OREGON HOUSING & COMMUNITY SERVICES Multifamily Energy Program

INTENTIONAL DESIGN FOR ENERGY EFFICIENCY Recommended Practices

Date: July 18, 2018

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USING GOTOWEBINAR

Open and close* your **control panel**

Questions will be taken at the end of the presentation.







REGISTER FOR UPCOMING TRAININGS

- Thursday, August 9, 2018, 12pm:
 Energy Auditing 101 | <u>REGISTER NOW</u>
- Thursday, August 23, 2018, 12pm: Energy Modeling Best Practices | <u>REGISTER NOW</u>



THE BIG PICTURE







INTENTIONAL DESIGN







WHY IS THIS WORTH OUR TIME?

- Early planning reduces costs and increases revenue
- Design charrettes make best use of resources (various smart people/trades)
- Quality control and buildings designed for efficiency reduce utility and maintenance costs
- Intentional design principles lead to a wellcoordinated design
- Commitment to third-party influencers ensures an unbiased perspective







THE GOOD NEWS

- Integrated Design Process results in greater efficiency.
- According to the UK Office of Government Commerce:
 - 2-10% savings in the cost of construction of a single project.
 - Up to 30% savings in the cost of construction over a series of projects.





VALUE TO THE OWNER/DEVELOPER

- Can reduce costs
- Minimal change and increased oversight of construction schedule and quality of work
- Provides the owner/developer with post-construction cost and performance data

A CHECKLIST FOR CHECKLISTS

Drafting

Development

Do you have clear, concise objectives for your checklist?

Is each item:

- A critical safety step and in great danger of being missed?
- Not adequately checked by other mechanisms?
- Actionable, with a specific response required for each item?
- Designed to be read aloud as a verbal check?
- One that can be affected by the use of a checklist?

Have you considered:

- Adding items that will improve communication among team members?
- Involving all members of the team in the checklist creation process?



- Does the Checklist:
 - Utilize natural breaks in workflow (pause points)?
 Use simple sentence structure and
 - basic language?
 - Have a title that reflects its objectives?
 - Have a simple, uncluttered, and logical format?
 - Fit on one page?
 Minimize the use of color?

 - Is the font:
 - Sans serif?
 Upper and lower case text?
 - Large enough to be read easily?
 - Dark on a light background?
 - Are there fewer than 10 items per pause point?
 - Is the date of creation (or revision) clearly marked?



Have you:

Trialed the checklist with front line users (either in a real or simulated situation)?

Validation

- Modified the checklist in response to repeated trials?
- Does the checklist:
- Fit the flow of work?
 Detect errors at a time when they can still be corrected?
- Can the checklist be completed in a reasonably brief period of time?
- Have you made plans for future review and revision of the checklist?

WHY?

WHAT

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INTENTIONAL DESIGN







WHAT EXACTLY ARE WE TALKING ABOUT?

At minimum:

- Host a pre-construction, intentional design meeting
 - Scopes of work include responsibilities for meeting energy efficiency design minimums
 - Coordinate scopes into sequencing
 - Opt for a full design charrette

Ideally:

 Adoption of Integrated Design Process into business model





INTENTIONAL DESIGN VS INTEGRATED DESIGN







THE INTEGRATED DESIGN PROCESS

Goal Setting				\wedge
Pre-define	Design Charrette			\bigwedge
preliminary goals	Consult with the entire design/procur ement team	Value Engineering Meeting		\searrow
		Consult with the construction team	Field Verifications	
			Confirm in-field if measures are being met	

- Adjust as you go
- Open communication
- Save money, time, materials, and labor
- Open the value of better design to the developer
- Many programs reward integrated design







TRADITIONAL VS. INTEGRATED PROCESSES

	Traditional Project Delivery	Integrated Design Process	
Project Team	Fragmented	Integrated	
Timing	Assembled on "just- as-needed" basis	Assembled early in the process	
Chain of command	Strongly hierarchical	Open	
Communications	Informal	Structured	
Process	Controlled	Collaborative	
Decisions	Linear, distinct, segregated	Concurrent, multi-level	
Knowledge	Siloed, hoarded	Shared, collaborative	

WHY?

WHAT?





HOW? WHEN?

WHO?

INTENTIONAL DESIGN







ANATOMY OF INTENTIONAL DESIGN

Intentional Design Basics - host a meeting to:

- Reaffirm/confirm project goals
- Discuss perceived challenges, anticipate issues
- Brainstorm potential solutions
- Recognize and plan for construction training needs
- Review in-field verification items
- Take notes
- Distribute and follow up on action items

* Length of time depends on size and scope of the project







PRE-CONSTRUCTION SUPPORT

PRE-CONSTRUCTION ON-SITE MEETING

- When and where do these meetings typically take place?
- What other types of pre-construction on-site meetings happen for every project?









BEFORE INTENTIONAL DESIGN MEETING

PREPARE

- Assign a facilitator or champion for energy efficiency and the Intentional Design process
- Know the current status of the design, or project description.
 - Energy efficiency (EE) measures
 - Siting
 - Etc.

Build an agenda inclusive of energy efficiency

- EE is only one aspect
- Waste management, sequencing, aesthetics, program rules
- Develop an attendee list mandatory vs. preferred





AFTER INTENTIONAL DESIGN MEETING

REVIEWING/WRITING SCOPES OF WORK

- Who has a scope of work that specifically identifies pre-construction support?
- Does your scope of work allow you to review and write other trade scopes of work?



GOOD INTENTIONS NOT ENOUGH

Detailed instructions...



...get ignored



You need to explain the "what", "when", "how", and "why".





HOW TO SET UP FOR SUCCESS?







INTENTIONAL DESIGN





DESIGN IMPACT: TIMING MATTERS



Traditional Design:	Pre-design	Schematic Design	Design Development	Construction Docs	Permits/bidding	Construction Complete
Integrated Design:	Conceptualization	Criteria Design	Detailed Design	Implementation Docs	Agency coordination	

WHY?

WHAT?

HOW?

WHEN?

WHO?





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ENERGY MODEL LIVE & IN-PERSON

Pre-built preliminary models...

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... allow for live feedback



Scenario analysis and optimization can demonstrate cost reductions and incentive boosts.





ADVANCED MEASURES REQUIRE ADVANCED PLANNING

Repetitive processes...

... multiply the benefit



Installation strategies for new high performance applications need to be developed.





MOCK UPS: CRITICAL FIELD DESIGN FOLLOW-UP









INTENTIONAL DESIGN









WHAT IF CHAMPION IS NOT PART OF THE DESIGN TEAM?

Don't be afraid to contribute to the design process. (This is integrated, intentional design after all)

- Energy modeling can be most influential early in design
- Know the team's goals at the start, or help set them!
- The more you interact with field personnel, the more valuable you are to the design team
- Help the trades have a voice... What would the HVAC team say if they could be there?
- KEY: Bundle your services







TECHNICAL CONSULTING

All participants - not just the champion/coordinator:

- Where is the best place to focus limited resources?
- Review scopes of work to make sure key items are included.







INTENTIONAL DESIGN

Key Conclusions





KEY TAKEAWAYS



SIGNS OF SUCCESS!

- Host a design charrette
- Host a scope of work review
 - Internal coordinator or energy consultant checks all key trades' scopes of work with purchasing agent to ensure all energy efficiency measures are included.
- What are other indicators of success?





THANK YOU!

QUESTIONS?

THANK YOU FOR ATTENDING!

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