CE2183 Construction Project Management

Lab Project AY2013/14

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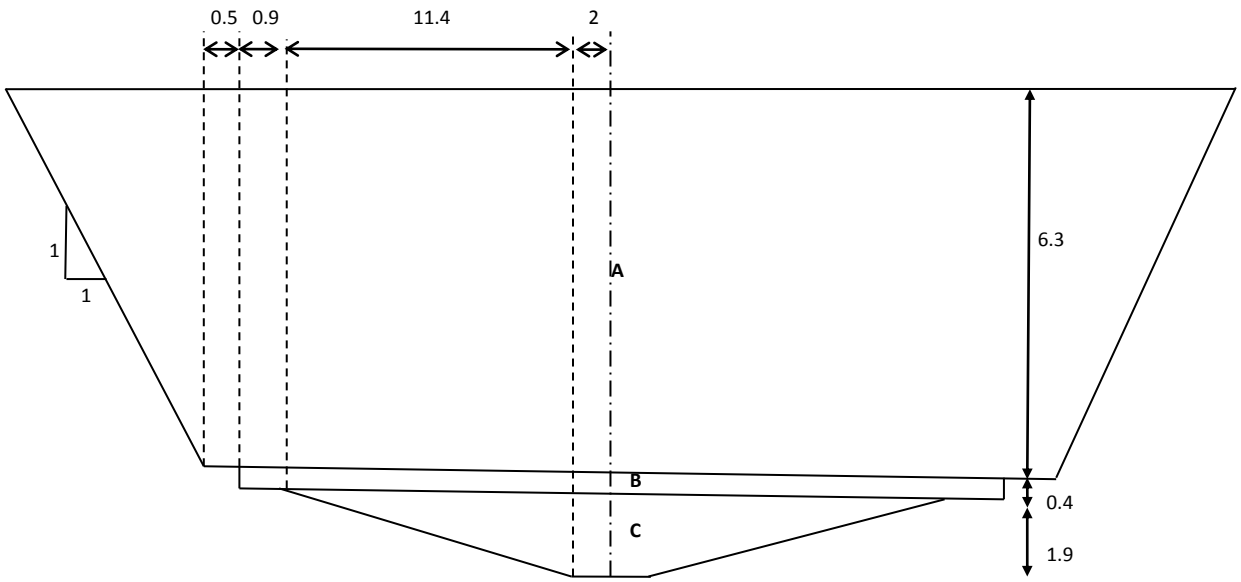

0.5
0.9
11.4
2
1
1
A
6.3
B
0.4
C
1.9

Excavation

Volume of section A $= \frac{1}{3}\pi(21.1^2 + 14.8^2 + 21.1 \times 14.8)(6.3) = 6442.5m^3$

Volume of section B $= \pi(14.3)^2(0.4) = 257m^3$

Volume of section C $= \frac{1}{3}\pi(13.4^2 + 2.0^2 + 13.4 \times 2.0)(1.9) = 418.55m^3$

Total Excavation volume $= 6442.5 + 257 + 418.55$

$= 7118.05BCM = 8897.5LCM$

Backfill

Total Backfill volume

$= \frac{1}{3}\pi(21.1^2 + 14.8^2 + 21.1 \times 14.8)(6.3) - \pi(14.3)^2(0.6) - \pi(14.0)^2(5.7)$

$= 2547.26CCM = 3745.98LCM$

Total dumping volume = Total excavation volume - Total backfill volume

$= 8897.5LCM - 3745.98LCM$

$= 5151.52LCM$

Bedding

Gravel volume $= \pi(14.3)^2(0.4) = 257m^3$

Surface area of gravel $= 569.58 + \pi(14.3^2 - 13.4^2) = 647.9m^2$

Concrete

Slab volume $= \pi(14.3)^2(0.6) = 385.45m^3$

Thick wall volume $= \pi(14.0^2 - (14.0 - 0.6)^2)(8 - 3.5) = 232.42m^3$

Thin wall volume $= \pi(14.0^2 - (14.0 - 0.4)^2)(3.5) = 121.39m^3$

Total concrete volume $= 385.45 + 232.42 + 121.39 = 739.26m^3$

Reinforcement

Assumption: No overlapping of reinforcement steel is required. A length of 200mm of steel is required between slab and thick wall, and between thick wall and thin wall.

Steel required for concrete only $= 739.26 \times 180/1000 = 133.07 ton$

Extra steel required
$= \{[\pi(14.0^2 \times 0.2) - \pi(13.4^2 \times 0.2)] + [\pi(14.0^2 \times 0.2) - \pi(13.6^2 \times 0.2)]\} \times 180/1000$

$= 3.1 ton$

Total steel required $= 133.07 + 3.1 = 136.17 ton$

Formwork

Formwork fabrication:

½ Slab $= \pi \times 14.3 \times 0.6 + 2(0.6 \times 0.9 + 0.6\sqrt{11.4^2 + 1.9^2} + 2.0 \times 0.6)$

$= 44.3 m^2$

1/3 Thick Wall $= \frac{2}{3}\pi \times (8 - 3.5) \times 14 + \frac{2}{3}\pi \times (8 - 3.5) \times 13.4 + 2 \times 0.6 \times (8 - 3.5)$

$= 263.64 m^2$

1/3 Thin Wall $= \frac{2}{3}\pi \times 3.5 \times 14 + \frac{2}{3}\pi \times 3.5 \times 13.6 + 2 \times 0.4 \times 3.5$

$= 205.12 m^2$

Total surface area of formwork fabrication $= 44.3 + 263.64 + 205.12 = 513.06 m^2$

Formwork installation:

Total surface area of formwork installation
$= 44.3 + 26.95 + 263.64 + 260.94 + 258.24 + 205.12 + 203.72 + 202.32$

$= 1465.23 m^2$

Finishing (for inside surface only)

Finishing of thin wall $= 2\pi(14-0.4)(3.5)+\pi(14^2-13.6^2) = 333.76m^2$

Finishing of thick wall $= 2\pi(14-0.6)(4.5)+\pi(13.6^2-13.4^2) = 395.84m^2$

Finishing of slab $= \pi(13.4)\sqrt{13.4^2+1.9^2}-\pi(2)\sqrt{2^2+0.33^2}+\pi(2)^2$

$= 569.58m^2$

Total finishing area $= 333.76+395.84+569.58 = 1299.18m^2$

Scaffolding

Scaffolds are assembled off site. Scaffold can be reused, placed at outer wall.

Total length of scaffold along the outer wall $= 2\pi(14) = 87.96m$

Excavation

Total excavation volume	7118.05	bcm
Dumping volume	5151.52	lcm
Excavation productivity	50	m^3/hr
Dump truck cycle	0.5	hr
Truck loads	515.15	trucks
Total backfill volume	3745.98	lcm

Cost of excavators chosen	$ 5,723.89
Cost of trucks chosen	$ 6,105.48

Excavator-truck match

Number of excavators	Remarks	1	2	3	4	5
Excavator cycle (hr)	Truck volume/excavation productivity	0.2	0.11	0.07	0.06	0.05
Truck cycle (hr)	Excavator cycle+0.5hr	0.70	0.61	0.57	0.56	0.55
Truck cycle/Excavator cycle		3.50	5.75	7.75	9.50	11.00
Max hrs if truck governs(1 truck)	Truck cycle*truck loads	360.61	311.80	295.73	287.88	283.33
Daily production	Dumping vol/max hrs	14.29	16.52	17.42	17.89	18.18

Truck cycle governs: Number of hrs	120.20	62.36	42.25	31.99	25.76
Daily production	42.86	82.61	121.94	161.05	200.00
Cost	$ 13,222.18	$ 12,472.05	$ 12,251.85	$ 12,154.85	$ 12,106.03
Excavator cycle governs: Number of hrs	103.03	54.23	38.16	30.30	25.76
Daily production	57.14	99.13	139.36	178.95	200.00
Cost	$ 13,393.90	$ 11,929.79	$ 11,829.37	$ 12,121.18	$ 12,106.03

Therefore, 3 excavators and 8 trucks are used. (most cost and time effective)

Gravel Bedding		
Gravel volume	257	m^3
Gravel surface area	647.90	m^2

Putting in gravel

Number of excavator	Duration (hr)	Cost
1	5.14	$ 257.00
2	2.71	$ 270.53
3	1.90	$ 285.56
4	1.51	$ 302.35

Gravel compaction

Number of compactor	Duration (hr)	Cost
1	21.60	$ 431.93
2	11.37	$ 454.67
3	8.00	$ 479.93
4	6.35	$ 508.16
5	5.40	$ 539.92
6	4.80	$ 575.91

Slab 1

Reinforcement fabrication

Productivity	10 hrs/ton/man	
Rate	$5 /hr/man	
Total of Steel	35.62 ton	
Labourer	Duration (hrs)	Cost
1	356.20	$ 1,781.00
2	178.10	$ 1,781.00
3	118.73	$ 1,781.00
4	89.05	$ 1,781.00
5	71.24	$ 1,781.00
6	62.49	$ 1,874.74
7	56.54	$ 1,978.89
8	52.38	$ 2,095.29
9	49.47	$ 2,226.25
10	47.49	$ 2,374.67
11	46.26	$ 2,544.29
12	45.67	$ 2,740.00

Reinforcement erection

Productivity	5 hrs/ton	
Rate	$60 /hr	
Total of Steel	35.62 ton	
Number of crane	Duration (hrs)	Cost
1	178.10	$ 10,686.00
2	93.74	$ 11,248.42
3	65.96	$ 11,873.33
4	52.38	$ 12,571.76
5	44.53	$ 13,357.50
6	39.58	$ 14,248.00

Formwork fabrication

Productivity	0.5 hrs/m^2/man	
Rate	$5 /hr/man	
Surface area of formwork	44.3 m^2	
Labourer	Duration (hrs)	Cost
1	22.15	$ 110.75
2	11.08	$ 110.75
3	7.38	$ 110.75
4	5.54	$ 110.75
5	4.43	$ 110.75
6	3.89	$ 116.58
7	3.52	$ 123.06

Volume of Slab 1	192.73 m^3
Steel for Slab 1	34.69 ton
Extra steel for Slab 1	0.93 ton
Total steel required for Slab 1	35.62 ton
Formwork fabrication for Slab 1	44.3 m^2
Formwork installation for Slab 1	44.3 m^2

8	3.26	$	130.29
9	3.08	$	138.44
10	2.95	$	147.67

Formwork installation

Productivity	0.333333333	hr/m^2	
Rate	$60	/hr	
Surface area of formwork	44.3	m^2	
Number of crane	Duration (hrs)	Cost	
1	14.77	$	886.00
2	7.77	$	932.63
3	5.47	$	984.44
4	4.34	$	1,042.35
5	3.69	$	1,107.50
6	3.28	$	1,181.33
7	3.01	$	1,265.71
8	2.84	$	1,363.08

Concreting (crew of 3 men)

Productivity	10	m^3/hr	
Rate	$5	/hr/man	
Concrete volume of Slab 1	192.73	m^3	
Labourer	Duration (hrs)	Cost	
3	19.27	$	289.10
6	10.14	$	304.31
9	7.14	$	321.22
12	5.67	$	340.11
15	4.82	$	361.37
18	4.28	$	385.46
21	3.93	$	412.99

Slab 2

Reinforcement fabrication

Productivity	10	hrs/ton/man
Rate	$5	/hr/man
Total of Steel	35.62	ton

Labourer	Duration (hrs)	Cost
1	356.20	$ 1,781.00
2	178.10	$ 1,781.00
3	118.73	$ 1,781.00
4	89.05	$ 1,781.00
5	71.24	$ 1,781.00
6	62.49	$ 1,874.74
7	56.54	$ 1,978.89
8	52.38	$ 2,095.29
9	49.47	$ 2,226.25
10	47.49	$ 2,374.67

Reinforcement erection

Productivity	5.00	hrs/ton
Rate	$60	/hr
Total of Steel	35.62	ton

Number of crane	Duration (hrs)	Cost
1	178.10	$ 10,686.00
2	93.74	$ 11,248.42
3	65.96	$ 11,873.33
4	52.38	$ 12,571.76
5	44.53	$ 13,357.50
6	39.58	$ 14,248.00

Formwork installation

Productivity	0.333333333	hr/m^2
Rate	$60	/hr
Surface area of formwork	26.95	m^2

Number of crane	Duration (hrs)	Cost
1	8.98	$ 539.00
2	4.73	$ 567.37
3	3.33	$ 598.89
4	2.64	$ 634.12
5	2.25	$ 673.75
6	2.00	$ 718.67
7	1.83	$ 770.00
8	1.73	$ 829.23

Concreting (crew of 3 men)

Volume of Slab 2	192.73	m^3
Steel for Slab 2	34.69	ton
Extra steel for Slab 2	0.93	ton
Total steel required for Slab 2	35.62	ton
Formwork fabrication for Slab 2	0	m^2
Formwork installation for Slab 2	26.95	m^2

Productivity	10 m^3/hr	
Rate	$5 /hr/man	
Concrete volume of Slab 1	192.73 m^3	
Labourer	Duration (hrs)	Cost
3	19.27	$ 289.10
6	10.14	$ 304.31
9	7.14	$ 321.22
12	5.67	$ 340.11
15	4.82	$ 361.37
18	42.83	$ 3,854.60
21	3.93	$ 412.99

Thick Wall 1

Volume of Thick Wall 1	77.47 m^3
Steel for Thick Wall 1	13.95 ton
Extra steel for Thick Wall 1	0.416 ton
Total steel required for Thick Wall 1	14.36 ton
Formwork fabrication for Thick Wall 1	0 m^2
Formwork installation for Thick Wall 1	263.64 m^2

Reinforcement fabrication

Productivity	10 hrs/ton/man	
Rate	$5 /hr/man	
Total of Steel	14.36 ton	
Labourer	Duration (hrs)	Cost
1	143.60	$ 718.00
2	71.80	$ 718.00
3	47.87	$ 718.00
4	35.90	$ 718.00
5	28.72	$ 718.00
6	25.19	$ 755.79
7	22.79	$ 797.78
8	21.12	$ 844.71
9	19.94	$ 897.50
10	19.15	$ 957.33

Reinforcement erection

Productivity	5.00 hrs/ton	
Rate	$60 /hr	
Total of Steel	14.36 ton	
Number of crane	Duration (hrs)	Cost
1	71.80	$ 4,308.00
2	37.79	$ 4,534.74
3	26.59	$ 4,786.67
4	21.12	$ 5,068.24
5	17.95	$ 5,385.00
6	15.96	$ 5,744.00

Productivity	15.00 hrs/ton	
Rate	$5 /hr/man	
Total of Steel	14.36 ton	
Labourer	Duration (hrs	Cost
3	215.40	$3,231.00
6	113.37	$3,401.05
9	79.78	$3,590.00
12	63.35	$3,801.18
15	53.85	$4,038.75
18	47.87	$4,308.00

Formwork fabrication

Productivity	0.5 hrs/m^2/man	
Rate	$5 /hr/man	
Surface area of formwork	263.64 m^2	
Labourer	Duration (hrs)	Cost
1	131.82	$ 659.10
2	65.91	$ 659.10
3	43.94	$ 659.10
4	32.96	$ 659.10
5	26.36	$ 659.10
6	23.13	$ 693.79
7	20.92	$ 732.33
8	19.39	$ 775.41

Formwork installation

Productivity	0.333333333 hr/m^2	
Rate	$60 /hr	
Surface area of formwork	263.64 m^2	
Number of crane	Duration (hrs)	Cost
1	87.88	$ 5,272.80
2	46.25	$ 5,550.32
3	32.55	$ 5,858.67
4	25.85	$ 6,203.29
5	21.97	$ 6,591.00
6	19.53	$ 7,030.40
7	17.93	$ 7,532.57
8	16.90	$ 8,112.00

Productivity	1 hr/m^2	
Rate	$5 /hr/man	
Surface area of formwork	263.64 m^2	
Labourer	Duration (hrs	Cost
3	263.64	$ 3,954.60
6	138.76	$ 4,162.74
9	97.64	$ 4,394.00
12	77.54	$ 4,652.47
15	65.91	$ 4,943.25
18	58.59	$ 5,272.80
21	53.80	$ 5,649.43
24	50.70	$ 6,084.00

Concreting (crew of 3 men)

Productivity	10 m^3/hr	
Rate	$5 /hr/man	
Concrete volume of Thick Wall 1	77.47 m^3	
Labourer	Duration (hrs)	Cost
3	7.75	$ 116.21
6	4.08	$ 122.33
9	2.87	$ 129.12
12	2.28	$ 136.72
15	1.94	$ 145.26
18	1.72	$ 154.95
21	1.58	$ 166.01

Thick Wall 2

Volume of Thick Wall 2	77.47 m^3
Steel for Thick Wall 2	13.95 ton
Extra steel for Thick Wall 2	0.416 ton
Total steel required for Thick Wall 2	14.36 ton
Formwork fabrication for Thick Wall 2	0 m^2
Formwork installation for Thick Wall 2	260.94 m^2

Reinforcement Fabrication

Productivity	10 hrs/ton/man
Rate	$5 /hr/man
Total of Steel	14.36 ton

Labourer	Duration (hrs)	Cost
1	143.60	$ 718.00
2	71.80	$ 718.00
3	47.87	$ 718.00
4	35.90	$ 718.00
5	28.72	$ 718.00
6	25.19	$ 755.79
7	22.79	$ 797.78
8	21.12	$ 844.71
9	19.94	$ 897.50
10	19.15	$ 957.33

Reinforcement erection

Productivity	5.00 hrs/ton
Rate	$60 /hr
Total of Steel	14.365 ton

Number of crane	Duration (hrs)	Cost
1	167.53	$ 10,052.00
2	88.18	$ 10,581.05
3	62.05	$ 11,168.89
4	49.27	$ 11,825.88
5	41.88	$ 12,565.00
6	37.23	$ 13,402.67

Productivity	15.00 hrs/ton
Rate	$5 /hr/man
Total of Steel	14.365 ton

Labourer	Duration (hrs	Cost
3	215.48	$ 3,232.13
6	113.41	$ 3,402.24
9	79.81	$ 3,591.25
12	63.38	$ 3,802.50
15	53.87	$ 4,040.16
18	47.88	$ 4,309.50

Formwork installation

Productivity	0.333333333 hr/m^2
Rate	$60 /hr
Surface area of formwork	260.94 m^2

Number of crane	Duration (hrs)	Cost
1	86.98	$ 5,218.80
2	45.78	$ 5,493.47
3	32.21	$ 5,798.67
4	25.58	$ 6,139.76
5	21.75	$ 6,523.50
6	19.33	$ 6,958.40
7	17.75	$ 7,455.43
8	16.73	$ 8,028.92

Productivity	1 hr/m^2
Rate	$5 /hr/man
Surface area of formwork	260.94 m^2

Labourer	Duration (hrs	Cost
3	260.94	$ 3,914.10
6	137.34	$ 4,120.11
9	96.64	$ 4,349.00
12	76.75	$ 4,604.82
15	65.24	$ 4,892.63
18	57.99	$ 5,218.80
21	53.25	$ 5,591.57
24	50.18	$ 6,021.69

Concreting (crew of 3 men)

Productivity	10 m^3/hr	
Rate	$5 /hr/man	
Concrete volume of Thick Wall 2	77.47333333 m^3	
Labourer	Duration (hrs)	Cost
3	7.75	$ 116.21
6	4.08	$ 122.33
9	2.87	$ 129.12
12	2.28	$ 136.72
15	1.94	$ 145.26
18	1.72	$ 154.95
21	1.58	$ 166.01

Thick Wall 3

Volume of Thick Wall 3	77.47 m^3
Steel for Thick Wall 3	13.95 ton
Extra steel for Thick Wall 3	0.416 ton
Total steel required for Thick Wall 3	14.36 ton
Formwork fabrication for Thick Wall 3	0 m^2
Formwork installation for Thick Wall 3	258.24 m^2

Reinforcement fabrication

Productivity	10 hrs/ton/man	
Rate	$5 /hr/man	
Total of Steel	14.36 ton	
Labourer	Duration (hrs)	Cost
1	143.60	$ 718.00
2	71.80	$ 718.00
3	47.87	$ 718.00
4	35.90	$ 718.00
5	28.72	$ 718.00
6	25.19	$ 755.79
7	22.79	$ 797.78
8	21.12	$ 844.71
9	19.94	$ 897.50
10	19.15	$ 957.33

Reinforcement erection

Productivity	5.00 hrs/ton	
Rate	$60 /hr	
Total of Steel	14.36 ton	
Number of crane	Duration (hrs)	Cost
1	71.80	$ 4,308.00
2	37.79	$ 4,534.74
3	26.59	$ 4,786.67
4	21.12	$ 5,068.24
5	17.95	$ 5,385.00
6	15.96	$ 5,744.00

Productivity	15.00 hrs/ton	
Rate	$5 /hr/man	
Total of Steel	14.36 ton	
Labourer	Duration (hrs	Cost
3	215.40	$ 3,231.00
6	113.37	$ 3,401.05
9	79.78	$ 3,590.00
12	63.35	$ 3,801.18
15	53.85	$ 4,038.75
18	47.87	$ 4,308.00

Formwork installation

Productivity	0.333333333 hr/m^2	
Rate	$60 /hr	
Surface area of formwork	258.24 m^2	
Number of crane	Duration (hrs)	Cost
1	86.08	$ 5,164.80
2	45.31	$ 5,436.63
3	31.88	$ 5,738.67
4	25.32	$ 6,076.24
5	21.52	$ 6,456.00
6	19.13	$ 6,886.40
7	17.57	$ 7,378.29
8	16.55	$ 7,945.85

Productivity	1 hr/m^2	
Rate	$5 /hr/man	
Surface area of formwork	258.24 m^2	
Labourer	Duration (hrs	Cost
3	258.24	$ 3,873.60
6	135.92	$ 4,077.47
9	95.64	$ 4,304.00
12	75.95	$ 4,557.18
15	64.56	$ 4,842.00
18	57.39	$ 5,164.80
21	52.70	$ 5,533.71
24	49.66	$ 5,959.38

Concreting (crew of 3 men)

Productivity	10 m^3/hr	
Rate	$5 /hr/man	
Concrete volume of Thick Wall 3	77.47 m^3	
Labourer	Duration (hrs)	Cost
3	7.75	$ 116.21
6	4.08	$ 122.33
9	2.87	$ 129.12
12	2.28	$ 136.72
15	1.94	$ 145.26
18	1.72	$ 154.95
21	1.58	$ 166.01

Thin Wall 1

Volume of Thin Wall 1	40.46 m^3
Steel for Thin Wall 1	7.28 ton
Extra steel for Thin Wall 1	0 ton
Total steel required for Thin Wall 1	7.28 ton
Formwork fabrication for Thin Wall 1	205.12 m^2
Formwork installation for Thin Wall 1	205.12 m^2

Reinforcement Fabrication

Productivity	10 hrs/ton/man	
Rate	$5 /hr/man	
Total of Steel	7.28 ton	
Labourer	Duration (hrs)	Cost
1	72.80	$ 364.00
2	36.40	$ 364.00
3	24.27	$ 364.00
4	18.20	$ 364.00
5	14.56	$ 364.00
6	12.77	$ 383.16
7	11.56	$ 404.44
8	10.71	$ 428.24
9	10.11	$ 455.00
10	9.71	$ 485.33
11	9.45	$ 520.00
12	9.33	$ 560.00

Reinforcement erection

Productivity	5.00 hrs/ton	
Rate	$60 /hr	
Total of Steel	7.28 ton	
Number of crane	Duration (hrs)	Cost
1	36.40	$ 2,184.00
2	19.16	$ 2,298.95
3	13.48	$ 2,426.67
4	10.71	$ 2,569.41
5	9.10	$ 2,730.00
6	8.09	$ 2,912.00

Productivity	15.00 hrs/ton	
Rate	$5 /hr/man	
Total of Steel	7.28 ton	
Labourer	Duration (hrs	Cost
3	109.20	$ 1,638.00
6	57.47	$ 1,724.21
9	40.44	$ 1,820.00
12	32.12	$ 1,927.06
15	27.30	$ 2,047.50
18	24.27	$ 2,184.00

Formwork fabrication

Productivity	0.5 hrs/m^2/man	
Rate	$5 /hr/man	
Surface area of formwork	205.12 m^2	
Labourer	Duration (hrs)	Cost
1	102.56	$ 512.80
2	51.28	$ 512.80
3	34.19	$ 512.80
4	25.64	$ 512.80
5	20.51	$ 512.80
6	17.99	$ 539.79

7	16.28	$	569.78
8	15.08	$	603.29
9	7.12	$	320.50
10	4.56	$	227.91

Formwork installation

Productivity	0.333333333 hr/m^2	
Rate	$60 /hr	
Surface area of formwork	205.12 m^2	
Number of crane	Duration (hrs)	Cost
1	68.37	$ 4,102.40
2	35.99	$ 4,318.32
3	25.32	$ 4,558.22
4	20.11	$ 4,826.35
5	17.09	$ 5,128.00
6	15.19	$ 5,469.87
7	13.95	$ 5,860.57
8	13.15	$ 6,311.38

Productivity	1 hr/m^2	
Rate	$5 /hr/man	
Surface area of formwork	205.12 m^2	
Labourer	Duration (hrs	Cost
3	205.12	$ 3,076.80
6	107.96	$ 3,238.74
9	75.97	$ 3,418.67
12	60.33	$ 3,619.76
15	51.28	$ 3,846.00
18	45.58	$ 4,102.40
21	41.86	$ 4,395.43
24	39.45	$ 4,733.54

Concreting (crew of 3 men)

Productivity	10 m^3/hr	
Rate	$5 /hr/man	
Concrete volume of Thin Wall 1	40.46 m^3	
Labourer	Duration (hrs)	Cost
3	4.05	$ 60.69
6	2.13	$ 63.88
9	1.50	$ 67.43
12	1.19	$ 71.40
15	1.01	$ 75.86
18	0.90	$ 80.92
21	0.83	$ 86.70

Thin Wall 2

Volume of Thin Wall 2	40.46 m^3
Steel for Thin Wall 2	7.28 ton
Extra steel for Thin Wall 2	0 ton
Total steel required for Thin Wall 2	7.28 ton
Formwork fabrication for Thin Wall 2	0 m^2
Formwork installation for Thin Wall 2	203.72 m^2

Reinforcement Fabrication

Productivity	10 hrs/ton/man	
Rate	$5 /hr/man	
Total of Steel	7.28 ton	
Labourer	Duration (hrs)	Cost
1	72.80	$ 364.00
2	36.40	$ 364.00
3	24.27	$ 364.00
4	18.20	$ 364.00
5	14.56	$ 364.00
6	12.77	$ 383.16
7	11.56	$ 404.44
8	10.71	$ 428.24
9	10.11	$ 455.00
10	9.71	$ 485.33
11	9.45	$ 520.00
12	9.33	$ 560.00

Reinforcement erection

Productivity	5.00 hrs/ton	
Rate	$60 /hr	
Total of Steel	7.28 ton	
Number of crane	Duration (hrs)	Cost
1	36.40	$ 2,184.00
2	19.16	$ 2,298.95
3	13.48	$ 2,426.67
4	10.71	$ 2,569.41
5	9.10	$ 2,730.00
6	8.09	$ 2,912.00

Formwork installation

Productivity	0.333333333 hr/m^2	
Rate	$60 /hr	
Surface area of formwork	203.72 m^2	
Number of crane	Duration (hrs)	Cost
1	67.91	$ 4,074.40
2	35.74	$ 4,288.84
3	25.15	$ 4,527.11
4	19.97	$ 4,793.41
5	16.98	$ 5,093.00
6	15.09	$ 5,432.53

7	13.86	$ 5,820.57
8	13.06	$ 6,268.31

Concreting (crew of 3 men)

Productivity	10 m^3/hr	
Rate	$5 /hr/man	
Concrete volume of Thin Wall 2	40.46 m^3	
Labourer	Duration (hrs)	Cost
3	4.05	$ 60.69
6	2.13	$ 63.88
9	1.50	$ 67.43
12	1.19	$ 71.40
15	1.01	$ 75.86
18	0.90	$ 80.92
21	0.83	$ 86.70

Thin Wall 3

Volume of Thin Wall 3	40.46 m^3
Steel for Thin Wall 3	7.28 ton
Extra steel for Thin Wall 3	0 ton
Total steel required for Thin Wall 3	7.28 ton
Formwork fabrication for Thin Wall 3	0 m^2
Formwork installation for Thin Wall 3	202.32 m^2

Steel Fabrication

Productivity	10 hrs/ton/man
Rate	$5 /hr/man
Total of Steel	7.28 ton

Labourer	Duration (hrs)	Cost
1	72.80	$ 364.00
2	36.40	$ 364.00
3	24.27	$ 364.00
4	18.20	$ 364.00
5	14.56	$ 364.00
6	12.77	$ 383.16
7	11.56	$ 404.44
8	10.71	$ 428.24
9	10.11	$ 455.00
10	9.71	$ 485.33
11	9.45	$ 520.00
12	9.33	$ 560.00

Reinforcement erection

Productivity	5.00 hrs/ton
Rate	$60 /hr
Total of Steel	7.28 ton

Number of crane	Duration (hrs)	Cost
1	36.40	$ 2,184.00
2	19.16	$ 2,298.95
3	13.48	$ 2,426.67
4	10.71	$ 2,569.41
5	9.10	$ 2,730.00
6	8.09	$ 2,912.00

Productivity	15.00 hrs/ton
Rate	$5 /hr/man
Total of Steel	7.28 ton

Labourer	Duration (hrs	Cost
3	109.20	$ 1,638.00
6	57.47	$ 1,724.21
9	40.44	$ 1,820.00
12	32.12	$ 1,927.06
15	27.30	$ 2,047.50
18	24.27	$ 2,184.00

Formwork installation

Productivity	0.333333333 hr/m^2
Rate	$60 /hr
Surface area of formwork	202.32 m^2

Number of crane	Duration (hrs)	Cost
1	67.44	$ 4,046.40
2	35.49	$ 4,259.37
3	24.98	$ 4,496.00
4	19.84	$ 4,760.47
5	16.86	$ 5,058.00
6	14.99	$ 5,395.20

Productivity	1 hr/m^2
Rate	$5 /hr/man
Surface area of formwork	202.32 m^2

Labourer	Duration (hrs	Cost
3	202.32	$ 3,034.80
6	106.48	$ 3,194.53
9	74.93	$ 3,372.00
12	59.51	$ 3,570.35
15	50.58	$ 3,793.50
18	44.96	$ 4,046.40

7	13.76	$	5,780.57
8	12.97	$	6,225.23

21	41.29	$	4,335.43
24	38.91	$	4,668.92

Concreting (crew of 3 men)

Productivity	10 m^3/hr		
Rate	$5 /hr/man		
Concrete volume of Thin Wall 3	40.46 m^3		
Labourer	Duration (hrs)	Cost	
3	4.05	$	60.69
6	2.13	$	63.88
9	1.50	$	67.43
12	1.19	$	71.40
15	1.01	$	75.86
18	0.90	$	80.92
21	0.83	$	86.70

Scaffolding

Scaffold installation

Labourer	Duration (hr)	Cost
3	87.96	$ 1,319.47
6	46.30	$ 1,388.91
9	32.58	$ 1,466.08
12	25.87	$ 1,552.32
15	21.99	$ 1,649.34
18	19.55	$ 1,759.29
21	17.95	$ 1,884.96
24	16.92	$ 2,029.95

Total length of fabrication	87.96	m
Installation productivity	1	hr/m
Installation rate	$5	/hr/man

Scaffold dismantling

Labourer	Duration (hr)	Cost
3	43.98	$ 659.73
6	23.15	$ 694.46
9	16.29	$ 733.04
12	12.94	$ 776.16
15	11.00	$ 824.67
18	9.77	$ 879.65
21	8.98	$ 942.48
24	8.46	$ 1,014.98

Total length of dismantling	87.96	m
Dismantling productivity	0.5	hr/m
Dismantling rate	$5	/hr/man

Backfill

Roller compactor, bulldozer	Duration (hr)	Cost
1	374.60	$ 18,729.90
2	197.16	$ 19,715.68
3	138.74	$ 20,811.00
4	110.18	$ 22,035.18
5	93.65	$ 23,412.38
6	83.24	$ 24,973.20
7	76.45	$ 26,757.00
8	72.04	$ 28,815.23

Backfill volume	3745.98	lcm
Rate of backfill equipment	$50	/hr
Backfill productivity	10	m^3/hr

Finishing walls		
Labourer	Duration (hr)	Cost
1	121.60	$ 608.00
2	60.80	$ 608.00
3	40.53	$ 608.00
4	30.40	$ 608.00
5	24.32	$ 608.00
6	21.33	$ 640.00
7	19.30	$ 675.56
8	17.88	$ 715.29
9	16.89	$ 760.00
10	16.21	$ 810.67

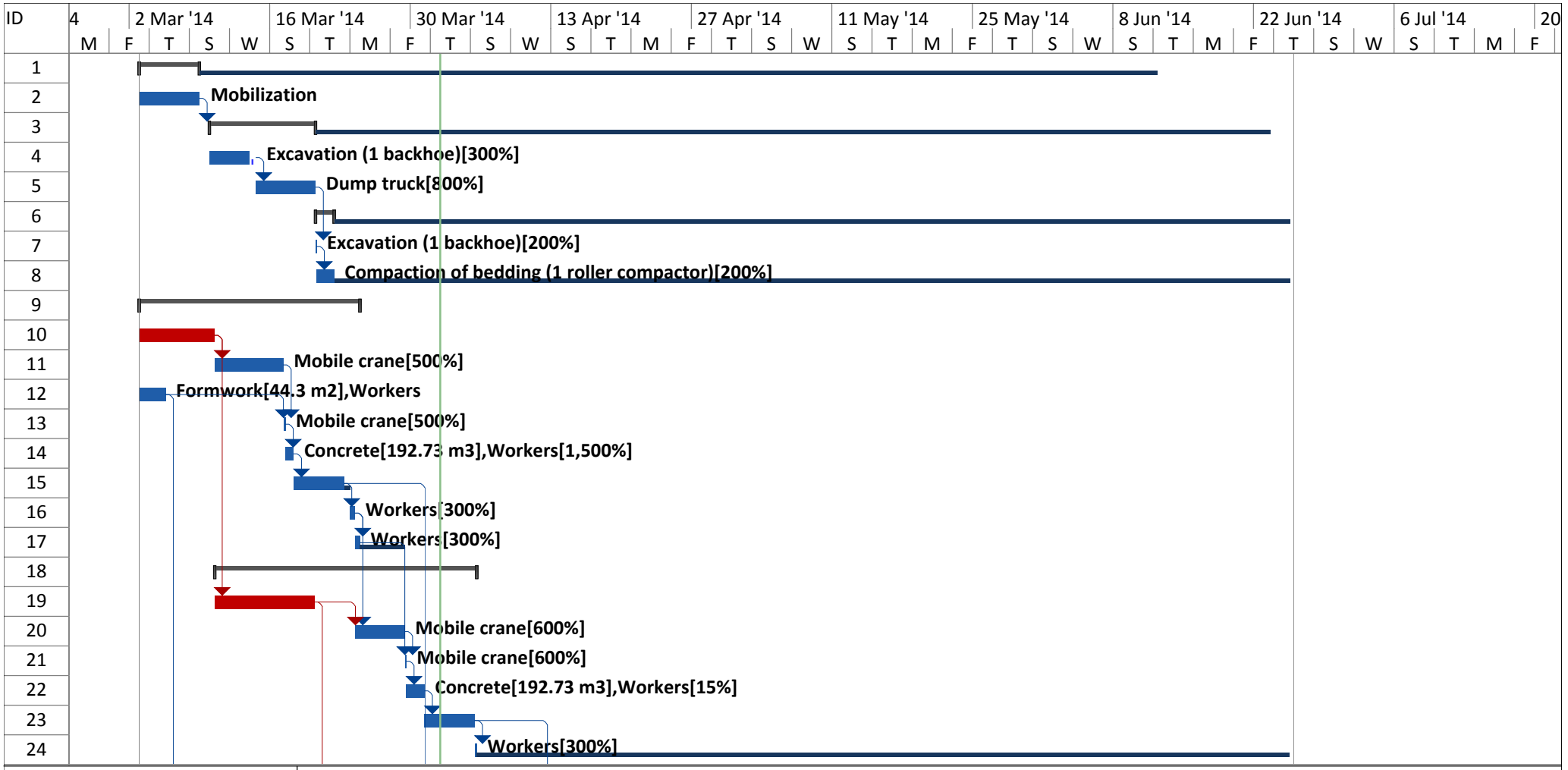
Finishing slab		
Labourer	Duration (hr)	Cost
1	284.79	$ 1,423.95
2	142.40	$ 1,423.95
3	94.93	$ 1,423.95
4	71.20	$ 1,423.95
5	56.96	$ 1,423.95
6	49.96	$ 1,498.89
7	45.20	$ 1,582.17
8	41.88	$ 1,675.24
9	39.55	$ 1,779.94
10	37.97	$ 1,898.60

Finishing area of thin wall	333.76	m^2
Finishing area of thick wall	395.84	m^2
Finishing area of slab	569.58	m^2
Finishing area of 1/3 walls	243.2	m^2
Total finishing area	812.78	m^2
Finishing Rate	$5	/hr/man
Finishing productivity	0.5	hr/m^2/man

ID	Task Name	Duration	Start	Late Start	Finish	Predecess	Resource Names	Total Slack
1	**Mobilization**	**6 days**	**Mon 3/3/14**	**Thu 5/6/14**	**Sat 8/3/14**			**78.2 days**
2	Mobilization	6 days	Mon 3/3/14	Thu 5/6/14	Sat 8/3/14		Mobilization	78.2 days
3	**Excavation**	**9.6 days**	**Mon 10/3/14**	**Thu 12/6/14**	**Thu 20/3/14**	**2**		**78.2 days**
4	Excavator	4.8 days	Mon 10/3/14	Thu 12/6/14	Fri 14/3/14		Excavation (1 backhoe)[300%]	78.2 days
5	Hauling	4.8 days	Fri 14/3/14	Wed 18/6/14	Thu 20/3/14	4	Dump truck[800%]	78.4 days
6	**Gravel**	**1.7 days**	**Thu 20/3/14**	**Tue 24/6/14**	**Sat 22/3/14**		**Gravel bedding[257 m3]**	**78.4 days**
7	Fill	0.3 days	Thu 20/3/14	Tue 24/6/14	Thu 20/3/14	5	Excavation (1 backhoe)[200%]	78.4 days
8	Compaction	1.4 days	Thu 20/3/14	Tue 24/6/14	Sat 22/3/14	7	Compaction of bedding (1 roller compactor)[20(	78.4 days
9	**Slab 1**	**19 days**	**Mon 3/3/14**	**Mon 3/3/14**	**Mon 24/3/14**			**0 days**
10	Steel Fabrication	6.5 days	Mon 3/3/14	Mon 3/3/14	Mon 10/3/14		Workers[800%],Reinforcement steel[35.62 ton]	0 days
11	Steel Erection	5.6 days	Mon 10/3/14	Sat 22/3/14	Mon 17/3/14	10	Mobile crane[500%]	10.7 days
12	Formwork Fabrication	2.8 days	Mon 3/3/14	Wed 26/3/14	Wed 5/3/14		Formwork[44.3 m2],Workers	20 days
13	Formwork Installation	0.5 days	Mon 17/3/14	Fri 28/3/14	Mon 17/3/14	11,12	Mobile crane[500%]	10.7 days
14	Pour Concrete	0.6 days	Mon 17/3/14	Sat 29/3/14	Tue 18/3/14	13	Concrete[192.73 m3],Workers[1,500%]	10.7 days
15	Cure Concrete	5 edays	Tue 18/3/14	Sat 29/3/14	Sun 23/3/14	14		11.28 edays
16	Formwork Stripping	0.5 days	Mon 24/3/14	Sat 5/4/14	Mon 24/3/14	15	Workers[300%]	11.1 days
17	Formwork Cleaning	0.5 days	Mon 24/3/14	Fri 11/4/14	Mon 24/3/14	16	Workers[300%]	15.5 days
18	**Slab 2**	**23.3 days**	**Mon 10/3/14**	**Mon 10/3/...**	**Sat 5/4/14**			**0 days**
19	Steel Fabrication	8.9 days	Mon 10/3/14	Mon 10/3/14	Thu 20/3/14	10	Reinforcement steel[35.62 ton],Workers[500%]	0 days
20	Steel Erection	4.9 days	Mon 24/3/14	Sat 5/4/14	Sat 29/3/14	19,16	Mobile crane[600%]	11.1 days
21	Formwork Installation	0.3 days	Sat 29/3/14	Fri 11/4/14	Sat 29/3/14	20,17	Mobile crane[600%]	11.1 days
22	Pour Concrete	0.6 days	Sat 29/3/14	Fri 11/4/14	Mon 31/3/14	21	Concrete[192.73 m3],Workers[15%]	11.1 days
23	Cure Concrete	5 edays	Mon 31/3/14	Sat 12/4/14	Sat 5/4/14	22		12.03 edays
24	Formwork Stripping	0.5 days	Sat 5/4/14	Wed 25/6/14	Sat 5/4/14	23	Workers[300%]	65.9 days
25	**Thick Wall 1**	**33.6 days**	**Wed 5/3/14**	**Thu 20/3/14**	**Mon 14/4/14**			**9.2 days**
26	Steel Fabrication	9 days	Thu 20/3/14	Thu 20/3/14	Mon 31/3/14	19	Reinforcement steel[14.36 ton],Workers[200%]	0 days
27	Steel Erection	4.7 days	Mon 31/3/14	Thu 3/4/14	Sat 5/4/14	26,15	Mobile crane[200%]	3.5 days
28	Formwork Fabrication	5.5 days	Wed 5/3/14	Thu 3/4/14	Wed 12/3/14	12	Formwork[263.64 m2],Workers[3%]	24.3 days
29	Formwork Installation	4.1 days	Sat 5/4/14	Wed 9/4/14	Thu 10/4/14	27,28	Mobile crane[300%]	3.5 days
30	Pour Concrete	0.2 days	Thu 10/4/14	Mon 14/4/14	Thu 10/4/14	29,81	Concrete[77.47 m3],Workers[1,500%]	3.5 days
31	Cure Concrete	2 edays	Thu 10/4/14	Mon 14/4/14	Sat 12/4/14	30		4.21 edays
32	Formwork Stripping	0.5 days	Sat 12/4/14	Wed 16/4/14	Sat 12/4/14	31	Workers[300%]	3.5 days

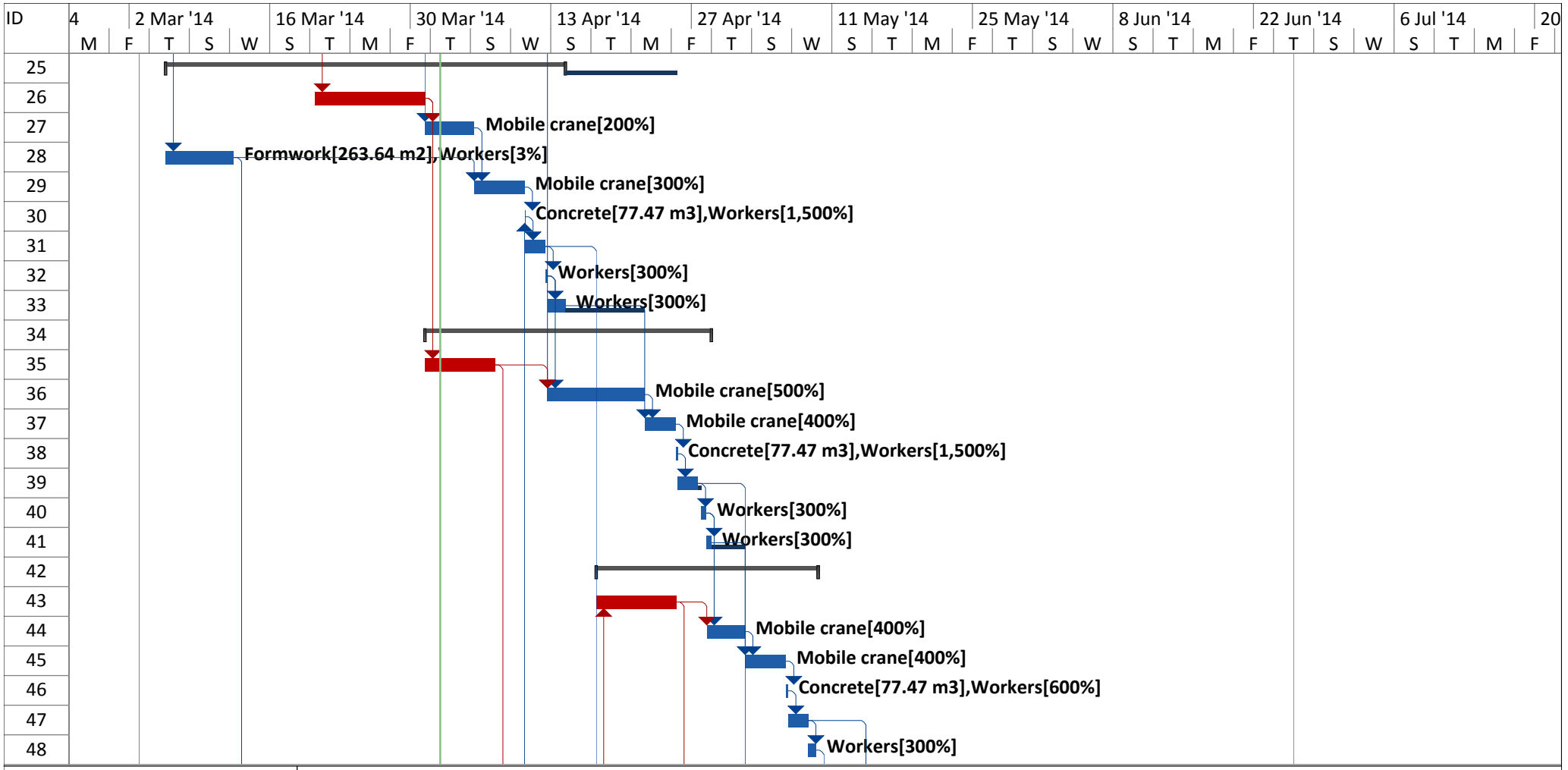
ID	Task Name	Duration	Start	Late Start	Finish	Predecess	Resource Names	Total Slack
33	Formwork Cleaning	0.5 days	Sat 12/4/14	Fri 25/4/14	Mon 14/4/14	32	Workers[300%]	9.2 days
34	**Thick Wall 2**	**23.6 days**	**Mon 31/3/14**	**Mon 31/3/...**	**Mon 28/4/14**			**0 days**
35	Steel Fabrication	6 days	Mon 31/3/14	Mon 31/3/14	Mon 7/4/14	26	Reinforcement steel[14.36 ton],Workers[300%]	0 days
36	Steel Erection	6.2 days	Sat 12/4/14	Thu 17/4/14	Tue 22/4/14	35,23,32	Mobile crane[500%]	3.5 days
37	Formwork Installation	3.2 days	Tue 22/4/14	Fri 25/4/14	Fri 25/4/14	36,33	Mobile crane[400%]	3.5 days
38	Pour Concrete	0.5 days	Fri 25/4/14	Tue 29/4/14	Fri 25/4/14	37	Concrete[77.47 m3],Workers[1,500%]	3.5 days
39	Cure Concrete	2 edays	Fri 25/4/14	Wed 30/4/14	Sun 27/4/14	38		4.79 edays
40	Formwork Stripping	0.5 days	Mon 28/4/14	Sat 3/5/14	Mon 28/4/14	39	Workers[300%]	4.4 days
41	Formwork Cleaning	0.5 days	Mon 28/4/14	Wed 7/5/14	Mon 28/4/14	40	Workers[300%]	6.5 days
42	**Thick Wall 3**	**17.3 days**	**Thu 17/4/14**	**Thu 17/4/14**	**Fri 9/5/14**			**0 days**
43	Steel Fabrication	6 days	Thu 17/4/14	Thu 17/4/14	Fri 25/4/14	51	Reinforcement steel[14.36 ton],Workers[300%]	0 days
44	Steel Erection	2.6 days	Mon 28/4/14	Sat 3/5/14	Fri 2/5/14	43,40	Mobile crane[400%]	4.4 days
45	Formwork Installation	3.2 days	Fri 2/5/14	Wed 7/5/14	Tue 6/5/14	44,41	Mobile crane[400%]	4.4 days
46	Pour Concrete	0.5 days	Tue 6/5/14	Sat 10/5/14	Tue 6/5/14	45	Concrete[77.47 m3],Workers[600%]	4.4 days
47	Cure Concrete	2 edays	Tue 6/5/14	Mon 12/5/14	Thu 8/5/14	46		5.76 edays
48	Formwork Stripping	0.5 days	Thu 8/5/14	Wed 14/5/14	Fri 9/5/14	47	Workers[300%]	4.1 days
49	Formwork Cleaning	0.5 days	Fri 9/5/14	Thu 15/5/14	Fri 9/5/14	48	Workers[300%]	4.1 days
50	**Thin Wall 1**	**40 days**	**Wed 12/3/14**	**Mon 7/4/14**	**Tue 29/4/14**			**4.4 days**
51	Steel Fabrication	9.1 days	Mon 7/4/14	Mon 7/4/14	Thu 17/4/14	35	Reinforcement steel[7.28 ton],Workers	0 days
52	Steel Erection	2.4 days	Thu 17/4/14	Tue 22/4/14	Mon 21/4/14	31,51	Mobile crane[200%]	2.5 days
53	Formwork Fabrication	3.2 days	Wed 12/3/14	Mon 21/4/14	Sat 15/3/14	28	Formwork[205.12 m2],Workers[400%]	32.9 days
54	Formwork Installation	3.2 days	Mon 21/4/14	Thu 24/4/14	Fri 25/4/14	52,53	Mobile crane[300%]	2.5 days
55	Pour Concrete	0.2 days	Fri 25/4/14	Mon 28/4/14	Fri 25/4/14	54	Concrete[40.46 m3],Workers[900%]	2.5 days
56	Cure Concrete	2 days	Fri 25/4/14	Mon 28/4/14	Mon 28/4/14	55		2.5 days
57	Formwork Stripping	0.5 days	Mon 28/4/14	Wed 30/4/14	Mon 28/4/14	56	Workers[300%]	2.5 days
58	Formwork Cleaning	0.5 days	Mon 28/4/14	Mon 5/5/14	Tue 29/4/14	57	Workers[300%]	4.4 days
59	**Thin Wall 2**	**13.5 days**	**Fri 25/4/14**	**Fri 25/4/14**	**Mon 12/5/14**			**0 days**
60	Steel Fabrication	4.6 days	Fri 25/4/14	Fri 25/4/14	Fri 2/5/14	43	Reinforcement steel[7.28 ton],Workers[2%]	0 days
61	Steel Erection	2.4 days	Fri 2/5/14	Fri 2/5/14	Mon 5/5/14	39,60,57	Mobile crane[200%]	0.2 days
62	Formwork Installation	4.5 days	Mon 5/5/14	Mon 5/5/14	Fri 9/5/14	61,58	Mobile crane[200%]	0.2 days
63	Pour Concrete	0.5 days	Sat 10/5/14	Sat 10/5/14	Sat 10/5/14	62	Concrete[40.46 m3],Workers[300%]	0.2 days
64	Cure Concrete	2 edays	Sat 10/5/14	Sat 10/5/14	Mon 12/5/14	63		0.11 edays

ID	Task Name	Duration	Start	Late Start	Finish	Predecess	Resource Names	Total Slack
65	Formwork Stripping	0.5 days	Mon 12/5/14	Mon 12/5/14	Mon 12/5/14	64	Workers[300%]	0.2 days
66	**Thin Wall 3**	**16.7 days**	**Fri 2/5/14**	**Fri 2/5/14**	**Thu 22/5/14**			**0 days**
67	Steel Fabrication	9.1 days	Fri 2/5/14	Fri 2/5/14	Wed 14/5/14	60	Reinforcement steel[7.28 ton],Workers	0 days
68	Steel Erection	1.7 days	Wed 14/5/14	Wed 14/5/14	Thu 15/5/14	47,67,65	Mobile crane[300%]	0 days
69	Formwork Installation	3.1 days	Thu 15/5/14	Thu 15/5/14	Mon 19/5/14	68,49	Mobile crane[300%]	0 days
70	Pour Concrete	0.3 days	Tue 20/5/14	Tue 20/5/14	Tue 20/5/14	69	Concrete[40.46 m3],Workers[600%]	0 days
71	Cure Concrete	2 edays	Tue 20/5/14	Tue 20/5/14	Thu 22/5/14	70		0 edays
72	Formwork Stripping	0.5 days	Thu 22/5/14	Thu 22/5/14	Thu 22/5/14	71	Workers[300%]	0 days
73	**Finishing**	**25.9 days**	**Thu 22/5/14**	**Thu 22/5/14**	**Sat 21/6/14**			**0 days**
74	1/3 of Wall	2.7 days	Thu 22/5/14	Thu 22/5/14	Mon 26/5/14	72	Workers[600%]	0 days
75	2/3 of Wall	2.7 days	Mon 26/5/14	Mon 26/5/14	Thu 29/5/14	74	Workers[600%]	0 days
76	3/3 of Wall	2.7 days	Thu 29/5/14	Thu 29/5/14	Sat 31/5/14	75	Workers[600%]	0 days
77	Slab	17.8 days	Sat 31/5/14	Sat 31/5/14	Sat 21/6/14	76	Workers[200%]	0 days
78	**Backfill**	**17.3 days**	**Sat 31/5/14**	**Mon 2/6/14**	**Sat 21/6/14**			**0.5 days**
79	Backfill	17.3 days	Sat 31/5/14	Mon 2/6/14	Sat 21/6/14	76	Backfill (1 roller compactor& bulldozer)	0.5 days
80	**Scaffolding**	**80.4 days**	**Mon 3/3/14**	**Tue 1/4/14**	**Sat 7/6/14**			**12.3 days**
81	Scaffold Installation	11 days	Mon 3/3/14	Tue 1/4/14	Fri 14/3/14		Scaffold[87.96 metre],Workers[300%]	25.7 days
82	Scaffold Dismantling	5.5 days	Sat 31/5/14	Mon 16/6/14	Sat 7/6/14	76	Workers[300%]	12.3 days
83	**Demobilization**	**3 days**	**Sat 21/6/14**	**Sat 21/6/14**	**Wed 25/6/14**	**77,79,82**		**0 days**
84	Demobilization	3 days	Sat 21/6/14	Sat 21/6/14	Wed 25/6/14		Demobilization	0 days



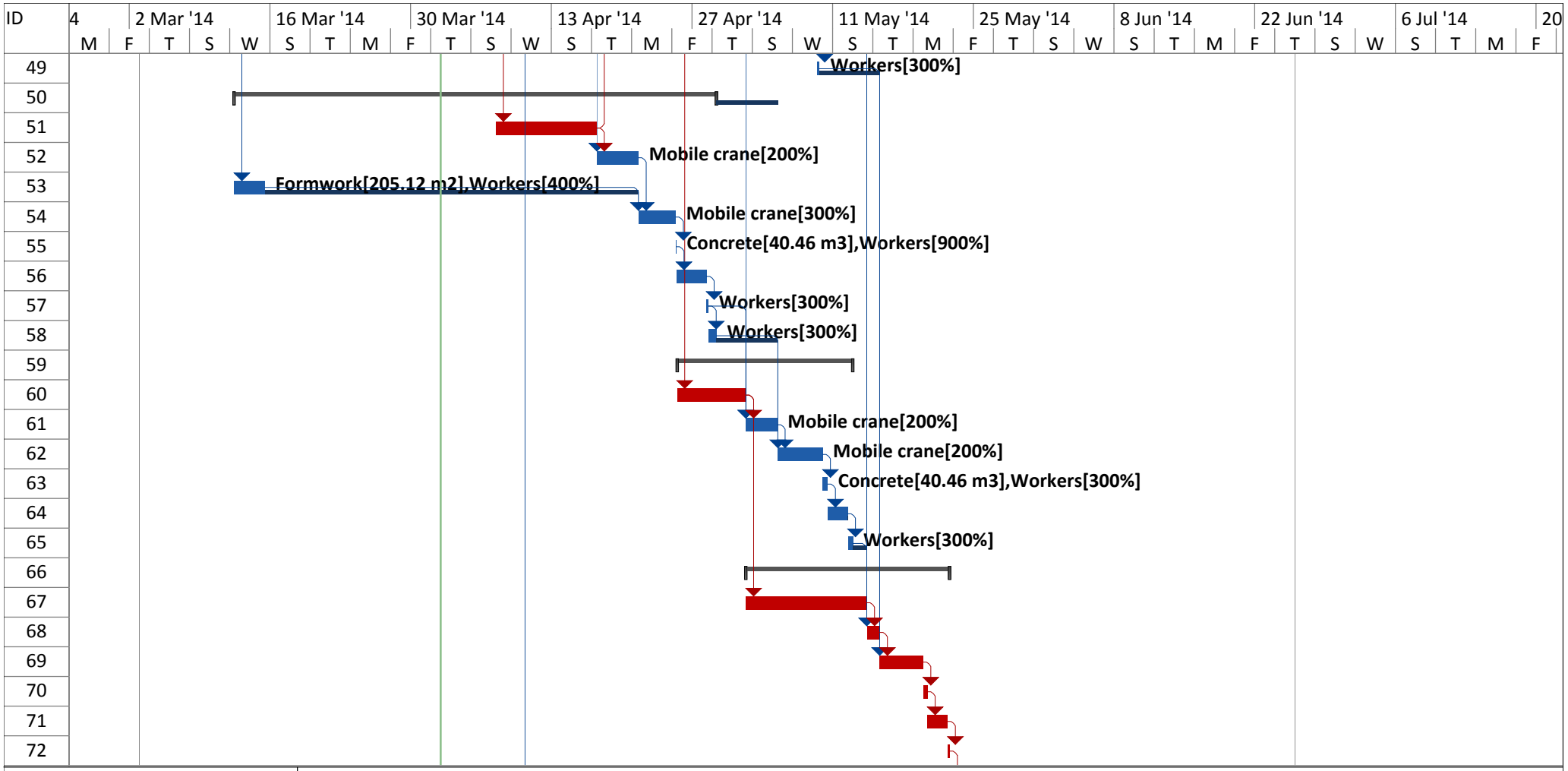
Project: CE2183_I1G73
Date: Wed 2/4/14

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		Slack	



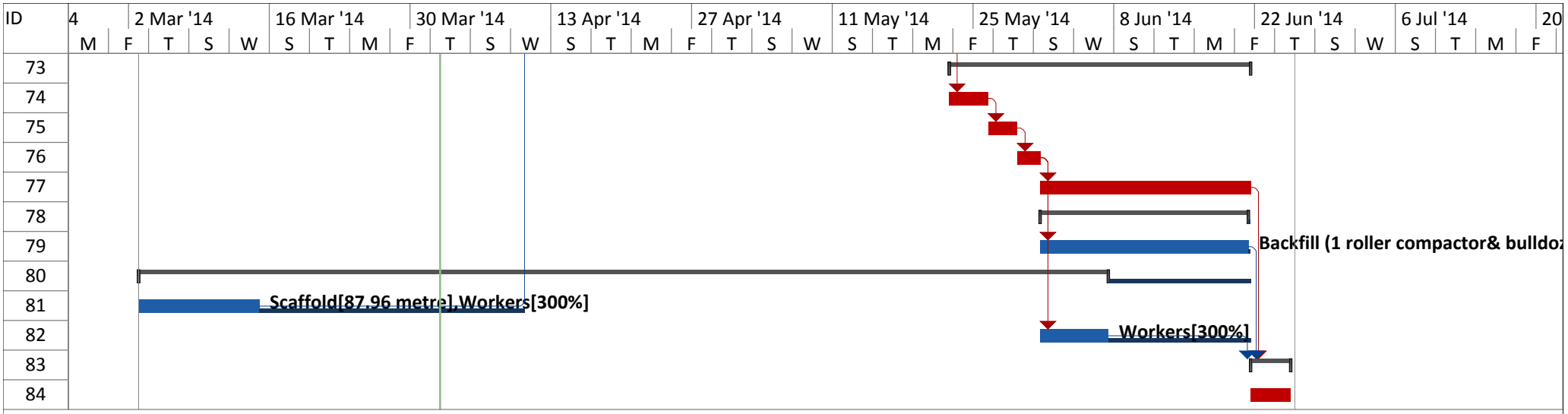
Project: CE2183_I1G73
Date: Wed 2/4/14

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		Slack	



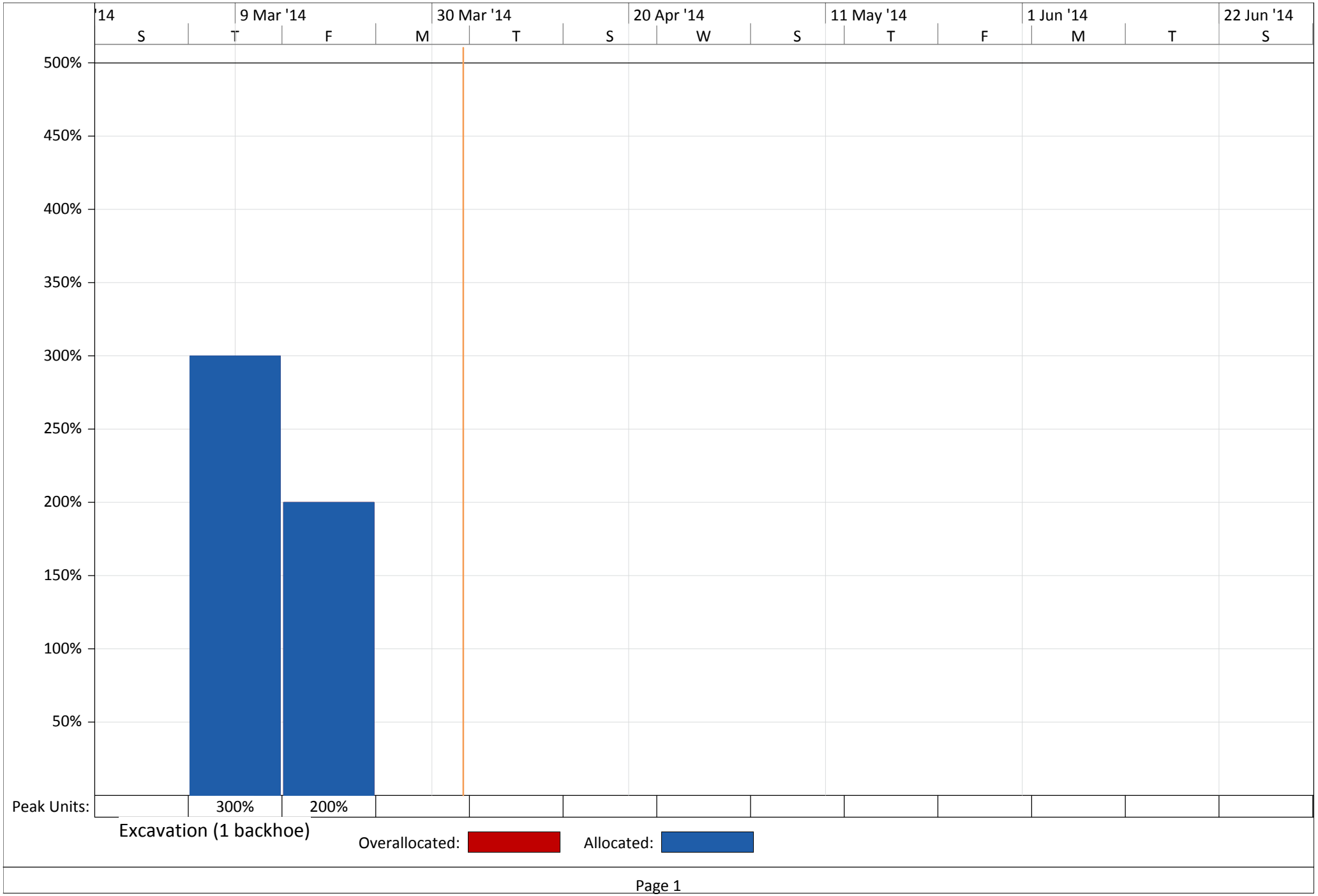
Project: CE2183_I1G73
Date: Wed 2/4/14

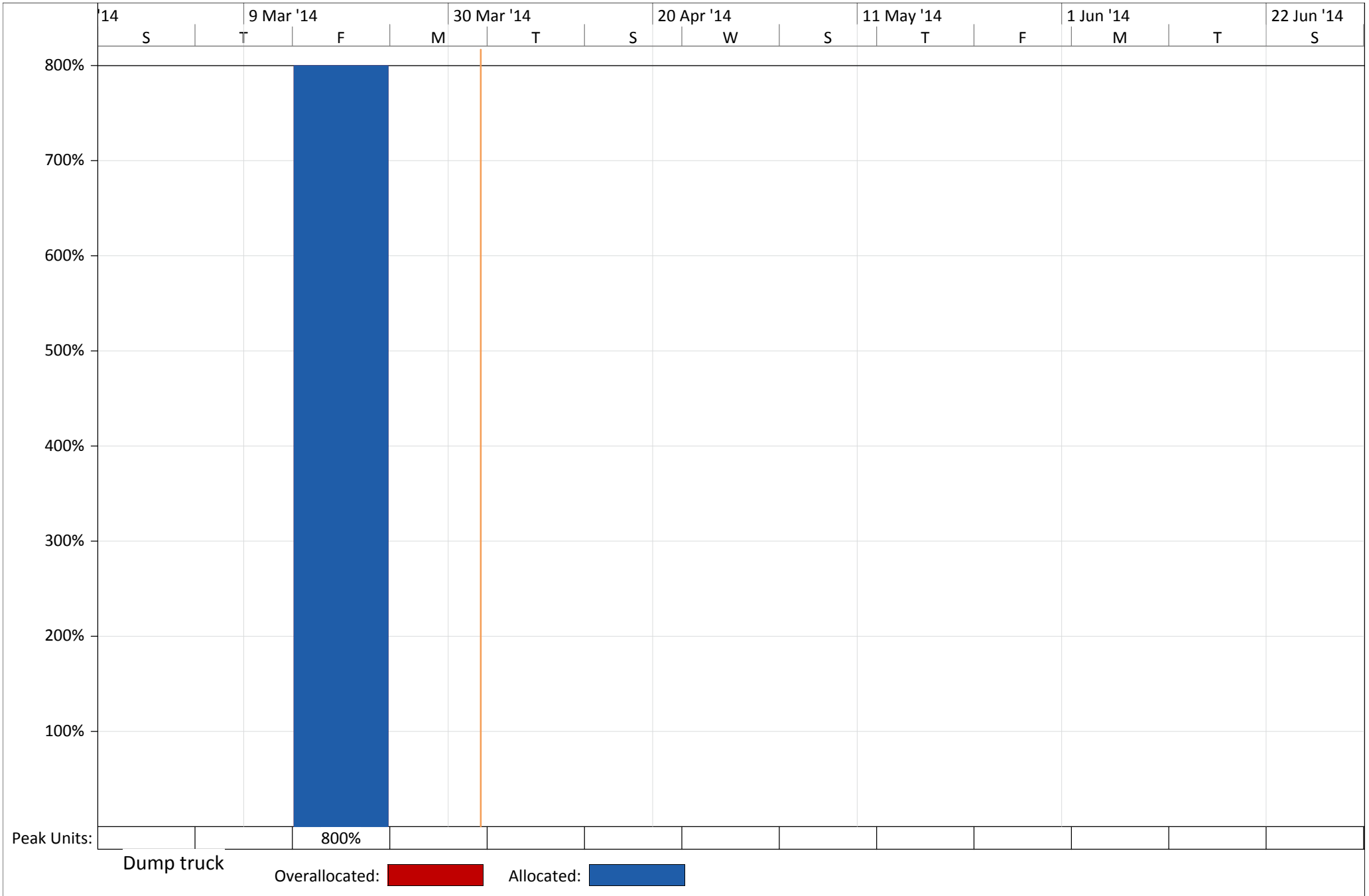
Task		Inactive Task		Start-only	
Split		Inactive Milestone		Finish-only	
Milestone		Inactive Summary		Deadline	
Summary		Manual Task		Critical	
Project Summary		Duration-only		Critical Split	
External Tasks		Manual Summary Rollup		Progress	
External Milestone		Manual Summary		Slack	

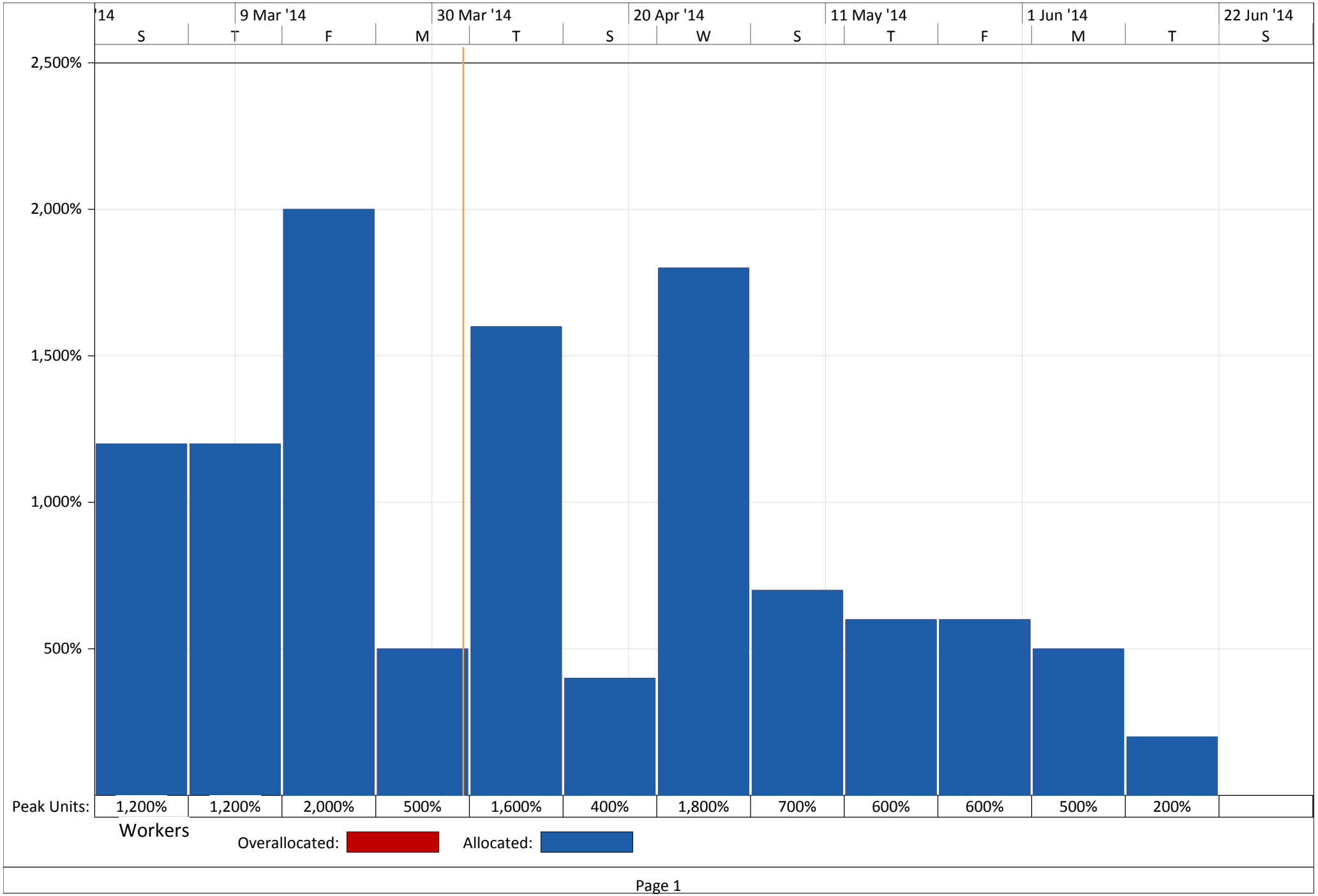


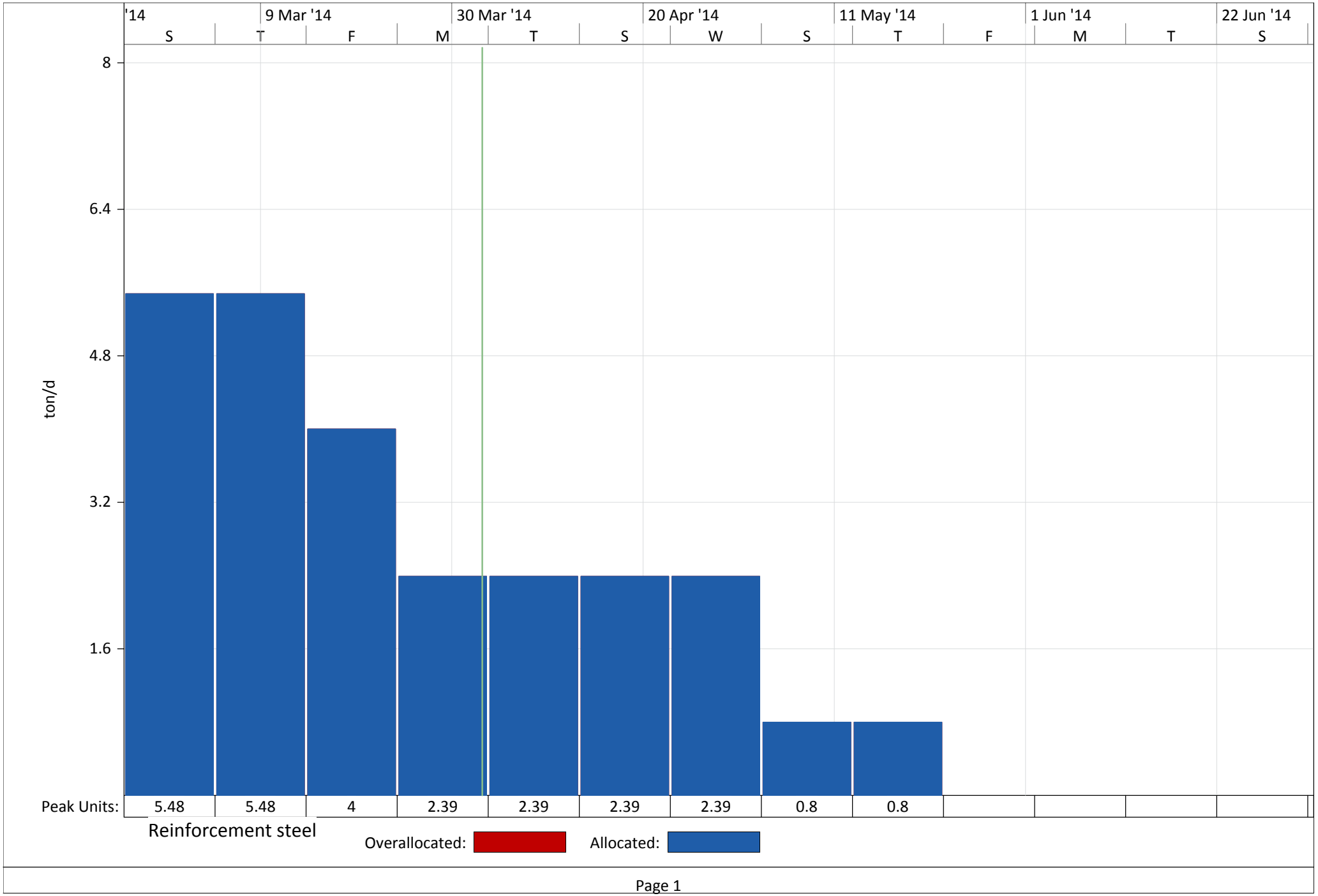
Project: CE2183_I1G73
Date: Wed 2/4/14

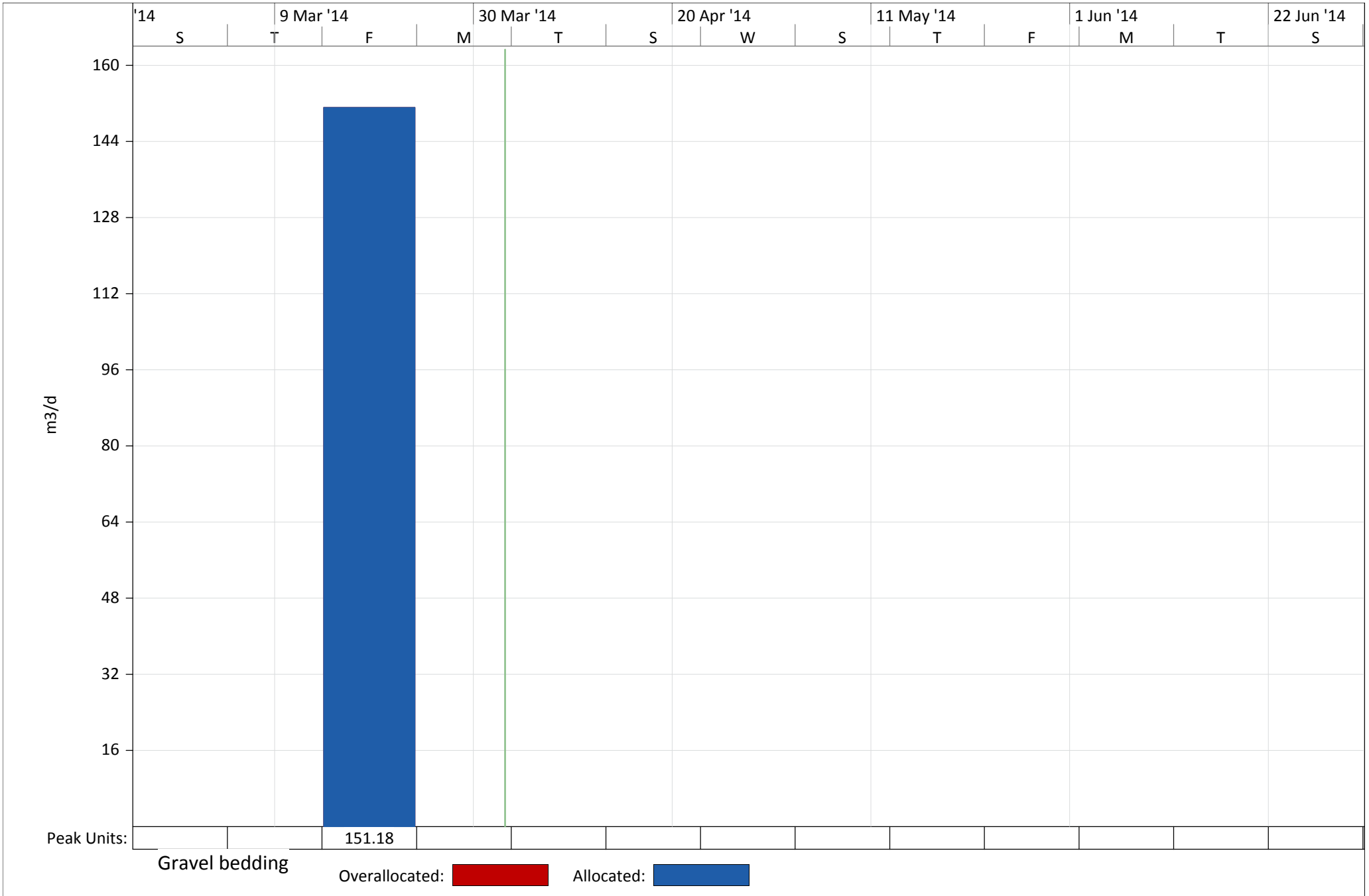
Task		Inactive Task		Start-only	
Split		Inactive Milestone		Finish-only	
Milestone		Inactive Summary		Deadline	
Summary		Manual Task		Critical	
Project Summary		Duration-only		Critical Split	
External Tasks		Manual Summary Rollup		Progress	
External Milestone		Manual Summary		Slack	

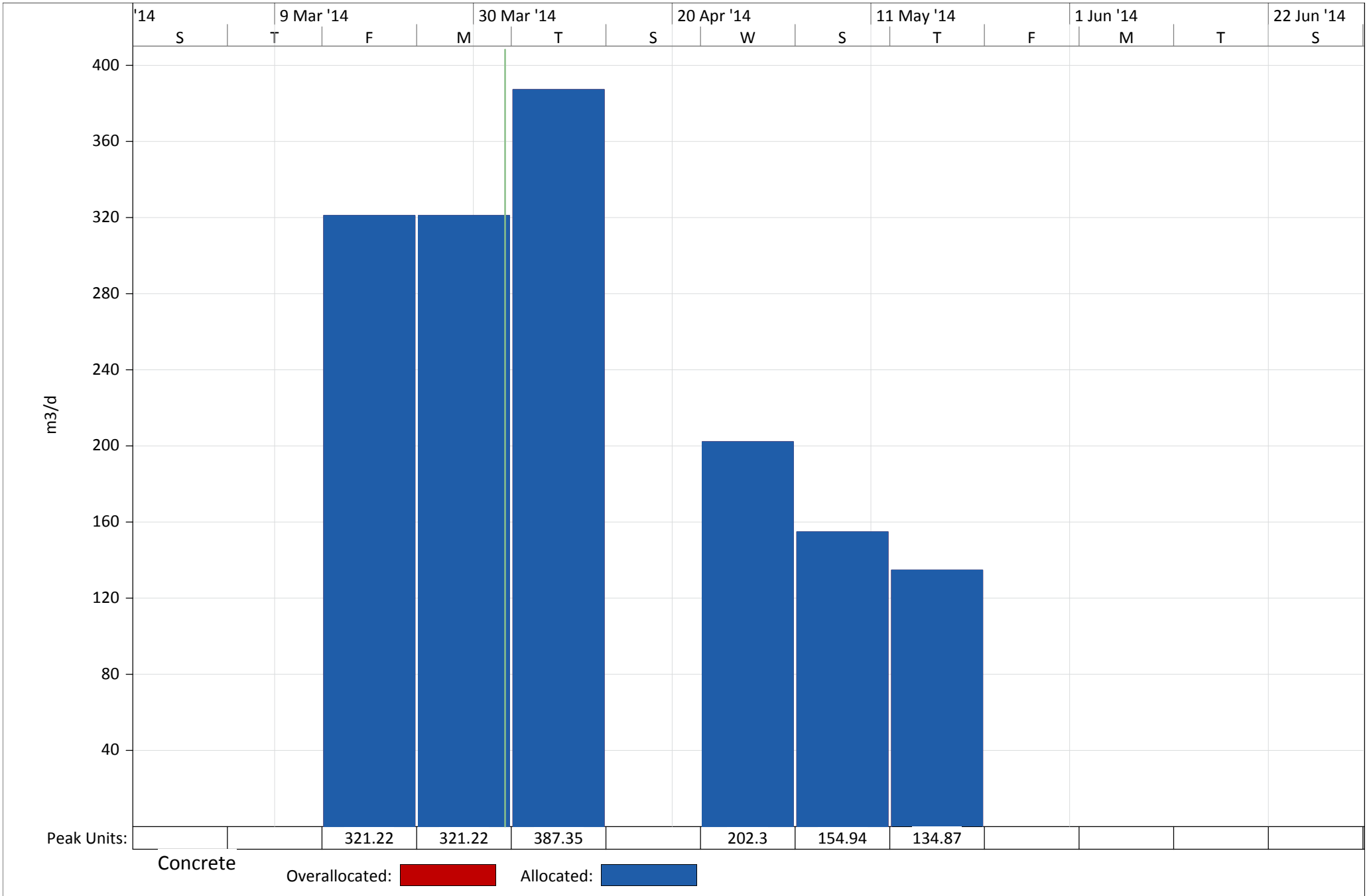

'14
9 Mar '14
30 Mar '14
20 Apr '14
11 May '14
1 Jun '14
22 Jun '14
S
T
F
M
T
S
W
S
T
F
M
T
S
500%
450%
400%
350%
300%
250%
200%
150%
100%
50%
Peak Units:
300%
200%
Excavation (1 backhoe)
Overallocated:
Allocated:

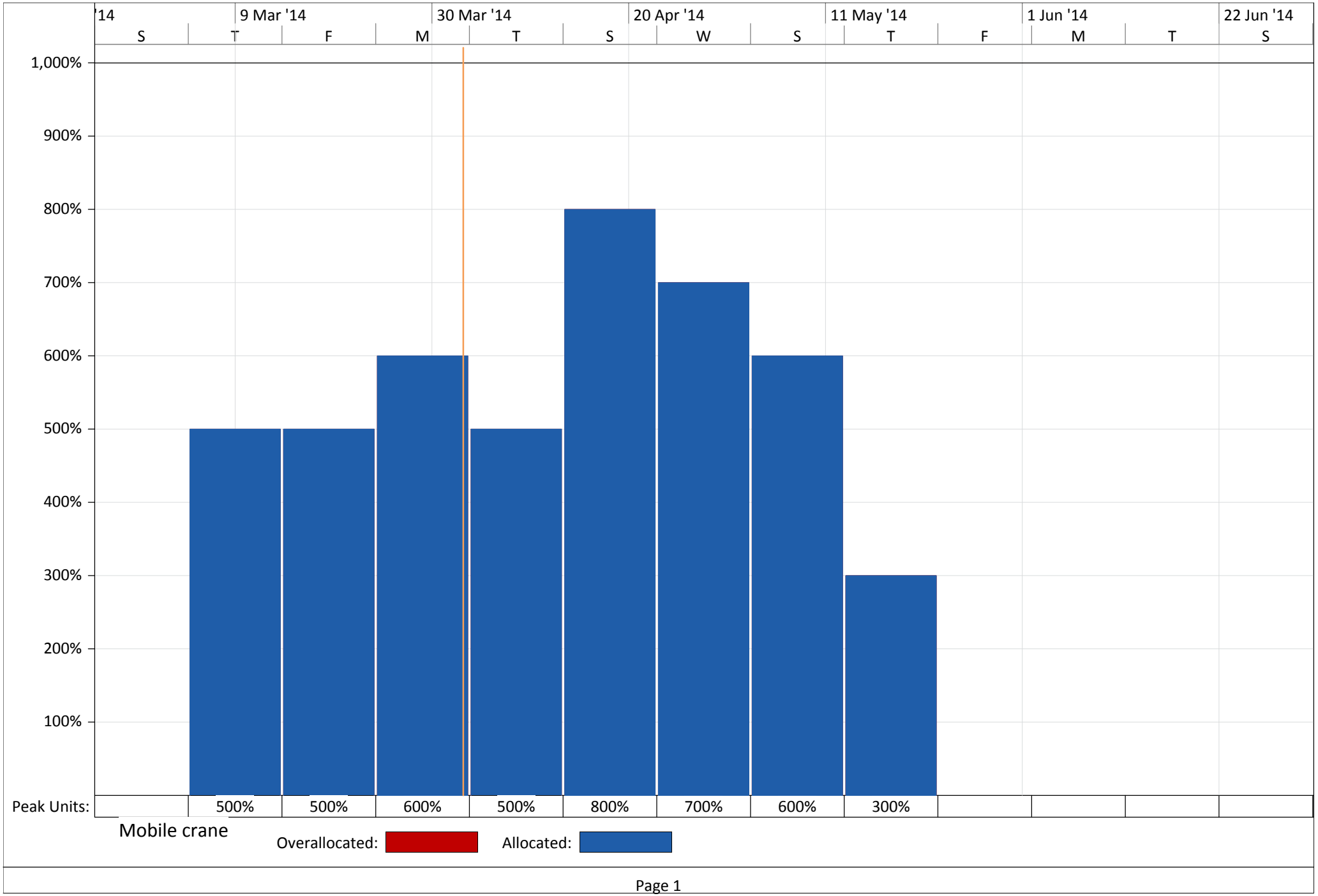

'14
9 Mar '14
30 Mar '14
20 Apr '14
11 May '14
1 Jun '14
22 Jun '14
S T F M T S W S T F M T S
800%
700%
600%
500%
400%
300%
200%
100%
Peak Units:
800%
Dump truck
Overallocated:
Allocated:

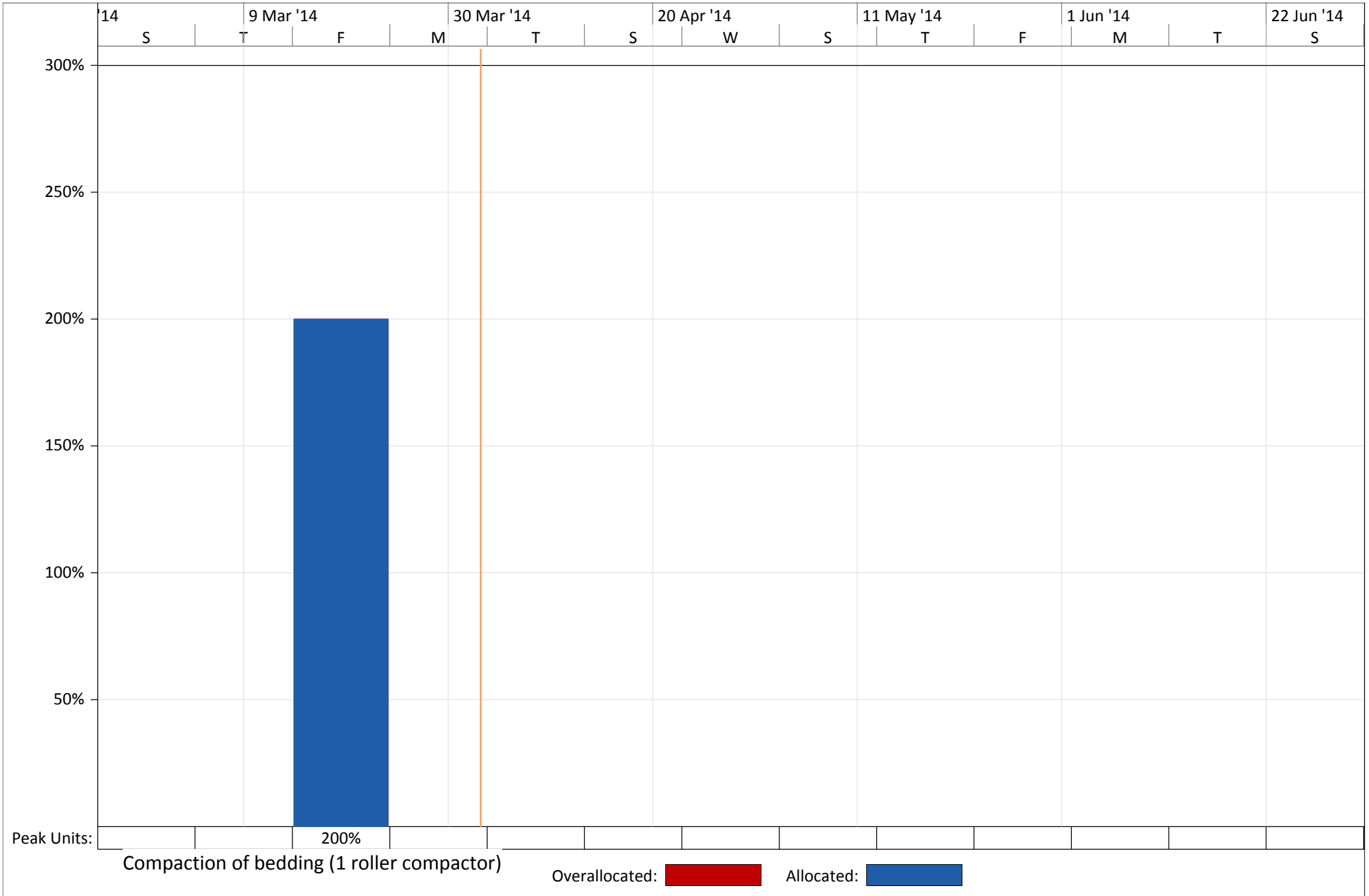

'14
9 Mar '14
30 Mar '14
20 Apr '14
11 May '14
1 Jun '14
22 Jun '14
S T F M T S W S T F M T S
2,500%
2,000%
1,500%
1,000%
500%
Peak Units:
1,200% 1,200% 2,000% 500% 1,600% 400% 1,800% 700% 600% 600% 500% 200%
Workers
Overallocated:
Allocated:

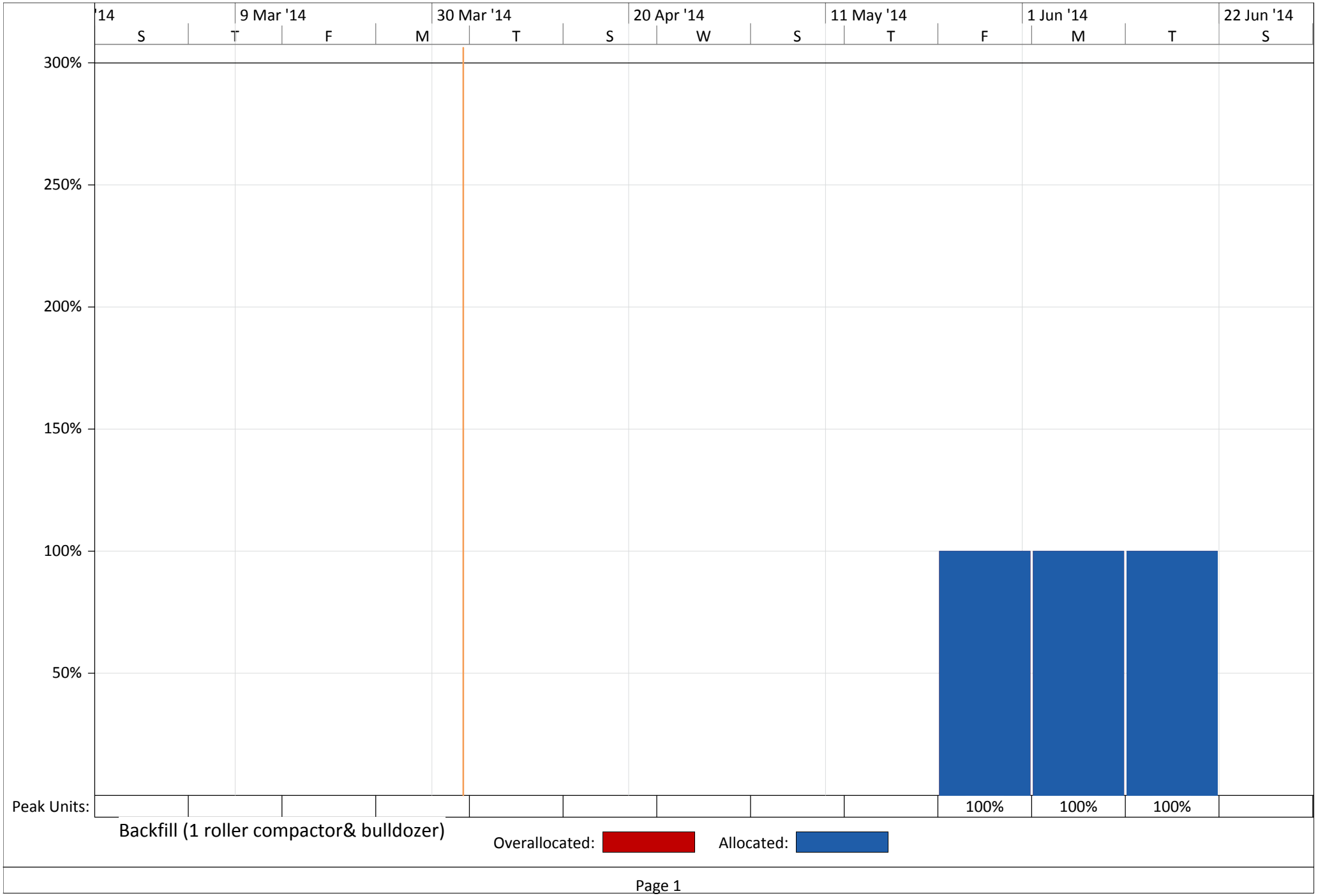

'14
9 Mar '14
30 Mar '14
20 Apr '14
11 May '14
1 Jun '14
22 Jun '14
S T F M T S W S T F M T S
8
6.4
4.8
3.2
1.6
ton/d
Peak Units:
5.48 5.48 4 2.39 2.39 2.39 2.39 0.8 0.8
Reinforcement steel
Overallocated:
Allocated:

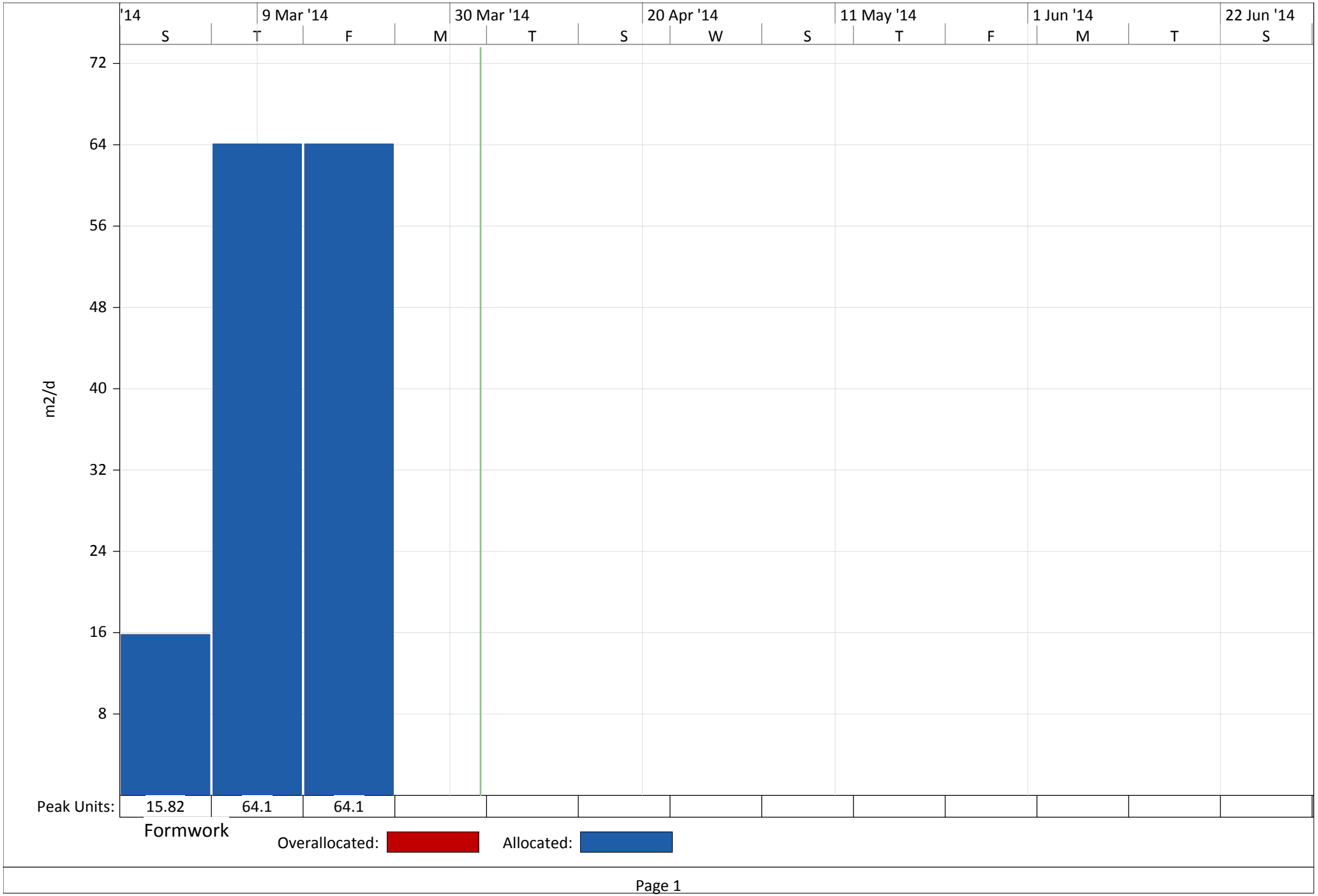

'14
9 Mar '14
30 Mar '14
20 Apr '14
11 May '14
1 Jun '14
22 Jun '14
S T F M T S W S T F M T S
160
144
128
112
96
80
64
48
32
16
m3/d
Peak Units:
151.18
Gravel bedding
Overallocated:
Allocated:

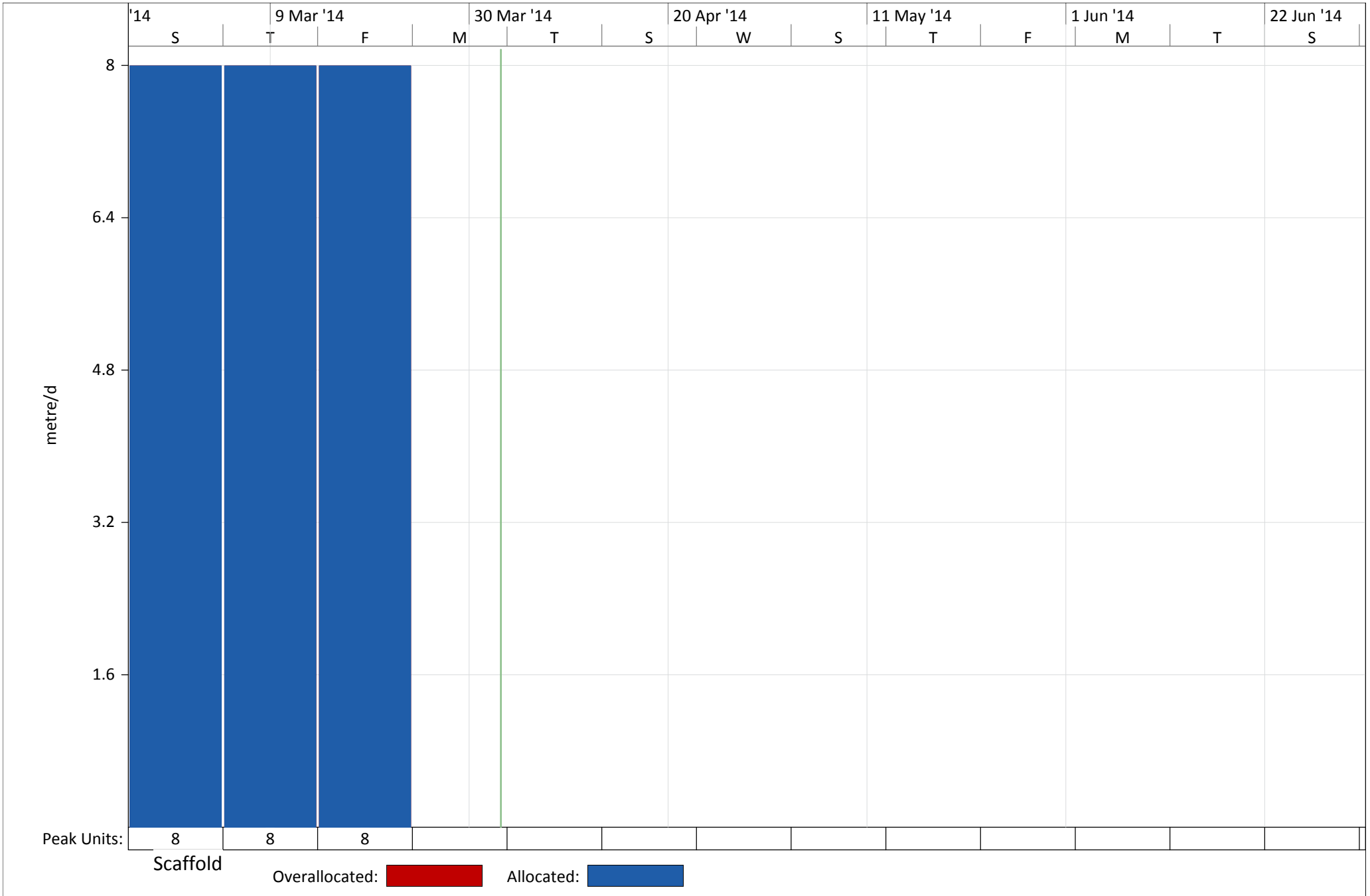

'14
9 Mar '14
30 Mar '14
20 Apr '14
11 May '14
1 Jun '14
22 Jun '14
S T F M T S W S T F M T S
400
360
320
280
240
200
160
120
80
40
m3/d
Peak Units:
321.22
321.22
387.35
202.3
154.94
134.87
Concrete
Overallocated:
Allocated:

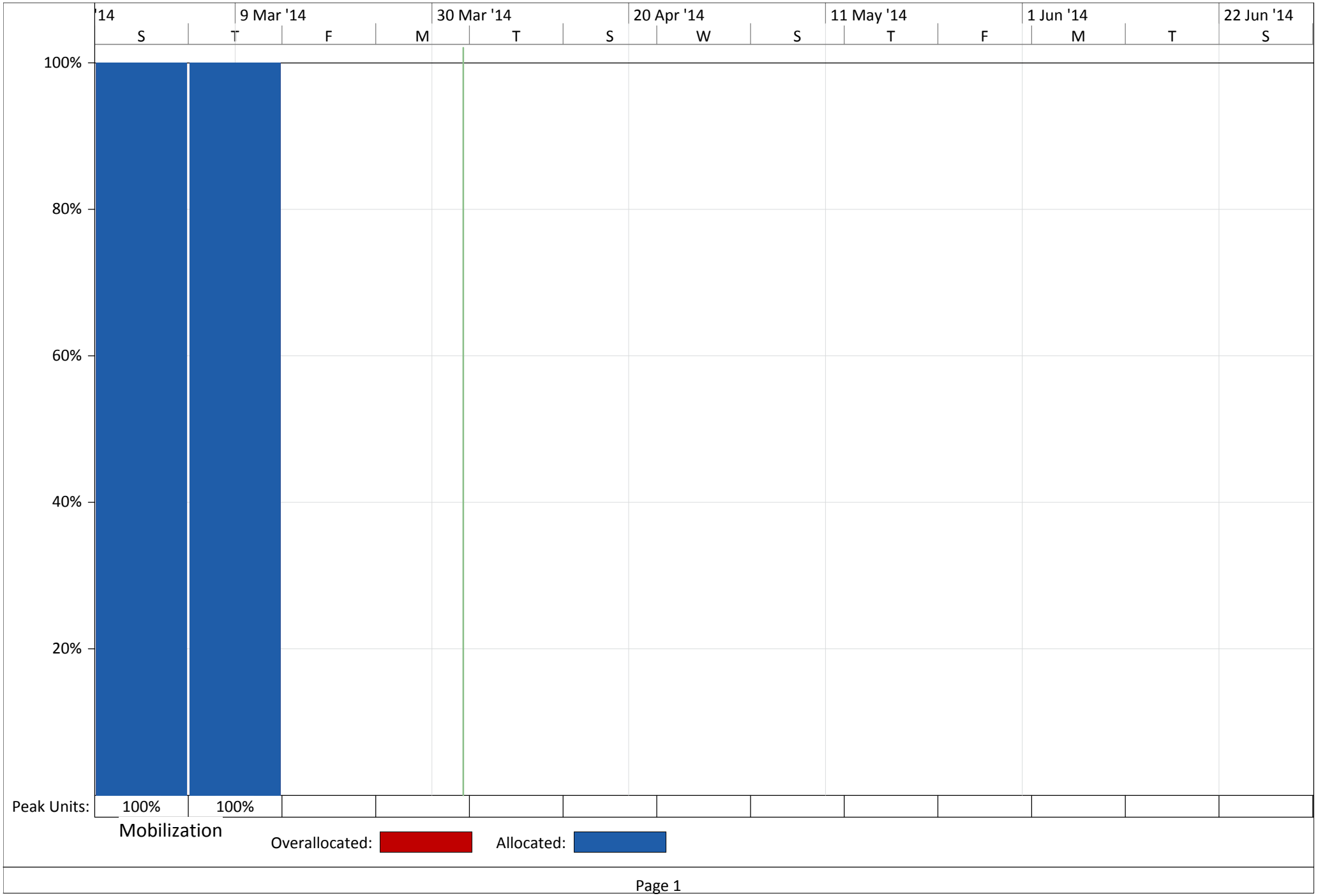

'14
9 Mar '14
30 Mar '14
20 Apr '14
11 May '14
1 Jun '14
22 Jun '14
S T F M T S W S T F M T S
1,000%
900%
800%
700%
600%
500%
400%
300%
200%
100%
Peak Units:
500% 500% 600% 500% 800% 700% 600% 300%
Mobile crane
Overallocated:
Allocated:

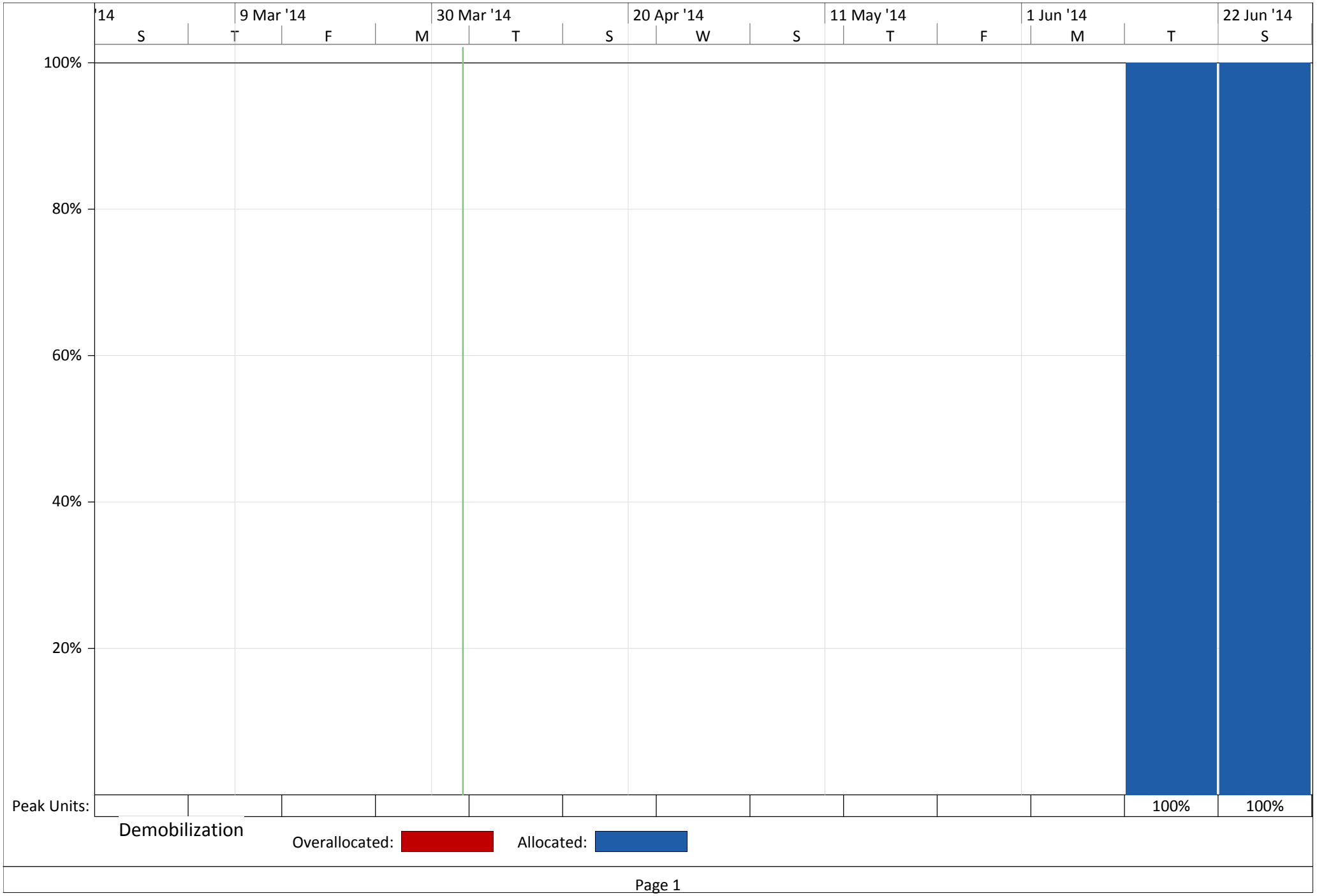

'14
9 Mar '14
30 Mar '14
20 Apr '14
11 May '14
1 Jun '14
22 Jun '14
S
T
F
M
T
S
W
S
T
F
M
T
S
300%
250%
200%
150%
100%
50%
Peak Units:
200%
Compaction of bedding (1 roller compactor)
Overallocated:
Allocated:


'14
9 Mar '14
30 Mar '14
20 Apr '14
11 May '14
1 Jun '14
22 Jun '14
S
T
F
M
T
S
W
S
T
F
M
T
S
300%
250%
200%
150%
100%
50%
Peak Units:
100%
100%
100%
Backfill (1 roller compactor& bulldozer)
Overallocated:
Allocated:


'14
9 Mar '14
30 Mar '14
20 Apr '14
11 May '14
1 Jun '14
22 Jun '14
S T F M T S W S T F M T S
72
64
56
48
40
32
24
16
8
m2/d
Peak Units:
15.82
64.1
64.1
Formwork
Overallocated:
Allocated:


'14
9 Mar '14
30 Mar '14
20 Apr '14
11 May '14
1 Jun '14
22 Jun '14
S T F M T S W S T F M T S
8
6.4
4.8
3.2
1.6
metre/d
Peak Units:
8
8
8
Scaffold
Overallocated:
Allocated:


'14
9 Mar '14
30 Mar '14
20 Apr '14
11 May '14
1 Jun '14
22 Jun '14
S
T
F
M
T
S
W
S
T
F
M
T
S
100%
80%
60%
40%
20%
Peak Units:
100%
100%
Mobilization
Overallocated:
Allocated:


'14
9 Mar '14
30 Mar '14
20 Apr '14
11 May '14
1 Jun '14
22 Jun '14
S
T
F
M
T
S
W
S
T
F
M
T
S
100%
80%
60%
40%
20%
Peak Units:
100%
100%
Demobilization
Overallocated:
Allocated: