



La Jolla Commons Phase II Office Tower

San Diego, California

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La Jolla Commons Office Tower

- Building Introduction
- Design Scenario and Proposed Solution
- **Gravity System**
 - **Preliminary Vibrations Analysis**
 - Layout
 - Beam and Column Designs
 - Final Vibrations Analysis
- Lateral System Design
 - Layout
 - Moment Frames
 - Shear Walls
- Construction Breadth
- Conclusions

Preliminary Vibrations Analysis

- Long beam spans
- Vibrations due to human excitation
- Multiple deck and beam spacing configurations tested

Design Selection:

- 1.5VLR20
- 4.25" LW Topping
- 7.5' – 8' beam spacing

Source: *The Preliminary Assessment for Walking-Induced Vibrations in Office Environments* by Dr. Linda Hanagan and Taehoo Kim

Deck Configuration for Vibration Control	
Concrete Strength	3000 psi
Steel Grade	50
Deck Type	1.5VLR20
Topping (in)	4.25
LW/NW?	LW
Total Slab Thickness (in)	5.75
Class from Table 1	4
Select C1 from Table 2	0.413
Select C2 from Table 4	0.019
Evaluate C1 + C2	0.432
C1 + C2 < 0.5?	GOOD

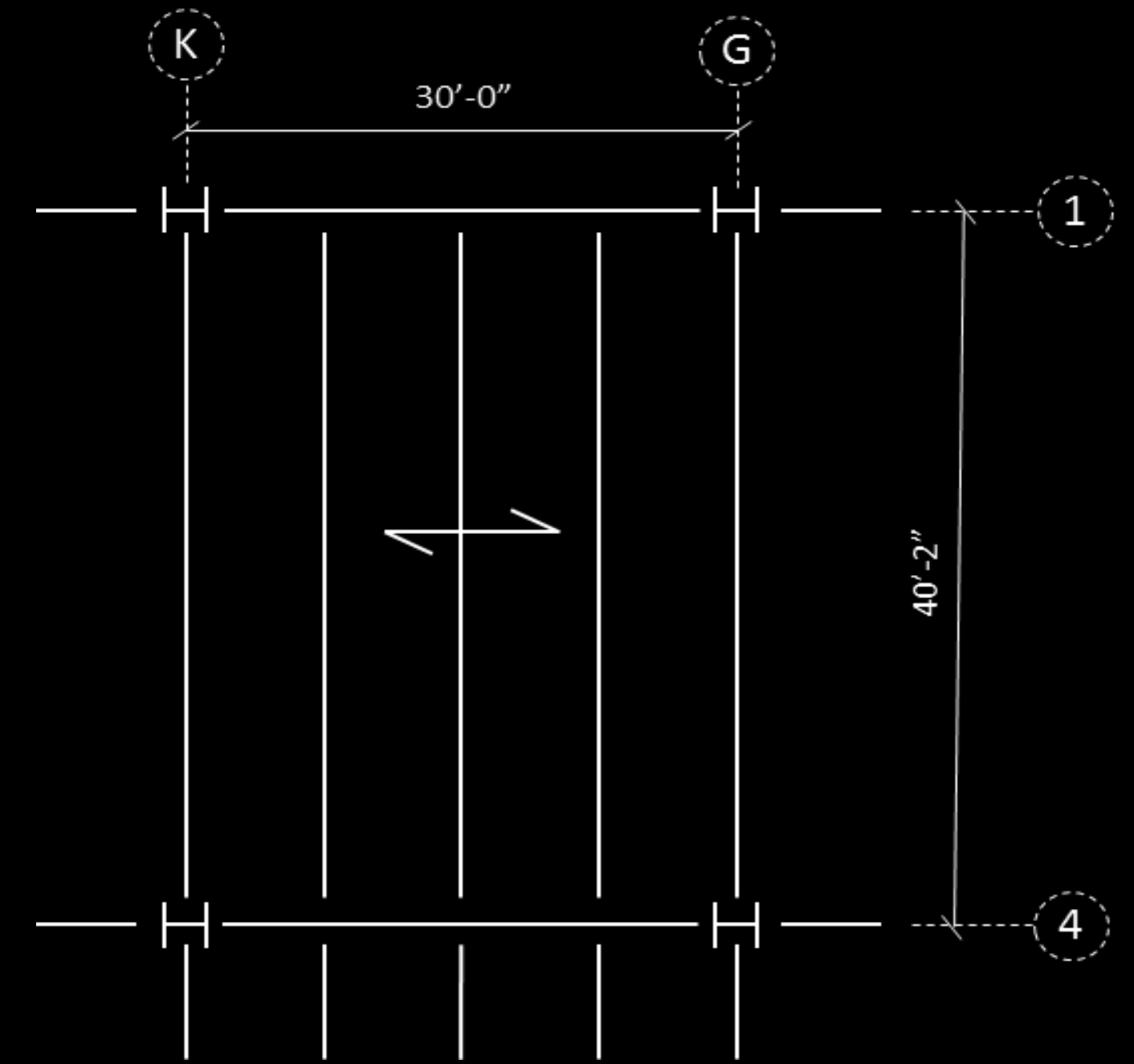
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Gravity System Layout

- Which direction to span infill beams?
- Long Direction Selected

Infill Beam Comparison		
	Steel Weight (lbs)	Number of Members
Long Direction	212936	155
Short Direction	179608	225



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Steel System Cost

- Based on cost information from RS Means 2009
 - 1.13 time modifier – 3% Inflation
 - 105.1 location modifier
- Structural Steel Framing – 36% of cost
- Concrete on Metal Deck – 12% of cost
- **\$ 65.05 per SF**

Total Steel Structure Cost (2009 RS Means)	
Item	Cost
Concrete on Metal Deck	\$ 3,049,983.64
Structural Steel Framing	\$ 9,052,267.61
Shear Walls	\$ 4,309,712.97
Foundation Walls	\$ 1,929,048.98
Lower Level Concrete Slabs	\$ 2,796,418.47
Lower Level Concrete Columns	\$ 198,415.62
Mat Foundation	\$ 4,054,749.44
Total Cost	\$ 25,390,596.74
Final Modified Cost	\$ 30,072,276.51