

A case for more consistency in the categorization of the reasons for change orders and the tracking of additional sub-reasons.

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Why track the reasons for changes?

Explain to decision makers where the money went.

- OFM and the Legislature have cut contingency funding below requested levels because they were not convinced it was justified.
- Legislators have said we are not returning enough funding at the end of our projects.

Focus our effort to reduce future change orders.

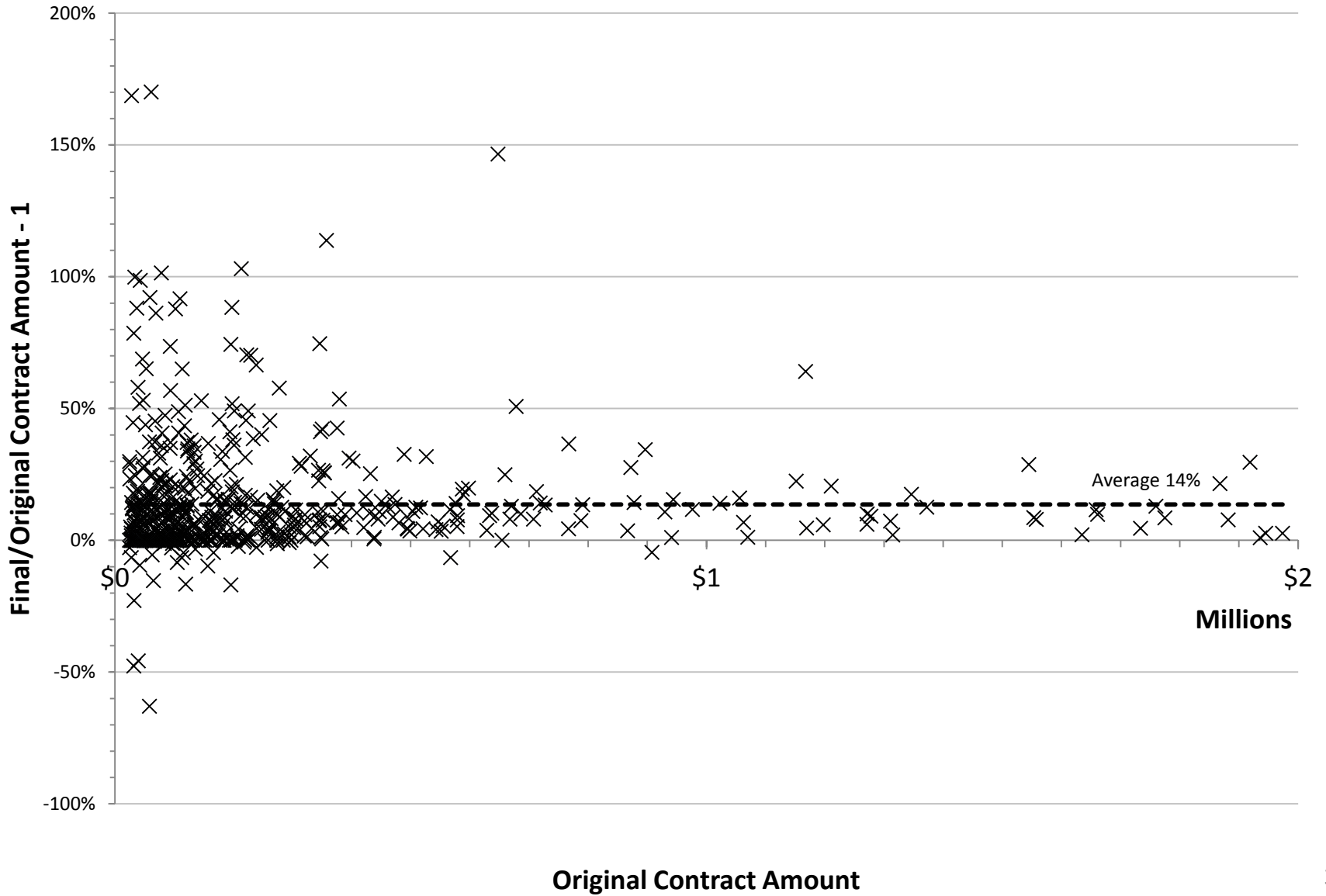
- We have limited resources.
- Using data to inform decisions is a proven management approach.

Manage the A/E agreement.

- The Conditions of Agreement say no compensation is due for services performed in connection with an error or omission.
- The Owner is due compensation for costs resulting from errors, omissions, or negligence.

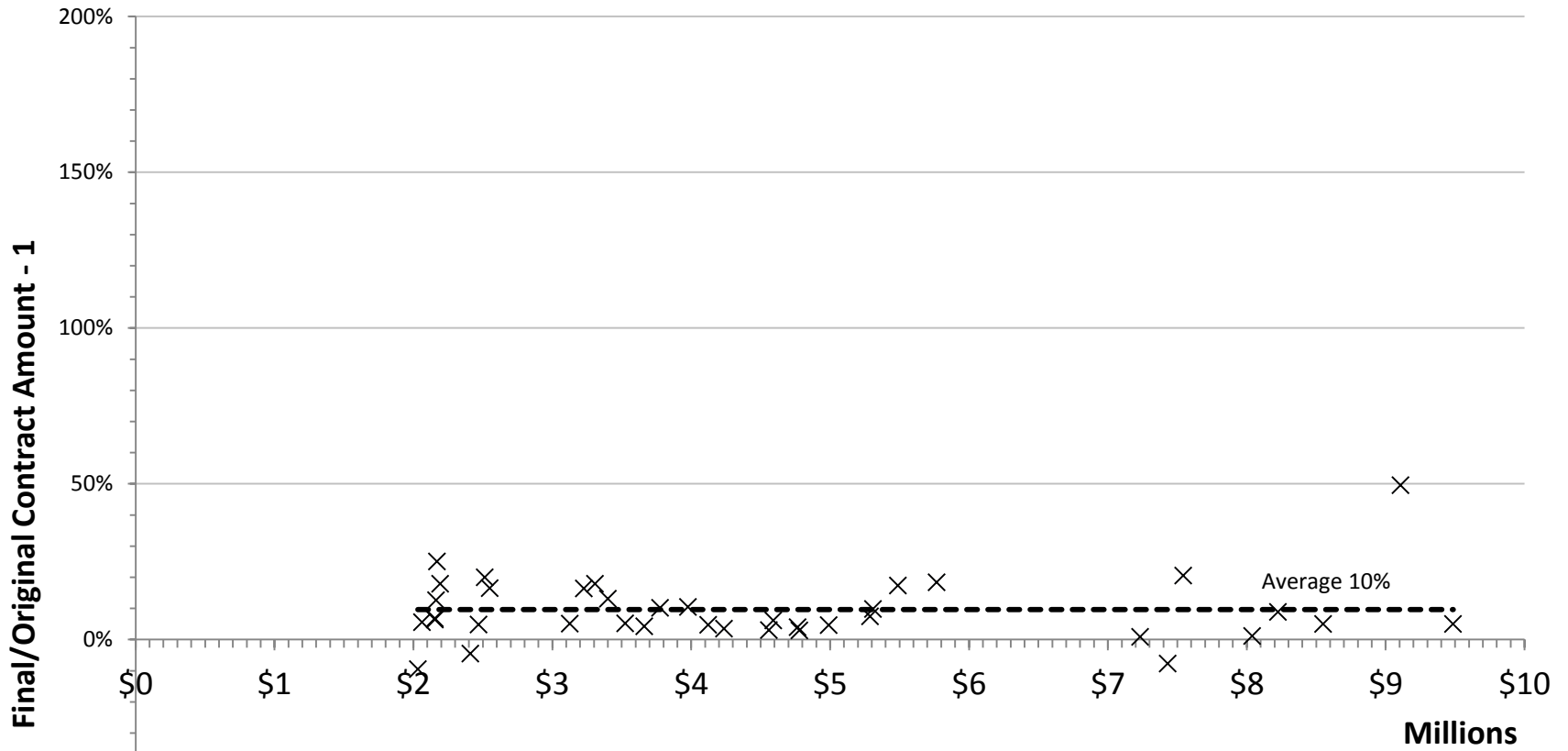
Change Order Rates for Community and Technical College Projects Completed Since 2007

(original contract amounts between \$25k and \$2M, 638 projects)



Change Order Rates for Community and Technical College Projects Completed Since 2007

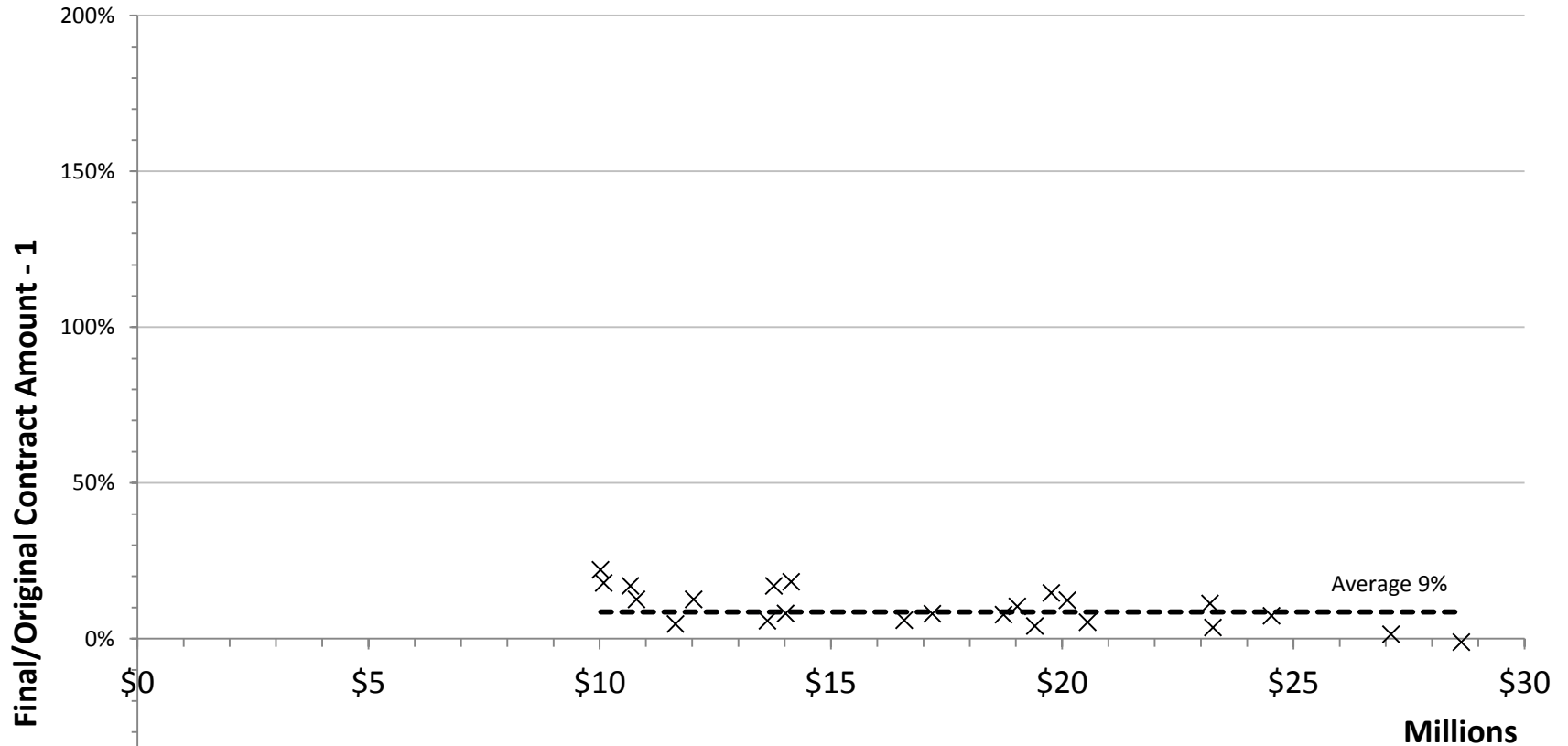
(original contract amounts between \$2M and \$10M, 38 projects)



Original Contract Amount

Change Order Rates for Community and Technical College Projects Completed Since 2007

(original contract amounts \$10M and greater, 23 projects)



Original Contract Amount

Current Reasons for Change Orders

Changes have been coded with the following reasons in the Project Tracking System:

A	Scope Change
C	Contractor Request
D	Design Consultant
E	Error/Omissions
F	Facility Request
L	Latent Conditions
O	Omission
P	Project Manager
R	Code Requirements
V	Value Engineering
(blank)	Unspecified

The current Change Order Proposal form has check boxes for the following reasons:

Design Errors
Design Omissions
Agency
Latent Conditions
Code Requirements
Value Engineering

Working Definitions for Change Orders on DES COP Form updated 25-Jan-13

DESIGN ERRORS – Errors in design which result in destruction of previously installed work. The previously installed work was paid for by the owner as part of the bid, and the removal/destruction of this work represents a loss to the owner. It is possible to classify design omissions as an error should that omission lead to impacts to the project such as schedule delay or loss of labor productivity for which the owner becomes liable. This determination should be carefully considered before application of this reason.

DESIGN OMISSIONS – Omissions in design which result in clarification or additional work. Omissions are viewed in several ways. In many cases design omissions result in the addition of work and increased cost to the owner. When viewed in perspective, most omissions, had they been included in the original bid would have added cost to the bid. The difference in cost is typically higher than a competitive bid day estimate. A certain, nominal level of design omissions are to be anticipated and are one reason behind having a contingency. Excessive omissions often represent a poor design and may be dealt with between the owner and the A/E in the form of fee reduction.

Working Definitions for Change Orders - continued

AGENCY – Agency is a broad term representing that the owner is asking for the change. It is the category that captures the largest share of changes as the reason. In most cases, it can be assumed that the changes are elective as opposed to necessary. However, there may be good reasons for the change even if they are elective. Below is an attempt to sub-categorize the reasons for an agency request:

Scope Change – The agency may desire to modify or add to the original scope of the project. Examples could include adding square footage of new or remodel space, programmatic changes which require a redesign/reconfiguration of the original design and adding ancillary and optional items due to convenience of contracting method and available funds (example(s): kitchen or lab equipment) .

Enhancements and Improvements – Elective upgrades resulting from affordability of the change and arising from the realization that serviceability, longevity, appearance and value would be improved. These changes may be viewed as wasteful or value added depending on the change.

Risk Management – There may be instances where schedule concerns arise that warrant mitigation to avoid delay or adverse affects to contractor productivity which could result in cost liability to the owner. Examples could include acceleration, overtime, change of design or methods to hasten task completion or additional contractor management staff to assist in timely completion.

Delay Impacts – In the event of project schedule delay compensation may be authorized to the contractor as recognition of owner responsibility for impacts. These costs may include field overhead, home office overhead, increased insurance and other costs related to extended contract performance.

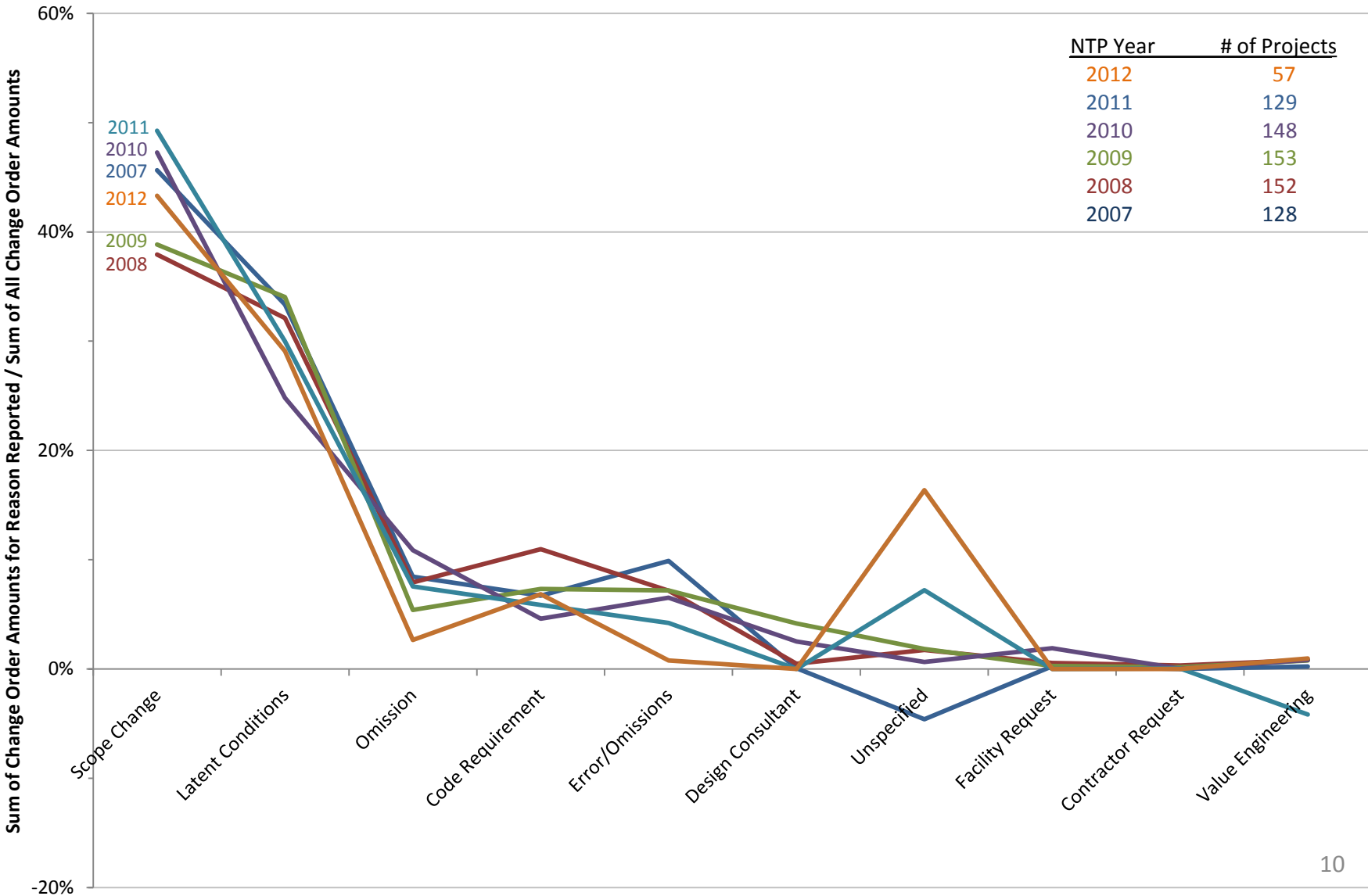
Working Definitions for Change Orders - continued

LATENT CONDITIONS – Latent conditions represent a category of unforeseen which could not be known at the time of initial design. Common examples are subsurface discoveries of differing site conditions (rock, unsuitable soils, existing unmapped utilities) as well as discoveries of unknown/differing existing building components and dimensions exposed during demolition and during remodel construction.

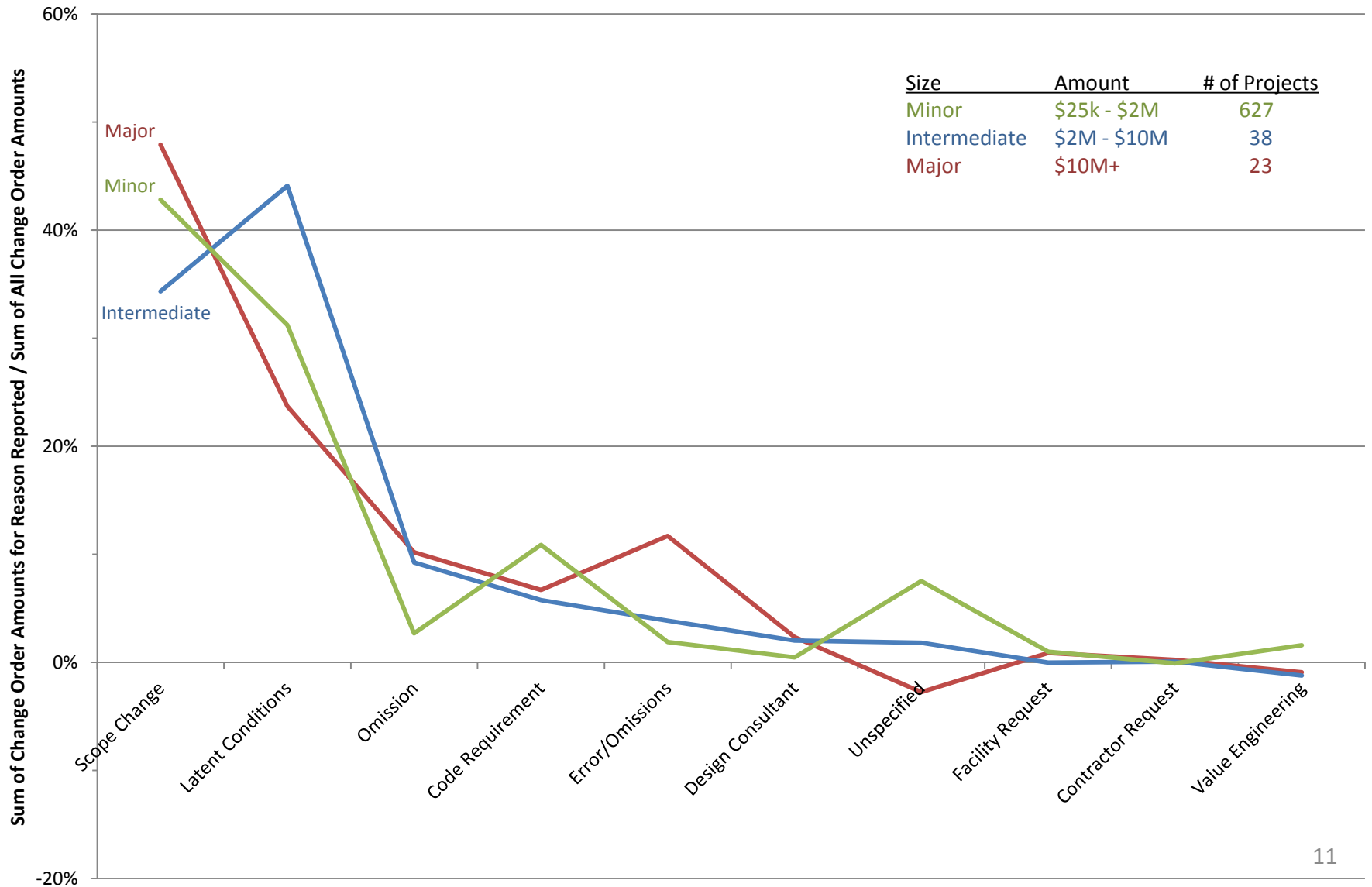
CODE REQUIREMENTS – Code requirements sometimes change either through interpretations by the AHJ which differ from the design interpretation or code revisions which occur after design which the AHJ enforce even though the submitted design complies with the code in force during design. This reason code can also be construed to encompass code required changes which result from non-conforming design which is the responsibility of the designer. These instances of non-conformance should be considered errors or omissions depending on the individual case.

VALUE ENGINEERING – This reason code should be applied to changes which either result in lower cost to the owner through selection of alternative design options or may result in increased cost resulting from the considered decision to change the original design to improve serviceability, longevity, appearance and value. This type of change may or may not be the result of a contractor request or suggestion.

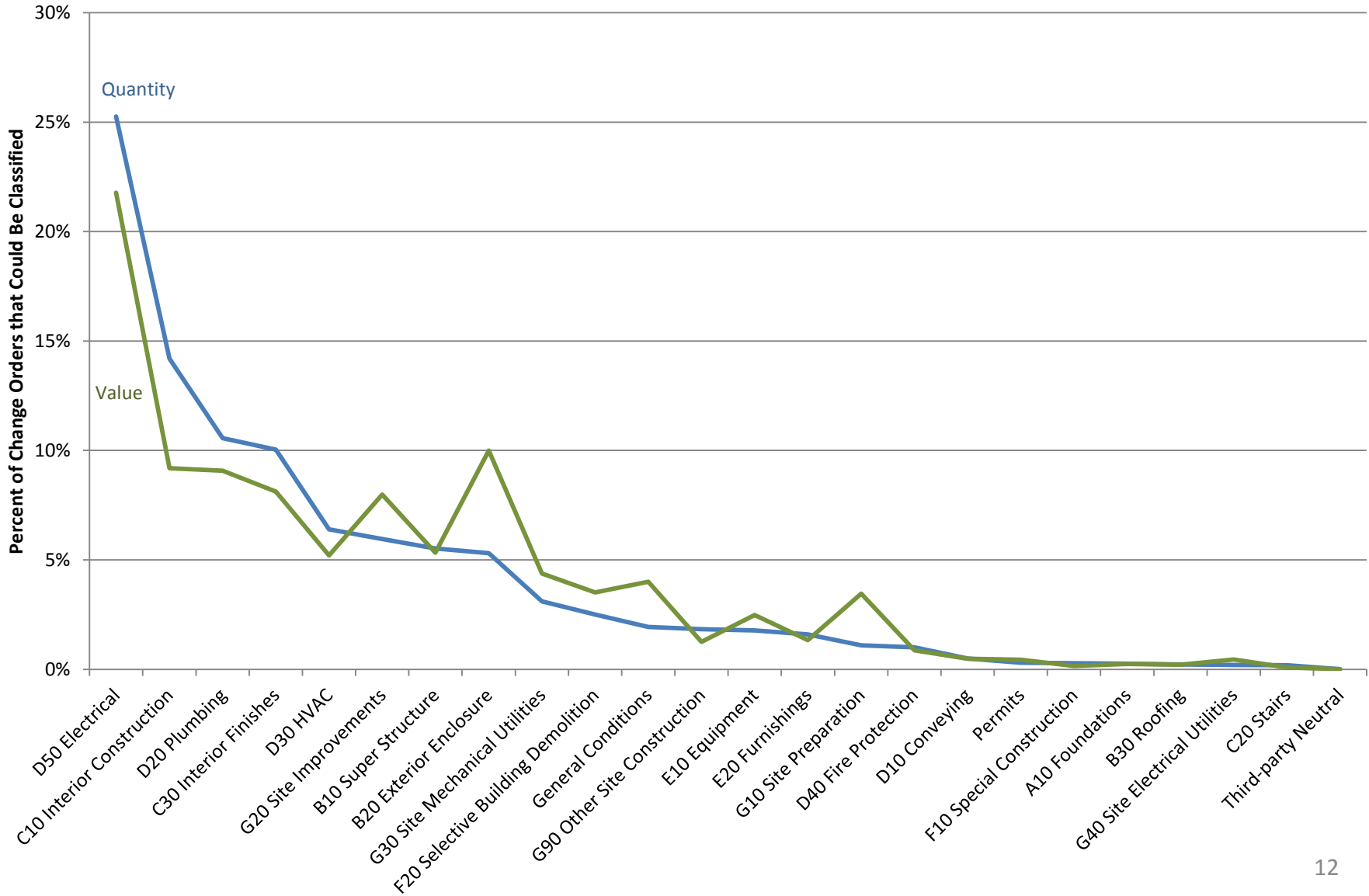
Reasons Reported for Community and Technical College Change Orders (for completed projects)



Reasons Reported for Community and Technical College Change Orders (for projects completed since 2007)



Community and Technical College Change Orders by Uniformat II Category (for projects completed since 2007 - 9,805 Changes for \$67.9M)



SBCTC Change Orders for project completed since 2007

By category on DES COP Form:

\$29.7M	44%	Agency
\$20.9M	31%	Latent Conditions
\$11.3M	17%	Design Errors
Inc. above		Design Omissions
\$ 4.8M	7%	Code Requirements
\$ 0.2M	0%	Value Engineering

Agency (Scope Changes) included:

\$ 1.9M	6%	to add bid alternates after bid
\$ 1.3M	4%	to deal with existing conditions
\$ 0.3M	1%	to add days to the contract
\$ 0.2M	1%	to pay for overtime
-\$ 0.2M	-1%	to delete unspecified work
-\$ 0.4M	-1%	to return contingency (GC/CM)

Observation: *The Agency category is the largest category and includes changes caused by many different reasons, some of which overlap with other categories.*

SBCTC Change Orders for project completed since 2007

Post award additions and subtractions of Bid Alternates were found in the following categories:

\$ 1.9M	99%	Agency
\$ 0.1M	3%	Value Engineering
-\$ 0.1M	-2%	Latent Conditions

Contract Settlements were found in the following categories:

\$ 2.9M	81%	Latent Conditions
\$ 0.3M	8%	Error/Omissions
\$ 0.3M	8%	Agency
\$ 0.1M	3%	unspecified reason
\$ 0.0M	0%	Code Requirements

Question: *How should Bid Alternates and Contract Settlements be classified?*

Value of changes identified as Code Requirements by Unifomat II categories:

D50 Electrical	984,946	20%
indeterminate	834,718	17%
G20 Site Improvements	445,659	9%
C10 Interior Construction	402,963	8%
D40 Fire Protection	319,009	7%
D20 Plumbing	309,088	6%
G30 Site Mechanical Utilities	264,342	5%
F20 Selective Building Demolition	248,047	5%
Permits	239,975	5%
C30 Interior Finishes	166,213	3%
D30 HVAC	160,479	3%
D10 Conveying	97,867	2%
B10 Super Structure	88,026	2%
General Conditions	82,959	2%
E10 Equipment	60,925	1%
B20 Exterior Enclosure	56,480	1%
G90 Other Site Construction	54,719	1%
B30 Roofing	8,093	0%
C20 Stairs	7,819	0%
E20 Furnishings	4,175	0%
Total	4,836,503	100%

What is the difference between a Code Requirement and a Design Omission?

ARTICLE II - BASIC SERVICES OF A/E

A. General Items

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4. A/E shall employ Owner's "Instructions for Architects and Engineers" and Project guidelines and shall design the Project in accordance with applicable federal, state and local laws, including statutes, ordinances, codes, orders, rules and regulations and the requirements for environmental documents prepared under the State Environmental Policy Act (SEPA). Review and approval of documents by Owner does not relieve the A/E from the responsibility to conform to the requirements of the program or applicable laws, statutes, ordinances, codes, rules or regulations.
5. A/E shall ascertain and coordinate the general requirements of all AHJs.

...

Question: *Does it depend on when in the project the code requirement is discovered?*

During permit review?

During field inspection?

Question: *Does it depend on whether the A/E or others agree with the AHJ interpretation?*

Source and Potential Benefit of Proposed Agency Subcategories

Reasons for Tracking Changes

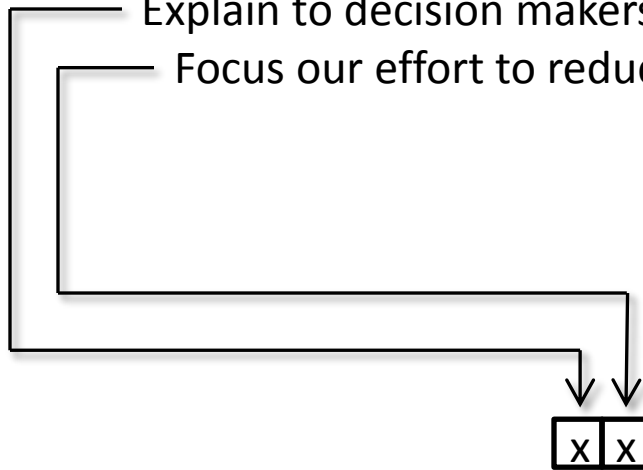
Explain to decision makers where the money went.

Focus our effort to reduce future change orders.

Potential Benefit

Perception value

Portion of changes



x|x

Subcategory: Description

x = H High Benefit

x = L Low Benefit

Possible Agency Change Order Subcategories

HH **Improve Functionality:** A change that will allow the completed project to accommodate more occupants or more hours of use. This could include additional electrical, IT or A/V outlets.

HL **Lower Operating Cost:** A change that has a simple return on investment in less than ten years. This could include changes for different finishes, fixtures, equipment, or systems. For example:

$$\frac{\text{Cost of Change}}{\text{Annual Savings}} < 10$$

HL **Program Change:** A change to accommodate a different way of using the space than was included in the Construction Documents. This could include changes for new curriculum, technologies, teaching styles, or service delivery methods.

HL **Coordination:** A change to accommodate use of adjacent spaces during the construction period. This could include temporary structures or systems, after hours work, or different construction processes and materials.

Possible Agency Change Order Subcategories - continued

- HH** **Bid Alternate:** A change to incorporate the work described in a bid alternate or to delete a the work in a previous awarded bid alternate. This does not include Alternates included in the initial bid award.
- HL** **Administrative:** A change that has no impact on the contract value or corrects the contract value. This could include non-compensable changes in the completion date, work hours, personnel, or acceptance of equivalent materials. Corrections might include a change in sales tax rate, adjustment of time and material authorization to actual cost, the return of buyout savings or contingencies.
- HL** **Aesthetics:** A change in color, finish, texture or material that does not fit into any of the other categories. Could include the addition or subtraction of plants, structures, or systems that are primarily sensory in nature or for sensory reasons.
- HH** **Settlement:** A change that includes cumulative or multiple impacts negotiated by a third-party. Could include changes to contract completion date, acceleration or delay costs, direct labor and material costs, or compensation for additional overhead and profit.

Possible Agency Change Order Subcategories – my ideas



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Possible Agency Change Order Subcategories – my ideas



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