Compress the Bicycle Schedule

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Plan, Direct, Control Project

PMGT 614

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Compress the Bicycle Schedule

In order to meet market demands, the project sponsor requested the project manager to improve the project schedule in order to expedite overall production and provide quicker deliverable of goods. The following change evaluation seeks to meet the new business demands and ensure the interest of tour organizations, shareholders, and associated stakeholders.

Change Evaluation

The team evaluated the change request received from the customer to determine what compression techniques were appropriate for use. The evaluation determined the best course of action was to crash key activities along the critical pathway to reduce the project schedule. Four activities were identified during this analysis. The completed Change Request Form is shown in Figure 1.

The frame construction time was compressed from four hours to two hours using additional labor hours. The phone dock time was compressed from 1.2 days to two hours due to the outsourcing of this item. Final testing of the completed product was reduced from eight to four hours as the customer testing will suffice for product testing. Finally, the project closeout process can be reduced from eight hours to six hours as this process will be active between project phases.

Project Change Request Form

Name of Project: BICYCLE **Project Manager:** Kristin Dexter

Change Request #: 1.0 **Change Request Date:** 6-Jun-17

Change Requested by Name: Customer **Current Project Phase:** Initiation

Description of Change: Customer states project schedule is too long. Requests schedule compression. Primary constraint is time. The project team recommends:

1. Crashing the time to order the frame from 4 hours to 2 hours.
2. Crashing the time to assemble and mount the phone dock from 1.2 days to 2 hours as this product is being shipped directly from the outside vendor ready to assemble and mount.
3. Crashing the time to test the final product from 8 hours to 4 hours since each component is tested when assembled, and the customer will test the final product.
4. Crashing the project closeout from 8 hours to 6 hours since paperwork, invoicing, etc. should be submitted and closed throughout the project.

Original completion date: 26-Jun-17 Revised completion date: 22-Jun-17

Scope Impact: The scope will remain unchanged. Project schedule will be changed which will require additional changes to the project documents.

Cost Impact: The total cost of crashing the project leads to a reduction in the overall cost of $50.23

Original EAC: $6.212.66 Revised EAC: $6.162.43

Quality Impact: The quality level of the product will remain unchanged.

Possible Risks: The possibility of failing to meet the new time line.
Crash costs exceed the estimated costs causing additional delays or change of scope.
Outside vendor delays getting materials, which can cause additional delays to the schedule.

Reviewed by: Kristin Dexter **Position:** Project Manager **Date:** 7-Jun-17

Recommended Action: APPROVE

Figure 1. Customer change request to compress the project schedule.

Budget Changes

Table 1

Provides information regarding the budget prior to proposed changes.

WBS		Expenses					
WBS No	**WBS Element**	**Labor**	**Travel**	**Materials**	**Subcontracts**	**Other Direct Costs**	**Totals**
1.1	Frame Set	$ 3.77	$ -	$ 75.92	$ -	$ 5.00	$ 84.69
1.2	Crank Set	$ 1.31	$ 439.00	$ 28.79	$ -	$ 15.00	$ 484.10
1.3	Wheels	$ 0.94	$ 439.00	$ 38.79	$ -	$ 10.00	$ 488.73
1.4	Braking System	$ 1.31	$ 439.00	$ 16.98	$ -	$ 10.00	$ 467.29
1.5	Shifting System	$ 1.67	$ 439.00	$ 17.11	$ -	$ -	$ 457.78
1.6	Integration	$ 91.25	$ 1,649.00	$ -	$ -	$ -	$ 1,740.25
1.7	Phone Dock	$ 69.96	$ 439.00	$ 6.16	$ 250.00	$ -	$ 765.12
1.8	Project Management	$ 75.70	$ 1,649.00	$ -	$ -	$ -	$ 1,724.70
	Totals	**$ 245.91**	**$ 5,493.00**	**$ 183.75**	**$ 250.00**	**$ 40.00**	**$ 6,212.66**

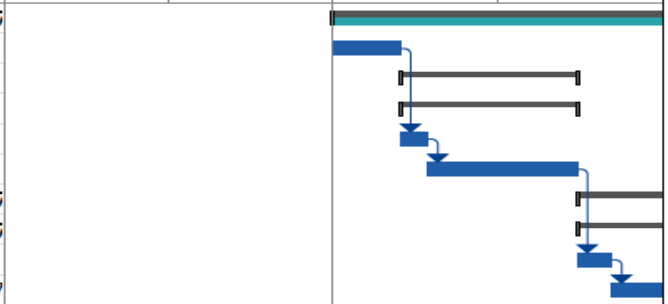
Table 2

Includes the crashing costs for the project and the difference between the original cost and the proposed new budget

WBS					Expenses					
WBS No	WBS Element	Before Crash Hours	After Crash Hours	Crashing Costs	Labor	Travel	Materials	Subcontracts	Other Direct Costs	Totals
1.1	**Frame Set**	0.52	0.52	$ -	$ 3.77	$ -	$ 75.92	$ -	$ 5.00	$ 84.69
1.2	**Crank Set**	0.18	0.18	$ -	$ 1.31	$ 439.00	$ 28.79	$ -	$ 15.00	$ 484.10
1.3	**Wheels**	0.13	0.13	$ -	$ 0.94	$ 439.00	$ 38.79	$ -	$ 10.00	$ 488.73
1.4	**Braking System**	0.18	0.18	$ -	$ 1.31	$ 439.00	$ 16.98	$ -	$ 10.00	$ 467.29
1.5	**Shifting System**	0.23	0.23	$ -	$ 1.67	$ 439.00	$ 17.11	$ -	$ -	$ 457.78
1.6	**Integration**	18.25	14.25	$ 10.00	$ 71.25	$ 1,649.00	$ -	$ -	$ -	$ 1,720.25
1.7	**Phone Dock**	9.65	2.00	$ 27.73	$ 14.50	$ 439.00	$ 6.16	$ 250.00	$ -	$ 709.66
1.8	**Project Management**	15.14	10.14	$ 12.50	$ 50.70	$ 1,649.00	$ -	$ -	$ -	$ 1,699.70
	Totals	**44.28**	**27.63**	$ 50.23	**$ 145.45**	**$ 5,493.00**	**$ 183.75**	**$ 250.00**	**$ 40.00**	**$ 6,162.43**
									Original Cost	$ 6,212.66
									Difference	$ (50.23)

Original Schedule

ID	Task Mode	Task Name	Duration	Start	Finish
1		**Build a Bicycle**	**8 days**	**Thu 6/15/17**	**Mon 6/26/17**
2		Project Initiation	1.88 hrs	Thu 6/15/17	Thu 6/15/17
3		**Preliminary Plan**	**1.22 days**	**Thu 6/15/17**	**Fri 6/16/17**
4		**Bicycle Integration**	**1.22 days**	**Thu 6/15/17**	**Fri 6/16/17**
5		Create a Concept	3 hrs	Thu 6/15/17	Thu 6/15/17
6		Design Bicycle	6.75 hrs	Thu 6/15/17	Fri 6/16/17
7		**Project Planning**	**2.56 days**	**Fri 6/16/17**	**Wed 6/21/17**
8		**Procure Material**	**2.56 days**	**Fri 6/16/17**	**Wed 6/21/17**
9		Order Frame	4 hrs	Fri 6/16/17	Fri 6/16/17
10		Order Handlebars	2 hrs	Fri 6/16/17	Mon 6/19/17
11		Order Fork	0.5 hrs	Mon 6/19/17	Mon 6/19/17
12		Order Seat	0.5 hrs	Mon 6/19/17	Mon 6/19/17
13		Order Pedals	0.5 hrs	Mon 6/19/17	Mon 6/19/17
14		Order Bearings	0.5 hrs	Mon 6/19/17	Mon 6/19/17
15		Order Crank Arms	1 hr	Mon 6/19/17	Mon 6/19/17
16		Order Sprocket	1 hr	Mon 6/19/17	Mon 6/19/17
17		Order Front Wheel	1 hr	Mon 6/19/17	Mon 6/19/17
18		Order Rear Wheel	1 hr	Mon 6/19/17	Mon 6/19/17
19		Order Tires & Tubes	0.5 hrs	Mon 6/19/17	Tue 6/20/17
20		Order Brake Levers	0.5 hrs	Tue 6/20/17	Tue 6/20/17
21		Order Brake Cables	0.5 hrs	Tue 6/20/17	Tue 6/20/17
22		Order Brake Pads/Calipers	1 hr	Tue 6/20/17	Tue 6/20/17
23		Order Derailer	1 hr	Tue 6/20/17	Tue 6/20/17
24		Order Shift Cables	0.5 hrs	Tue 6/20/17	Tue 6/20/17
25		Order Shift Levers	1 hr	Tue 6/20/17	Tue 6/20/17



Project: Ben Group 4 Bicycle Befo
Date: Sat 6/24/17

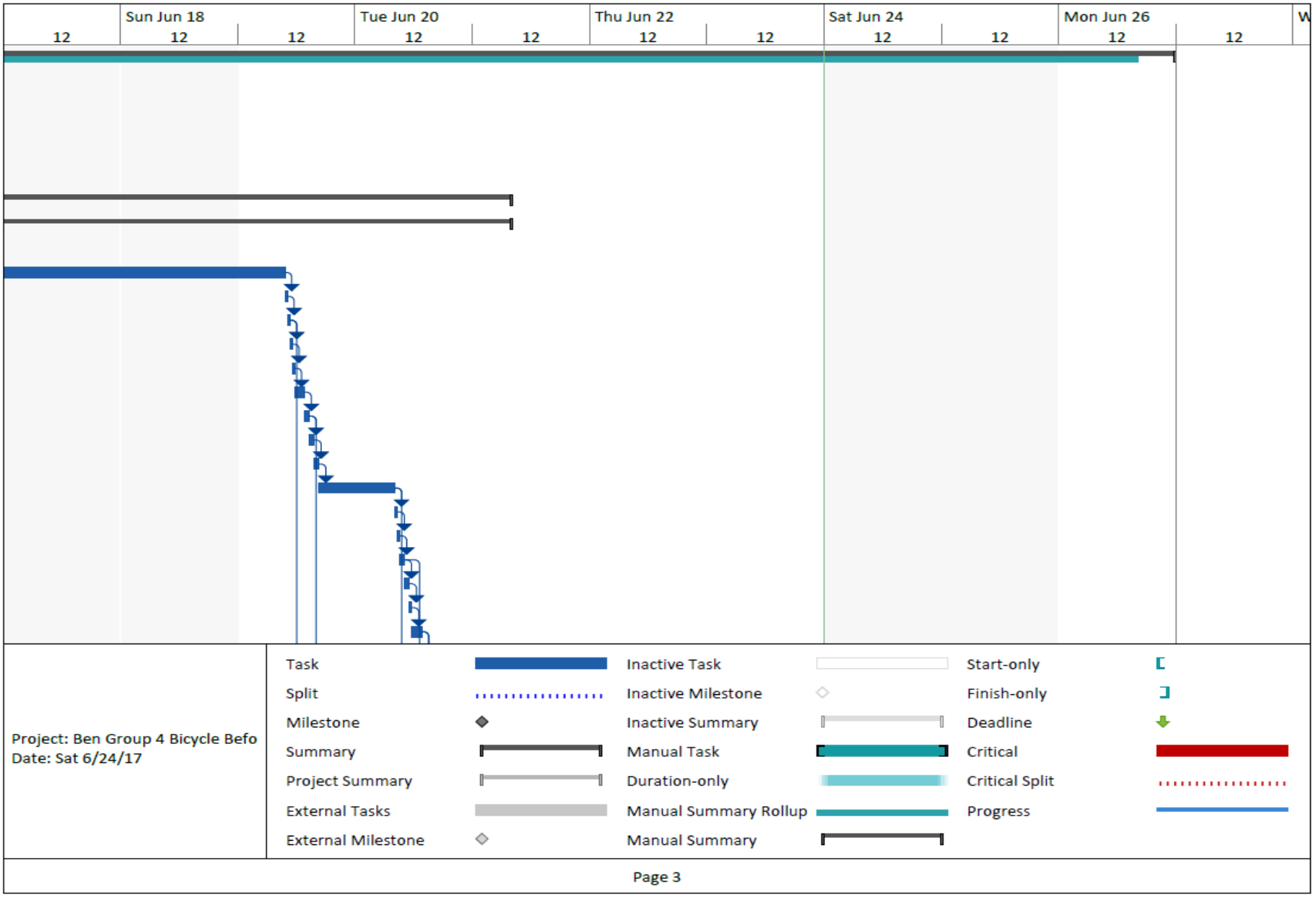
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Split	Inactive Milestone	Finish-only	
Milestone	Inactive Summary	Deadline	
Summary	Manual Task	Critical	
Project Summary	Duration-only	Critical Split	
External Tasks	Manual Summary Rollup	Progress	
External Milestone	Manual Summary		

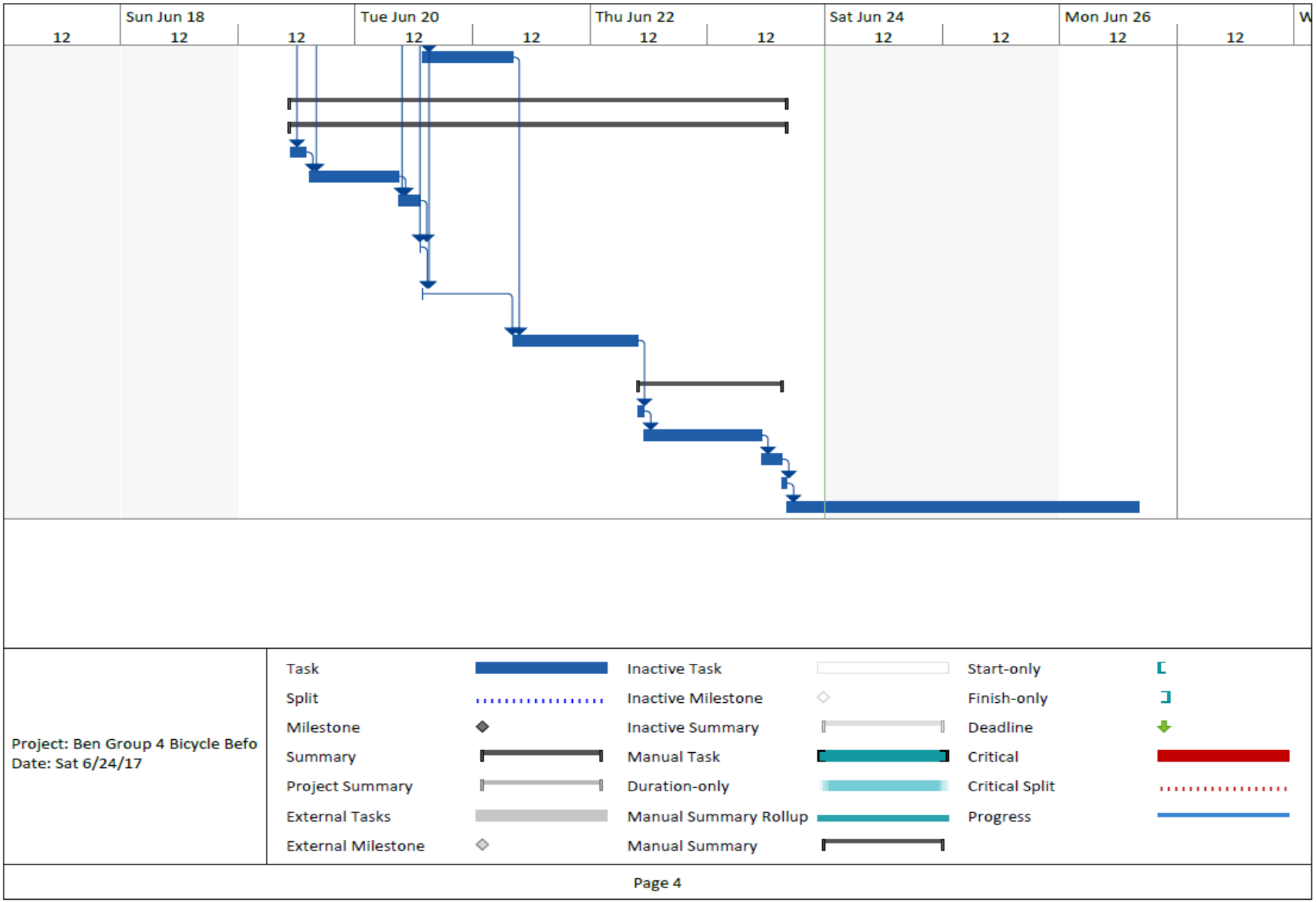
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ID	Task Mode	Task Name	Duration	Start	Finish	Wed Jun 14 12	Fri Jun 16 12
26		Order Phone Dock, Power Supply, and Bluetooth from Contractor	3.5 hrs	Tue 6/20/17	Wed 6/21/17		
27		**Project Production**	**4.58 days**	**Mon 6/19/17**	**Fri 6/23/17**		
28		**Bicycle Assembly**	**4.58 days**	**Mon 6/19/17**	**Fri 6/23/17**		
29		Assemble Frameset	0.28 days	Mon 6/19/17	Mon 6/19/17		
30		Assemble Crankset to Frame	0.4 days	Mon 6/19/17	Tue 6/20/17		
31		Assemble Wheels & Mount to Frame Set	0.42 days	Tue 6/20/17	Tue 6/20/17		
32		Assemble Braking System & Mount to Frame Set	0.01 days	Tue 6/20/17	Tue 6/20/17		
33		Assemble Shifting System & Mount to Frame Set	0.02 days	Tue 6/20/17	Tue 6/20/17		
34		Assemble Phone Dock & Mount to Frame Set	1.2 days	Wed 6/21/17	Thu 6/22/17		
35		**Perform Assembly Testing**	**1.56 days**	**Thu 6/22/17**	**Fri 6/23/17**		
36		Perform Component Test	1.25 hrs	Thu 6/22/17	Thu 6/22/17		
37		Perform Product Test	8 hrs	Thu 6/22/17	Fri 6/23/17		
38		Perform Customer Testing	3.25 hrs	Fri 6/23/17	Fri 6/23/17		
39		Deliver Bicycle to Customer	1 hr	Fri 6/23/17	Fri 6/23/17		
40		**Project Closeout**	1 day	Fri 6/23/17	Mon 6/26/17		

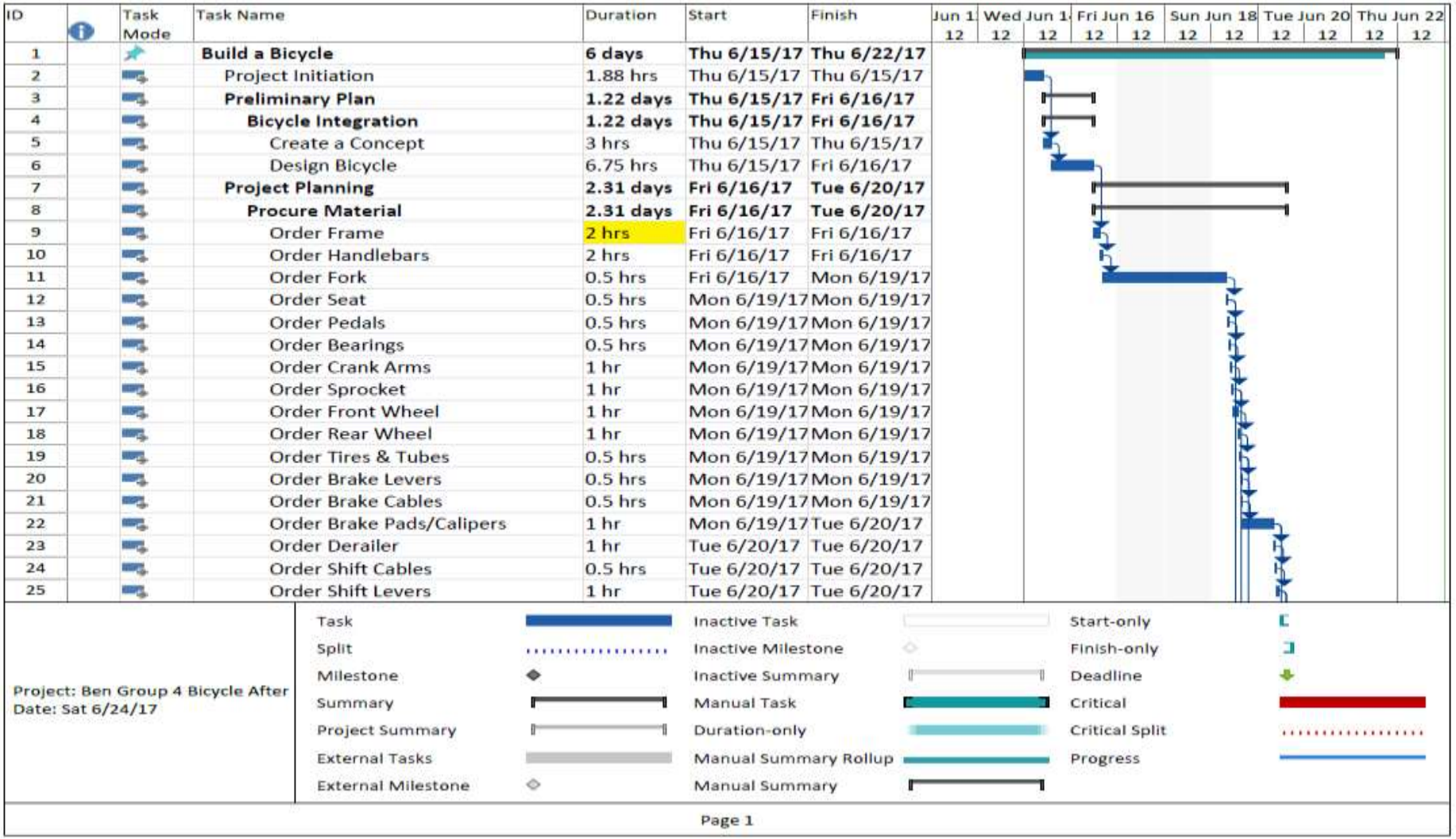
Project: Ben Group 4 Bicycle Befo
Date: Sat 6/24/17

Task	Inactive Task	Start-only
Split	Inactive Milestone	Finish-only
Milestone	Inactive Summary	Deadline
Summary	Manual Task	Critical
Project Summary	Duration-only	Critical Split
External Tasks	Manual Summary Rollup	Progress
External Milestone	Manual Summary	


Sun Jun 18
Tue Jun 20
Thu Jun 22
Sat Jun 24
Mon Jun 26
12
Project: Ben Group 4 Bicycle Befo
Date: Sat 6/24/17
Task
Split
Milestone
Summary
Project Summary
External Tasks
External Milestone
Inactive Task
Inactive Milestone
Inactive Summary
Manual Task
Duration-only
Manual Summary Rollup
Manual Summary
Start-only
Finish-only
Deadline
Critical
Critical Split
Progress
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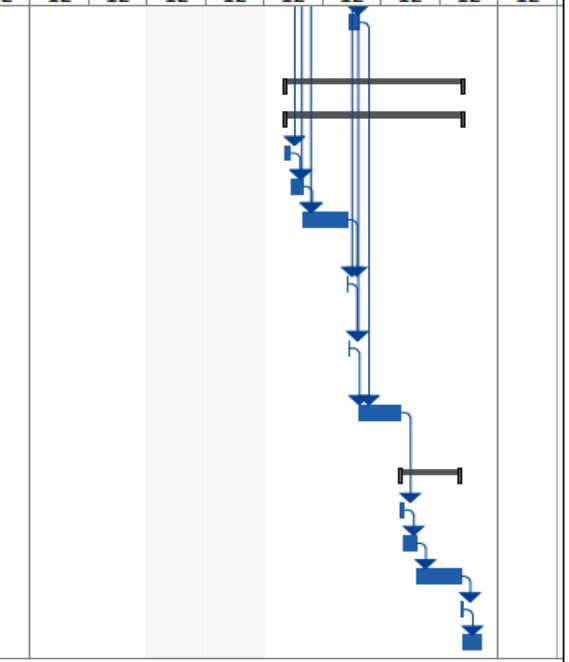

Sun Jun 18
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Project: Ben Group 4 Bicycle Befo
Date: Sat 6/24/17
Task
Split
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External Milestone
Inactive Task
Inactive Milestone
Inactive Summary
Manual Task
Duration-only
Manual Summary Rollup
Manual Summary
Start-only
Finish-only
Deadline
Critical
Critical Split
Progress
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Compressed Schedule



ID	Task Mode	Task Name	Duration	Start	Finish
1		**Build a Bicycle**	**6 days**	**Thu 6/15/17**	**Thu 6/22/17**
2		Project Initiation	1.88 hrs	Thu 6/15/17	Thu 6/15/17
3		**Preliminary Plan**	**1.22 days**	**Thu 6/15/17**	**Fri 6/16/17**
4		**Bicycle Integration**	**1.22 days**	**Thu 6/15/17**	**Fri 6/16/17**
5		Create a Concept	3 hrs	Thu 6/15/17	Thu 6/15/17
6		Design Bicycle	6.75 hrs	Thu 6/15/17	Fri 6/16/17
7		**Project Planning**	**2.31 days**	**Fri 6/16/17**	**Tue 6/20/17**
8		**Procure Material**	**2.31 days**	**Fri 6/16/17**	**Tue 6/20/17**
9		Order Frame	2 hrs	Fri 6/16/17	Fri 6/16/17
10		Order Handlebars	2 hrs	Fri 6/16/17	Fri 6/16/17
11		Order Fork	0.5 hrs	Fri 6/16/17	Mon 6/19/17
12		Order Seat	0.5 hrs	Mon 6/19/17	Mon 6/19/17
13		Order Pedals	0.5 hrs	Mon 6/19/17	Mon 6/19/17
14		Order Bearings	0.5 hrs	Mon 6/19/17	Mon 6/19/17
15		Order Crank Arms	1 hr	Mon 6/19/17	Mon 6/19/17
16		Order Sprocket	1 hr	Mon 6/19/17	Mon 6/19/17
17		Order Front Wheel	1 hr	Mon 6/19/17	Mon 6/19/17
18		Order Rear Wheel	1 hr	Mon 6/19/17	Mon 6/19/17
19		Order Tires & Tubes	0.5 hrs	Mon 6/19/17	Mon 6/19/17
20		Order Brake Levers	0.5 hrs	Mon 6/19/17	Mon 6/19/17
21		Order Brake Cables	0.5 hrs	Mon 6/19/17	Mon 6/19/17
22		Order Brake Pads/Calipers	1 hr	Mon 6/19/17	Tue 6/20/17
23		Order Derailer	1 hr	Tue 6/20/17	Tue 6/20/17
24		Order Shift Cables	0.5 hrs	Tue 6/20/17	Tue 6/20/17
25		Order Shift Levers	1 hr	Tue 6/20/17	Tue 6/20/17

ID	Task Mode	Task Name	Duration	Start	Finish
26		Order Phone Dock, Power Supply, and Bluetooth from Contractor	3.5 hrs	Tue 6/20/17	Tue 6/20/17
27		**Project Production**	**3.13 days**	**Mon 6/19/17**	**Thu 6/22/17**
28		**Bicycle Assembly**	**3.13 days**	**Mon 6/19/17**	**Thu 6/22/17**
29		Assemble Frameset	0.28 days	Mon 6/19/17	Mon 6/19/17
30		Assemble Crankset to Frame	0.4 days	Mon 6/19/17	Mon 6/19/17
31		Assemble Wheels & Mount to Frame Set	0.42 days	Mon 6/19/17	Tue 6/20/17
32		Assemble Braking System & Mount to Frame Set	0.01 days	Tue 6/20/17	Tue 6/20/17
33		Assemble Shifting System & Mount to Frame Set	0.02 days	Tue 6/20/17	Tue 6/20/17
34		Assemble Phone Dock & Mount to Frame Set	2 hrs	Tue 6/20/17	Wed 6/21/17
35		**Perform Assembly Testing**	**1.06 days**	**Wed 6/21/17**	**Thu 6/22/17**
36		Perform Component Test	1.25 hrs	Wed 6/21/17	Wed 6/21/17
37		Perform Product Test	4 hrs	Wed 6/21/17	Wed 6/21/17
38		Perform Customer Testing	3.25 hrs	Wed 6/21/17	Thu 6/22/17
39		Deliver Bicycle to Customer	1 hr	Thu 6/22/17	Thu 6/22/17
40		**Project Closeout**	6 hrs	Thu 6/22/17	Thu 6/22/17



Project: Ben Group 4 Bicycle After
Date: Sat 6/24/17

Task	Inactive Task	Start-only	
Split	Inactive Milestone	Finish-only	
Milestone	Inactive Summary	Deadline	
Summary	Manual Task	Critical	
Project Summary	Duration-only	Critical Split	
External Tasks	Manual Summary Rollup	Progress	
External Milestone	Manual Summary		

Schedule Compression Techniques

Two techniques are commonly utilized to compress schedules when scope change is not required: fast tracking and crashing. With the availability of additional funds, and the need to complete the project earlier than initially planned, crashing was the compression technique used for the Bicycle Project. Crashing seeks to add additional resources to the project to decrease the planned duration of project tasks (Project Management Institute, 2013). Additional resources (et. al. hired resources, provided overtime, or monetary compensation) are assigned specifically to the tasks associated with the critical pathway for the project; as well as to project activities that can have additional resources assigned without adding additional cost to the project (Project Management Institute, 2013) When the technique of crashing is utilized, the reduction in duration with less cost input will occur; as the process is continued project cost will grow at an exponential rate as more significant reduction in task duration occurs. However, the compression technique of crashing cannot be applied to all activities of the schedule.

References

Larson, E. W. & Gray, C. F. (2014). *Project Management: The managerial process* (6th ed.). New York, NY: McGraw-Hill.