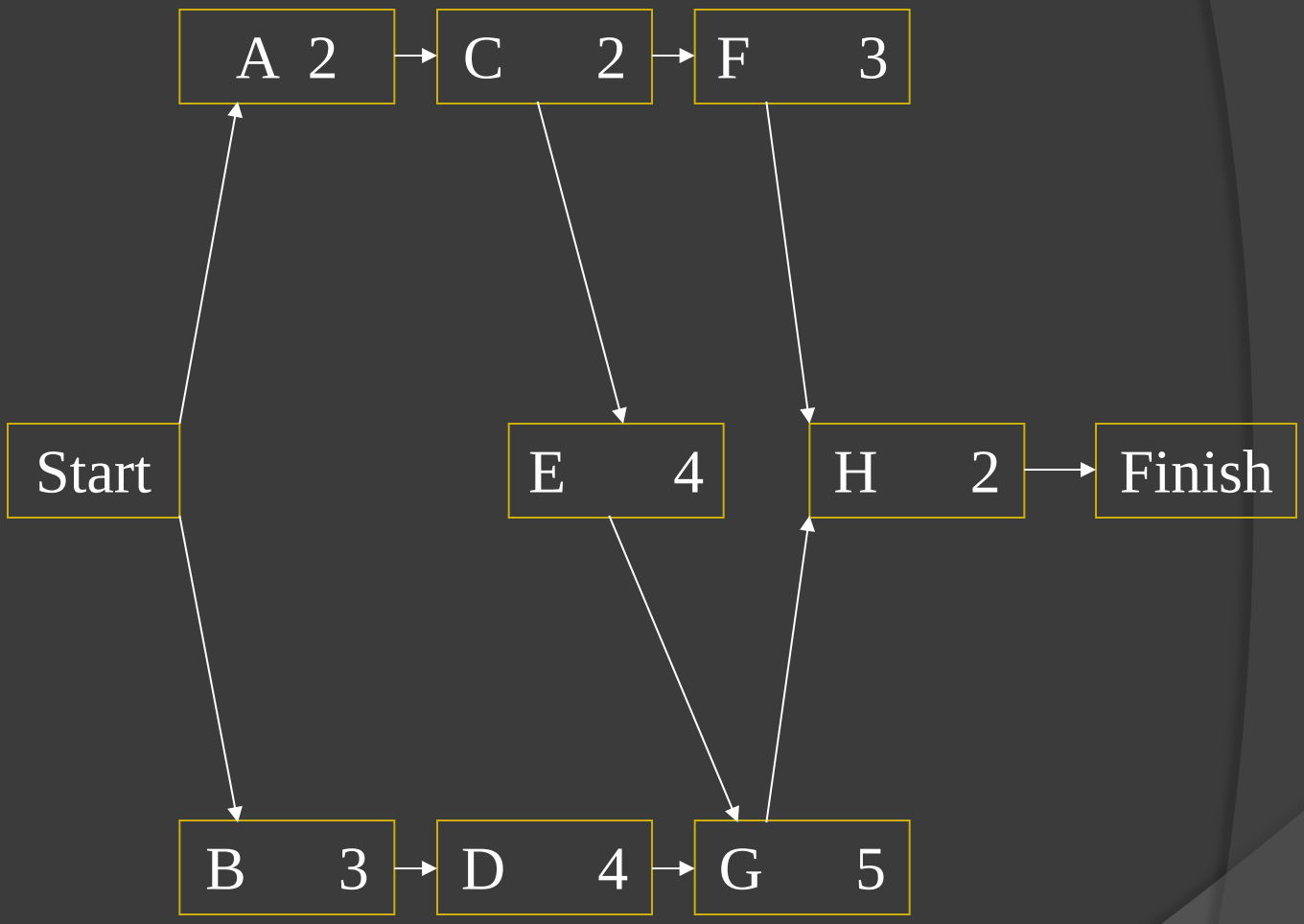
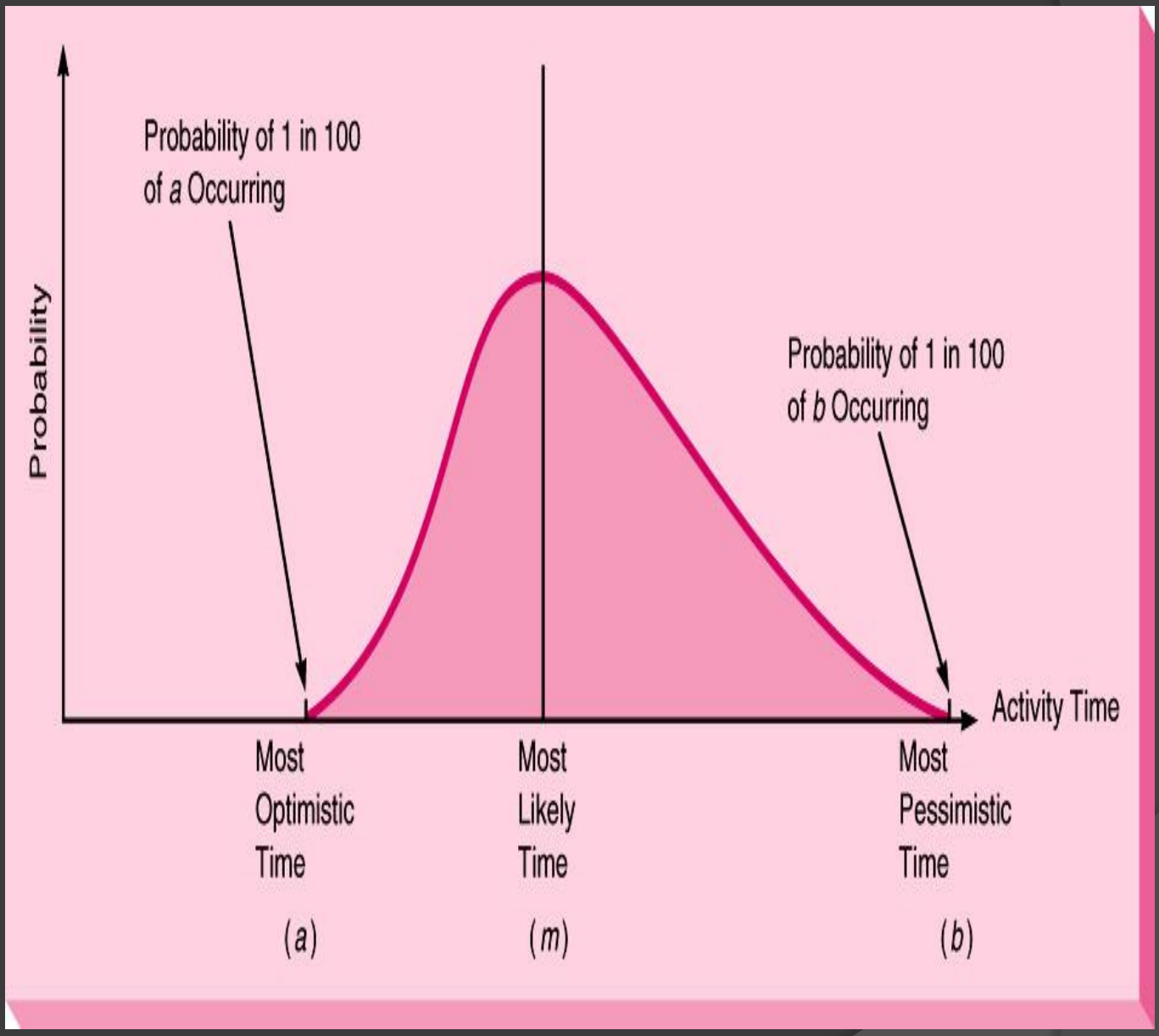
General Foundry PERT

Activity	Description	Immediate Predecessors
A	Build internal components	
B	Modify roof and floor	
C	Construct collection stack	A
D	Pour concrete and install frame	B
E	Build high-temperature burner	C
F	Install control system	C
G	Install air pollution device	D,E
H	Inspect and test	F,G

General Foundry, Inc. PERT Network



Beta Probability Distribution with Three Time Estimates

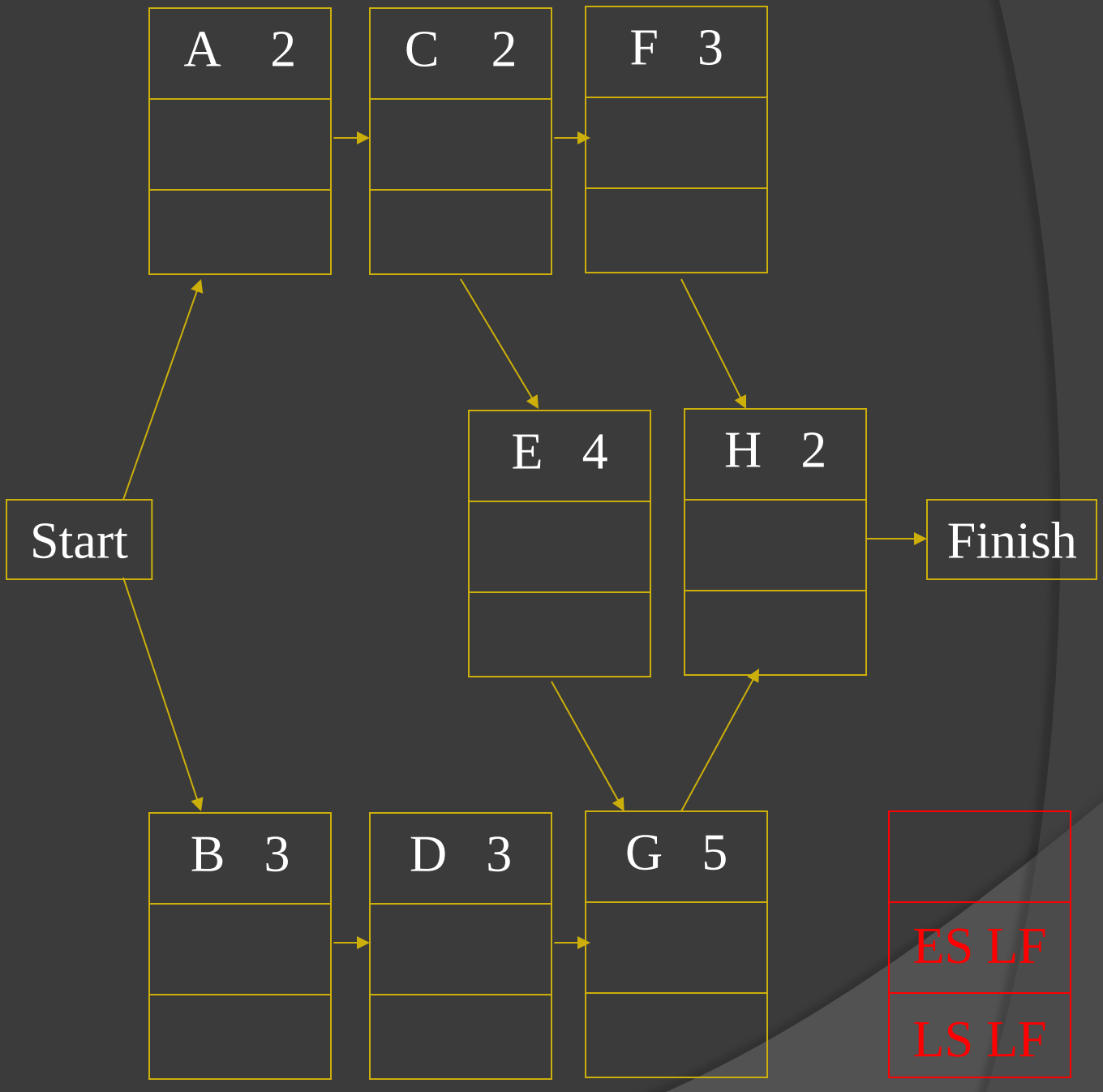


General Foundry, Inc. Time Estimates

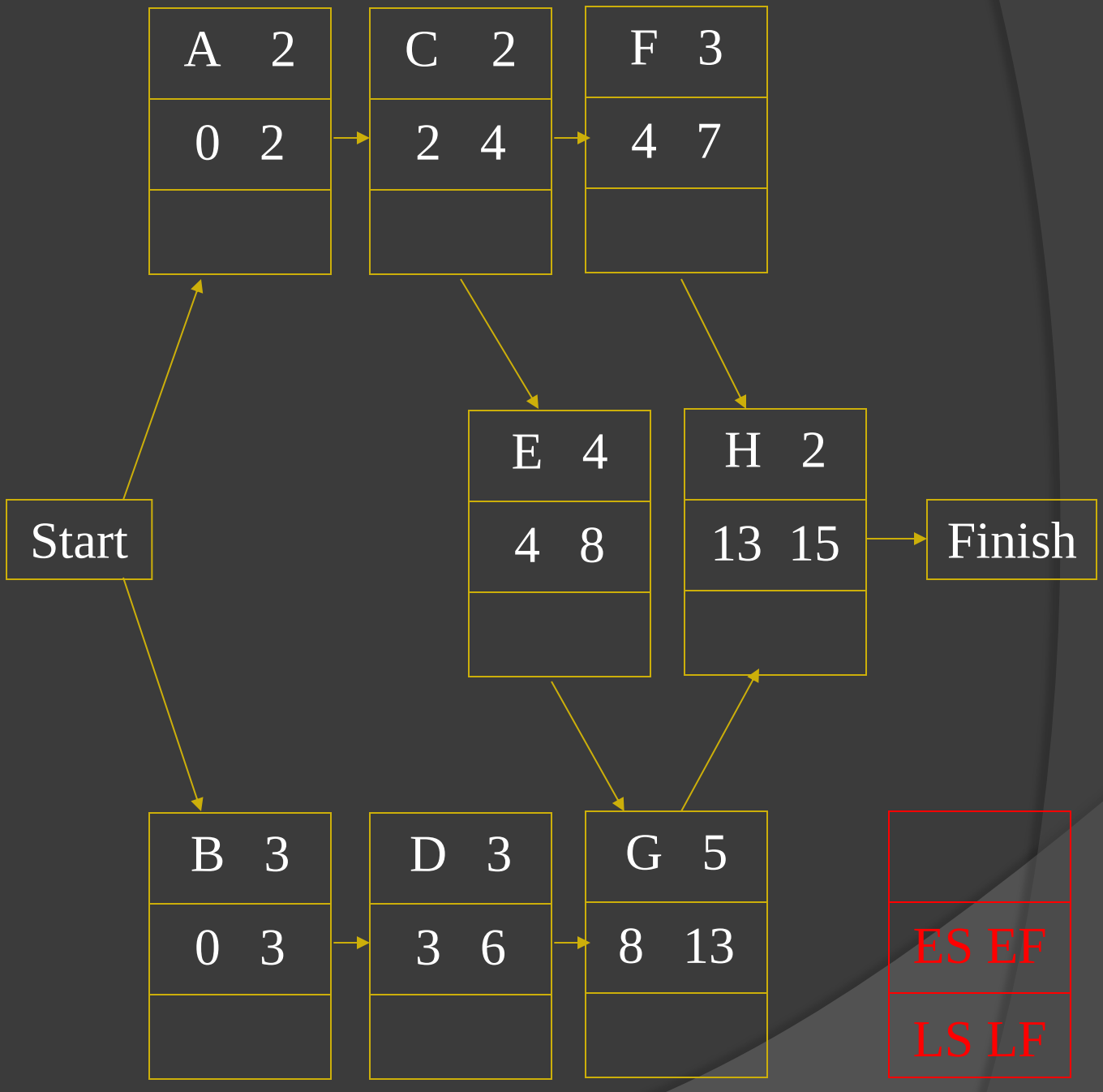
Activity	*a*	*m*	*b*	*E(t)*	σ^2
A	1	2	3	2	$\left(\frac{3-1}{6}\right)^2 = \frac{1}{9}$
B	2	3	4	3	$\left(\frac{4-1}{6}\right)^2 = \frac{1}{4}$
C	1	2	3	2	$\left(\frac{3-1}{6}\right)^2 = \frac{1}{9}$
D	2	4	6	4	$\left(\frac{6-2}{6}\right)^2 = \frac{4}{9}$
E	1	4	7	4	$\left(\frac{7-1}{6}\right)^2 = \frac{9}{9}$
F	1	2	9	3	$\left(\frac{9-1}{6}\right)^2 = \frac{16}{9}$
G	3	4	11	5	$\left(\frac{11-1}{6}\right)^2 = \frac{25}{9}$
H	1	2	3	2	$\left(\frac{3-1}{6}\right)^2 = \frac{1}{9}$

Total: 25 weeks

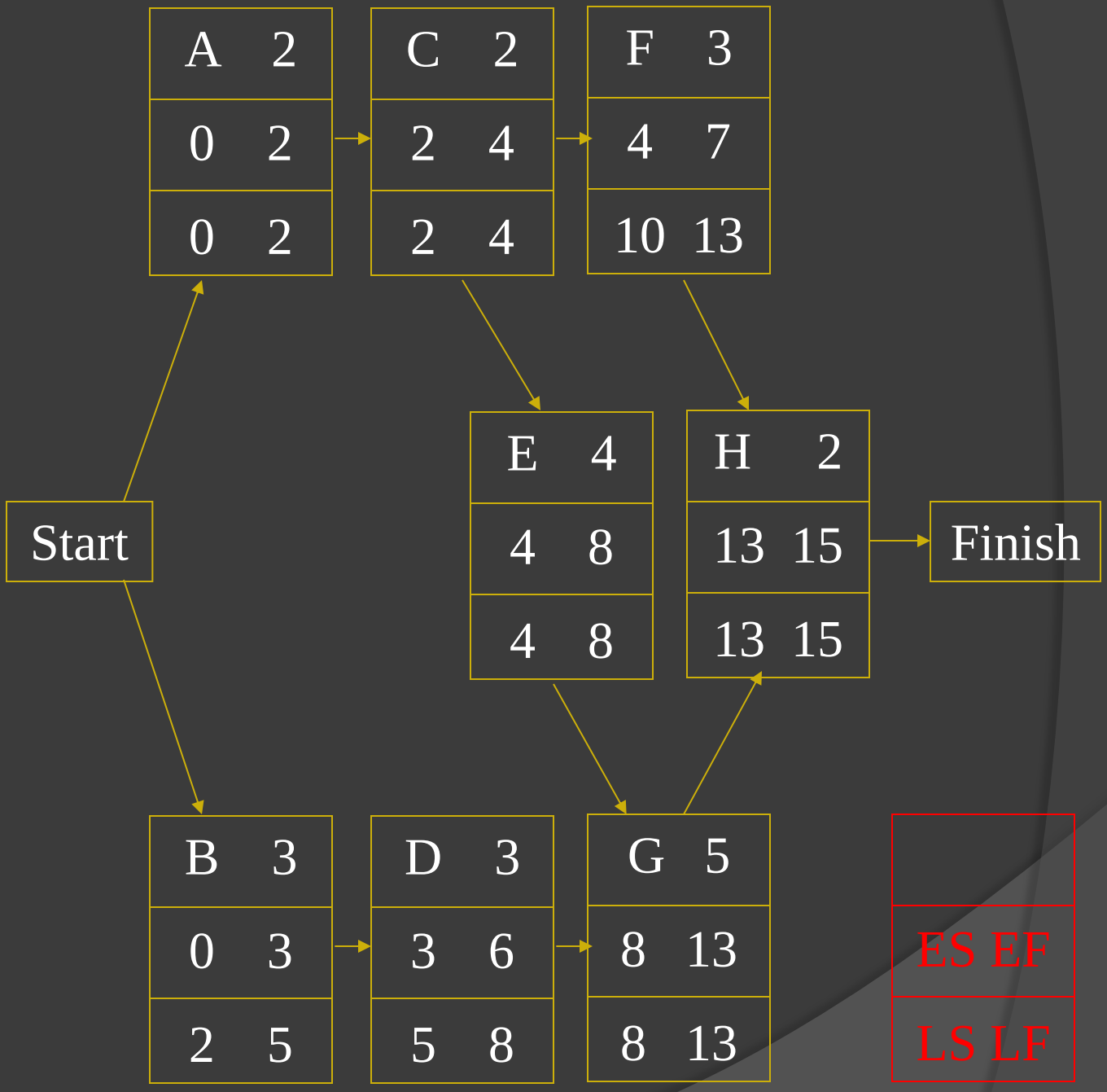
General Foundry, Inc. PERT Network - with E(t)



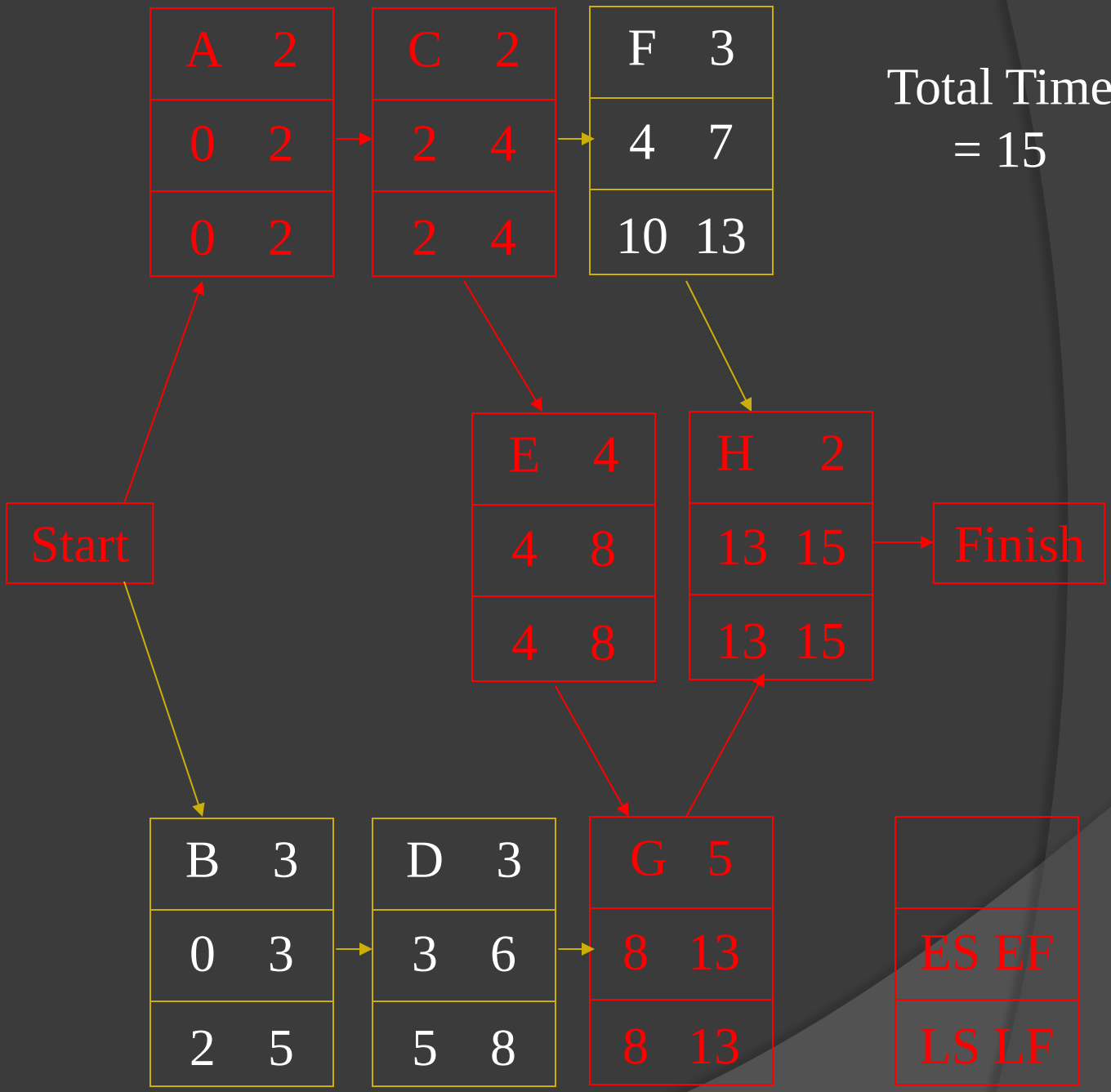
General Foundry, Inc.
PERT Network ES/EF, LS/LF



General Foundry, Inc.
PERT Network ES/EF, LS/LF



General Foundry, Inc. Critical Path



General Foundry Schedule & Slacks

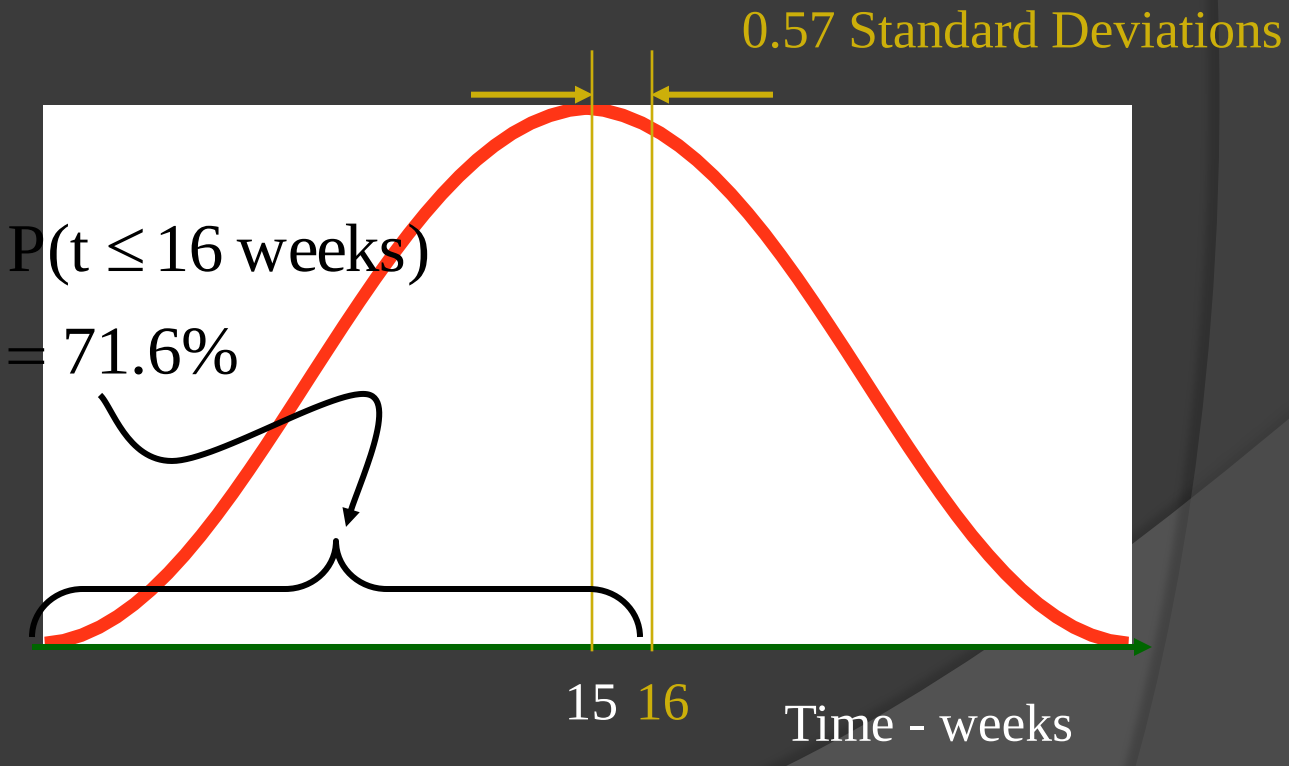
Activity	ES	EF	LS	LF	LS-ES	On Critical Path?
A	0	2	0	2	0	Yes
B	0	3	1	4	1	No
C	2	4	2	4	0	Yes
D	3	7	4	8	1	No
E	4	8	4	8	0	Yes
G	4	7	10	13	6	No
G	8	13	8	13	0	Yes
H	13	15	13	15	0	Yes

General Foundry Meeting a Deadline

$$\text{Standard deviation, } \sigma = \sqrt{\text{project variance}}$$

$$z = \frac{\text{Due date - Expected completion date}}{\sigma}$$

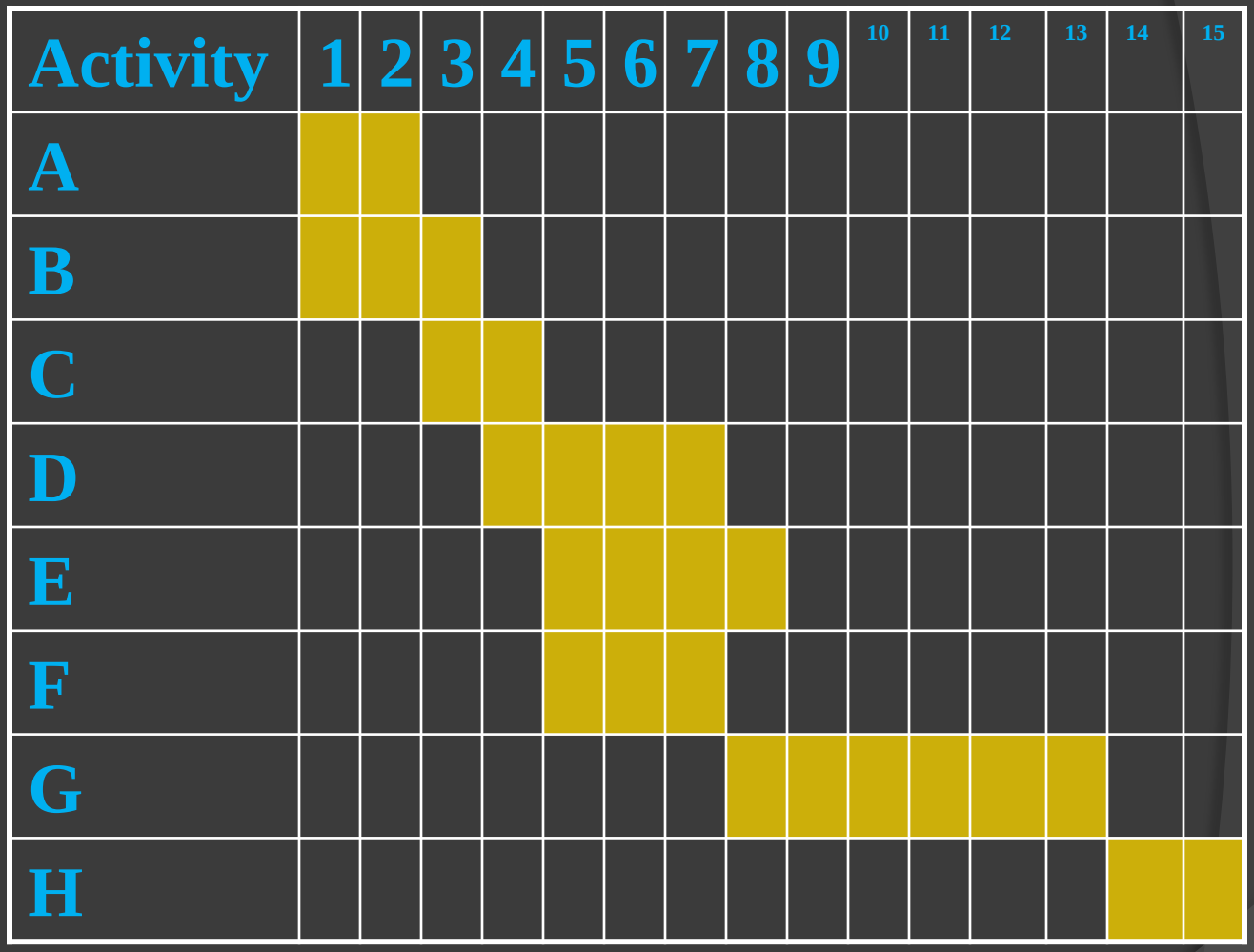
$$= \frac{16 - 15}{1.76} = 0.57$$



PERT Provided

- Project expected completion date: 15 weeks
- Probability of finishing in 16 or fewer days: 71.6%
- Identity of activities on critical path: A, C, E, G, and H
- Identity of activities with slack: B, D, and F
- Detailed schedule of start/finish dates

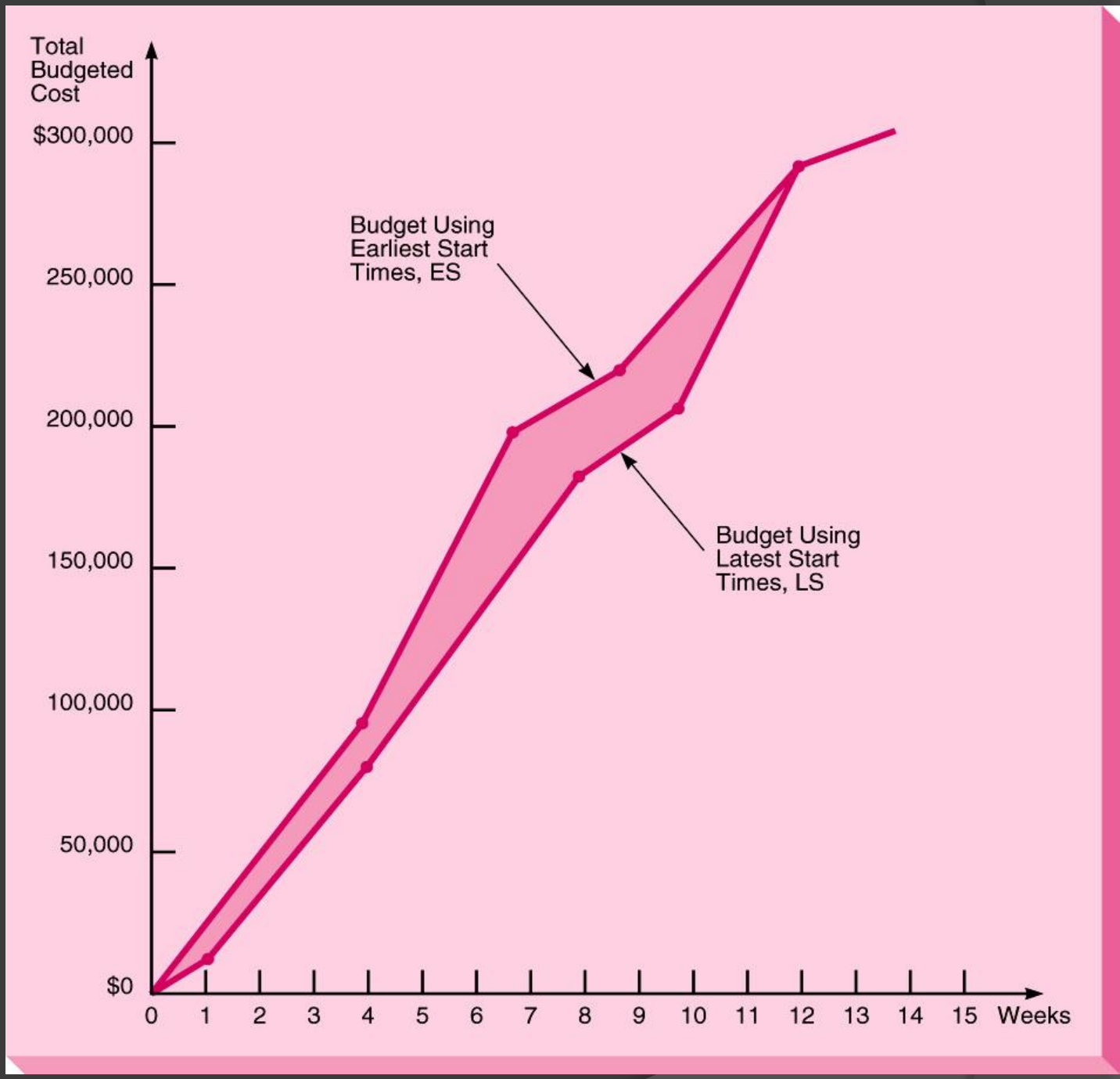
Gantt Chart for General Foundry



General Foundry, Inc. PERT & Budgeting

Activity	*ES*	*LS)*	*E(t)*	*Total Budgeted Cost*	*Budgeted Cost per Week*
A	0	0	2	$22,000	$11,000
B	0	1	3	$30,000	$10,000
C	2	2	2	$26,000	$13,000
D	3	4	4	$48,000	$12,000
E	4	4	4	$56,000	$14,000
F	4	10	3	$30,000	$10,000
G	8	8	5	$80,000	$16,000
H	13	13	2	$16,000	$ 8,000
			Total	$308,000	

General Foundry Budget Ranges



General Foundry Monitoring & Controlling

TABLE 13.8

Monitoring and Controlling Budgeted Cost

ACTIVITY	TOTAL BUDGETED COST ($)	PERCENT OF COMPLETION	VALUE OF WORK COMPLETED ($)	ACTUAL COST ($)	ACTIVITY DIFFERENCE ($)
A	22,000	100	22,000	20,000	–2,000
B	30,000	100	30,000	36,000	6,000
C	26,000	100	26,000	26,000	0
D	48,000	10	4,800	6,000	1,200
E	56,000	20	11,200	20,000	8,800
F	30,000	20	6,000	4,000	–2,000
G	80,000	0	0	0	0
H	16,000	0	0	0	0
		Total	100,000	112,000	12,000

Overrun