CONSTRUCTION TECHNOLOGY AND MANAGEMENT

IIT GUWAHATI

TOPIC: COST ESTIMATION OF RESIDENTIAL BUILDING

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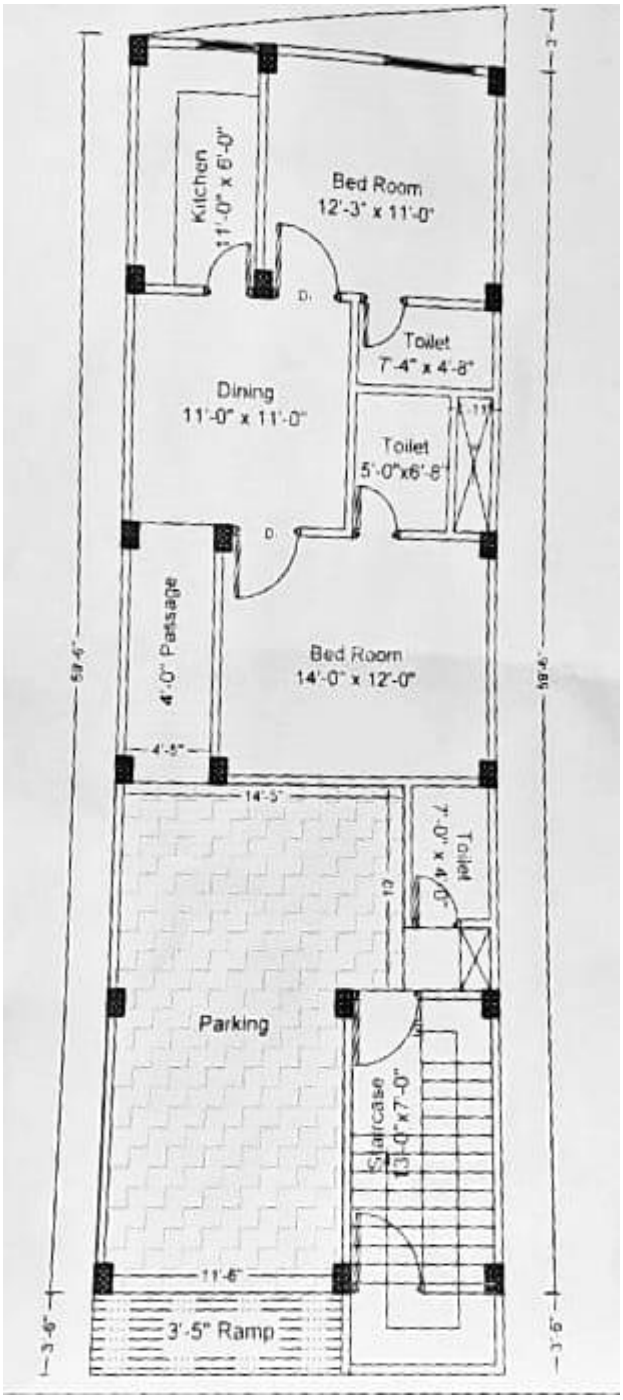
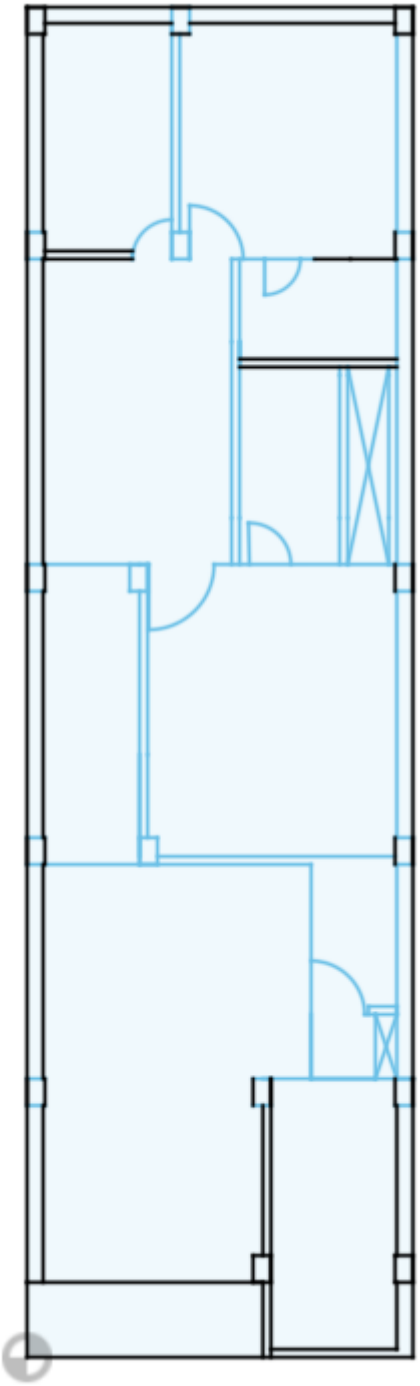
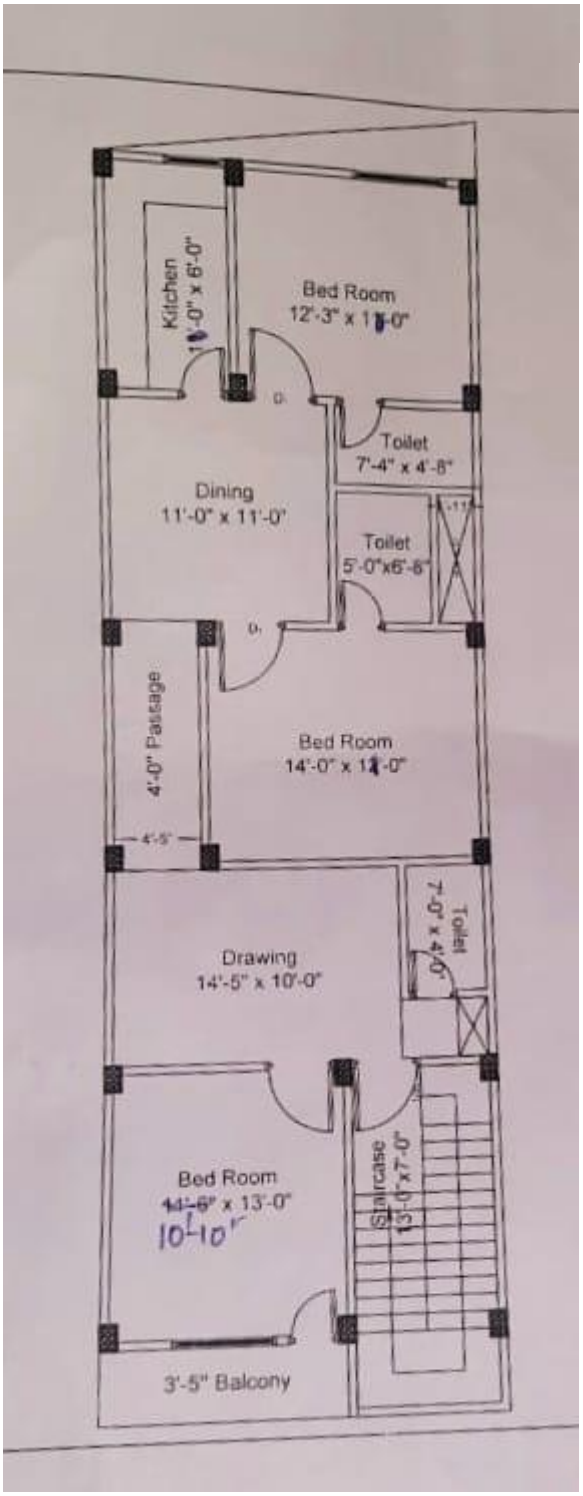
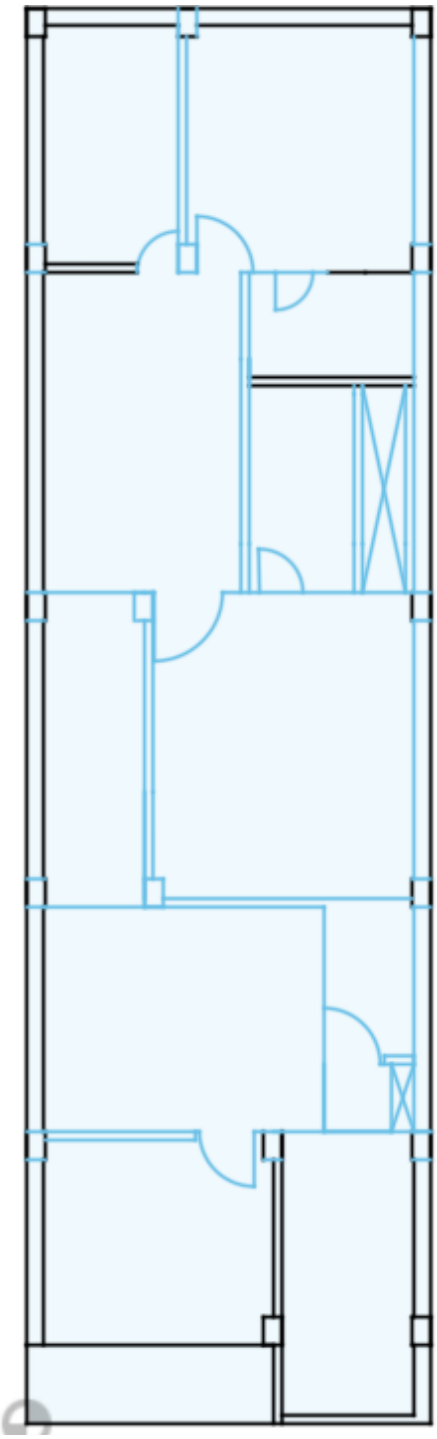




Plan of Ground Floor





Plan of First Floor

Actual Site

Assumptions

1. Brickwork in superstructure above plinth level up to floor V with cement mortar 1:4 (1 cement: 4 coarse sand).

2. Providing and laying in position reinforced cement concrete with mix proportion 1:2:4 (1 cement: 2 coarse sand of zone III: 4 stone aggregate 20mm nominal size), excluding the cost of shuttering and reinforcement – work up to plinth level.

3. Consider 75% 20 mm and 25% 10 mm aggregates, sundries @2%, GST @18%, Contractor's profit and overhead @15%, and Cess @1%.

4. Standard size of brick as 190 x 90 x 90mm.

5. The thickness of boundary wall is 9 inches and the thickness of inner wall is 4.5inches.

Hierarchy of Construction Works

1. Earthwork in excavation for foundation
2. PCC Foundation
3. RCC Foundation
4. Backfilling
5. Columns
6. Plinth Beams
7. Flooring at ground floor
8. Beam at surface of first floor
9. Slab at level one
10. Beam at surface of second floor
11. Slab at level two
12. Brickworks
13. Plastering
14. Whitewashing
15. Painting
16. Tiling

1. Earthwork in Excavation for foundation

Volume Calculation:

1	**Earthwork in Excavation**							
				Dimensions				
	Item no.	Description of Items	no.	length(feet)	Breadth(feet)	Height(feet)	Quantity(cubic feet)	**Quantity in cum**
	1	Earthwork in Excavation	18	6	6	5	3240	91.75

Cost Calculation:

Item No.		Item Description	Unit	Volume	Worker	Rate per day	Rate(per m3)	Rate(in rupees)	Total Amount(in rupees)
1		**Excavation of Earth**							
	1.1	**Labour**	m3	91.74	Mate	714	42.84	3930.1416	
					Mazdoor	645	399.9	36686.826	
								40616.9676	**40616.9676**

2. PCC Foundation

Volume Calculation:

			Dimensions				
Item no.	Description of Items	no.	length(feet)	Breadth(feet)	Height(feet)	Quantity(cubic feet)	**Quantity in cum**
2.1	PCC	18	5	5	0.75	337.5	9.56

Cost Calculation:

	PCC Foundation							
2.1	**Material**							
	Cement	m3	0.0885				2787.75	
	Sand	m3	0.177				567.108	
	Coarse Aggregate	m3	0.354				2300	
			0.6195				**5654.858**	**101787.444**
2.2	**Labour**	0.6195	0.17	Mason	784	133.28	82.56696	
		0.6195	1.83	Mazdoor	645	1180.4	731.226825	
		0.6195	0.8	Bhisti	714	571.2	353.8584	
		0.6195	0.07	Mixer Operator	784	54.88	33.99816	
		0.6195	0.07	Mixer	800	56	34.692	
		0.6195	0.07	Vibrator	350	24.5	15.17775	
							1251.520095	**22527.36171**

3. RCC Foundation

Volume Calculation:

			Dimensions				
Item no.	Description of Items	no.	length(feet)	Breadth(feet)	Height(feet)	Quantity(cubic feet)	**Quantity in cum**
2.2		1	1.25	0.83	1.25	1.296875	
		1	3	3	1.25	11.25	
	RCC work	1	trapezoidal structure with depth= 0.75feet and cross section areas of upper surface= 9 sqfeet and lower surface= 25sqfeet			12.25	
					Total volume	24.79	0.7

Cost Calculation:

Item No.		Item Description	Unit	Volume	Weight(kg)	Worker	Rate per day	Rate(per m3)	Rate(in rupees)	Total Amount(in rupees)
3		**RCC Foundation**								
	3.1	**Material**								
		Cement	m3	0.097					3055.5	
		Sand	m3	0.194					621.57	
		Coarse Aggregate	m3	0.388					2520.9	
		Steel	m3	0.0211	165.635 kg				10857.37	
									17055.34	**306996.12**
	3.2	**Labour**	0.702	0.17		Mason	784	133.28	93.56256	
			0.702	2		Mazdoor	645	1290	905.58	
			0.702	0.9		Bhisti	714	642.6	451.1052	
			0.702	0.07		Mixer Operator	784	54.88	38.52576	
			0.702	0.07		Mixer	800	56	39.312	
			0.702	0.07		Vibrator	350	24.5	17.199	
									1545.28452	**27815.1214**

4. Backfilling

Volume Calculation:

Backfilling						
Item no.	Description of Items	no.	Quantity(cubi	**Quantity in cum**	Explanatory notes	
1	Backfilling of foundation	18	2877.71	81.49	Total volume excavated-volume occupied by RCC work and lime concrete=> 3240-(24.79+337.5) cubic feet= 2877.71 cubic feet= 81.49 cum	

Cost Calculation:

Item Description	Unit	Volume	Worker	Rate(per m3)	Rate(in rupees)	Total Amount(in rupees)
Backfilling						
Labour	m3	62.5	Machine	60 per m3	**3750**	**3750**

5. Columns

Volume Calculation:

		Dimensions				
Description of Items	no.	length(feet)	Breadth(feet)	Height(feet)	Quantity(cubic feet)	**Quantity in cum**
Total columns above ground level	18	1.25	0.83	25	466.875	13.22

Cost Calculation:

Item Description	Unit	Volume	Worker	Rate(per m3)	Rate(in rupees)
Columns					
Material					
Cement	m3	1.84		57960	
Sand	m3	3.68		11790.72	
Coarse Aggregate	m3	7.365		27343.81	
Steel	m3	0.3305		170064.5	
				267159	
Labour					
	13.22	0.17	Mason	133.28	1761.9616
	13.22	2	Mazdoor	1290	17053.8
	13.22	0.9	Bhisti	642.6	8495.172
	13.22	0.07	Mixer Operator	54.88	725.5136
	13.22	0.07	Mixer	56	740.32
	13.22	0.07	Vibrator	24.5	323.89
					29100.6572
			Total Cost of Columns		**296259.6672**

6.Plinth Beams

Volume Calculation:

			Dimensions					
Item no.	Description of Items	no.	length(feet)	Breadth(feet)	Height(feet)	Quantity(cubic feet)	**Quantity in cum**	
4.2	Plinth Beams							
4.2.1	Beams parallel to the length of the plot	3	9.625	0.83	1	23.96625	0.68	
		2	9.625	0.83	1	15.9775	0.45	
		3	10.25	0.83	1	25.5225	0.72	
		2	10	0.83	1	16.6	0.47	
		3	11.25	0.83	1	28.0125	0.79	
4.2.2	Beams parallel to the Breadth of the plot	2	6	0.83	1	9.96	0.28	
		2	11.7	0.83	1	19.422	0.55	
		2	4.33	0.83	1	7.1878	0.20	
		2	13.46	0.83	1	22.3436	0.63	
		2	7	0.83	1	11.62	0.33	
		2	10.96	0.83	1	18.1936	0.52	
							Total Volume of Plinth Beams= 5.63 cum	

Cost Calculation

Item Description	Unit	Volume	Worker	Rate per day	Rate(per m3) in rupees	Rate(in rupees)
Plinth Beams parallel to the length of the plot						
Material						
Cement	m3	0.433				13639.5
Sand	m3	0.866				2774.664
Coarse Aggregate	m3	1.732				6430.34444
Steel	m3	0.07775				40007.6
						62852.10844
Labour						
	3.11	0.17	Mason	784	133.28	414.5008
	3.11	2	Mazdoor	645	1290	4011.9
	3.11	0.9	Bhisti	714	642.6	1998.486
	3.11	0.07	Mixer Operator	784	54.88	170.6768
	3.11	0.07	Mixer	800	56	174.16
	3.11	0.07	Vibrator	350	24.5	76.195
						6845.9186

Item Description	Unit	Volume	Worker	Rate per day	Rate(per m3) in rupees	Rate(in rupees)
Plinth Beams parallel to the Breadth of the plot						
Material						
Cement	m3	0.349			10993.5	
Sand	m3	0.699			2239.596	
Coarse Aggregate	m3	1.398			5190.31	
Steel	m3	0.06275			32289.09	
						50712.496
Labour	2.51	0.17	Mason	784	133.28	334.5328
	2.51	2	Mazdoor	645	1290	3237.9
	2.51	0.9	Bhisti	714	642.6	1612.926
	2.51	0.07	Mixer Operator	784	54.88	137.7488
	2.51	0.07	Mixer	800	56	140.56
	2.51	0.07	Vibrator	350	24.5	61.495
						5525.1626

7.Flooring

Volume Calculation

Flooring						
Item no.	Description of Items	Value	Explanatory notes			
5.1	Total plot area(sq. metres)	111.24	length of the plot= 59.5 feet and breadth of plot = 20.125 feet. Hence area = l*b = 1197.4375 sq. ft.= 111.24 sq. metres			
5.2	Surface area of plinth beams(top view) (sq. metres)	5.63				
5.3	Cross-section area of column(top view) sq. metres	1.74				
5.4	Surface area of flooring(sq.	103.87	111.24-(5.63+1.74) sq. metres			
5.5	volume of flooring					
5.5.1	**Volume occupied by soil**	**26.38 cum**	Height upto which soil is filled is 10 inches(0.254 meters) hence the volume= 103.87*(0.254)			
5.5.2	**Volume occupied by PCC**	**5.28 cum**	Height upto which PCC is done is 2 inches(0.0508 meters) hence the volume= 103.87*(0.0508)			

Cost Calculation

Item Description	Unit	Volume	Worker	ıte per d	Rate(per m3) in rupees	Rate(in rupees)
Flooring						
Material						
Soil	m3	26.38				7914
Cement	m3	0.754				23751
Sand	m3	1.5				4806
Coarse Aggregate	m3	3.017				11201.12539
						47672.12539
Labour for pcc	5.28	0.17	Mason	784	133.28	703.7184
	5.28	1.83	Mazdoor	645	1180.35	6232.248
	5.28	0.8	Bhisti	714	571.2	3015.936
	5.28	0.07	Mixer Operator	784	54.88	289.7664
	5.28	0.07	Mixer	800	56	295.68
	5.28	0.07	Vibrator	350	24.5	129.36
						10666.7088
Labour for soil work	26.38	0.02	Mate	714	14.28	376.7064
	26.38	0.25	Mazdoor	645	161.25	4253.775
	26.38	0.02	Bhisti	714	14.28	376.7064
						5007.1878

8. Beam at surface of first floor

Volume Calculation

Beam at base of 1st floor

Item no.	Description of Items	no.	Dimensions length(feet)	Breadth(feet	Height(feet)	Quantity(cubic feet)	Quantity in cum
7.1	Beams parallel to the length of the plot	3	9.625	0.83	1	23.97	0.68
		2	11	0.83	1	18.26	0.52
		3	10.25	0.83	1	25.52	0.72
		2	10	0.83	1	16.60	0.47
		3	14.67	0.83	1	36.53	1.03
7.2	Beams parallel to the Breadth of the plot	2	6	0.83	1	9.96	0.28
		2	11.7	0.83	1	19.422	0.55
		2	4.33	0.83	1	7.1878	0.20
		2	13.46	0.83	1	22.3436	0.63
		2	7	0.83	1	11.62	0.33
		2	10.96	0.83	1	18.1936	0.52
							total volume= 5.93 cubic meters

Cost Calculation

Item Description	Unit	Volume	Worker	Rate per day	Rate(per m3) in rupees	Rate(in rupees)
Beams parallel to the length of the plot(1st floor)						
Cement	m3	0.476357			31500	15005.25
Sand	m3	0.952714			3204	3052.496571
Coarse Aggregate	m3	1.905429			3712.67	7074.227494
Steel	m3	0.0855			514567.29	43995.5033
						69127.47736
Labour	3.42	0.17	Mason	784	133.28	455.8176
	3.42	2	Mazdoor	645	1290	4411.8
	3.42	0.9	Bhisti	714	642.6	2197.692
	3.42	0.07	Mixer Operator	784	54.88	187.6896
	3.42	0.07	Mixer	800	56	191.52
	3.42	0.07	Vibrator	350	24.5	83.79
						7528.3092

Item Description	Unit	Volume	Worker	Rate per day	Rate(per m3) in rupees	Rate(in rupees)
Beams parallel to the breadth of the plot(1st floor)				Total Volume	2.51	
Cement	m3	0.349714			31500	11016
Sand	m3	0.699429			3204	2240.969143
Coarse Aggregate	m3	1.398857			3712.67	5193.494949
Steel	m3	0.062			514567.29	31903.17198
						50353.63607
Labour	2.51	0.17	Mason	784	133.28	334.5328
	2.51	2	Mazdoor	645	1290	3237.9
	2.51	0.9	Bhisti	714	642.6	1612.926
	2.51	0.07	Mixer Operator	784	54.88	137.7488
	2.51	0.07	Mixer	800	56	140.56
	2.51	0.07	Vibrator	350	24.5	61.495
						5525.1626

9.Slab at level one

Volume Calculation

Slabbing

Item no.	Description of	no.	Dimensions length(feet)	Breadth(feet	Height(feet)	Quantity(cubic f	**Quantity in cum**	Explanatory notes
8.1	total volume(**S**	1	63	20.125	0.5	633.94	17.95	
8.2	volume occupied by beams at base of first floor(**V**)	1					5.93	
8.3	volume occupied by columns at base of first floor(**C**)	18	1.25	0.83	0.5	9.375	0.265	
8.4	Extra Slabbing	1	7	3.5	0.5	12.25	0.35	
8.4	**Total Volume for slabbing**						15.07	**S + E - (V/2) - C**

Cost Calculation

Item Description	**Unit**	**Volume**	**Worker**	**Rate per day**	**Rate(per m3) in rupees**	**Rate(in rupees)**
Slabbing			**Total Volume**	**15.07**		
Cement	m3	2.099036		31500	66119.63	
Sand	m3	4.198071		3204	13450.62	
Coarse Aggregate	m3	8.396143		3712.67	31172.11	
Steel	m3	0.37675		514567.29	193863.2	
						304605.5801
Labour	15.07	0.24	Mason	784	188.16	2835.5712
	15.07	2.5	Mazdoor	645	1612.5	24300.375
	15.07	0.9	Bhisti	714	642.6	9683.982
	15.07	0.07	Mixer Operator	784	54.88	827.0416
	15.07	0.07	Mixer	800	56	843.92
	15.07	0.07	Vibrator	350	24.5	369.215
						38860.1048

10.Beam at surface of second floor

Volume Calculation

Beam at surface of second floor						
		Dimensions				
Description of Items	no.	length(feet)	Breadth(feet)	Height(feet)	Quantity(cubic feet)	**Quantity in cum**
Beams parallel to the length of the plot	3	9.625	0.83	1	23.97	0.68
	2	11	0.83	1	18.26	0.52
	3	10.25	0.83	1	25.52	0.72
	2	10	0.83	1	16.60	0.47
	3	14.67	0.83	1	36.53	1.03
Beams parallel to the Breadth of the plot	2	6	0.83	1	9.96	0.28
	2	11.7	0.83	1	19.422	0.55
	2	4.33	0.83	1	7.1878	0.20
	2	13.46	0.83	1	22.3436	0.63
	2	7	0.83	1	11.62	0.33
	2	10.96	0.83	1	18.1936	0.52
						total volume= 5.93 cubic meters

Cost Calculation

Item Description	Unit	Volume	Worker	Rate per day	Rate(per m3) in rupees	Rate(in rupees)
Beams parallel to the length of the plot(2nd floor)						
Cement	m3	0.476357			31500	15005.25
Sand	m3	0.952714			3204	3052.496571
Coarse Aggregate	m3	1.905429			3712.67	7074.227494
Steel	m3	0.0855			514567.29	43995.5033
						69127.47736
Labour	3.42	0.17	Mason	784	133.28	455.8176
	3.42	2	Mazdoor	645	1290	4411.8
	3.42	0.9	Bhisti	714	642.6	2197.692
	3.42	0.07	Mixer Operator	784	54.88	187.6896
	3.42	0.07	Mixer	800	56	191.52
	3.42	0.07	Vibrator	350	24.5	83.79
						7528.3092

Item Description	Unit	Volume	Worker	Rate per day	Rate(per m3) in rupees	Rate(in rupees)
Beams parallel to the breadth of the plot(2nd floor)				Total Volume	2.51	
Cement	m3	0.349714			31500	11016
Sand	m3	0.699429			3204	2240.969143
Coarse Aggregate	m3	1.398857			3712.67	5193.494949
Steel	m3	0.062			514567.29	31903.17198
						50353.63607
Labour	2.51	0.17	Mason	784	133.28	334.5328
	2.51	2	Mazdoor	645	1290	3237.9
	2.51	0.9	Bhisti	714	642.6	1612.926
	2.51	0.07	Mixer Operator	784	54.88	137.7488
	2.51	0.07	Mixer	800	56	140.56
	2.51	0.07	Vibrator	350	24.5	61.495
						5525.1626

11.Slab at level two (Roof)

Volume Calculation

Slabbing of roof							
Description of Items	no.	length(feet)	Breadth(feet)	Height(feet)	Quantity(cubic feet)	**Quantity in cur**	Explanatory notes
total volume(**S**)	1	63	20.125	0.5	633.94	17.95	
volume occupied by beams at base of first floor(**V**)	1					5.93	
volume occupied by columns at base of first floor(**C**)	18	1.25	0.83	0.5	9.375	0.265	
Total Volume for slabbing						14.72	**S - (V/2) - C**

Cost Calculation

Item Description	Unit	Volume	Worker	Rate per day	Rate(per m3) in rupees	Rate(in rupees)
Roof Slabbing			Total Volume	14.72		
Cement	m3	2.050286			31500	64584
Sand	m3	4.100571			3204	13138.23086
Coarse Aggregate	m3	8.201143			3712.67	30448.13705
Steel	m3	0.368			514567.3	189360.7627
						297531.1306
Labour	14.72	0.24	Mason	784	188.16	2769.7152
	14.72	2.5	Mazdoor	645	1612.5	23736
	14.72	0.9	Bhisti	714	642.6	9459.072
	14.72	0.07	Mixer Operator	784	54.88	807.8336
	14.72	0.07	Mixer	800	56	824.32
	14.72	0.07	Vibrator	350	24.5	360.64
						37957.5808

12.Brickworks

Volume Calculation

Brickwork in superstructure(first floor)

Item no.	Description of Items	no.	length(feet)	Dimensions Breadth(feet)	Height(feet)	Quantity(cubic feet)	**Quantity in cum**
9.1	Boundary wall brickwc	1	6	0.75	11.5	51.75	1.47
			11.7			100.90	2.86
			10.96			94.53	2.68
			3.5			30.20	0.86
		2	9.625			166.03	4.70
		2	11			189.75	5.37
		2	10.25			176.81	5.01
		2	10			172.50	4.88
		2	11.25			194.06	5.50
		1	10.96			94.53	2.68
9.2	Internal wall brickwork	1	5.92	0.375	11.5	25.53	0.72
		1	11.8	0.375	11.5	50.89	1.44
		1	7.33	0.375	12	32.99	0.93
		1	7.25	0.375	11.5	31.27	0.89
		2	4.33	0.375	11.5	37.35	1.06
		2	13.49	0.375	11.5	116.35	3.29
		1	4	0.375	12	18.00	0.51
		1	6.92	0.375	11.5	29.84	0.85
		1	9.25	0.375	11.5	39.89	1.13
		1	11	0.375	11.5	47.44	1.34
		1	6.67	0.375	12	30.02	0.85
		1	9.5	0.375	11.5	40.97	1.16
		1	7	0.375	12	31.50	0.89
		1	10.5	0.375	11.5	45.28	1.28
9.3	Extra Brickwork						
		2	3.416	0.375	11.5	29.463	0.83
9.4	Area acquired by door and window						

Item	Type	No.	area per iter	total area(sq.ft	Explanatory notes
Door	D3	5	17.5	87.5	
Door	D2	2	21	42	
Door	D1	2	24.5	49	
			total area	178.5	

			Volume occupied by doors= 1.9 cubic metres		volume= (total area*0.375) cubic feet= 1.9 cum

Item	Type	No.	area per item(sq.ft)	total area(sq.ft)	Explanatory notes
Window	W1	2	22.5	45	
Window	W2	1	13.5	13.5	
			total area	58.5	
			Volume occupied by windows= 1.24 cubic metres		volume= (total area*0.75) cubic feet= 1.24 cum
9.5	**Final Brickwork excluding doors and windows**				
6.4.1	total external brickwork(**E**) = 34.76		36 - 1.24		
6.4.2	total internal brickwork(**I**) = 15.28		17.18- 1.9		
	Total Volume= 50.04 cubic metres		E+I		

Brickwork in superstructure(ground floor)

Item no.	Description of Items	no.	length(feet)	Dimensions Breadth(feet)	Height(feet)	Quantity(cubic feet)	**Quantity in cum**
6.1	Boundary wall brickwo	1	6	0.75	11.5	51.75	1.47
			11.7			100.90	2.86
			10.96			94.53	2.68
			3.5			30.20	0.86
		2	9.625			166.03	4.70
		2	11			189.75	5.37
		2	10.25			176.81	5.01
		2	10			172.50	4.88
		2	11.25			194.06	5.50
6.2	Internal wall brickwork	1	5.92	0.375	11.5	25.53	0.72
		1	11.8	0.375	11.5	50.89	1.44
		1	7.33	0.375	12	32.99	0.93
		1	7.25	0.375	11.5	31.27	0.89
		2	4.33	0.375	11.5	37.35	1.06
		2	13.49	0.375	11.5	116.35	3.29
		1	4	0.375	12	18.00	0.51
		1	6.92	0.375	11.5	29.84	0.85
							0.00
		1	9.25	0.375	11.5	39.89	1.13
		1	11	0.375	11.5	47.44	1.34
		1	6.67	0.375	12	30.02	0.85
		1	9.5	0.375	11.5	40.97	1.16
		1	7	0.375	12	31.50	0.89
		1	10.5	0.375	11.5	45.28	1.28
							0.00
6.3	Extra Brickwork						0.00
		2	3.5	0.375	4	10.5	0.30

6.4	Area acquired by door and window					
Item	Type	No.	area per item(sq.ft)	total area(sq.ft)	Explanatory notes	
Door	D3	4	17.5	70		
Door	D2	2	21	42		
Door	D1	2	24.5	49		
			total area	161		
			Volume occupied by doors= 1.71 cubic metres		volume= (total area*0.375) cubic feet= 1.71 cum	
Item	Type	No.	area per item(sq.ft)	total area(sq.ft)	Explanatory notes	
Window	W1	1	22.5	22.5		
Window	W2	1	13.5	13.5		
			total area	36		
			Volume occupied by windows= 0.76 cubic metres		volume= (total area*0.75) cubic feet= 0.76 cum	

Final Brickwork excluding doors and windows	
total external brickwork(**E**) = 32.55	33.31- 0.76
total internal brickwork(**I**) = 14.92	16.63- 1.71
Total Volume= 47.47 cubic metres	E+I

Cost Calculation

Item Description	Unit	Volume	Worker	Rate per day	Rate(per m3) in rupees	Rate(in rupees)
Brickwork in superstructure			**Total Volume**	**97.51**		
Material						
Cement	m3	2.796			31500	88074
Sand	m3	11.184			3204	35833.5
brick	m3	83.58			6.5	353002
		Bricks Req.	**54308**			**476909.5**
Labour	97.51	0.25	Mason	784	196	19111.96
	97.51	0.4	Mazdoor	645	258	25157.58
	97.51	0.1	Bhisti	714	71.4	6962.214
						51231.754

13.Plastering

Area Calculation

Plastering			
Description	Value(sq. meters)	Explanation	thickness=0.02 m
Total area of brickwork(B)	651.76		
Total area of slab(S)	177.8		
total area of Plastering	**1659.12**	2*B + 2*S [the factor of 2 in brickwork is used for inner and outer plastering and the factor of 2 in slabs is used because there are 2 ceilings in the whole house]	

Cost Calculation

Item Description	Unit	Volume	Worker	Rate per day	Rate(per m3) in rupees	Rate(in rupees)
Plastering						
Material						
Cement	m3	6.63648			31500	209049.12
Sand	m3	26.54592			3204	85053.12768
						294102.2477
Labour	33.1824	0.6	Mason	784	470.4	15609.00096
	33.1824	0.1	Mazdoor	645	64.5	2140.2648
	33.1824	0.1	Bhisti	714	71.4	2369.22336
						20118.48912

14.Whitwashing

Area Calculation

whitewashing		
Total Area	1659.12 sq. meters	area for painting and whitewashing will be same as area of plastering

Cost Calculation

White Wash						
	Rate			Total Area		Total Cost
Total Cost	65			1659.12		**107842.8**

15.Painting

Area Calculation

Painting		
Total Area	1659.12 sq. meters	area for painting and whitewashing will be same as area of plastering

Cost Calculation

Painting						
	Rate			**Total Area**		**Total Cost**
	90			1659.12		**149320.8**

16.Tiling

Area Calculation

Tiling				
Tiling for Groundfloor				
Description	length(feet)	Breadth(feet)	Area(sq. feet)	Area in sq.meters
Kitchen	11	6	66	6.13
Bedroom 1	12.25	11	134.75	12.52
Toilet 1	7.33	4.67	34.2311	3.18
Toilet 2	5	6.67	33.35	3.10
Dining Hall	11	11	121	11.24
Bedroom 2	14	12	168	15.61
Passage	4	4.41	17.64	1.64
Toilet 3	7	4	28	2.60
Tiling for 1st floor				
Description	length(feet)	Breadth(feet)		
Kitchen	11	6	66	6.13
Bedroom 1	12.25	11	134.75	12.52
Toilet 1	7.33	4.67	34.2311	3.18
Toilet 2	5	6.67	33.35	3.10
Dining Hall	11	11	121	11.24
Bedroom 2	14	12	168	15.61
Drawing Room	14.416	10	144.16	13.39
Toilet 3	7	4	28	2.60
Bedroom 3	13	11.5	149.5	13.89
Balcony	3.416	11.5	39.284	3.65
Total area for Tiling= 141.33 sq. meters				

Cost Calculation

Tiling						
	Rate			Total Area		Total Cost
	1076.39			141.33		**152126.1987**

Final Costing

Cost of Carpentry, Toilet, Electric Work , Plumbing =15,79,992.33

Remaining Cost=29,20,007.67

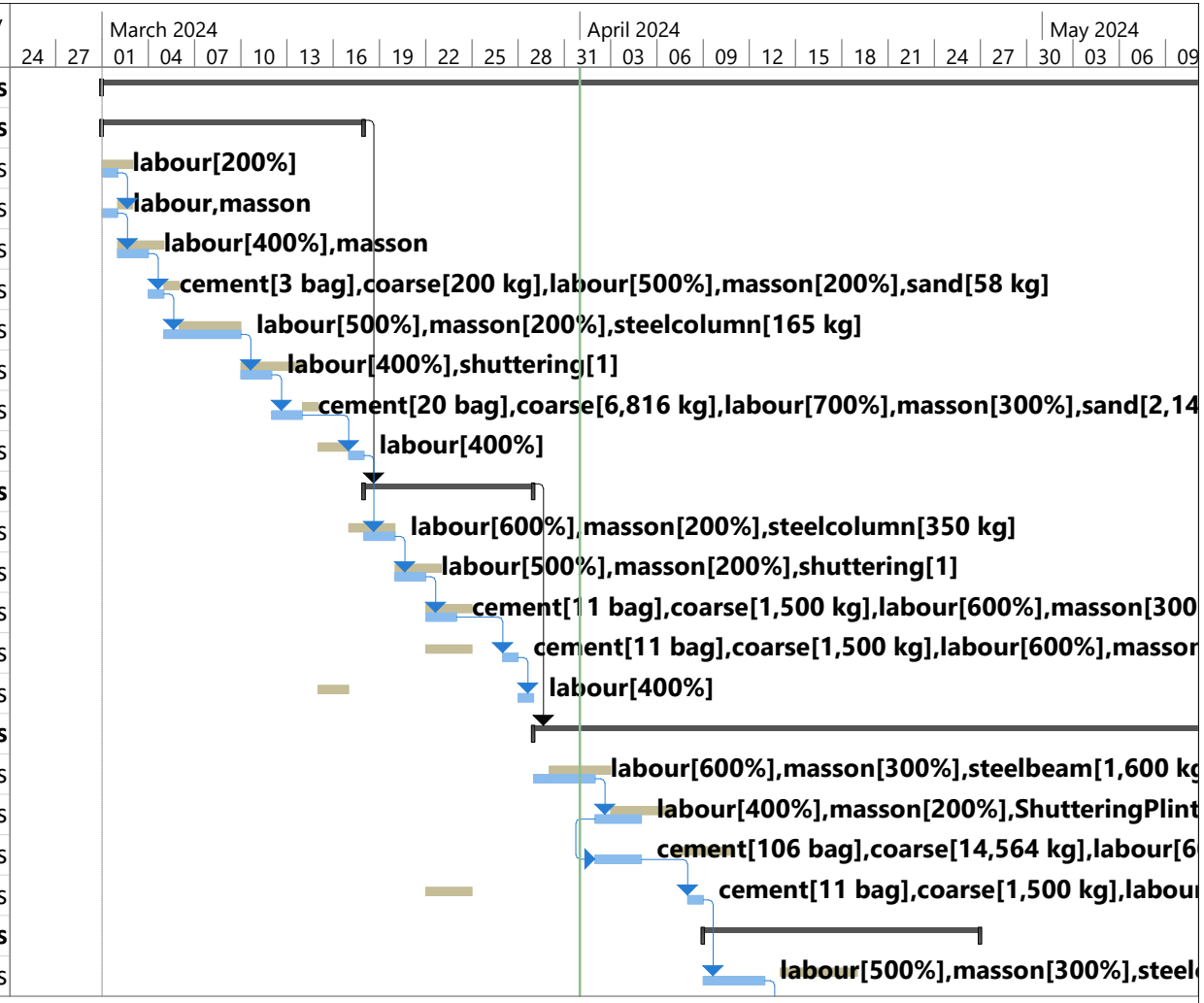
Total Cost =45,00,000

18% GST =8,10,000

15% Profit of Contractor=6,75,000

Total Cost(including GST and Profit)=59,85,000

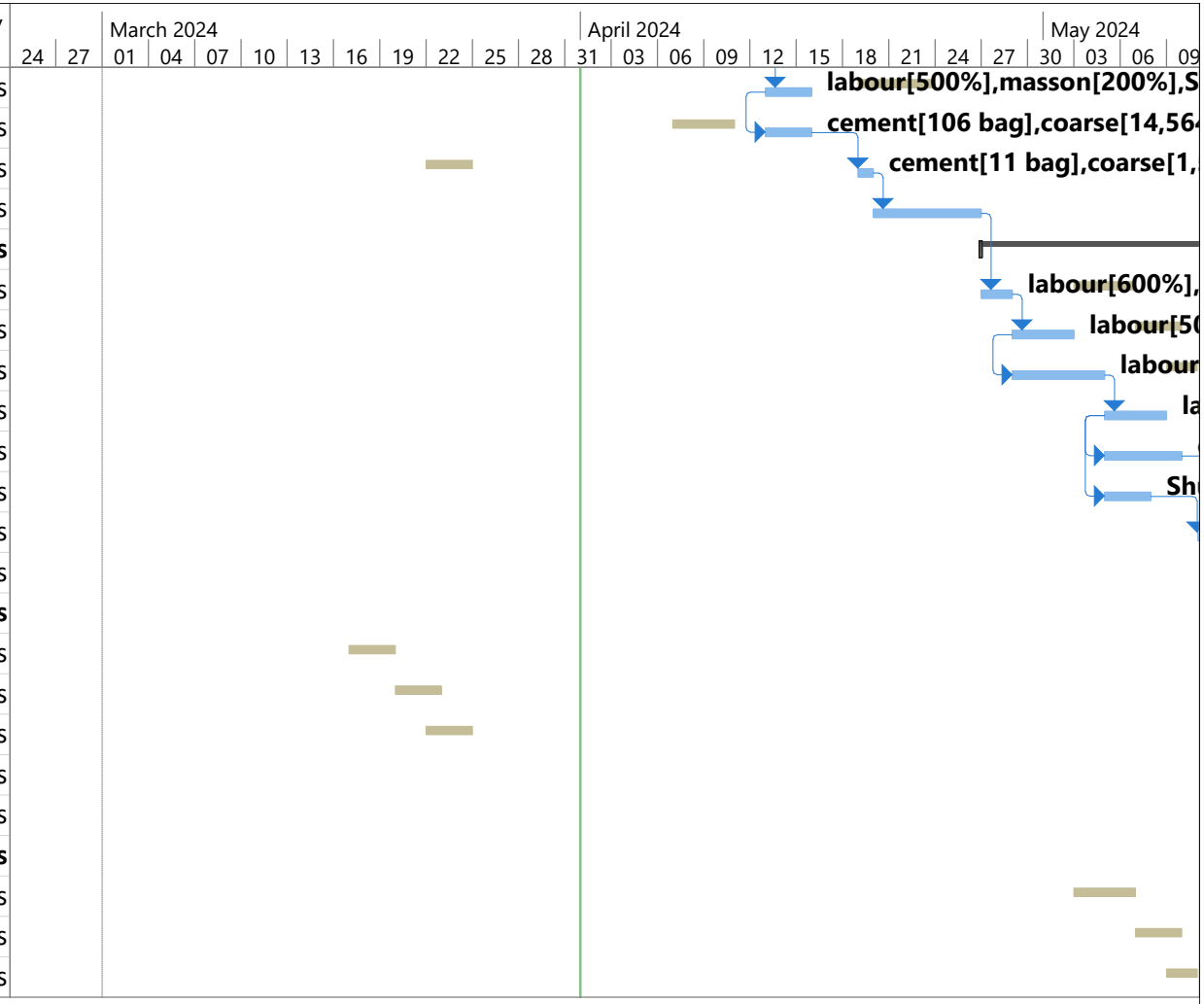
ID	Task Mode	Name	Leveling Delay
1		**House Construction**	**0 edays**
2		**Foundation**	**0 edays**
3		Cleaning	0 edays
4		Layout at Site	0 edays
5		Excavation	0 edays
6		PCC	0 edays
7		Reinforcement	0 edays
8		Shuttering	0 edays
9		RCC	0 edays
10		Deshuttering	0 edays
11		**Column upto plinth**	**0 edays**
12		Reinforcement	0 edays
13		Shuttering	0 edays
14		RCC	0 edays
15		Deshuttering	0 edays
16		Backfilling	0 edays
17		**Plinth Beams**	**0 edays**
18		Reinforcement	0 edays
19		Shuttering	0 edays
20		RCC	0 edays
21		Deshuttering	0 edays
22		**Ground Floor Col**	**0 edays**
23		Reinforcement	0 edays



Project: pROJECT2
Date: Mon 01-04-24

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

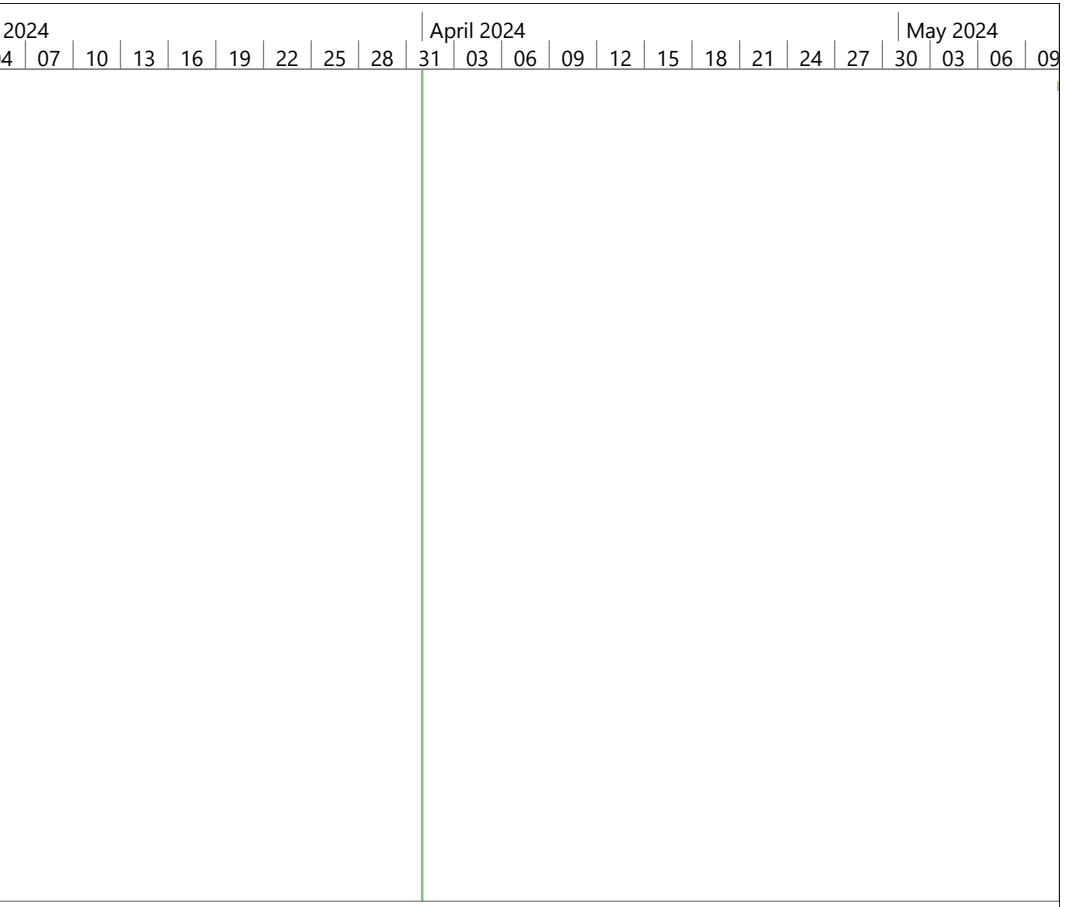
ID	Task Mode	Name	Leveling Delay
24		Shutttering	0 edays
25		RCC	0 edays
26		Deshuttering	0 edays
27		Brickwork	0 edays
28		**Beam & Slab of g**	**0 edays**
29		Staging	0 edays
30		Reinforcement	0 edays
31		Reinforcement	0 edays
32		Shuttering	0 edays
33		RCC of slab	0 edays
34		RCC of beam	0 edays
35		Deshuttering c	0 edays
36		Deshuttering c	0 edays
37		**Column and B**	**0 edays**
38		Reinforcem	0 edays
39		Shuttering	0 edays
40		RCC	0 edays
41		Deshutterin	0 edays
42		Brickwork	0 edays
43		**Beam and slab**	**0 edays**
44		Staging	0 edays
45		Reinforcem	0 edays
46		Reinforcem	0 edays



Project: pROJECT2
Date: Mon 01-04-24

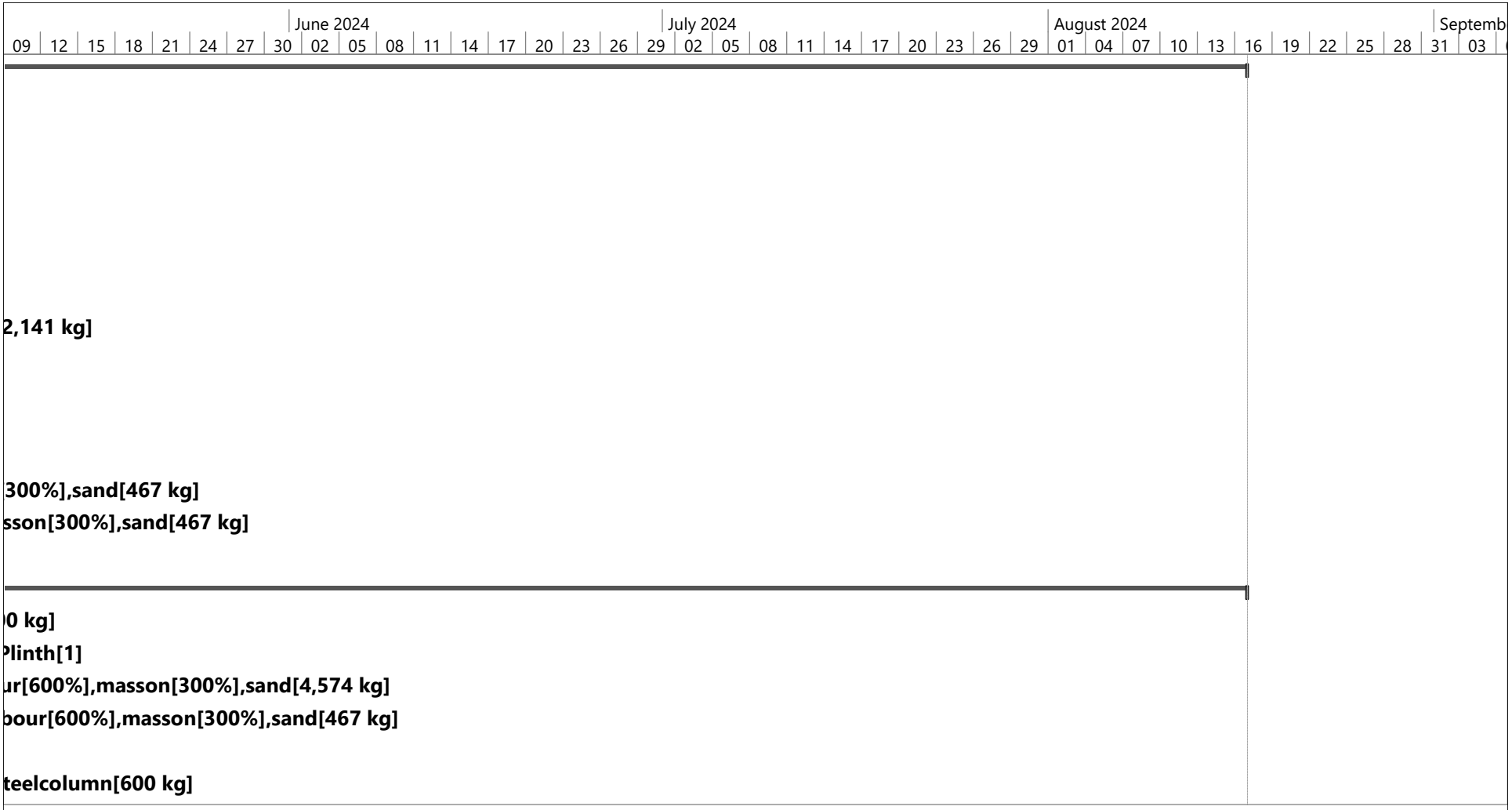
Preleveled Task	Inactive Summary	Summary
Preleveled Split	Duration-only	Manual Summary
Task	Start-only	Project Summary
Manual Task	Finish-only	External Tasks
Split	Preleveled Milestone	External Milestone
Progress	Milestone	Deadline
Inactive Task	Delay	
Inactive Milestone	Slack	

ID	Task Mode	Name	Leveling Delay
47		Shuttering	0 edays
48		RCC of slab	0 edays
49		RCC of bean	0 edays
50		Deshutterin	0 edays
51		Deshutterin	0 edays
52		**Wall finishing**	**0 edays**
53		Plastering	0 edays
54		Whitewashing	0 edays
55		Painting	0 edays
56		**Finishing work**	**0 edays**
57		**Room Work**	**0 edays**
58		Electric Wor	0 edays
59		Door	0 edays
60		Window	0 edays
61		Tiling	0 edays
62		**Toilets**	**0 edays**
63		Toilet water	0 edays
64		Sewage and	0 edays
65		Plumbing	0 edays
66		Toilet acces	0 edays



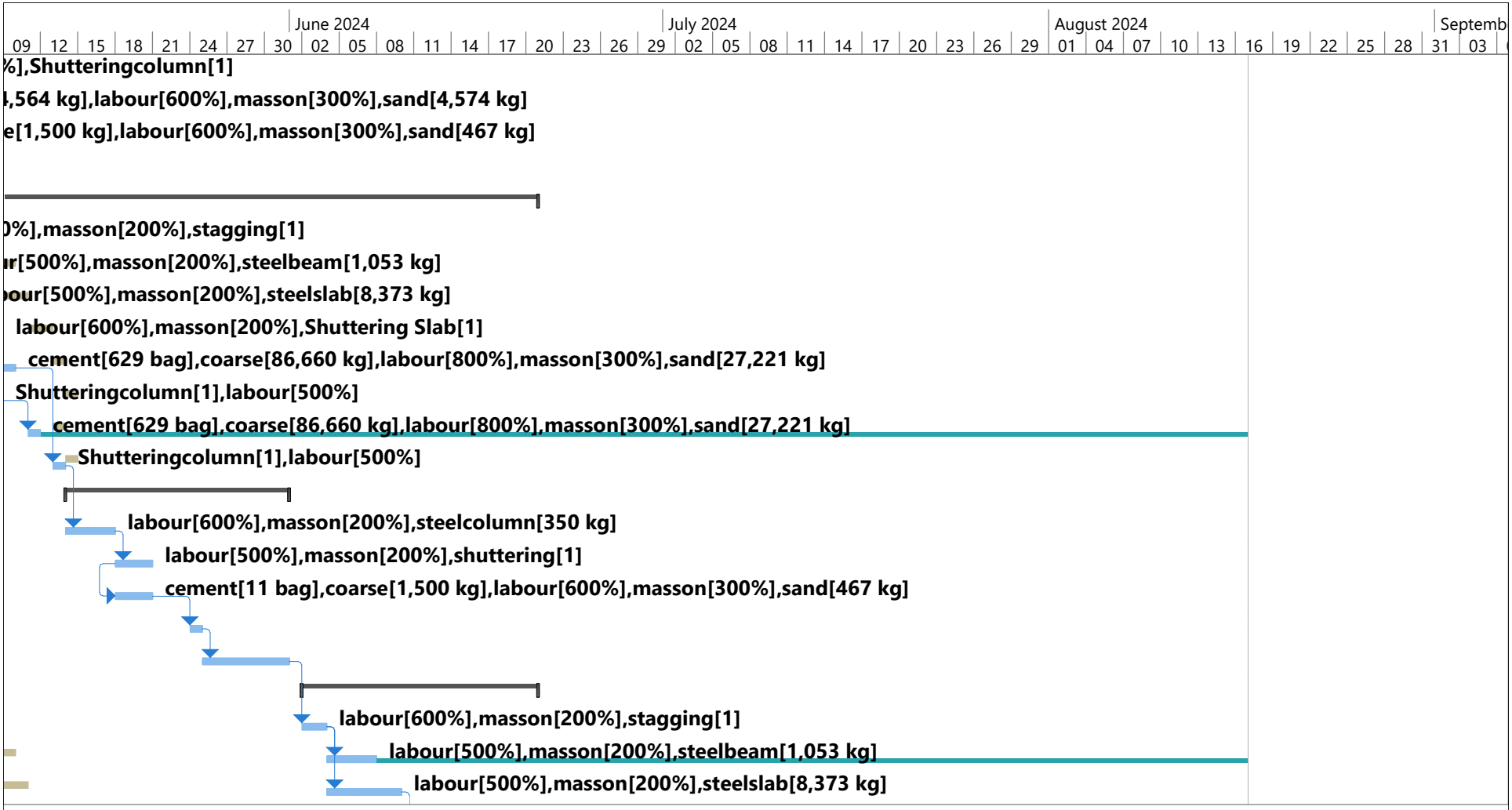
Project: pROJECT2
Date: Mon 01-04-24

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



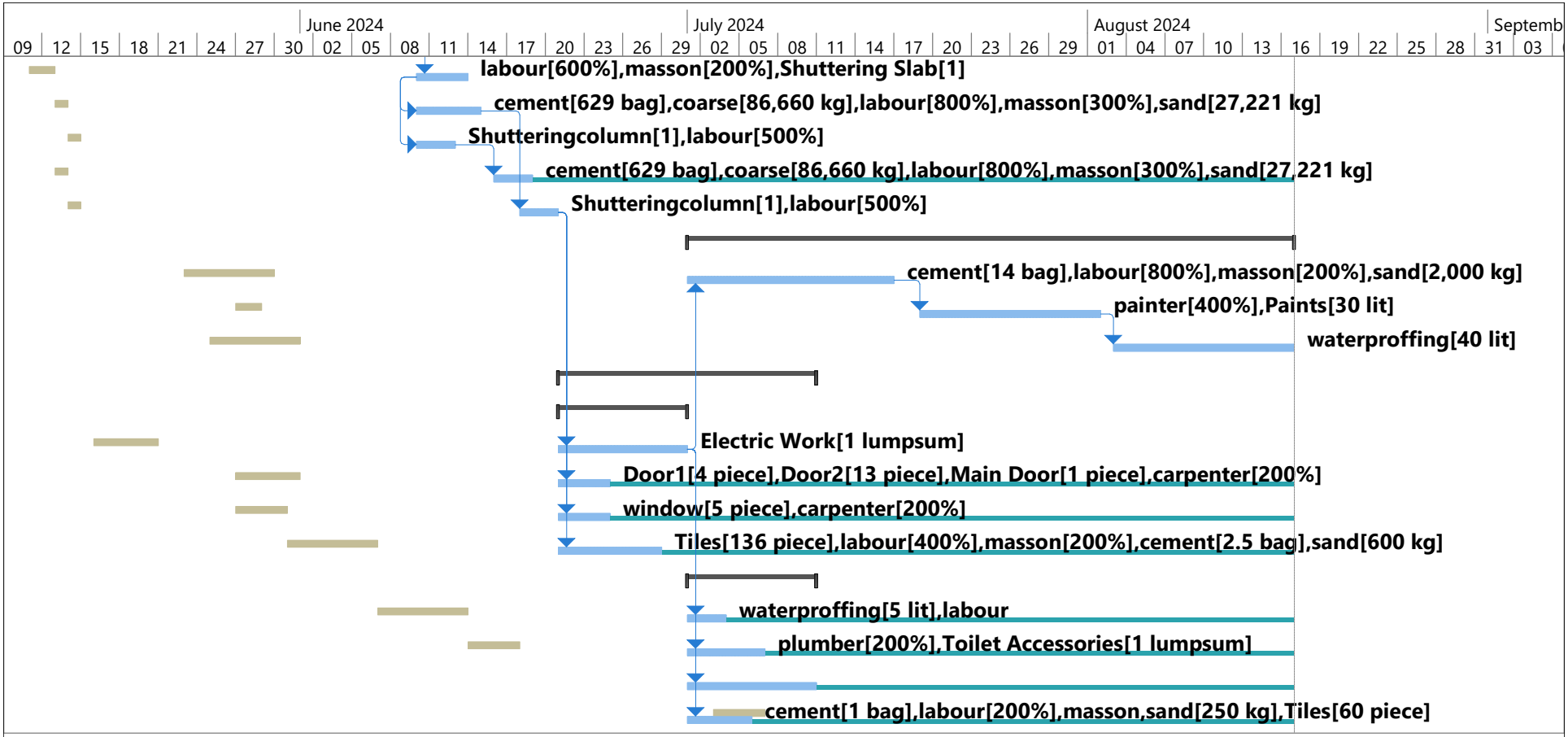
Project: pROJECT2
Date: Mon 01-04-24

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



Project: pROJECT2
Date: Mon 01-04-24

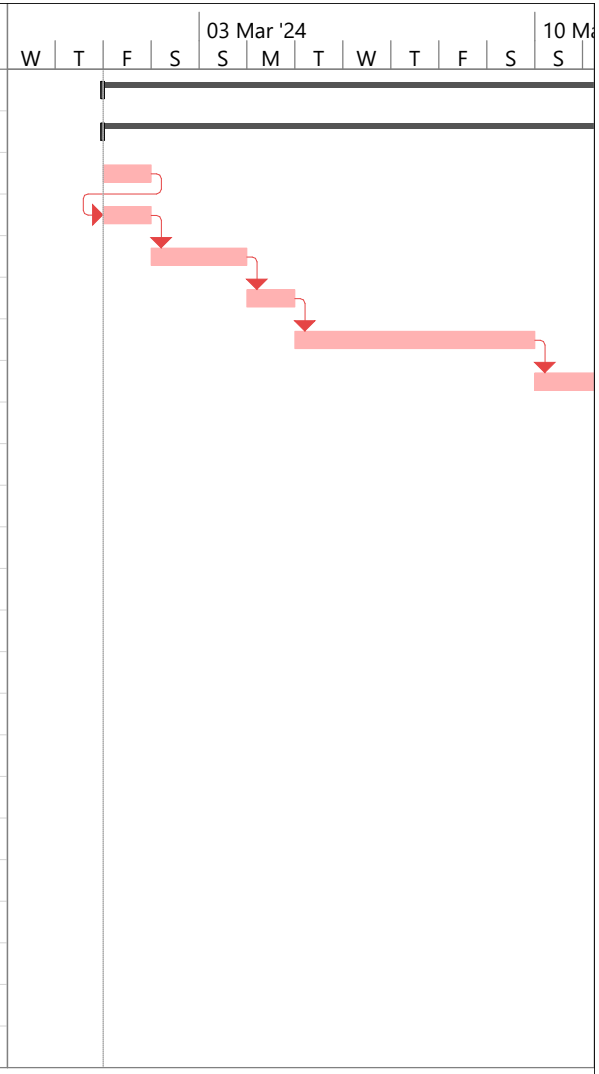
Preleveled Task	Inactive Summary	Summary
Preleveled Split	Duration-only	Manual Summary
Task	Start-only	Project Summary
Manual Task	Finish-only	External Tasks
Split	Preleveled Milestone	External Milestone
Progress	Milestone	Deadline
Inactive Task	Delay	
Inactive Milestone	Slack	



Project: pROJECT2
Date: Mon 01-04-24

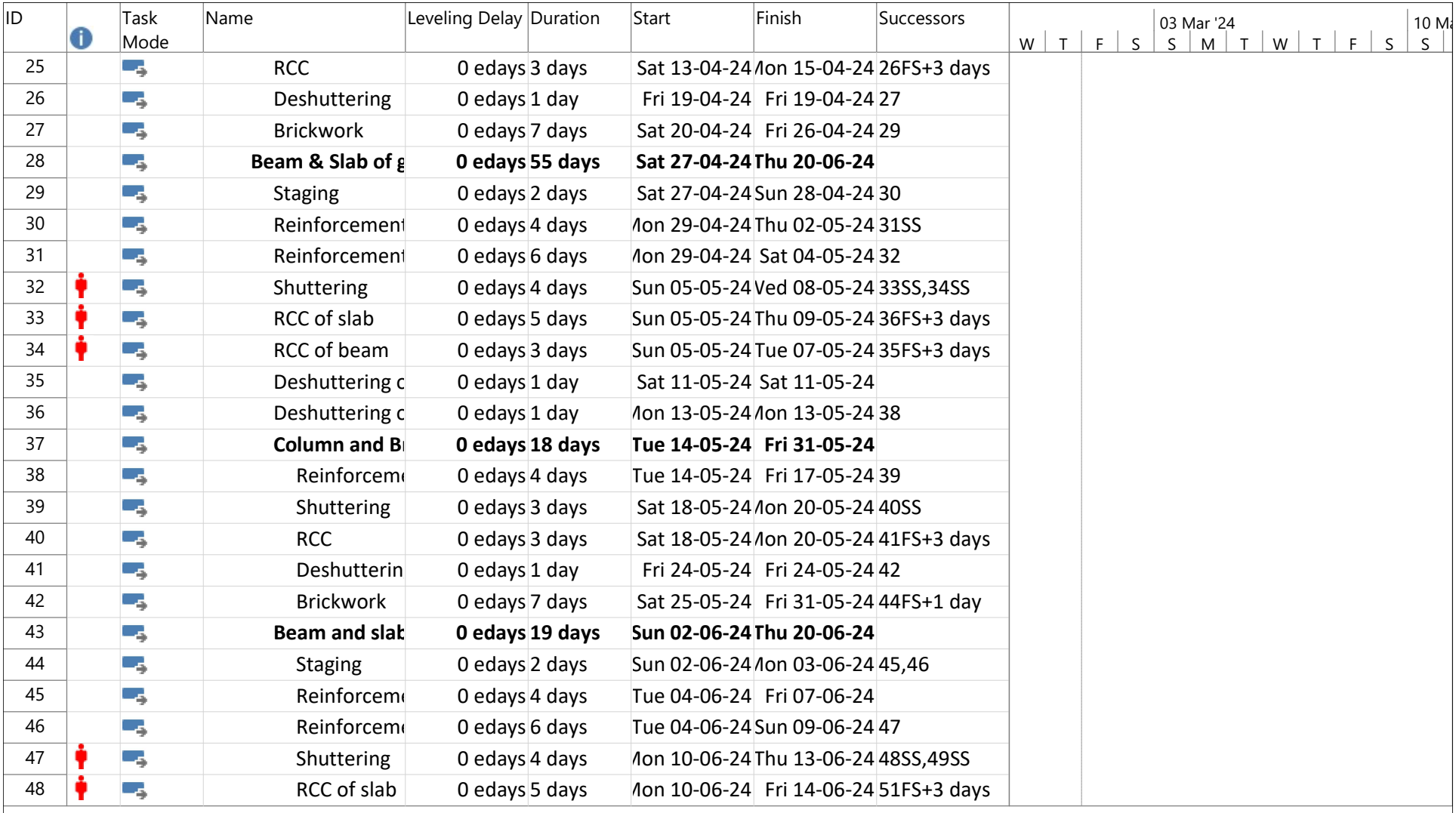
Preleveled Task		Inactive Summary		Summary	
Preleveled Split		Duration-only		Manual Summary	
Task		Start-only		Project Summary	
Manual Task		Finish-only		External Tasks	
Split		Preleveled Milestone		External Milestone	
Progress		Milestone		Deadline	
Inactive Task		Delay			
Inactive Milestone		Slack			

ID	Task Mode	Name	Leveling Delay	Duration	Start	Finish	Successors
1		**House Construction**	**0 edays**	**169 days**	**Fri 01-03-24**	**Fri 16-08-24**	
2		**Foundation**	**0 edays**	**17 days**	**Fri 01-03-24**	**Sun 17-03-24**	**11**
3		Cleaning	0 edays	1 day	Fri 01-03-24	Fri 01-03-24	4FS-1 day
4		Layout at Site	0 edays	1 day	Fri 01-03-24	Fri 01-03-24	5
5		Excavation	0 edays	2 days	Sat 02-03-24	Sun 03-03-24	6
6		PCC	0 edays	1 day	Mon 04-03-24	Mon 04-03-24	7
7		Reinforcement	0 edays	5 days	Tue 05-03-24	Sat 09-03-24	8
8		Shuttering	0 edays	2 days	Sun 10-03-24	Mon 11-03-24	9
9		RCC	0 edays	2 days	Tue 12-03-24	Wed 13-03-24	10FS+3 days
10		Deshuttering	0 edays	1 day	Sun 17-03-24	Sun 17-03-24	12
11		**Column upto plinth**	**0 edays**	**11 days**	**Mon 18-03-24**	**Thu 28-03-24**	**17**
12		Reinforcement	0 edays	2 days	Mon 18-03-24	Tue 19-03-24	13
13		Shuttering	0 edays	2 days	Wed 20-03-24	Thu 21-03-24	14
14		RCC	0 edays	2 days	Fri 22-03-24	Sat 23-03-24	15FS+3 days
15		Deshuttering	0 edays	1 day	Wed 27-03-24	Wed 27-03-24	16
16		Backfilling	0 edays	1 day	Thu 28-03-24	Thu 28-03-24	
17		**Plinth Beams**	**0 edays**	**141 days**	**Fri 29-03-24**	**Fri 16-08-24**	
18		Reinforcement	0 edays	4 days	Fri 29-03-24	Mon 01-04-24	19
19		Shuttering	0 edays	3 days	Tue 02-04-24	Thu 04-04-24	20SS
20		RCC	0 edays	3 days	Tue 02-04-24	Thu 04-04-24	21FS+3 days
21		Deshuttering	0 edays	1 day	Mon 08-04-24	Mon 08-04-24	23
22		**Ground Floor Col**	**0 edays**	**18 days**	**Tue 09-04-24**	**Fri 26-04-24**	
23		Reinforcement	0 edays	4 days	Tue 09-04-24	Fri 12-04-24	24
24		Shutttering	0 edays	3 days	Sat 13-04-24	Mon 15-04-24	25SS



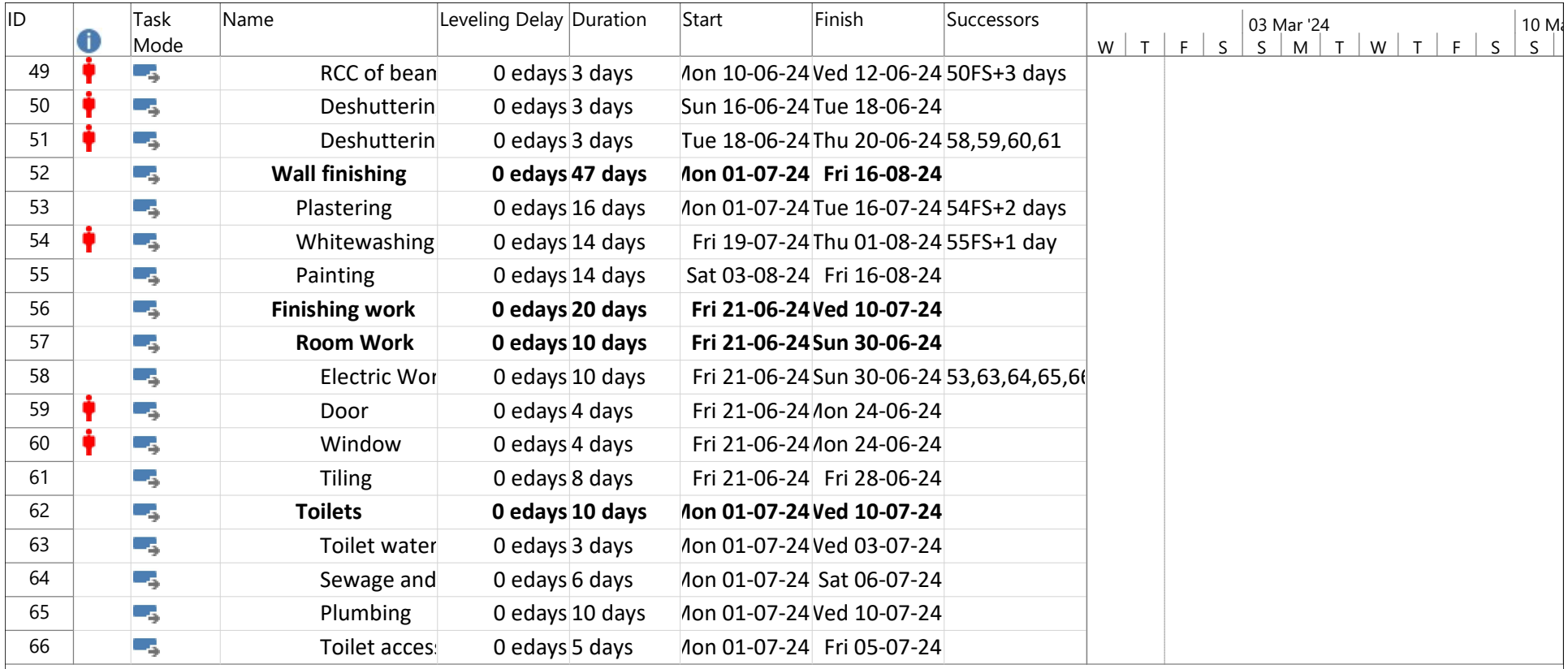
Critical	Project Summary	Manual Summary Rollup
Critical Split	Rolled Up Critical	Manual Summary
Task	Rolled Up Critical Split	Start-only
Split	Inactive Task	Finish-only
Milestone	Inactive Milestone	External Tasks
Slack	Inactive Summary	External Milestone
Slippage	Manual Task	Deadline
Summary	Duration-only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

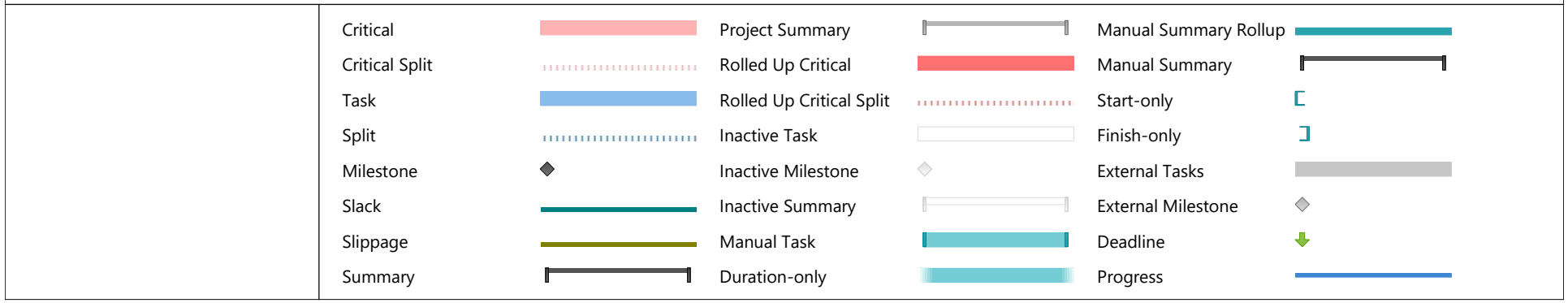
ID	Task Mode	Name	Leveling Delay	Duration	Start	Finish	Successors
25		RCC	0 edays	3 days	Sat 13-04-24	Mon 15-04-24	26FS+3 days
26		Deshuttering	0 edays	1 day	Fri 19-04-24	Fri 19-04-24	27
27		Brickwork	0 edays	7 days	Sat 20-04-24	Fri 26-04-24	29
28		**Beam & Slab of g**	**0 edays**	**55 days**	**Sat 27-04-24**	**Thu 20-06-24**	
29		Staging	0 edays	2 days	Sat 27-04-24	Sun 28-04-24	30
30		Reinforcement	0 edays	4 days	Mon 29-04-24	Thu 02-05-24	31SS
31		Reinforcement	0 edays	6 days	Mon 29-04-24	Sat 04-05-24	32
32		Shuttering	0 edays	4 days	Sun 05-05-24	Wed 08-05-24	33SS,34SS
33		RCC of slab	0 edays	5 days	Sun 05-05-24	Thu 09-05-24	36FS+3 days
34		RCC of beam	0 edays	3 days	Sun 05-05-24	Tue 07-05-24	35FS+3 days
35		Deshuttering c	0 edays	1 day	Sat 11-05-24	Sat 11-05-24	
36		Deshuttering c	0 edays	1 day	Mon 13-05-24	Mon 13-05-24	38
37		**Column and B**	**0 edays**	**18 days**	**Tue 14-05-24**	**Fri 31-05-24**	
38		Reinforceme	0 edays	4 days	Tue 14-05-24	Fri 17-05-24	39
39		Shuttering	0 edays	3 days	Sat 18-05-24	Mon 20-05-24	40SS
40		RCC	0 edays	3 days	Sat 18-05-24	Mon 20-05-24	41FS+3 days
41		Deshutterin	0 edays	1 day	Fri 24-05-24	Fri 24-05-24	42
42		Brickwork	0 edays	7 days	Sat 25-05-24	Fri 31-05-24	44FS+1 day
43		**Beam and slab**	**0 edays**	**19 days**	**Sun 02-06-24**	**Thu 20-06-24**	
44		Staging	0 edays	2 days	Sun 02-06-24	Mon 03-06-24	45,46
45		Reinforceme	0 edays	4 days	Tue 04-06-24	Fri 07-06-24	
46		Reinforceme	0 edays	6 days	Tue 04-06-24	Sun 09-06-24	47
47		Shuttering	0 edays	4 days	Mon 10-06-24	Thu 13-06-24	48SS,49SS
48		RCC of slab	0 edays	5 days	Mon 10-06-24	Fri 14-06-24	51FS+3 days

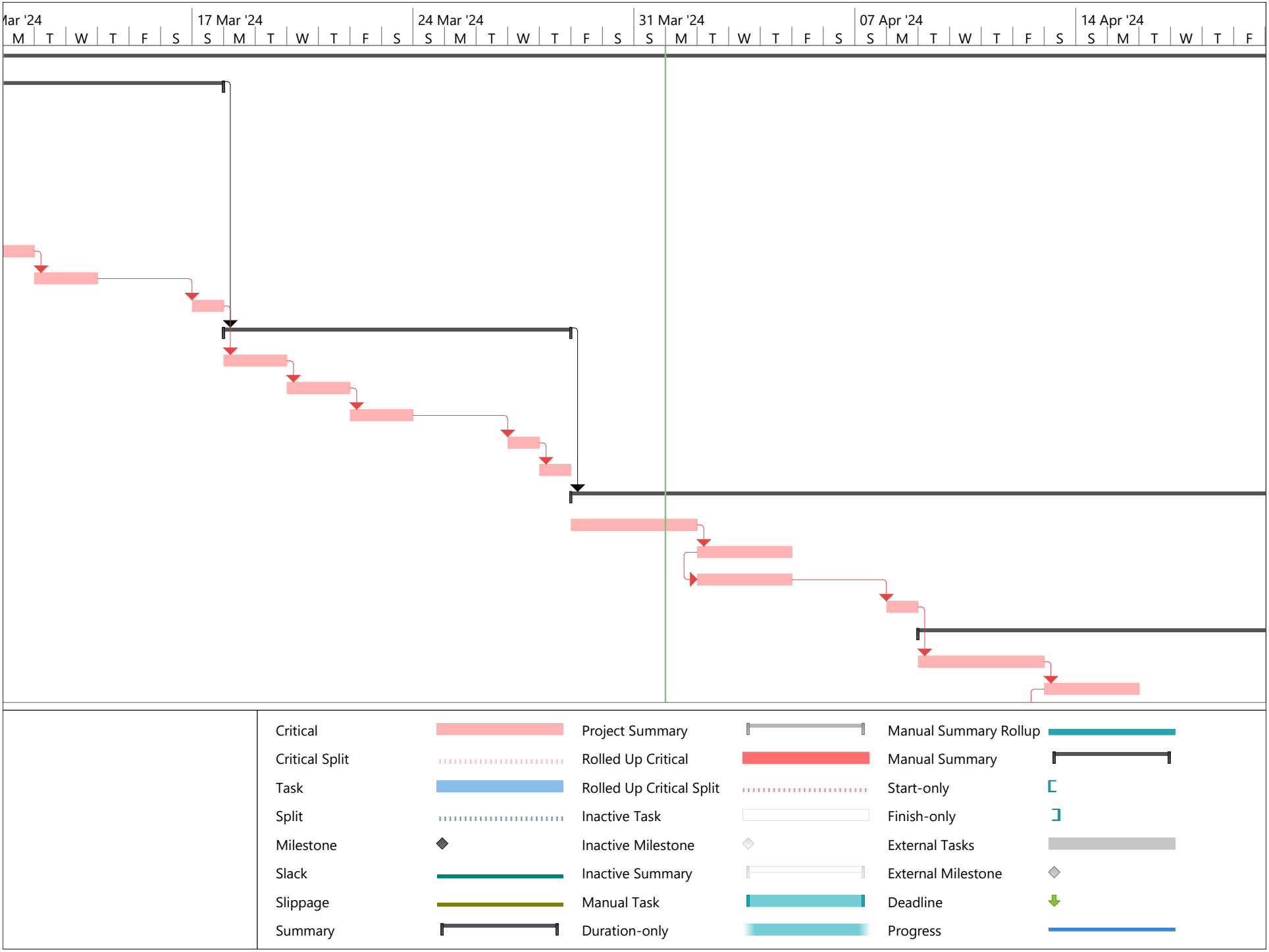


Critical
Critical Split
Task
Split
Milestone
Slack
Slippage
Summary
Project Summary
Rolled Up Critical
Rolled Up Critical Split
Inactive Task
Inactive Milestone
Inactive Summary
Manual Task
Duration-only
Manual Summary Rollup
Manual Summary
Start-only
Finish-only
External Tasks
External Milestone
Deadline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

ID	Task Mode	Name	Leveling Delay	Duration	Start	Finish	Successors
49		RCC of bean	0 edays	3 days	Mon 10-06-24	Wed 12-06-24	50FS+3 days
50		Deshutterin	0 edays	3 days	Sun 16-06-24	Tue 18-06-24	
51		Deshutterin	0 edays	3 days	Tue 18-06-24	Thu 20-06-24	58,59,60,61
52		**Wall finishing**	**0 edays**	**47 days**	**Mon 01-07-24**	**Fri 16-08-24**	
53		Plastering	0 edays	16 days	Mon 01-07-24	Tue 16-07-24	54FS+2 days
54		Whitewashing	0 edays	14 days	Fri 19-07-24	Thu 01-08-24	55FS+1 day
55		Painting	0 edays	14 days	Sat 03-08-24	Fri 16-08-24	
56		**Finishing work**	**0 edays**	**20 days**	**Fri 21-06-24**	**Wed 10-07-24**	
57		**Room Work**	**0 edays**	**10 days**	**Fri 21-06-24**	**Sun 30-06-24**	
58		Electric Wor	0 edays	10 days	Fri 21-06-24	Sun 30-06-24	53,63,64,65,66
59		Door	0 edays	4 days	Fri 21-06-24	Mon 24-06-24	
60		Window	0 edays	4 days	Fri 21-06-24	Mon 24-06-24	
61		Tiling	0 edays	8 days	Fri 21-06-24	Fri 28-06-24	
62		**Toilets**	**0 edays**	**10 days**	**Mon 01-07-24**	**Wed 10-07-24**	
63		Toilet water	0 edays	3 days	Mon 01-07-24	Wed 03-07-24	
64		Sewage and	0 edays	6 days	Mon 01-07-24	Sat 06-07-24	
65		Plumbing	0 edays	10 days	Mon 01-07-24	Wed 10-07-24	
66		Toilet acces	0 edays	5 days	Mon 01-07-24	Fri 05-07-24	



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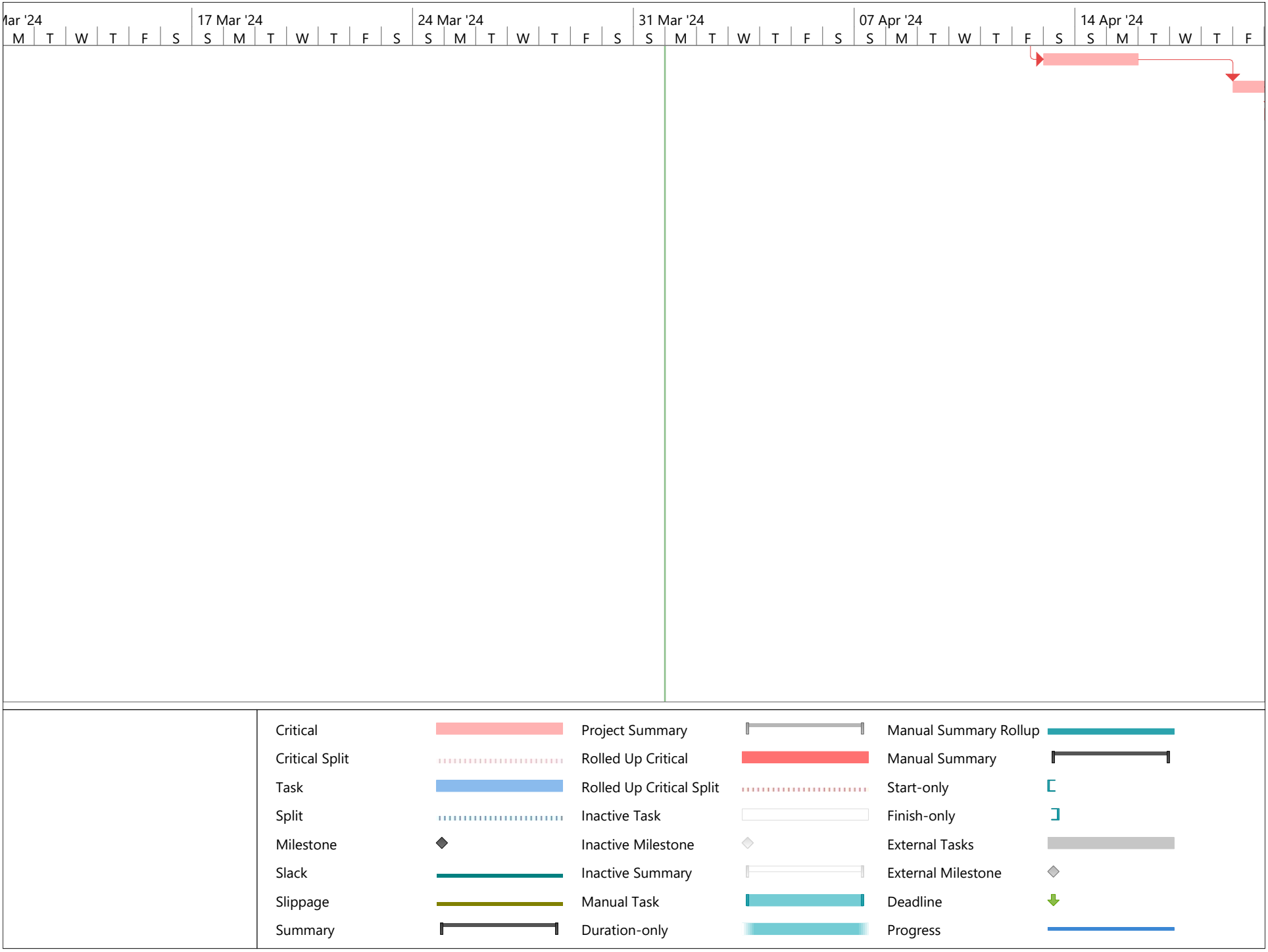
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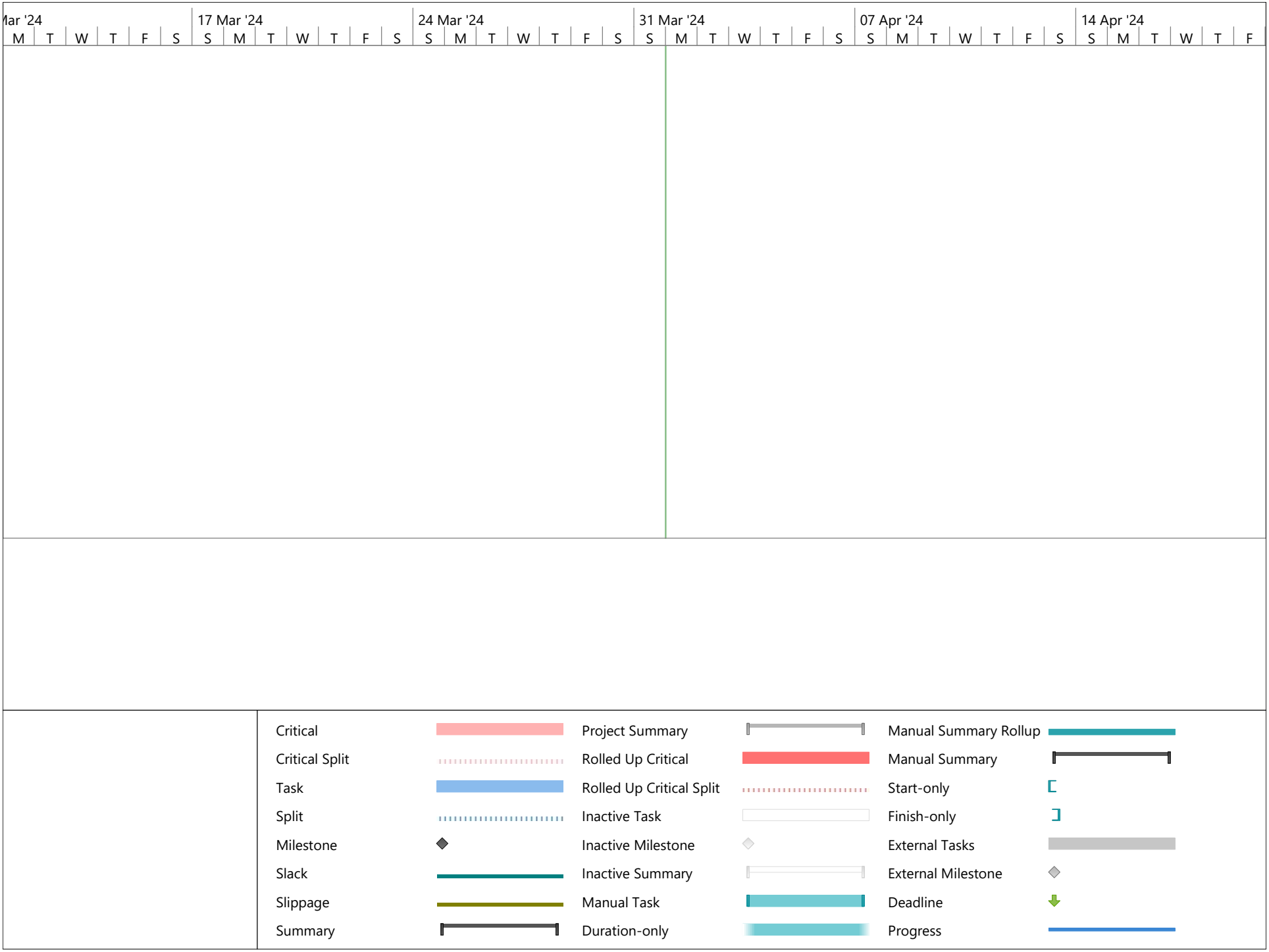
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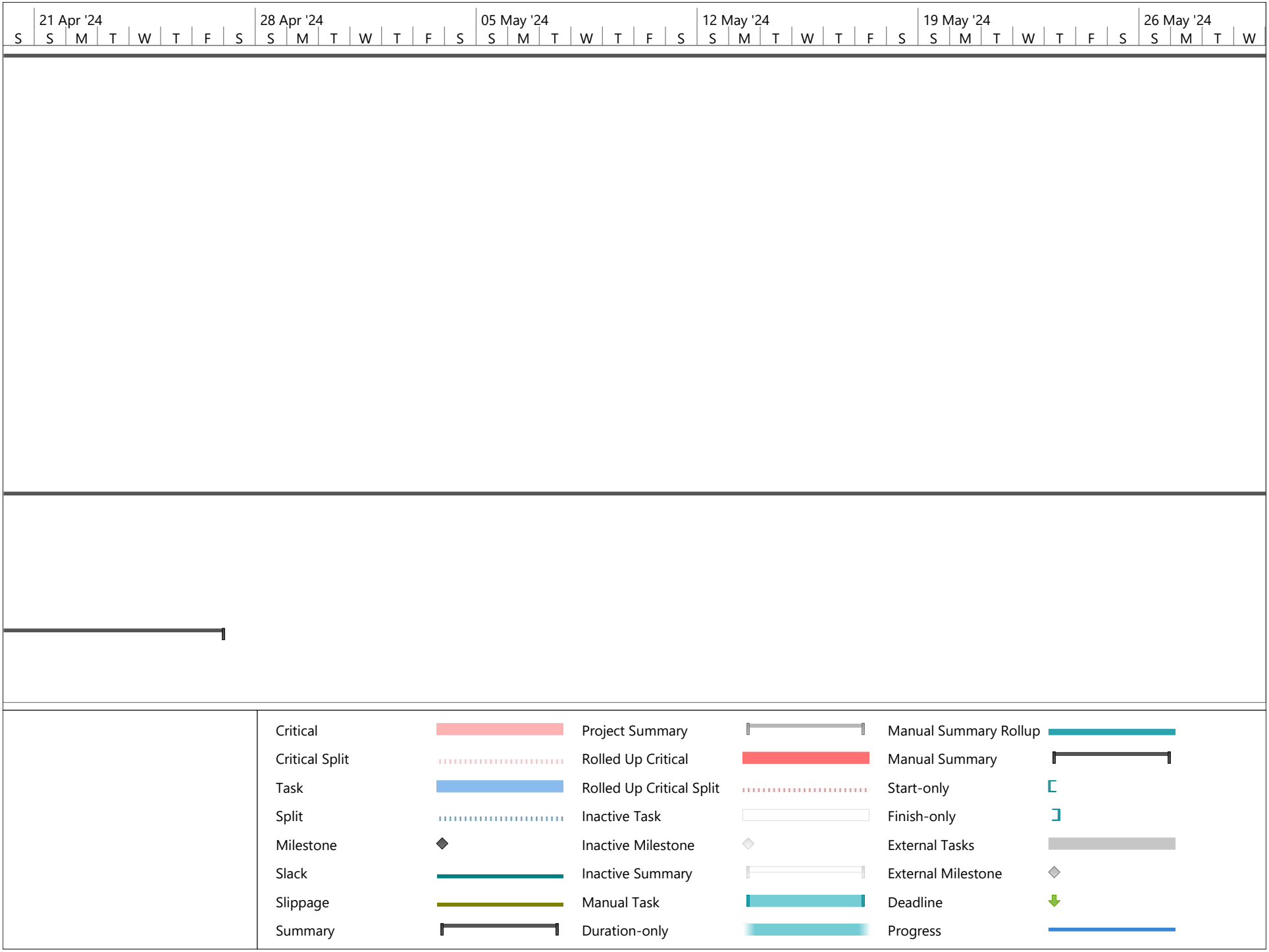
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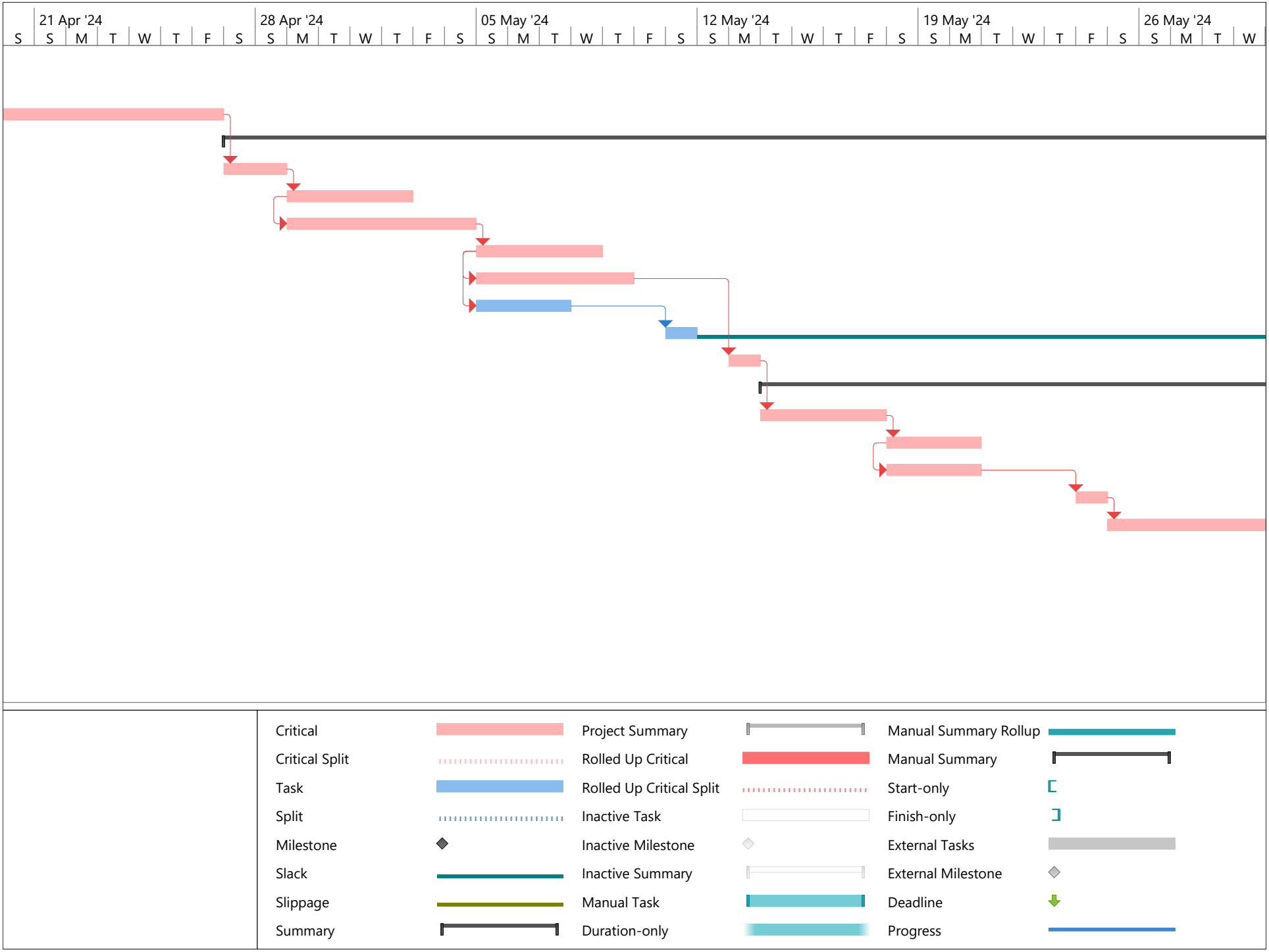
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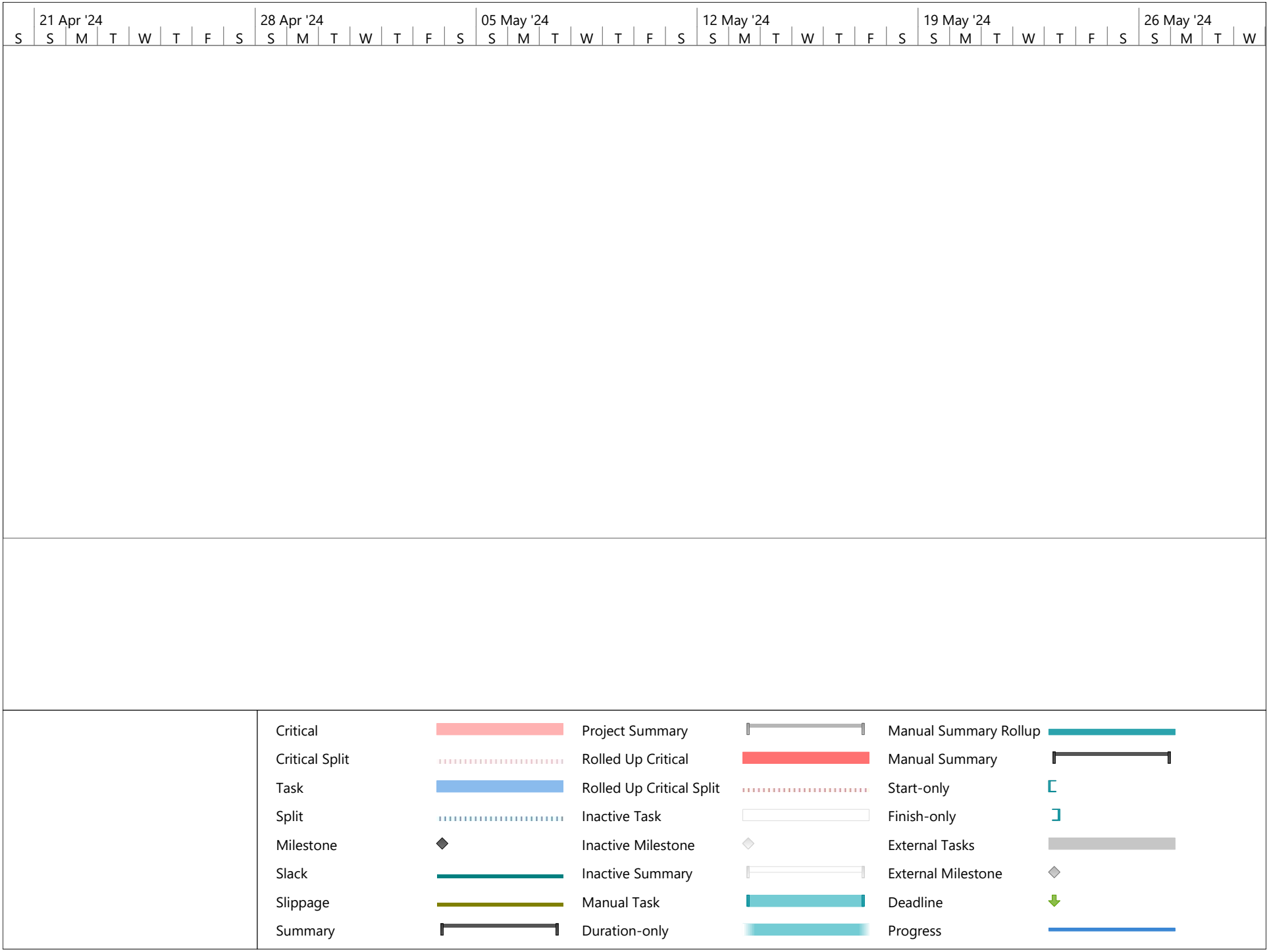
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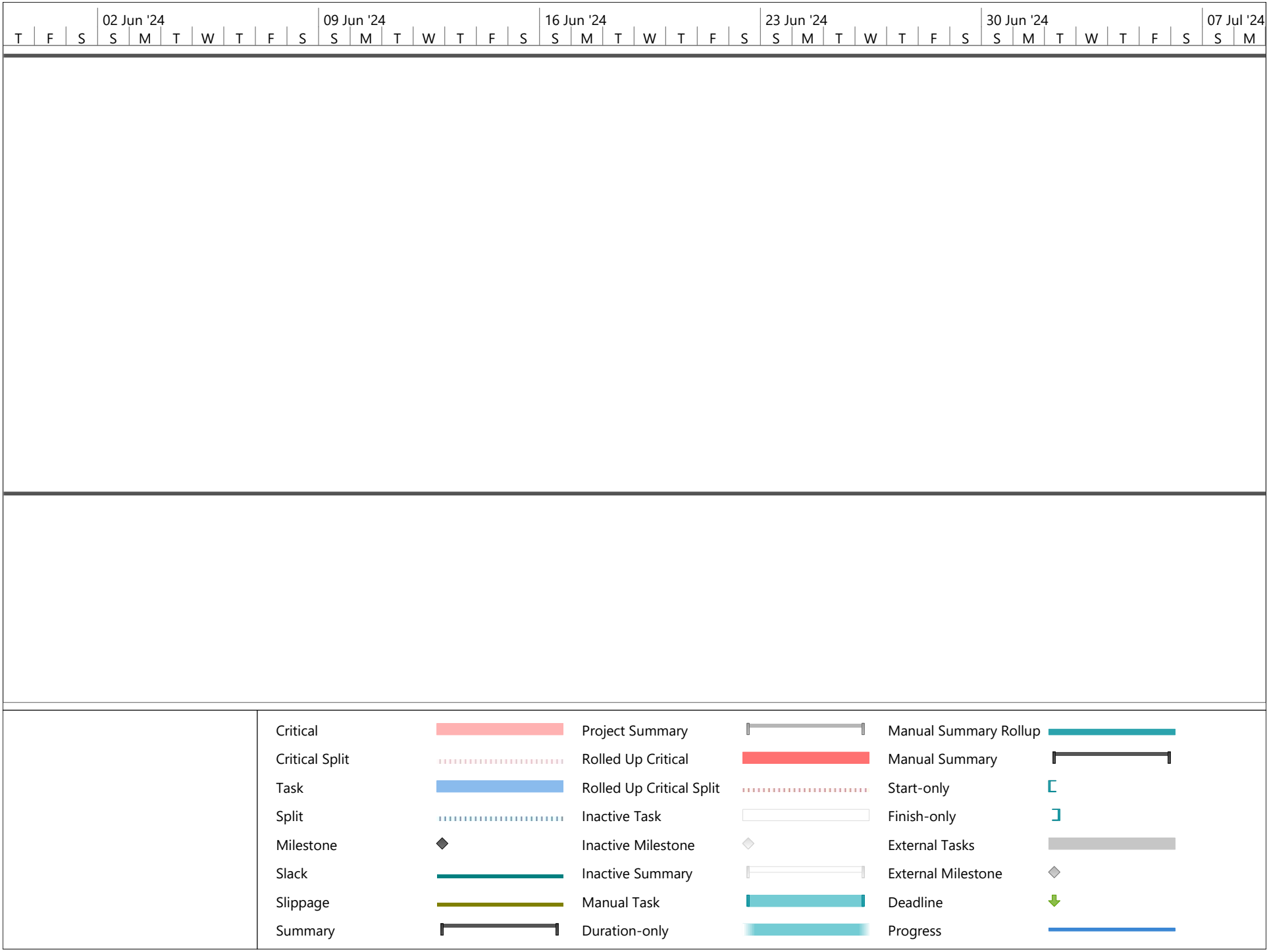
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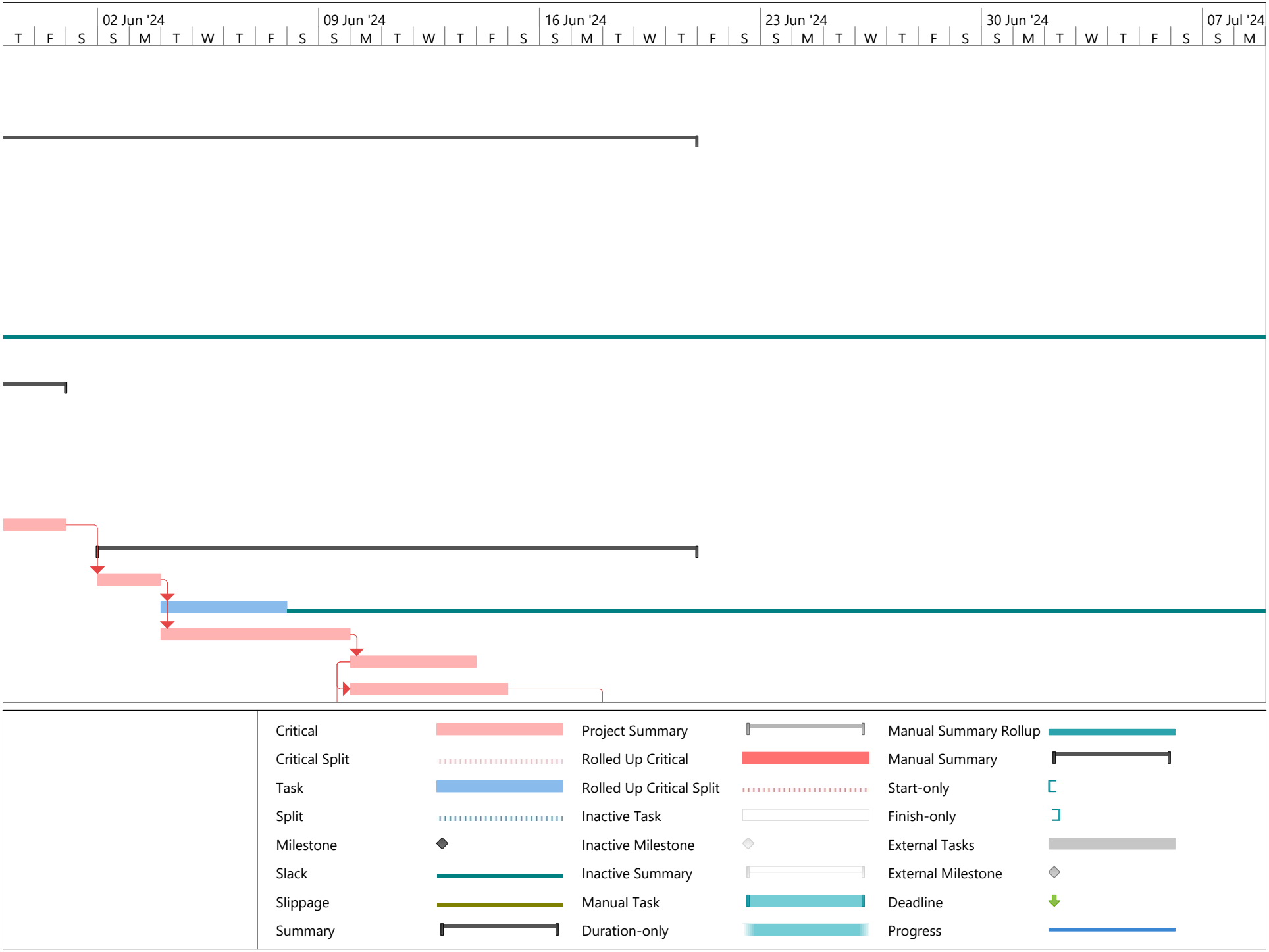
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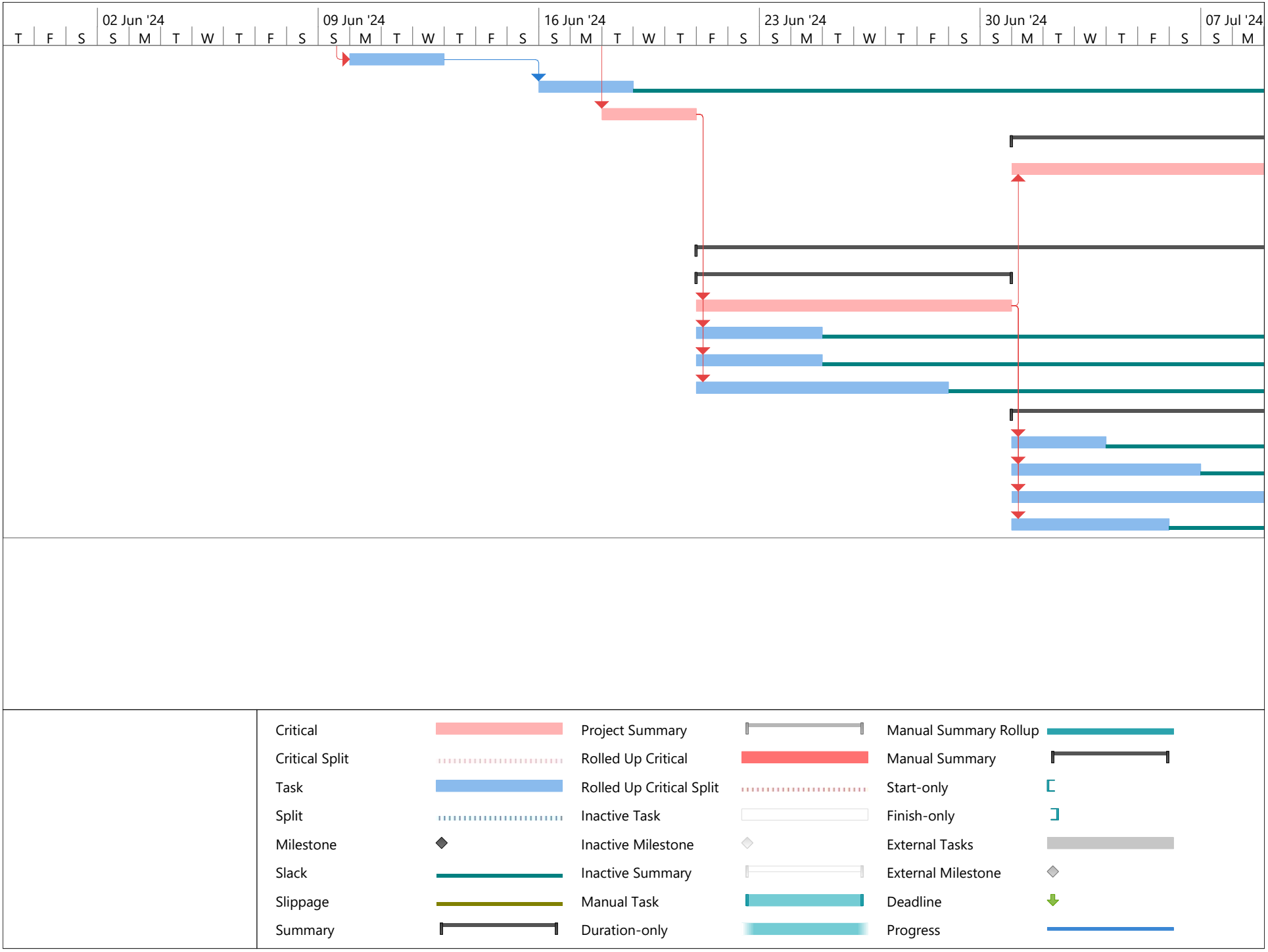
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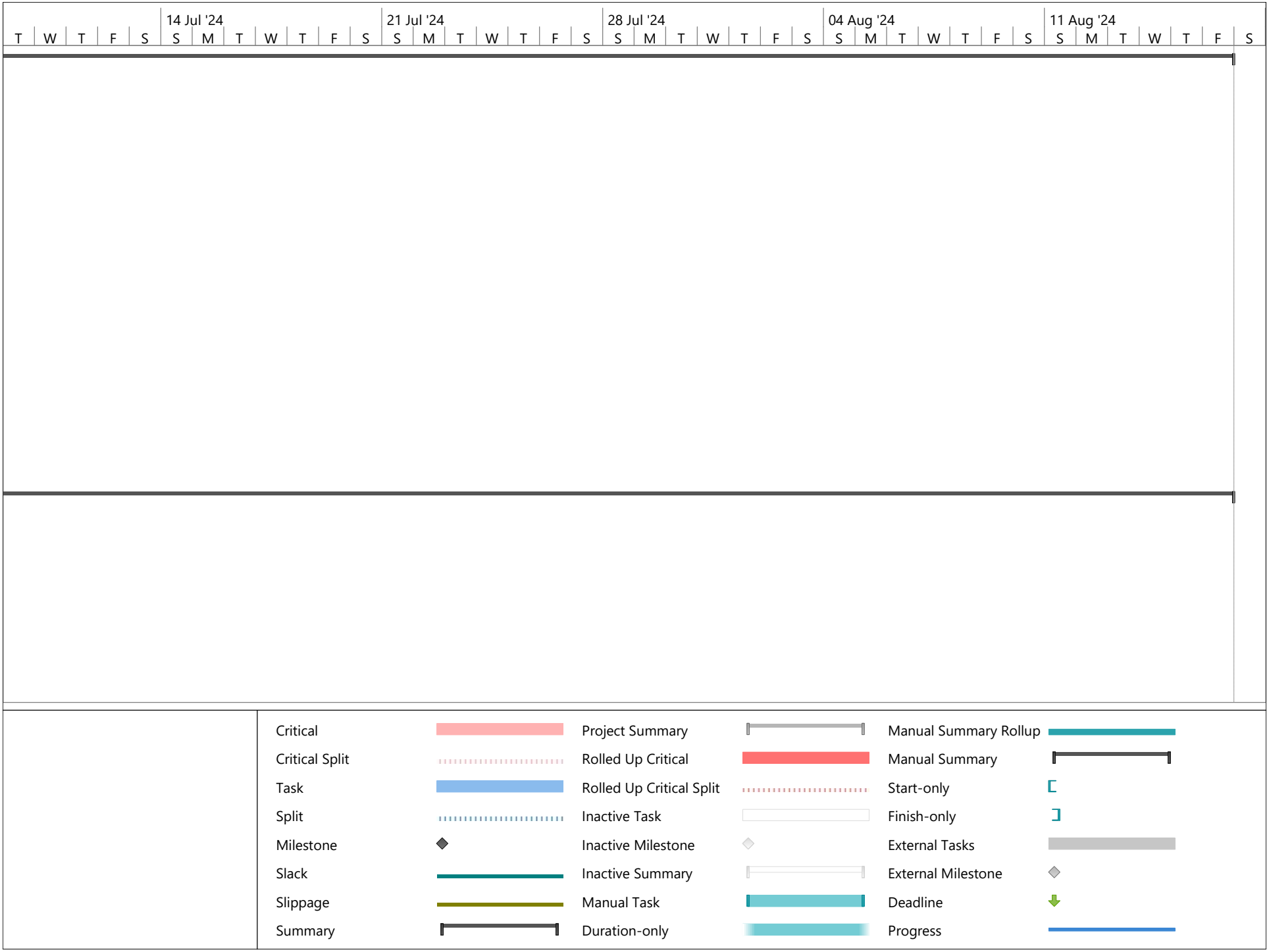
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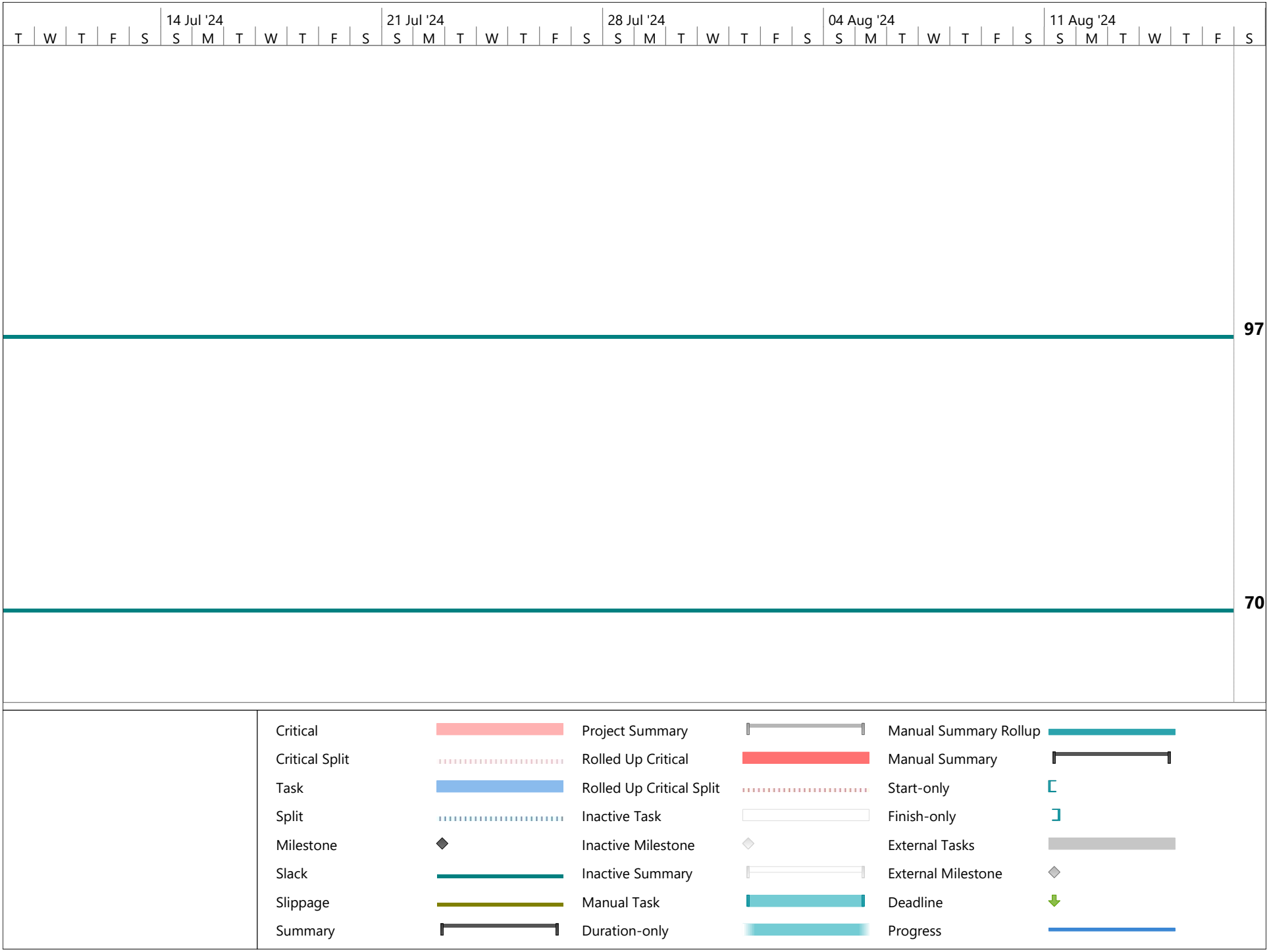
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