

**A Study to Identify and Exploit Mutual Frustrations
Among Seattle Area Residential Builders
Regarding Trade Contractor Relations.**

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Abstract

This descriptive research document investigates the existence of common frustrations among Seattle area residential builders regarding trade contractor relations. The study opens with an extensive exploration of what the body of literature has to say about the current state of affairs within the local, national and international construction industry. Statistics are examined from the residential construction and real estate markets in Seattle, the State of Washington as well as the United States. The rest of the literature review is organized into several broad categories including Quality, Risk, Collaboration, Safety, Scheduling and Information Technology. Each one is discussed and distilled to the key elements that play a role in relationship between builders and their tradesman. It is argued that the information in the literature review forms the framework for the focus of the research survey.

The survey was distributed in written form as a questionnaire to a sample of 35 Seattle area builders, 27 of which provided a complete response by the deadline. Drawing upon the amalgamation of the literature and the data gathered from the 27 respondents, a foundation will be built in support of three strategic recommendations. Each recommendation advises trade contractors as to how they can capitalize on the widespread shortcomings of their competitors. The recommendations can be considered individually or collectively as plausible methods of market differentiation or simply further avenues of research. Finally, as the study concludes, four potential areas for further study will be suggested.

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Introduction – Research Problem

Introduction

“Except in the middle of a battlefield, nowhere must men coordinate the movement of other men and all materials in the midst of such chaos and with such limited certainty of present facts and future occurrences as in a construction project” (Beattie, 2005, p.18). Construction can be a bewildering, confounding industry. Successfully completing a construction project within a predetermined framework of time, cost and quality constraints is a dynamic and often incommensurable undertaking. Every construction endeavor can call upon collaborative contributions of architects, excavators, engineers, general contractors, trade contractors, material suppliers, inspectors and a potential swarm of others. The organization and integration of the specific contribution of each party is a new creation at the conception of each building project. In many cases the parties are dealing with each other for the first time. The plot thickens with the implications of material availability and cost fluctuations, unpredictable outdoor working conditions, cultural and competency variances among the laborers, tool and equipment issues and the intrinsic physical and topographical uniqueness of every construction site. Like westward driving homesteaders, knowing little of what the future holds, the parties nonetheless proceed on the slippery speculations of how much the project will cost and how long it will take. They sign and bind themselves on the dotted line, grit their teeth and hope for the best. Dubois and Gadde (2002) offer an encapsulation that is worth repeating: “*The physical substance of a house is a pile of materials assembled from widely scattered sources. They undergo different kinds and degrees of processing in large numbers of places, require many types of handling over periods that vary greatly in length, and use the services of a multitude of people organized into many different sorts of business entity*” (Dubois 2002, p. 621).

The capacious body of journals, magazines, books and how-to seminars devoted to construction underscores the hunger for help among industry professionals. Scores of

scholars, entrepreneurs and inquisitive business minds have analyzed the varied and numerous interdependencies, processes, information flows, supply chains, relational issues, productivity factors and litigious implications unique to the construction project environment. The home building process is heavily dependent upon the ability and willingness of everyone involved to share resources. The delicate balance of risk, work and accountability can create tension that is only compounded by the inherent array of perceptions, expectations and results – especially when results fall short.

Research Problem

In light of these issues that go along with building a home, a conclusion can be drawn that builders prefer to work with trade contractors who meet their various standards and expectations. As well, it would behoove trade contractors to avoid habits and practices that make their services unattractive to the builders in their market. So logically one may deduce that it is worthwhile to investigate and identify areas of frustration that may arise within a *specific* group of residential builders about their local tradesman. This document will explore the possible existence of such frustrations among home builders in the *Seattle area*. The fundamental objective of this research endeavor, once common frustrations have been identified, is to draw attention to strategies whereby trade contractors can both avoid those practices and exploit them.

Research Layout & Limitations

Layout

In light of the research problem and the overall objective of this study, the layout of this research document will proceed as follows:

1. A review of the various forms of published literature concerning the affairs of builders and trade contractors in the home construction industry. The purpose of this review is to support the existence of the research problem as stated above and to craft the bedrock upon which the survey and findings can be presented.
2. A description of the survey methodology utilized for this study will highlight when and how the survey sample was selected as well as how the survey was created, distributed and gathered.
3. The next section will present an analysis of the results of the questionnaire responses.
4. The Summary and Recommendations section will amalgamate the survey results with the issues presented in the literature review. Three strategic recommendations will be offered relating to opportunities for trade contractors to benefit from leveraging the information herein. And several suggestions for further areas of research will be offered as the study concludes.

Limitations

The scope of this research project was bound primarily by time as a due date was defined and targeted for completion. Scope was also limited by resources as the research problem does not present itself to a readily available body of literature dedicated explicitly to comparable objectives.

Literature Review

Introduction

The astute academician doesn't have to search long to discover that there isn't an abundance of literature unique to the topic of this study. In addition, much of the published work dealing with the relationship between builders and trades is targeted at one particular aspect or function of construction projects such as quality control, communication, safety, time management, risk management, and work flow. The target audience of the majority of the research is general contractors and construction management firms rather than trade contractors. For example, one of the hot button topics in recent industry studies is the notion of trade partnering in its various manifestations. Trade partnering, to be discussed in greater depth later in this document, can be defined simply as any endeavor to intentionally foster collaboration and communication with the trades involved with a construction project. The concept is presented to general contractors almost exclusively in spite of the fact that general contractors only represent one side of the trade partnership.

Hinze and Gambatese (2003) noted this phenomenon in a study of the factors that influence trade contractor safety performance. The absence of applicable research for trade contractors, specifically safety related research, served as the impetus behind their collaboration. They point out that this issue is especially perplexing in light of the fact that trade contractors perform most of the actual construction work on the jobsite. They speculate that there may be several reasons behind the underwhelming focus on trade contractors in the current body of research literature. Trade contractors tend to be much smaller firms and their work tends to be restricted to limited geographic regions.

Again, the exploration of published literature may not provide an abundance of data focused specifically on Seattle area builders and tradesman but it is useful for creating a frame of reference for the subsequent analysis of the survey results. The following literature review

presents the current reality of the residential construction industry in the Seattle area both in the context of Washington State and as compared to some of the relevant national data. Then the literature review will expand to a wider look at the residential construction industry overall.

*The Current Reality of the Washington's
Residential Construction Industry*

The Seattle Times printed an article by the A.P.'s Martin Crutsinger on February 28th of this year regarding Commerce Department's most recent housing figures. According to the article, national new home sales came in at a 12 month low and "the backlog of unsold homes rose to an all time high" (Crutsinger, 2006). Interestingly, the article goes on to highlight the fact the only region in the nation to experience growth was the western United States where new home sales were up 11.3% over January 2005. While it is unclear from this article what portion of the increase (if any) is attributed to Washington State or the Seattle area, there is no shortage of data to supplement these findings. For example, The National Association of Home Builders (2005) ranked the Seattle – Tacoma – Bellevue area at 14th and 16th in the nation for multi-family and single-family housing permits (respectively) issued through June 2005.

The Puget Sound region is home to the nation's largest localized Master Builders Association (MBA) with more than 4,000 member companies employing over 100,000 workers in King, Pierce and Snohomish Counties (Master Builder's Association, 2006). According to their website, the current median house price in the Seattle market is \$325,000 which is 1.5 times more than the national average. They also point out that the median home price rose 14% in 2005 and 42% over the previous three years (Gardner, 2006).

Also worth mentioning (albeit briefly) is the ubiquitous environmental focus of the local MBA's prestigious "Built Green" certification. The Built Green website outlines the specific qualifications and processes required for builders and trades to achieve membership, (Appendix A), the exclusive membership benefits as well as their stated mission: "*Our mission is to promote environmentally friendly home building methods and practices, and to enhance our communities through leadership in sustainable development*" (www.builtgreen.net). In the state of Washington this mission rings deep in the hearts of the natives who take great pride in the lush green beauty of their climate. This Built Green certification is embraced as a form of local pride among hometown builders.

A 2003 report from the Washington State Department of Employment Security was repeatedly cited in a more recent study from the Washington Research Council (2005). The Council's report poses the profoundly favorable impact that the home building sector has had on the local economy. To do so the author drew upon data from the Master Builders Association of King and Snohomish Counties, The National Association of Home Builders, The U.S. Census Bureau and the Bureau for Economic Analysis. The combination of employee wages, owner's income, local taxes paid, and the number of local jobs supported by single and multi-family residential builders created an estimated economic impact in excess of \$3.1 Billion.

The 2003 data in the Research Council's report also shows just over 4,000 single family residential general contractors employing over 13,000 workers. There were also 10,200 trade contracting firms with a workforce of 42,500. The author noted the striking degree to which the residential construction industry in the region is dominated by trade contractors.

General contractors overall are smaller employers relying heavily on trade contractors to complete the physical construction work for them. This assertion is illustrated by the 2006

Puget Sound Book of Lists. The number five builder in the state only employs 28 workers on annual revenues of \$46.3 Million (Puget Sound Business Journal, 2006). To complicate matters the author points out that King County's land use and building codes are wreaking havoc on the ability of smaller builders to acquire less expensive parcels of buildable land. The most recent Employment Situation Report for the State of Washington (February 2006) contends that Washington's home building industry overall experienced a spurt of growth between December 2005 and January 2006. The number of general contractors employed or working state wide increased by 3,800 to 46,855. As well, the number of trade contractors employed or working grew by 2,600 to 107,623. Both areas of growth contributed to the lowest state unemployment rate on record since the Clinton Administration (Weeks, 2006). Though early, these numbers appear contrary to speculation that the building industry in the western United States (California, Idaho, Nevada, Oregon and Washington) would flatten out in the first quarter of 2006. In December 2005 and again in February 2006, Builder and Developer Magazine published articles that characterized the looming downturn as inevitable. Susan Pitarre stated "*We've exceeded sustainability. 2006 will be a cooling-down period*" (Pitarre, 2005, p.31). Her assertion was reinforced by Ross and Gabriel: "*Investors have become more cautious about investing in speculative residential land development. Such investments have yielded high returns in recent years, but investors are taking a harder look at them [in light of] land prices continuing to climb and infrastructure costs increasing*" (Ross, 2006, p. 32). Perhaps the early numbers in Washington's employment record are reason to be optimistic for the building industry. In fact, the U.S. Census Bureau's February 2006 press release may substantiate a more optimistic perspective on the current state of Washington's residential construction industry. Housing starts in January 2006 surpassed projections by 14.5% and were 4% higher than the housing starts reported in January 2005 (Filipek, 2006).

Builder News Magazine (August 2005) presented Washington's monthly residential construction permit figures for January 2004 through May 2005 as compared to Nevada, Arizona, California, Oregon and Idaho. Washington was 3rd in the region with monthly totals just below 5,000 for each of the first 5 months of 2005. This was only trumped by Arizona (between 6,000 and 8,500) and California (between 14,000 and 18,000).

Considering all of the data regarding the Seattle construction industry, its relative position in the state and national industry, and its enormous economic clout, there is one point worth restating. In light of the stated objective of this research, the fragmented nature of the workforce in the Seattle construction industry is a significant revelation. Smaller, often less profitable trade firms are bearing a disproportionate amount of the physical work associated with building homes. This condition may serve as justification for an increase in construction related research relating to trade contractors.

Review of Literature Related to Residential Construction

This section of the study will consist of an overview of numerous research studies, articles and reports that may provide insight into the types of frustrations that may be shared among builders industry-wide regarding their experience with subcontractors. The vast array of information has been organized within six broad categories. The overarching topics are Quality, Risk, Collaboration, Safety, Scheduling and Information Technology. This grouping will provide the framework in which the information is communicated. It should be stated here that structuring the data in this way is not intended to be a means of conditioning the reader to expect or to overlook a particular result or group of results from the survey. Rather it simply serves as a straightforward method of classifying an otherwise staggering amount of information so that it can be easily assimilated.

Overview of Residential Construction and Quality

Quality management as a standalone discipline was born in the 1950's from the work of Dr. W. Edwards Deming. His timeless classic *Out of the Crisis* laid the foundation for defining, measuring and developing organizational quality in firms around the world.

Deming's wisdom is cited in an article from the NAHB Research Center entitled *Leadership for Construction Quality*. He may have been thinking about the home building industry when he stated: "*We can no longer tolerate commonly accepted levels of defects . . . the worker has a right to be proud of his work and the right to do a good job*" (Deming as cited by Research Center, 1997). The purpose of the article, like so many other publications on the subject of construction quality, was to help builders motivate tradesman to monitor the quality of their own work. Builders are advised to appeal to the pride a worker has in their craftsmanship when they've completed a job well done. They should commit to an unwavering demand for quality in every aspect of workmanship coupled with meticulous inspections of every aspect of completed work. The authors contend that this will inspire trade contractors to progressively define their own standards for excellence.

The NAHB Research Center has also published a variety studies advocating assorted methods of tracking, motivating, improving and systematizing the quality of trade contractor's workmanship. One quote provides an insightful look into the fundamental frustration with the common tradesman: "*Certainly some trade contractors do better than others. But it seems that no matter how many of the poor performers are weeded out, the average quality performance doesn't seem to rise very much . . . next time you have a quality problem don't just change your trade contractor, check your trade contractor's quality controls?*" (Research Center, 1998). As well, their National Housing Quality Award *requires* implementation of their Trade Contractor Quality Control Manual. The manual provides builders with the guidelines to successfully measure

and manage trade contractor's quality. The manual defines checks and balances including materials and installation procedures, guidelines for selecting quality craftsman and installers, sales contract pointers, and indispensable items for jobsite punch lists (2001).

Along these lines, a 1998 collaboration comprised of HUD, the Partnership for Advancing Housing Technology (PATH) and the NAHB produced a case study pursuant to a technology roundtable. Members of the roundtable included builders and manufacturers. The participants of the dialogue articulated a collective need for "practical and effective methods to improve one of the most critical construction essentials – trade contractor quality" (HUD, 2001, p.4). The study follows three residential wood framing subcontractors (one in New Jersey and two in Arizona) as they implemented an ISO9000 based quality assurance system developed by the NAHB Research Center. The study lasted from 1991 through 2001. The scope of this document does not allow an exhaustive delineation of the specific details of each firm's experience. However, the results were succinctly summarized in the case study as follows: "*First year results included defect rates reduced by more than 50%, productivity improvements offset regional labor rate increases of over 7% and builder satisfaction improved to top ratings*" (HUD, November 2001, p. 5-8).

For clarification, ISO9000 was characterized by Zeng, Tian, Tam and Tam. (2005) as a quality driven set of auditable, unbiased certification standards that apply equally to organization which:

- 1) Design their own products and services
- 2) Do everything with the exception of design and
- 3) Provide products and services that can be verified by inspection and test.

The ISO9000 has been implemented in organizations around the globe including United States, UK, Australia, France, Sweden, Hong Kong and China. Since the case study above

was released, two updated versions of ISO9000 have emerged. Zeng made it clear that the direct application of this standard to the construction industry, in its most recent form, lacks research and evaluation of its current status (Zeng, 2005).

From these works it is clear that industry agencies and builders alike are enthusiastically prepared to invest resources to address shared concerns associated with the quality of the workmanship put forth by the common trade contractor. The problem is not confined to a region or even a specific nation. The ripple effect of poor quality is no respecter of persons. Every project contributor has the potential to be forced into adjusting their own role when quality is lacking.

Overview of Residential Construction and Risk

General contractors, by definition, are the party who shoulder the lion's share of the risk associated with the home building endeavor. The unavoidable reality is that construction is an industry riddled with litigious activity. The discipline of risk management is a common topic in several research studies in the industry. The focal points of the risk-related probes include areas such as billing and collecting procedures, jobsite safety, contract inclusions and exclusions as well as risk diversification techniques.

The Risk Management journal published several articles pertaining to residential construction. Bonnie Spiro Schinagle (2000) penned an article titled *Getting a Grip on Construction Liability*. The article espouses the value of risk diversification practices as a means of avoiding liability for subcontractor injuries, accidents and damage. In her words, "The objective at the top of the ladder (general contractors and construction managers) is to ensure that any liability is passed along to the entities further down the line. It only seems fair to assign the responsibility for any ensuing liability to the parties that performed the work" (Schinagle, 2005, p.26). She goes on to differentiate between general contractors as "passive entities" and trade contractors as

“active entities” in the relationship of a construction project. She points out the importance of verifying that tradesman add the builder in the “additional insured” clause of their insurance policy. As well, Schinagle argues that several insurance related items need to be clearly laid out in the contract as a means of properly assigning risk. According to her article, contracts with subcontractors working on construction projects should include specific and detailed insurance requirements. “These specifications include:

1. Calling for procurement of general liability insurance
2. Naming the owner, construction manager and general contractor as additional insured.
3. Requiring sufficient liability policy limits
4. Requiring that the liability insurance obtained for the benefit of the owner must be primary.
5. Limiting the permissible amount of deductible or self-insured retention”
(Schinagle, 2000, p.27 – 28).

The contract should also clearly stipulate that the trade contractor cannot begin their work until these things have been provided to the satisfaction of the builder.

The main thrust of Shinagle’s article is that legal claims can run rampant in the fertile ground of the home building industry. And that working with subcontractors will inevitably put builders on the hook for losses and expenses resulting from accidents, injuries and poor quality of work. The key to avoiding some of that risk is “*communication and inquiry*” (Shinagle 2000, p.35).

Risk Management also published an article by Jon Tate (April 2002) regarding an insurance policy cleverly labeled “Subguard”. Builders can pay a premium for coverage against many types of losses, “*including the cost to complete work, payment-related costs, any legal or consultant fees associated with a default, the costs of correcting certain defective or nonconforming work or materials and other*

key costs critical to keep jobs on pace” (Tate, April 2002, p. 43). The need for such a provision was born out of widespread default on the part of subcontractors between 1990 and 1998. According to Tate, general contractors were left with the collective burden of \$23 Billion in outstanding liabilities (Tate, 2002).

Carl Beattie (2005) wrote an extensive exploration of the various applications of payment schedules as leverage against delays caused by subcontractors. Specifically he addressed the inclusion of “damages for delay” clauses in contractor agreements. Beattie stated that “*the risk of delay is an enormous issue in construction, and the proof and calculation of delay damages can be extraordinarily challenging, even after a delay has occurred. Delay claims can potentially have huge economic impacts on owners and contractors alike*” (Beattie, March 2005, p.29). Mr. Beattie covered the issue with remarkably comprehensive detail. The important thing to draw from his work in this context is that the significance of astute, judicious risk management in builder/subcontractor relations cannot be overstated. There is far too much at stake on both sides of the issue to take it lightly.

Clearly the issue of risk poses an array of potential pain points in the construction environment. Both general contractors and trade contractors have much to lose (and gain) from the way they approach this facet of their working relationship.

Overview of Residential Construction and Collaboration

The notion of collaboration or trade partnering is frequently mentioned throughout industry literature. The NAHB Research Center contends that this concept brings benefits to both trades and builders through improved quality, avoiding problems cutting costs, and streamlining operations (Research Center, 2000). As defined by Dr. Kwaku Tenah (2001) partnering is a temporary arrangement based upon the good faith of two or more parties to

work on a project as a team. Chan, Chan and Ho (2003) cite a definition derived from the Construction Industry Institute (CII) in Austin, Texas:

“...a long term commitment between two or more organizations for the purposes of achieving specific business objectives by maximizing the effectiveness of each participant’s resources. This requires changing traditional relationships to a shared culture without regard to organizational boundaries. The relationship is based on trust, dedication to common goals, and an understanding of each other’s individual expectations and values” (CII 1991 cited in Chan, Chan & Ho, 2003, p. 126).

Examples of permanent partnerships are rare since most are not legally binding. In February 2004, Bill Lurz, the Senior Editor of Giants Magazine told the story of an Arizona builder (Pulte Homes Inc.) and a concrete/framing, subcontractor (Pratte Development Co.) who just entered into a 50/50 joint partnership by the name of Pratte Building Systems. Lurz poses the question “Is this a new form of industry (vertical) consolidation” (Lurz, 2004, p. 25)? Given all the interdependencies, uncertainties, and inefficiencies of the home building process various experimental collaborations are bound to present themselves. Trade partnering is emerging at the forefront of innovation as one of the developing areas for growth and opportunity in the building industry. The thread of this theme can be traced around the globe through various analytical publications.

The business journal *Construction Management and Economics* (CME) is characterized by its publishing firm as “*the leading international refereed journal that publishes original research concerning the management and economics of building and civil engineering*” (www.tandf.co.uk/journals). In 2004 and 2002 CME published peer reviewed research results pertaining to the concept of trade partnering in the UK and Sweden respectively. The 2004 UK-based study conducted by Stephen Pryke explored the application of the quantitative benefits of Social Network Analysis (SNA) to project management in construction. SNA is defined in his research as a representation of “*organizational groupings as systems of nodes or actors joined in permanent or (as in the*

case of construction coalitions) transitory configurations' (Pryke, 2004, p. 791). The nodes represent firms linked by relational attachments. His primary contention was that conventional means of mapping and tracking projects and work flow (i.e. MS Visio, MS Project, flow charts etc.) fail to accurately represent the "*non-linear, complex, iterative, and interactive processes that comprise the activities of the construction project team*" (Pryke, 2004, p. 789). There are contractual relationships, authority relationships, incentive based relationships, cross-disciplinary relationships, and cross-coalitional relationships involved with projects. Each type of relationship deals with its own underlying, complex exchanges. Social Network Analysis takes those implications into consideration when planning and executing a construction project. The result, Pryke argues, is a new way for managers to characterize the appropriateness and effectiveness of different types of incentives and contracts involved between builders and tradesman.

The 2002 study was based in Gothenberg, Sweden. Anna Dubois and Lars-Erik Gadde espouse the idea that the current state of inter-firm relationships in residential construction is a hindrance to innovation because "*the current community of practice stabilizes conditions that promote short term productivity*" (Dubois, 2002, p. 629). The current paradigm is more conducive to independence than interdependence. They point specifically to the deeply ingrained, single project-focused mindset among builders, trades and suppliers. Because the cluster of role-players is always changing "*it is difficult to make use of experience gained in previous projects. This creates particular cost inefficiencies [because] a new learning curve is climbed each time*" (Dubois, 2002, p. 629). While project teams are capable of working extremely efficiently on individual projects, as soon as they plug back into the greater network of the open market, the connections are broken and the synergy disappears. Dubois and Gadde suggest, as a plausible next step, that experiments be conducted whereby less emphasis is placed on the

boundaries of the project and more is applied to interdependence across firms *and* projects rather than the typical alliances on individual projects.

Collaboration/Partnering among general contractors and subcontractors was also covered in a Japan-based study by K. Reeves in *Building Research & Information* (2002). As well, Hong Kong was the context for the published findings of Chan, Chan and Ho (2003) in the *Journal of Management in Engineering*. Both studies addressed issues with implementing trade partnering in their unique respective economic environments.

Domestically the National Association of Home Builders has published several articles (far too many to cover in this context) on variations of the same subject matter. One particularly innovative, if not counterintuitive, organization, “Agile Web”, was discussed in the article titled *Trade Contractor Partnerships: The Builder’s Construction Department of the Future?* (Research Center, 2001). Agile Web was an individual incorporated entity. The members were a collection of competing subcontractors who mutually submitted to explicitly defined and agreed upon scheduling procedures, collective accountability, problem solving resources and communication systems. Theoretically, Agile Web was a virtual partnership of entrepreneurs competing for the same customer base. In practice the collaborative efforts of the trades could produce extremely competitive bids and results by creating a custom-made collection of team members based upon the parameters of each project.

The body of literature clearly demonstrates a high level of interest in the application of the partnering concept. The demonstrated results of its practical pertinence give sufficient cause for further exploration of the potential indicated in industry-wide innovative opportunities.

Overview of Residential Construction and Safety

According to the 2003 statistics on Washington State Department of Labor and Industries’ website, 30.7% of the injury claims in Washington’s construction industry

required the injured worker to take at least 31 days off the job. Furthermore, among occupations with the most days away from work caused by injury or illness, carpenters were ranked fourth with 10,400 accounting for 10.8% of the state-wide total. Finally, among occupations with the highest median days away from work, Washington's roofers missed 12 days, only being edged out by electricians and bartenders who combined for 114 (www.lni.wa.gov/safety/research). David Root further clarified the importance of jobsite safety. Since the early 1970s, the construction industry's incidence of injuries and have surpassed the national rates for other workers by a wide margin, usually more than 60%. From 1980 through 1995, construction maintained an average rate for fatal injuries of 15.2 per 100,000 workers. In addition, Root pointed out that indirect costs may exceed direct costs *"by ratios ranging from 2:1 to 17:1. Indirect costs include decreased productivity, project delays, administrative time, training replacements and adverse publicity that comes when something goes wrong"* (Root, 2005, p.58).

The Building Industry Association of Washington, based in Olympia, distributes their monthly publication *Building Insights* to inform their members of the pertinent legislative and economic developments in the region. In April 2005 Donovan Quebedeaux reported that The Department of Labor and Industries issued a rule holding general contractors responsible for all safety violations committed on their jobsite. In the past subcontractors alone would be cited for their own infractions. So homebuilders are now charged with the responsibility of policing their employees and their subs into compliance with all applicable safety regulations (Quebedeaux, 2005). Facts and figures such as these are bound to be a source of friction in the daily operations of a construction site. Intuitively, it would be worthwhile for builders and tradesmen to develop a fair, enforceable safety program.

The *Journal of Construction and Engineering* circulated the findings of Hinze and Gambatese (2003) in their exploration of the factors that motivate the safety compliance of trade contractors. Their research identified some factors that may be worth considering in addressing this hot button issue with trade contractors. Worker retention was linked with low injury rates and, perhaps predictably, injury rates increase with the rate of worker turnover. The implementation of some type of drug test was a shared practice among firms with low injury rates. Surprisingly, the use of incentives among builders did not demonstrate a link with a strong safety record. Hinze and Gambatese qualified their results as incomplete. They cautiously concluded that: *“the findings are not sufficiently compelling that they can be universally applied to all safety contractors. A research study involving a larger sample is suggested. While it is suspected that the findings will show consistency across several specialty areas, this must be determined in such a study”* (Hinze, 2003, p. 164).

Finally, the NAHB Research Center (1999) offered three suggestions showing how builders can shore up their safety performance by developing tradesman into safety partners. First, builders can contact product and tool manufacturers for training materials, then *“decide what training and capabilities a capable craftsman should have and develop a credential for craftsmen that meet those qualifications”* (Research Center, 1999, p.1). Second, trades and builders can join forces and develop a written safety plan covering their mutual standards for material usage, worker experience requirements, safety standards and inspection requirements. Finally, builders and their subcontractors can create inspection reports that document what occurred on each job as a “lessons-learned” tool going forward. Their bottom line belief is that a mutual commitment to safety can transform trade contractors from liabilities to assets creating a win-win proposition for both sides of the relationship (Research Center, 1999).

The research shows that safety is a necessary inclusion among construction project considerations. The impact of this issue on personnel and capital cannot be overstated. The very lives of the project team members hang in the balance. Workers who stay safe stay on the job. The best safety strategy is a cultural commitment to safety throughout the course of a building assignment. Safety impacts everybody. Safety is everybody's job.

Overview of Residential Construction and Scheduling

The discussion of risk above pointed out the impact of delays on a construction project. Time doesn't stop to accommodate slow laborers or supply shortages. It is what it is. As such, the arbitrary inflows and outflows of personnel, capital, equipment, materials and information underpin the fundamental importance of a healthy rapport between a builder and his trade contractors. The appropriate level of synergy is requisite for the task of properly scheduling even the most uncomplicated construction project.

In November 2003 Carl Wendell shared his perspective and offered tips on phasing and scheduling in *Reed Business Journal*. He summarized the importance of clarity and focus in scheduling as follows: "*The careful attention to definition of scope, quality, cost, and return on investment can all be for naught if a proper scheduling strategy is not developed and implemented . . . each job will require some form of careful phasing supported by a detailed schedule.*" (Wendell, 2003, p. 106). Among the insights put forth in his commentary is the admonition to carefully consider and facilitate the interpersonal make up of the team members involved in the project. He also pointed out some of the more conventional elements such as identifying milestones, developing a work breakdown structure and conducting critical path analysis. The main thrust of Wendell's article is that time is wisely applied toward creating skillfully developed schedule and that maintaining it throughout the construction project is paramount for minimizing obstacles and challenges.

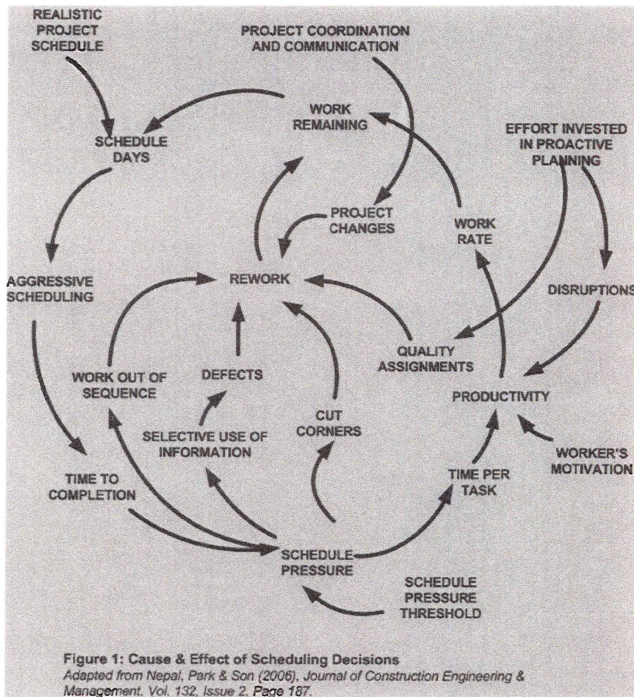
A more academic approach was proposed by Nepal, Park and Son in the *Journal of Construction Engineering and Management* (2006). They collaborated on an extensive exploration of the effects of schedule pressure on the performance of workers and managers in the residential construction industry in Singapore. Together they hand delivered questionnaires to 194 construction workers on 38 different projects. According to their findings, “*The negative effects of schedule pressure arise by working out of sequence, generating work defects, cutting corners and losing motivation to work*” (Nepal, 2006, p. 182). Their definition of “Schedule Pressure” is paraphrased as the individual or collective perception of induced demand to complete a task within a given time frame. This perception of pressure intensifies as the time required surpasses the available time to complete the task.

The greater the perception of schedule pressure in the mind of the worker, the more likely fatigue and stress will hinder productivity and morale. In addition, as pressure increases so does work performed out of sequence. Schedule pressure also boosts the “*selective use of information*” (Nepal, 2006, p.183). The authors contend that the amalgamation of working out of sequence, cutting corners, and work defects are to blame for many of the delays and quality related corrections that confound builders and tradesman alike. Ironically, the survey results also imply that a moderate level of schedule pressure actually bolsters productivity. Even so, caution must be exercised in light of the data outlined above.

Nepal, Park and Son conclude their findings with the following recommendations (Figure 1 illustrates the cause and effect relationships of their suggested scheduling methodology):

1. Set a realistic, attainable construction schedule. Unrealistic “schedule acceleration” only adds corrections and expense.

2. Motivating workers can be an effective means of reducing the perception of schedule pressure. When finalizing scheduling choices, managers should include acknowledgement of the capacity and values of individual team members.



3. Schedule Pressure can be offset through proactive preparation including inspection of material and tools, and verifying the accuracy of plans, bids, dependencies and exclusions. Prudent managers will couple this with intentional attentiveness to the progress of the project.

Finally, the lines of communication

between suppliers, trades, laborers and managers ought to remain open and accessible for the entire duration of the project. Each individual trade has a specific entry and exit point. Clarification and coordination are vital to keep the schedule progressing with minimal perception of pressure.

Overview of Residential Construction and Information Technology

The final portion of the literature review section of this document will focus on the application of Information Technology (IT) in its various forms to the construction industry. According to recent studies, this is one of the most prominent opportunities for growth in the building sector. In light of the topics already presented in the previous sections of this study, the inherent streamlining capabilities of current IT applications give good reason for a deeper look.

James Platner and Xiuwen Dong (2002) offer a detailed study of the impacts of IT in the construction industry in *The Journal of Labor Research*. In their investigation, Platner and Dong relied on corroborating data from the Current Population Survey (CPS) conducted by the Bureau of Labor and Statistics in 2000 as well as the Bureau's Economic Census.

According to the CPS figures, the composition of the construction workforce has changed dramatically over the last 20 years. In that time, the percentage of workers describing themselves as managers has almost doubled and the fraction of the work force involved in administrative and technical support has declined by 40 percent. Platner and Dong speculate that these changes in the construction workforce can be attributed to computerization, "*which increased productivity and facilitated the shifting of work to managers. IT may also have facilitated out-sourcing of some administrative duties such as payroll*" (Platner, 2002, p.576).

The construction industry has been relatively slow in adopting new technologies. Another research team agreed and offered their observation of jobsite communication: "*the full potential of electronic communications has not materialized. The scope and role of informal communication still constitutes a significant share of the communication between construction managers and their project counterparts. Formal communications may increase significantly by expanding the use of E-mails between managers (and their team)*" (Shohet, 2003, p. 577).

Platner and Dong reasoned that the transient nature of the construction workforce, when coupled with the pace of change in IT, renders the required training expenses unjustifiable. Simply put, builders have to spend enough to teach enough people how to use technology. This "skill barrier" has been a likely deterrent to aggressive investment in IT applications. Nevertheless they point out a multitude of areas where IT initiatives are becoming more and more common among builders:

Access to blueprints, CAD drawings and specifications
Work punch lists/Change Orders/Rework

- Work crew assignments
- Real time scheduling data including cross-functional schedules for coordination of work
- Safety hazards and hazardous materials information
- Access to selection of personal protective equipment (PPE) and tools
- Employee training/certification/ license information
- Materials and equipment inventory
- Inspection results
- Owner representative or architect comments on work performed by crew
- Client/owner policies or work
- Rules, information from the site owner on existing structures or processes,
- Equipment specifications and maintenance history
- Facilitating overall efficacy of information transfer through out the project team
- Payroll and invoicing

As advanced technology becomes more and more prevalent on jobsites, the “skill barrier” will present itself as one more crucial factor for construction managers to consider. The invisible hand of the free market will eventually force builders to reevaluate their approach to issues such as risk management, capital allocation and communication methodology. Platner and Dong acquiesce that a day is soon coming when IT skills will be a marketable skill set for residential tradesman and laborers. So it’s not entirely unlikely that a framer or trim installer with the ability to utilize a builder’s preferred technological tools will be able to command a higher salary than his counterparts who lack that ability.

Summary

The stated objective of this document is to identify mutual frustrations among Seattle area homebuilders regarding trade contractor relations. The current reality of the Seattle area construction industry, combined with the broader understanding of the industry wide issues (Quality, Risk, Collaboration, Safety, Scheduling and Information Technology) provide the underpinning for the next step toward achieving the objective. The literature review has demonstrated that there are a wide range of complicated circumstances and conditions that could frustrate builders and subcontractors alike. Will there be a dominant area of frustration that is unique to Seattle builders? Are local subcontractors lagging behind in their knowledge/application of IT skills? Do builders and trades

experience conflict over scheduling? What about corrections or change orders? Is the Seattle construction environment one in which builders feel over exposed to risk? How likely are trade contractors to abide by safety standards? Are there issues in the Puget Sound Region that weren't addressed in the literature review? In the pursuit of answers, what follows is a description of the survey methodology utilized for this project.

Survey Methodology

The survey for this descriptive research study was distributed by means of a written questionnaire consisting of 12 questions (Appendix B). Members of the sample were asked to select the delivery method that would be most convenient for them. The questionnaires were randomly distributed and collected depending upon the availability of the respondent between February 4th and a firm deadline of March 4th, 2006.

The target population for the survey was owners or current employees (i.e. Project Managers, Superintendents, Administrative Employees etc.) of Seattle area residential builders who deal with trade contractors as a function of the daily responsibilities of their job. A Convenience Random Sample consisting of 40 builders was selected from the following sources (NOTE: As previously stated, the scope of this research was limited by time. It is therefore possible that, by chance alone, the size and type of the sample do not represent the population):

1. The Puget Sound Business Journal Book of Lists (2006)
2. The Master Builder's Association Member Directory
3. A single web-based search using the Google search engine for "Seattle Area Home Builders"
4. The 2005 South King County Dex Telephone Directory
5. Various contacts generated through this author's vigilant networking efforts

Each respondent was initially contacted by phone. A script was used with each member of the sample to introduce him or her to the purpose of the questionnaire and to request their volunteered participation.

Respondents were given the following instructions regarding the protocol for their participation:

“Thank you for completing this questionnaire. Your responses are completely confidential. Please answer each question in numerical order. If you would like to provide more extensive input, please send an email to mbaresearch@gmail.com. Please put the words ‘Builder Input’ in the subject line. Also, please reference any question(s) to which your input may be related”.

The survey began with four objective questions (see below) designed to create a basic demographic profile of the sample members as a means of determining the collective diversity of the group.

Question 1 of 12

How long has your organization been in business?

- 0 - 5 Years
- 5 - 10 Years
- 10 - 20 Years
- More than 20 Years

Question 2 of 12

Please identify the type(s) of homes your company builds:

- Custom Homes
- Spec Homes
- Multi-Family

Question 3 of 12

Approximately how many of those homes does your company build each year?

CUSTOM HOMES:

SPEC HOMES:

MULTI-FAMILY:

Question 4 of 12

What is your role in the organization?

- Owner
- Partner
- Superintendent
- Project Manager
- Admin
- Other

This data may also be useful for future research if one were inclined to test for correlations between demographics and the survey findings.

Next, respondents answered four relatively lengthy objective questions designed to identify frustrating elements of dealing with trade contractors. The author relied heavily upon the body of literature, as well as 6 years of professional experience in real estate and residential construction, to create a list of 30 factors for respondents to rank according to their own experience.

The final two objective questions (see below) were specifically designed to identify any frustrations associated with the respondent's self-prioritized Time, Cost, and Quality constraints.

Question 9 of 12

Rank the following constraints in terms of importance to your organization on a typical project (1 = Highest Priority of These Three, 3 = Lowest Priority of These Three).

- TIME CONSTRAINTS
- COST CONSTRAINTS
- SCOPE/QUALITY CONSTRAINTS

Question 10 of 12

In your experience, how likely is it that the typical trade contractor will complete his task within the given time/cost/quality constraints?

- Very Likely
- Somewhat Likely
- Somewhat Unlikely
- Very Unlikely
- Don't Know

The survey ended with two subjective questions designed to give the respondents an opportunity to point out any specific frustrations not addressed in the previous questions. The next section of this document will analyze the data gathered from the questionnaire responses.

Demographics

From the sample of 40 residential builders described above, 35 agreed to participate in the survey. As of the March 4th deadline 27 completed questionnaires were returned. Ten were completed and returned via email while fax was used for the remaining 17. The demographic data gathered from the respondents is presented as follows:

Table 1: Length of time in business,

Table 2: Type of home(s) built

Tables 3 - 5: Number of homes built by type

Table 6: Respondent's Job Title/Role within their organization.

Table 1: DISTRIBUTION OF RESPONDENT'S LENGTH OF TIME IN BUSINESS

TIME IN BUSINESS	Responses	Percentage
	0-5 Years	6
5-10 Years	4	15%
10-20 Years	6	22%
More than 20 Years	11	41%

Table 2: DISTRIBUTION OF TYPE OF HOMES BUILT BY RESPONDENT'S ORGANIZATION

TYPE OF HOME	Responses	Percentage
	Custom Homes	17
Spec Homes	21	73%
Multi-Family Homes	6	19%

NOTE:
41% OF RESPONDENTS BUILD MORE THAN ONE TYPE OF HOME

TABLE 3: DISTRIBUTION OF RESPONDENT'S TOTAL CUSTOM HOMES BUILT PER YEAR

NUMBER OF HOMES BUILT	Responses	Percentages
	0-5	7
5-10	1	4%
10-25	3	11%
25-50	3	11%
50-100	2	7%
150-200	3	11%
200+	3	11%

TABLE 4: DISTRIBUTION OF RESPONDENT'S TOTAL SPEC HOMES BUILT PER YEAR

NUMBER OF HOMES BUILT	Responses	Percentages
	0-5	4
5-10	0	0%
10-25	5	19%
25-50	0	0%
50-100	2	7%
150-200	1	4%
200+	4	15%

TABLE 5: DISTRIBUTION OF RESPONDENT'S TOTAL MULTI-FAMILY HOMES BUILT PER YEAR

NUMBER OF HOMES BUILT	Responses	Percentages
	0-5	1
5-10	0	0%
10-25	1	4%
25-50	1	4%
50-100	0	0%
150-200	1	4%
200+	1	4%

Table 7 (bottom right) provides a summation of the dominant characteristics of the respondents based on their answers to the first 4 questions (Appendix B). Note that the distribution of the number of multi-family homes built per year was spread evenly across five of the seven categories. So the dominant response recorded in Table 7 is the greatest number of homes built rather than the highest percentage of the group. As well, Project Managers and Owners equally accounted for 30% of the respondents and were consequently combined to represent 60% of that group.

TABLE 6: DISTRIBUTION OF RESPONDENT'S JOB TITLE/ROLE WITHIN THEIR ORGANIZATION

		Responses	Percentages
JOB TITLE/ROLE	Owner	8	30%
	Partner	3	11%
	Superintendent	5	19%
	Project Manager	8	30%
	Admin	2	7%
	Other	3	3%

TABLE 7: DISTRIBUTION OF THE RESPONDENT'S MOST DOMINANT CHARACTERISTICS

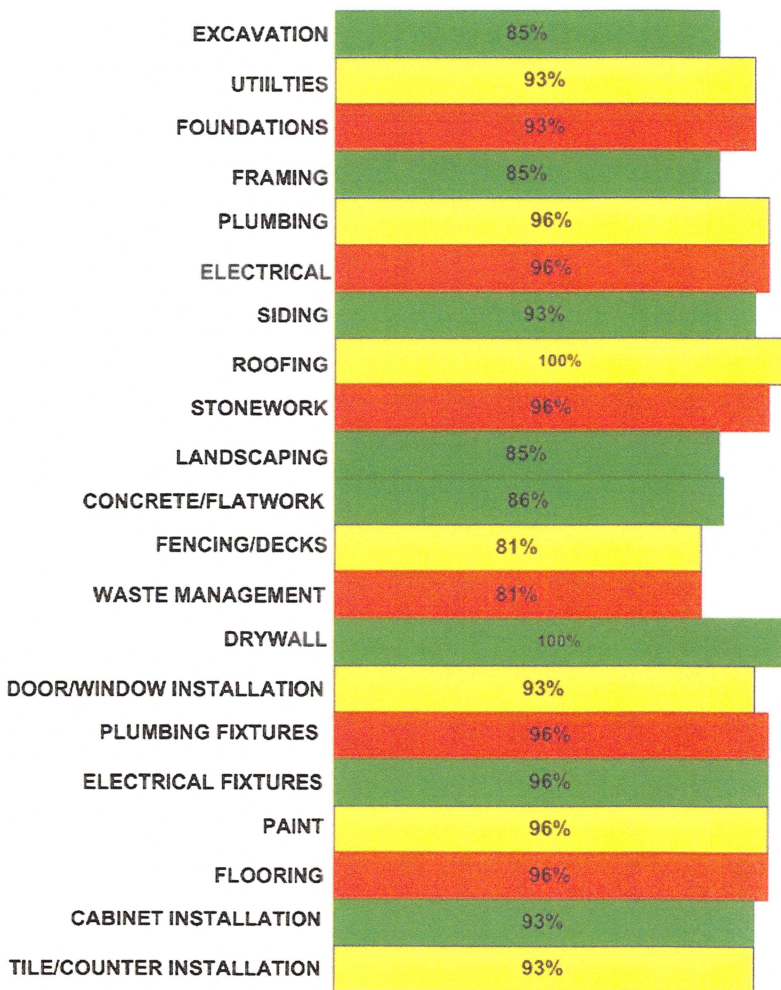
		Responses	Percentage of The Group
CHARACTERISTICS	Length of Time in Business	More than 20 Years	41%
	Type of Home Built	Spec Homes	73%
	Most Custom Homes/Year	5 or Less Per Year	26%
	Most Spec Homes/Year	Between 10 & 25/Year	19%
	Most Multi-Family Homes/Year	200 or More Per Year	4%
	Organizational Function	Owners & PMs	60%

The collective construction experience represented among the respondent's firms is significant. 63% of the organizations represented have been in business for more than 10 years. Of that group, 65% have lasted at least 20 years. Retrospectively, the survey may have offered more clarity if the respondents were given the opportunity to quantify their own personal construction experience. Of the owners who participated, 37% stated that their organization had been in business at least 10 years. So the residential construction

experience on a *personal* (as opposed to organizational) level is only apparent for about 11% of the respondents.

The combined volume of production is also a significant result to ponder. The questionnaire was designed to extrapolate the specifics of both the type and volume of homes being built. However, when all three home types are examined together, 44% of the respondents are producing no less than 150 homes per year. What's more, 81% said their yearly product line includes custom homes, which tend to be larger, more technical projects. Furthermore, half of the custom homebuilders are producing 25 units or more annually.

Table 8: Distribution of Tasks Assigned to Trade Contractors



It appears that the respondents have experienced a level of collective interaction with trade contractors that lends credibility to their input. Table 8 shows the percentages of respondents who rely on tradesman to complete broad range of specific project tasks. Recall that the literature review pointed out the disproportionate amount of the physical construction work shouldered by subcontractors. These figures appear to substantiate that notion.

Trade Contractor Relations

Next, participants were asked to qualify the level of importance of an array of factors when they consider the option to hire or rehire a trade contractor for a project task (Appendix B). For brevity and focus, the top 5 factors identified as “very important” will be discussed here. On average the participants contributed 12 votes to the “very important” category. In contrast, the average contribution to the “doesn’t matter” was only 3 factors per builder.

The top 5 most important factors were tabulated as follows:

1. **85% - Timeline Efficiency**
2. **81% - Attention to Detail**
81% - Integrity
3. **78% - Quality Work**
4. **74% - Ability to Read Plans and Blueprints**
74% - Licensed and Bonded
5. **70% - Own Tools and Equipment**

Again, parallels are evident between the survey results and the dominant themes of the literature (Quality, Risk, Scheduling, Collaboration, etc.). An interesting omission from the important factors is “knowledge and use of current technology”. Only 19% of the respondents gave it a top ranking. Finally, (this will be discussed in greater detail in the recommendations section) age, gender and “cross-functional construction experience” were each only ranked once as “very important”.

The next two questions were certainly telling with regard to the goal of the survey.

Respondents were presented with the same list of considerations and asked first to identify the areas in which *trade contractor’s shortcomings* are most frustrating for them and their

organization. Then respondents were asked to rate their level of satisfaction with the typical trade contractor's performance in each area. Table 9 below depicts the apparent consensus regarding builder's frustrations. Again the prevailing themes of quality and time are on the forefront of the minds of those who deal with trade contractors. There are a few noteworthy discrepancies between the inputs for the previous question and the responses to this one. For example, 81% of respondents identified attention to detail as very important. But only 44% considered it one of the most frustrating shortcomings to deal with. Also, 44% pointed to the importance of tradesman owning their own tools. Only 4% said that it was a

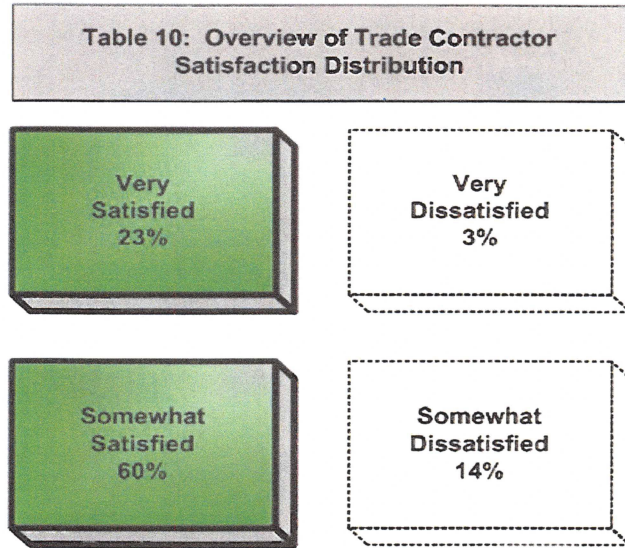
Table 9: Top 5 Most Frustrating Factors

	Responses	Percentage of Group
Quality of Work	18	67%
Timeline Efficiency	17	63%
Punctuality	14	52%
Communication Skills	13	48%
Attention to Detail	12	44%
Cleanliness of Work Area	12	44%

frustrating shortcoming. Lastly, the factors that were not selected as frustrating by any of the respondents are just as telling as those in Table 9. Participants collectively placed Environmental Conservation, Age, Gender and Memberships and Certifications at the bottom of the list with zero votes. Cross-Functional Construction Experience, Knowledge and Use of Technology and Length of Time in Business were only selected once each. It's peculiar to see that Seattle-based respondents unanimously placed shortcomings in Environmental Conservation on equal plane with the politically sensitive considerations of age and gender. This is especially perplexing in light of the fact that 26% of the respondents (names not to be disclosed) are listed as Built Green Members (<http://www.builtgreen.net>). Table 10 depicts a matrix of the survey results pertaining to the participant's level of satisfaction with their typical trade contractors. Overall the participants indicated a dominant level of satisfaction with their tradesman. 83% of the responses to the 30 factors

indicated satisfaction while only 17% indicated dissatisfaction. The factors that indicated the greatest level of builder *satisfaction* were:

Own tools and equipment (95%), Bid Amounts (76%) and Professional Integrity (70%). Respondents indicated the highest level of *dissatisfaction* with the cleanliness of work area (37%), Attention to Detail (34%) and Knowledge and Application of Safety Rules and Regulations (33%).



In light of previous responses pointing specifically to common frustrations with timeline issues, responses to this question indicated an interesting level of satisfaction with their typical trade contractor’s timeline efficiency (66% Satisfied/14% Dissatisfied). None of the respondents indicated that they were “very dissatisfied” in this regard, only “somewhat dissatisfied”.

Perhaps other factors have compensated for timeline deficiencies. Another explanation could be that builders are satisfied with the trades they are currently using, but only as long as time constraints are being met. Finally, the relatively low number of responses indicating dissatisfaction could possibly indicate that the trade contractors who avoid the most common shortcomings are able to keep builders “satisfied” thereby maintaining and prolonging a working relationship.

The final two objective questions in the survey relate to the respondents perception of their unique time, cost and quality constraints and the likelihood of trade contractors to work within that framework. Table 11 shows the statistical consensus among the respondents as

Table 11: Distribution of Constraints Ranked Top Priority

TIME	COST	QUALITY/SCOPE
33%	16%	51%

to the relative priority of the three project constraints.

Clearly, quality is most commonly viewed as the top

priority among the three. Generally speaking, it appears that builders are more willing to concede on a project's time and cost objectives than on quality. Time was most often ranked 2nd among the constraints (40%) and Cost constraints were most often ranked as the third priority with a collective (35%).

Next the participants were asked how likely it is for a typical trade contractor to complete his task within the given time/cost/quality constraints. Overwhelmingly the builders responded with either "somewhat likely" (63%) or "very likely" (14%). Only 11% indicated that it was "very unlikely". So in spite of all the stated reservations with quality, scheduling and attention to detail, the survey suggests that builders maintain a stable level of confidence that trades will successfully work with given constraints.

Finally, the respondents were posed with the following subjective, open-ended questions:

1. "What would you say is your area of greatest frustration in dealing with trade contractors?"
2. "Do you have any other input that may be relevant to the objective of this questionnaire?"
3. Of the 27 respondents who participated in the survey, 21 provided comments for the first question (78%) and five (5%) contributed to the second. The overwhelming majority of the responses to both questions were directly related to issues involving time, scheduling, and quality. For example, one participant expressed the following frustrations:

“Nearly all trade contractors believe they can make their own schedule, show up when they like, and complete the job on their own timeline. Maybe 10% of the trade contractors I have dealt with treat the project like a job, showing up on time, fulfilling the commitments, sticking to the budget”

Over and over again, when given the opportunity to openly articulate their “greatest frustration”, that outlook was echoed. Other examples included the following:

- *“Paperwork and scheduling”*
- *“Their lack of knowledge of other trades and their lack of attention to the details of their work”*
- *“Quality control within scheduled completion date”*
- *“Follow through, quality, and scheduling”*
- *“They start a job, do 90% of the work and you have to beg them to leave their next job to come complete the work”*
- *“Punctuality”*
- *“Keeping on schedule and messy worksites”*
- *“Few trades follow through on completing the job as stated in the timeframe stated”*
- *“Managing our timelines in a tight labor market with sub-standard results”*
- *“Trades usually expect top dollar but they lack experience and often take longer than expected. Then they argue with you when you ask them to come back to fix their mistakes”*
- *“Communication, quality of work and attention to detail”*
- *“Meeting schedule times”*
- *Scheduling and completion of work. Scope of the job tends to change as the project progresses”*
- *“The greatest frustration I have come across is the ability of the sub-contractor to accurately schedule the job. Before the job starts the sub should accurately schedule the job and allow enough manpower to get it done within the given timeline. If one sub is a week behind, it screws up the whole schedule.”*

These answers seem to suggest incongruity with the respondent’s collective level of dissatisfaction discussed previously. Only 14% of the participants indicated that they were dissatisfied with the timeline efficiency of the typical trade contractor. However, among the 78% of the respondents who took advantage of the opportunity to speak freely, timeline

issues were a rampantly redundant flaw among trade contractors. This may be an area where further research is necessary. More ideas like this will be discussed in the next section.

What follows is a summary of the questionnaire results and the comments above. Then recommendations will be offered regarding possible areas to continue this research as well as two strategic ways to capitalize on the results.

Summary & Recommendations

Summary

As presented previously, the survey results determined a set of common frustrations among a seasoned, experienced sample of Seattle area residential builders. Table 9 is

Table 9: Top 5 Most Frustrating Factors presented once again to remind the reader of the

	Responses	Percentage of Group
Quality of Work	18	67%
Timeline Efficiency	17	63%
Punctuality	14	52%
Communication Skills	13	48%
Attention to Detail	12	44%
Cleanliness of Work Area	12	44%

findings of this portion of the survey. These results are further supported by other survey results. Three out of the five factors in Table 9 were also among the top five factors identified by the respondents as “very important” when selecting a trade contractor (Timeline Efficiency, Attention to Detail, Quality of Work). As well, two of the most dissatisfying characteristics of working with tradesman were their lack of attention to detail and a lack of jobsite cleanliness.

The most convincing support for the top five in Table 9, within the survey itself, was the collective voice of the respondents as presented in the subjective portion of the questionnaire. Over and over the participants who decided to respond to the open-ended questions reinforced the most common frustrations.

Furthermore, the literature review presented several corroborating concepts for these five factors. For example, the 1998 roundtable involving homebuilders, NAHB, PATH and HUD resulted in an outcry for practical and effective ways to improve trade contractor quality (HUD, 2001). Safety statistics from the website for the Department of Labor and Industries were shown to demonstrate that Washington’s construction industry is among the top of the list in terms of injuries and illness that cause workers to take time off the job to recover (www.lni.wa.gov/safety/research). Construction site cleanliness can conceivably

contribute to trips and falls if neglected. So safety is a valid consideration along these lines as well.

Communication and timeline efficiency have weighty implications among the issues covered in the Collaboration and Scheduling sections. The idea of collaboration is analogous to teamwork, cooperation and partnership. None of those can be reached without the presence of a shared commitment to communication. Without communication, attention to detail and timeline efficiency delays would be the norm rather than the exception. Project teams would operate in independent isolation rather than as a cohesive unit. Nepal, Park and Son (2006) further articulated the reality that alliances among trades and builders and a successful scheduling strategy are conceptually interdependent. They are only attainable to the degree that the stakeholders carefully consider the details of the various types of relationships involved and communicate with one another along the way.

Although the survey results clearly indicate the existence of common frustrations among the Seattle-native respondents, the questionnaire is recognized to have some deficiencies in and of itself. In retrospect the questions could have been crafted more strategically. Recall that the scope of this study was primarily limited by time and resources. In that context, an attempt was made to design a questionnaire that can help check for its own veracity with questions targeted at inter-corroborating concepts. In addition, the goal was to limit the number of questions so that participants would be less likely to hurry through the questionnaire or return it incomplete. However, some confusion may have resulted in the minds of respondents as evidenced by some of the incongruous data already discussed above. Particularly, it may have been more worthwhile to remove the questions regarding “level of satisfaction” and focus more specifically on the areas of potential frustration. The body of literature alone could have led one to deduce the same group of frustrations

identified by this survey. It is conceivable that more unique frustrations exist that have not surfaced in this investigation. Nevertheless, the survey findings and the literature review have been integrated to support the recommendations that are presented in the next section.

Recommendations

The objectives of research endeavors like this are targeted at eliminating uncertainty, identifying bottlenecks, providing more accurate information for decision makers, and improving the likelihood of desired outcomes. It has been said that the people who succeed in business are those who identify a problem and provide the solution. In the residential construction industry problems abound. This research points specifically to the problems among subcontractors. Inherent in these problems and shortcomings is a wealth of opportunity for the attentive tradesman. To that end, the stated objective of this study was to identify and exploit common frustrations among Seattle area residential builders regarding trade contractor relations. As outlined above, the five areas of common frustration were quality, timeline efficiency, punctuality, communication skills, attention to detail and jobsite cleanliness. So what is one to do with this information? The three recommendations below hold the answers. Each of them is directed at trade contractors as the party that can benefit most from this research.

Recommendation #1: The Power to Become Trade of Choice

The first recommendation is that trade contractors should strategically exploit the five common areas of frustration in their marketing efforts. While builders devote resources to the search for buyers and landowners who want their product, trade contractors are looking for a builder who needs their product. While a builder's product is made up of foundations, framing, millwork, countertops and upgrades, the tradesman's product is comprised of their attention to detail, quality craftsmanship, safety consciousness,

punctuality, availability, and timeline efficiency will fundamentally define his brand. As a result, their competitive advantage can be further galvanized by using research such as this because it is not an easily reproducible endeavor.

It is argued here that identifying these 5 common frustrations empowers the savvy tradesman to differentiate himself from his competition by specifically targeting the implicit needs that those frustrations represent. In doing so he is appealing directly to his customer's self-interest. As Stan Barron (2004) puts it, *"don't tell the customer about you, tell them how they will benefit if they deal with you. Isn't the sole reason for advertising to make you stand out from the competition? You win customers by telling them what makes you different, not the same"*(Barron, 2004, p. 50). The goal is to be perceived as the only trade contractor who meets the customer's functional, financial, emotional and aesthetic needs.

Joseph Schmitt (2000) echoed this notion in Contractor Magazine with the contention that customers understand fancy cars, fillet mignon and flying first class. *"Your goal"* he said, *"is to be placed in the same class, to be considered distinctive from and preferred over your competition, especially among your target customers"* (Schmitt, 2000, p. 16). To that end, understanding the five frustrations empowers trade contractors in the effort to eliminate those frustrations by creating the exact opposite experience when a builder decides to work with them. Trades can clearly define what's important to their target customer. They can gain insight into the builder's preferences and see their perspective of the home building process. Ultimately the trade contractor can successfully brand himself as the Trade of Choice.

Recommendation #2: Creation of the Cooperation Corporation

The literature review section above outlined various manifestations of partnering between builders and their trades, architects, engineers and owners during a construction project. The recommendation of this author is that the collaboration model should be

leveraged by a group of trade contractors – from different construction disciplines – joining forces and resources to form an independent business entity (the cooperation corporation!). By comparison, this entity would be more diverse than the 50/50 partnership between Pulte Homes and Pratte Development and less virtual (more real) than the “Agile Web” collaboration described in the literature review. While the traditional model is characterized by temporary collaborative groupings being selected and directed by a builder, this more innovative firm would permanently join forces and target builders on the basis of their collective ability to out-perform the conventional project team. Along these lines, it is henceforth argued that this type of arrangement can target the five frustrations through the Trade of Choice concept (above), while maximizing the benefits and minimizing the drawbacks of the customary partnering model.

The disadvantages of partnering among builders and trade contractors are clear. As Tenah points out, in most cases partnering agreements are not legally binding which can lead to a diminished sense of accountability among the parties (Tenah, 2001). In addition, Chan, Chan and Ho (2003) point out several potential difficulties that may arise. Participants often find it challenging to abandon their competitive relationships with other trades during the course of a project. Uneven distribution of the risk associated with a project can foster an environment of self-preservation and distrust. As a result team members may not exhibit equal levels of commitment to the success of the project. Other partnering difficulties include cultural and language barriers and varying degrees of training, profit sharing and technological sophistication.

The benefits of traditional partnering are also unambiguous. As discussed in the literature review, trades and builders who posture themselves along these lines have demonstrated the potential to work much more efficiently. Partnering fosters such benefits as increased

communication, diminished delays, knowledge-sharing and cost savings. In addition to sharing these benefits, the independent company proposed in this section has the potential to overcome many, if not all, of the difficulties of the traditional partnering model. For example, the company may be comprised of a residential framer, an electrician and a plumber. As owners of the company they would willingly share access to their resources (personnel, capital, equipment, IT, data, etc.) and strive to complement the logistical needs of their team members. They would also share equal risk and equal access to profit; not to mention the shared organizational underpinnings of vision, objectives, culture, and so on. Mutual commitment to the long-term success of the company might overcome the typical adversarial relationships that usually influence partnering endeavors among competing firms. In the absence of competition between team members, the company's capacity for synergistic teamwork has the potential to expand with each completed project. Information such as "lessons learned" could be shared. Best practices, once identified and openly communicated, could then be systemically integrated into the operations of the team. Rather than focusing on their individual area of knowledge, and the narrow scope of an individual project, the firm could transfer their collective education from job to job. This creates an obvious value proposition for the residential builder. The opportunity to hire a unified, experienced, cross-functional team of trades would most likely be worth considering. The competition offers a collection of fragmented, self-promoting, risk-weary team members. The Cooperation Corporation offers solutions to quality, timeline, cleanliness and communication by virtue of the fact that they truly operate as one. It is conceivable that the Cooperation Corporation could grow into a widely recognized Trade of Choice.

Recommendation #3: Show Up

“Punctuality and follow-through are as crucial to your business as cash flow. And happy (builders) will keep you in mind the next time they need something done” (Sweet, 2005, p.6). The bottom line in the issue of addressing builder’s frustrations is Integrity. One could fully embrace the marketing ideas and chase after the potential opportunities for innovation in their industry. But it would all be fruitless if not fortified by the faithfulness and veracity of the parties involved. The five frustrations are essentially born out of a vacuity of integrity. If the target is quality, punctuality and efficiency, then integrity provides the velocity and the trajectory. Recall that 81% of the survey participants emphasized the importance of integrity when hiring or rehiring a trade contractor. So in essence the market value of a tradesman is either bound or burgeoned by his word. All three recommendations can therefore be pithily recapitulated as follows:

Show up on time. Perform as agreed. Follow through. Communicate.

Suggestions for Further Research

Four ideas for further research came to mind as this study progressed. First of all, the apparent lack of concern among the survey respondents for environmental consciousness was especially puzzling when coupled with the stated mission of the Built Green program and the presence of several certified Built Green members among the survey participants. There may be value seeking out more precise information. For example, Builder News reported in September 2005 that Centex homes donated \$1Million to environmental organizations. What implications does this have for the trade contractors who work with Centex? If Centex uses environmentally friendly materials, could a trade contractor target Centex on the basis of material knowledge and conservation?

Second, some of the literature pointed to the emerging opportunities for IT growth in the home building industry, yet only one respondent expressed frustration with tradesman technological incompetence. If Seattle's builders are actively investing in new IT initiatives, it seems intuitive that IT related ineptitude would have played a more prominent role in the survey responses. An investigation into the current state of Information Technology in the home construction industry might be an interesting way to determine the necessity of computer related skill sets among trade contractors. As well, there may be niche opportunities for trade contractors with technological skill sets. Where are the opportunities to eliminate paper and redundancy? Where can communication and information flow be streamlined by tech tools?

Another interesting continuation of this research would be a probe into any correlations that may exist between different demographic factors and identified frustrations. Do larger builders tend to attract quality talent? Do smaller builders experience the same difficulties in partnering with trades? Do trades appear to prefer to working on custom homes or spec homes?

Finally, a deeper look into the market relevance of the Cooperation Corporation would be interesting. What are the legal implications? Would builders be interested in the product? What kind of capitalization is required to start such a firm? How much cash flow would be required to support it? What kind of margins could the owners expect? How should it be advertised? What is the most efficient size of such a company? The answers to these questions (among others) would be required before the idea could be fully realized.

Conclusion

This document has identified some of the most common areas of frustration among Seattle area residential builders regarding trade contractor relations. The current body of literature regarding the local, national and international residential construction industry was reviewed. The literature was used to support the existence of the stated research problem and serve as the foundation for presenting the findings of the research survey. A survey was distributed to a sample of Seattle area builders in order to identify common frustrations regarding their collective experience with trade contractors. Once identified, the common frustrations were then combined with the literature review to formulate three suggestions as to how tradesman might be able to strategically exploit them. Obviously, the scope of this research was limited so the results presented herein are not proposed as a definitive picture of the Seattle area construction industry. Nevertheless, perhaps a day will come when this information can be used as a basis for further research or actually utilized by a Seattle area trade contractor.

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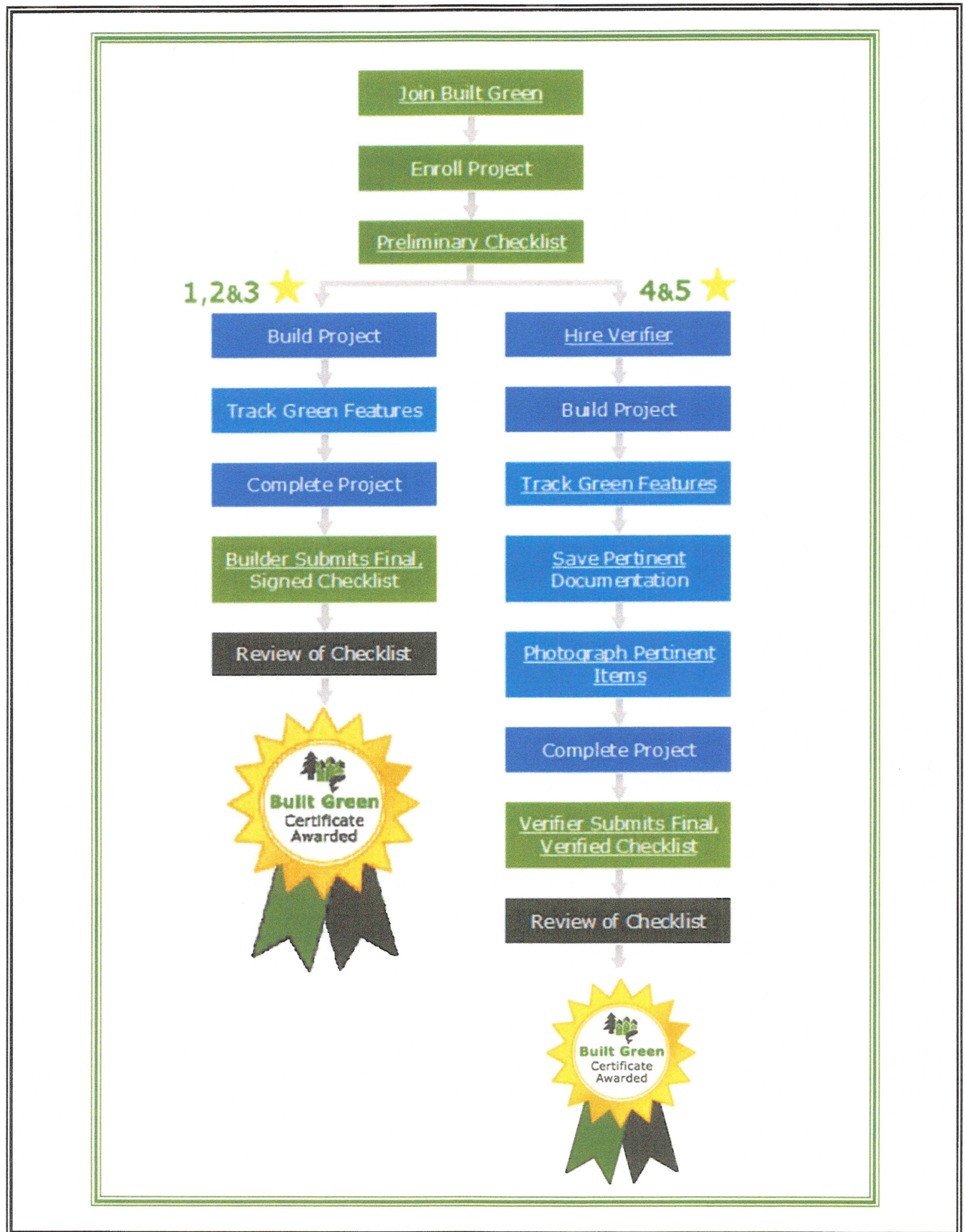
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Appendices

Appendix A: Built Green Qualification Process



*Adapted from www.builtgreen.net (2006).

MBA RESEARCH SURVEY

Thank you for completing this questionnaire. Your responses are completely confidential.

Please answer each question in numerical order. If you would like to provide more extensive input, please send an email to mbareasearch@gmail.com. Please put the words "Builder Input" in the subject line. Also, please reference any question(s) to which your input may be related.

Question 1 of 12

How long has your organization been in business?

- 0 - 5 Years
- 5 - 10 Years
- 10 - 20 Years
- More than 20 Years

Question 2 of 12

Please identify the type(s) of homes your company builds

- Custom Homes
- Spec Homes
- Multi-Family

Question 3 of 12

Approximately how many of those homes does your company build each year?

CUSTOM HOMES:

SPEC HOMES:

MULTI-FAMILY:

Question 4 of 12

What is your role in the organization?

- Owner
- Partner
- Superintendent
- Project Manager
- Admin
- Other

Appendix B: Builder Survey Form

Question 5 of 12

Please identify the trade contractors for which you typically rely on resources outside your organization

- | | | |
|---|--|---|
| <input type="checkbox"/> Excavation | <input type="checkbox"/> Concrete/Sidewalks | <input type="checkbox"/> Trim/Millwork |
| <input type="checkbox"/> Utilities | <input type="checkbox"/> Fencing/Decks | <input type="checkbox"/> Tile/Countertops |
| <input type="checkbox"/> Foundation | <input type="checkbox"/> Waste Management | <input type="checkbox"/> Other |
| <input type="checkbox"/> Framing | <input type="checkbox"/> Drywall | |
| <input type="checkbox"/> Plumbing | <input type="checkbox"/> Doors/Windows Install | |
| <input type="checkbox"/> Electrical | <input type="checkbox"/> Plumbing Fixtures | |
| <input type="checkbox"/> Siding/Stucco | <input type="checkbox"/> Electrical Fixtures | |
| <input type="checkbox"/> Roofing | <input type="checkbox"/> Paint | |
| <input type="checkbox"/> Stonework/Facade | <input type="checkbox"/> Flooring | |
| <input type="checkbox"/> Landscaping | <input type="checkbox"/> Cabinetry | |

Question 6 of 12

Please rank each the following factors according to their significance to your organization when hiring/re-hiring trade contractors to use on your projects (1=Very Important, 2=Somewhat Important, 3=Neutral, 4=Doesn't Matter, 5=Does Not Apply)

- | | |
|---|--|
| <input type="text"/> <input type="button" value="v"/> Own Tools/Equipment | <input type="text"/> <input type="button" value="v"/> Bid Amount |
| <input type="text"/> <input type="button" value="v"/> Convenient Availability | <input type="text"/> <input type="button" value="v"/> Age |
| <input type="text"/> <input type="button" value="v"/> Length of Time in Business | <input type="text"/> <input type="button" value="v"/> Licensed & Bonded |
| <input type="text"/> <input type="button" value="v"/> Timeline Efficiency | <input type="text"/> <input type="button" value="v"/> Contract Details |
| <input type="text"/> <input type="button" value="v"/> Reputation for Quality Work | <input type="text"/> <input type="button" value="v"/> Integrity |
| <input type="text"/> <input type="button" value="v"/> Punctuality/Preparedness | <input type="text"/> <input type="button" value="v"/> Shared/Common Values |
| <input type="text"/> <input type="button" value="v"/> Communication Ability | <input type="text"/> <input type="button" value="v"/> Attitude |
| <input type="text"/> <input type="button" value="v"/> Language Barriers | <input type="text"/> <input type="button" value="v"/> Knowledge of Industry Trends |
| <input type="text"/> <input type="button" value="v"/> Billing Procedure | <input type="text"/> <input type="button" value="v"/> Business Savvy |
| <input type="text"/> <input type="button" value="v"/> Materials Conservation | <input type="text"/> <input type="button" value="v"/> Operational Processes/Systems |
| <input type="text"/> <input type="button" value="v"/> Environmental Consciousness | <input type="text"/> <input type="button" value="v"/> Ability to Read Plans/Blueprints |
| <input type="text"/> <input type="button" value="v"/> Cross-Functional Construction Experience | <input type="text"/> <input type="button" value="v"/> Attention to Detail |
| <input type="text"/> <input type="button" value="v"/> Knowledge/Use of Technology | <input type="text"/> <input type="button" value="v"/> Change Order Procedure |
| <input type="text"/> <input type="button" value="v"/> Knowledge & Application of Safety Standards | <input type="text"/> <input type="button" value="v"/> Cleanliness of Work Area |
| <input type="text"/> <input type="button" value="v"/> Memberships & Certifications | <input type="text"/> <input type="button" value="v"/> Gender |

Appendix B: Builder Survey Form

Question 7 of 12

In which of the following areas are trade contractor's shortcomings most frustrating for you and your organization (Check all that apply)?

- | | |
|--|---|
| <input type="checkbox"/> Own Tools/Equipment | <input type="checkbox"/> Professional Appearance |
| <input type="checkbox"/> Convenient Availability | <input type="checkbox"/> Bid Amount |
| <input type="checkbox"/> Length of Time in Business | <input type="checkbox"/> Age |
| <input type="checkbox"/> Timeline Efficiency | <input type="checkbox"/> Word of Mouth |
| <input type="checkbox"/> Quality of Work | <input type="checkbox"/> Past Performance |
| <input type="checkbox"/> Punctuality | <input type="checkbox"/> Licensed & Bonded |
| <input type="checkbox"/> Communication | <input type="checkbox"/> Contract Details |
| <input type="checkbox"/> Speak English | <input type="checkbox"/> Integrity |
| <input type="checkbox"/> Billing Procedure | <input type="checkbox"/> Shared/Common Values |
| <input type="checkbox"/> Materials Conservation | <input type="checkbox"/> Attitude |
| <input type="checkbox"/> Environmental Consciousness | <input type="checkbox"/> Professional References |
| <input type="checkbox"/> Cross-Functional Experience | <input type="checkbox"/> Preparedness |
| <input type="checkbox"/> Knowledge/Use of Technology | <input type="checkbox"/> Level of Effort to Get the Job |
| <input type="checkbox"/> Organizational Skills | <input type="checkbox"/> Knowledge of Industry Trends |
| <input type="checkbox"/> Bid Accuracy | <input type="checkbox"/> Business Savvy |
| <input type="checkbox"/> Knowledge of Safety Standards | <input type="checkbox"/> Operational Processes/Systems |
| <input type="checkbox"/> Memberships & Certifications | <input type="checkbox"/> Ability to Read Plans/Blueprints |
| <input type="checkbox"/> Gender | <input type="checkbox"/> Attention to Detail |
| <input type="checkbox"/> Cleanliness of Work Area | <input type="checkbox"/> Union/Non - Union |
| <input type="checkbox"/> "First Impression" | <input type="checkbox"/> Change Order Procedure |

Scale for Question 8:	1	Very Satisfied
	2	Somewhat Satisfied
	3	Neutral
	4	Somewhat Dissatisfied
	5	Very Dissatisfied

Question 8

From the list below please rate your level of satisfaction with the typical trade contractor based upon your experience. Please write the number in the box to the left of each factor.

- | | |
|---|--|
| <input type="text"/> <input type="button" value="v"/> Own Tools/Equipment | <input type="text"/> <input type="button" value="v"/> Bid Amount |
| <input type="text"/> <input type="button" value="v"/> Convenient Availability | <input type="text"/> <input type="button" value="v"/> Age |
| <input type="text"/> <input type="button" value="v"/> Length of Time in Business | <input type="text"/> <input type="button" value="v"/> Licensed & Bonded |
| <input type="text"/> <input type="button" value="v"/> Timeline Efficiency | <input type="text"/> <input type="button" value="v"/> Contract Details |
| <input type="text"/> <input type="button" value="v"/> Reputation for Quality Work | <input type="text"/> <input type="button" value="v"/> Integrity |
| <input type="text"/> <input type="button" value="v"/> Punctuality/Preparedness | <input type="text"/> <input type="button" value="v"/> Shared/Common Values |
| <input type="text"/> <input type="button" value="v"/> Communication | <input type="text"/> <input type="button" value="v"/> Attitude |
| <input type="text"/> <input type="button" value="v"/> Language Barriers | <input type="text"/> <input type="button" value="v"/> Knowledge of Industry Trends |
| <input type="text"/> <input type="button" value="v"/> Billing Procedure | <input type="text"/> <input type="button" value="v"/> Business Savvy |
| <input type="text"/> <input type="button" value="v"/> Materials Conservation | <input type="text"/> <input type="button" value="v"/> Operational Processes/Systems |
| <input type="text"/> <input type="button" value="v"/> Environmental Consciousness | <input type="text"/> <input type="button" value="v"/> Ability to Read Plans/Blueprints |
| <input type="text"/> <input type="button" value="v"/> Cross-Functional Construction Experience | <input type="text"/> <input type="button" value="v"/> Attention to Detail |
| <input type="text"/> <input type="button" value="v"/> Knowledge/Use of Technology | <input type="text"/> <input type="button" value="v"/> Change Order Procedure |
| <input type="text"/> <input type="button" value="v"/> Knowledge & Application of Safety Standards | <input type="text"/> <input type="button" value="v"/> Cleanliness of Work Area |
| <input type="text"/> <input type="button" value="v"/> Memberships & Certifications | <input type="text"/> <input type="button" value="v"/> Gender |

Appendix B: Builder Survey Form

Question 9 of 12

Rank the following constraints in terms of importance to your organization on a typical project (1 = Highest Priority of These Three, 3 = Lowest Priority of These Three)

- TIME CONSTRAINTS
- COST CONSTRAINTS
- SCOPE/QUALITY CONSTRAINTS

Question 10 of 12

In your experience, how likely is it that the typical trade contractor will complete his task within the given time/cost/quality constraints?

- Very Likely
- Somewhat Likely
- Somewhat Unlikely
- Very Unlikely
- Don't Know

Question 11 of 12

What would you say is your area of greatest frustration in dealing with trade contractors (click on the top line in the box below and type your reply)?

Question 12 of 12

Do you have any other comments or suggestions that may be relevant to the objective of this questionnaire (click on the top line in the box below and type your reply)?
