[FIRM LOGO]

Performance-Based Design: New Construction, Retrofit, and Master Plan

Performance-Based Design can systematically lower costs, improve occupant comfort, and lower energy use. Finding opportunities throughout the design process to test and improve performance is the best way to realize these valuable impacts. See links below for more in-depth Retrofit and Master Plan examples.

DESIGN PHASE	ANALYSIS	ASSESSMENT
BID	RFP	Showcase possible project performance gains and their positive impacts on project cost.
	RFQ	Demonstrate your capabilities and portfolio related to delivering high performance.
PRE-DESIGN	Kick-off	Define the project goals, the comparison baseline, applicable metrics, and relevant analysis.
	Passive Strategies	Passive strategies are often no-cost or low-cost, and can provide substantial impact.
	Climate	The climate will inform massing, siting, glazing and material choices.
	Siting	Experiment with different massings and site locations, keeping performance goals in mind.
	Renewable energy	What is the "energy budget" of the site? (i.e. energy generation vs. energy use)
SD	Strategic	Identify the most compelling and cost-effective energy conservation measures.
	Massing	Is there a particular massing that supports our performance goals?
	Iteration Comparison	Compare design options, keeping performance goals in mind.
	Floor and Ceiling Dims	Can we optimize for X (energy, daylight, etc.) with floorplate dimension and ceiling height?
	Fenestration	What is the impact of fenestration (amount, location, size, and shape) on performance?
	Shading	What is the optimal size and type of shading for each orientation?
	Passive Survivability	How does the building perform without mechanical system (e.g. in a power outage?)
DD	Progress	Given design progress to this point, what is the best way to achieve our performance goals?
	Envelope Optimization	How can we most effectively optimize the envelope (insulation, glazing, infiltration, etc.?)
	Water Efficiency	How can we most effectively reduce water use?
	Wall Sections	Which is the best wall section to use?
	Renewable Energy	How well can site-produced electricity meet demand? How much can be exported to the grid?
	Shading	Use relevant performance data to defend value engineering design decisions.
ANYTIME	Energy Use	What are the main drivers of energy use? Brainstorm how might we improve it.
	Daylighting	How good is the daylight? Brainstorm how might we improve it.
	Benchmarking	How do we compare to other buildings and/or our performance target(s)?

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It may seem that the preceding matrix applies only to New Construction. In fact, it supports Retrofit and Master Plan activity as well:

RETROFIT

I. DAYLIGHTING

II. HEATING/COOLING LOADS

III. MATERIALS

http://sefaira.com/resources/bridges-ventures-customer-case-study/

I. Improved daylighting in an existing space can do a lot to improve occupant comfort and productivity, and to lower energy costs associated with electric lighting.

II. Heating/Cooling loads affect energy use and HVAC system size--both components of project cost. Sefaira helps to quickly optimize glazing, insulation, and shading to lessen these loads.

III. Materials' inherent performance properties (like R-value and thermal mass) as well as their resultant properties (like infiltration) all stand to affect building performance relative to cost and comfort.

MASTER PLAN

I. SITING AND ORIENTATION

II. CONTEXT

III. MODULAR DESIGN

http://sefaira.com/resources/4240-customer-case-study/

I. Siting and orientation can substantially impact building performance, specifically related to solar heat gain, daylighting, and natural ventilation. Sefaira makes it easy to consider performance in conjunction with pedestrian experience and overall parti.

II. Contextual massing affects daylighting and solar heat gain. Understanding the impact of context informs an optimized plan.

III. Modules strategically ordered on site are a cost-effective approach to development. Sefaira helps optimize the module's glazing ratios, shading, materials and more to support a high-performance master plan.