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**A Case for the “Last 10%”
Being the Hardest 30%**

By Gregg Schoppman

The phase between substantial completion and final acceptance can be one of the hardest bridges to cross, but the rewards of getting there are worth the extra effort.

An interesting phenomenon occurs on just about every project in the built world when the line blurs between substantial completion (a legal term used to define the moment a project is sufficiently complete according to the contract documents) and final acceptance (the actual moment a project is truly complete in the customer’s eyes).

For many trade and general contractors, this block of time represents a source of margin erosion for myriad reasons, including:

- **Personnel Swaps.** Supervisors and managers are often removed at the end of a project to focus on new endeavors.
- **Punch List/Deficiency List Misestimating.** The punch list process garners little respect on the CPM schedule, leaving miniscule time for a herculean phase.
- **Paperwork.** The as-built documents, operations/maintenance manuals, training and so forth become a distraction, even with the specter of held retention hovering over the process.

“ The prime contractor started the project with the making of a true thoroughbred but finished like a mule. ”

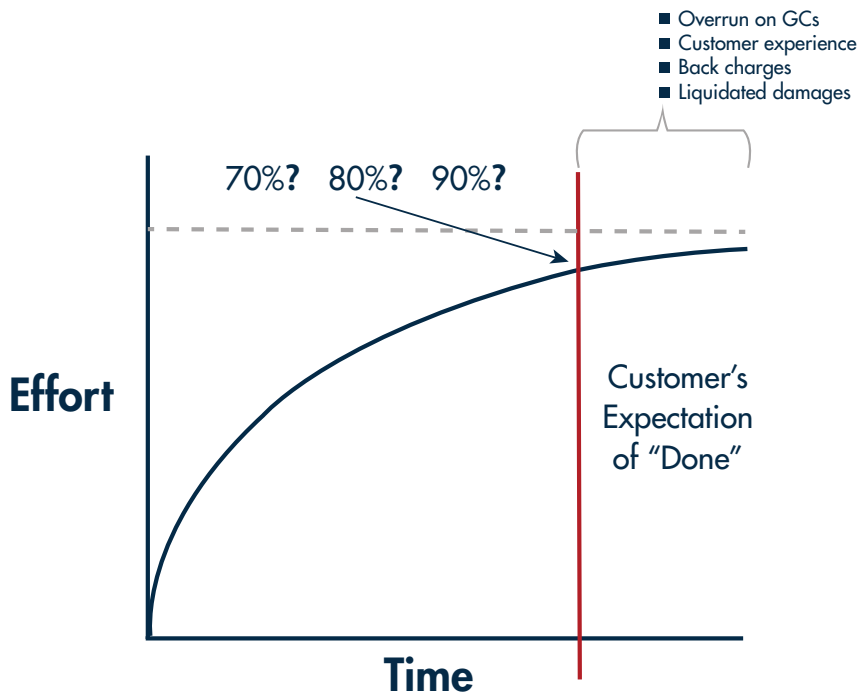
– Quote from an undisclosed owner describing the “closeout strategy” of a general contractor

The common thread among these items represents one singular theme—the negative impact they have on the customer’s business. Contractors create an interesting paradox. In an attempt to deliver customer service to one customer, they often pull critical personnel on another customer’s project too early, leaving a deluge of paperwork, unmet promises and ever-growing deficiency lists, resulting in poor customer service. More importantly, consider the timing of the message this sends to the later customer, all at the end when memories are the freshest. The closeout portion of the project is arguably the most important phase, simply because it represents so many milestones, including final financial reconciliation, release of surety obligations and the customer’s acknowledgment of completion. Failure to observe the sanctity of closeout damages relationships and extends a firm’s risk profile. Below is a simple illustration of how the end of projects tends to have an asymptotic appearance (Exhibit 1).

Best-in-class firms have become proactive in attacking closeout with the same fervor that they exhibited during project kickoff. Even though every stakeholder agrees that completing projects on schedule is imperative, many would also agree that most firms struggle to execute effectively in this area. The three critical elements that describe an effective firmwide closeout strategy are:

- Metrics—Defined closeout-related key performance indicators.
- Processes/Tools—Consistent and standardized approach to the final executable phase.
- Customer Involvement—Achievement of the customer’s version of “complete.”

Exhibit 1. Construction Timeline to Effort Curve

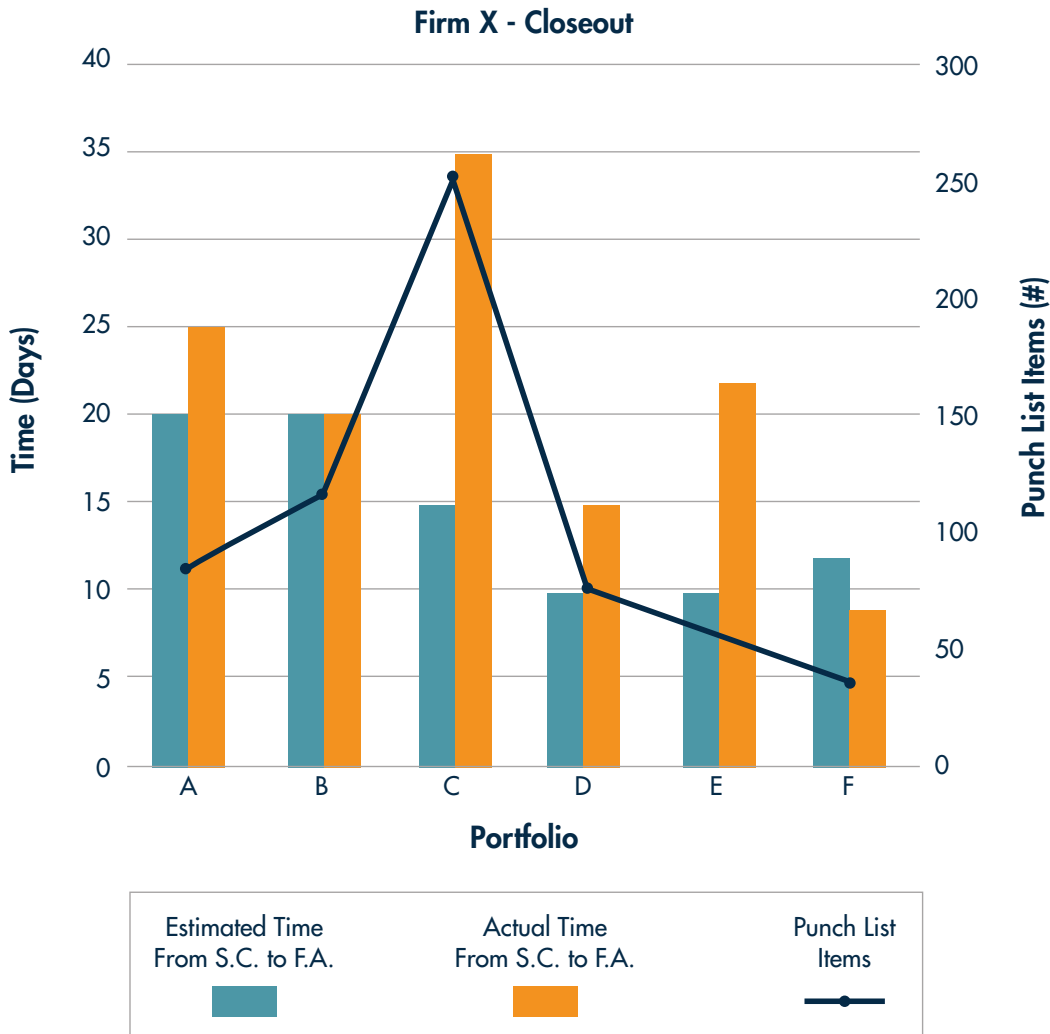


Source: FMI

Examining the Metrics

Firms continue to migrate towards data-driven strategies, but they aren't using that data to drive decisions and behaviors. For instance, the proliferation of software tools that capture closeout data, such as documentation and even punch lists, is ubiquitous. The first step in understanding the impact of closeout on the firm is to mine the data and show the correlation of time and activities. For instance, Exhibit 2 links the duration of the “closeout phase” (substantial completion to final acceptance) and the number of punch list items examined from a macro level.

Exhibit 2. Closeout Metric and Deficiency List by Project



Source: FMI

This simple illustration can be broadcast across the various departments in the firm. Furthermore, a firm can measure other critical aspects of closeout, including:

- **Punch List/Deficiency List Dollars.** All work associated with closeout is captured in one budget code, separating work packages.
- **Closeout Compliance.** Whether it is the closeout strategy meeting or simply the gathering of documents, project personnel are recognized globally to drive behaviors internally (see below).

Project	Closeout Strategy Meeting	Final Document Packages
A	DONE	INCOMPLETE
B	INCOMPLETE	IN PROCESS
C	SCHEDULED	IN PROCESS
D	DONE	DONE
E	DONE	DONE
F	INCOMPLETE	IN PROCESS

- **Change Order Activity.** The closeout phase forces—in many cases to the detriment of the project budget—change order closure. The illustration below is one “dashboard KPI” consideration:

Project	Change Order Dollars (Approved)	Change Order (Outstanding)	Change Order Average Margin
A	\$450,000	\$250,000	12%
B	\$125,000	\$125,000	10%
C	\$10,000	\$250,000	7%
D	\$1,250,000	\$350,000	5%
E	\$17,500	\$5,000	25%
F	\$35,000	\$100,000	10%

The most important aspect of any KPI is its connection back to the firm and its strategic relevance. For instance, change order measurement may only be important to a firm that experiences a high frequency of such requests and that engages in high-risk closure. The last 10% of the project should be used to place optics on closeout and influence upstream and downstream behaviors, in much the same way that diet and exercise (upstream) influence better weight and health (downstream).

Processes and Tools

Many firms have some semblance of a preconstruction phase, but they lack a defined and consistent closeout process. In other words, does the firm have a “preconstruction phase for the last 10%”? During the start of the project, the “last 10%” process is often triggered by some milestone or simply defined during said preconstruction phase. For instance, firms may have triggers tied to an inspection, man-hour percentage or internal phase such as landscaping, final grading or final cleaning. From there, the steps should include an internal meeting focused on strategizing closeout and an external meeting(s) that involves the customer and/or trade partners.

Here are the typical agenda items and the action plan:

Item No.	Item	Discussion/Strategy	Who?	Target Date	Complete?
1	Punch List Approach				
2	Owner Furniture, Furnishing and Equipment				
3	As-Built Status				
4	O&M Manual Status				
5	Utility Switchover				
6	Final Testing (HVAC)				
7	Final Testing (Bacteriological)				
8	Commissioning (Security/Life Safety)				
9	Owner Training				
10	Strategy on Extra Work Orders				
11	Equipment Demobilization				
12	Trailer/Sea Can Removal				

Item #10 is generally the most vexing component. For instance, deficiency list completion gets increasingly complicated with the addition of new contract work, leading companies to focus on profitable work (or work that represents incomplete contract work). What will the firm's response be? For example, should a new crew/foreman be included who is simply dedicated to extras that arise?

Lastly, it is important to note that during the closeout discussion, some firms use dedicated punch list teams. On the surface, this sounds like an acceptable way of attacking the punch list with newfound energy and gusto. However, these groups are often riddled with problems such as:

- **Cost Allocation.** While the closeout phase should have a budget line item, you want to avoid an internal battle over how much time is required—a common occurrence that can lead to resentment or angst. In short, will there be a cultural war and internal divide among operational teams?
- **Punch List Punting.** Since the project team knows a special crew is coming in to serve as the closer, will the project experience a higher frequency of closeout items? In other words, will contract work (and not punch list work), get punted at the end, leading to increased cost allocation issues?
- **Utilization.** In theory, closeout is a small portion of the overall schedule. Unless this team has other obligations, will the firm suffer cost overruns due to failed utilization?

Research has uncovered several successful uses of punch list teams, tiger teams and/or closeout crews. These successes are tied directly to a well-thought-out strategy and well-developed rules of engagement. More importantly, these groups were initiated to drive superior customer service rather than serve as backstops for punch list costs.

The Voice of the Customer

The customer's voice is the most important voice in this process. Many firms focus on their versions of "done" rather than the customer's opinion. What does "done" mean to them? The definition should be reinforced during the preconstruction phase as well as the closeout phase.

Here are sample questions and components that should be defined early and revisited throughout the construction process:

- **Document Collection.** Short of the contractual description, what will be expected in terms of the as-built documents, operations/maintenance manuals, training, etc., in terms of format (electronic, paper versions, etc.) as well as the number of copies? Yes, the contract documents trump many things, but in the court of the customer's perception, there is the contract answer and then there is their answer.
- **Punch List Process.** Who will create the punch list? What is their experience with this process? What has frustrated them in the past? Will there be multiple inspections?
- **Owner Vendors and Suppliers.** Furniture, low-voltage coordination, security and kitchen equipment contractors are all professionals who lack specific job knowledge. When selecting parties, it's incumbent on the lead contractors to execute a coordination meeting as part of the preconstruction and then close out as if those contractors were already on the team. In cases where it has not been selected, the savvy prime contractor should develop a proactive coordination timeline—working backward from the award stage to illustrate important decisions and considerations (i.e., fabrication, municipality expectations, etc.).

Too often, an owner's vendor lacks project knowledge, thus creating delays, because the local municipality's own version of "complete" was not factored in.

Closeout leaves an indelible imprint on a customer's mind. He or she may forget the botched start, for example, but failing to complete the nagging punch list may mean the difference when it comes time to award the next project. By focusing on project closeout, industry leaders can not only differentiate themselves in a field of mules, but they can also keep their customers happy and coming back for more.



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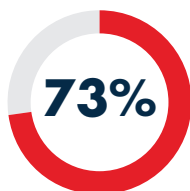
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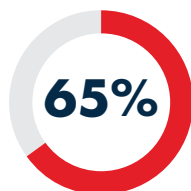
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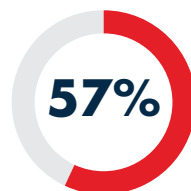
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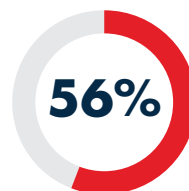
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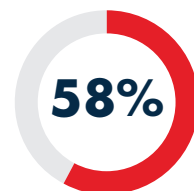
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