covered in the **FORMATTING THE DISPLAY** chapter.

- A Table may be applied to one or more Views which display data in tables. This includes Views such as the Gantt Chart, Resource Sheet, Resource Usage, Task Sheet and Task Usage.
- There are two types of Tables:
 - **Task** tables that are applied to **Task Views** and
 - **Resource** tables that are applied to **Resource Views**.
- When the View is active and you assign it a different Table, the View is permanently changed and the Table permanently associated with the View; unless a project is not saved. Unlike Oracle Primavera software, the user does not have the option to save or not save changes to a view when another is selected.



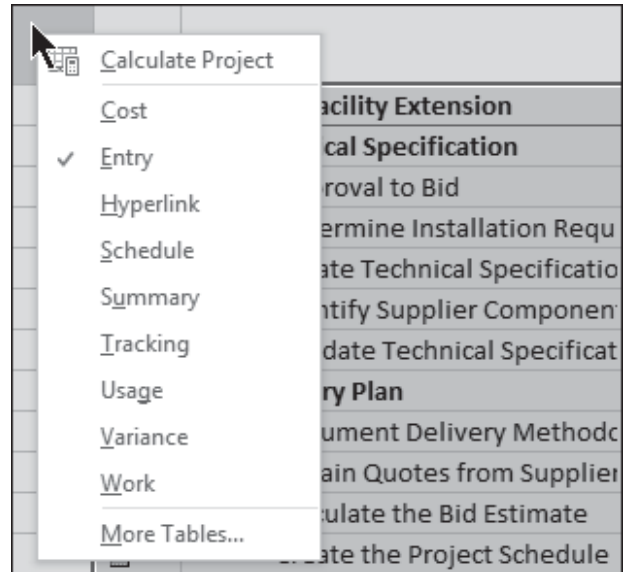
Formatting a Table by adding or removing columns, etc., is editing the current table on a permanent basis. These changes will appear when the table is next applied and this will affect any View the table is associated with. It is therefore strongly recommended that each View be paired with a unique table of the same name. Consider carefully when adding or deleting columns from a table as the changes are permanent, unless you do not save your file.

Sample Book with two chapters

13.2.1 Applying a Table to a View

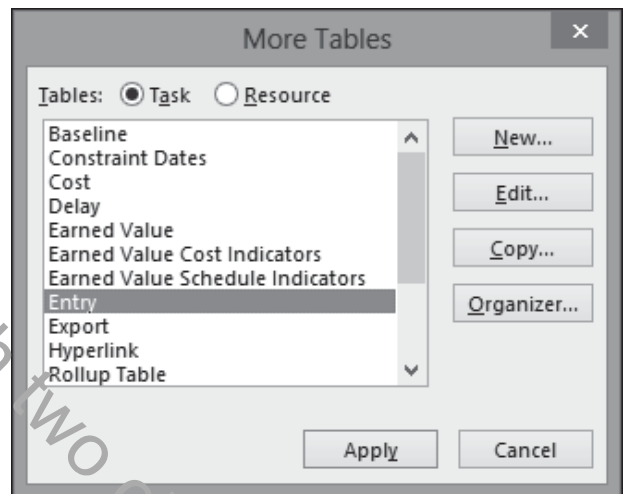
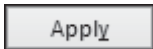
A Table may be applied to the active View by:

- Clicking the **Select All** button, the box above the row 1 number, then right-clicking the mouse to display a sub-menu with the table options, or
- Selecting **View, Data group Tables** and selecting a Table from the list in the menu.




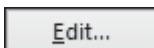
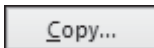
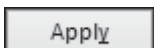
Both of these Table menus have a **More Tables...** option which will open the **More Tables...** form:

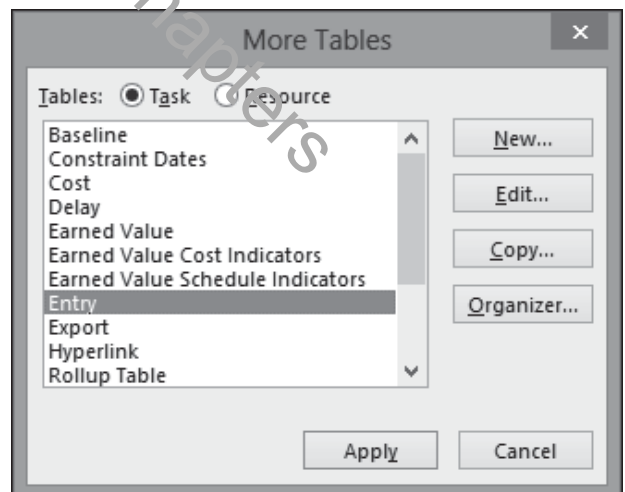
- Tables that have not been selected to appear on the menu list will be displayed here.
- Select a table from the list and click on



13.2.2 Creating and Editing a Table

A Table may be created or edited by opening the **View, Data group Tables, More Tables...** form:

-  creates a new table,
-  edits an existing table, or
-  creates a copy of an existing selected table.
-  – applies the table to a view.



All these buttons open the Table Definition form shown below:

Table Definition in 'OzBuild Bid Workshop 10'

Name: &Entry Show in menu

Table

Cut Row Copy Row Paste Row Insert Row Delete Row

Field Name	Align Data	Width	Title	Align Title	Header Wrapping	Text Wrapping
ID	Center	6		Center	Yes	No
Indicators	Left	6		Left	Yes	No
Name	Left	32	Task Name	Left	Yes	No
Duration	Center	5	Dur	Center	Yes	No
Start	Center	10		Center	Yes	No
Finish	Center	11		Center	Yes	No
Total Slack	Center	7		Center	Yes	No

Date format: Default Row height: 1

Lock first column
 Auto-adjust header row heights
 Show 'Add New Column' interface

Help OK Cancel

- The functions in this form are similar to those in many other forms. The functions that are unique to this form are listed below:
 - **Show in menu** – Decides if the Table is displayed in menus.
 - **Date format:** – Changes the format of the dates in this project and table only.
 - **Row height:** – Allows you to specify the row height for this table.
 - **Lock first column** – Ensures the first column is always displayed when scrolling to the right.
 - **Auto-adjust header row heights** – Automatically adjusts the header height when the width of the column is adjusted so the column text wraps.
 - **Show 'Add New Column' interface** shows the **New Column** column at the right of all columns. Clicking on this column creates a new column.






The **Date Format** selected in the **File, Options, General** tab is overridden by a date format selected in a Table. Therefore, if you have a project that requires a unique date format then the option of selecting a date format in a Table overrides the default on any computer for anyone who opens the project file.

13.3 Custom Fields

A **Custom Field** is an existing Microsoft Project field that may be:

- Renamed to suit your projects requirements,
- Tailored to display specific data in a specific format,
- Assigned a list, such as a list of values or people, that may be assigned from a drop-down list, or
- Assigned a formula for calculating data from other fields.

To create or edit a **Custom Field** the **Custom Fields** form must be opened by:

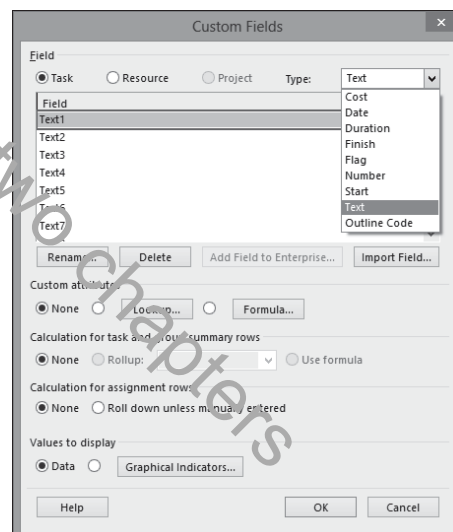
- Displaying the  **Custom Fields** button Ribbon or Quick Access Toolbar, or
- Selecting  **Custom Fields** when inserting a new column, or
- Selecting  **Custom Fields** when right-clicking on an existing column.

Task fields may be used for:

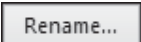

- Recording additional information about Tasks (such as responsibility, location, floor, system)
- Recording additional information about Resources such as telephone number, address and skills.
- Formulas may be created to populate the fields with calculated data.
- Tasks or resources may be grouped using these fields.

These predefined fields fall into the following categories:

- Cost
- Date
- Duration
- Finish (date)
- Flag
- Number
- Start (date)
- Text
- Outline Code



Both the title and content of these fields may be edited with options including:

-  allows the renaming of the field name.
 - This new name is then available when inserting columns and is displayed in the column header.
 - After Custom Field is renamed, the new name will be displayed in the **Custom Fields** tab of the **Task** or **Resource Information** form and the appropriate information may then be entered in this form.
-  allows importing from other fields or project files.

• **Custom Attributes:**

- **None** allows data to be entered into the field without any restrictions, this is similar to the way a User Defined Field works in Primavera P6.
- **Lookup...** opens the **Edit Lookup Table** where a table of values and descriptions may be entered. The Value is displayed in columns and Description in bands when the tasks are grouped by this field. These value may be copied and pasted from other applications such as Excel. This is similar to the way an Activity Code works in Primavera P6 and odes in Asta Powerproject.
- **Formula...** allows the assigning of formulae for the calculation of field value from other task and project fields.

• **Calculation for task and group summary rows** specifies how Summary tasks calculate their value, such as Maximum, Minimum, Sum, None and Average. For example, the following options may be used:

- A Start Date would select Minimum,
- A Finish Date would select Maximum,
- Cost would use Sum.

• **Calculation for assignment rows** determines if the field value is displayed only against the resource in Task Usage and Resource Usage fields or against the resource and assignment.

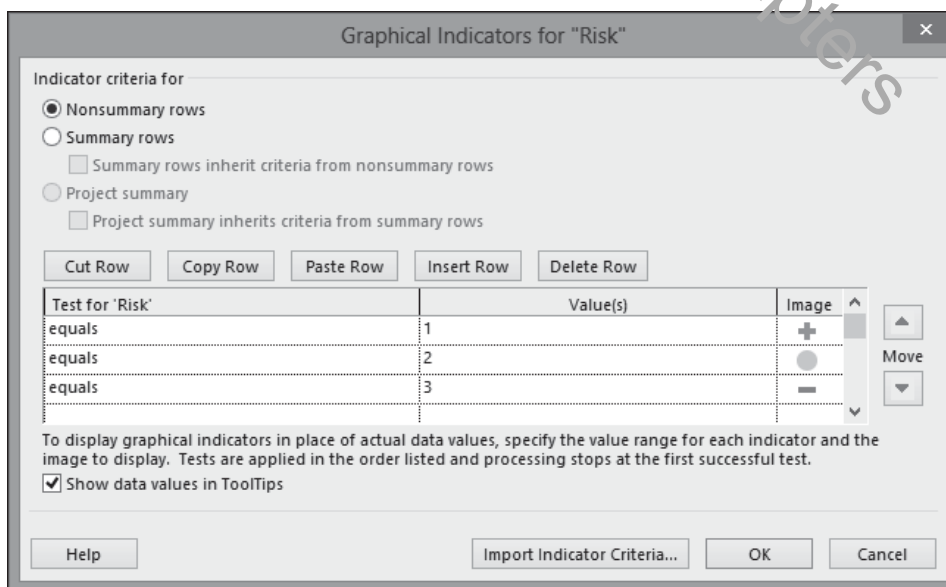
Resource Only

	Resource Name	Wor	Location
1	Paul Harris	16 hrs	Melbourne
	Electrical Design	8 hrs	
	Mechanical Design	8 hrs	
2	Samantha Harris	16 hrs	Brisbane
	Electrical Design	8 hrs	
	Mechanical Design	8 hrs	

Resource and Assignment

	Resource Name	Wor	Location
1	Paul Harris	16 hrs	Melbourne
	Electrical Design	8 hrs	Melbourne
	Mechanical Design	8 hrs	Melbourne
2	Samantha Harris	16 hrs	Brisbane
	Electrical Design	8 hrs	Brisbane
	Mechanical Design	8 hrs	Brisbane

- **Value to display** allows the options of displaying the value in the cell or generating graphical indicators such as traffic lights. A very simple example is displayed below when the Number 1 Custom Field has been renamed Risk and three values entered and three different images displayed:



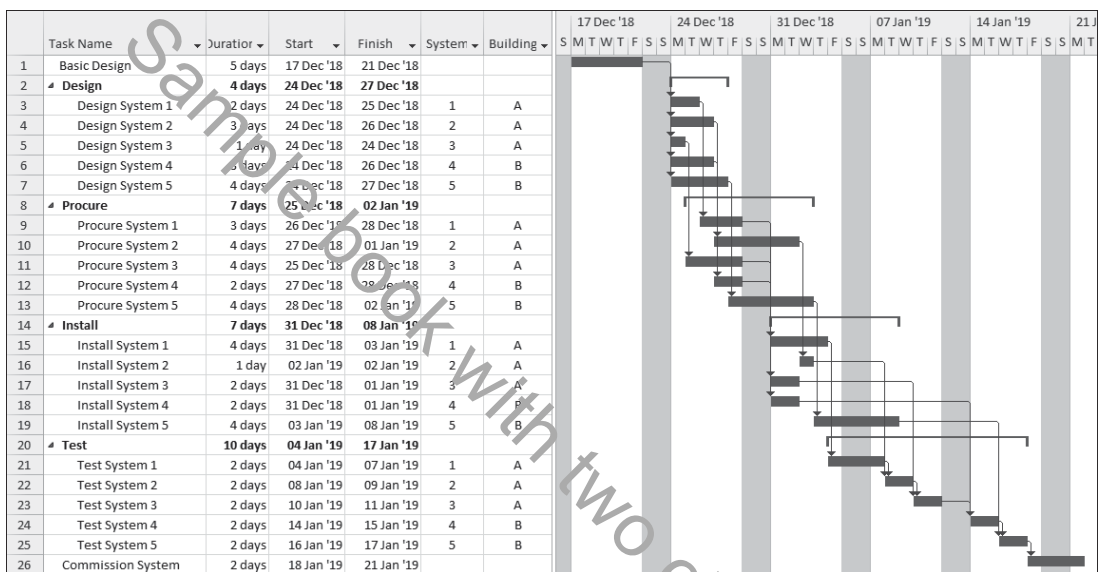
Outline Codes will be covered in more detail later in paragraph 24.7.1.



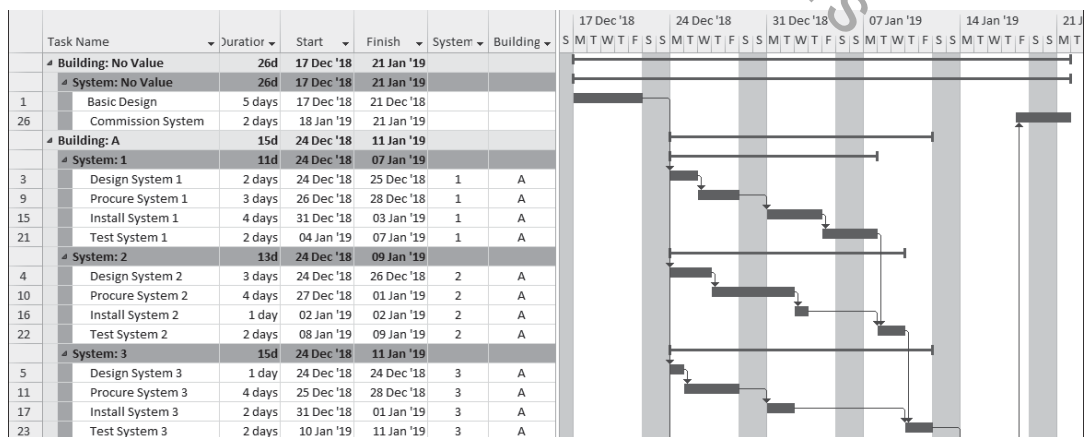
Oracle Primavera P3 and SureTrak software users will find the formatting options available when using Value and Description restrictive, because the description may not be displayed in columns and the value not displayed when Grouping. This is similar to the way Oracle Primavera P6 works.

13.4 Grouping

Grouping allows grouping of tasks under data items such as Customized fields, Durations, Constraints, etc. This function is particularly useful with schedules with a number of tasks and there is a requirement to work with a related group of tasks throughout a project. The picture below displays a simple project where the relationship between each Task is difficult to check by inspection of the Gantt Chart organized with Outlining by Phase:



With the Grouping function it is possible to Group on a text field to reorganize the data. In this example, the schedule has been reorganized by the Text 1 - Building and Text 2 - System fields, which have been renamed using the Custom Fields form to System and Building. You may now clearly see the logic between the Items:



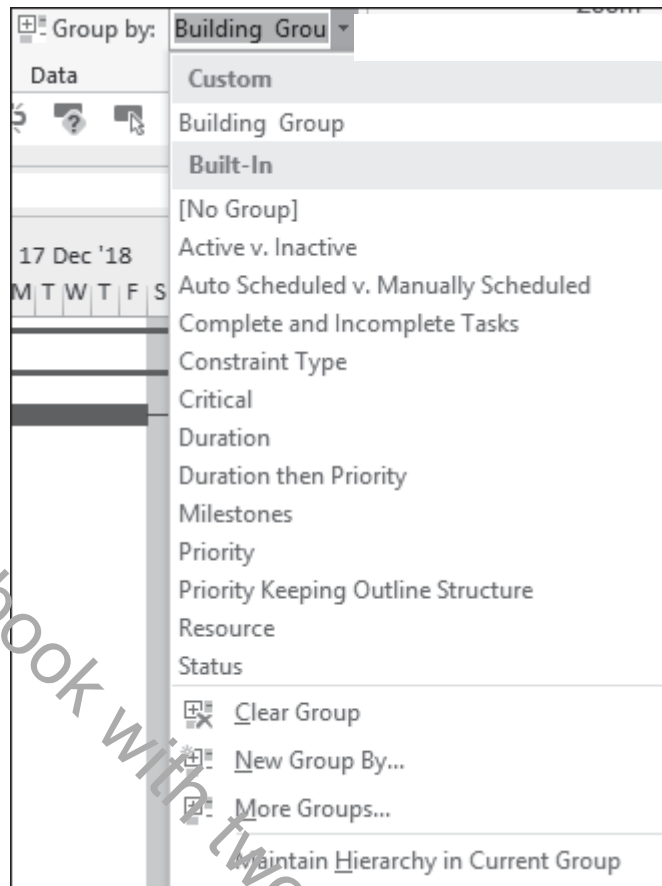


The first few characters of the field determine the sort order when tasks are grouped by a Text Field. To order items differently from the fields' text values, place a number or letter at the start of the description, or create a **Custom Outline Codes** which will take a little more effort but provide a more satisfactory result.

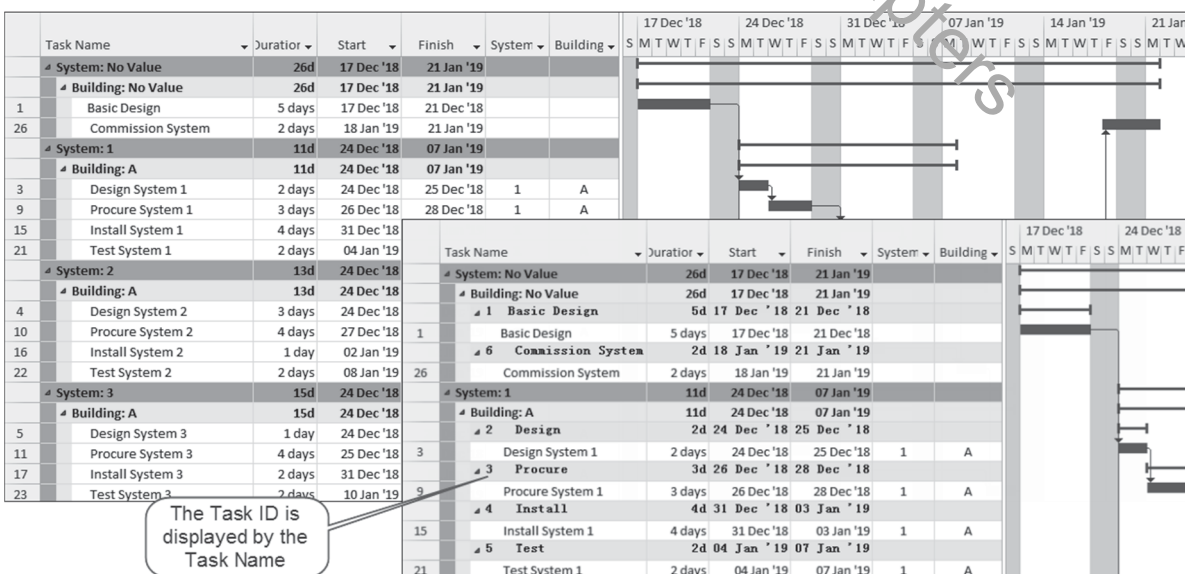
13.4.1 Group by: Function

The **View, Data** group, **Group by:** option allows you to Group scenarios in the same way as filters are created and saved:

- **Custom** are user defined groups,
- **Built-In** are system defined groups,
- **Clear Group** removes any grouping applied to a View,
- **New Group By...** opens the **Group Definition** form allowing the defining and saving of a new group scenario,
- **More Groups...** opens the **More Groups** form allowing access to Groups that may not be listed in the **View, Data** group, **Group by:** list.



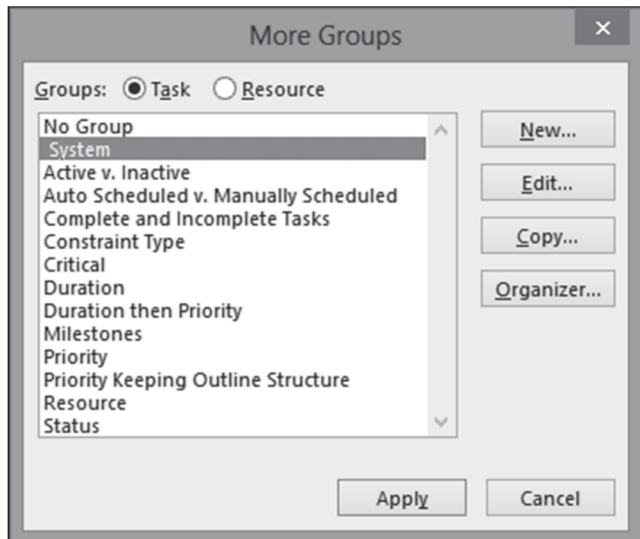
- **Maintain Hierarchy in Current Group** was a new feature to Microsoft Project 2010 and allows the user to see the Outline hierarchy when Grouping. The picture below displays the effect of grouping by two Custom Text columns, with the lower picture having this option turned on:



13.4.2 Using a Predefined Group

The Grouping function works in a similar way to Filters and Tables. A predefined Group may be assigned by:

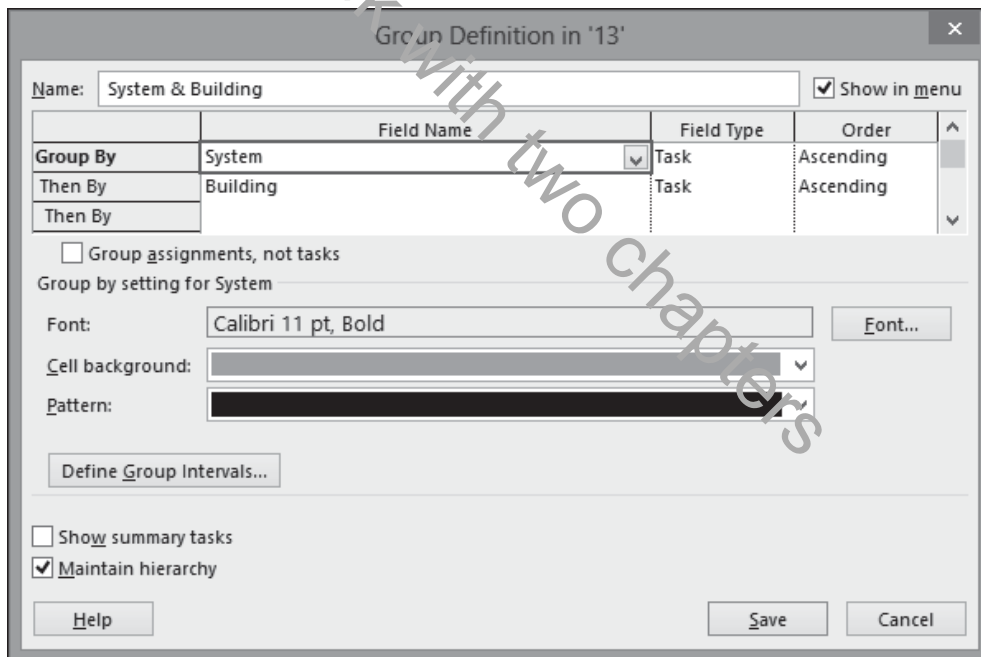
- Selecting **View, Data group, Group by:**
- Then either:
 - Selecting a grouping from the list, or
 - Selecting **More Groups...** to open the **More Groups** form and then selecting one from the list after clicking on the **Task** or **Resource** radio button.



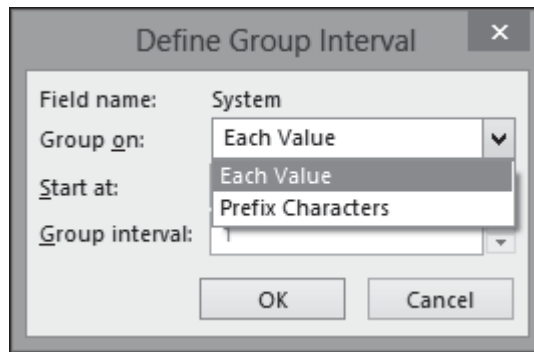
13.4.3 Creating a New Group

Create a new Group by:

- Selecting **View, Data group, Group by:**,
- Selecting **More Groups...** to open the **More Groups** form,
- Clicking on the **New...** button to open the **Group Definition** form,
- Now create a “Grouping” which may be reapplied at a later date or copy to another project using **Organizer**.



- The **Define Group Interval** form is available with many **Group By** options, such as Start or Finish, and allows further formatting options by defining the intervals of the banding.



Grouping is similar to the Oracle Primavera and Asta Powerproject's Group and Sort function. It is possible to mimic this Oracle Primavera function using the text columns as Task Code dictionaries. Projects converted from Oracle Primavera software format often translate Primavera Task Codes to Microsoft Project's Text fields. After conversion, the project may be **Grouped** by Text fields. **Custom Outline Codes** may produce a better result as bands may be ordered with this function.

13.4.4 Grouping Resources in the Resource Sheet

Resources may be created in the **Resource Sheet**. Then the resources may be grouped by a number of attributes. The standard options are shown below:



Resources are covered in more detail in the **RESOURCES** chapters.

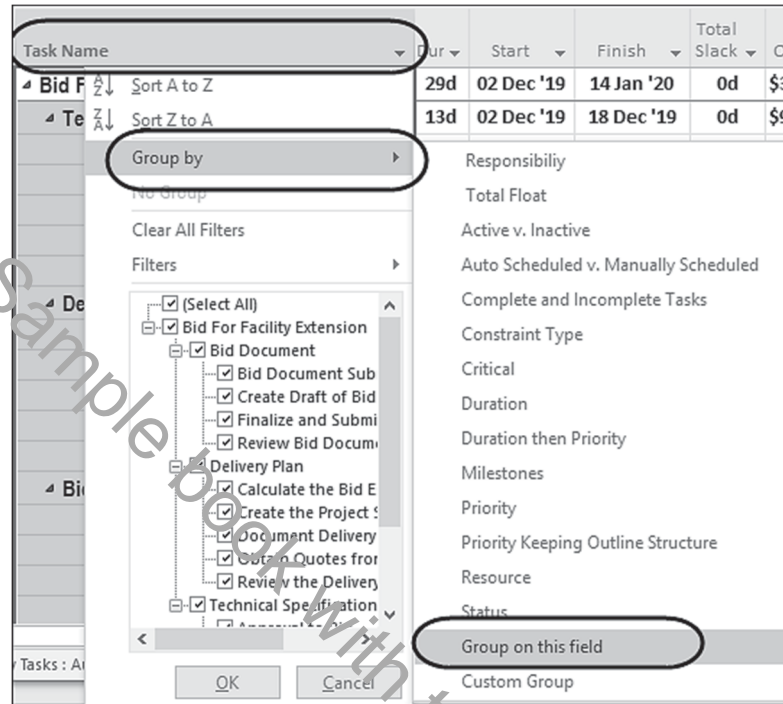
There are many uses for Grouping Resources which may be used in conjunction with Customized Fields:

- A project hierarchical organizational structure may be created using these Customized Outline Codes and resources summarized under this hierarchical structure in the Resource Sheet.
- Resources details such as skill, trade, address, office, department and telephone number may be recorded in Customized Fields and the resources grouped by this data.

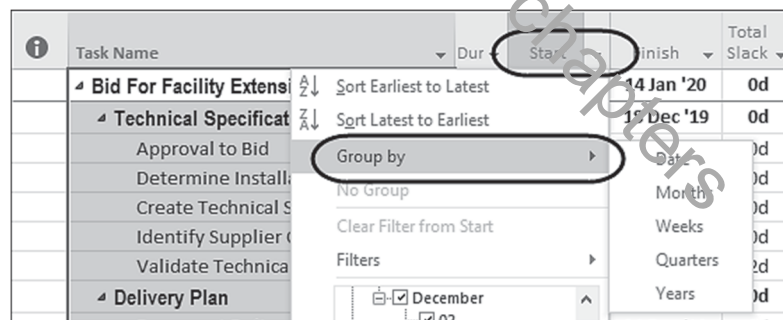
13.4.5 Grouping with AutoFilter

The **AutoFilter** command may also be used to Group tasks:

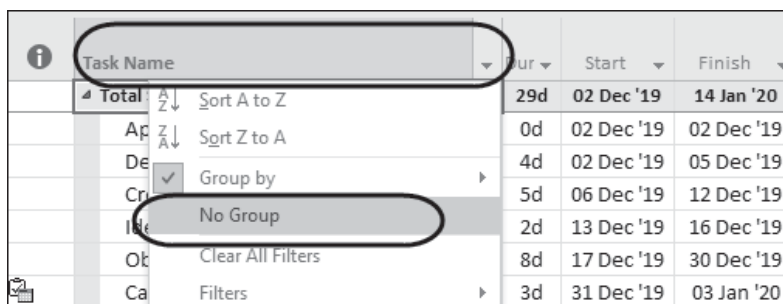
- It allows Grouping by one parameter only, and
- Different columns have different options,
- The picture below shows the Grouping options when selecting the Task Name header AutoFilter to group the tasks:



- The picture below shows the Grouping options when selecting the Start header AutoFilter to group the tasks:



- The picture below shows the option to remove grouping using the **No Group** AutoFilter command:



Sample book with two chapters


13.5 Workshop 11 - Reorganizing the Schedule



Background

We want to issue reports for comment by management. We will group the tasks by their float value and show the WBS columns. We will also look at the Outline Codes and then Group the Tasks by the people responsible for the work, which we will enter into a text column.

Assignment

1. Grouping – to group tasks by their float value:
 - Ensure there is no filter applied.
 - Apply the Entry table and ensure the **Total Slack** column is displayed.
 - Select **View, Data Group By**  drop down box and select **New Group by**:
 - Create a new Group titled **Total Float** and group the tasks by **Total Slack**
 - Change the font to Calibri 10 pt, Bold,
 - Select an appropriate cell background,
 - Check the **Show in menu** option, **DO NOT** show Summary tasks and apply.

Group Definition in 'OzBuild Workshop 11'

Name: Show in menu

	Field Name	Field Type	Order
Group By	Total Slack	Task	Ascending
Then By			
Then By			

Group assignments, not tasks

Group by setting for Total Slack

Font:

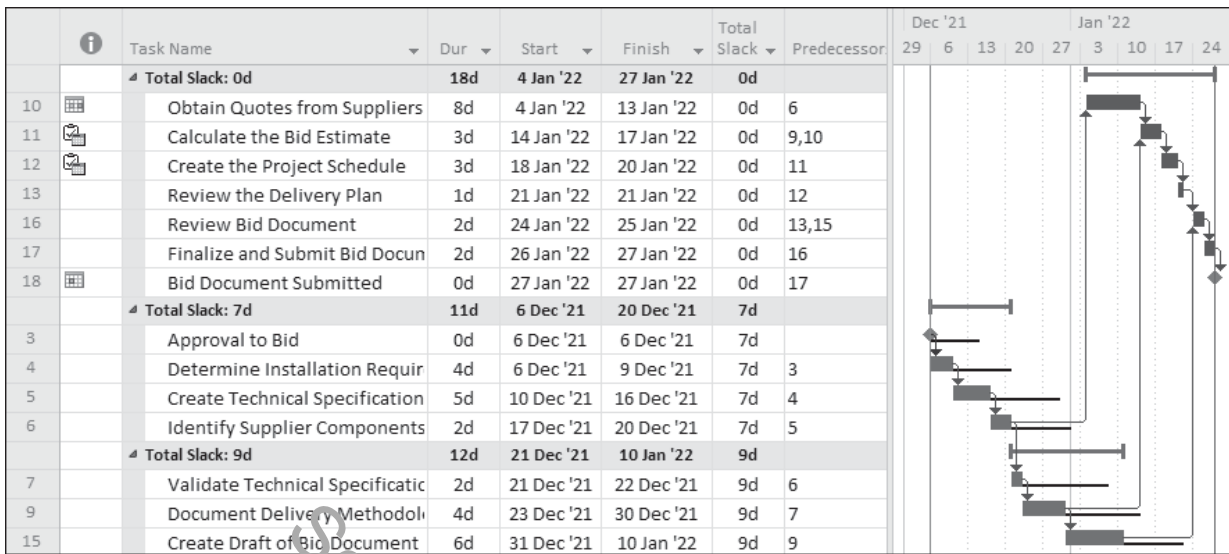
Cell background:

Pattern:

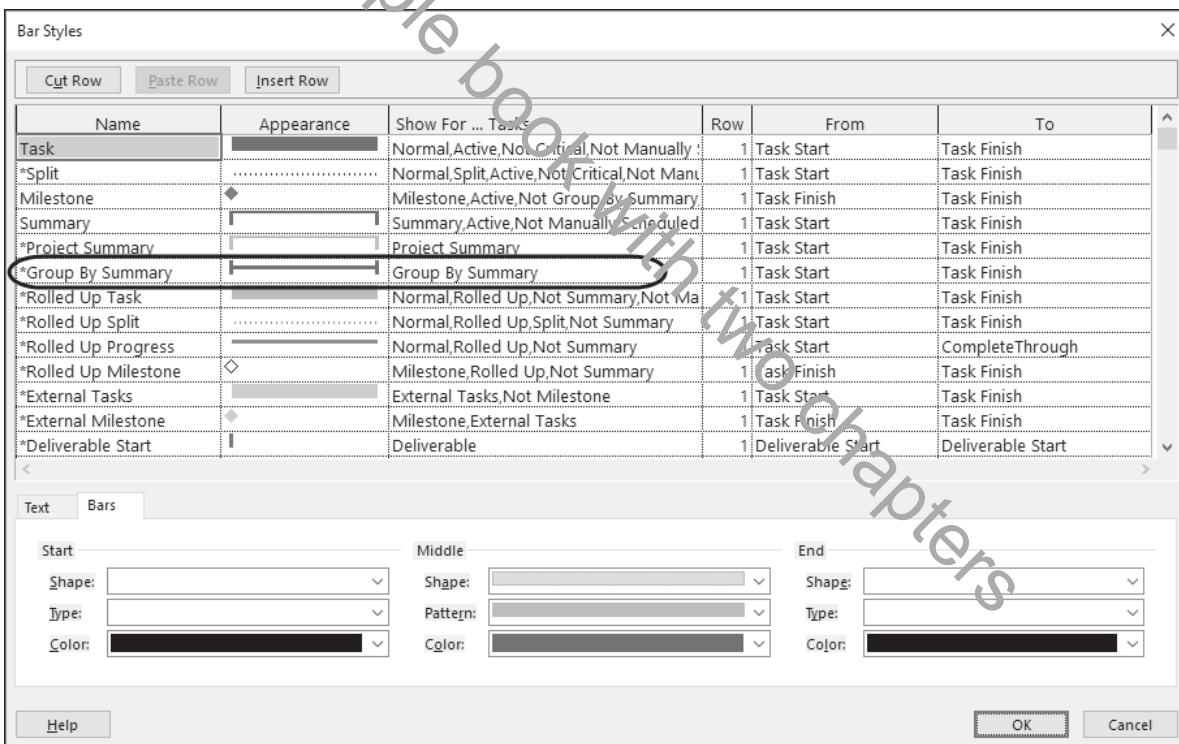
Show summary tasks

Maintain hierarchy

➤ All the tasks with zero days' float are grouped at the top under the heading **Total Slack: 0 days**.

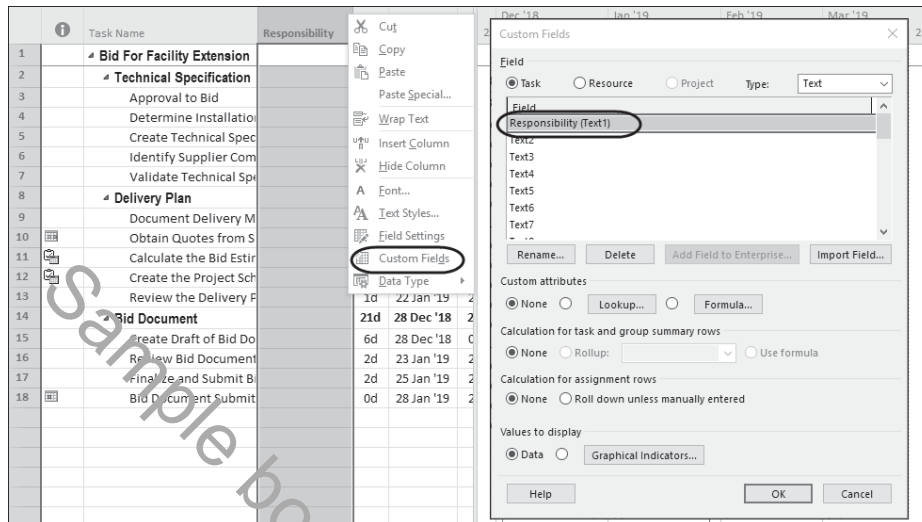


NOTE: You may format or remove the summary bars or add text to them by opening the **Bars** form and editing the **Group By Summary** bar text tab.




2. Grouping by Responsibility

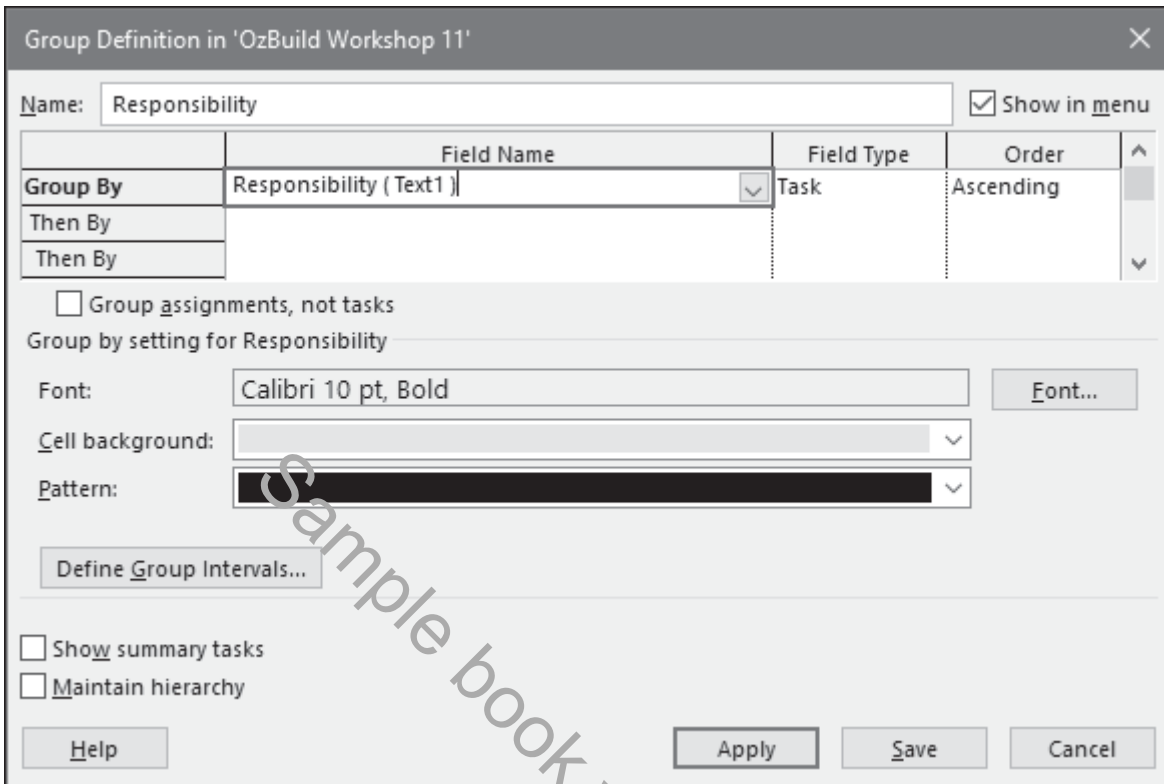
- Remove the previous grouping by selecting [No Group],
- Use the **Add New Column** command to add a **Text 1** as a new column,
- Drag this new column so it is beside the Task Name
- Right Click on the column heading, select **Custom Fields** and use the **Rename** command to rename the column as **Responsibility**,



- Assign the Responsibilities in the table below, use Copy & Paste cells:

ID	Task Name	Responsibility
2	Technical Specification	
3	Approval to Bid	
4	Determine Installation Requirements	Scott Morrison - Engineering
5	Create Technical Specification	Scott Morrison - Engineering
6	Identify Supplier Components	Angela Lowe - Purchasing
7	Validate Technical Specification	Scott Morrison - Engineering
8	Delivery Plan	
9	Document Delivery Methodology	Scott Morrison - Engineering
10	Obtain Quotes from Suppliers	Angela Lowe - Purchasing
11	Calculate the Bid Estimate	Carol Peterson - Bid Manager
12	Create the Project Schedule	Carol Peterson - Bid Manager
13	Review the Delivery Plan	Carol Peterson - Bid Manager
14	Bid Document	
15	Create Draft of Bid Document	Carol Peterson - Bid Manager
16	Review Bid Document	Carol Peterson - Bid Manager
17	Finalize and Submit Bid Document	Carol Peterson - Bid Manager
18	Bid Document Submitted	

- Create a Group titled **Responsibility** by clicking the **Group by:** button  and grouping the tasks by Responsibility showing in the menu but do not show Summary tasks.



- Select **Apply**,
- See the answer below:

		Dec '21				Jan '22				Feb		
		2	29	6	13	20	27	3	10	17	24	31
	Task Name	Responsibility										
	▲ Responsibility: No Value											
3	Approval to Bid											
18	Bid Document Submitted											
	▲ Responsibility: Angela Lowe - Purchasing											
6	Identify Supplier Components	Angela Lowe - Purchasing										
10	Obtain Quotes from Suppliers	Angela Lowe - Purchasing										
	▲ Responsibility: Carol Peterson - Bid Manager											
11	Calculate the Bid Estimate	Carol Peterson - Bid Manager										
12	Create the Project Schedule	Carol Peterson - Bid Manager										
13	Review the Delivery Plan	Carol Peterson - Bid Manager										
15	Create Draft of Bid Document	Carol Peterson - Bid Manager										
16	Review Bid Document	Carol Peterson - Bid Manager										
17	Finalize and Submit Bid Document	Carol Peterson - Bid Manager										
	▲ Responsibility: Scott Morrison - Engineering											
4	Determine Installation Requirements	Scott Morrison - Engineering										
5	Create Technical Specification	Scott Morrison - Engineering										
7	Validate Technical Specification	Scott Morrison - Engineering										
9	Document Delivery Methodology	Scott Morrison - Engineering										

3. Remove all Grouping.
4. Hide the **Responsibility** column.
5. Save your **OzBuild Bid** project.