Quantifying Safety in Off-site Construction

By

Nicole Tamara Odo

BScE, University of New Brunswick, 2017

A Thesis Submitted in Partial Fulfillment
of the Requirements for the Degree of

Master of Science in Engineering

in the Graduate Academic Unit of Civil Engineering

Supervisor: Jeff H. Rankin, PhD, P.Eng, Department of Civil Engineering

Examining Board: Zhen Lei, PhD, PEng, Civil Engineering
Lloyd Waugh, PhD, PEng, Civil Engineering
Guida Benrich, PhD, PEng, Chemical Engineering

This thesis is accepted by the
Dean of Graduate Studies

THE UNIVERSITY OF NEW BRUNSWICK

June 2022

ABSTRACT

The concept of leveraging off-site construction as a safer alternative has been presented by researchers and industry, but support of this with quantifiable data is lacking. To investigate differences in off-site construction versus conventional on-site methods, the research has developed a safety evaluation methodology to quantify safety risks and allow for comparisons. The methodology leverages historical safety data from the Province of New Brunswick to provide inputs for a risk-based process analysis. The methodology is partially validated in its' application to two case studies: a mid-rise modular hotel construction project that employed both conventional and off-site construction methods, and a pre-fabricated panel installation. The evaluation takes a construction product-focused approach with emphasis on defining a complete material supply chain. The case studies demonstrated the generalizability and feasibility of the evaluation method, and also found off-site construction to be safer in the specified context of the mixed method hotel construction.

ACKNOWLEDGEMENTS

I would like to acknowledge the following for their support and contributions to this research:

- Dr. Jeff Rankin for his continuous guidance and support throughout my research. Jeff was always available to answer questions, problem solve, and give valuable insight and advice when needed. Having his support made my graduate studies experience a positive one.
- WorkSafe New Brunswick, specifically Angela Francoeur, Phil Traverse, Chris Campbell, Dr. Ankona Banerjee and Tim Petersen, for supplying historical provincial data and supporting the research with their insight and expertise.
- Several organizations including: Iron Maple Constructors, Amsterdam Inn & Suites, Alantra Leasing Ltd., Nomidic and Nexii Building Solutions for allowing me to leverage their construction project initiatives as case studies in the development of the safety evaluation methodology.
- Alyssa van de Riet for not only providing off-site manufacturing related data and insight for the case study from her extensive research with Alantra Leasing Ltd., but also being there to discuss all things research (and life) any day of the week.
- My mentor, Shawn MacDonald, for answering all of my calls with construction related questions to this day (and probably for the rest of his life).
- My partner, Cass, for his unwavering support throughout my graduate studies.
- Friends and family for your encouragement and check ins!

Table of Contents

List of Tables

List of Figures

List of Abbreviations

CCOHS	Canadian Centre for Occupational Health and Safety
GDP	Gross domestic product
LT	Lost time incident
NAICS	North American Industry Classification System
NBCSA	New Brunswick Construction Safety Association
n.e.c.	Not otherwise classified (WorkSafeNB data)
NLT	No lost time incident
OSB	Oriented strand board
OSC	Off-site construction
RFID	Radio-frequency identification
Uns.	Unspecified (WorkSafeNB data)

1.0 Introduction

The construction industry is one of the most dangerous to work in (Ahn et al., 2020, Fard et al., 2017). Around the world, countries are reporting high frequencies of safety incidents each year, and the Province of New Brunswick, population estimate of 776,000, is no exception. Over the past 10 years, the New Brunswick construction industry has accounted for a total of 7,194 incidents and 18 fatalities, putting the industry at an average of 719 incidents and 2 fatalities per year. These numbers highlight the need for improvement when it comes to creating safe working environments for individuals in this industrial sector.

Conventional on-site construction can typically be described by trades completing their work on location at the project site. However, an innovative approach classified "off-site construction" has been gaining interest from the industry because of the potential opportunities it offers. Off-site construction refers to the process of completing construction activities in an off-site facility, transporting completed components, and then assembling the components on a project site (Goodier et al., 2019). While off-site construction methods still require a significant shift in the construction industry, the approach has many observed benefits during the execution of construction tasks such as increased productivity, quality, time, sustainability, cost and claims of it being a safer alternative to conventional construction.

By transitioning construction activities to a controlled environment with reduced variability in working conditions, it may seem obvious that off-site construction could provide safer work environments and would result in fewer safety incidents. While this is something known intuitively, the topic of safety within off-site construction and the opportunities it can provide with respect to safety performance in the execution of construction activities is lacking research and quantifiable data to support these claims. The ability to assess, quantify and effectively evaluate the benefits gained from choosing off-site construction methods in a project is an important component of making informed decisions. Not only does enabling the ability to evaluate safety risks in a comprehensive way support stakeholders and decision makers in the industry, it also offers the possibility of a reduction in incidents in the execution of construction projects.

Risk can be quantified by the product of the likelihood, severity and duration of risk exposure. However, safety risk management evaluations are oftentimes subjective in nature, relying on intuition and judgement from the evaluator to complete the assessment. The lack of objective quantifiable safety evaluation methods to predict safety performance leads to potentially biased or inconsistent risk evaluations. Additionally, a means to compare the safety risks of differing defined processes to develop a desired end-product creates a large gap when attempting to understand the benefits that can be realized by adopting off-site construction methods.

The research proposes a safety evaluation methodology that will allow for comparisons of on-site versus off-site construction methods from an activity-based level through the evaluation of potential sources of injury in the process. The methodology is used to evaluate a case study project that employed a mix of conventional and off-site construction processes in its' execution, demonstrating the effectiveness of the methodology while establishing a framework for future comparisons in academia and industry. This will allow for improved safety evaluations and a more thorough understanding of how modifications to a construction process to employ off-site construction work can impact the expected overall safety performance.

1.1 Statement of Motivating Problem

The first motivating problem that has prompted this research is that despite the efforts within the New Brunswick construction industry to execute construction activities safely, workplace incidents continue to occur with the traditional approach to construction. This problem is highlighted in the aforementioned statistics observed by the industry, which averages 719 incidents per year and 2 fatalities. Contrastingly, the manufacturing industry experiences a higher average of incidents per year at 1784, but the average fatalities per year is less than 1, as the total number of fatalities over the last 10 years is fewer.

The Canadian Centre for Occupational Health and Safety (CCOHS) (2019) define a safety *incident* in the workplace as "an occurrence, condition, or situation that arose during the execution of the work that resulted in, or could have resulted in injuries, illness, damage to health, or a fatality." With respect to WorkSafe New Brunswick's use of the term *incident*, it is used in the same context as defined by the CCOHS, and the data they collect reflects no-lost-time incidents and lost-time incidents, as well as fatalities. A no-lost-time incident refers to no time being lost from work other than on the day of the accident that was sustained at work, but health care was required. Contrastingly, a lost-time incident refers to the opposite, where the event resulted in either a disability or an employee missing work for a period of time due to an injury that was sustained while at work.

Based on the overview presented Figure 1 of New Brunswick construction safety incident trends, while incident rates are trending downwards in a positive direction, it can be concluded that poor safety performance is still an ongoing issue based on the significant number of yearly incidents. The industry could benefit from an investigation into alternative construction methods as an opportunity to offer safer work environments for the New Brunswick work force. The conventional on-site construction method can be described by dynamic site conditions (Ahn et al., 2020), high variability in work environments, congested project sites and exposure to adverse weather conditions, which are the less favorable aspects of this approach with the safety risks they present. Meanwhile, an off-site construction environment can be described by stable work locations, controlled work environments and predictable construction tasks and risks (Fard et al., 2017).

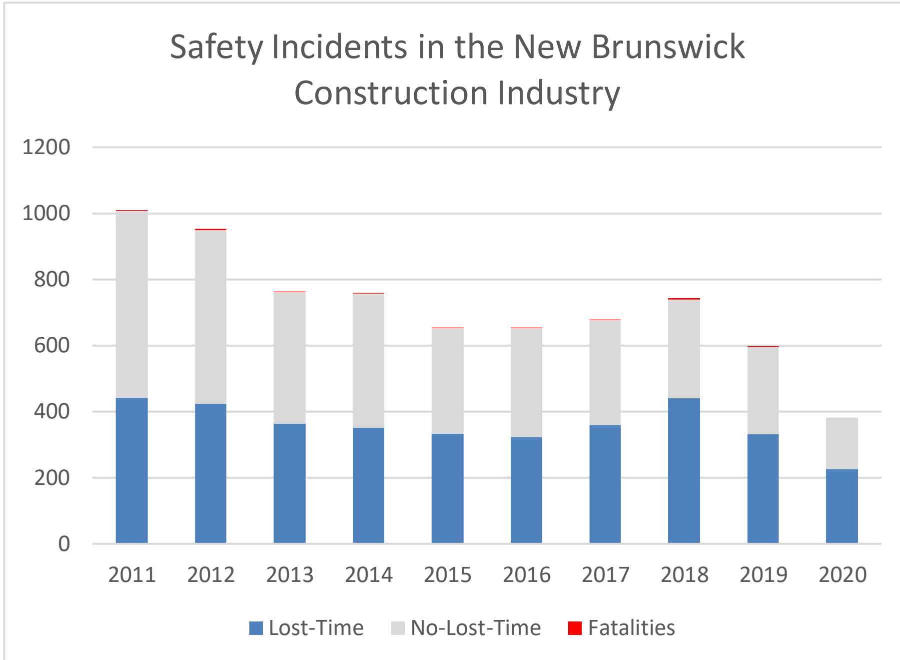

Figure 1: Safety Incidents in the New Brunswick Construction Industry

Off-site construction (OSC) is an innovative approach that has been recognized as a means to drive process and efficiency improvements in the construction industry (Blisman and Wakefield, 2009), and adoption of OSC has been increasing in the construction engineering sector (Goodier et al., 2019). While it's believed that moving work to a controlled setting will reduce the number of safety incidents that are observed during the delivery of a construction product, this has not been studied extensively or proven by data (Jang et al., 2019). The lack of evidence to support this notion is the secondary motivating problem that the research aims to address. Proving that off-site construction can offer opportunities for safer workplaces will be of value to the off-site construction industry and the construction industry at large. By investigating historical safety data from the New

Brunswick construction industry, identifying the sources of injury of these incidents, observing on-site and off-site delivery methods in practice and developing a methodology to evaluate and objectively quantify safety performance to make comparisons, the research will aim to standardize a way to evaluate construction alternatives with respect to safety from an activity level analysis of defined processes. The research will investigate the delivery of a hotel room with on-site and off-site construction methods to conclude whether the off-site method offers a safer alternative in the specified context, but more importantly, it will establish a method to evaluate and quantify safety. Providing the industry and academia a means to make future comparisons of off-site versus on-site construction with respect to safety, and enable the determination of quantified safety values will provide data to support or disprove safety improvement claims in off-site construction.

The vision of the New Brunswick Construction Safety Association is “every worker in New Brunswick will go home safe” (NBCSA, 2020). Additionally, WorkSafe New Brunswick’s commitment is to “promote healthy and safe workplaces for New Brunswick’s workers and employers” (WorkSafeNB, 2020). Being able to go home from work safely each day is a right for all individuals in the workforce, and it has been observed throughout history that safety continues to be a priority in all industries, with organizations solely committed to regulating working conditions and regulations continuously developing to ensure all workers are provided a safe working environment. Improving safety in the workplace is a requirement that will continue, with the ultimate goal being no workplace incidents. In an effort to contribute to the goal of these organizations, the off-site approach to construction activities will be investigated to determine the opportunities it can offer to reduce the number of safety risks and incidents in the specified context of the case study, with the establishment of a safety evaluation methodology to quantify safety performance, and an overall contribution will be made to the body of knowledge that exists with respect to the benefits off-site construction can offer practitioners, clients and owners.

1.2 Research Purpose

The goal of the research project is to develop a *quantifiable safety evaluation methodology* that objectively evaluates a defined process from an activity-level risk-based approach. The evaluation will enable comparisons of on-site versus off-site construction methodologies to produce a defined end-product. This research will analyze on-site and off-site construction methods for a singular construction product only to determine which approach is safer, but the evaluation techniques to quantify safety performance will be a valuable contribution for the industry and future studies.

The methodology is developed in partnership with a jurisdictional health and safety authority, WorkSafe New Brunswick, and leverages historical safety data to provide input into the risk-based activity-level approach for the process analysis of defined construction methods. The evaluation method is partially validated in collaboration with a local construction project team and applied to a case study of a mid-rise modular hotel construction project that employed a mix of conventional and off-site construction methods to construct the hotel room units. The evaluation methodology takes a construction product-focused approach, in this case, a hotel room module, with emphasis on defining a complete material supply chain to capture all potential risks.

The above goal will be accomplished through completion of the following objectives:

- To work with local practitioners on a case study of on-site versus off-site methods to make organizational specific observations and data collection
- To analyze the on-site and off-site delivery methods of a hotel room construction
- To define the processes for the entire supply chain of each construction method, including process steps, resources and activity durations
- To analyze the construction processes at an activity level for risks based on present potential sources of injury
- To analyze safety incident data from WorkSafe New Brunswick to identify incident frequencies (i.e., likelihood of occurrence) from a source of injury perspective and incident severity
- To use a combination of historic data and case study evaluation data to validate the evaluation methodology and determine the feasibility of the analysis method
- To determine whether the off-site method being analyzed is safer than the comparable on-site method in the context of the specified construction product
- To partially validate the research through the evaluation of a secondary case study installing pre-fabricated panels for an on-site structure

1.3 Significance of the Study

For this research, there are a few key stakeholders that the research will provide valuable contributions for. The first being the off-site construction industry in general. With increasing demands from the construction industry to complete projects faster, cheaper and more sustainably, among other requests, the innovative approach to off-site construction carries the potential to meet these demands (Goodier et al., 2019, Sutrisna and Goulding, 2019). Despite the potential of off-site construction, Razkenari et al. (2020) point out that off-site construction adoption is still an obstacle from both the construction and built-environment industries. While there have been many research initiatives within the area of off-site construction that aim to validate how utilizing an off-site approach can offer opportunities in the aforementioned areas, there is a lack of research in the area of safety in off-site construction. Contributions to the area of off-site construction help to not only raise awareness of the opportunities, but to develop the field and aid in increasing the adoption rate of off-site construction. This research initiative will contribute to the area of safety through the development of a safety evaluation methodology to quantify and compare on-site versus off-site construction methods. In this research, a case study will be utilized to analyze the processes of producing a hotel room in both a traditional on-site construction and pre-fabricated modular scenario to determine whether an off-site operation removes the root causes of safety incidents that will be determined from historical data, thus resulting in a safer process.

The second stakeholder within this area of research is WorkSafe New Brunswick. As the research will be leveraging historical data provided by this organization, any findings or insights with respect to the analysis of the construction and manufacturing data sources of injury and how an off-site construction operation may be able to offer the opportunity to remove the presence of common sources of injury from the construction process will be of valuable to WorkSafe New Brunswick. Considering the aforementioned statistics that the New Brunswick construction industry has experienced over the last 10 years, defining opportunities in off-site construction for safety performance during the execution of construction activities will be valuable to the organization.

Thirdly, the New Brunswick construction industry, as well as the construction industry at large, is a significant stakeholder in this research topic. Since the research will utilize historical New Brunswick data and local practitioners, the results will have strong ties to the Province. The research will allow us to demonstrate the opportunities that off-site construction practitioners in our own Province can offer with respect to safety during the delivery method of a construction product of focus. While the data collection will be from New Brunswick only, it’s expected that the findings will be representative of other provinces within Canada, North America, and likely other developed countries as well. On a larger scale, the most valuable contribution to the Province and industry at large will be the safety evaluation methodology. While this research will study a specific construction activity, the expectation is the methods of analysis will be widely applicable and can be used by organizations within the industry to make alternative comparisons between construction methods that are of interest to them. This methodology will provide decision makers in the industry with the information they need to make informed and calculated decisions when choosing their construction approach and factoring in safety as a key value.

Fourth, the companies participating in the case study investigation, will be valuable stakeholders throughout the research process. Their construction processes will be analyzed, and the project being undertaken by these companies will provide the research with a foundation of knowledge of on-site and off-site construction methods upon which the safety evaluation methodology can be developed. Any findings that highlight the benefits of carrying out the off-site approach when undertaking construction projects will have strong ties to these companies and will be relevant to their future works.

Lastly, this research will make valuable contributions to the off-site construction research base. As previously mentioned, there are a lack of studies within the area of safety in off-site construction, most specifically, with respect to a means to evaluate the safety risks within off-site environments and quantify a predictive safety performance value. With a lack of studies being executed in off-site construction and overall safety performance of a construction activity, this research will aim to address the current gaps found in the literature. Making contributions to the knowledge base of the opportunities off-site can offer, and creating an evaluation methodology that can be used going forward, will be a valuable contribution to this area of research. The development of the safety evaluation allows for additional on-site versus off-site comparisons to begin to prove whether off-site can be considered the safer approach.

The contributions that will be made throughout the timeline of this research will be a comparison of on-site and off-site methodologies for the construction of a hotel room to determine which construction approach is safer in the specified context, the recognition of combinations of sources of injury and resulting safety incidents, and a safety evaluation methodology to quantify and compare safety performance of on-site and off-site construction approaches. The implications of this research in the future could include further investigation into other construction products, as well as an increased awareness of the benefits of off-site construction to improve overall safety performance when undertaking a construction project and selecting a construction method to proceed with, and the opportunity to automate the construction method selection process with the use of digital technologies through further advancement of the evaluation framework.

1.4 Research Question and Hypothesis

Research questions and hypotheses that the research will develop responses to are as follows:

1. Are the sources of injury identified from historical data that lead to safety incidents in the New Brunswick construction industry present during an off-site construction operation?

- The presence of the sources of injury that lead to safety incidents in the conventional on-site approach will not be present in an off-site construction operation

Within the New Brunswick construction and manufacturing industries, there are sources of injury that lead to safety incidents occuring more frequently than others. The goal is to determine the combinations of safety incidents and sources of injury, and then observe whether these sources of injury are present in an observed off-site construction operation. Additionally, the manufacturing industry will also have common sources of injury that lead to safety incidents, which will allow comparisons between on-site and off-site environments to be made. If the sources of injury that are most common in the construction injury are absent throughout the operation, it’s expected that the frequency of safety incidents in an off-site approach will be fewer than a comparable on-site approach, resulting in an improved result based on the evaluation methodology established. For this research, the production of a hotel room in both an on-site and off-site construction setting will be observed.

2. How will an off-site construction approach impact the safety performance of the delivery of a construction product in comparison to an on-site approach?

    - Off-site construction will improve the safety performance of the delivery of a construction product

It’s expected that by transferring the production of a hotel room to a controlled environment, the safety performance will improve by presenting fewer potential sources of injury throughout the operation. This will be measured with the evaluation methodology to be developed, and the quantifiable scores for both on-site and off-site methods will be compared. Additionally, observations will be made throughout each approach to determine whether common sources found to cause safety incidents are present throughout the operation.

1.5 Research Assumptions

There are a few assumptions that must be made to complete this research:

- That analyzing existing safety data for production and manufacturing environments will be representative of off-site construction methods
- That any documentation or data sets collected will contain the necessary information to draw valid and reliable conclusions
- That all lost-time safety incidents that occur in the Province are reported to WorkSafe New Brunswick
- That the claims list provided by WorkSafe New Brunswick is complete, properly coded, and representative of the incidents that occurred
- That any construction observations conducted will be unbiased in reporting what was observed
- That any testing efforts to validate the evaluation methodology will be unbiased in the results
- That any safety risks identified when executing the evaluation methodology will be accurately represented by a correlating WorkSafe New Brunswick historical incident

1.6 Scope and Limitations

The scope of this research includes an analysis of historical WorkSafe New Brunswick data, the development of a safety evaluation methodology to compare on-site versus off-site methods, and data collection through evaluation of local practitioners in a case study to determine whether an off-site approach is safer than the traditional on-site methods in the specified context of the production of a hotel room utilizing both on-site and off-site construction methods. Aspects that are excluded from the scope of the research include the evaluation of the organizational safety culture, capture and analysis of worker demographics, interviews with participants and process analysis of construction outside of the scope of structural components. While the research will only focus on the construction of a hotel room to keep the scope size manageable, the overarching goal will be to create a safety evaluation methodology that can be applied to other on-site versus off-site comparisons of construction products in future studies.

There are a few ways the research will be limited:

- Sample population: The data collected will be from New Brunswick industries only
- Lack of previous research studies on the topic: With fewer research studies being completed within off-site construction and safety specifically, there may be limitations in the validation of the data with less works to draw from for comparison

- Scope: To keep the scope size manageable, the structural components of the construction of a hotel room using on-site and off-site methods will be analyzed rather than the construction of the entire hotel and every activity within it.
- Practitioners: Our local practitioners are limited as there is only one company who executes the on-site portion of the hotel room construction (ground level of the hotel), and one company who assembles the modular rooms (upper levels of the hotel).
- Observations: With the on-site ground level portion of the hotel previously completed before the engagement of the local practitioners in the case study, the on-site process analysis will be developed and re-created based on organizational input and construction industry productivity data (ie. RSMeans) rather than through data collection and construction observations. Additionally, the data collection of the off-site manufacturing of the hotel units was completed by another researcher. Contrastingly, observations of the delivery and installation of these modules, as well as the on-site panel installation for the second case study, has been captured and documented through construction observation, video and photos by the principal researcher, allowing for a more thorough, consistent and detailed analysis.
- Historical data: When a no-lost-time incident occurs within the Province, these are not coded when reported to WorkSafe New Brunswick, meaning the level of detail captured is limited to which NAICS sector the incident occurred in, and which part of the body was affected. This differs from a lost-time-incident, which is coded by

all of the aforementioned categories: sector, North American Industry Classification System (NAICS) description, claim type, accident date, accident year, occupation description, part of body description, nature of injury, event exposure and source of injury. This limits the analysis that can be executed on the no-lost-time incident data.

- No-lost-time incidents: A potential limiting factor may be that not all no-lost-time incidents are reported to WorkSafe New Brunswick which affects the accuracy of the incident rates that are analyzed
- Process automation: A potential benefit of off-site construction is enabling automation in the construction processes and minimizing human efforts required to execute the work which reduces risk to the worker. In the context of the off-site construction modular manufacturer that has been included in the case study, there are low levels of automation implementation in the construction process, which limits the analysis.
- Risk assessments: The principal researcher is the only individual executing the analysis of potential sources of injury, therefore predictive safety performance results from the evaluation methodology are from one perspective only
- Organizational specific data: The safety evaluation does not consider organization specific historical safety data, therefore does not consider the safety record of the company executing the work or the effectiveness of the safety practices they have in place. This limits the insight gained from the specific organization doing the work, and instead applies frequency and severity factors based on the average

safety incident rates of the Province, which assumes the organization is at an average level of safety performance. If an organization were to use organizational specific data, the scores could be lower or higher depending on their historic safety performance.

- Process analysis: Knowledge of the processes, work tasks and familiarity with work environments and potential sources of injury are required to complete the safety evaluation.
- Internal risk: The safety evaluation calculates an internal risk score to those directly involved in the process, and does not evaluate how factors such as transportation of large equipment and oversized components presents to the public.
- Long-term health & safety: The long-term health and safety benefits of off-site construction (ie. ergonomic) are not considered in the evaluation methodology

Based on these limitations, the quality of the research may be impacted particularly through the limitation of scope size. Keeping the scope size manageable will be an important aspect of the study to ensure it can be completed in a timely manner, but it may impact how widely applicable the study with respect to all the trades that may potentially work on a construction activity within the industry. While this may be a limitation, the research will be creating a process for analyzing how a selection of an off-site approach to a construction product delivery can impact safety performance, which could then be used in future applications when looking to study a different application of off-site methods.

1.7 Expected Results

Through the completion of this research, the expectation is to be able to recommend an off-site construction approach as a safer alternative when selecting the delivery method for the construction of a hotel room. It's expected the off-site approach will result in fewer safety incidents as the controlled work environment will present fewer possible sources of injury that were determined to lead to the occurrence of safety incidents, thus resulting in an overall improved score determined by the safety evaluation methodology.

Project deliverables include:

- Identification of an on-site and off-site alternative that can be analyzed through a case study within the Province of New Brunswick

- Analysis of WorkSafe New Brunswick data to identify trends and make comparisons between on-site methods (Construction Industry) and off-site methods (Manufacturing Industry)

- Identification of combinations and frequencies in the historical New Brunswick construction safety data between safety incidents and sources of injury

- Case study observations of on-site and off-site construction methods in practice (complying with relevant site personal protective equipment requirements)

- Development of process maps for on-site and off-site methods

- Development of an evaluation methodology for the comparison of safety performance between off-site and on-site methods

2.0 Points of Departure

2.1 Safety in Construction

In terms of safety, the construction industry has been identified as one of the most dangerous (Fard et al., 2017). The United States construction industry reported a fatal injury rate of 3.5 per 100,000 full-time workers (Occupational Safety and Health Administration, 2021), equating to 1,061 fatalities in 2019. The Canadian construction industry is experiencing similar statistics of 2.9 per 100,000 full-time workers, at a total of 925 fatalities (Tucker and Keefe, 2021) in the same year, confirming that safety in construction is an ongoing issue on a global scale. When the historical safety incident trends of the New Brunswick construction industry in Canada are examined, it can be concluded that the Province is no exception to the trends that are being observed in other parts of the world. In the last 10 years, the New Brunswick construction industry has experienced 7,194 incidents and 18 fatalities. Based on 2018 sector profile data (NBJobs, 2019), the construction industry accounts for 6.9% of the gross domestic product in the Province, annualizing $2.1 billion, making it the sixth largest sector in New Brunswick. Based on historic trends, NBJobs (2019) has projected that the industry will increase its' gross domestic product contribution by 10.6%, as described by Figure 2.

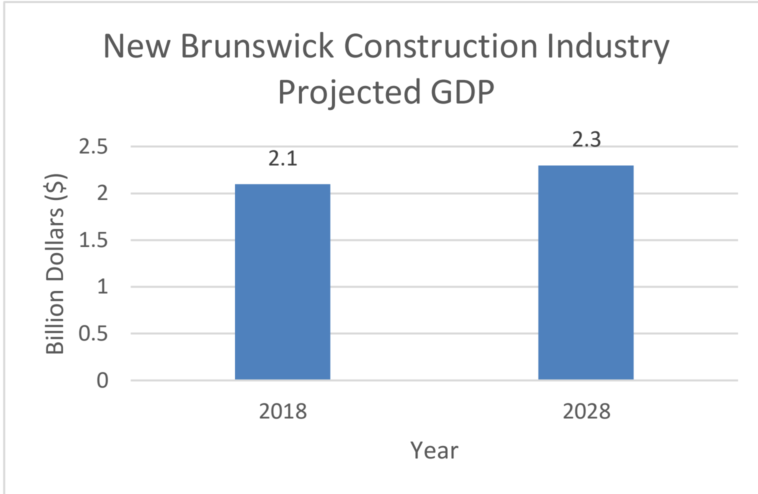

Figure 2: New Brunswick Construction Industry Projected GDP

The construction industry employs 6.6% of the working population, which in 2018, equated to 23,300 employees (NBJobs, 2019). In the same year, a total of 744 incidents occurred and 4 fatalities. This means that 3.2% of the construction industry workforce was impacted by a sustained injury or fatality. Employment opportunities are expected to increase by 1.2% (NBJobs, 2019), from 23,300 to 23,576 employees, as described by Figure 3. If safety incident trends remain the same, projected incidents will increase from 748/year to 754/year, as described by Figure 4.

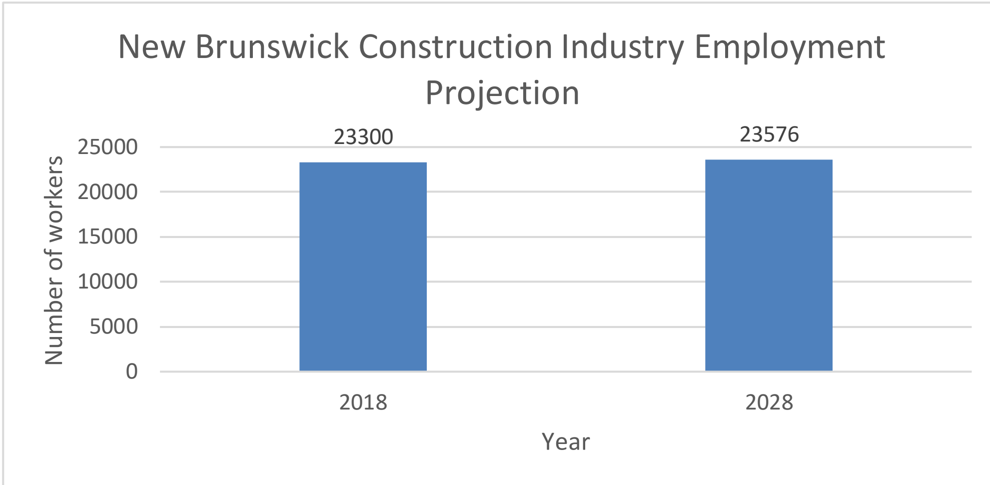

Figure 3: New Brunswick Construction Industry Employment Projection

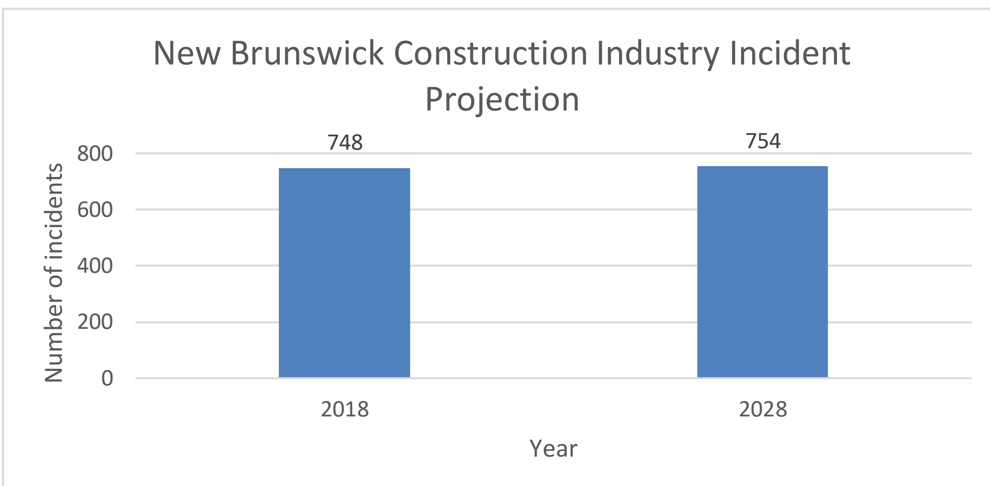

Figure 4: New Brunswick Construction Industry Incident Projection

Factors that have been found to be inherent to construction work environments that result in an increased number of safety incidents include the need to work at height, a large number of moving objects such as equipment, workers and materials, crowded workspaces, site congestion, exposure to adverse weather conditions and dynamic site conditions (Ahn et al., 2020, Fard et al., 2017). Unlike manufacturing, the work involved with construction rarely requires a regular or repetitive set of activities, with work environments and personnel continuously changing (McKay, 2010). While it may not be possible to change the nature of construction project sites, there is an opportunity to leverage off-site construction methods that offer opportunities to remove the aforementioned risk factors by transferring work to a controlled and predictable environment. The purpose of this research is to be able to assess and quantify how transferring construction activities to an off-site environment will impact the overall safety performance when delivering a defined construction product.

2.2 Off-Site Construction

The use of off-site construction methods is still considered innovative within the construction industry. While this method has been captured by a variety of terms, they all refer to the process of producing project components in a manufacturing-like facility off-site using large scale machinery and industrial production processes, and transporting completed units to site to be assembled to achieve the desired end-product. Prefabricated construction involves both off-site and on-site aspects in its' processes (Fard et al., 2017), and while the concept of building in an off-site environment is not new (Sustrisna and Goulding, 2019), the effort to move towards an off-site approach is a growing facet of the construction industry (Goodier et al., 2019).

One benefit to off-site construction that is often stated is that it is a safer approach when compared to conventional on-site methods (Killingsworth et al., 2020). The improvements in safety have been attributed to notable improvements in safety plans and risk assessments (Killingsworth et al., 2020), work being executed in a tidier and controlled environment (Killingsworth et al., 2020), reduced exposure to inclement weather and temperature extremes, stable work locations, improved familiarity with tasks at hand and risks involved, removing the need to work at height, easier to monitor unsafe activities (Fard et al., 2017), and decreased labour is required on site to execute projects (Killingsworth et al., 2020). In contrast, Blismas and Wakefield (2009) found project stakeholders were resistant to adopt off-site methods due to the perception that safety risks are increased due to the crane-intensive work required to handle larger completed volumetric components. Although it is true that the regular need for mobile cranes within off-site construction presents new safety risks that need to be considered, the magnitude of the impact additional crane work and larger loads has on safety performance is not well understood.

The research has developed an evaluation methodology to assess and quantify safety risks of a defined process to enable the comparison of on-site versus off-site construction methodologies. The aim is to support the idea that off-site construction provides safer work environments and presents fewer safety risks than a comparable on-site construction method that delivers the same product. This will allow for the industry and academia to quantify the magnitude of impact any changes in methodology presents with respect to safety, rather than making judgements based on intuition or previous experience.

2.3 Drivers and Barriers to Off-Site Construction

Wuni and Shen (2019) determined 86 drivers of off-site construction, and categorized these drivers into time, cost, quality, productivity, innovative competitiveness, sustainability, market and policy. Goodier et al. (2019) and Sutrisna and Goulding (2019) both mention the ability to address the issue of skilled workforce shortages, as tasks being performed in a production environment would eliminate the need for highly skilled workers. Goodier et al. (2019) also found that the quality of finished product improves as work is being completed in a controlled setting rather than outside against the elements. Off-site also offers the advantages of an expedited schedule, which has been a key driver in some countries where overall construction time was reduced by 30-70% (Goodier et al., 2019). Within a production setting comes the opportunity for process improvement initiatives, clear productivity targets, and an overall environment that allows for the continuous observation and improvement of methods to establish efficiency and effectiveness. Lastly, a frequently discussed opportunity is that off-site can be more cost effective, although there are differing opinions on this, as observed in Pan, Gibb and Dainty (2007), and Blismas, Pasquire and Gibb (2007). Pan et al. (2007), state that off-site construction is associated with such a high initial capital cost that the result is minimal savings, while Blismas et al. (2007) found that, savings are observed in the projects' supply chain costs, which includes aspects such as quality and safety.

When it comes to the application of off-site construction methods in practice, there are still barriers to overcome to obtain wide-spread adoption such as management complexity, high capital costs, ineffective supply chain integration and limited expertise and experience are only a few of the barriers identified by Wuni et al. (2020). While research suggests many benefits of off-site (Goodier et al. 2019, Sutrisna and Goulding, 2019, Blismas et al. 2006), what can still be observed within the construction industry is heuristic biases (Mather and White, 2020) in decision makers, especially those who are most familiar with traditional on-site construction methods and know how to execute projects with this approach. In order for off-site methods to be viable construction options, processes must be well understood by all parties and coordination of potential off-site opportunities must be coordinated in the early stages of the project (Sutrisna at al., 2018). One of the great barriers to off-site is the significant level of effort required at the front end of the construction project to be able to apply and execute off-site methods (Sutrisna and Goulding, 2019), which either may not seem feasible to decision-makers, or there is limited expertise and experience (Hong et al. 2018) when it comes to executing projects in a non-traditional way. From a safety perspective, the many unknowns that can accompany an application of off-site construction methods could be perceived as a greater risk from project stakeholders (Sutrisna and Goulding, 2019). With no qualifiable methods to effectively compare and evaluate options, decision makers are more likely to make decisions based on what obtained a positive result in their most recent experiences which could result in resorting to conventional construction methodologies if they have no prior experience with off-site construction methods, leading to inertia in the industry (Mather and White, 2020).

In support of the conclusion by Blismas et al. (2007) that project savings are observed through aspects such as improvements in safety, this research provides decision makers with a means to quantify the safety performance improvements that could be observed through the application of off-site methods. Having tabulated information to support the decision between on-site or off-site construction may help to reduce heuristic biases in the construction industry.

2.4 Safety in Off-Site Construction

When it comes to safety, there has been notable potential benefit in transferring construction activities to controlled, off-site locations, where it's easier to control the work environment and reduce the safety risks (Ahn et al., 2020). Researchers Fard et al. (2017) found the main factors that contribute to the potential of off-site construction to improve safety performance include: stable work locations, less variability in working conditions, workers are more familiar with the tasks at hand and the risks involved, less work in tight spaces, removing the need to work at height, no exposure to harsh weather conditions, easier to monitor unsafe activities, less time spent on construction sites, and fewer workers required to complete the tasks. Additionally, McKay (2010) noted the opportunity to increase control over construction activities, reducing the overall risk. Furthermore, off-site construction facilities present the opportunity for mechanical handling to reduce the need of manual handling throughout the process.

While transferring activities to a controlled environment may intuitively feel that it should equate to fewer incidents, there is a lack of quantifiable data to support off-site construction is safer than on-site construction. By equating off-site construction methods to the manufacturing industry, it can be observed from the WorkSafe New Brunswick data that manufacturing environments have experienced significantly fewer fatalities in the Province over the last 10 years, which makes the concept of off-site work a promising alternative with respect to safety performance. However, there are additional aspects of off-site construction that must be considered from a safety perspective, which includes introducing larger components needing to be handled and transported, which in turn requires larger and more specialized equipment. Additionally, research results have revealed that where activities are similar to insitu construction, the risks remain the same, with initial results suggesting that it cannot be assumed that off-site will remove all health and safety risks of constructing a product (McKay, 2010). While safety is often listed as a potential benefit in the application of off-site construction (Blismas et al., 2007, Fard et al., 2017), there are limited studies that have proven this. Current research in the area of safety in off-site construction has been limited. Jang et al. (2019) completed a thorough literature review on the topic of off-site construction to determine current research areas of focus, and concluded that only 8.5% of the total number of papers reviewed discussed safety aspects.

Safety research in off-site construction has analysed: risks in off-site versus hypothetical on-site construction scenarios for the same building components (Ahn et al., 2020); off-site construction facilities to determine root causes of safety incidents (Fard et al., 2017); and behaviours in off-site environments to predict safety outcomes (Liu et al., 2019). Additionally, much of the research surrounding safety risk assessments in off-site construction is qualitative and summarizes findings from expert opinions (Killingsworth et al., 2020) about the perceived benefits of the off-site approach. While these research efforts have found fewer safety risks in the on-site operations of off-site construction (Ahn et al., 2020), additional opportunities to understand and reduce risks in stable work locations (Fard et al., 2017) and enhanced safety performance due to the repetitive nature of tasks in off-site (Liu et al., 2019), there are notable gaps in the knowledge base. The research discussed in this paper develops an evaluation methodology to address a need to quantify safety of a defined process to construct a desired end-product that allows for comparisons of processes with respect to safety performance, with a focus on defining and analysing the entire supply chain to capture all potential risks.

2.5 Safety Assessment Methods

Over the last decade, there has been an increased effort in researching predictive and proactive safety assessment strategies (Oguz Erkal et al., 2021) so the construction industry can better understand the risk status of projects being undertaken. Studies have shown that the development of various risk assessment techniques greatly improve the safety outcomes of construction operations (Purohit et al., 2018) by providing managers, supervisors and workers with the information to be proactive. Hazard identification and risk assessment has been identified as the most important safety management techniques

(Manuele, 2003) to improve the safety performance when undertaking a construction project. However, many methods of safety risk management are subjective (Hallowell and Gambatese, 2009, Ma et al., 2021), and oftentimes rely on intuition and judgement of professionals who are involved with and understand the process (Hallowell and Gambatese, 2007). Thus, gaps in objective and proactive health and safety research still exist (Hallowell and Gambatese, 2009).

Aven (2016) states that safety risk is typically quantified by taking the product of the likelihood and severity of the identified risk. Contrastingly, Marhavilas and Koulouriotis (2008) identify safety risk as the product of likelihood, severity and exposure. Considering exposure duration in a safety risk assessment is an important distinction and particularly valuable in the safety evaluation framework that this research proposes. Risk exposure duration is a key factor when assessing two different processes that result in the same end-product, but have different means of execution. Therefore, the product of likelihood, severity and exposure is used for this research.

Likelihood is typically expressed in terms of incident rate frequencies. For this evaluation framework, likelihood will be determined with historical WorkSafe New Brunswick data from the last 10 years in the construction and manufacturing industries. Severity is defined by the impact to the worker or firm (Hallowell and Gambatese, 2009), and will use WorkSafe New Brunswick data as well, where severity has been indicated by the jurisdictional health authority based on the nature of the injury. Exposure is defined in units of time (Hallowell and Gambatese, 2009) which will be determined in this study through worker observations involved in the construction processes to be analyzed for safety risks for the case study.

Hallowell and Gambatese (2009) acknowledge the difficulty of quantifying risk likelihood, which is relevant to the dataset from WorkSafe New Brunswick as well. When it comes to relatively low severity incidents such as near misses or first aid injuries, there is no guarantee that these incidents are reported. However, studies have shown that a significant portion of construction related claims involve low-severity incidents. This is one acknowledged limitation of the research, as there is likely a gap when it comes to companies reporting minor incidents to proper authorities.

Lu et al. (2021) have summarized safety assessment methodologies into three categories: project-based, activity-oriented and occupation-oriented. Project-based focuses on estimated the safety risk based on the potential causes of construction hazards associated with the construction methods being used within the project execution plan (Lu et al. 2021). Activity-oriented safety assessments involve defining the construction activities for the process of interest (Hallowell and Gambatese, 2009) to evaluate safety risk. Lastly, the occupation-oriented approach uses injury and fatality data from the construction industry and analyzes it by occupation involved in the process to determine the risk based on historic trends of incident rates based on the occupation of the worker (Lu et al. 2021).

Lu et al. (2021) state that an occupation-oriented approach has several advantages over the other two methods of assessment due to the objective nature of the data which can be extracted from occupational databases and the assessment can be based in statistics rather than subjective evaluations of project or activity level of detail. While it is true that occupation related data is inherently objective, assessing safety performance from solely an occupational-oriented assessment does not allow for differentiation between methodologies. For example, off-site and on-site construction could both utilize carpenters in their process, and while the task being executed may be similar, one method could remove a potential source of injury. The proposed evaluation methodology presents an activity-oriented assessment of potential sources of injury that remains objective through the use of historical health and safety data.

3.0 Methodology

The two major pillars of the research to quantify safety risk and enable comparisons between on-site and off-site construction methods were: 1. the identification of construction activities in both construction alternatives; and 2. the risk analysis of each process step at an activity-level of detail. The approach of the research was to define on-site and off-site construction processes for the entire supply chain and evaluate risks by determining the likelihood, severity and exposure duration of the identified potential sources of injury. The available data for incident frequency and severity was provided by WorkSafe New Brunswick, and the case study provided information on construction processes, potential sources of injury, and the exposure duration to the identified risks through daily logs and site observations made in compliance with relevant site personal protective equipment requirements.

3.1 Research Design

The methodology for this research includes the development of a theoretical evaluation framework through the use of the case study to assess and quantify safety, allowing for comparisons from an end-product perspective between off-site and on-site construction processes. The proposed framework considers risk exposure, likelihood and severity for a defined process at an activity level. Emphasis is placed on the assessment of the complete supply chain to deliver the end-product to ensure all risks are captured in the processes of interest.

The development of the evaluation model uses historical data from a jurisdictional health authority, WorkSafe New Brunswick, to quantify objective risk likelihood and severity values, in addition to using a non-probability sampling model through a case study with local practitioners executing a unique project that leverages both on-site and off-site methodologies in the construction. The product of focus in the case study analysis is a hotel room, which was constructed with conventional on-site construction methods for the first level, with the upper-level units being constructed through off-site manufacturing, then delivered and installed on the structure at the project site. The scope has been reduced to the structural construction of the hotel room units only, and does not investigate aspects such as electrical, mechanical, etc. The research has taken an exploratory approach to develop this quantitative safety evaluation method that can be utilized within the construction industry for further off-site versus on-site delivery method comparisons. Using a case study for the research allows for the analysis of the processes in off-site and on-site construction methods to deliver the same end-product in non-hypothetical scenarios, all while investigating the feasibility and effectiveness of the proposed safety evaluation methodology.

3.2 Data Collection

Four key sources of information provided the data required for the development of the proposed safety evaluation model, as summarized by Table 1: Data Sources. The first source being the historical data provided from WorkSafe New Brunswick. Through partnership with the organization, 10 years of occupational health and safety data was obtained, with construction industry data representing conventional on-site construction methods, and manufacturing data representing the risks in off-site construction. The second, third and fourth sources provided the information needed for the construction processes to be able to define the supply chain of the specified product, and analyze the processes from an activity level to identify potential sources of injury to calculate risk. The data was obtained through on-site observation in compliance with required site personal protective equipment, daily logs, video collection and published construction productivity data to define the process, resources and durations of activity.

Table 1: Data Sources

WorkSafe New Brunswick	**General Contractor**	**RSMeans**	**Module Manufacturer**
		Data Collected	
7212 Construction Claims 17,838 Manufacturing Claims (Claim Type, Accident Date, Occupation, Part of Body, Nature of Injury, Event Exposure, Source of Injury)	15 hours on-site observation 15 hours video records 159 site photos 2 months of daily logs	On-site construction resources Resource productivity	Productivity study data (van de Riet, 2021) 15 hours on-site observation 15 hours video records 159 site photos
		Data Obtained	
Risks Risk Likelihood (L_{Risk}) Risk Severity (S_{Risk})	On-Site Construction Process	Process Resources Risk Exposure Duration (E_{Risk})	Off-Site Construction Process Off-Site Transportation Process On-Site Assembly Process Process Resources Risk Exposure Duration (E_{Risk})

3.3 Risk Analysis

A summary of the evaluation methodology is presented in Figure 5. Once the process has been defined, the resources executing the work are analyzed to determine the potential sources of injury they are exposed to during each activity to calculate the likelihood of occurrence, severity and exposure duration and determine risk. To calculate the required variables for on-site construction work, construction industry data was used. For off-site construction calculations, manufacturing industry data was used.

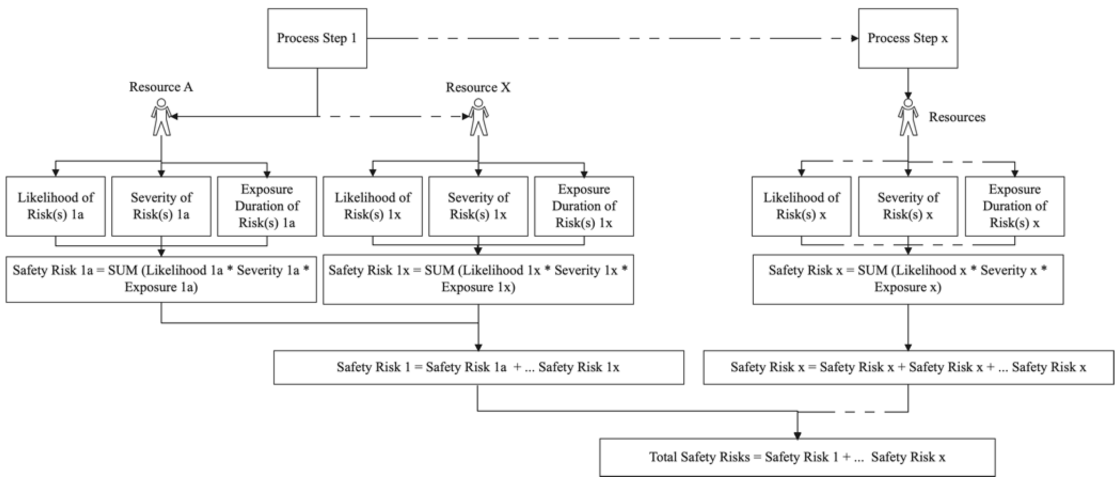

Figure 5: On-Site & Off-Site Safety Evaluation Methodology

To determine the likelihood of risk occurrence for each identified potential source of injury, the WorkSafe New Brunswick data is used as inputs with equation 1:

$$L_{Risk} = \frac{Frequency_{Event\ Exposure-Source\ of\ Injury}}{Total\ Injuries} * 100 \quad (1)$$

The event exposure describes the type of activity the worker was executing, and the source of injury describes what caused the injury that was identified by the researcher when observing the work. It should be noted that case study participants were not interviewed to determine the safety risks.

As an example, the risk likelihood for the combination of event exposure “bending, climbing, crawling, reaching, twisting” and source of injury “bodily motion or position of injured, ill worker” will be calculated to demonstrate the value that is used within the evaluation methodology (Table 2). The data is first limited to construction or manufacturing data based on the circumstances of the process being analyzed. In this example calculation, the data is extracted from the historical construction industry dataset.

Table 2: Risk Frequency Calculation Example

Variable	Value
$Frequency_{Event\ Exposure-Source\ of\ Injury}$	252
$Total\ Injuries$	3634
$L_{Risk} = \frac{252}{3634} * 100$	6.93%

Some additional examples of the final tabulated result from this calculation are provided in Table 3.

Table 3: Event Exposure and Source of Injury Frequency

Event Exposure	Source of Injury	Frequency
Bending, climbing, crawling, reaching, twisting	Bodily motion or position of injured, ill worker	6.93%
Fall to floor, walkway, or other surface	Ground	2.75%
Bodily reaction, n.e.c	Bodily motion or position of injured, ill worker	2.37%
Stepping in a hole or on an object – with or without twisting – without fall	Bodily motion or position of injured, ill worker	1.60%
Slipping on something – with or without twisting – without fall	Bodily motion or position of injured, ill worker	1.40%

High severity incidents are classified by WorkSafe New Brunswick based on the nature of the injury. Injuries that have been identified as highly severe include asphyxiations, cerebral hemorrhages, chemical burns, crushing injuries and drownings, to name a few. The development of this multiplication factor remains objective through the use of WorkSafe New Brunswick data only, and does not collect the opinions of workers to determine how severe an identified safety risk may be. To develop a severity factor, the ratio of high severity to total lost time incidents by event exposure plus one is calculated, to create a factor for all event exposures, including those with no high severity incidents, as presented in equation 2:

$$S_{Risk} = \left(\frac{Frequency_{Event\ Exposure-High\ Severity}}{Frequency_{Event\ Exposure-Total\ Lost\ Time\ Incidents}}\right) + 1 \quad (2)$$

As an example, the risk severity for the event exposure “fell from and struck by vehicle, mobile equipment” will be calculated to demonstrate the value that is used within the evaluation methodology (Table 4). Replicating the conditions of the risk likelihood calculation, the data is first limited to construction or manufacturing data based on the circumstances of the process being analyzed. In this example calculation, the data is extracted from the historical construction industry dataset.

Table 4: Risk Severity Calculation Example

Variable	Value
$Frequency_{Event\ Exposure-High\ Severity}$	2
$Frequency_{Event\ Exposure-Total\ Lost\ Time\ Incidents}$	3
$S_{Risk} = \left(\frac{2}{3}\right) + 1$	1.7

Some additional examples of this calculation are provided in Table 5. The event exposure describes the type of activity the worker was executing, and the determination of the ratio of high severity to total incidents provides the input needed to determine the severity multiplication factor. The factor is then applied when the event exposures are present in the risk analysis from the extracted Event Exposure and Source of Injury data combinations that are relevant to the process being analyzed.

Table 5: Severity Factor Examples

Event Exposure	Number of High Severity Incidents	Total Number of Incidents	Ratio	Severity Factor (S_{Risk})
Drowning, submersion, uns.	1	1	1	2
Fell from and struck by vehicle, mobile equipment	2	3	0.7	1.7
Exposure to electrical energy from machine, tool, appliance, or light fixture	3	6	0.5	1.5
Fire, n.e.c.	1	3	0.3	1.3
Fall from floor, dock, or ground level, n.e.c.	0	1	0	1

The exposure duration is then determined by the observed or known activity duration in hours, as described by equation 3:

$$E_{Risk} = Duration_{Activity} \quad (3)$$

For each potential source of injury identified for a resource, equation 4 is used to determine the risk. The sum of all risks identified for a resource then represents the total risk per resource. To determine the total risk for an activity, a sum of risks for all resources is taken. Lastly, to determine the total risk of the process, a sum of the risks for all activities is taken. The calculation of all these variables is described by equation 5.

$$R = L_{Risk} * S_{Risk} * E_{Risk} \quad (4)$$

$$R_{Process} = \sum_{k=1}^{n} R_{Activityk}\left(\sum_{j=1}^{n} R_{Resourcej}\left(\sum_{i=1}^{n}(R_i)\right)\right) \quad (5)$$

3.4 Case Study – Off-Site vs. On-Site Construction

3.4.1 Project Background

The selected case study project is a new build of a 4-storey Amsterdam Inn & Suites hotel in Florenceville-Bristol, New Brunswick. The execution of this project is unique, as it is a combination of conventional on-site construction methods and off-site pre-fabricated modular components. The ground floor of this hotel was constructed with on-site methods, while the construction of the upper levels took advantage of pre-fabricated modular hotel room units. By leveraging the opportunity this project presents to capture two different construction methods to achieve the same end-product, a hotel room, a valuable comparison of on-site versus off-site methods from a safety perspective can be executed.

The on-site work began in September 2020. This portion of construction included the foundations, backfilling and general site preparation work. This work was followed by the construction of the ground floor of the hotel which includes a restaurant, lobby, various conference rooms and a series of hotel rooms and suites. In November 2020, the modular hotel sections began pre-fabrication at an off-site location and were shipped to site periodically to align with the overall project schedule dates for installation of the upper floors.

3.4.2 Purpose

The purpose of the case study is to provide the inputs for the process map, resources, and safety analysis for the evaluation methodology. Oftentimes, non-hypothetical comparisons of on-site and off-site methods are not possible as projects are not completed twice using the different methodologies.

By taking the analysis for the evaluation methodology from a product perspective, and defining the complete supply chain for the execution of both construction methods, comparisons of processes can be made using non-hypothetical data upon which to execute the safety analysis.

3.4.3 Scope of Work

The scope of work for the case study includes data collection, process definition and safety analysis of the complete supply chain for on-site and off-site methods, limited to the structural components of the hotel rooms only (i.e., no analysis of electrical, mechanical, plumbing, etc.). The definition of the supply chain has also been limited to the process steps required to build the end product, meaning the origin of the materials (ie. lumber in saw mills) is not considered in scope for the safety evaluation methodology.

A brief overview of scope for what each phase will entail has been summarized in Table 6.

Table 6: Overview of Scope

Process Step	Scope
Data Collection	Videos Photos Documentation Written observations Daily logs from site personnel **All on-site data collection made in compliance with relevant site personal protective equipment requirements.*
Process Definition	Activity diagram Resource allocation
Process Analysis	Safety risk analysis Risk exposure durations by resource

3.4.4 Off-Site vs. On-Site Safety Comparison

To demonstrate the application of the developed safety evaluation framework, the case study project was analyzed for potential sources of injury throughout the processes and the duration of risk exposure to each resource involved. This provided the inputs for the evaluation methodology, to then be analyzed for likelihood of occurrence and severity of the potential injury based on the WorkSafe New Brunswick data. The analysis of this case study allows for an initial quantified and objective off-site to on-site construction comparison with respect to safety, providing a tabulated result that can be evaluated to determine which alternative can be quantified as safer.

Figure 6 outlines the high-level processes depicting the complete supply chain that will be evaluated and compared for the chosen case study. The supply chain for both construction methods begin with the procurement of raw materials with subsequent delivery, but these process steps have been excluded from the scope of work for this research. The construction methods begin to differ, as off-site construction includes manufacturing, transportation and assembly of the unit, while on-site construction includes construction of the unit at the project site only. The scope of analysis includes only the process steps below that point to a more granular breakdown showing the process map. Each of these high-level process steps were observed and documented to obtain a detailed process map that provides the inputs for the construction activities involved in the methods to be compared.

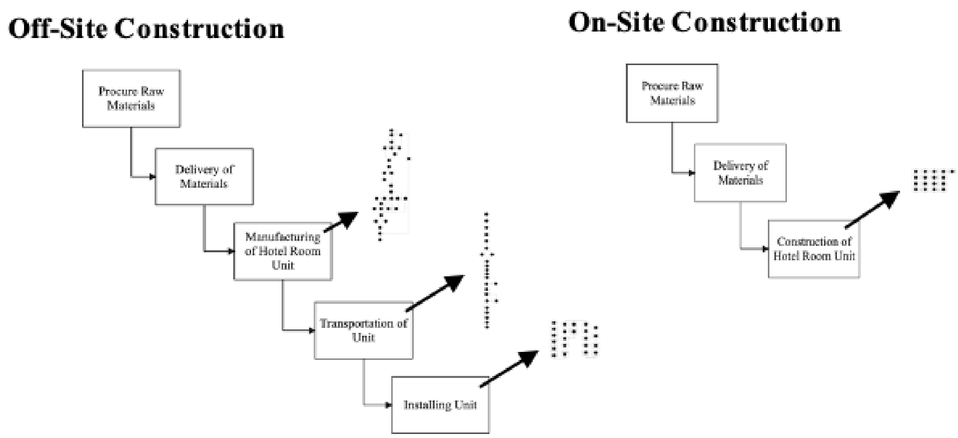

Figure 6: Off-Site and On-Site Construction Processes (High Level)

4.0 Safety Evaluation Methodology

To enable the quantification of safety performance in off-site construction in an objective way, the safety evaluation methodology was developed. The purpose of the evaluation methodology is to enable decision makers to make informed decisions when assessing on-site versus off-site methodologies, and to establish a means to quantify safety to understand whether off-site construction methods would be the safest alternative when approaching a new project. The evaluation integrates process and resource analyses with potential risk analysis for on-site and off-site construction comparisons for the development of similar end-products. The evaluation is unique in that it considers the complete supply chain when defining the process, considers the safety incident likelihood, exposure duration and severity when evaluating the risks from a potential source of injury perspective, and leverages historical construction and manufacturing data from the Province of New Brunswick to provide objective inputs for the risk evaluation aspects.

As presented in Equation 7, the safety score for the process is the sum of the risks for each activity within the process. To determine the safety score, the evaluation methodology should be completed through the following steps:

1. Identify End-Product
2. Define Process
    a. On-site process map
    b. Off-site process map
3. Analyze Process

    a. Resource requirements
    b. Equipment requirements
    c. Activity durations
4. Identify Safety Risks
5. Evaluate Safety Risks
    a. Likelihood (WorkSafe New Brunswick data)
    b. Exposure duration (process analysis)
    c. Severity (WorkSafe New Brunswick data)

4.1 Identify End-Product

The identification of the desired construction end-product is required to complete an analysis of the potential on-site and off-site methods to be used to deliver the product. The safety evaluation methodology has taken a construction product-focused approach with emphasis on defining a complete material supply chain to promote a comprehensive safety analysis for all resources, activities and process steps as defined by the respective processes. This is a unique approach to industry level comparisons, that allows for differentiation with respect to safety performance between on-site and off-site processes, and establishes a valuable evaluation methodology for future comparisons. The identification of the desired end-product would occur at the project initiation and design phases, and the safety evaluation methodology will support the decision-making process to evaluate the potential benefits or trade-offs of adopting off-site construction methods instead of conventional construction.

4.2 Define Process

The first input for the safety evaluation methodology is a defined process map for the complete supply chain for the on-site and off-site methods to deliver the end-product. For off-site construction this includes the off-site manufacturing activities, steps to transport completed manufactured products and the on-site assembly process. For on-site construction activities, this includes the detailed steps to produce the same end-product with conventional stick-built methods.

4.3 Analyze Process

Following the process definition, further analysis of the process is required to obtain the remaining inputs that are derived from the specific construction and manufacturing processes. The process analysis is comprised of three main sources of information, as summarized in Table 7.

Table 7: Process Analysis Information Requirements

Analysis	Result
Resource Analysis	Resources assigned to each process step
Equipment Analysis	Equipment and tools assigned to each process step by resource
Activity Durations	Duration of each process step by resource

4.4 Identify Safety Risks

The process steps should then be analyzed from a safety perspective by identifying potential sources of injury throughout the process that present risks to the resources involved. This analysis should be completed at a resource level, as each worker involved may be exposed to different risks based on their contribution to the process step. The sources of injury should consider conditions workers are exposed to, the nature of the task at hand and the means or methods of which the activity is completed. The level of detail needed for the identification of sources of injury must correlate with the historical data from WorkSafe New Brunswick. Examples of sources of injury as identified by WorkSafe New Brunswick historical incident claims include:

- Cutting hand tools (non-powered)
- Drills
- Forklifts
- Scissor lifts
- Walking

4.5 Evaluate Safety Risks

After the safety risks have been identified, the evaluation methodology, as summarized in Figure 7, enables the quantification of the total risks present within a defined process by leveraging historical data from the Province of New Brunswick to remain objective in the values that are being used.

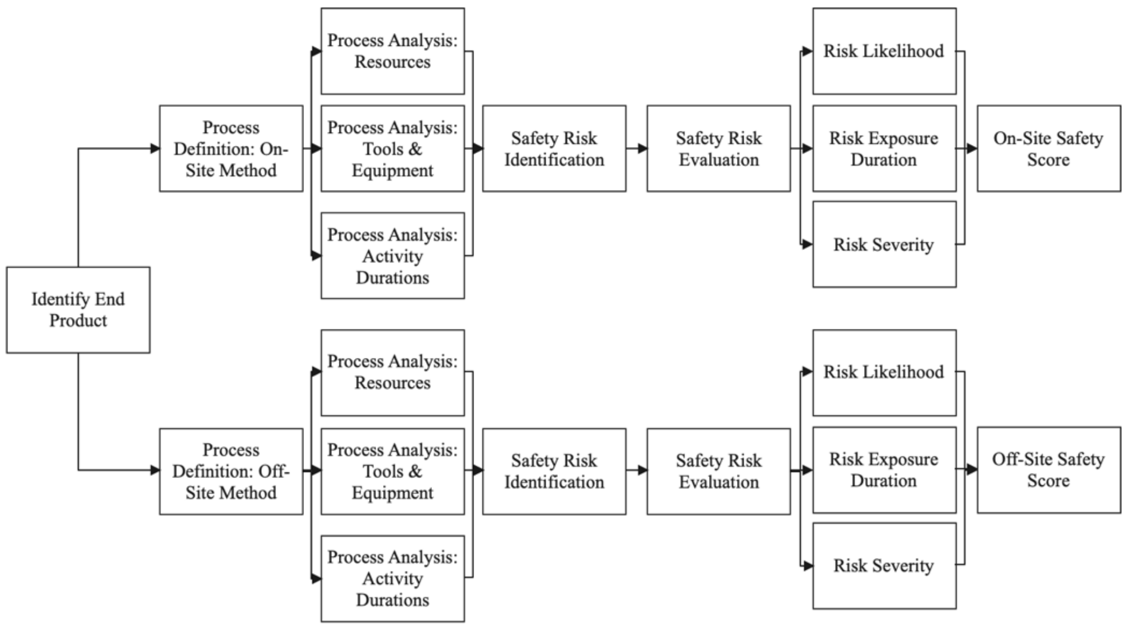

Figure 7: Safety Evaluation Methodology Process

The safety risk evaluation requires the determination of the likelihood of occurrence, the exposure duration and the severity of the potential incident, as described by equations 1, 2 and 3 in Chapter 3. These values are calculated for each process step, and summed together to provide the total safety score of the defined process, as described by Table 8. Once completed for both the on-site and off-site methodologies, comparisons can be made with the quantified safety value determined, which represents the total risk present in the process. The lower the value, the fewer risks there are. In addition to making comparisons based on the results obtained for the *Total* safety score, valuable conclusions can also be drawn by comparing the individual factors that establish the quantified risk value: *Risk Likelihood, Risk Exposure Duration* and *Risk Severity.* These comparisons can be made on an individual process step level, or from a summation of these variables.

Table 8: Safety Evaluation Methodology

Process	Resources	Risk Likelihood	Risk Exposure Duration	Risk Severity	Total
On-site Activity 1 or Off-site Activity 1	Resource 1	Risk 1 Likelihood	Exposure Duration Risk 1	Risk 1 Severity	Product 1 + Product 2
		Risk 2 Likelihood	Exposure Duration Risk 2	Risk 2 Severity	
	Resource 2	Risk 1 Likelihood	Exposure Duration Risk 1	Risk 1 Severity	Product 1 + Product 2
		Risk 2 Likelihood	Exposure Duration Risk 2	Risk 2 Severity	
On-site Activity 2 or Off-site Activity 2	Resource 1	Risk 1 Likelihood	Exposure Duration Risk 1	Risk 1 Severity	Product 1 + Product 2
		Risk 2 Likelihood	Exposure Duration Risk 2	Risk 2 Severity	
	Resource 2	Risk 1 Likelihood	Exposure Duration Risk 1	Risk 1 Severity	Product 1 + Product 2
		Risk 2 Likelihood	Exposure Duration Risk 2	Risk 2 Severity	
TOTAL					**SUM**

5.0 Results

5.1 WorkSafe New Brunswick Data

The WorkSafe New Brunswick data detailed the safety incidents in the construction and manufacturing industries over the last 10 years. Each safety claim included the following details:

- Sector description
- NAICS (North American Industry Classification System) description
- Claim type (lost-time or no-lost-time)
- Accident date
- Occupation
- Part of body
- Nature of injury
- Event exposure
- Source of injury

The incident claims are made by the employer, typically in conjunction with the injured employee, to submit the claims to WorkSafe New Brunswick.

There are two types of incident claims, lost-time (LT) and no-lost-time (NLT). LT incidents mean that the injured employee had time away from work as a result of the injury sustained at work, while NLT incidents indicate no time away from work. When it comes to NLT incidents, the only categories that are required to be reported on are the sector, NAICS description, claim type, accident date, and the part of the body that was injured. While there are some NLT claims that are coded in all the aforementioned categories, they are fairly insignificant in comparison to the total NLT claims that are made. In the construction sector, only 10.4% are completely coded, and in the manufacturing industry, only 23.8% of NLT incidents are coded. This lack of information limits the analysis that can be performed on this type of data, as it creates gaps in the data set. Therefore, the data used for the research was the LT claims, as they provide the needed insight into the source of injury that can be matched to the process being analysed in terms of potential safety risks.

The dataset was used to make initial comparisons between the construction and manufacturing industries with respect to safety. The analysis shows that manufacturing has 2.5 times the amount of safety incidents each year on average, with an average of 1.1 times the number of hours worked, as summarized by Table 9.

Table 9: Comparison of Incidents to Worker Hours in Construction and Manufacturing Industries

Year	Total Construction Incidents (LT + NLT + Fatality)	Total Manufacturing Incidents (LT + NLT + Fatality)	Ratio of Manufacturing to Construction Incidents	Total Hours Worked (Construction) x 10^6	Total Hours Worked (Manufacturing) x 10^6	Ratio of Manufacturing to Construction Worker Hours
2011	1012	2061	2.0	1.22	1.19	0.98
2012	956	2038	2.1	1.11	1.15	1.03
2013	764	1975	2.6	1.15	1.11	0.97
2014	759	1917	2.5	1.12	1.08	0.96
2015	656	1858	2.8	1.00	1.18	1.17
2016	655	1940	3.0	0.97	1.20	1.24
2017	682	1753	2.6	0.98	1.23	1.25
2018	748	1664	2.2	0.95	1.28	1.35
2019	598	1577	2.6	0.97	1.21	1.25
2020	382	1064	2.8	0.94	1.11	1.18
Average Ratio of Manufacturing to Construction Incidents			**2.5**	**Average Ratio of Manufacturing to Construction Worker Hours**		**1.1**

Further analysis examined the ratio of LT to NLT incidents within these injuries, as summarized in Table 10. Interestingly, the results show that while manufacturing consistently has higher frequencies of incidents year over year, the construction industry has a higher percentage of LT incidents in 7 out of the 10 years of data.

Table 10: Ratio of LT vs NLT Incidents in Construction and Manufacturing Industries

	Construction			Manufacturing		
Year	**Lost-Time**	**No-Lost-Time**	**% Lost Time**	**Lost-Time**	**No-Lost-Time**	**% Lost Time**
2011	443	565	78%	923	1138	81%
2012	425	525	81%	897	1140	79%
2013	364	398	91%	858	1117	77%
2014	351	406	86%	890	1027	87%
2015	333	319	104%	871	986	88%
2016	324	329	98%	980	958	102%
2017	359	317	113%	899	855	105%
2018	441	299	147%	900	764	118%
2019	332	264	126%	851	725	117%
2020	226	156	145%	596	467	128%

In addition to experiencing fewer LT incidents in comparison to NLT incidents, the manufacturing industry has experienced significantly fewer fatalities historically. This points to the possibility of the manufacturing industry experiencing incidents that are less severe on average than the construction industry incidents. The fatalities over the last 10 years in these industries is summarized in

Figure 8.

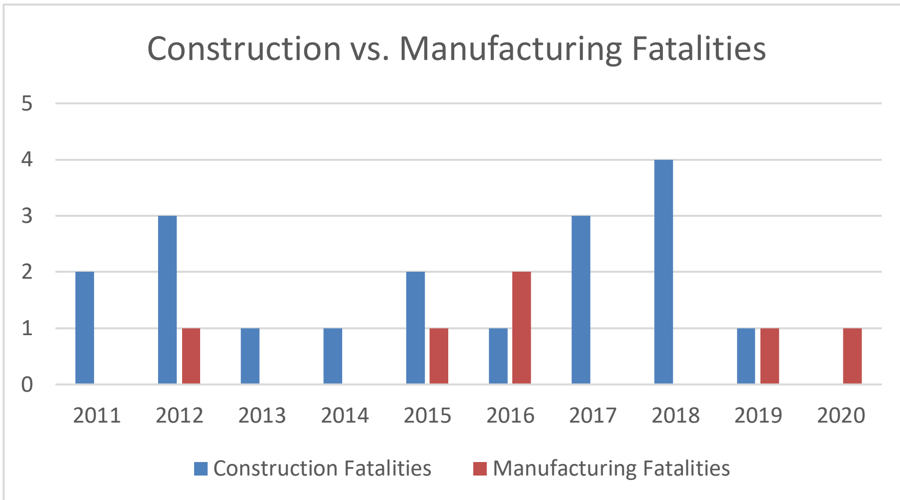

Figure 8: Construction vs. Manufacturing Fatalities

Further analysis into the causes of the fatalities in the manufacturing industry reveals there are no cause of fatality that is more common than another, as summarized in Table 11.

Table 11: Cause of Fatalities - Manufacturing

Manufacturing		
Cause of Fatality	**Fatalities**	**Percent of Total Fatalities**
Caught in running equipment or machinery	1	17%
Compressed or pinched by rolling, sliding, or shifting objects	1	17%
Not coded	1	17%
Struck by falling object	1	17%
Struck by swinging or slipping object, n.e.c.	1	17%
Unknown	1	17%

Contrastingly, it can be observed that the construction industry has experienced fatalities from the same cause of injury on multiple occasions, as summarized by Table 12. When comparing the two industries, it should be noted that both have experienced fatalities from a worker being *struck by a falling object* and *being caught or compressed by equipment or objects*.

Table 12: Cause of Fatalities - Construction

Construction		
Cause of Fatality	**Fatalities**	**Percent of Total Fatalities**
Struck by falling object	3	16.7%
Fall through existing floor opening	2	11.1%
Bodily reaction and exertion, not elsewhere classified (n.e.c.)	1	5.6%
Caught in or compressed by equipment or objects, n.e.c.	1	5.6%
Drowning, submersion, uns.	1	5.6%
Explosion of pressure vessel or piping	1	5.6%
Fall from ladder	1	5.6%
Fall from roof, uns.	1	5.6%
Fall from scaffold, staging, platform	1	5.6%
Fell from and struck by vehicle, mobile equipment	1	5.6%
Jack-knifed or overturned -- no collision	1	5.6%
Moving in opposite directions, oncoming	1	5.6%
Overexertion, n.e.c.	1	5.6%
Pedestrian struck by vehicle, mobile equipment in parking lot or non-roadway area	1	5.6%
Transportation accident, n.e.c.	1	5.6%

The most common event exposures and sources of injury for each industry were also examined to determine whether there were any similarities between the two industries. For both industries, it can be observed that the bodily motion or position of the injured worker when bending, climbing, crawling, reaching and twisting is the most common cause of injury. It can then be observed that the remaining common sources of injury in manufacturing can be correlated to repetitive motions and exposure to noise overtime, as summarized by Table 13, whereas the remaining common sources of injury in construction are associated with slips, trips and falls, as summarized by Table 14.

Table 13: Cause of Incidents - Manufacturing

	Manufacturing	
Event Exposure	**Source of Injury**	**Total Claims**
Bending, climbing, crawling, reaching, twisting	Bodily motion or position of injured, ill worker	562
Repetitive motion	Bodily motion or position of injured, ill worker	490
Exposure to noise over time	Noise	296
Repetitive placing, grasping, or moving objects, except tools	Bodily motion or position of injured, ill worker	247
Bodily reaction	Bodily motion or position of injured, ill worker	220
Fall to floor, walkway or other surface	Floor of building	220
Repetitive use of tools	Bodily motion or position of injured, ill worker	134

Table 14: Cause of Incidents - Construction

	Construction	
Event Exposure	**Source of Injury**	**Total Claims**
Bending, climbing, crawling, reaching, twisting	Bodily motion or position of injured, ill worker	264
Fall to floor, walkway or other surface	Floor of building	110
Bodily reaction	Bodily motion or position of injured, ill worker	92

Stepping in a hole or on an object with or without twisting, without fall	Bodily motion or position of injured, ill worker	68
Fall to floor, walkway or other surface	Floors, walkways, ground surfaces, unspecified (uns.)	62
Slip, trip, stepped on or in, loss of balance, with or without twisting, without fall, nec.	Bodily motion or position of injured, ill worker	54
Slipping on something, with or without twisting, without fall	Bodily motion or position of injured, ill worker	54

It should be noted that the methodology uses the datasets available for both construction and manufacturing, without excluding any type of work environment. Instead, the risk analysis will be completed from a potential source of injury perspective when observing the process. Meaning regardless of the end-product of the manufacturing facility or construction site in the data, if the source of injury is present and in use in the observed process, then the likelihood of injury is still relevant, whether it applies specifically to the construction of a hotel room or not.

5.2 Case Study – On-Site vs. Off-Site Construction

5.2.1 Introduction

The case study for this research analysed the construction of a hotel in Florenceville, New Brunswick, Canada, that utilized both on-site and off-site methodologies. The nature of this project is unique, as it allows for comparison of different construction processes used to deliver a hotel room. The first level of the hotel was constructed using conventional on-site construction methodologies, while the upper levels leveraged off-site construction modular hotel room units which were then transported to the project site and installed on the structure for the second, third and fourth floors.

This project allows for the comparison of two construction methodologies used in the delivery of the same end-product. The requirement of the safety evaluation methodology to analyse from a product perspective places emphasis on the complete definition of the supply chain in the development and delivery of the end-product. This ensures a comprehensive safety risk analysis is completed for the entire process, and allows for a comparison of on-site versus off-site methods to quantitatively determine which alternative presents the least amount of safety risks.

The safety analysis remains objective with the use of historical safety claim data from the Province of New Brunswick, and requires the analysis to be completed from a potential source of injury perspective. This allows for extraction of relevant safety data for both the likelihood of occurrence and severity of the potential injury based on the sources of injury that are present throughout the process. Leveraging historical data allows for the use of incident frequency to determine the likelihood of occurrence, and the severity calculations to be based on the severity of historical incidents that have been experienced in both the construction and manufacturing industries. The portions of construction activities that occur at the project site will use incident claim data from the construction industry, while the off-site construction of the modular units will use incident claim data from the manufacturing industry.

5.2.2 Analysis

5.2.2.1 On-Site Construction

The on-site construction portion of the work began in September 2020. For the purpose of this research, the on-site construction work analysis is limited to the hotel room structure, similar to the off-site construction analysis. This allows for comparison of two similar products that were developed through different methodologies. The data for this analysis was obtained through various means as the construction of the ground level hotel rooms was already complete by the time this research was initiated. To determine the process and develop the detailed process map, daily logs from the general contractor were reviewed in conjunction with site photos (e.g., Figure 9), to determine the sequence of construction activities.

Figure 9: On-Site Construction Site Photo

Additional information was available through the project schedule, also provided by the general contractor, which provided high level direction for the development of the process map. The daily logs were limited to a description of the construction activities taking place on site each day, but did not detail the resources involved in individual tasks or the time resources allocated to the tasks. The daily logs and site photos also provided information about the risks present, which provided input for the potential sources of injury risk analysis. An example of the daily logs that were reviewed can be found in Appendix D. To complete the resource analysis and risk exposure durations, RSMeans (2021) was used to determine the duration of each construction activity using historical productivity data and applying it to the dimensions and details from the project construction drawings.

There are important considerations and inclusions that go along with the use of RSMeans (2021) construction productivity data, and accounts for factors such as:

- Daily set-up, clean-up, breaks and plan layout time
- Movement of materials up to 200' into the building to the first and second floor of a building
- Time allowance for quality control
- Direct labour (measuring and layout, preparing materials, actual installation), indirect labour (reading plans, preparing space, receiving materials, material movement, giving/receiving instruction) and non-work (discussions, personal issues, breaks, interruptions)

To account for these underlying assumptions, there are some process steps that needed to be combined to determine the construction activity duration because RSMeans (2021) includes these factors in the productivity data. For example, the framing process step duration includes the standing and bracing of the framing, so the two construction activities were combined in the risk assessment, but were kept separate in the process map described by Figure 10 to more accurately present the construction activities.

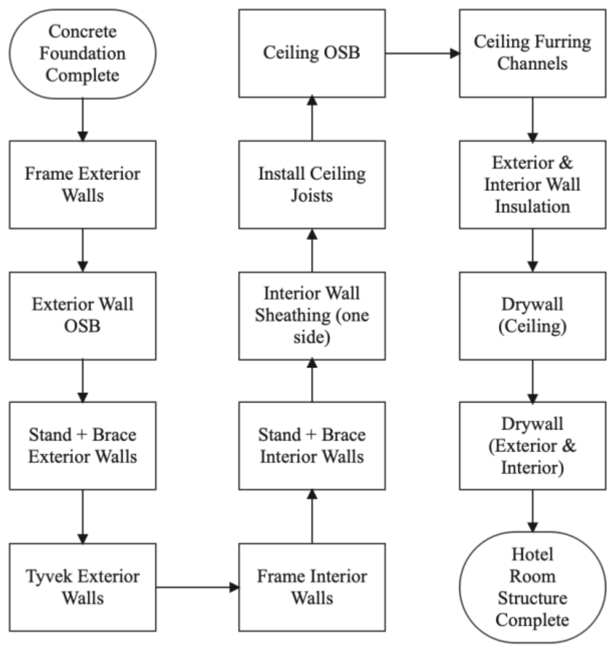

Figure 10: On-Site Construction Process Map

Once the resource requirements and activity durations were calculated, the safety evaluation was completed for the on-site construction of the ground floor. The on-site construction process obtained a total safety score of 2110, and is further summarized in Table 15. The detailed risk assessment can be found in Appendix A1, and the severity factors for the construction industry that were input into the risk analysis calculations can be found in Appendix B1.

Table 15: On-Site Construction Safety Evaluation

Process Step	Resources	Risk Likelihood	Risk Exposure Duration	Risk Severity	Total
Frame Exterior Walls (Includes standing + bracing)	Carpenter 1	21.05%	2.45	1.012	52.19
	Carpenter 2	21.05%	2.45	1.012	52.19
Exterior Wall Sheathing	Carpenter 1	13.87%	1.66	1.007	23.18
	Carpenter 2	13.87%	1.66	1.007	23.18
Tyvek Exterior Walls	Carpenter 1	16.29%	0.27	1.007	4.43
	Carpenter 2	16.29%	0.27	1.007	4.43
Frame Interior Walls (includes standing + bracing walls)	Carpenter 1	19.62%	12.21	1.012	242.47
	Carpenter 2	19.62%	12.21	1.012	242.47
Interior Wall Sheathing (exterior)	Carpenter 1	24.16%	7.76	1.004	188.22
	Carpenter 2	24.16%	7.76	1.004	188.22
Install Ceiling Joists	Carpenter 1	14.12%	4.16	1.008	59.21
	Carpenter 2	14.12%	4.16	1.008	59.21
Ceiling Sheathing	Carpenter 1	4.90%	4.40	1.036	22.32
	Carpenter 2	4.90%	4.40	1.036	22.32
Ceiling Furring Channels	Carpenter 1	15.80%	23.52	1.007	374.14
Exterior & Interior Wall Insulation	Carpenter 1	1.43%	11.38	1.000	16.29
Drywall (Ceiling)	Carpenter 1	14.28%	12.00	1.004	172.15
	Carpenter 2	14.28%	12.00	1.004	172.15
Drywall (Exterior and Interior Walls)	Carpenter 1	3.99%	23.56	1.016	95.51
	Carpenter 2	3.99%	23.56	1.016	95.51
SUM			**2110**		

5.2.2.2 Off-Site Construction

The off-site construction portion of work has been previously defined by three high level process steps: off-site manufacturing, mobilization and on-site installation. The scope for the analysis of the off-site modules has also been reduced to the structural components only in order to align with the analysis of the conventional on-site construction. To capture the work for the off-site construction methodologies, data was collected from observations at the module manufacturer and through on-site observations at the project site made in compliance with relevant site personal protective equipment requirements.

The modules for this project were produced in Sussex, New Brunswick, approximately 2.5 hours away from the project site. The modules arrived to the project site complete with furniture assembled and placed within the unit, only needing to be connected to the structure with the use of a crane to lift and install for the upper levels. An important distinction between the pre-fabricated modules and the on-site construction is that the modules were being installed for the upper levels of the hotel, while the on-site construction analysed the construction of the ground floor. Installing modules for the upper levels introduces additional risks that would not be present if the modules had been installed on the ground floor, such as the need to work at height. Therefore, this analysis was completed assuming the modules would be lifted and installed at the ground floor. While this assumption does not eliminate all risk, it makes for a better comparison by eliminating some of the working at height that is required to connect the modules to an upper level of a structure.

Off-Site Manufacturing

The off-site construction process at the facility, shown in Figure 11, was analysed to develop the process map and define the resources involved with each activity. Once the process was defined, each activity was reviewed to identify the potential sources of injury that were present to the workers involved, allowing for the extraction of relevant WorkSafe New Brunswick data to determine the likelihood of occurrence and the severity of the potential incident based on historic data from the manufacturing industry.

Figure 11: Off-Site Construction Site Photo

The process analysis resulted in the process map as presented in Figure 12. This process was then used as the initial input for the safety evaluation methodology. For each process step, the resources were defined and analysed to understand what potential sources of injury were present in their work activities.

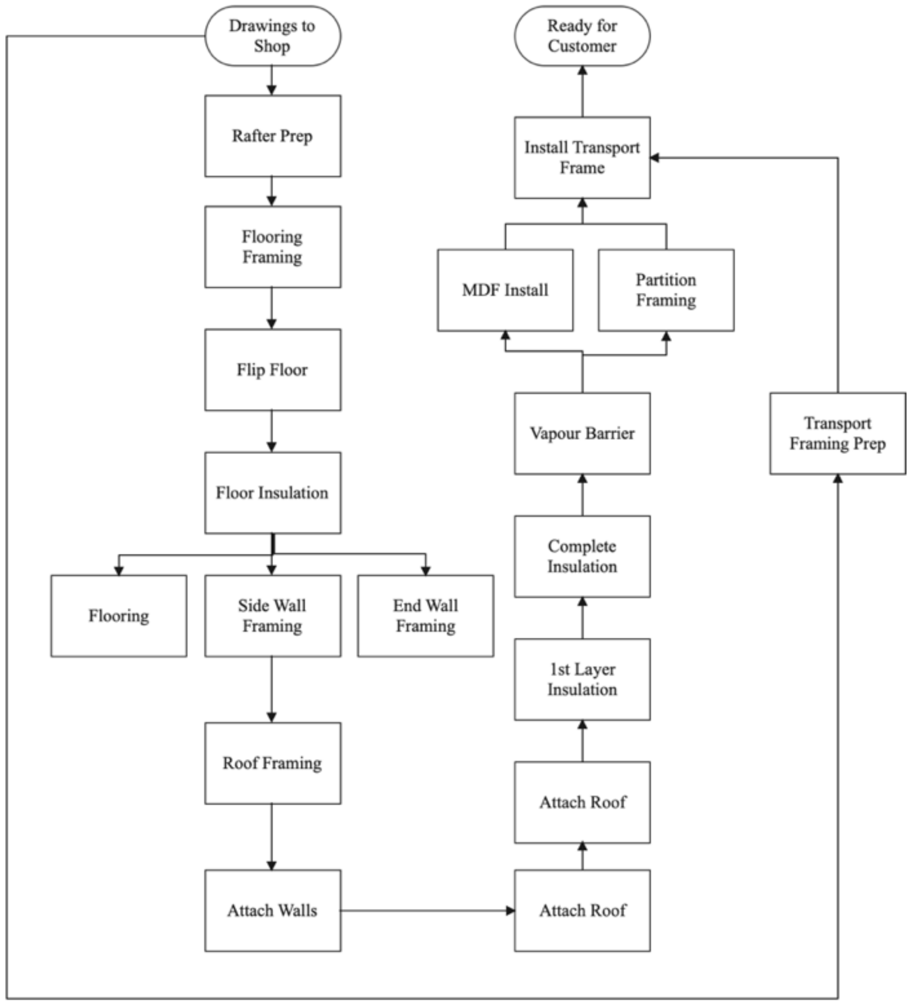

Figure 12: Off-Site Construction Process Map

Based on the results of the safety evaluation, the off-site manufacturing obtained safety risk total of 388.23, and is further summarized in Table 16. The detailed risk assessment can be found in Appendix A2, and the severity factors for the manufacturing industry that were input for the risk analysis calculations can be found in Appendix B2. The risk exposure durations were provided by a process improvement study that was previously completed in partnership by Alantra Leasing Inc. that analysed the off-site construction activities, resources, and durations (van de Riet, 2021).

This value represents the first portion of the off-site process. It should be noted that the "transport framing prep" process step has been removed from the scope as this work is completed by a sub-contractor outside of the manufacturing facility, and therefore, there was not enough information about the work to proceed with an in-depth risk assessment or determination of the exposure duration to risk.

Table 16: Off-Site Module Construction Safety Evaluation

Process Step	Resources	Risk Likelihood	Risk Exposure Duration	Risk Severity	Total
Rafter Prep	Carpenter	1.00%	4.64	1.02	4.75
Floor Framing	Carpenter 1	1.64%	4.46	1.03	7.54
	Carpenter 2	9.03%	4.46	1.02	40.98
Flip Floor	Carpenter 1	0.05%	0.13	1.09	0.01
	Carpenter 2	0.05%	0.13	1.09	0.01
	Carpenter 3	0.05%	0.13	1.09	0.01
Flooring Insulation	Carpenter 1	7.83%	0.73	1.00	5.74
	Carpenter 2	7.83%	0.73	1.00	5.74
	Carpenter 3	7.83%	0.73	1.00	5.74
	Carpenter 4	7.83%	0.73	1.00	5.74
	Carpenter 5	7.83%	0.73	1.00	5.74
Flooring	Carpenter 1	2.30%	4.21	1.03	9.96
	Carpenter 2	1.37%	4.21	1.04	6.01
	Carpenter 3	0.72%	4.21	1.06	3.19

Side Wall Framing	Carpenter 1	1.64%	3.57	1.03	6.03
	Carpenter 2	8.10%	3.57	1.02	29.45
	Carpenter 3	8.10%	3.57	1.02	29.45
End Wall Framing	Carpenter	1.58%	2	1.03	3.25
Roof Framing	Carpenter 1	1.64%	4	1.03	6.76
	Carpenter 2	8.10%	4	1.02	33.00
	Carpenter 3	8.10%	4	1.02	33.00
Attach Walls	Carpenter 1	1.01%	0.57	1.03	0.59
	Carpenter 2	0.08%	0.57	1.18	0.05
	Carpenter 3	0.08%	0.57	1.18	0.05
Attach Roof	Carpenter 1	1.01%	0.23	1.03	0.24
	Carpenter 2	0.08%	0.23	1.18	0.02
	Carpenter 3	0.08%	0.23	1.18	0.02
1st Layer Insulation	Carpenter 1	10.87%	1.49	1.01	16.36
	Carpenter 2	10.87%	1.49	1.01	16.36
Complete Insulation	Carpenter 1	10.87%	2.66	0.11	3.15
	Carpenter 2	10.87%	2.66	0.11	3.15
Vapour Barrier	Carpenter 1	10.13%	1.28	1.01	13.12
	Carpenter 2	10.13%	1.28	1.01	13.12
MDF Install	Carpenter 1	0.93%	2.49	1.01	2.34
	Carpenter 2	8.55%	2.49	1.01	21.40
	Carpenter 3	8.55%	2.49	1.01	21.40
	Carpenter 4	8.55%	2.49	1.01	21.40
Partition Framing	Carpenter 1	1.58%	1	1.03	1.62
	Carpenter 2	1.86%	1	1.07	1.98
Transport Framing Prep (out of scope)					
Install Transport Frame	Carpenter 1	6.28%	0.78	1.00	4.90
	Carpenter 2	6.28%	0.78	1.00	4.90
SUM			**388**		

Module Mobilization

The modules were delivered to the project site and stored temporarily at the defined lay down areas. All the modules required for a complete level were delivered to site in advance of the crane arrival. The modules were stored directly on and adjacent to the hotel project lot, and were stored in a manner that could later be accessed for trucks to deliver modules to the crane as they were installed on the structure.

Figure 13 demonstrates the modules being delivered and placed on jacks that temporarily held the modules in preparation for their installation. They were delivered in a strategic manner so the trucks could access and deliver the needed modules to the crane in the correct assembly order, as shown in Figure 14.

Figure 13: On-Site Module Delivery

Figure 14: On-Site Module Storage

Through on-site observations, which included video, photo and written documentation, the module mobilization process was defined, as presented in Figure 15. The resources required to execute the mobilization activities were documented, and the durations of each process step for each resource were determined.

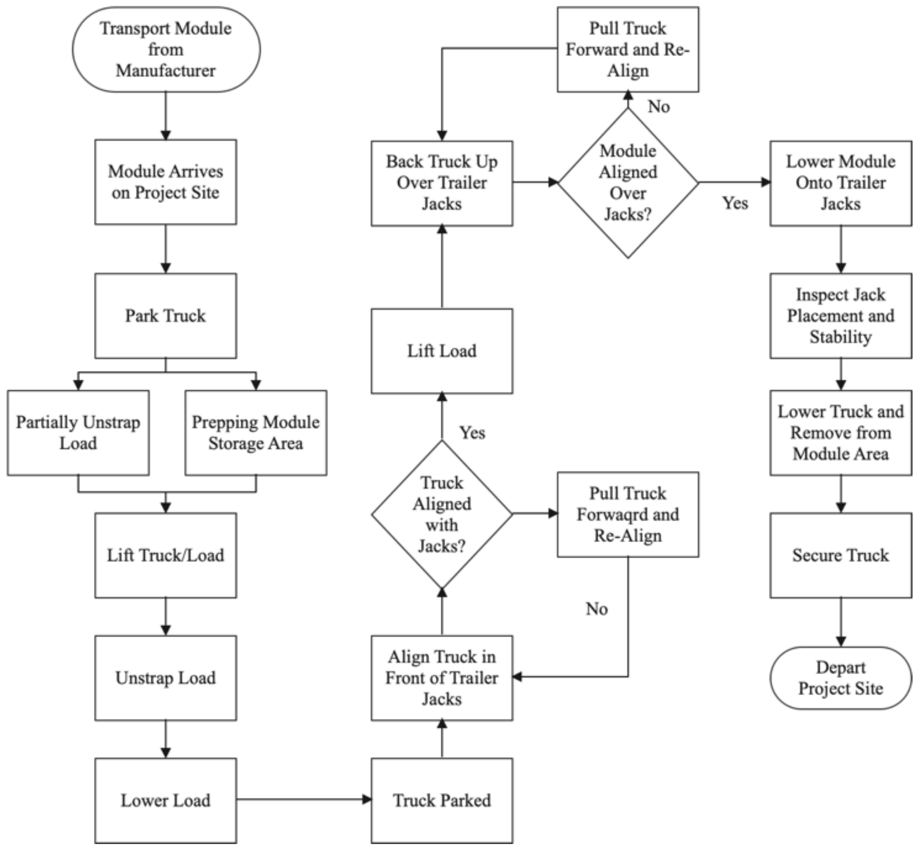

Figure 15: Module Mobilization Process Map

The process was further analysed for potential sources of injury present. Based on the results of the safety evaluation, the module mobilization portion of the off-site construction process obtained a safety risk total of 30.80, and is further summarized in Table 17. This value represents the second portion of the off-site process. The detailed risk assessment can be found in Appendix A3, the severity factors for the construction industry that were input for the risk analysis calculations can be found in Appendix B1, and the risk exposure durations that were determined through a detailed analysis of the construction crews and their activities can be found in Appendix C1.

Table 17: Module Mobilization Safety Evaluation

Process Step	Resources	Risk Likelihood	Risk Exposure Duration	Risk Severity	Total
Drive Module from Alantra to Florenceville-Bristol	Labourer – Driver 1	1.43%	2.50	1.07	3.82
	Labourer – Driver 2	1.43%	2.50	1.07	3.82
	Labourer - Pickup Driver 1	1.32%	2.50	1.07	3.52
	Labourer - Pickup Driver 2	1.32%	2.50	1.07	3.52
Park Truck	Labourer – Driver 1	1.29%	0.03	1.02	0.04
Prepping Module Storage Area	Labourer – Driver 2	10.46%	0.14	1.00	1.46
Partially Unstrap Load	Labourer – Driver 1	21.46%	0.04	1.00	0.90
	Labourer – Driver 2	21.46%	0.13	1.00	2.79
Lift Truck/Load	Labourer – Driver 1	0.03%	0.02	1.00	0.001
	Labourer – Driver 2	0.03%	0.02	1.00	0.001
Unstrap Load	Labourer – Driver 1	21.46%	0.09	1.00	1.83
	Labourer – Driver 2	21.46%	0.11	1.00	2.33
	Labourer – Pickup Driver 1	21.46%	0.03	1.00	0.55

	Labourer – Pickup Driver 2	21.46%	0.03	1.00	0.55
Lower Load	Labourer – Driver 1	0.03%	0.01	1.00	0.00
	Labourer – Driver 2	0.03%	0.01	1.00	0.00
	Labourer – Pickup Driver 1	0.03%	0.02	1.00	0.00
	Labourer – Pickup Driver 2	0.03%	0.02	1.00	0.00
Truck Parked	Labourer – Driver 1	0	0.06	0.00	0.00
	Labourer – Driver 2	0	0.02	0.00	0.00
	Labourer – Pickup Driver 1	0	0.10	0.00	0.00
	Labourer – Pickup Driver 2	0	0.10	0.00	0.00
Align Truck in Front of Trailer Jacks	Labourer – Driver 1	10.54%	0.06	1.01	0.68
	Labourer – Driver 2	0.11%	0.06	1.00	0.01
	Labourer – Pickup Driver 1	10.54%	0.01	1.01	0.08
	Labourer – Pickup Driver 2	10.54%	0.01	1.01	0.08

Check Alignment	Labourer – Driver 1	0	0.02	0.00	0.00
	Labourer – Driver 2	10.35%	0.02	1.00	0.19
Pull Truck Forward and Re-Align	Labourer – Driver 1	10.57%	0.07	1.01	0.76
	Labourer – Driver 2	0.11%	0.07	1.00	0.01
Lift Load	Labourer – Driver 1	0.03%	0.03	1.00	0.00
	Labourer – Driver 2	0.03%	0.03	1.00	0.00
Back Truck Up Over Trailer Jacks	Labourer – Driver 1	10.54%	0.08	1.01	0.82
	Labourer – Driver 2	0.11%	0.05	1.00	0.01
Check Alignment	Labourer – Driver 1	10.35%	0.05	1.00	0.48
	Labourer – Driver 2	0	0.05	0.00	0.00
Pull Truck Forward and Re-Align	Labourer – Driver 1	10.54%	0.05	1.01	0.52
	Labourer – Driver 2	0.11%	0.05	1.00	0.01
Lower Module onto Trailer Jacks	Labourer – Driver 1	0.30%	0.03	1.10	0.01
	Labourer – Driver 2	0.03%	0.03	1.00	0.00
	Labourer – Pickup Driver 1	0.03%	0.03	1.00	0.00
	Labourer – Pickup Driver 2	0.03%	0.05	1.00	0.00

Inspect Jack Placement and Stability	Labourer – Driver 1	10.48%	0.03	1.00	0.34
	Labourer – Driver 2	10.48%	0.02	1.00	0.20
	Labourer – Pickup Driver 1	10.48%	0.03	1.00	0.34
Lower Truck and Remove from Module Area	Labourer – Driver 1	0.03%	0.08	1.00	0.00
	Labourer – Driver 2	0.41%	0.10	0.59	0.02
Secure Truck	Labourer – Driver 1	10.48%	0.11	1.00	1.12
	Labourer – Driver 2	0.00%	0.09	1.00	0.00
SUM			**31**		

On-Site Module Installation

Once the crane arrived on site, the modules were transported from the lay down areas to the crane to be installed on the hotel structure, as shown in Figure 16. This process was repeated for the second, third and fourth levels of the hotel.

Figure 16: On-Site Module Installation

The process was observed and analysed in the same manner as the module mobilization, through on-site observations documented with video, photo and written observations, and then defined through the development of a process map, as shown in Figure 17.

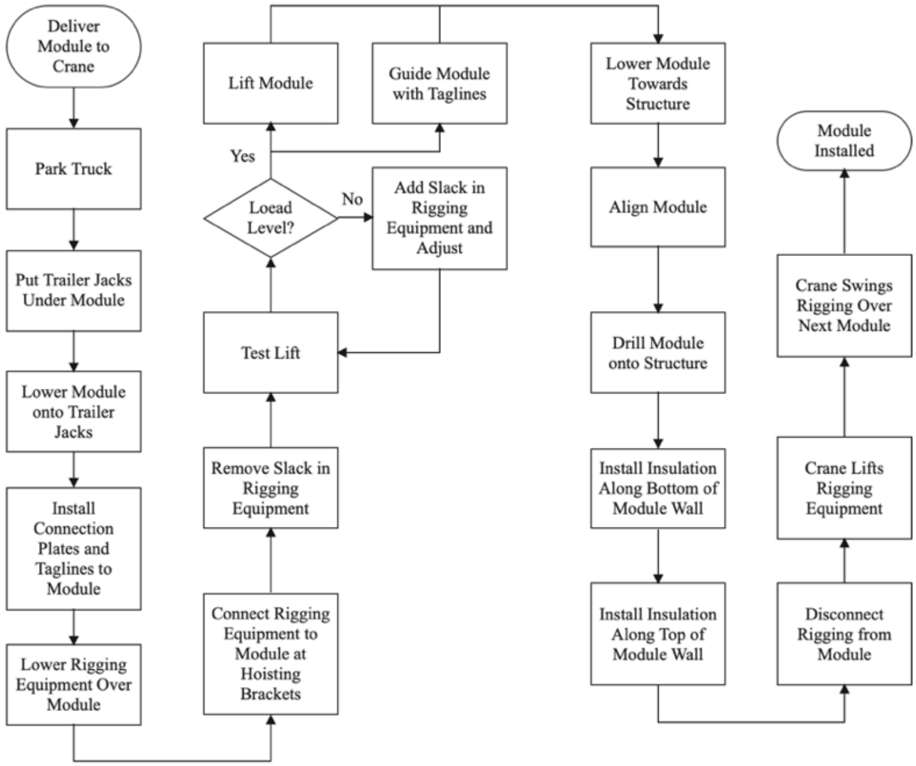

Figure 17: On-Site Installation Process Map

Based on the results of the safety evaluation, the on-site installation portion of the off-site construction process obtained a safety risk total of 15. and is further summarized in Table 18. This value represents the third portion of the off-site process. The detailed risk assessment can be found in Appendix A4, the severity factors for the construction industry that were input into the risk analysis calculations can be found in Appendix B1, and the risk exposure durations that were determined through a detailed analysis of the construction crews and their activities can be found in Appendix C2.

Table 18: On-Site Module Installation Safety Evaluation

Process Step	Resources	Risk Likelihood	Risk Exposure Duration	Risk Severity	Total
Deliver Module to Crane	Labourer - Spotter	11.14%	0.125	1.04	1.44
	Labourer - Driver	0.03%	0.133	1.00	0.00
Park Truck	Labourer - Driver	1.18%	0.017	1.02	0.02
Put Trailer Jacks Under Module	Labourer – Spotter	11.01%	0.017	1.00	0.19
	Labourer – Driver	11.01%	0.017	1.00	0.19
Lower Module onto Trailer Jacks	Labourer – Spotter	0.03%	0.025	1.13	0.00
	Labourer – Driver	0.03%	0.025	1.13	0.00
Install Connection Plates and Taglines to Module	Labourer – Spotter	11.67%	0.021	1.00	0.25
Lower Rigging Equipment Over Module	Crane Operator	0.00%	0.008	0.00	0.00
	Labourer – Spotter	0.03%	0.008	1.03	0.00
	Labourer – Driver	0.03%	0.008	1.03	0.00
Connect Rigging Equipment to Module at Hoisting Brackets	Crane Operator	0.00%	0.067	0.00	0.00
	Labourer – Spotter	22.34%	0.075	1.00	1.68
	Labourer – Driver	22.34%	0.058	1.00	1.30
Remove Slack in Rigging Equipment	Crane Operator	0.00%	0.017	0.00	0.00
	Labourer – Spotter	0.03%	0.008	1.13	0.00
	Labourer – Driver	0.03%	0.008	1.13	0.00
Test Lift	Crane Operator	0.03%	0.092	1.13	0.00
	Labourer – Spotter	0.36%	0.092	1.05	0.03
	Labourer – Driver	0.36%	0.092	1.05	0.03
Add Slack in Rigging Equipment and Adjust	Crane Operator	0.00%	0.042	0.00	0.00
	Labourer – Spotter	0.17%	0.042	1.09	0.01
	Labourer – Driver	0.17%	0.042	1.09	0.01
Lift Module	Crane Operator	0.03%	0.05	1.13	0.00
	Labourer – Spotter	0.36%	0.05	1.08	0.02
	Labourer – Driver	0.36%	0.05	1.08	0.02

	Labourer – Roof Connection 1	0.36%	0.05	1.08	0.02
	Labourer – Roof Connection 2	0.36%	0.05	1.08	0.02
	Labourer – Front Connection	0.36%	0.05	1.08	0.02
	Labourer – Back Connection	0.36%	0.05	1.08	0.02
Guide Module with Taglines	Labourer – Spotter	10.79%	0.083	1.01	0.90
	Labourer – Driver	10.79%	0.092	1.01	1.00
Lower Module Towards Structure	Crane Operator	0.03%	0.025	1.13	0.00
	Labourer – Spotter	0.19%	0.025	1.07	0.01
	Labourer – Driver	0.19%	0.025	1.07	0.01
	Labourer – Roof Connection 1	0.33%	0.025	1.09	0.01
	Labourer – Roof Connection 2	0.33%	0.025	1.09	0.01
	Labourer – Front Connection	0.33%	0.025	1.09	0.01
	Labourer – Back Connection	0.33%	0.025	1.09	0.01
Align Module	Crane Operator	0.00%	0.05	0.00	0.00
	Labourer – Front Connection	10.18%	0.05	1.00	0.51
	Labourer – Back Connection	10.18%	0.033	1.00	0.34
Drill Module onto Structure	Crane Operator	0.00%	0.417	0.00	0.00
	Labourer – Roof Connection 1	4.57%	0.008	1.00	0.04
	Labourer – Roof Connection 2	4.57%	0.083	1.00	0.38
	Labourer – Front Connection	0.00%	0.417	1.01	0.00
	Labourer – Back Connection	0.00%	0.342	1.01	0.00
Install Insulation Along Bottom of Module Wall	Labourer – Roof Connection 1	11.64%	0.075	1.00	0.88
	Labourer – Roof Connection 2	11.64%	0.067	1.00	0.78
Install Insulation Along Top of Module Wall	Labourer – Roof Connection 1	20.58%	0.158	1.01	3.27

	Labourer – Roof Connection 2	7.57%	0.158	1.00	1.20
Disconnect Rigging from Module	Labourer – Roof Connection 1	6.58%	0.017	1.00	0.11
	Labourer – Roof Connection 2	6.58%	0.017	1.00	0.11
Crane Lifts Rigging Equipment	Crane Operator	0.00%	0.033	0.00	0.00
	Labourer – Roof Connection 1	0.03%	0.033	1.03	0.00
	Labourer – Roof Connection 2	0.03%	0.033	1.03	0.00
Crane Swings Rigging Over Next Module	Crane Operator	0.00%	0.025	0.00	0.00
	Labourer – Spotter	0.03%	0.025	1.03	0.00
	Labourer – Driver	0.03%	0.025	1.03	0.00
SUM			**15**		

5.2.3 Comparing Results

To use the safety evaluation methodology in the context of this case study, the construction processes were defined for both on-site and off-site methodologies through observations and daily logs. An important component of this research is that the methodology evaluates the entire supply chain of the product to ensure all safety risks have been captured and assessed. The safety evaluation methodology produces a quantifiable value that represents the safety score obtained. A higher value represents more potential safety risks present in the defined process, thus making the process less safe. The determination of this value allows for objective comparisons between two construction methodologies to produce similar end-products, as the likelihood and severity values have been taken from historical data within the construction and manufacturing industries. Based on the comparison of this case study, it can be concluded that the off-site construction approach is considered safer in the construction of a hotel room unit, as summarized in Table 19.

Table 19: Off-Site vs. On-Site Results

Construction Method	High Level Process Step	High Level Process Score	Total Construction Method Score
On-Site Construction	Construction of Hotel Unit	2110	2110
Off-Site Construction	Module Manufacturing	388	434
	Module Mobilization	31	
	On-Site Installation	15	

5.3 Case Study – Pre-Fabricated Panels

5.3.1 Introduction

This case study was completed in partnership with Nomodic, which leveraged a construction project they were involved in that used prefabricated panels to build a new Starbucks building located in Oromocto, New Brunswick. The project engaged Nexii Building Solutions to design, engineer and fabricate the structural envelope panels which provided opportunities for an accelerated schedule and sustainable construction materials being employed to deliver the new build. Nomodic was sub-contracted by Nexii in this endeavor to oversee the base building preparation, panels installation and to complete the roofing and envelope scopes. The project presented research opportunities for process analysis and a safety evaluation using the developed methodology to demonstrate another application. This case study highlights the generalizability of the developed evaluation methodology, and shows that it can be used outside of the scope of on-site versus off-site comparisons, but rather, analyze the execution of any process to develop a quantified safety value.

5.3.2 Analysis

The analysis of the case study was completed through on-site observations and video capture of the installation of the pre-fabricated panels. Figure 18 shows the material transportation means and crane set up, while Figure 19 demonstrates how the panels were lifted for installation in the building.

Figure 18: Pre-fabricated Panels

Figure 19: Installation of Pre-fabricated Panels

Detailed analysis of the video footage provided the inputs for the process definition, the resources required, the potential sources of injury present, and the exposure duration to the risks. The process is summarized by Figure 20.

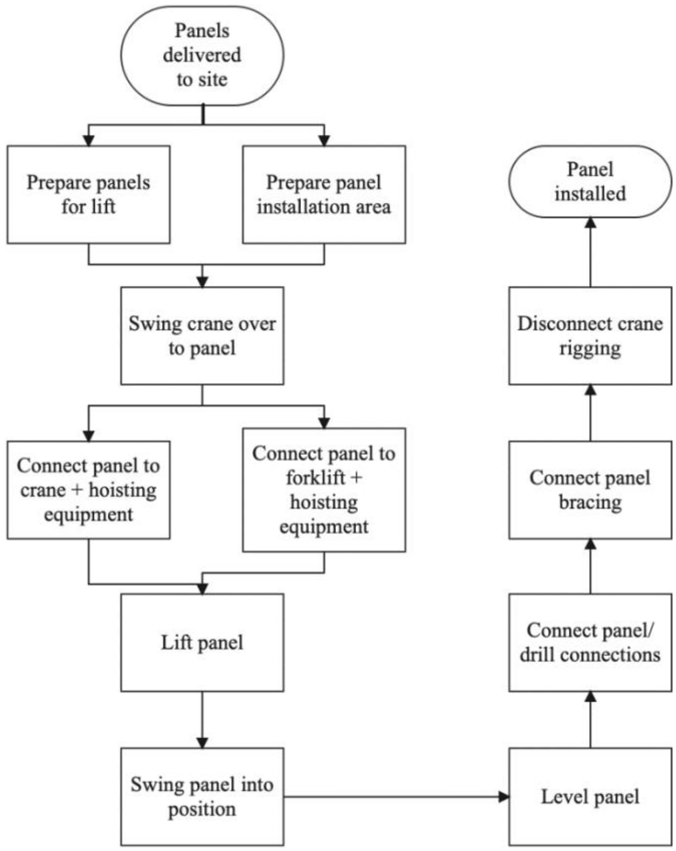

Figure 20: Pre-Fabricated Panel Installation

When analysing the on-site processes for the panels, there were a variety of panel sizes that made up the building envelope. To make valuable comparisons and ensure consistency in the data, the risk exposure durations were analysed for one size of panel only. Based on the results of the safety evaluation completed, the on-site installation of the pre-fabricated Nexii panels obtained a safety risk total of 15.71, which is further detailed in Table 20. The details risk analysis for this process can be found in Appendix A5, the safety factors used in the calculations can be found in Appendix B1, and the risk exposure durations that were determined through a detailed analysis of the construction crews and their activities can be found in Appendix C3.

Table 20: Pre-Fabricated Panel Installation Safety Evaluation

Process Step	Resources	Risk Likelihood	Risk Exposure Duration	Risk Severity	Total
Prepare panels for lift	Foreman	21.11%	0.017	1.00	0.35
	Labourer 3	21.11%	0.028	1.00	0.59
	Labourer 4	21.11%	0.033	1.00	0.71
Prepare panel installation area	Foreman	9.99%	0.078	1.00	0.78
	Labourer 1	9.99%	0.047	1.00	0.47
	Labourer 2	9.99%	0.117	1.00	1.17
	Labourer 3	9.99%	0.031	1.00	0.31
	Labourer 4	9.99%	0.056	1.00	0.56
	Labourer 5	9.99%	0.133	1.00	1.33
Swing crane over to panel	Crane Operator	0	0.058	0.00	0.00
Connect panel to crane + hoisting equipment	Labourer 3	9.85%	0.022	1.00	0.22
	Crane Operator	0	0.069	0.00	0.00
Connect panel to forklift + hoisting equipment	Foreman	10.02%	0.006	1.00	0.06
	Labourer 3	10.02%	0.033	1.00	0.33
Lift panel	Foreman	0.19%	0.011	1.05	0.00
	Labourer 3	0.19%	0.011	1.05	0.00
	Labourer 4	0.19%	0.044	1.05	0.01
	Crane Operator	0	0.061	0.00	0.00
Swing panel into position	Foreman	5.48%	0.028	1.00	0.15
	Labourer 1	11.47%	0.064	1.00	0.74
	Labourer 3	6.52%	0.094	1.01	0.62
	Labourer 4	0.52%	0.050	1.01	0.03

	Crane Operator	0	0.125	0.00	0.00
Level panel	Foreman	10.54%	0.083	1.00	0.88
	Labourer 1	3.71%	0.078	1.01	0.29
	Labourer 2	3.44%	0.122	1.01	0.42
	Labourer 3	10.32%	0.167	1.00	1.72
	Labourer 4	10.26%	0.064	1.00	0.66
	Labourer 5	10.32%	0.058	1.00	0.60
	Crane Operator	0	0.150	0.00	0.00
Connect panel/drill connections	Foreman	11.03%	0.106	1.00	1.17
	Labourer 1	4.38%	0.033	1.01	0.15
	Labourer 2	3.44%	0.100	1.01	0.35
	Labourer 3	0.47%	0.061	1.01	0.03
	Labourer 4	0.69%	0.081	1.01	0.06
	Labourer 5	0.69%	0.006	1.01	0.00
	Crane Operator	0	0.197	0.00	0.00
Connect panel bracing	Foreman	10.76%	0.042	1.00	0.45
	Labourer 1	4.38%	0.044	1.01	0.20
	Labourer 2	3.44%	0.058	1.01	0.20
	Labourer 3	0.39%	0.061	1.00	0.02
	Labourer 4	0.39%	0.103	1.00	0.04
	Crane Operator	0	0.153	0.00	0.00
Disconnect crane rigging	Labourer 1	3.52%	0.006	1.01	0.02
	Labourer 2	3.52%	0.006	1.01	0.02
	Crane Operator	0	0.011	0.00	0.00
SUM			**16**		

6.0 Discussion

6.1 Safety Evaluation Methodology Results

This study is similar to the evaluation process proposed by Lu et al. (2021) in that it uses the construction process to quantify the risks, but differs by analysing the risks at an activity level and identifying sources of injuries to extract likelihood and severity from historical data, instead of using injury rates by occupation to quantify the risk of the total process. This differentiation allows for comparisons of methodologies that may require the same or similar occupations throughout the process, and allows for the identification of varying risks based on the nature of work at each process step. This allows the safety evaluation to be completed with greater detail. This study also differs from prior research more generally within the area of off-site construction. Other studies have compared on-site versus off-site construction methods (Ahn et al., 2020), but have not analysed the entire supply chain of the process and therefore, have had the potential to exclude the risks that could have transferred upstream or downstream in the off-site construction process.

The contribution of the safety evaluation methodology is a comprehensive and quantifiable evaluation that allows for future comparisons between on-site and off-site construction for both industry and academia. The evaluation supports informed decision making in the design and planning phases, and provides quantifiable results to support whether off-site construction can be considered a safer alternative, while remaining objective through the use of historical incident frequency and severity data. Additional contributions include the case studies, which provide quantified evaluations of defined processes, while also demonstrating the application and feasibility of the implementation of the methodology in practice.

In the case study comparing the on-site construction of the ground floor hotel rooms to the off-site construction of the modular rooms for the upper units, the results show that the off-site construction methodology can be considered the safest approach of construction to deliver the desired end-product. The on-site construction process obtained a safety score of 2110, while the off-site construction process achieved a score of 434. In the case of this evaluation methodology, the lower the score, the safer the process is as the evaluation sums the product of the risk likelihood, severity and durations for each process step. The notable difference between the on-site and off-site construction processes was that in general, the duration of risk exposure was less in the off-site environment. While the off-site construction process had significantly more process steps due to the fact that modular units are produced, then need to be transported and installed on site, the additional steps did not have a large impact on the total score as the risk likelihood, exposure and severity were not considerable. This case study demonstrated the intended use of the evaluation methodology to provide a quantifiable means to compare between construction methods that deliver the same end-product with differing processes.

The second case study analysed and evaluated the installation of pre-fabricated panels at a project site. This study demonstrates the potential of leveraging the evaluation methodology to analyse a process and identify which process steps present the most risk, as well as who involved in the process are the most at risk. This allows for managers, supervisors and workers to effectively assess the risks and plan preventative safety measures accordingly. This analysis also provided another evaluation of an off-site application, and obtained a low safety evaluation score of 16, highlighting the safety performance potential of off-site applications. This assessment differed from the first case study in that the analysis did not define the complete supply chain of the product as intended, but allows for a detailed and objective quantified analysis of the observed process at hand.

6.2 Methodology Limitations

Once the methodology was established and applied to two case study scenarios, the research was also able to draw conclusions about the feasibility and implementation of the evaluation method in practice. There are two aspects to the analysis that are labour intensive, which could limit the adoption of the evaluation in industry and academia if not further developed with the implementation of digital technologies in future studies.

The first analytical aspect that would benefit from advanced technologies would be the extraction of relevant data from the WorkSafe New Brunswick dataset. The analysis for this research extracted relevant sources of injury that were relevant to the process fairly manually by filtering as needed. However, there is potential for an interface to be applied that would allow users to select the Event Exposures workers experience in the process (i.e., working from height, struck by slipping handheld object) as well as the potential sources of injury (i.e., ground, drills), which would enable the interface to extract the relevant data combinations from a centralized database that contains the WorkSafe New

Brunswick historical incident claims. The centralized database could be further improved by connecting to the WorkSafe New Brunswick data in real time, instead of requiring manual data extractions from the organization to proceed with the analysis. Digitizing this aspect would transform the methodology into an application that is easier to adopt, as the application would guide users through the inputs needed where they can select the relevant ones.

The second aspect would be resource movement detection with the use of digital technologies, which would provide the inputs for risk exposure durations on the project site. For this research, the risk exposure durations were determined by timing the workers' activities in the video footage taken from the project site, which is a significant undertaking when analysing the movement of multiple resources on a project. By adopting technology that would track movement in the x, y and z for the resources on site (i.e., RFID), the risk exposure duration analysis would be more accurate while simplifying the methodology.

6.3 Data Limitations

The following data limitations have been identified during completion of the research:

- The use of New Brunswick safety incident data limits the generalizability of the findings, and does not necessarily represent the safety risks of other provinces or countries.

- It is less likely that smaller workplace incidents (i.e., those that do not require or requires minimal first aid) and near misses are reported to WorkSafe New Brunswick.
- The safety evaluation calculates an internal risk score to those directly involved in the process, and does not evaluate how factors such as transportation of large equipment and oversized components presents to the public.
- The analysis uses lost-time incident data to calculate risk likelihood only.
- Potential long term safety data (ie. comparison of workers who have worked as on-site construction labour versus workers who have worked as off-site construction labour) is not available so benefits such as ergonomics, long-term hearing, mental wellbeing, etc, are not considered.
- On-site hotel construction productivity and activity durations were not captured from the project site by the principal researcher so RS Means (2021) data was used for calculating durations.
- Off-site construction hotel manufacturing productivity and activity durations were captured by another researcher.
- The safety risk extraction from the WorkSafe New Brunswick data was completed by the researcher only, and therefore, presents limitations with the verification of

the analysis. The risk analysis was done to the best of the researchers' abilities, but potential sources of error in data extraction are still possible.

7.0 Conclusions and Recommendations

7.1 Conclusions

The objective of the research was to develop a quantifiable safety evaluation methodology that objectively evaluates a defined process from an activity-level risk-based approach to enable on-site versus off-site construction comparisons with respect to safety. To achieve this, the research standardized a way to evaluate and quantify safety with the use of historical safety incident data from the Province of New Brunswick. The safety evaluation methodology that has been established provides users a framework to be able to compare processes that deliver a similar end-product with differing methodologies. This is done by defining the process and resources, and identifying potential sources of injury throughout the life cycle of the end-product to evaluate three quantifiable variables: risk likelihood, exposure duration and severity.

While the initial goal was to enable on-site versus off-site construction comparisons, the unexpected deliverable was an evaluation methodology that allows for more general applications as well that can more broadly be used as a framework to compare methods. This includes methodology comparisons in different sectors whenever the same product is to be delivered and there are various supply chains that can be leverage to deliver it. Additionally, while the evaluation methodology produces a total score to enable comparisons of the complete supply chain of a defined process, the results also provide safety scores by process step. This provides organizations information on which process step can be considered high-risk. For example, if a process step accounts for 1/3rd of the total score while others account for no more than 1/16th, this provides management, supervisors and workers the insight to effectively mitigate the identified high-risk activities based on past safety performance in the Province to ensure the safety of the workers involved.

The motivation for this research stemmed from the fact that despite the efforts within the New Brunswick construction industry in the area of improved safety performance, it remains one of the most dangerous industries to work in. While the number of safety incidents in the Province has been trending downwards, the annual volume of incidents is high. This can be attribute in part to the typical work conditions of conventional on-site construction such as dynamic site conditions and highly variable work environments. In contrast, an off-site construction environment, while still dynamic in nature, is typically described by stable work locations and predictable environments, which has led to industry and academia suggesting that off-site construction methods are safer than the comparable on-site alternative. However, there is a lack of quantifiable data that is able to prove this statement, which was the secondary motivating problem the research set out to address.

Two research questions and hypotheses were addressed with the research:

1. Are the sources of injury identified from historical data that lead to safety incidents in the New Brunswick construction industry present during an off-site construction operation?

- The presence of the sources of injury that lead to safety incidents in the conventional on-site approach will not be present in an off-site construction operation

It became evident through the research that evaluating safety performance in construction and comparing to manufacturing environment was not as simple as concluding that sources of injury in construction were absent in an off-site environment. The reality is that there are potential sources of injury and risk in almost all work activities, regardless of the environment in which they are undertaken. Therefore, the response to this hypothesis is that it is incorrect. Sources of injury are still very much present in the off-site environment, however, the research found that the distinguishing factors were the likelihood of occurrence, duration of exposure, and the severity potential.

2. How will an off-site construction approach impact the safety performance of the delivery of a construction product in comparison to an on-site approach?
    - Off-site construction will improve the safety performance of the delivery of a construction product

The research found that this hypothesis was correct. When comparing the safety evaluation score of the on-site construction of a hotel room compared to the off-site construction of the same product, the off-site approach was determined to be safest. On-site construction obtained a safety score of 2110 while off-site construction achieving 434. A lower score represents fewer potential sources of injury identified throughout the process. The results show the on-site construction process has almost five times the number of risks in comparison to the off-site construction method. While the study found that on-site construction had five times the amount of safety risks, **this does not mean that off-site construction is five times safer. T**he results from this singular case study analysis are not definitive for the potential of off-site construction, but rather demonstrate the opportunities present in the specified context only. Additional comparisons should be made with the evaluation methodology to be able to draw conclusions about the safety performance improvement potential of off-site construction more generally.

The second case study, which analyzed the installation of the pre-fabricated panels, determined a total safety score of 16, which is extremely low in comparison to the hotel construction case study. This can be attributed to the relatively short risk exposure durations observed throughout the process.

While the research is not able to compare these results to other published results to validate the numbers, some commentary on the reasonableness of the results can be provided. In the hotel construction case study, it’s observed that the on-site construction safety score is significantly larger than the off-site construction safety score. This can be attributed to the duration of activities, as they were found to be less productive than the comparable off-site construction task. Although off-site construction presents new risks such as oversized component transportation and the use of cranes for assembly, the exposure to these risks is minimal and does not affect the overall safety score significantly. The increase in risk exposure duration in the on-site construction scenario was the major contributor to the higher risk scores, therefore, the results that were obtained for this evaluation are reasonable.

Similar factors were observed in the analysis of the pre-fabricated panel installation. Since this method of construction is also considered an off-site method as the finished product was transported to site and ready for assembly, the durations of risk exposure were minimal as the process was efficient and productive. This case study was limited to the on-site installation portion of the work only, and is comparable to the results obtained for the on-site installation of the hotel modules. The panel installation obtained a score of 16, and the hotel module installation obtained a score of 15. Given that the scope of work was similar for these aspects of the safety evaluations, these results demonstrate the reasonableness of the quantified safety values calculated with the evaluation methodology.

7.2 Recommendations

The development of this evaluation model creates a foundation upon which additional on-site versus off-site construction comparisons can be built. Future research opportunities include additional on-site to off-site construction comparisons to begin to understand whether off-site construction is statistically safer than conventional on-site methods as prior research has claimed. Additionally, future studies should investigate the benefits of implementing digital technologies to simplify and make the evaluation process more efficient and likely to be adopted by industry. Recommendations to improve the process with digital technologies include:

1. The development of an interface that will automate the calculation of risk likelihood and severity by inputting relevant Event Exposure and Sources of Injury and extracting the required values from a centralized database

2. The implementation of technology to track movement of resources the project site in the x, y and z directions to simplify the determination of risk exposure durations.

Throughout the data analysis of the WorkSafe New Brunswick incident claims, the research identified additional information that could be gathered when a claim is submitted that could simplify and improve the determination of some variables needed for this evaluation methodology, and recommends the following:

1. Including a severity rating of the incident

2. Require coding for all no-lost-time incidents

A severity rating of the incident would be valuable for this methodology, and would change the way severity is being determined. If a standardized scale was used in the reporting, the calculation of the severity of incidents would use the average severity rating by Event Exposure. Alternatively, instead of using a severity rating, which could introduce subjectivity, coding all no-lost-time incidents could also provide some insight into the severity of incidents. It's suggested that NLT incidents are consistently coded in all of the categories that WorkSafe New Brunswick has established, as this creates a more complete dataset and would provide insight into the cause of the NLT incidents. Additionally, this would allow for the determination of ratios of LT to NLT incidents by Event Exposure, which would enable a severity factor based on the ranking of which Event Exposure result in the highest ratios of LT to NLT.

7.3 Summary of Contributions

The key stakeholders for this research included the off-site construction industry, WorkSafe New Brunswick, the New Brunswick construction industry, the practitioners involved in the case studies, and the off-site construction research base. The significance of the study and its' contributions can be divided into academic and practical, as follows:

Academic

1. Assessment and critique of current safety evaluation methodologies

2. Establishment of a safety evaluation methodology that enables future comparisons of on-site to off-site construction to grow the research base, with more general applications of safety assessments possible as well

3. Integration of process definition with process analysis to create an activity-level safety assessment

Practical

1. Establishment of a safety evaluation methodology to support the planning and design phases of a construction project considering an on-site versus off-site approach

2. Analysis of WorkSafe New Brunswick data to provide inputs for risk likelihood and severity to the evaluation methodology

3. Evaluation of on-site versus off-site construction methods for a defined end product (a hotel room)

4. Evaluation of an off-site construction application to demonstrate additional uses for the evaluation methodology

5. Analysis of the feasibility of the developed methodology, with recommendations for future studies to enhance likelihood of adoption

Identification of data limitations and recommendations for future data collection from the industry and for evaluation execution

Future Works

1. Validation of the risk frequency data with the use of other jurisdictional historical safety incident data bases (ie. WorkSafe Nova Scotia, WorkSafe British Columbia, etc)
2. Integration of digital technologies to enable automated calculations of the safety score once evaluation criteria is entered into the system by the user
3. Evaluation of a design in the planning stages to define and quantify safety for on-site and off-site alternatives to make construction decisions
4. Additional evaluations of on-site and off-site alternatives (either complete processes or similar process steps delivering the same end-product)

References

Ahn, S., Crouch, L., Kim, T.W., and Rameezdeen, R. 2020. Comparison of Worker Safety Risks between Onsite and Offsite Construction Methods: A Site Management Perspective. Journal of Construction Engineering and Management, **146**(9): 05020010. doi:10.1061/(ASCE)CO.1943-7862.0001890.

Aven, T. 2016. Risk assessment and risk management: Review of recent advances on their foundation. European Journal of Operational Research, **253**(1): 1–13. doi:10.1016/j.ejor.2015.12.023.

Blismas, N., Pasquire, C., and Gibb, A. 2006. Benefit evaluation for off-site production in construction. Construction Management & Economics, **24**(2): 121–130. Routledge. doi:10.1080/01446190500184444.

Blismas, N., and Wakefield, R. 2009. Drivers, constraints and the future of offsite manufacture in Australia. Construction Innovation, **9**(1): 72–83. Emerald Group Publishing Limited, London, United Kingdom. doi:http://dx.doi.org/10.1108/14714170910931552.

Canadian Centre for Occupational Health and Safety. 2019. Incident Investigation. Retrieved November 25th, 2020 from https://www.ccohs.ca/oshanswers/hsprograms/investig.html#:~:text=The%20term%20incident%20can%20be,damage%20to%20health%2C%20or%20fatalities.&text=%22Near%20miss%22%20or%20%22dangerous,caused%20harm%20but%20did%20not

Fard, M.M., Terouhid, S.A., Kibert, C.J., and Hakim, H. 2017. Safety concerns related to modular/prefabricated building construction. International Journal of Injury Control and Safety Promotion, **24**(1): 10–23. Taylor & Francis. doi:10.1080/17457300.2015.1047865.

Goodier, C., Gibb, A., Mancini, M., Turck, C., Gjepali, O., and Daniels, E. 2019. Modularisation and offsite in engineering construction: an early decision-support tool. Proceedings of the Institution of Civil Engineers - Civil Engineering, **172**(6): 3–14. ICE Publishing. doi:10.1680/jcien.19.00015.

Hallowell, M.R., Gambatese, J., 2007. Quantification and Communication of Construction Safety Risk 12.

Hallowell, M.R., and Gambatese, J.A. 2009. Activity-Based Safety Risk Quantification for Concrete Formwork Construction. Journal of Construction Engineering &

Management, **135**(10): 990–998. American Society of Civil Engineers. doi:10.1061/(ASCE)CO.1943-7862.0000071.

Hong, J., Shen, G.Q., Li, Z., Zhang, B., and Zhang, W. 2018. Barriers to promoting prefabricated construction in China: A cost–benefit analysis. Journal of Cleaner Production, **172**: 649–660. doi:10.1016/j.jclepro.2017.10.171.

Jang, J.Y., Lee, C., Kim, J.I., and Kim, T.W. 2019. Research Trends in Off-Site Construction Management: Review of Literature at the Process Level. Modular and Offsite Construction (MOC) Summit Proceedings,: 349–356. doi:10.29173/mocs113.

Killingsworth, J., Mehany, M.H., and Ladhari, H. 2020. General contractors' experience using off-site structural framing systems. Construction Innovation, **21**(1): 40–63. Emerald Publishing Limited. doi:10.1108/CI-05-2019-0038.

Liu, Q., Ye, G., and Feng, Y. 2019. Workers' safety behaviors in the off-site manufacturing plant. Engineering, Construction and Architectural Management, **27**(3): 765–784. Emerald Publishing Limited. doi:10.1108/ECAM-03-2019-0136.

Lu, Y., Gong, P., Tang, Y., Sun, S., Li, Q., 2021. BIM-integrated construction safety risk assessment at the design stage of building projects. Automation in Construction 124, 103553. https://doi.org/10.1016/j.autcon.2021.103553

Ma, L., Guo, H., and Fang, Y. 2021. Analysis of Construction Workers' Safety Behavior Based on Myers-Briggs Type Indicator Personality Test in a Bridge Construction Project. Journal of Construction Engineering and Management, **147**(1): 04020149. American Society of Civil Engineers. doi:10.1061/(ASCE)CO.1943-7862.0001958.

Manuele, F.A. 2003. On the Practice of Safety. John Wiley & Sons.

Mather, A., & White, G. (2020). Designing with data: a systematic approach for offsite construction. Proceedings of the Institution of Civil Engineers – Civil Engineering 173(2): 78–84, https://doi.org/10.1680/jcien.19.00002

Marhavilas, Pan.K., and Koulouriotis, D.E. 2008. A risk-estimation methodological framework using quantitative assessment techniques and real accidents' data: Application in an aluminum extrusion industry. Journal of Loss Prevention in the Process Industries, **21**(6): 596–603. doi:10.1016/j.jlp.2008.04.009.

McKay, Lawrence J. 2010. The effect of offsite construction on occupational health and safety. Loughborough University. Thesis. https://hdl.handle.net/2134/6381

NBCSA, 2020. About Us. Retrieved on November 2nd, 2020 from https://nbcsa.ca/about/about-us/

NB Jobs. 2019. A Labour Economic Profile of New Brunswick. Retrieved November 25th, 2020 from https://www.nbjobs.ca/sites/default/files/images/infographic/0-_profile_final-aug2019_r1.pdf

Occupational Safety and Health Administration, 2021. Commonly Used Statistics. Retrieved December 13th, 2021 from https://www.osha.gov/data/commonstats

Oguz Erkal, E.D., Hallowell, M.R., and Bhandari, S. 2021. Practical Assessment of Potential Predictors of Serious Injuries and Fatalities in Construction. Journal of Construction Engineering and Management, **147**(10): 04021129. American Society of Civil Engineers. doi:10.1061/(ASCE)CO.1943-7862.0002146.

Pan, W., Gibb, A.F., Dainty, A.R.J. 2007. Perspective of UK housebuilders on the use of offsite modern methods of construction. Constr. Manag. Econ. 2007, 25, 183–194.

Purohit, D.P., Siddiqui, D.N.A., Nandan, A., and Yadav, D.B.P. 2018. Hazard Identification and Risk Assessment in Construction Industry. **13**(10): 29.

Razkenari, M., Fenner, A., Shojaei, A., Hakim, H., and Kibert, C. 2020. Perceptions of offsite construction in the United States: An investigation of current practices. Journal of Building Engineering, **29**: 101138. doi:10.1016/j.jobe.2019.101138.

RSMeans. 2021. Building Construction Costs with RSMeans Data.

Sutrisna, M., and Goulding, J. 2019. Managing information flow and design processes to reduce design risks in offsite construction projects. Engineering, Construction and Architectural Management, **26**(2): 267–284. Emerald Publishing Limited. doi:10.1108/ECAM-11-2017-0250.

Sutrisna, M., Ramanayaka, C.D.D., and Goulding, J.S. 2018. Developing work breakdown structure matrix for managing offsite construction projects. Architectural Engineering and Design Management, **14**(5): 381–397. Taylor & Francis. doi:10.1080/17452007.2018.1477728.

Tucker, S., Keefe, A., 2021. 2021 Report on Work Fatality and Injury Rates in Canada. University of Regina. Retrieved December 13th, 2021 from: https://www.uregina.ca/business/assets/faculty_staff/2021-Report-on-Workplace-Fatalities-and-Injuries-2021-Oct-21.pdf van de Riet, Alyssa. 2021. Improving Production Management in Modular Construction Facility Using Data Modelling and Analytics at Alantra Leasing Ltd.

WorkSafeNB, 2020. Vision, mission and values. Retrieved on November 2nd, 2020 from https://www.worksafenb.ca/about-us/what-we-do/vision-mission-and-values/

Wuni, I.Y., and Shen, G.Q.P. 2019. Holistic Review and Conceptual Framework for the Drivers of Offsite Construction: A Total Interpretive Structural Modelling Approach. Buildings, **9**(5): 117. Multidisciplinary Digital Publishing Institute. doi:10.3390/buildings9050117.

Appendix A: Risk Analysis

Appendix A1: On-Site Construction Risk Analysis

Process Step 1							
Frame Exterior Walls							
Resources							
Carpenter 1				Carpenter 2			
Risks							
Event Exposure/Source of Injury Combination	Frequency (%)	Severity Factor	Frequency * Severity	Event Exposure/Source of Injury Combination	Frequency (%)	Severity Factor	Frequency * Severity
	21.05%	1.011937906	21.30%		21.05%	1.011937906	21.30%
Fall on same level, n.e.c.		1		Fall on same level, n.e.c.		1	
Floor of building	0.03%		0.03%	Floor of building	0.03%		0.03%
Floors, walkways, ground surfaces, uns.	0.06%		0.06%	Floors, walkways, ground surfaces, uns.	0.06%		0.06%
Ground	0.08%		0.08%	Ground	0.08%		0.08%
Ice, sleet, snow	0.03%		0.03%	Ice, sleet, snow	0.03%		0.03%
Fall on same level, uns.		1		Fall on same level, uns.		1	
Floor of building	0.03%		0.03%	Floor of building	0.03%		0.03%
Ground	0.06%		0.06%	Ground	0.06%		0.06%
Fall onto or against objects		1		Fall onto or against objects		1	
Floor of building	0.03%		0.03%	Floor of building	0.03%		0.03%
Floor of scaffold, staging, or temporary work platform	0.06%		0.06%	Floor of scaffold, staging, or temporary work platform	0.06%		0.06%
Floors, walkways, ground surfaces, uns.	0.03%		0.03%	Floors, walkways, ground surfaces, uns.	0.03%		0.03%
Ice, sleet, snow	0.03%		0.03%	Ice, sleet, snow	0.03%		0.03%
Fall to floor, walkway, or other surface		1.003649635		Fall to floor, walkway, or other surface		1.003649635	
Floor of building	0.80%		0.80%	Floor of building	0.80%		0.80%
Floor, n.e.c.	0.03%		0.03%	Floor, n.e.c.	0.03%		0.03%
Floor, uns.	0.06%		0.06%	Floor, uns.	0.06%		0.06%
Floors, walkways, ground surfaces, n.e.c.	0.06%		0.06%	Floors, walkways, ground surfaces, n.e.c.	0.06%		0.06%
Floors, walkways, ground surfaces, uns.	1.62%		1.63%	Floors, walkways, ground surfaces, uns.	1.62%		1.63%
Ground	2.75%		2.76%	Ground	2.75%		2.76%
Other floors, walkways, ground surfaces, uns.	0.06%		0.06%	Other floors, walkways, ground surfaces, uns.	0.06%		0.06%
Fall, n.e.c.		1.071428571		Fall, n.e.c.		1.071428571	
Floors, walkways, ground surfaces, uns.	0.11%		0.12%	Floors, walkways, ground surfaces, uns.	0.11%		0.12%
Ground	0.03%		0.03%	Ground	0.03%		0.03%
Other floors, walkways, ground surfaces, uns.	0.03%		0.03%	Other floors, walkways, ground surfaces, uns.	0.03%		0.03%
Fall, uns.		1		Fall, uns.		1	
Floors, walkways, ground surfaces, uns.	0.03%		0.03%	Floors, walkways, ground surfaces, uns.	0.03%		0.03%
Ground	0.06%		0.06%	Ground	0.06%		0.06%
Ice, sleet, snow	0.06%		0.06%	Ice, sleet, snow	0.06%		0.06%
Slip,trip,stepped on or in, loss of balance - with or without twisting - without fall,nec		1		Slip,trip,stepped on or in, loss of balance - with or without twisting - without fall,nec		1	
Bodily motion or position of injured, ill worker	1.49%		1.49%	Bodily motion or position of injured, ill worker	1.49%		1.49%
Slip,trip,stepped on or in, loss of balance - with or without twisting - without fall,uns		1		Slip,trip,stepped on or in, loss of balance - with or without twisting - without fall,uns		1	
Bodily motion or position of injured, ill worker	0.36%		0.36%	Bodily motion or position of injured, ill worker	0.36%		0.36%
Slipping on something - with or without twisting - without fall		1		Slipping on something - with or without twisting - without fall		1	
Bodily motion or position of injured, ill worker	1.40%		1.40%	Bodily motion or position of injured, ill worker	1.40%		1.40%
Stepping in a hole or on an object - with or without twisting - without fall		1		Stepping in a hole or on an object - with or without twisting - without fall		1	
Bodily motion or position of injured, ill worker	1.60%		1.60%	Bodily motion or position of injured, ill worker	1.60%		1.60%
Struck against object, n.e.c.		1		Struck against object, n.e.c.		1	
Ground	0.03%		0.03%	Ground	0.03%		0.03%
Struck against stationary object		1.009009009		Struck against stationary object		1.009009009	
Ground	0.03%		0.03%	Ground	0.03%		0.03%

Tripping over something - with or without twisting - without fall		1	
Bodily motion or position of injured, ill worker	0.36%		0.36%
Walking -- without other incident		1	
Bodily motion or position of injured, ill worker	0.14%		0.14%
Struck against stationary object		1.009009009	
Floor of building	0.03%		0.03%
Fall onto or against objects		1	
Nails, brads, tacks	0.06%		0.06%
Struck against object, uns.		1	
Nails, brads, tacks	0.06%		0.06%
Stepped on object		1	
Nails, brads, tacks	0.03%		0.03%
Struck by slipping handheld object		1	
Nails, brads, tacks	0.03%		0.03%
Struck by object, n.e.c.		1	
Nails, brads, tacks	0.08%		0.08%
Struck by flying object, n.e.c.		1	
Nails, brads, tacks	0.11%		0.11%
Struck by falling object		1.054545455	
Nail guns -- powered	0.03%		0.03%
Nails, brads, tacks	0.03%		0.03%
Struck by discharged object or substance		1.032786885	
Nail guns -- powered	0.03%		0.03%
Nails, brads, tacks	0.96%		0.99%
Caught in or compressed by equipment or objects, n.e.c.		1.12716763	
Dimensional lumber, n.e.c.	0.03%		0.03%
Wood, lumber, n.e.c.	0.08%		0.09%
Wood, lumber, uns.	0.06%		0.06%
Caught in or compressed by equipment or objects, uns.		1.272727273	
Wood, lumber, uns.	0.03%		0.04%
Contact with objects and equipment, uns.		1	
Wood, lumber, uns.	0.03%		0.03%
Overexertion in carrying, turning, wielding objects		1.020408163	
Wood, lumber, n.e.c.	0.06%		0.06%
Overexertion in lifting		1	
Dimensional lumber, n.e.c.	0.03%		0.03%
Wood, lumber, n.e.c.	0.06%		0.06%
Wood, lumber, uns.	0.03%		0.03%
Overexertion, n.e.c.		1.011111111	
Dimensional lumber, n.e.c.	0.03%		0.03%
Wood, lumber, uns.	0.06%		0.06%
Overexertion, uns.		1	
Wood, lumber, uns.	0.03%		0.03%
Stepped on object		1	
Wood, lumber, uns.	0.03%		0.03%
Struck against object, n.e.c.		1	
Wood, lumber, n.e.c.	0.03%		0.03%
Struck by falling object		1.054545455	
Dimensional lumber, n.e.c.	0.03%		0.03%
Wood, lumber, n.e.c.	0.08%		0.09%

Tripping over something - with or without twisting - without fall		1	
Bodily motion or position of injured, ill worker	0.36%		0.36%
Walking -- without other incident		1	
Bodily motion or position of injured, ill worker	0.14%		0.14%
Struck against stationary object		1.009009009	
Floor of building	0.03%		0.03%
Fall onto or against objects		1	
Nails, brads, tacks	0.06%		0.06%
Struck against object, uns.		1	
Nails, brads, tacks	0.06%		0.06%
Stepped on object		1	
Nails, brads, tacks	0.03%		0.03%
Struck by slipping handheld object		1	
Nails, brads, tacks	0.03%		0.03%
Struck by object, n.e.c.		1	
Nails, brads, tacks	0.08%		0.08%
Struck by flying object, n.e.c.		1	
Nails, brads, tacks	0.11%		0.11%
Struck by falling object		1.054545455	
Nail guns -- powered	0.03%		0.03%
Nails, brads, tacks	0.03%		0.03%
Struck by discharged object or substance		1.032786885	
Nail guns -- powered	0.03%		0.03%
Nails, brads, tacks	0.96%		0.99%
Caught in or compressed by equipment or objects, n.e.c.		1.12716763	
Dimensional lumber, n.e.c.	0.03%		0.03%
Wood, lumber, n.e.c.	0.08%		0.09%
Wood, lumber, uns.	0.06%		0.06%
Caught in or compressed by equipment or objects, uns.		1.272727273	
Wood, lumber, uns.	0.03%		0.04%
Contact with objects and equipment, uns.		1	
Wood, lumber, uns.	0.03%		0.03%
Overexertion in carrying, turning, wielding objects		1.020408163	
Wood, lumber, n.e.c.	0.06%		0.06%
Overexertion in lifting		1	
Dimensional lumber, n.e.c.	0.03%		0.03%
Wood, lumber, n.e.c.	0.06%		0.06%
Wood, lumber, uns.	0.03%		0.03%
Overexertion, n.e.c.		1.011111111	
Dimensional lumber, n.e.c.	0.03%		0.03%
Wood, lumber, uns.	0.06%		0.06%
Overexertion, uns.		1	
Wood, lumber, uns.	0.03%		0.03%
Stepped on object		1	
Wood, lumber, uns.	0.03%		0.03%
Struck against object, n.e.c.		1	
Wood, lumber, n.e.c.	0.03%		0.03%
Struck by falling object		1.054545455	
Dimensional lumber, n.e.c.	0.03%		0.03%
Wood, lumber, n.e.c.	0.08%		0.09%

Struck by object, n.e.c.		1	
Dimensional lumber, n.e.c.	0.06%		0.06%
Wood, lumber, uns.	0.03%		0.03%
Struck by object, uns.		1	
Dimensional lumber, n.e.c.	0.03%		0.03%
Struck by slipping handheld object		1	
Dimensional lumber, n.e.c.	0.03%		0.03%
Struck by swinging or slipping object, n.e.c.		1.033333333	
Lumber whose dimensions are less than 4"	0.03%		0.03%
Wood, lumber, n.e.c.	0.03%		0.03%
Rubbed or abraded by friction or pressure, n.e.c.		1	
Wood, lumber, uns.	0.03%		0.03%
Struck by discharged object or substance		1.032786885	
Dimensional lumber, uns.	0.03%		0.03%
Sawdust	0.03%		0.03%
Struck by dislodged flying object, particle		1	
Lumber whose dimensions are less than 4"	0.03%		0.03%
Sawdust	0.06%		0.06%
Bodily reaction and exertion, n.e.c.		1	
Saws -- power not determined	0.03%		0.03%
Saws -- powered, except chainsaws	0.03%		0.03%
Caught in or compressed by equipment or objects, n.e.c.		1.12716763	
Sawing machinery -- stationary, uns.	0.03%		0.03%
Caught in running equipment or machinery		1.071428571	
Sawing machinery -- stationary, uns.	0.06%		0.06%
Table saws	0.06%		0.06%
Contact with objects and equipment, n.e.c.		1.029411765	
Sawing machinery -- stationary, n.e.c.	0.03%		0.03%
Contact with objects and equipment, uns.		1	
Saws -- powered, except chainsaws	0.03%		0.03%
Table saws	0.08%		0.08%
Overexertion, n.e.c.		1.011111111	
Saws -- power not determined	0.03%		0.03%
Overexertion, uns.		1	
Sawing machinery -- stationary, n.e.c.	0.03%		0.03%
Struck against moving object		1	
Sawing machinery -- stationary, n.e.c.	0.06%		0.06%
Saws -- powered, except chainsaws	0.14%		0.14%
Table saws	0.11%		0.11%
Struck against object, uns.		1	
Table saws	0.03%		0.03%
Struck by discharged object or substance		1.032786885	
Saws -- powered, except chainsaws	0.03%		0.03%
Struck by object, n.e.c.		1	
Sawing machinery -- stationary, uns.	0.03%		0.03%
Saws -- power not determined	0.03%		0.03%
Saws -- powered, except chainsaws	0.25%		0.25%
Table saws	0.06%		0.06%

Struck by object, n.e.c.		1	
Dimensional lumber, n.e.c.	0.06%		0.06%
Wood, lumber, uns.	0.03%		0.03%
Struck by object, uns.		1	
Dimensional lumber, n.e.c.	0.03%		0.03%
Struck by slipping handheld object		1	
Dimensional lumber, n.e.c.	0.03%		0.03%
Struck by swinging or slipping object, n.e.c.		1.033333333	
Lumber whose dimensions are less than 4"	0.03%		0.03%
Wood, lumber, n.e.c.	0.03%		0.03%
Rubbed or abraded by friction or pressure, n.e.c.		1	
Wood, lumber, uns.	0.03%		0.03%
Struck by discharged object or substance		1.032786885	
Dimensional lumber, uns.	0.03%		0.03%
Sawdust	0.03%		0.03%
Struck by dislodged flying object, particle		1	
Lumber whose dimensions are less than 4"	0.03%		0.03%
Sawdust	0.06%		0.06%
Bodily reaction and exertion, n.e.c.		1	
Saws -- power not determined	0.03%		0.03%
Saws -- powered, except chainsaws	0.03%		0.03%
Caught in or compressed by equipment or objects, n.e.c.		1.12716763	
Sawing machinery -- stationary, uns.	0.03%		0.03%
Caught in running equipment or machinery		1.071428571	
Sawing machinery -- stationary, uns.	0.06%		0.06%
Table saws	0.06%		0.06%
Contact with objects and equipment, n.e.c.		1.029411765	
Sawing machinery -- stationary, n.e.c.	0.03%		0.03%
Contact with objects and equipment, uns.		1	
Saws -- powered, except chainsaws	0.03%		0.03%
Table saws	0.08%		0.08%
Overexertion, n.e.c.		1.011111111	
Saws -- power not determined	0.03%		0.03%
Overexertion, uns.		1	
Sawing machinery -- stationary, n.e.c.	0.03%		0.03%
Struck against moving object		1	
Sawing machinery -- stationary, n.e.c.	0.06%		0.06%
Saws -- powered, except chainsaws	0.14%		0.14%
Table saws	0.11%		0.11%
Struck against object, uns.		1	
Table saws	0.03%		0.03%
Struck by discharged object or substance		1.032786885	
Saws -- powered, except chainsaws	0.03%		0.03%
Struck by object, n.e.c.		1	
Sawing machinery -- stationary, uns.	0.03%		0.03%
Saws -- power not determined	0.03%		0.03%
Saws -- powered, except chainsaws	0.25%		0.25%
Table saws	0.06%		0.06%

Struck by object, uns.		1		**Struck by object, uns.**		1	
Saws -- power not determined	**0.03%**		**0.03%**	**Saws -- power not determined**	**0.03%**		**0.03%**
Struck by slipping handheld object		1		**Struck by slipping handheld object**		1	
Saws	**0.08%**		**0.08%**	**Saws**	**0.08%**		**0.08%**
Saws -- powered, except chainsaws	**0.06%**		**0.06%**	**Saws -- powered, except chainsaws**	**0.06%**		**0.06%**
Table saws	**0.06%**		**0.06%**	**Table saws**	**0.06%**		**0.06%**
Overexertion in lifting (object) and turning (body)		1		**Overexertion in lifting (object) and turning (body)**		1	
Saws	**0.03%**		**0.03%**	**Saws**	**0.03%**		**0.03%**
Saws -- powered, except chainsaws	**0.03%**		**0.03%**	**Saws -- powered, except chainsaws**	**0.03%**		**0.03%**
Rubbed or abraded by foreign matter in eye		1		**Rubbed or abraded by foreign matter in eye**		1	
Sawdust	0.06%		**0.06%**	Sawdust	0.06%		**0.06%**
Contact with objects and equipment, n.e.c.		1.029411765		**Contact with objects and equipment, n.e.c.**		1.029411765	
Forklift, uns.	0.03%		**0.03%**	Forklift, uns.	0.03%		**0.03%**
Caught in or compressed by equipment or objects, n.e.c.		1.12716763		**Caught in or compressed by equipment or objects, n.e.c.**		1.12716763	
Forklift, uns.	0.06%		**0.06%**	Forklift, uns.	0.06%		**0.06%**
Pedestrian struck by vehicle, mobile equipment, n.e.c.		1.25		**Pedestrian struck by vehicle, mobile equipment, n.e.c.**		1.25	
Forklift, uns.	0.03%		**0.03%**	Forklift, uns.	0.03%		**0.03%**
Struck against stationary object		1.009009009		**Struck against stationary object**		1.009009009	
Forklift, uns.	0.03%		**0.03%**	Forklift, uns.	0.03%		**0.03%**
Struck by shifting load -- nonhighway accident		1		**Struck by shifting load -- nonhighway accident**		1	
Forklift, uns.	0.03%		**0.03%**	Forklift, uns.	0.03%		**0.03%**
Caught in or compressed by equipment or objects, n.e.c.		1.12716763		**Caught in or compressed by equipment or objects, n.e.c.**		1.12716763	
Hoisting accessories, uns.	0.03%		**0.03%**	Hoisting accessories, uns.	0.03%		**0.03%**
Bodily reaction and exertion, n.e.c.		1		**Bodily reaction and exertion, n.e.c.**		1	
Drills	**0.03%**		**0.03%**	**Drills**	**0.03%**		**0.03%**
Drills -- power not determined	**0.06%**		**0.06%**	**Drills -- power not determined**	**0.06%**		**0.06%**
Drills -- powered	**0.22%**		**0.22%**	**Drills -- powered**	**0.22%**		**0.22%**
Caught in or compressed by equipment or objects, n.e.c.		1.12716763		**Caught in or compressed by equipment or objects, n.e.c.**		1.12716763	
Drills -- power not determined	**0.03%**		**0.03%**	**Drills -- power not determined**	**0.03%**		**0.03%**
Caught in running equipment or machinery		1.071428571		**Caught in running equipment or machinery**		1.071428571	
Drills -- power not determined	**0.03%**		**0.03%**	**Drills -- power not determined**	**0.03%**		**0.03%**
Drills -- powered	**0.06%**		**0.06%**	**Drills -- powered**	**0.06%**		**0.06%**
Overexertion in carrying, turning, wielding objects		1.020408163		**Overexertion in carrying, turning, wielding objects**		1.020408163	
Drills -- powered	**0.03%**		**0.03%**	**Drills -- powered**	**0.03%**		**0.03%**
Overexertion, n.e.c.		1.011111111		**Overexertion, n.e.c.**		1.011111111	
Drills -- powered	**0.06%**		**0.06%**	**Drills -- powered**	**0.06%**		**0.06%**
Overexertion, uns.		1		**Overexertion, uns.**		1	
Drills	**0.03%**		**0.03%**	**Drills**	**0.03%**		**0.03%**
Drills -- powered	**0.03%**		**0.03%**	**Drills -- powered**	**0.03%**		**0.03%**
Stepped on object		1		**Stepped on object**		1	
Drills -- power not determined	**0.03%**		**0.03%**	**Drills -- power not determined**	**0.03%**		**0.03%**
Struck by object, n.e.c.		1		**Struck by object, n.e.c.**		1	
Drills -- power not determined	**0.06%**		**0.06%**	**Drills -- power not determined**	**0.06%**		**0.06%**
Drills -- powered	**0.11%**		**0.11%**	**Drills -- powered**	**0.11%**		**0.11%**
Struck by slipping handheld object		1		**Struck by slipping handheld object**		1	
Drills	**0.06%**		**0.06%**	**Drills**	**0.06%**		**0.06%**
Drills -- power not determined	**0.06%**		**0.06%**	**Drills -- power not determined**	**0.06%**		**0.06%**
Drills -- powered	**0.06%**		**0.06%**	**Drills -- powered**	**0.06%**		**0.06%**
Struck by swinging or slipping object, uns.		1		**Struck by swinging or slipping object, uns.**		1	
Drills	**0.03%**		**0.03%**	**Drills**	**0.03%**		**0.03%**

Bodily reaction and exertion, n.e.c.		1		Bodily reaction and exertion, n.e.c.		1	
Ladders, n.e.c.	0.03%		0.03%	Ladders, n.e.c.	0.03%		0.03%
Ladders, uns.	0.25%		0.25%	Ladders, uns.	0.25%		0.25%
Caught in or compressed by equipment or objects, n.e.c.		1.12716763		Caught in or compressed by equipment or objects, n.e.c.		1.12716763	
Ladders, uns.	0.11%		0.12%	Ladders, uns.	0.11%		0.12%
Fall from ladder		1.022222222		Fall from ladder		1.022222222	
Ladders, uns.	0.36%		0.37%	Ladders, uns.	0.36%		0.37%
Fall onto or against objects		1		Fall onto or against objects		1	
Ladders, uns.	0.14%		0.14%	Ladders, uns.	0.14%		0.14%
Overexertion in carrying, turning, wielding objects		1.020408163		Overexertion in carrying, turning, wielding objects		1.020408163	
Ladders, uns.	0.03%		0.03%	Ladders, uns.	0.03%		0.03%
Overexertion in lifting		1		Overexertion in lifting		1	
Ladders, uns.	0.06%		0.06%	Ladders, uns.	0.06%		0.06%
Overexertion in lifting (object) and turning (body)		1		Overexertion in lifting (object) and turning (body)		1	
Ladders, uns.	0.03%		0.03%	Ladders, uns.	0.03%		0.03%
Overexertion in pulling or pushing objects		1		Overexertion in pulling or pushing objects		1	
Ladders, uns.	0.03%		0.03%	Ladders, uns.	0.03%		0.03%
Overexertion, uns.		1		Overexertion, uns.		1	
Movable ladders, uns.	0.03%		0.03%	Movable ladders, uns.	0.03%		0.03%
Struck against stationary object		1.009009009		Struck against stationary object		1.009009009	
Ladders, uns.	0.11%		0.11%	Ladders, uns.	0.11%		0.11%
Struck by falling object		1.054545455		Struck by falling object		1.054545455	
Ladders, uns.	0.08%		0.09%	Ladders, uns.	0.08%		0.09%
Struck by object, n.e.c.		1		Struck by object, n.e.c.		1	
Ladders, uns.	0.03%		0.03%	Ladders, uns.	0.03%		0.03%
Fall from ladder		1.022222222		Fall from ladder		1.022222222	
Floor of building	0.58%		0.59%	Floor of building	0.58%		0.59%
Floor, uns.	0.17%		0.17%	Floor, uns.	0.17%		0.17%
Floors, walkways, ground surfaces, n.e.c.	0.11%		0.11%	Floors, walkways, ground surfaces, n.e.c.	0.11%		0.11%
Floors, walkways, ground surfaces, uns.	0.99%		1.01%	Floors, walkways, ground surfaces, uns.	0.99%		1.01%
Ground	1.38%		1.41%	Ground	1.38%		1.41%
Ice, sleet, snow	0.06%		0.06%	Ice, sleet, snow	0.06%		0.06%
Other floors, walkways, ground surfaces, uns.	0.03%		0.03%	Other floors, walkways, ground surfaces, uns.	0.03%		0.03%

Process Step 2							
Exterior Wall OSB							
Resources							
Carpenter 1				Carpenter 2			
Risks							
	Frequency (%)	Severity Factor	Frequency * Severity		Frequency (%)	Severity Factor	Frequency * Severity
Event Exposure/Source of Injury Combination	13.87%	1.006776385	13.96%	Event Exposure/Source of Injury Combination	13.87%	1.006776385	13.96%
Fall on same level, n.e.c.		1		Fall on same level, n.e.c.		1	
Floor of building	0.03%		0.03%	Floor of building	0.03%		0.03%
Floors, walkways, ground surfaces, uns.	0.06%		0.06%	Floors, walkways, ground surfaces, uns.	0.06%		0.06%
Ground	0.08%		0.08%	Ground	0.08%		0.08%
Ice, sleet, snow	0.03%		0.03%	Ice, sleet, snow	0.03%		0.03%
Fall on same level, uns.		1		Fall on same level, uns.		1	
Floor of building	0.03%		0.03%	Floor of building	0.03%		0.03%
Ground	0.06%		0.06%	Ground	0.06%		0.06%
Fall onto or against objects		1		Fall onto or against objects		1	
Floor of building	0.03%		0.03%	Floor of building	0.03%		0.03%
Floor of scaffold, staging, or temporary work platform	0.06%		0.06%	Floor of scaffold, staging, or temporary work platform	0.06%		0.06%
Floors, walkways, ground surfaces, uns.	0.03%		0.03%	Floors, walkways, ground surfaces, uns.	0.03%		0.03%
Ice, sleet, snow	0.03%		0.03%	Ice, sleet, snow	0.03%		0.03%
Fall to floor, walkway, or other surface		1.003649635		Fall to floor, walkway, or other surface		1.003649635	
Floor of building	0.80%		0.80%	Floor of building	0.80%		0.80%
Floor, n.e.c.	0.03%		0.03%	Floor, n.e.c.	0.03%		0.03%
Floor, uns.	0.06%		0.06%	Floor, uns.	0.06%		0.06%
Floors, walkways, ground surfaces, n.e.c.	0.06%		0.06%	Floors, walkways, ground surfaces, n.e.c.	0.06%		0.06%
Floors, walkways, ground surfaces, uns.	1.62%		1.63%	Floors, walkways, ground surfaces, uns.	1.62%		1.63%
Ground	2.75%		2.76%	Ground	2.75%		2.76%
Other floors, walkways, ground surfaces, uns.	0.06%		0.06%	Other floors, walkways, ground surfaces, uns.	0.06%		0.06%
Fall, n.e.c.		1.071428571		Fall, n.e.c.		1.071428571	
Floors, walkways, ground surfaces, uns.	0.11%		0.12%	Floors, walkways, ground surfaces, uns.	0.11%		0.12%
Ground	0.03%		0.03%	Ground	0.03%		0.03%
Other floors, walkways, ground surfaces, uns.	0.03%		0.03%	Other floors, walkways, ground surfaces, uns.	0.03%		0.03%
Fall, uns.		1		Fall, uns.		1	
Floors, walkways, ground surfaces, uns.	0.03%		0.03%	Floors, walkways, ground surfaces, uns.	0.03%		0.03%
Ground	0.06%		0.06%	Ground	0.06%		0.06%
Ice, sleet, snow	0.06%		0.06%	Ice, sleet, snow	0.06%		0.06%
Slip,trip,stepped on or in, loss of balance - with or without twisting - without fall,nec		1		Slip,trip,stepped on or in, loss of balance - with or without twisting - without fall,nec		1	
Bodily motion or position of injured, ill worker	1.49%		1.49%	Bodily motion or position of injured, ill worker	1.49%		1.49%
Slip,trip,stepped on or in, loss of balance - with or without twisting - without fall,uns		1		Slip,trip,stepped on or in, loss of balance - with or without twisting - without fall,uns		1	
Bodily motion or position of injured, ill worker	0.36%		0.36%	Bodily motion or position of injured, ill worker	0.36%		0.36%
Slipping on something - with or without twisting - without fall		1		Slipping on something - with or without twisting - without fall		1	
Bodily motion or position of injured, ill worker	1.40%		1.40%	Bodily motion or position of injured, ill worker	1.40%		1.40%
Stepping in a hole or on an object - with or without twisting - without fall		1		Stepping in a hole or on an object - with or without twisting - without fall		1	
Bodily motion or position of injured, ill worker	1.60%		1.60%	Bodily motion or position of injured, ill worker	1.60%		1.60%
Struck against object, n.e.c.		1		Struck against object, n.e.c.		1	
Ground	0.03%		0.03%	Ground	0.03%		0.03%
Struck against stationary object		1.009009009		Struck against stationary object		1.009009009	
Ground	0.03%		0.03%	Ground	0.03%		0.03%

Tripping over something - with or without twisting - without fall		1		Tripping over something - with or without twisting - without fall		1	
Bodily motion or position of injured, ill worker	0.36%		0.36%	Bodily motion or position of injured, ill worker	0.36%		0.36%
Walking -- without other incident		1		Walking -- without other incident		1	
Bodily motion or position of injured, ill worker	0.14%		0.14%	Bodily motion or position of injured, ill worker	0.14%		0.14%
Struck against stationary object		1.009009009		Struck against stationary object		1.009009009	
Floor of building	0.03%		0.03%	Floor of building	0.03%		0.03%
Fall onto or against objects		1		Fall onto or against objects		1	
Nails, brads, tacks	0.06%		0.06%	Nails, brads, tacks	0.06%		0.06%
Struck against object, uns.		1		Struck against object, uns.		1	
Nails, brads, tacks	0.06%		0.06%	Nails, brads, tacks	0.06%		0.06%
Stepped on object		1		Stepped on object		1	
Nails, brads, tacks	0.03%		0.03%	Nails, brads, tacks	0.03%		0.03%
Struck by slipping handheld object		1		Struck by slipping handheld object		1	
Nails, brads, tacks	0.03%		0.03%	Nails, brads, tacks	0.03%		0.03%
Struck by object, n.e.c.		1		Struck by object, n.e.c.		1	
Nails, brads, tacks	0.08%		0.08%	Nails, brads, tacks	0.08%		0.08%
Struck by flying object, n.e.c.		1		Struck by flying object, n.e.c.		1	
Nails, brads, tacks	0.11%		0.11%	Nails, brads, tacks	0.11%		0.11%
Struck by falling object		1.054545455		Struck by falling object		1.054545455	
Nail guns -- powered	0.03%		0.03%	Nail guns -- powered	0.03%		0.03%
Nails, brads, tacks	0.03%		0.03%	Nails, brads, tacks	0.03%		0.03%
Struck by discharged object or substance		1.032786885		Struck by discharged object or substance		1.032786885	
Nail guns -- powered	0.03%		0.03%	Nail guns -- powered	0.03%		0.03%
Nails, brads, tacks	0.96%		0.99%	Nails, brads, tacks	0.96%		0.99%
Caught in or compressed by equipment or objects, n.e.c.		1.12716763		Caught in or compressed by equipment or objects, n.e.c.		1.12716763	
Plywood, wood paneling; particle, chip, flake board	0.06%		0.06%	Plywood, wood paneling; particle, chip, flake board	0.06%		0.06%
Overexertion in carrying, turning, wielding objects		1.020408163		Overexertion in carrying, turning, wielding objects		1.020408163	
Plywood, wood paneling; particle, chip, flake board	0.08%		0.08%	Plywood, wood paneling; particle, chip, flake board	0.08%		0.08%
Overexertion in lifting		1		Overexertion in lifting		1	
Plywood, wood paneling; particle, chip, flake board	0.28%		0.28%	Plywood, wood paneling; particle, chip, flake board	0.28%		0.28%
Overexertion in lifting and turning (object)		1		Overexertion in lifting and turning (object)		1	
Plywood, wood paneling; particle, chip, flake board	0.06%		0.06%	Plywood, wood paneling; particle, chip, flake board	0.06%		0.06%
Overexertion, n.e.c.		1.011111111		Overexertion, n.e.c.		1.011111111	
Plywood, wood paneling; particle, chip, flake board	0.03%		0.03%	Plywood, wood paneling; particle, chip, flake board	0.03%		0.03%
Overexertion, uns.		1		Overexertion, uns.		1	
Plywood, wood paneling; particle, chip, flake board	0.03%		0.03%	Plywood, wood paneling; particle, chip, flake board	0.03%		0.03%
Struck against object, n.e.c.		1		Struck against object, n.e.c.		1	
Plywood, wood paneling; particle, chip, flake board	0.03%		0.03%	Plywood, wood paneling; particle, chip, flake board	0.03%		0.03%
Struck by discharged object or substance		1.032786885		Struck by discharged object or substance		1.032786885	
Plywood, wood paneling; particle, chip, flake board	0.06%		0.06%	Plywood, wood paneling; particle, chip, flake board	0.06%		0.06%
Struck by dislodged flying object, particle		1		Struck by dislodged flying object, particle		1	
Plywood, wood paneling; particle, chip, flake board	0.03%		0.03%	Plywood, wood paneling; particle, chip, flake board	0.03%		0.03%
Struck by falling object		1.054545455		Struck by falling object		1.054545455	
Plywood, wood paneling; particle, chip, flake board	0.19%		0.20%	Plywood, wood paneling; particle, chip, flake board	0.19%		0.20%
Struck by object, n.e.c.		1		Struck by object, n.e.c.		1	
Plywood, wood paneling; particle, chip, flake board	0.03%		0.03%	Plywood, wood paneling; particle, chip, flake board	0.03%		0.03%
Struck by object, uns.		1		Struck by object, uns.		1	
Plywood, wood paneling; particle, chip, flake board	0.03%		0.03%	Plywood, wood paneling; particle, chip, flake board	0.03%		0.03%
Struck by rolling, sliding or falling objects on floor or ground level		1		Struck by rolling, sliding or falling objects on floor or ground level		1	
Plywood, wood paneling; particle, chip, flake board	0.03%		0.03%	Plywood, wood paneling; particle, chip, flake board	0.03%		0.03%
Bodily reaction and exertion, n.e.c.		1		Bodily reaction and exertion, n.e.c.		1	
Plywood, wood paneling; particle, chip, flake board	0.03%		0.03%	Plywood, wood paneling; particle, chip, flake board	0.03%		0.03%
Contact with skin, eye(s) or other exposed tissue		1.193548387		Contact with skin, eye(s) or other exposed tissue		1.193548387	
Adhesives, glues, n.e.c.	0.03%		0.03%	Adhesives, glues, n.e.c.	0.03%		0.03%

Process Step 3							
Tyvek Exterior Walls							
Resources							
Carpenter 1				Carpenter 2			
Risks							
	Frequency (%)	Severity Factor	Frequency * Severity		Frequency (%)	Severity Factor	Frequency * Severity
Event Exposure/Source of Injury Combination	16.29%	1.006550431	16.40%	**Event Exposure/Source of Injury Combination**	16.29%	1.006550431	16.40%
Bodily reaction and exertion, n.e.c.		1		**Bodily reaction and exertion, n.e.c.**		1	
Ladders, n.e.c.	**0.03%**		**0.03%**	**Ladders, n.e.c.**	**0.03%**		**0.03%**
Ladders, uns.	**0.25%**		**0.25%**	**Ladders, uns.**	**0.25%**		**0.25%**
Caught in or compressed by equipment or objects, n.e.c.		1.12716763		**Caught in or compressed by equipment or objects, n.e.c.**		1.12716763	
Ladders, uns.	**0.11%**		**0.12%**	**Ladders, uns.**	**0.11%**		**0.12%**
Fall from ladder		1.022222222		**Fall from ladder**		1.022222222	
Ladders, uns.	**0.36%**		**0.37%**	**Ladders, uns.**	**0.36%**		**0.37%**
Fall onto or against objects		1		**Fall onto or against objects**		1	
Ladders, uns.	**0.14%**		**0.14%**	**Ladders, uns.**	**0.14%**		**0.14%**
Overexertion in carrying, turning, wielding objects		1.020408163		**Overexertion in carrying, turning, wielding objects**		1.020408163	
Ladders, uns.	**0.03%**		**0.03%**	**Ladders, uns.**	**0.03%**		**0.03%**
Overexertion in lifting		1		**Overexertion in lifting**		1	
Ladders, uns.	**0.06%**		**0.06%**	**Ladders, uns.**	**0.06%**		**0.06%**
Overexertion in lifting (object) and turning (body)		1		**Overexertion in lifting (object) and turning (body)**		1	
Ladders, uns.	**0.03%**		**0.03%**	**Ladders, uns.**	**0.03%**		**0.03%**
Overexertion in pulling or pushing objects		1		**Overexertion in pulling or pushing objects**		1	
Ladders, uns.	**0.03%**		**0.03%**	**Ladders, uns.**	**0.03%**		**0.03%**
Overexertion, uns.		1		**Overexertion, uns.**		1	
Movable ladders, uns.	**0.03%**		**0.03%**	**Movable ladders, uns.**	**0.03%**		**0.03%**
Struck against stationary object		1.009009009		**Struck against stationary object**		1.009009009	
Ladders, uns.	**0.11%**		**0.11%**	**Ladders, uns.**	**0.11%**		**0.11%**
Struck by falling object		1.054545455		**Struck by falling object**		1.054545455	
Ladders, uns.	**0.08%**		**0.09%**	**Ladders, uns.**	**0.08%**		**0.09%**
Struck by object, n.e.c.		1		**Struck by object, n.e.c.**		1	
Ladders, uns.	**0.03%**		**0.03%**	**Ladders, uns.**	**0.03%**		**0.03%**
Fall from ladder		1.022222222		**Fall from ladder**		1.022222222	
Floor of building	**0.58%**		**0.59%**	**Floor of building**	**0.58%**		**0.59%**
Floor, uns.	**0.17%**		**0.17%**	**Floor, uns.**	**0.17%**		**0.17%**
Floors, walkways, ground surfaces, n.e.c.	**0.11%**		**0.11%**	**Floors, walkways, ground surfaces, n.e.c.**	**0.11%**		**0.11%**
Floors, walkways, ground surfaces, uns.	**0.99%**		**1.01%**	**Floors, walkways, ground surfaces, uns.**	**0.99%**		**1.01%**
Ground	**1.38%**		**1.41%**	**Ground**	**1.38%**		**1.41%**
Ice, sleet, snow	**0.06%**		**0.06%**	**Ice, sleet, snow**	**0.06%**		**0.06%**
Other floors, walkways, ground surfaces, uns.	**0.03%**		**0.03%**	**Other floors, walkways, ground surfaces, uns.**	**0.03%**		**0.03%**
Struck by object, n.e.c.		1		**Struck by object, n.e.c.**		1	
Knives	0.11%		**0.11%**	Knives	0.11%		**0.11%**
Struck by object, uns.		1		**Struck by object, uns.**		1	
Knives	0.03%		**0.03%**	Knives	0.03%		**0.03%**
Contact with objects and equipment, uns.		1		**Contact with objects and equipment, uns.**		1	
Knives	0.11%		**0.11%**	Knives	0.11%		**0.11%**
Struck against object, n.e.c.		1		**Struck against object, n.e.c.**		1	
Knives	0.03%		**0.03%**	Knives	0.03%		**0.03%**

Struck against object, uns.		1		Struck against object, uns.		1	
Cutting handtools -- power not determined, n.e.c.	0.03%		0.03%	Cutting handtools -- power not determined, n.e.c.	0.03%		0.03%
Struck by slipping handheld object		1		Struck by slipping handheld object		1	
Cutting handtools -- nonpowered, n.e.c.	0.03%		0.03%	Cutting handtools -- nonpowered, n.e.c.	0.03%		0.03%
Knives	1.07%		1.07%	Knives	1.07%		1.07%
Contact with skin, eye(s) or other exposed tissue		1.193548387		Contact with skin, eye(s) or other exposed tissue		1.193548387	
Adhesives, glues, n.e.c.	0.03%		0.03%	Adhesives, glues, n.e.c.	0.03%		0.03%
Bending, climbing, crawling, reaching, twisting		1		Bending, climbing, crawling, reaching, twisting		1	
Bodily motion or position of injured, ill worker	6.93%		6.93%	Bodily motion or position of injured, ill worker	6.93%		6.93%
Bodily reaction and exertion, n.e.c.		1		Bodily reaction and exertion, n.e.c.		1	
Bodily motion or position of injured, ill worker	0.25%		0.25%	Bodily motion or position of injured, ill worker	0.25%		0.25%
Person -- injured or ill worker, uns.	0.03%		0.03%	Person -- injured or ill worker, uns.	0.03%		0.03%
Bodily reaction and exertion, uns.		1		Bodily reaction and exertion, uns.		1	
Bodily motion or position of injured, ill worker	0.03%		0.03%	Bodily motion or position of injured, ill worker	0.03%		0.03%
Bodily reaction, n.e.c.		1		Bodily reaction, n.e.c.		1	
Bodily motion or position of injured, ill worker	2.37%		2.37%	Bodily motion or position of injured, ill worker	2.37%		2.37%
Bodily reaction, uns.		1		Bodily reaction, uns.		1	
Bodily motion or position of injured, ill worker	0.19%		0.19%	Bodily motion or position of injured, ill worker	0.19%		0.19%
Standing		1		Standing		1	
Bodily motion or position of injured, ill worker	0.03%		0.03%	Bodily motion or position of injured, ill worker	0.03%		0.03%
Static posture with the application of force to an object		1		Static posture with the application of force to an object		1	
Bodily motion or position of injured, ill worker	0.11%		0.11%	Bodily motion or position of injured, ill worker	0.11%		0.11%
Static posture without the application of force to an object		1		Static posture without the application of force to an object		1	
Bodily motion or position of injured, ill worker	0.25%		0.25%	Bodily motion or position of injured, ill worker	0.25%		0.25%
Overexertion in lifting (object) and turning (body)		1		Overexertion in lifting (object) and turning (body)		1	
Bodily motion or position of injured, ill worker	0.11%		0.11%	Bodily motion or position of injured, ill worker	0.11%		0.11%

Process Step 4							
Frame Interior Walls							
Resources							
Carpenter 1				Carpenter 2			
Risks							
	Frequency (%)	Severity Factor	Frequency * Severity		Frequency (%)	Severity Factor	Frequency * Severity
Event Exposure/Source of Injury Combination	19.62%	1.012126656	19.86%	Event Exposure/Source of Injury Combination	19.62%	1.012126656	19.86%
Fall on same level, n.e.c.		1		Fall on same level, n.e.c.		1	
Floor of building	0.03%		0.03%	Floor of building	0.03%		0.03%
Floors, walkways, ground surfaces, uns.	0.06%		0.06%	Floors, walkways, ground surfaces, uns.	0.06%		0.06%
Ground	0.08%		0.08%	Ground	0.08%		0.08%
Ice, sleet, snow	0.03%		0.03%	Ice, sleet, snow	0.03%		0.03%
Fall on same level, uns.		1		Fall on same level, uns.		1	
Floor of building	0.03%		0.03%	Floor of building	0.03%		0.03%
Ground	0.06%		0.06%	Ground	0.06%		0.06%
Fall onto or against objects		1		Fall onto or against objects		1	
Floor of building	0.03%		0.03%	Floor of building	0.03%		0.03%
Floor of scaffold, staging, or temporary work platform	0.06%		0.06%	Floor of scaffold, staging, or temporary work platform	0.06%		0.06%
Floors, walkways, ground surfaces, uns.	0.03%		0.03%	Floors, walkways, ground surfaces, uns.	0.03%		0.03%
Ice, sleet, snow	0.03%		0.03%	Ice, sleet, snow	0.03%		0.03%
Fall to floor, walkway, or other surface		1.003649635		Fall to floor, walkway, or other surface		1.003649635	
Floor of building	0.80%		0.80%	Floor of building	0.80%		0.80%
Floor, n.e.c.	0.03%		0.03%	Floor, n.e.c.	0.03%		0.03%
Floor, uns.	0.06%		0.06%	Floor, uns.	0.06%		0.06%
Floors, walkways, ground surfaces, n.e.c.	0.06%		0.06%	Floors, walkways, ground surfaces, n.e.c.	0.06%		0.06%
Floors, walkways, ground surfaces, uns.	1.62%		1.63%	Floors, walkways, ground surfaces, uns.	1.62%		1.63%
Ground	2.75%		2.76%	Ground	2.75%		2.76%
Other floors, walkways, ground surfaces, uns.	0.06%		0.06%	Other floors, walkways, ground surfaces, uns.	0.06%		0.06%
Fall, n.e.c.		1.071428571		Fall, n.e.c.		1.071428571	
Floors, walkways, ground surfaces, uns.	0.11%		0.12%	Floors, walkways, ground surfaces, uns.	0.11%		0.12%
Ground	0.03%		0.03%	Ground	0.03%		0.03%
Other floors, walkways, ground surfaces, uns.	0.03%		0.03%	Other floors, walkways, ground surfaces, uns.	0.03%		0.03%
Fall, uns.		1		Fall, uns.		1	
Floors, walkways, ground surfaces, uns.	0.03%		0.03%	Floors, walkways, ground surfaces, uns.	0.03%		0.03%
Ground	0.06%		0.06%	Ground	0.06%		0.06%
Ice, sleet, snow	0.06%		0.06%	Ice, sleet, snow	0.06%		0.06%
Slip,trip,stepped on or in, loss of balance - with or without twisting - without fall,nec		1		Slip,trip,stepped on or in, loss of balance - with or without twisting - without fall,nec		1	
Bodily motion or position of injured, ill worker	1.49%		1.49%	Bodily motion or position of injured, ill worker	1.49%		1.49%
Slip,trip,stepped on or in, loss of balance - with or without twisting - without fall,uns		1		Slip,trip,stepped on or in, loss of balance - with or without twisting - without fall,uns		1	
Bodily motion or position of injured, ill worker	0.36%		0.36%	Bodily motion or position of injured, ill worker	0.36%		0.36%
Slipping on something - with or without twisting - without fall		1		Slipping on something - with or without twisting - without fall		1	
Bodily motion or position of injured, ill worker	1.40%		1.40%	Bodily motion or position of injured, ill worker	1.40%		1.40%
Stepping in a hole or on an object - with or without twisting - without fall		1		Stepping in a hole or on an object - with or without twisting - without fall		1	
Bodily motion or position of injured, ill worker	1.60%		1.60%	Bodily motion or position of injured, ill worker	1.60%		1.60%
Struck against object, n.e.c.		1		Struck against object, n.e.c.		1	
Ground	0.03%		0.03%	Ground	0.03%		0.03%
Struck against stationary object		1.009009009		Struck against stationary object		1.009009009	
Ground	0.03%		0.03%	Ground	0.03%		0.03%

Tripping over something - with or without twisting - without fall		1		Tripping over something - with or without twisting - without fall		1	
Bodily motion or position of injured, ill worker	0.36%		0.36%	Bodily motion or position of injured, ill worker	0.36%		0.36%
Walking -- without other incident		1		Walking -- without other incident		1	
Bodily motion or position of injured, ill worker	0.14%		0.14%	Bodily motion or position of injured, ill worker	0.14%		0.14%
Struck against stationary object		1.009009009		Struck against stationary object		1.009009009	
Floor of building	0.03%		0.03%	Floor of building	0.03%		0.03%
Fall onto or against objects		1		Fall onto or against objects		1	
Nails, brads, tacks	0.06%		0.06%	Nails, brads, tacks	0.06%		0.06%
Struck against object, uns.		1		Struck against object, uns.		1	
Nails, brads, tacks	0.06%		0.06%	Nails, brads, tacks	0.06%		0.06%
Stepped on object		1		Stepped on object		1	
Nails, brads, tacks	0.03%		0.03%	Nails, brads, tacks	0.03%		0.03%
Struck by slipping handheld object		1		Struck by slipping handheld object		1	
Nails, brads, tacks	0.03%		0.03%	Nails, brads, tacks	0.03%		0.03%
Struck by object, n.e.c.		1		Struck by object, n.e.c.		1	
Nails, brads, tacks	0.08%		0.08%	Nails, brads, tacks	0.08%		0.08%
Struck by flying object, n.e.c.		1		Struck by flying object, n.e.c.		1	
Nails, brads, tacks	0.11%		0.11%	Nails, brads, tacks	0.11%		0.11%
Struck by falling object		1.054545455		Struck by falling object		1.054545455	
Nail guns -- powered	0.03%		0.03%	Nail guns -- powered	0.03%		0.03%
Nails, brads, tacks	0.03%		0.03%	Nails, brads, tacks	0.03%		0.03%
Struck by discharged object or substance		1.032786885		Struck by discharged object or substance		1.032786885	
Nail guns -- powered	0.03%		0.03%	Nail guns -- powered	0.03%		0.03%
Nails, brads, tacks	0.96%		0.99%	Nails, brads, tacks	0.96%		0.99%
Caught in or compressed by equipment or objects, n.e.c.		1.12716763		Caught in or compressed by equipment or objects, n.e.c.		1.12716763	
Dimensional lumber, n.e.c.	0.03%		0.03%	Dimensional lumber, n.e.c.	0.03%		0.03%
Wood, lumber, n.e.c.	0.08%		0.09%	Wood, lumber, n.e.c.	0.08%		0.09%
Wood, lumber, uns.	0.06%		0.06%	Wood, lumber, uns.	0.06%		0.06%
Caught in or compressed by equipment or objects, uns.		1.272727273		Caught in or compressed by equipment or objects, uns.		1.272727273	
Wood, lumber, uns.	0.03%		0.04%	Wood, lumber, uns.	0.03%		0.04%
Contact with objects and equipment, uns.		1		Contact with objects and equipment, uns.		1	
Wood, lumber, uns.	0.03%		0.03%	Wood, lumber, uns.	0.03%		0.03%
Overexertion in carrying, turning, wielding objects		1.020408163		Overexertion in carrying, turning, wielding objects		1.020408163	
Wood, lumber, n.e.c.	0.06%		0.06%	Wood, lumber, n.e.c.	0.06%		0.06%
Overexertion in lifting		1		Overexertion in lifting		1	
Dimensional lumber, n.e.c.	0.03%		0.03%	Dimensional lumber, n.e.c.	0.03%		0.03%
Wood, lumber, n.e.c.	0.06%		0.06%	Wood, lumber, n.e.c.	0.06%		0.06%
Wood, lumber, uns.	0.03%		0.03%	Wood, lumber, uns.	0.03%		0.03%
Overexertion, n.e.c.		1.011111111		Overexertion, n.e.c.		1.011111111	
Dimensional lumber, n.e.c.	0.03%		0.03%	Dimensional lumber, n.e.c.	0.03%		0.03%
Wood, lumber, uns.	0.06%		0.06%	Wood, lumber, uns.	0.06%		0.06%
Overexertion, uns.		1		Overexertion, uns.		1	
Wood, lumber, uns.	0.03%		0.03%	Wood, lumber, uns.	0.03%		0.03%
Stepped on object		1		Stepped on object		1	
Wood, lumber, uns.	0.03%		0.03%	Wood, lumber, uns.	0.03%		0.03%
Struck against object, n.e.c.		1		Struck against object, n.e.c.		1	
Wood, lumber, n.e.c.	0.03%		0.03%	Wood, lumber, n.e.c.	0.03%		0.03%

Struck by falling object		1.054545455		Struck by falling object		1.054545455	
Dimensional lumber, n.e.c.	0.03%		0.03%	Dimensional lumber, n.e.c.	0.03%		0.03%
Wood, lumber, n.e.c.	0.08%		0.09%	Wood, lumber, n.e.c.	0.08%		0.09%
Struck by object, n.e.c.		1		Struck by object, n.e.c.		1	
Dimensional lumber, n.e.c.	0.06%		0.06%	Dimensional lumber, n.e.c.	0.06%		0.06%
Wood, lumber, uns.	0.03%		0.03%	Wood, lumber, uns.	0.03%		0.03%
Struck by object, uns.		1		Struck by object, uns.		1	
Dimensional lumber, n.e.c.	0.03%		0.03%	Dimensional lumber, n.e.c.	0.03%		0.03%
Struck by slipping handheld object		1		Struck by slipping handheld object		1	
Dimensional lumber, n.e.c.	0.03%		0.03%	Dimensional lumber, n.e.c.	0.03%		0.03%
Struck by swinging or slipping object, n.e.c.		1.033333333		Struck by swinging or slipping object, n.e.c.		1.033333333	
Lumber whose dimensions are less than 4"	0.03%		0.03%	Lumber whose dimensions are less than 4"	0.03%		0.03%
Wood, lumber, n.e.c.	0.03%		0.03%	Wood, lumber, n.e.c.	0.03%		0.03%
Rubbed or abraded by friction or pressure, n.e.c.		1		Rubbed or abraded by friction or pressure, n.e.c.		1	
Wood, lumber, uns.	0.03%		0.03%	Wood, lumber, uns.	0.03%		0.03%
Struck by discharged object or substance		1.032786885		Struck by discharged object or substance		1.032786885	
Dimensional lumber, uns.	0.03%		0.03%	Dimensional lumber, uns.	0.03%		0.03%
Sawdust	0.03%		0.03%	Sawdust	0.03%		0.03%
Struck by dislodged flying object, particle		1		Struck by dislodged flying object, particle		1	
Lumber whose dimensions are less than 4"	0.03%		0.03%	Lumber whose dimensions are less than 4"	0.03%		0.03%
Sawdust	0.06%		0.06%	Sawdust	0.06%		0.06%
Contact with objects and equipment, n.e.c.		1.029411765		Contact with objects and equipment, n.e.c.		1.029411765	
Forklift, uns.	0.03%		0.03%	Forklift, uns.	0.03%		0.03%
Caught in or compressed by equipment or objects, n.e.c.		1.12716763		Caught in or compressed by equipment or objects, n.e.c.		1.12716763	
Forklift, uns.	0.06%		0.06%	Forklift, uns.	0.06%		0.06%
Pedestrian struck by vehicle, mobile equipment, n.e.c.		1.25		Pedestrian struck by vehicle, mobile equipment, n.e.c.		1.25	
Forklift, uns.	0.03%		0.03%	Forklift, uns.	0.03%		0.03%
Struck against stationary object		1.009009009		Struck against stationary object		1.009009009	
Forklift, uns.	0.03%		0.03%	Forklift, uns.	0.03%		0.03%
Struck by shifting load -- nonhighway accident		1		Struck by shifting load -- nonhighway accident		1	
Forklift, uns.	0.03%		0.03%	Forklift, uns.	0.03%		0.03%
Caught in or compressed by equipment or objects, n.e.c.		1.12716763		Caught in or compressed by equipment or objects, n.e.c.		1.12716763	
Hoisting accessories, uns.	0.03%		0.03%	Hoisting accessories, uns.	0.03%		0.03%
Bodily reaction and exertion, n.e.c.		1		Bodily reaction and exertion, n.e.c.		1	
Drills	0.03%		0.03%	Drills	0.03%		0.03%
Drills -- power not determined	0.06%		0.06%	Drills -- power not determined	0.06%		0.06%
Drills -- powered	0.22%		0.22%	Drills -- powered	0.22%		0.22%
Caught in or compressed by equipment or objects, n.e.c.		1.12716763		Caught in or compressed by equipment or objects, n.e.c.		1.12716763	
Drills -- power not determined	0.03%		0.03%	Drills -- power not determined	0.03%		0.03%
Caught in running equipment or machinery		1.071428571		Caught in running equipment or machinery		1.071428571	
Drills -- power not determined	0.03%		0.03%	Drills -- power not determined	0.03%		0.03%
Drills -- powered	0.06%		0.06%	Drills -- powered	0.06%		0.06%
Overexertion in carrying, turning, wielding objects		1.020408163		Overexertion in carrying, turning, wielding objects		1.020408163	
Drills -- powered	0.03%		0.03%	Drills -- powered	0.03%		0.03%
Overexertion, n.e.c.		1.011111111		Overexertion, n.e.c.		1.011111111	

Drills -- powered	0.06%		0.06%	Drills -- powered	0.06%		0.06%
Overexertion, uns.		1		Overexertion, uns.		1	
Drills	0.03%		0.03%	Drills	0.03%		0.03%
Drills -- powered	0.03%		0.03%	Drills -- powered	0.03%		0.03%
Stepped on object		1		Stepped on object		1	
Drills -- power not determined	0.03%		0.03%	Drills -- power not determined	0.03%		0.03%
Struck by object, n.e.c.		1		Struck by object, n.e.c.		1	
Drills -- power not determined	0.06%		0.06%	Drills -- power not determined	0.06%		0.06%
Drills -- powered	0.11%		0.11%	Drills -- powered	0.11%		0.11%
Struck by slipping handheld object		1		Struck by slipping handheld object		1	
Drills	0.06%		0.06%	Drills	0.06%		0.06%
Drills -- power not determined	0.06%		0.06%	Drills -- power not determined	0.06%		0.06%
Drills -- powered	0.06%		0.06%	Drills -- powered	0.06%		0.06%
Struck by swinging or slipping object, uns.		1		Struck by swinging or slipping object, uns.		1	
Drills	0.03%		0.03%	Drills	0.03%		0.03%
Bodily reaction and exertion, n.e.c.		1		Bodily reaction and exertion, n.e.c.		1	
Ladders, n.e.c.	0.03%		0.03%	Ladders, n.e.c.	0.03%		0.03%
Ladders, uns.	0.25%		0.25%	Ladders, uns.	0.25%		0.25%
Caught in or compressed by equipment or objects, n.e.c.		1.12716763		Caught in or compressed by equipment or objects, n.e.c.		1.12716763	
Ladders, uns.	0.11%		0.12%	Ladders, uns.	0.11%		0.12%
Fall from ladder		1.022222222		Fall from ladder		1.022222222	
Ladders, uns.	0.36%		0.37%	Ladders, uns.	0.36%		0.37%
Fall onto or against objects		1		Fall onto or against objects		1	
Ladders, uns.	0.14%		0.14%	Ladders, uns.	0.14%		0.14%
Overexertion in carrying, turning, wielding objects		1.020408163		Overexertion in carrying, turning, wielding objects		1.020408163	
Ladders, uns.	0.03%		0.03%	Ladders, uns.	0.03%		0.03%
Overexertion in lifting		1		Overexertion in lifting		1	
Ladders, uns.	0.06%		0.06%	Ladders, uns.	0.06%		0.06%
Overexertion in lifting (object) and turning (body)		1		Overexertion in lifting (object) and turning (body)		1	
Ladders, uns.	0.03%		0.03%	Ladders, uns.	0.03%		0.03%
Overexertion in pulling or pushing objects		1		Overexertion in pulling or pushing objects		1	
Ladders, uns.	0.03%		0.03%	Ladders, uns.	0.03%		0.03%
Overexertion, uns.		1		Overexertion, uns.		1	
Movable ladders, uns.	0.03%		0.03%	Movable ladders, uns.	0.03%		0.03%
Struck against stationary object		1.009009009		Struck against stationary object		1.009009009	
Ladders, uns.	0.11%		0.11%	Ladders, uns.	0.11%		0.11%
Struck by falling object		1.054545455		Struck by falling object		1.054545455	
Ladders, uns.	0.08%		0.09%	Ladders, uns.	0.08%		0.09%
Struck by object, n.e.c.		1		Struck by object, n.e.c.		1	
Ladders, uns.	0.03%		0.03%	Ladders, uns.	0.03%		0.03%
Fall from ladder		1.022222222		Fall from ladder		1.022222222	
Floor of building	0.58%		0.59%	Floor of building	0.58%		0.59%
Floor, uns.	0.17%		0.17%	Floor, uns.	0.17%		0.17%
Floors, walkways, ground surfaces, n.e.c.	0.11%		0.11%	Floors, walkways, ground surfaces, n.e.c.	0.11%		0.11%
Floors, walkways, ground surfaces, uns.	0.99%		1.01%	Floors, walkways, ground surfaces, uns.	0.99%		1.01%
Ground	1.38%		1.41%	Ground	1.38%		1.41%
Ice, sleet, snow	0.06%		0.06%	Ice, sleet, snow	0.06%		0.06%
Other floors, walkways, ground surfaces, uns.	0.03%		0.03%	Other floors, walkways, ground surfaces, uns.	0.03%		0.03%

Process Step 5							
Interior Wall OSB (exterior)							
Resources							
Carpenter 1				Carpenter 2			
Risks							
	Frequency (%)	Severity Factor	Frequency * Severity		Frequency (%)	Severity Factor	Frequency * Severity
Event Exposure/Source of Injury Combination	24.16%	1.003889861	24.25%	Event Exposure/Source of Injury Combination	24.16%	1.003889861	24.25%
Fall on same level, n.e.c.		1		Fall on same level, n.e.c.		1	
Floor of building	0.03%		0.03%	Floor of building	0.03%		0.03%
Floors, walkways, ground surfaces, uns.	0.06%		0.06%	Floors, walkways, ground surfaces, uns.	0.06%		0.06%
Ground	0.08%		0.08%	Ground	0.08%		0.08%
Ice, sleet, snow	0.03%		0.03%	Ice, sleet, snow	0.03%		0.03%
Fall on same level, uns.		1		Fall on same level, uns.		1	
Floor of building	0.03%		0.03%	Floor of building	0.03%		0.03%
Ground	0.06%		0.06%	Ground	0.06%		0.06%
Fall onto or against objects		1		Fall onto or against objects		1	
Floor of building	0.03%		0.03%	Floor of building	0.03%		0.03%
Floor of scaffold, staging, or temporary work platform	0.06%		0.06%	Floor of scaffold, staging, or temporary work platform	0.06%		0.06%
Floors, walkways, ground surfaces, uns.	0.03%		0.03%	Floors, walkways, ground surfaces, uns.	0.03%		0.03%
Ice, sleet, snow	0.03%		0.03%	Ice, sleet, snow	0.03%		0.03%
Fall to floor, walkway, or other surface		1.003649635		Fall to floor, walkway, or other surface		1.003649635	
Floor of building	0.80%		0.80%	Floor of building	0.80%		0.80%
Floor, n.e.c.	0.03%		0.03%	Floor, n.e.c.	0.03%		0.03%
Floor, uns.	0.06%		0.06%	Floor, uns.	0.06%		0.06%
Floors, walkways, ground surfaces, n.e.c.	0.06%		0.06%	Floors, walkways, ground surfaces, n.e.c.	0.06%		0.06%
Floors, walkways, ground surfaces, uns.	1.62%		1.63%	Floors, walkways, ground surfaces, uns.	1.62%		1.63%
Ground	2.75%		2.76%	Ground	2.75%		2.76%
Other floors, walkways, ground surfaces, uns.	0.06%		0.06%	Other floors, walkways, ground surfaces, uns.	0.06%		0.06%
Fall, n.e.c.		1.071428571		Fall, n.e.c.		1.071428571	
Floors, walkways, ground surfaces, uns.	0.11%		0.12%	Floors, walkways, ground surfaces, uns.	0.11%		0.12%
Ground	0.03%		0.03%	Ground	0.03%		0.03%
Other floors, walkways, ground surfaces, uns.	0.03%		0.03%	Other floors, walkways, ground surfaces, uns.	0.03%		0.03%
Fall, uns.		1		Fall, uns.		1	
Floors, walkways, ground surfaces, uns.	0.03%		0.03%	Floors, walkways, ground surfaces, uns.	0.03%		0.03%
Ground	0.06%		0.06%	Ground	0.06%		0.06%
Ice, sleet, snow	0.06%		0.06%	Ice, sleet, snow	0.06%		0.06%
Slip,trip,stepped on or in, loss of balance - with or without twisting - without fall,nec		1		Slip,trip,stepped on or in, loss of balance - with or without twisting - without fall,nec		1	
Bodily motion or position of injured, ill worker	1.49%		1.49%	Bodily motion or position of injured, ill worker	1.49%		1.49%
Slip,trip,stepped on or in, loss of balance - with or without twisting - without fall,uns		1		Slip,trip,stepped on or in, loss of balance - with or without twisting - without fall,uns		1	
Bodily motion or position of injured, ill worker	0.36%		0.36%	Bodily motion or position of injured, ill worker	0.36%		0.36%
Slipping on something - with or without twisting - without fall		1		Slipping on something - with or without twisting - without fall		1	
Bodily motion or position of injured, ill worker	1.40%		1.40%	Bodily motion or position of injured, ill worker	1.40%		1.40%
Stepping in a hole or on an object - with or without twisting - without fall		1		Stepping in a hole or on an object - with or without twisting - without fall		1	
Bodily motion or position of injured, ill worker	1.60%		1.60%	Bodily motion or position of injured, ill worker	1.60%		1.60%
Struck against object, n.e.c.		1		Struck against object, n.e.c.		1	
Ground	0.03%		0.03%	Ground	0.03%		0.03%
Struck against stationary object		1.009009009		Struck against stationary object		1.009009009	
Ground	0.03%		0.03%	Ground	0.03%		0.03%

Tripping over something - with or without twisting - without fall		1		Tripping over something - with or without twisting - without fall		1	
Bodily motion or position of injured, ill worker	0.36%		0.36%	Bodily motion or position of injured, ill worker	0.36%		0.36%
Walking -- without other incident		1		Walking -- without other incident		1	
Bodily motion or position of injured, ill worker	0.14%		0.14%	Bodily motion or position of injured, ill worker	0.14%		0.14%
Struck against stationary object		1.009009009		Struck against stationary object		1.009009009	
Floor of building	0.03%		0.03%	Floor of building	0.03%		0.03%
Fall onto or against objects		1		Fall onto or against objects		1	
Nails, brads, tacks	0.06%		0.06%	Nails, brads, tacks	0.06%		0.06%
Struck against object, uns.		1		Struck against object, uns.		1	
Nails, brads, tacks	0.06%		0.06%	Nails, brads, tacks	0.06%		0.06%
Stepped on object		1		Stepped on object		1	
Nails, brads, tacks	0.03%		0.03%	Nails, brads, tacks	0.03%		0.03%
Struck by slipping handheld object		1		Struck by slipping handheld object		1	
Nails, brads, tacks	0.03%		0.03%	Nails, brads, tacks	0.03%		0.03%
Struck by object, n.e.c.		1		Struck by object, n.e.c.		1	
Nails, brads, tacks	0.08%		0.08%	Nails, brads, tacks	0.08%		0.08%
Struck by flying object, n.e.c.		1		Struck by flying object, n.e.c.		1	
Nails, brads, tacks	0.11%		0.11%	Nails, brads, tacks	0.11%		0.11%
Struck by falling object		1.054545455		Struck by falling object		1.054545455	
Nail guns -- powered	0.03%		0.03%	Nail guns -- powered	0.03%		0.03%
Nails, brads, tacks	0.03%		0.03%	Nails, brads, tacks	0.03%		0.03%
Struck by discharged object or substance		1.032786885		Struck by discharged object or substance		1.032786885	
Nail guns -- powered	0.03%		0.03%	Nail guns -- powered	0.03%		0.03%
Nails, brads, tacks	0.96%		0.99%	Nails, brads, tacks	0.96%		0.99%
Caught in or compressed by equipment or objects, n.e.c.		1.12716763		Caught in or compressed by equipment or objects, n.e.c.		1.12716763	
Plywood, wood paneling; particle, chip, flake board	0.06%		0.06%	Plywood, wood paneling; particle, chip, flake board	0.06%		0.06%
Overexertion in carrying, turning, wielding objects		1.020408163		Overexertion in carrying, turning, wielding objects		1.020408163	
Plywood, wood paneling; particle, chip, flake board	0.08%		0.08%	Plywood, wood paneling; particle, chip, flake board	0.08%		0.08%
Overexertion in lifting		1		Overexertion in lifting		1	
Plywood, wood paneling; particle, chip, flake board	0.28%		0.28%	Plywood, wood paneling; particle, chip, flake board	0.28%		0.28%
Overexertion in lifting and turning (object)		1		Overexertion in lifting and turning (object)		1	
Plywood, wood paneling; particle, chip, flake board	0.06%		0.06%	Plywood, wood paneling; particle, chip, flake board	0.06%		0.06%
Overexertion, n.e.c.		1.011111111		Overexertion, n.e.c.		1.011111111	
Plywood, wood paneling; particle, chip, flake board	0.03%		0.03%	Plywood, wood paneling; particle, chip, flake board	0.03%		0.03%
Overexertion, uns.		1		Overexertion, uns.		1	
Plywood, wood paneling; particle, chip, flake board	0.03%		0.03%	Plywood, wood paneling; particle, chip, flake board	0.03%		0.03%
Struck against object, n.e.c.		1		Struck against object, n.e.c.		1	
Plywood, wood paneling; particle, chip, flake board	0.03%		0.03%	Plywood, wood paneling; particle, chip, flake board	0.03%		0.03%
Struck by discharged object or substance		1.032786885		Struck by discharged object or substance		1.032786885	
Plywood, wood paneling; particle, chip, flake board	0.06%		0.06%	Plywood, wood paneling; particle, chip, flake board	0.06%		0.06%
Struck by dislodged flying object, particle		1		Struck by dislodged flying object, particle		1	
Plywood, wood paneling; particle, chip, flake board	0.03%		0.03%	Plywood, wood paneling; particle, chip, flake board	0.03%		0.03%
Struck by falling object		1.054545455		Struck by falling object		1.054545455	
Plywood, wood paneling; particle, chip, flake board	0.19%		0.20%	Plywood, wood paneling; particle, chip, flake board	0.19%		0.20%
Struck by object, n.e.c.		1		Struck by object, n.e.c.		1	
Plywood, wood paneling; particle, chip, flake board	0.03%		0.03%	Plywood, wood paneling; particle, chip, flake board	0.03%		0.03%
Struck by object, uns.		1		Struck by object, uns.		1	
Plywood, wood paneling; particle, chip, flake board	0.03%		0.03%	Plywood, wood paneling; particle, chip, flake board	0.03%		0.03%

Struck by rolling, sliding or falling objects on floor or ground level		1		**Struck by rolling, sliding or falling objects on floor or ground level**		1	
Plywood, wood paneling; particle, chip, flake board	**0.03%**		**0.03%**	**Plywood, wood paneling; particle, chip, flake board**	**0.03%**		**0.03%**
Bodily reaction and exertion, n.e.c.		1		**Bodily reaction and exertion, n.e.c.**		1	
Plywood, wood paneling; particle, chip, flake board	0.03%		**0.03%**	Plywood, wood paneling; particle, chip, flake board	0.03%		**0.03%**
Bending, climbing, crawling, reaching, twisting		1		**Bending, climbing, crawling, reaching, twisting**		1	
Bodily motion or position of injured, ill worker	**6.93%**		**6.93%**	**Bodily motion or position of injured, ill worker**	**6.93%**		**6.93%**
Bodily reaction and exertion, n.e.c.		1		**Bodily reaction and exertion, n.e.c.**		1	
Bodily motion or position of injured, ill worker	**0.25%**		**0.25%**	**Bodily motion or position of injured, ill worker**	**0.25%**		**0.25%**
Person -- injured or ill worker, uns.	**0.03%**		**0.03%**	**Person -- injured or ill worker, uns.**	**0.03%**		**0.03%**
Bodily reaction and exertion, uns.		1		**Bodily reaction and exertion, uns.**		1	
Bodily motion or position of injured, ill worker	**0.03%**		**0.03%**	**Bodily motion or position of injured, ill worker**	**0.03%**		**0.03%**
Bodily reaction, n.e.c.		1		**Bodily reaction, n.e.c.**		1	
Bodily motion or position of injured, ill worker	**2.37%**		**2.37%**	**Bodily motion or position of injured, ill worker**	**2.37%**		**2.37%**
Bodily reaction, uns.		1		**Bodily reaction, uns.**		1	
Bodily motion or position of injured, ill worker	**0.19%**		**0.19%**	**Bodily motion or position of injured, ill worker**	**0.19%**		**0.19%**
Standing		1		**Standing**		1	
Bodily motion or position of injured, ill worker	**0.03%**		**0.03%**	**Bodily motion or position of injured, ill worker**	**0.03%**		**0.03%**
Static posture with the application of force to an object		1		**Static posture with the application of force to an object**		1	
Bodily motion or position of injured, ill worker	**0.11%**		**0.11%**	**Bodily motion or position of injured, ill worker**	**0.11%**		**0.11%**
Static posture without the application of force to an object		1		**Static posture without the application of force to an object**		1	
Bodily motion or position of injured, ill worker	**0.25%**		**0.25%**	**Bodily motion or position of injured, ill worker**	**0.25%**		**0.25%**
Overexertion in lifting (object) and turning (body)		1		**Overexertion in lifting (object) and turning (body)**		1	
Bodily motion or position of injured, ill worker	0.11%		**0.11%**	Bodily motion or position of injured, ill worker	0.11%		**0.11%**
Contact with skin, eye(s) or other exposed tissue		1.193548387		**Contact with skin, eye(s) or other exposed tissue**		1.193548387	
Adhesives, glues, n.e.c.	0.03%		**0.03%**	Adhesives, glues, n.e.c.	0.03%		**0.03%**

Process Step 6							
Install Ceiling Joists							
Resources							
Carpenter 1				Carpenter 2			
Risks							
Event Exposure/Source of Injury Combination	Frequency (%)	Severity Factor	Frequency * Severity	Event Exposure/Source of Injury Combination	Frequency (%)	Severity Factor	Frequency * Severity
	14.12%	1.008249702	14.23%		14.12%	1.008249702	14.23%
Fall on same level, n.e.c.		1		Fall on same level, n.e.c.		1	
Floor of building	0.03%		0.03%	Floor of building	0.03%		0.03%
Floors, walkways, ground surfaces, uns.	0.06%		0.06%	Floors, walkways, ground surfaces, uns.	0.06%		0.06%
Ground	0.08%		0.08%	Ground	0.08%		0.08%
Ice, sleet, snow	0.03%		0.03%	Ice, sleet, snow	0.03%		0.03%
Fall on same level, uns.		1		Fall on same level, uns.		1	
Floor of building	0.03%		0.03%	Floor of building	0.03%		0.03%
Ground	0.06%		0.06%	Ground	0.06%		0.06%
Fall onto or against objects		1		Fall onto or against objects		1	
Floor of building	0.03%		0.03%	Floor of building	0.03%		0.03%
Floor of scaffold, staging, or temporary work platform	0.06%		0.06%	Floor of scaffold, staging, or temporary work platform	0.06%		0.06%
Floors, walkways, ground surfaces, uns.	0.03%		0.03%	Floors, walkways, ground surfaces, uns.	0.03%		0.03%
Ice, sleet, snow	0.03%		0.03%	Ice, sleet, snow	0.03%		0.03%
Fall to floor, walkway, or other surface		1.003649635		Fall to floor, walkway, or other surface		1.003649635	
Floor of building	0.80%		0.80%	Floor of building	0.80%		0.80%
Floor, n.e.c.	0.03%		0.03%	Floor, n.e.c.	0.03%		0.03%
Floor, uns.	0.06%		0.06%	Floor, uns.	0.06%		0.06%
Floors, walkways, ground surfaces, n.e.c.	0.06%		0.06%	Floors, walkways, ground surfaces, n.e.c.	0.06%		0.06%
Floors, walkways, ground surfaces, uns.	1.62%		1.63%	Floors, walkways, ground surfaces, uns.	1.62%		1.63%
Ground	2.75%		2.76%	Ground	2.75%		2.76%
Other floors, walkways, ground surfaces, uns.	0.06%		0.06%	Other floors, walkways, ground surfaces, uns.	0.06%		0.06%
Fall, n.e.c.		1.071428571		Fall, n.e.c.		1.071428571	
Floors, walkways, ground surfaces, uns.	0.11%		0.12%	Floors, walkways, ground surfaces, uns.	0.11%		0.12%
Ground	0.03%		0.03%	Ground	0.03%		0.03%
Other floors, walkways, ground surfaces, uns.	0.03%		0.03%	Other floors, walkways, ground surfaces, uns.	0.03%		0.03%
Fall, uns.		1		Fall, uns.		1	
Floors, walkways, ground surfaces, uns.	0.03%		0.03%	Floors, walkways, ground surfaces, uns.	0.03%		0.03%
Ground	0.06%		0.06%	Ground	0.06%		0.06%
Ice, sleet, snow	0.06%		0.06%	Ice, sleet, snow	0.06%		0.06%
Slip,trip,stepped on or in, loss of balance - with or without twisting - without fall,nec		1		Slip,trip,stepped on or in, loss of balance - with or without twisting - without fall,nec		1	
Bodily motion or position of injured, ill worker	1.49%		1.49%	Bodily motion or position of injured, ill worker	1.49%		1.49%
Slip,trip,stepped on or in, loss of balance - with or without twisting - without fall,uns		1		Slip,trip,stepped on or in, loss of balance - with or without twisting - without fall,uns		1	
Bodily motion or position of injured, ill worker	0.36%		0.36%	Bodily motion or position of injured, ill worker	0.36%		0.36%
Slipping on something - with or without twisting - without fall		1		Slipping on something - with or without twisting - without fall		1	
Bodily motion or position of injured, ill worker	1.40%		1.40%	Bodily motion or position of injured, ill worker	1.40%		1.40%
Stepping in a hole or on an object - with or without twisting - without fall		1		Stepping in a hole or on an object - with or without twisting - without fall		1	
Bodily motion or position of injured, ill worker	1.60%		1.60%	Bodily motion or position of injured, ill worker	1.60%		1.60%
Struck against object, n.e.c.		1		Struck against object, n.e.c.		1	
Ground	0.03%		0.03%	Ground	0.03%		0.03%
Struck against stationary object		1.009009009		Struck against stationary object		1.009009009	
Ground	0.03%		0.03%	Ground	0.03%		0.03%

Tripping over something - with or without twisting - without fall		1		Tripping over something - with or without twisting - without fall		1	
Bodily motion or position of injured, ill worker	0.36%		0.36%	Bodily motion or position of injured, ill worker	0.36%		0.36%
Walking -- without other incident		1		Walking -- without other incident		1	
Bodily motion or position of injured, ill worker	0.14%		0.14%	Bodily motion or position of injured, ill worker	0.14%		0.14%
Struck against stationary object		1.009009009		Struck against stationary object		1.009009009	
Floor of building	0.03%		0.03%	Floor of building	0.03%		0.03%
Fall onto or against objects		1		Fall onto or against objects		1	
Nails, brads, tacks	0.06%		0.06%	Nails, brads, tacks	0.06%		0.06%
Struck against object, uns.		1		Struck against object, uns.		1	
Nails, brads, tacks	0.06%		0.06%	Nails, brads, tacks	0.06%		0.06%
Stepped on object		1		Stepped on object		1	
Nails, brads, tacks	0.03%		0.03%	Nails, brads, tacks	0.03%		0.03%
Struck by slipping handheld object		1		Struck by slipping handheld object		1	
Nails, brads, tacks	0.03%		0.03%	Nails, brads, tacks	0.03%		0.03%
Struck by object, n.e.c.		1		Struck by object, n.e.c.		1	
Nails, brads, tacks	0.08%		0.08%	Nails, brads, tacks	0.08%		0.08%
Struck by flying object, n.e.c.		1		Struck by flying object, n.e.c.		1	
Nails, brads, tacks	0.11%		0.11%	Nails, brads, tacks	0.11%		0.11%
Struck by falling object		1.054545455		Struck by falling object		1.054545455	
Nail guns -- powered	0.03%		0.03%	Nail guns -- powered	0.03%		0.03%
Nails, brads, tacks	0.03%		0.03%	Nails, brads, tacks	0.03%		0.03%
Struck by discharged object or substance		1.032786885		Struck by discharged object or substance		1.032786885	
Nail guns -- powered	0.03%		0.03%	Nail guns -- powered	0.03%		0.03%
Nails, brads, tacks	0.96%		0.99%	Nails, brads, tacks	0.96%		0.99%
Caught in or compressed by equipment or objects, n.e.c.		1.12716763		Caught in or compressed by equipment or objects, n.e.c.		1.12716763	
Dimensional lumber, n.e.c.	0.03%		0.03%	Dimensional lumber, n.e.c.	0.03%		0.03%
Wood, lumber, n.e.c.	0.08%		0.09%	Wood, lumber, n.e.c.	0.08%		0.09%
Wood, lumber, uns.	0.06%		0.06%	Wood, lumber, uns.	0.06%		0.06%
Caught in or compressed by equipment or objects, uns.		1.272727273		Caught in or compressed by equipment or objects, uns.		1.272727273	
Wood, lumber, uns.	0.03%		0.04%	Wood, lumber, uns.	0.03%		0.04%
Contact with objects and equipment, uns.		1		Contact with objects and equipment, uns.		1	
Wood, lumber, uns.	0.03%		0.03%	Wood, lumber, uns.	0.03%		0.03%
Overexertion in carrying, turning, wielding objects		1.020408163		Overexertion in carrying, turning, wielding objects		1.020408163	
Wood, lumber, n.e.c.	0.06%		0.06%	Wood, lumber, n.e.c.	0.06%		0.06%
Overexertion in lifting		1		Overexertion in lifting		1	
Dimensional lumber, n.e.c.	0.03%		0.03%	Dimensional lumber, n.e.c.	0.03%		0.03%
Wood, lumber, n.e.c.	0.06%		0.06%	Wood, lumber, n.e.c.	0.06%		0.06%
Wood, lumber, uns.	0.03%		0.03%	Wood, lumber, uns.	0.03%		0.03%
Overexertion, n.e.c.		1.011111111		Overexertion, n.e.c.		1.011111111	
Dimensional lumber, n.e.c.	0.03%		0.03%	Dimensional lumber, n.e.c.	0.03%		0.03%
Wood, lumber, uns.	0.06%		0.06%	Wood, lumber, uns.	0.06%		0.06%
Overexertion, uns.		1		Overexertion, uns.		1	
Wood, lumber, uns.	0.03%		0.03%	Wood, lumber, uns.	0.03%		0.03%
Stepped on object		1		Stepped on object		1	
Wood, lumber, uns.	0.03%		0.03%	Wood, lumber, uns.	0.03%		0.03%
Struck against object, n.e.c.		1		Struck against object, n.e.c.		1	
Wood, lumber, n.e.c.	0.03%		0.03%	Wood, lumber, n.e.c.	0.03%		0.03%
Struck by falling object		1.054545455		Struck by falling object		1.054545455	
Dimensional lumber, n.e.c.	0.03%		0.03%	Dimensional lumber, n.e.c.	0.03%		0.03%
Wood, lumber, n.e.c.	0.08%		0.09%	Wood, lumber, n.e.c.	0.08%		0.09%

Struck by object, n.e.c.		1		Struck by object, n.e.c.		1	
Dimensional lumber, n.e.c.	**0.06%**		**0.06%**	**Dimensional lumber, n.e.c.**	**0.06%**		**0.06%**
Wood, lumber, uns.	**0.03%**		**0.03%**	**Wood, lumber, uns.**	**0.03%**		**0.03%**
Struck by object, uns.		1		Struck by object, uns.		1	
Dimensional lumber, n.e.c.	**0.03%**		**0.03%**	**Dimensional lumber, n.e.c.**	**0.03%**		**0.03%**
Struck by slipping handheld object		1		Struck by slipping handheld object		1	
Dimensional lumber, n.e.c.	**0.03%**		**0.03%**	**Dimensional lumber, n.e.c.**	**0.03%**		**0.03%**
Struck by swinging or slipping object, n.e.c.		1.033333333		Struck by swinging or slipping object, n.e.c.		1.033333333	
Lumber whose dimensions are less than 4"	**0.03%**		**0.03%**	**Lumber whose dimensions are less than 4"**	**0.03%**		**0.03%**
Wood, lumber, n.e.c.	**0.03%**		**0.03%**	**Wood, lumber, n.e.c.**	**0.03%**		**0.03%**
Rubbed or abraded by friction or pressure, n.e.c.		1		Rubbed or abraded by friction or pressure, n.e.c.		1	
Wood, lumber, uns.	0.03%		**0.03%**	Wood, lumber, uns.	0.03%		**0.03%**
Struck by discharged object or substance		1.032786885		Struck by discharged object or substance		1.032786885	
Dimensional lumber, uns.	0.03%		**0.03%**	Dimensional lumber, uns.	0.03%		**0.03%**
Sawdust	0.03%		**0.03%**	Sawdust	0.03%		**0.03%**
Struck by dislodged flying object, particle		1		Struck by dislodged flying object, particle		1	
Lumber whose dimensions are less than 4"	0.03%		**0.03%**	Lumber whose dimensions are less than 4"	0.03%		**0.03%**
Sawdust	0.06%		**0.06%**	Sawdust	0.06%		**0.06%**
Fall to floor, walkway, or other surface		1.003649635		Fall to floor, walkway, or other surface		1.003649635	
Manlifts	0.03%		**0.03%**	Manlifts	0.03%		**0.03%**
Caught in or compressed by equipment or objects, n.e.c.		1.12716763		Caught in or compressed by equipment or objects, n.e.c.		1.12716763	
Manlifts	0.06%		**0.06%**	Manlifts	0.06%		**0.06%**
Bodily reaction and exertion, n.e.c.		1		Bodily reaction and exertion, n.e.c.		1	
Lifelines, lanyards, safety belts or harnesses	**0.03%**		**0.03%**	**Lifelines, lanyards, safety belts or harnesses**	**0.03%**		**0.03%**
Bodily reaction and exertion, uns.		1		Bodily reaction and exertion, uns.		1	
Lifelines, lanyards, safety belts or harnesses	**0.03%**		**0.03%**	**Lifelines, lanyards, safety belts or harnesses**	**0.03%**		**0.03%**
Struck by swinging or slipping object, n.e.c.		1.033333333		Struck by swinging or slipping object, n.e.c.		1.033333333	
Hoisting accessories, n.e.c.	**0.03%**		**0.03%**	**Hoisting accessories, n.e.c.**	**0.03%**		**0.03%**
Struck by discharged object or substance		1.032786885		Struck by discharged object or substance		1.032786885	
Lifelines, lanyards, safety belts or harnesses	0.03%		**0.03%**	Lifelines, lanyards, safety belts or harnesses	0.03%		**0.03%**

Process Step 7							
Ceiling OSB							
Resources							
Carpenter 1				Carpenter 2			
Risks							
	Frequency (%)	Severity Factor	Frequency * Severity		Frequency (%)	Severity Factor	Frequency * Severity
Event Exposure/Source of Injury Combination	4.90%	1.035650997	5.07%	Event Exposure/Source of Injury Combination	4.90%	1.035650997	5.07%
Fall onto or against objects		1		**Fall onto or against objects**		1	
Nails, brads, tacks	0.06%		**0.06%**	Nails, brads, tacks	0.06%		**0.06%**
Struck against object, uns.		1		**Struck against object, uns.**		1	
Nails, brads, tacks	0.06%		**0.06%**	Nails, brads, tacks	0.06%		**0.06%**
Stepped on object		1		**Stepped on object**		1	
Nails, brads, tacks	0.03%		**0.03%**	Nails, brads, tacks	0.03%		**0.03%**
Struck by slipping handheld object		1		**Struck by slipping handheld object**		1	
Nails, brads, tacks	0.03%		**0.03%**	Nails, brads, tacks	0.03%		**0.03%**
Struck by object, n.e.c.		1		**Struck by object, n.e.c.**		1	
Nails, brads, tacks	0.08%		**0.08%**	Nails, brads, tacks	0.08%		**0.08%**
Struck by flying object, n.e.c.		1		**Struck by flying object, n.e.c.**		1	
Nails, brads, tacks	0.11%		**0.11%**	Nails, brads, tacks	0.11%		**0.11%**
Struck by falling object		1.054545455		**Struck by falling object**		1.054545455	
Nail guns -- powered	0.03%		**0.03%**	Nail guns -- powered	0.03%		**0.03%**
Nails, brads, tacks	0.03%		**0.03%**	Nails, brads, tacks	0.03%		**0.03%**
Struck by discharged object or substance		1.032786885		**Struck by discharged object or substance**		1.032786885	
Nail guns -- powered	0.03%		**0.03%**	Nail guns -- powered	0.03%		**0.03%**
Nails, brads, tacks	0.96%		**0.99%**	Nails, brads, tacks	0.96%		**0.99%**
Fall to lower level, n.e.c.		1		**Fall to lower level, n.e.c.**		1	
Floor of building	**0.25%**		**0.25%**	**Floor of building**	**0.25%**		**0.25%**
Floor of scaffold, staging, or temporary work platform	**0.03%**		**0.03%**	**Floor of scaffold, staging, or temporary work platform**	**0.03%**		**0.03%**
Floor, n.e.c.	**0.03%**		**0.03%**	**Floor, n.e.c.**	**0.03%**		**0.03%**
Floor, uns.	**0.08%**		**0.08%**	**Floor, uns.**	**0.08%**		**0.08%**
Floors, walkways, ground surfaces, n.e.c.	**0.03%**		**0.03%**	**Floors, walkways, ground surfaces, n.e.c.**	**0.03%**		**0.03%**
Floors, walkways, ground surfaces, uns.	**0.25%**		**0.25%**	**Floors, walkways, ground surfaces, uns.**	**0.25%**		**0.25%**
Ground	**0.36%**		**0.36%**	**Ground**	**0.36%**		**0.36%**
Fall to lower level, uns.		1		**Fall to lower level, uns.**		1	
Floor of building	**0.03%**		**0.03%**	**Floor of building**	**0.03%**		**0.03%**
Floor of scaffold, staging, or temporary work platform	**0.03%**		**0.03%**	**Floor of scaffold, staging, or temporary work platform**	**0.03%**		**0.03%**
Floors, walkways, ground surfaces, uns.	**0.14%**		**0.14%**	**Floors, walkways, ground surfaces, uns.**	**0.14%**		**0.14%**
Ground	**0.06%**		**0.06%**	**Ground**	**0.06%**		**0.06%**
Roof	**0.03%**		**0.03%**	**Roof**	**0.03%**		**0.03%**
Fall from roof edge		1		**Fall from roof edge**		1	
Floors, walkways, ground surfaces, uns.	**0.03%**		**0.03%**	**Floors, walkways, ground surfaces, uns.**	**0.03%**		**0.03%**
Ground	**0.06%**		**0.06%**	**Ground**	**0.06%**		**0.06%**
Fall from roof, n.e.c.		1.083333333		**Fall from roof, n.e.c.**		1.083333333	
Ground	**0.22%**		**0.24%**	**Ground**	**0.22%**		**0.24%**
Roof	**0.03%**		**0.03%**	**Roof**	**0.03%**		**0.03%**
Fall from roof, uns.		1.121212121		**Fall from roof, uns.**		1.121212121	
Floor, n.e.c.	**0.03%**		**0.03%**	**Floor, n.e.c.**	**0.03%**		**0.03%**
Floors, walkways, ground surfaces, uns.	**0.08%**		**0.09%**	**Floors, walkways, ground surfaces, uns.**	**0.08%**		**0.09%**
Ground	**0.63%**		**0.71%**	**Ground**	**0.63%**		**0.71%**

Fall through existing roof opening		1		**Fall through existing roof opening**		1	
Floor of building	**0.03%**		**0.03%**	**Floor of building**	**0.03%**		**0.03%**
Fall to lower level, n.e.c.		1		**Fall to lower level, n.e.c.**		1	
Dimensional lumber, n.e.c.	0.03%		**0.03%**	Dimensional lumber, n.e.c.	0.03%		**0.03%**
Bodily reaction and exertion, n.e.c.		1		**Bodily reaction and exertion, n.e.c.**		1	
Lifelines, lanyards, safety belts or harnesses	**0.03%**		**0.03%**	**Lifelines, lanyards, safety belts or harnesses**	**0.03%**		**0.03%**
Bodily reaction and exertion, uns.		1		**Bodily reaction and exertion, uns.**		1	
Lifelines, lanyards, safety belts or harnesses	**0.03%**		**0.03%**	**Lifelines, lanyards, safety belts or harnesses**	**0.03%**		**0.03%**
Struck by swinging or slipping object, n.e.c.		1.033333333		**Struck by swinging or slipping object, n.e.c.**		1.033333333	
Hoisting accessories, n.e.c.	**0.03%**		**0.03%**	**Hoisting accessories, n.e.c.**	**0.03%**		**0.03%**
Struck by discharged object or substance		1.032786885		**Struck by discharged object or substance**		1.032786885	
Lifelines, lanyards, safety belts or harnesses	0.03%		**0.03%**	Lifelines, lanyards, safety belts or harnesses	0.03%		**0.03%**
Caught in or compressed by equipment or objects, n.e.c.		1.12716763		**Caught in or compressed by equipment or objects, n.e.c.**		1.12716763	
Plywood, wood paneling; particle, chip, flake board	**0.06%**		**0.06%**	**Plywood, wood paneling; particle, chip, flake board**	**0.06%**		**0.06%**
Overexertion in carrying, turning, wielding objects		1.020408163		**Overexertion in carrying, turning, wielding objects**		1.020408163	
Plywood, wood paneling; particle, chip, flake board	**0.08%**		**0.08%**	**Plywood, wood paneling; particle, chip, flake board**	**0.08%**		**0.08%**
Overexertion in lifting		1		**Overexertion in lifting**		1	
Plywood, wood paneling; particle, chip, flake board	**0.28%**		**0.28%**	**Plywood, wood paneling; particle, chip, flake board**	**0.28%**		**0.28%**
Overexertion in lifting and turning (object)		1		**Overexertion in lifting and turning (object)**		1	
Plywood, wood paneling; particle, chip, flake board	**0.06%**		**0.06%**	**Plywood, wood paneling; particle, chip, flake board**	**0.06%**		**0.06%**
Overexertion, n.e.c.		1.011111111		**Overexertion, n.e.c.**		1.011111111	
Plywood, wood paneling; particle, chip, flake board	**0.03%**		**0.03%**	**Plywood, wood paneling; particle, chip, flake board**	**0.03%**		**0.03%**
Overexertion, uns.		1		**Overexertion, uns.**		1	
Plywood, wood paneling; particle, chip, flake board	**0.03%**		**0.03%**	**Plywood, wood paneling; particle, chip, flake board**	**0.03%**		**0.03%**
Struck against object, n.e.c.		1		**Struck against object, n.e.c.**		1	
Plywood, wood paneling; particle, chip, flake board	**0.03%**		**0.03%**	**Plywood, wood paneling; particle, chip, flake board**	**0.03%**		**0.03%**
Struck by discharged object or substance		1.032786885		**Struck by discharged object or substance**		1.032786885	
Plywood, wood paneling; particle, chip, flake board	**0.06%**		**0.06%**	**Plywood, wood paneling; particle, chip, flake board**	**0.06%**		**0.06%**
Struck by dislodged flying object, particle		1		**Struck by dislodged flying object, particle**		1	
Plywood, wood paneling; particle, chip, flake board	**0.03%**		**0.03%**	**Plywood, wood paneling; particle, chip, flake board**	**0.03%**		**0.03%**
Struck by falling object		1.054545455		**Struck by falling object**		1.054545455	
Plywood, wood paneling; particle, chip, flake board	**0.19%**		**0.20%**	**Plywood, wood paneling; particle, chip, flake board**	**0.19%**		**0.20%**
Struck by object, n.e.c.		1		**Struck by object, n.e.c.**		1	
Plywood, wood paneling; particle, chip, flake board	**0.03%**		**0.03%**	**Plywood, wood paneling; particle, chip, flake board**	**0.03%**		**0.03%**
Struck by object, uns.		1		**Struck by object, uns.**		1	
Plywood, wood paneling; particle, chip, flake board	**0.03%**		**0.03%**	**Plywood, wood paneling; particle, chip, flake board**	**0.03%**		**0.03%**
Struck by rolling, sliding or falling objects on floor or ground level		1		**Struck by rolling, sliding or falling objects on floor or ground level**		1	
Plywood, wood paneling; particle, chip, flake board	**0.03%**		**0.03%**	**Plywood, wood paneling; particle, chip, flake board**	**0.03%**		**0.03%**
Bodily reaction and exertion, n.e.c.		1		**Bodily reaction and exertion, n.e.c.**		1	
Plywood, wood paneling; particle, chip, flake board	0.03%		**0.03%**	Plywood, wood paneling; particle, chip, flake board	0.03%		**0.03%**
Contact with skin, eye(s) or other exposed tissue		1.193548387		**Contact with skin, eye(s) or other exposed tissue**		1.193548387	
Adhesives, glues, n.e.c.	0.03%		**0.03%**	Adhesives, glues, n.e.c.	0.03%		**0.03%**

Process Step 8			
Ceiling Furring Channels			
Resources			
Carpenter 1			
Risks			
	Frequency (%)	**Severity Factor**	**Frequency * Severity**
Event Exposure/Source of Injury Combination	15.80%	1.007087788	15.91%
Bending, climbing, crawling, reaching, twisting		1	
Bodily motion or position of injured, ill worker	**6.93%**		**6.93%**
Bodily reaction and exertion, n.e.c.		1	
Bodily motion or position of injured, ill worker	**0.25%**		**0.25%**
Person -- injured or ill worker, uns.	**0.03%**		**0.03%**
Bodily reaction and exertion, uns.		1	
Bodily motion or position of injured, ill worker	**0.03%**		**0.03%**
Bodily reaction, n.e.c.		1	
Bodily motion or position of injured, ill worker	**2.37%**		**2.37%**
Bodily reaction, uns.		1	
Bodily motion or position of injured, ill worker	**0.19%**		**0.19%**
Standing		1	
Bodily motion or position of injured, ill worker	**0.03%**		**0.03%**
Static posture with the application of force to an object		1	
Bodily motion or position of injured, ill worker	**0.11%**		**0.11%**
Static posture without the application of force to an object		1	
Bodily motion or position of injured, ill worker	**0.25%**		**0.25%**
Overexertion in lifting (object) and turning (body)		1	
Bodily motion or position of injured, ill worker	0.11%		**0.11%**
Bodily reaction and exertion, n.e.c.		1	
Drills	**0.03%**		**0.03%**
Drills -- power not determined	**0.06%**		**0.06%**
Drills -- powered	**0.22%**		**0.22%**
Caught in or compressed by equipment or objects, n.e.c.		1.12716763	
Drills -- power not determined	**0.03%**		**0.03%**
Caught in running equipment or machinery		1.071428571	
Drills -- power not determined	**0.03%**		**0.03%**
Drills -- powered	**0.06%**		**0.06%**
Overexertion in carrying, turning, wielding objects		1.020408163	
Drills -- powered	**0.03%**		**0.03%**
Overexertion, n.e.c.		1.011111111	
Drills -- powered	**0.06%**		**0.06%**
Overexertion, uns.		1	
Drills	**0.03%**		**0.03%**
Drills -- powered	**0.03%**		**0.03%**
Stepped on object		1	
Drills -- power not determined	**0.03%**		**0.03%**
Struck by object, n.e.c.		1	
Drills -- power not determined	**0.06%**		**0.06%**
Drills -- powered	**0.11%**		**0.11%**

Struck by slipping handheld object		1	
Drills	0.06%		0.06%
Drills -- power not determined	0.06%		0.06%
Drills -- powered	0.06%		0.06%
Struck by swinging or slipping object, uns.		1	
Drills	0.03%		0.03%
Bodily reaction and exertion, n.e.c.		1	
Ladders, n.e.c.	0.03%		0.03%
Ladders, uns.	0.25%		0.25%
Caught in or compressed by equipment or objects, n.e.c.		1.12716763	
Ladders, uns.	0.11%		0.12%
Fall from ladder		1.022222222	
Ladders, uns.	0.36%		0.37%
Fall onto or against objects		1	
Ladders, uns.	0.14%		0.14%
Overexertion in carrying, turning, wielding objects		1.020408163	
Ladders, uns.	0.03%		0.03%
Overexertion in lifting		1	
Ladders, uns.	0.06%		0.06%
Overexertion in lifting (object) and turning (body)		1	
Ladders, uns.	0.03%		0.03%
Overexertion in pulling or pushing objects		1	
Ladders, uns.	0.03%		0.03%
Overexertion, uns.		1	
Movable ladders, uns.	0.03%		0.03%
Struck against stationary object		1.009009009	
Ladders, uns.	0.11%		0.11%
Struck by falling object		1.054545455	
Ladders, uns.	0.08%		0.09%
Struck by object, n.e.c.		1	
Ladders, uns.	0.03%		0.03%
Fall from ladder		1.022222222	
Floor of building	0.58%		0.59%
Floor, uns.	0.17%		0.17%
Floors, walkways, ground surfaces, n.e.c.	0.11%		0.11%
Floors, walkways, ground surfaces, uns.	0.99%		1.01%
Ground	1.38%		1.41%
Ice, sleet, snow	0.06%		0.06%
Other floors, walkways, ground surfaces, uns.	0.03%		0.03%

Process Step 9			
Exterior + Interior Wall Insulation			
Resources			
Carpenter 1			
Risks			
Event Exposure/Source of Injury Combination	**Frequency (%)**	**Severity Factor**	**Frequency * Severity**
	1.43%	1	1.43%
Overexertion in lifting (object) and turning (body)		1	
Fiberglass insulation	0.03%		**0.03%**
Struck by object, n.e.c.		1	
Knives	0.11%		**0.11%**
Struck by object, uns.		1	
Knives	0.03%		**0.03%**
Contact with objects and equipment, uns.		1	
Knives	0.11%		**0.11%**
Struck against object, n.e.c.		1	
Knives	0.03%		**0.03%**
Struck against object, uns.		1	
Cutting handtools -- power not determined, n.e.c.	0.03%		**0.03%**
Struck by slipping handheld object		1	
Cutting handtools -- nonpowered, n.e.c.	0.03%		**0.03%**
Knives	1.07%		**1.07%**

Process Step 10							
Drywall (Ceiling)							
Resources							
Carpenter 1				Carpenter 2			
Risks							
	Frequency (%)	Severity Factor	Frequency * Severity		Frequency (%)	Severity Factor	Frequency * Severity
Event Exposure/Source of Injury Combination	14.28%	1.004465028	14.35%	Event Exposure/Source of Injury Combination	14.28%	1.004465028	14.35%
Bodily reaction and exertion, n.e.c.		1		**Bodily reaction and exertion, n.e.c.**		1	
Wallboard, drywall	**0.11%**		**0.11%**	**Wallboard, drywall**	**0.11%**		**0.11%**
Contact with objects and equipment, n.e.c.		1.029411765		**Contact with objects and equipment, n.e.c.**		1.029411765	
Wallboard, drywall	**0.03%**		**0.03%**	**Wallboard, drywall**	**0.03%**		**0.03%**
Overexertion in carrying, turning, wielding objects		1.020408163		**Overexertion in carrying, turning, wielding objects**		1.020408163	
Wallboard, drywall	**0.03%**		**0.03%**	**Wallboard, drywall**	**0.03%**		**0.03%**
Overexertion in lifting		1		**Overexertion in lifting**		1	
Wallboard, drywall	**0.28%**		**0.28%**	**Wallboard, drywall**	**0.28%**		**0.28%**
Overexertion in lifting (object) and turning (body)		1		**Overexertion in lifting (object) and turning (body)**		1	
Wallboard, drywall	**0.11%**		**0.11%**	**Wallboard, drywall**	**0.11%**		**0.11%**
Overexertion in lifting and turning (object)		1		**Overexertion in lifting and turning (object)**		1	
Wallboard, drywall	**0.06%**		**0.06%**	**Wallboard, drywall**	**0.06%**		**0.06%**
Overexertion in pulling or pushing objects		1		**Overexertion in pulling or pushing objects**		1	
Wallboard, drywall	**0.08%**		**0.08%**	**Wallboard, drywall**	**0.08%**		**0.08%**
Overexertion, n.e.c.		1.011111111		**Overexertion, n.e.c.**		1.011111111	
Wallboard, drywall	**0.06%**		**0.06%**	**Wallboard, drywall**	**0.06%**		**0.06%**
Overexertion, uns.		1		**Overexertion, uns.**		1	
Wallboard, drywall	**0.03%**		**0.03%**	**Wallboard, drywall**	**0.03%**		**0.03%**
Struck by dislodged flying object, particle		1		**Struck by dislodged flying object, particle**		1	
Wallboard, drywall	**0.03%**		**0.03%**	**Wallboard, drywall**	**0.03%**		**0.03%**
Struck by falling object		1.054545455		**Struck by falling object**		1.054545455	
Wallboard, drywall	**0.22%**		**0.23%**	**Wallboard, drywall**	**0.22%**		**0.23%**
Struck by slipping handheld object		1		**Struck by slipping handheld object**		1	
Wallboard, drywall	**0.11%**		**0.11%**	**Wallboard, drywall**	**0.11%**		**0.11%**
Struck by swinging or slipping object, n.e.c.		1.033333333		**Struck by swinging or slipping object, n.e.c.**		1.033333333	
Wallboard, drywall	**0.03%**		**0.03%**	**Wallboard, drywall**	**0.03%**		**0.03%**
Fall onto or against objects		1		**Fall onto or against objects**		1	
Nails, brads, tacks	0.06%		**0.06%**	Nails, brads, tacks	0.06%		**0.06%**
Struck against object, uns.		1		**Struck against object, uns.**		1	
Nails, brads, tacks	0.06%		**0.06%**	Nails, brads, tacks	0.06%		**0.06%**
Stepped on object		1		**Stepped on object**		1	
Nails, brads, tacks	0.03%		**0.03%**	Nails, brads, tacks	0.03%		**0.03%**
Struck by slipping handheld object		1		**Struck by slipping handheld object**		1	
Nails, brads, tacks	0.03%		**0.03%**	Nails, brads, tacks	0.03%		**0.03%**
Struck by object, n.e.c.		1		**Struck by object, n.e.c.**		1	
Nails, brads, tacks	0.08%		**0.08%**	Nails, brads, tacks	0.08%		**0.08%**
Struck by flying object, n.e.c.		1		**Struck by flying object, n.e.c.**		1	
Nails, brads, tacks	0.11%		**0.11%**	Nails, brads, tacks	0.11%		**0.11%**
Struck by falling object		1.054545455		**Struck by falling object**		1.054545455	
Nail guns -- powered	0.03%		**0.03%**	Nail guns -- powered	0.03%		**0.03%**
Nails, brads, tacks	0.03%		**0.03%**	Nails, brads, tacks	0.03%		**0.03%**

Struck by discharged object or substance		1.032786885		Struck by discharged object or substance		1.032786885	
Nail guns -- powered	0.03%		**0.03%**	Nail guns -- powered	0.03%		**0.03%**
Nails, brads, tacks	0.96%		**0.99%**	Nails, brads, tacks	0.96%		**0.99%**
Bodily reaction and exertion, n.e.c.		1		Bodily reaction and exertion, n.e.c.		1	
Saws -- power not determined	**0.03%**		**0.03%**	**Saws -- power not determined**	**0.03%**		**0.03%**
Saws -- powered, except chainsaws	**0.03%**		**0.03%**	**Saws -- powered, except chainsaws**	**0.03%**		**0.03%**
Caught in or compressed by equipment or objects, n.e.c.		1.12716763		Caught in or compressed by equipment or objects, n.e.c.		1.12716763	
Sawing machinery -- stationary, uns.	**0.03%**		**0.03%**	**Sawing machinery -- stationary, uns.**	**0.03%**		**0.03%**
Caught in running equipment or machinery		1.071428571		Caught in running equipment or machinery		1.071428571	
Sawing machinery -- stationary, uns.	**0.06%**		**0.06%**	**Sawing machinery -- stationary, uns.**	**0.06%**		**0.06%**
Table saws	**0.06%**		**0.06%**	**Table saws**	**0.06%**		**0.06%**
Contact with objects and equipment, n.e.c.		1.029411765		Contact with objects and equipment, n.e.c.		1.029411765	
Sawing machinery -- stationary, n.e.c.	**0.03%**		**0.03%**	**Sawing machinery -- stationary, n.e.c.**	**0.03%**		**0.03%**
Contact with objects and equipment, uns.			1	Contact with objects and equipment, uns.			1
Saws -- powered, except chainsaws	**0.03%**		**0.03%**	**Saws -- powered, except chainsaws**	**0.03%**		**0.03%**
Table saws	**0.08%**		**0.08%**	**Table saws**	**0.08%**		**0.08%**
Overexertion, n.e.c.		1.011111111		Overexertion, n.e.c.		1.011111111	
Saws -- power not determined	**0.03%**		**0.03%**	**Saws -- power not determined**	**0.03%**		**0.03%**
Overexertion, uns.		1		Overexertion, uns.		1	
Sawing machinery -- stationary, n.e.c.	**0.03%**		**0.03%**	**Sawing machinery -- stationary, n.e.c.**	**0.03%**		**0.03%**
Struck against moving object		1		Struck against moving object		1	
Sawing machinery -- stationary, n.e.c.	**0.06%**		**0.06%**	**Sawing machinery -- stationary, n.e.c.**	**0.06%**		**0.06%**
Saws -- powered, except chainsaws	**0.14%**		**0.14%**	**Saws -- powered, except chainsaws**	**0.14%**		**0.14%**
Table saws	**0.11%**		**0.11%**	**Table saws**	**0.11%**		**0.11%**
Struck against object, uns.		1		Struck against object, uns.		1	
Table saws	**0.03%**		**0.03%**	**Table saws**	**0.03%**		**0.03%**
Struck by discharged object or substance		1.032786885		Struck by discharged object or substance		1.032786885	
Saws -- powered, except chainsaws	**0.03%**		**0.03%**	**Saws -- powered, except chainsaws**	**0.03%**		**0.03%**
Struck by object, n.e.c.		1		Struck by object, n.e.c.		1	
Sawing machinery -- stationary, uns.	**0.03%**		**0.03%**	**Sawing machinery -- stationary, uns.**	**0.03%**		**0.03%**
Saws -- power not determined	**0.03%**		**0.03%**	**Saws -- power not determined**	**0.03%**		**0.03%**
Saws -- powered, except chainsaws	**0.25%**		**0.25%**	**Saws -- powered, except chainsaws**	**0.25%**		**0.25%**
Table saws	**0.06%**		**0.06%**	**Table saws**	**0.06%**		**0.06%**
Struck by object, uns.		1		Struck by object, uns.		1	
Saws -- power not determined	**0.03%**		**0.03%**	**Saws -- power not determined**	**0.03%**		**0.03%**
Struck by slipping handheld object		1		Struck by slipping handheld object		1	
Saws	**0.08%**		**0.08%**	**Saws**	**0.08%**		**0.08%**
Saws -- powered, except chainsaws	**0.06%**		**0.06%**	**Saws -- powered, except chainsaws**	**0.06%**		**0.06%**
Table saws	**0.06%**		**0.06%**	**Table saws**	**0.06%**		**0.06%**
Overexertion in lifting (object) and turning (body)		1		Overexertion in lifting (object) and turning (body)		1	
Saws	**0.03%**		**0.03%**	**Saws**	**0.03%**		**0.03%**
Saws -- powered, except chainsaws	**0.03%**		**0.03%**	**Saws -- powered, except chainsaws**	**0.03%**		**0.03%**
Rubbed or abraded by foreign matter in eye		1		Rubbed or abraded by foreign matter in eye		1	
Sawdust	0.06%		**0.06%**	Sawdust	0.06%		**0.06%**
Bending, climbing, crawling, reaching, twisting		1		Bending, climbing, crawling, reaching, twisting		1	
Bodily motion or position of injured, ill worker	**6.93%**		**6.93%**	**Bodily motion or position of injured, ill worker**	**6.93%**		**6.93%**
Bodily reaction and exertion, n.e.c.		1		Bodily reaction and exertion, n.e.c.		1	
Bodily motion or position of injured, ill worker	**0.25%**		**0.25%**	**Bodily motion or position of injured, ill worker**	**0.25%**		**0.25%**
Person -- injured or ill worker, uns.	**0.03%**		**0.03%**	**Person -- injured or ill worker, uns.**	**0.03%**		**0.03%**

Bodily reaction and exertion, uns.		1		**Bodily reaction and exertion, uns.**		1	
Bodily motion or position of injured, ill worker	**0.03%**		**0.03%**	**Bodily motion or position of injured, ill worker**	**0.03%**		**0.03%**
Bodily reaction, n.e.c.		1		**Bodily reaction, n.e.c.**		1	
Bodily motion or position of injured, ill worker	**2.37%**		**2.37%**	**Bodily motion or position of injured, ill worker**	**2.37%**		**2.37%**
Bodily reaction, uns.		1		**Bodily reaction, uns.**		1	
Bodily motion or position of injured, ill worker	**0.19%**		**0.19%**	**Bodily motion or position of injured, ill worker**	**0.19%**		**0.19%**
Standing		1		**Standing**		1	
Bodily motion or position of injured, ill worker	**0.03%**		**0.03%**	**Bodily motion or position of injured, ill worker**	**0.03%**		**0.03%**
Static posture with the application of force to an object		1		**Static posture with the application of force to an object**		1	
Bodily motion or position of injured, ill worker	**0.11%**		**0.11%**	**Bodily motion or position of injured, ill worker**	**0.11%**		**0.11%**
Static posture without the application of force to an object		1		**Static posture without the application of force to an object**		1	
Bodily motion or position of injured, ill worker	**0.25%**		**0.25%**	**Bodily motion or position of injured, ill worker**	**0.25%**		**0.25%**
Overexertion in lifting (object) and turning (body)		1		**Overexertion in lifting (object) and turning (body)**		1	
Bodily motion or position of injured, ill worker	0.11%		**0.11%**	Bodily motion or position of injured, ill worker	0.11%		**0.11%**

Process Step 11

Drywall (Exterior and Interior Walls)

Resources

Risks

Carpenter 1				Carpenter 2			
Event Exposure/Source of Injury Combination	**Frequency (%)**	**Severity Factor**	**Frequency * Severity**	**Event Exposure/Source of Injury Combination**	**Frequency (%)**	**Severity Factor**	**Frequency * Severity**
	3.99%	1.015981721	4.05%		3.99%	1.015981721	4.05%
Bodily reaction and exertion, n.e.c.		1		**Bodily reaction and exertion, n.e.c.**		1	
Wallboard, drywall	**0.11%**		**0.11%**	**Wallboard, drywall**	**0.11%**		**0.11%**
Contact with objects and equipment, n.e.c.		1.029411765		**Contact with objects and equipment, n.e.c.**		1.029411765	
Wallboard, drywall	**0.03%**		**0.03%**	**Wallboard, drywall**	**0.03%**		**0.03%**
Overexertion in carrying, turning, wielding objects		1.020408163		**Overexertion in carrying, turning, wielding objects**		1.020408163	
Wallboard, drywall	**0.03%**		**0.03%**	**Wallboard, drywall**	**0.03%**		**0.03%**
Overexertion in lifting		1		**Overexertion in lifting**		1	
Wallboard, drywall	**0.28%**		**0.28%**	**Wallboard, drywall**	**0.28%**		**0.28%**
Overexertion in lifting (object) and turning (body)		1		**Overexertion in lifting (object) and turning (body)**		1	
Wallboard, drywall	**0.11%**		**0.11%**	**Wallboard, drywall**	**0.11%**		**0.11%**
Overexertion in lifting and turning (object)		1		**Overexertion in lifting and turning (object)**		1	
Wallboard, drywall	**0.06%**		**0.06%**	**Wallboard, drywall**	**0.06%**		**0.06%**
Overexertion in pulling or pushing objects		1		**Overexertion in pulling or pushing objects**		1	
Wallboard, drywall	**0.08%**		**0.08%**	**Wallboard, drywall**	**0.08%**		**0.08%**
Overexertion, n.e.c.		1.011111111		**Overexertion, n.e.c.**		1.011111111	
Wallboard, drywall	**0.06%**		**0.06%**	**Wallboard, drywall**	**0.06%**		**0.06%**
Overexertion, uns.		1		**Overexertion, uns.**		1	
Wallboard, drywall	**0.03%**		**0.03%**	**Wallboard, drywall**	**0.03%**		**0.03%**
Struck by dislodged flying object, particle		1		**Struck by dislodged flying object, particle**		1	
Wallboard, drywall	**0.03%**		**0.03%**	**Wallboard, drywall**	**0.03%**		**0.03%**
Struck by falling object		1.054545455		**Struck by falling object**		1.054545455	
Wallboard, drywall	**0.22%**		**0.23%**	**Wallboard, drywall**	**0.22%**		**0.23%**
Struck by slipping handheld object		1		**Struck by slipping handheld object**		1	
Wallboard, drywall	**0.11%**		**0.11%**	**Wallboard, drywall**	**0.11%**		**0.11%**
Struck by swinging or slipping object, n.e.c.		1.033333333		**Struck by swinging or slipping object, n.e.c.**		1.033333333	
Wallboard, drywall	**0.03%**		**0.03%**	**Wallboard, drywall**	**0.03%**		**0.03%**
Fall onto or against objects		1		**Fall onto or against objects**		1	
Nails, brads, tacks	0.06%		**0.06%**	Nails, brads, tacks	0.06%		**0.06%**
Struck against object, uns.		1		**Struck against object, uns.**		1	
Nails, brads, tacks	0.06%		**0.06%**	Nails, brads, tacks	0.06%		**0.06%**
Stepped on object		1		**Stepped on object**		1	
Nails, brads, tacks	0.03%		**0.03%**	Nails, brads, tacks	0.03%		**0.03%**
Struck by slipping handheld object		1		**Struck by slipping handheld object**		1	
Nails, brads, tacks	0.03%		**0.03%**	Nails, brads, tacks	0.03%		**0.03%**
Struck by object, n.e.c.		1		**Struck by object, n.e.c.**		1	
Nails, brads, tacks	0.08%		**0.08%**	Nails, brads, tacks	0.08%		**0.08%**
Struck by flying object, n.e.c.		1		**Struck by flying object, n.e.c.**		1	
Nails, brads, tacks	0.11%		**0.11%**	Nails, brads, tacks	0.11%		**0.11%**
Struck by falling object		1.054545455		**Struck by falling object**		1.054545455	
Nail guns -- powered	0.03%		**0.03%**	Nail guns -- powered	0.03%		**0.03%**
Nails, brads, tacks	0.03%		**0.03%**	Nails, brads, tacks	0.03%		**0.03%**

Struck by discharged object or substance		1.032786885		**Struck by discharged object or substance**		1.032786885	
Nail guns -- powered	0.03%		**0.03%**	Nail guns -- powered	0.03%		**0.03%**
Nails, brads, tacks	0.96%		**0.99%**	Nails, brads, tacks	0.96%		**0.99%**
Bodily reaction and exertion, n.e.c.		1		**Bodily reaction and exertion, n.e.c.**		1	
Saws -- power not determined	**0.03%**		**0.03%**	**Saws -- power not determined**	**0.03%**		**0.03%**
Saws -- powered, except chainsaws	**0.03%**		**0.03%**	**Saws -- powered, except chainsaws**	**0.03%**		**0.03%**
Caught in or compressed by equipment or objects, n.e.c.		1.12716763		**Caught in or compressed by equipment or objects, n.e.c.**		1.12716763	
Sawing machinery -- stationary, uns.	**0.03%**		**0.03%**	**Sawing machinery -- stationary, uns.**	**0.03%**		**0.03%**
Caught in running equipment or machinery		1.071428571		**Caught in running equipment or machinery**		1.071428571	
Sawing machinery -- stationary, uns.	**0.06%**		**0.06%**	**Sawing machinery -- stationary, uns.**	**0.06%**		**0.06%**
Table saws	**0.06%**		**0.06%**	**Table saws**	**0.06%**		**0.06%**
Contact with objects and equipment, n.e.c.		1.029411765		**Contact with objects and equipment, n.e.c.**		1.029411765	
Sawing machinery -- stationary, n.e.c.	**0.03%**		**0.03%**	**Sawing machinery -- stationary, n.e.c.**	**0.03%**		**0.03%**
Contact with objects and equipment, uns.		1		**Contact with objects and equipment, uns.**		1	
Saws -- powered, except chainsaws	**0.03%**		**0.03%**	**Saws -- powered, except chainsaws**	**0.03%**		**0.03%**
Table saws	**0.08%**		**0.08%**	**Table saws**	**0.08%**		**0.08%**
Overexertion, n.e.c.		1.011111111		**Overexertion, n.e.c.**		1.011111111	
Saws -- power not determined	**0.03%**		**0.03%**	**Saws -- power not determined**	**0.03%**		**0.03%**
Overexertion, uns.		1		**Overexertion, uns.**		1	
Sawing machinery -- stationary, n.e.c.	**0.03%**		**0.03%**	**Sawing machinery -- stationary, n.e.c.**	**0.03%**		**0.03%**
Struck against moving object		1		**Struck against moving object**		1	
Sawing machinery -- stationary, n.e.c.	**0.06%**		**0.06%**	**Sawing machinery -- stationary, n.e.c.**	**0.06%**		**0.06%**
Saws -- powered, except chainsaws	**0.14%**		**0.14%**	**Saws -- powered, except chainsaws**	**0.14%**		**0.14%**
Table saws	**0.11%**		**0.11%**	**Table saws**	**0.11%**		**0.11%**
Struck against object, uns.		1		**Struck against object, uns.**		1	
Table saws	**0.03%**		**0.03%**	**Table saws**	**0.03%**		**0.03%**
Struck by discharged object or substance		1.032786885		**Struck by discharged object or substance**		1.032786885	
Saws -- powered, except chainsaws	**0.03%**		**0.03%**	**Saws -- powered, except chainsaws**	**0.03%**		**0.03%**
Struck by object, n.e.c.		1		**Struck by object, n.e.c.**		1	
Sawing machinery -- stationary, uns.	**0.03%**		**0.03%**	**Sawing machinery -- stationary, uns.**	**0.03%**		**0.03%**
Saws -- power not determined	**0.03%**		**0.03%**	**Saws -- power not determined**	**0.03%**		**0.03%**
Saws -- powered, except chainsaws	**0.25%**		**0.25%**	**Saws -- powered, except chainsaws**	**0.25%**		**0.25%**
Table saws	**0.06%**		**0.06%**	**Table saws**	**0.06%**		**0.06%**
Struck by object, uns.		1		**Struck by object, uns.**		1	
Saws -- power not determined	**0.03%**		**0.03%**	**Saws -- power not determined**	**0.03%**		**0.03%**
Struck by slipping handheld object		1		**Struck by slipping handheld object**		1	
Saws	**0.08%**		**0.08%**	**Saws**	**0.08%**		**0.08%**
Saws -- powered, except chainsaws	**0.06%**		**0.06%**	**Saws -- powered, except chainsaws**	**0.06%**		**0.06%**
Table saws	**0.06%**		**0.06%**	**Table saws**	**0.06%**		**0.06%**
Overexertion in lifting (object) and turning (body)		1		**Overexertion in lifting (object) and turning (body)**		1	
Saws	**0.03%**		**0.03%**	**Saws**	**0.03%**		**0.03%**
Saws -- powered, except chainsaws	**0.03%**		**0.03%**	**Saws -- powered, except chainsaws**	**0.03%**		**0.03%**
Rubbed or abraded by foreign matter in eye		1		**Rubbed or abraded by foreign matter in eye**		1	
Sawdust	0.06%		**0.06%**	Sawdust	0.06%		**0.06%**

Appendix A2: Off-Site Manufacturing Risk Analysis

Process Step 1			
Rafter Prep			
Resources			
Carpenter 1			
Risks			
	Frequency (%)	**Severity Factor**	**Frequency * Severity**
Event Exposure/Source of Injury Combination	1.00%	1.024321706	1.02%
Caught in or compressed by equipment or objects, n.e.c.		1.150	
Table saws	0.01%		9.34213E-05
Contact with objects and equipment, n.e.c.		1.000	
Table saws	0.01%		8.12678E-05
Contact with objects and equipment, uns.		1.021	
Table saws	0.03%		0.000332037
Overexertion, uns.		1.000	
Table saws	0.01%		8.12678E-05
Struck against moving object		1.000	
Table saws	0.18%		0.001787891
Struck against object, n.e.c.		1.008	
Table saws	0.01%		8.19179E-05
Struck against object, uns.		1.000	
Table saws	0.03%		0.000325071
Struck by object, n.e.c.		1.013	
Table saws	0.02%		0.000164691
Struck by object, uns.		1.013	
Table saws	0.01%		8.22965E-05
Struck by slipping handheld object		1.025	
Table saws	0.03%		0.000333055
Bodily reaction and exertion, n.e.c.		1.000	
Drills	0.02%		0.000162536
Drills -- power not determined	0.03%		0.000325071
Drills -- powered	0.09%		0.000893946
Bodily reaction and exertion, uns.		1.000	
Drills -- power not determined	0.01%		8.12678E-05

Caught in or compressed by equipment or objects, n.e.c.		1.150	
Drills -- power not determined	0.02%		0.000186843
Caught in running equipment or machinery		1.192	
Drills	0.01%		9.68616E-05
Drills -- power not determined	0.02%		0.000193723
Drills -- powered	0.05%		0.00058117
Contact with objects and equipment, uns.		1.021	
Drills -- powered	0.02%		0.000166018
Overexertion in carrying, turning, wielding objects		1.000	
Drills -- powered	0.01%		8.12678E-05
Overexertion, n.e.c.		1.000	
Drills -- powered	0.02%		0.000243803
Overexertion, uns.		1.000	
Drills	0.01%		8.12678E-05
Drills -- powered	0.02%		0.000162536
Stepped on object		1.000	
Drills -- power not determined	0.01%		8.12678E-05
Struck by falling object		1.046	
Drills -- powered	0.01%		8.49795E-05
Struck by object, n.e.c.		1.013	
Drills	0.01%		8.23456E-05
Drills -- power not determined	0.02%		0.000247037
Drills -- powered	0.08%		0.000823456
Struck by object, uns.		1.013	
Drills -- powered	0.01%		8.22965E-05
Struck by slipping handheld object		1.025	
Drills	0.02%		0.000166528
Drills -- power not determined	0.02%		0.000249791
Drills -- powered	0.03%		0.000333055
Struck by swinging or slipping object, uns.		1.038	
Drills	0.01%		8.43935E-05
Drills -- powered	0.01%		8.43935E-05
Static posture with the application of force to an object		1.000	
Bodily motion or position of injured, ill worker	0.13%		0.001300284

Process Step 2							
Floor Framing							
Resources							
Carpenter 1				Carpenter 2			
Risks							
	Frequency (%)	Severity Factor	Frequency * Severity		Frequency (%)	Severity Factor	Frequency * Severity
Event Exposure/Source of Injury Combination	1.64%	1.029247109	1.69%	Event Exposure/Source of Injury Combination	9.03%	1.017623661	9.19%
Caught in or compressed by equipment or objects, uns.		1.120		**Walking -- without other incident**		1.000	
Nail guns -- powered	0.01%		9.10199E-05	Bodily motion or position of injured, ill worker	0.13%		0.001300284
Contact with objects and equipment, uns.		1.021		**Fall from floor, dock, or ground level, uns.**		1.000	
Nails, brads, tacks	0.02%		0.000166018	Floor of building	0.02%		0.000162536
Fall onto or against objects		1.005		**Fall on same level, n.e.c.**		1.000	
Nails, brads, tacks	0.02%		0.000163365	Floor of building	0.02%		0.000243803
Overexertion in carrying, turning, wielding objects		1.000		Floor, uns.	0.01%		8.12678E-05
Nail guns -- powered	0.01%		8.12678E-05	Floors, walkways, ground surfaces, n.e.c.	0.01%		8.12678E-05
Stepped on object		1.000		Floors, walkways, ground surfaces, uns.	0.02%		0.000162536
Nails, brads, tacks	0.02%		0.000243803	Ground	0.03%		0.000325071
Struck against object, uns.		1.000		Stairs, steps, uns.	0.01%		8.12678E-05
Nails, brads, tacks	0.02%		0.000162536	**Fall on same level, uns.**		1.000	
Struck against stationary object		1.012		Floor of building	0.01%		8.12678E-05
Nails, brads, tacks	0.02%		0.000164448	Floor, uns.	0.01%		8.12678E-05
Struck by discharged object or substance		1.013		Floors, walkways, ground surfaces, uns.	0.02%		0.000162536
Nail guns -- powered	0.02%		0.000164593	Ground	0.02%		0.000162536
Nails, brads, tacks	0.67%		0.006830608	**Fall onto or against objects**		1.005	
Struck by dislodged flying object, particle		1.019		Floor of building	0.02%		0.000245047
Nails, brads, tacks	0.01%		8.27868E-05	Floor of scaffold, staging, or temporary work platform	0.02%		0.000163365
Struck by falling object		1.046		Floor, n.e.c.	0.02%		0.000163365
Nail guns -- powered	0.02%		0.000254939	Floor, uns.	0.02%		0.000163365
Nails, brads, tacks	0.01%		8.49795E-05	Floors, walkways, ground surfaces, n.e.c.	0.02%		0.000163365
Struck by flying object, n.e.c.		1.000		Floors, walkways, ground surfaces, uns.	0.03%		0.00032673
Nails, brads, tacks	0.04%		0.000406339	**Fall to floor, walkway, or other surface**		1.003	
Struck by object, n.e.c.		1.013		Floor of building	1.85%		0.018588824
Nails, brads, tacks	0.03%		0.000329382	Floor of scaffold, staging, or temporary work platform	0.04%		0.00040765
Struck by object, uns.		1.013		Floor, n.e.c.	0.06%		0.00057071
Nails, brads, tacks	0.01%		8.22965E-05	Floor, uns.	0.15%		0.001549069
Struck by slipping handheld object		1.025		Floors, walkways, ground surfaces, n.e.c.	0.09%		0.000896829
Nails, brads, tacks	0.01%		8.32638E-05	Floors, walkways, ground surfaces, uns.	1.22%		0.01222949
Contact with objects and equipment, uns.		1.021		Ground	1.68%		0.016876696
Adhesives, glues, n.e.c.	0.02%		0.000166018	**Fall, n.e.c.**		1.000	
Inhalation of substance, uns.		1.118		Floor of building	0.02%		0.000243803
Adhesives, glues, n.e.c.	0.01%		9.08287E-05	Floor of scaffold, staging, or temporary work platform	0.01%		8.12678E-05

Struck against moving object		1.000	
Containers -- pressurized, n.e.c.	0.01%		8.12678E-05
Struck against stationary object		1.012	
Containers -- pressurized, n.e.c.	0.02%		0.000246672
Struck by object, n.e.c.		1.013	
Containers -- pressurized, n.e.c.	0.01%		8.23456E-05
Bodily reaction and exertion, n.e.c.		1.000	
Forklift, uns.	0.01%		8.12678E-05
Caught in or compressed by equipment or objects, n.e.c.		1.150	
Forklift, n.e.c.	0.02%		0.000186843
Forklift, uns.	0.10%		0.001121056
Caught in or compressed by equipment or objects, uns.		1.120	
Forklift, uns.	0.02%		0.00018204
Compressed or pinched by rolling, sliding, or shifting objects		1.314	
Forklift, uns.	0.01%		0.000106809
Contact with objects and equipment, n.e.c.		1.000	
Forklift, uns.	0.02%		0.000162536
Fall from moving vehicle, mobile equipment -- nonhighway		1.000	
Forklift, uns.	0.01%		8.12678E-05
Fall onto or against objects		1.005	
Forklift, n.e.c.	0.01%		8.16824E-05
Forklift, uns.	0.02%		0.000245047
Fall, n.e.c.		1.000	
Forklift, uns.	0.01%		8.12678E-05
Jump to lower level, uns.		1.000	
Forklift, uns.	0.02%		0.000162536
Forklift, uns.	0.03%		0.000325071
Nonhighway Collision between vehicles or mobile equipment		1.000	
Forklift, uns.	0.02%		0.000243803
Overexertion in lifting		1.001	
Forklift, uns.	0.01%		8.13806E-05
Overexertion in pulling or pushing objects		1.000	
Forklift, uns.	0.01%		8.12678E-05
Overexertion, n.e.c.		1.000	
Forklift, uns.	0.01%		8.12678E-05
Overturned -- nonhighway accident		1.000	
Forklift, n.e.c.	0.01%		8.12678E-05
Pedestrian struck by vehicle, mobile equipment in parking lot or non-roadway area		1.105	
Forklift, n.e.c.	0.01%		8.98223E-05
Forklift, uns.	0.09%		0.000988045
Pedestrian struck by vehicle, mobile equipment, n.e.c.		1.000	
Forklift, uns.	0.07%		0.000650142
Struck against moving object		1.000	
Forklift, uns.	0.02%		0.000162536
Struck against object, n.e.c.		1.008	
Forklift, n.e.c.	0.01%		8.19179E-05
Floor, uns.	0.02%		0.000162536
Floors, walkways, ground surfaces, n.e.c.	0.02%		0.000162536
Floors, walkways, ground surfaces, uns.	0.08%		0.000812678
Forklift, uns.	0.01%		8.12678E-05
Ground	0.05%		0.000487607
Fall, uns.		1.045	
Floor, uns.	0.01%		8.49618E-05
Floors, walkways, ground surfaces, uns.	0.06%		0.000594732
Ground	0.02%		0.000254885
Bodily reaction and exertion, n.e.c.		1.000	
Wallboard, drywall	0.05%		0.000487607
Contact with objects and equipment, n.e.c.		1.000	
Wallboard, drywall	0.01%		8.12678E-05
Fall, n.e.c.		1.000	
Wallboard, drywall	0.01%		8.12678E-05
Overexertion in carrying, turning, wielding objects		1.000	
Wallboard, drywall	0.02%		0.000162536
Overexertion in lifting		1.001	
Wallboard, drywall	0.15%		0.001546232
Overexertion in lifting (object) and turning (body)		1.000	
Wallboard, drywall	0.03%		0.000325071
Overexertion in lifting and turning (object)		1.000	
Wallboard, drywall	0.02%		0.000162536
Overexertion in pulling or pushing objects		1.000	
Wallboard, drywall	0.03%		0.000325071
Overexertion, n.e.c.		1.000	
Wallboard, drywall	0.02%		0.000162536
Overexertion, uns.		1.000	
Wallboard, drywall	0.01%		8.12678E-05
Struck against stationary object		1.012	
Wallboard, drywall	0.01%		8.22239E-05
Struck by falling object		1.046	
Wallboard, drywall	0.07%		0.000764816
Struck by object, n.e.c.		1.013	
Wallboard, drywall	0.01%		8.23456E-05
Struck by object, uns.		1.013	
Wallboard, drywall	0.01%		8.22965E-05
Bodily reaction and exertion, n.e.c.		1.000	
Dimensional lumber, n.e.c.	0.02%		0.000162536
Wood, lumber, n.e.c.	0.01%		8.12678E-05
Wood, lumber, uns.	0.07%		0.000650142
Caught in or compressed by equipment or objects, n.e.c.		1.150	
Dimensional lumber, n.e.c.	0.07%		0.000747371
Dimensional lumber, uns.	0.02%		0.000186843
Wood, lumber, n.e.c.	0.09%		0.001027635
Wood, lumber, uns.	0.25%		0.002896061

Forklift, uns.	0.02%		0.000163836
Struck against stationary object		1.012	
Forklift, uns.	0.02%		0.000246672
Struck by falling object		1.046	
Forklift, uns.	0.02%		0.000169959
Struck by object, n.e.c.		1.013	
Forklift, uns.	0.02%		0.000164691
Struck by rolling, sliding or falling objects on floor or ground level		1.000	
Forklift, uns.	0.02%		0.000162536
Struck by slipping handheld object		1.025	
Forklift, n.e.c.	0.01%		8.32638E-05
Sudden start or stop, n.e.c.		1.000	
Forklift, uns.	0.02%		0.000243803
Vehicle, mobile equipment struck stationary object		1.000	
Forklift, uns.	0.02%		0.000243803

Caught in or compressed by equipment or objects, uns.		1.120	
Dimensional lumber, n.e.c.	0.01%		9.10199E-05
Wood, lumber, uns.	0.05%		0.000546119
Compressed or pinched by rolling, sliding, or shifting objects		1.314	
Wood, lumber, n.e.c.	0.02%		0.000213618
Wood, lumber, uns.	0.02%		0.000213618
Contact with objects and equipment, n.e.c.		1.000	
Wood, lumber, uns.	0.01%		8.12678E-05
Contact with objects and equipment, uns.		1.021	
Wood, lumber, n.e.c.	0.01%		8.30092E-05
Fall onto or against objects		1.005	
Wood, lumber, n.e.c.	0.01%		8.16824E-05
Wood, lumber, uns.	0.02%		0.000245047
Fall to floor, walkway, or other surface		1.003	
Wood, lumber, n.e.c.	0.02%		0.00016306
Fall, n.e.c.		1.000	
Wallboard, drywall	0.01%		8.12678E-05
Rubbed or abraded by objects being handled		1.000	
Wood, lumber, uns.	0.02%		0.000162536
Stepped on object		1.000	
Wood, lumber, uns.	0.03%		0.000325071
Struck against object, n.e.c.		1.008	
Wood, lumber, n.e.c.	0.02%		0.000163836
Wood, lumber, uns.	0.02%		0.000163836
Struck against object, uns.		1.000	
Wood, lumber, uns.	0.01%		8.12678E-05
Struck against stationary object		1.012	
Dimensional lumber, n.e.c.	0.01%		8.22239E-05
Wood, lumber, uns.	0.02%		0.000246672
Struck by object, n.e.c.		1.013	
Dimensional lumber, n.e.c.	0.03%		0.000329382
Wood, lumber, n.e.c.	0.07%		0.000658765
Wood, lumber, uns.	0.20%		0.001976294
Struck by object, uns.		1.013	
Dimensional lumber, n.e.c.	0.02%		0.000164593
Dimensional lumber, uns.	0.01%		8.22965E-05
Wood, lumber, n.e.c.	0.02%		0.000164593
Wood, lumber, uns.	0.03%		0.000329186
Struck by slipping handheld object		1.025	
Wood, lumber, uns.	0.02%		0.000166528
Struck by swinging or slipping object, n.e.c.		1.042	
Wood, lumber, n.e.c.	0.02%		0.000169403
Wood, lumber, uns.	0.01%		8.47016E-05
Struck by swinging or slipping object, uns.		1.038	
Wood, lumber, uns.	0.01%		8.43935E-05
Bodily reaction and exertion, n.e.c.		1.000	
Forklift, uns.	0.01%		8.12678E-05

Caught in or compressed by equipment or objects, n.e.c.		1.150	
Forklift, n.e.c.	0.02%		0.000186843
Forklift, uns.	0.10%		0.001121056
Caught in or compressed by equipment or objects, uns.		1.120	
Forklift, uns.	0.02%		0.00018204
Compressed or pinched by rolling, sliding, or shifting objects		1.314	
Forklift, uns.	0.01%		0.000106809
Contact with objects and equipment, n.e.c.		1.000	
Forklift, uns.	0.02%		0.000162536
Fall from moving vehicle, mobile equipment -- nonhighway		1.000	
Forklift, uns.	0.01%		8.12678E-05
Fall onto or against objects		1.005	
Forklift, n.e.c.	0.01%		8.16824E-05
Forklift, uns.	0.02%		0.000245047
Fall, n.e.c.		1.000	
Forklift, uns.	0.01%		8.12678E-05
Jump to lower level, uns.		1.000	
Forklift, uns.	0.02%		0.000162536
Forklift, uns.	0.03%		0.000325071
Nonhighway Collision between vehicles or mobile equipment		1.000	
Forklift, uns.	0.02%		0.000243803
Overexertion in lifting		1.001	
Forklift, uns.	0.01%		8.13806E-05
Overexertion in pulling or pushing objects		1.000	
Forklift, uns.	0.01%		8.12678E-05
Overexertion, n.e.c.		1.000	
Forklift, uns.	0.01%		8.12678E-05
Overturned -- nonhighway accident		1.000	
Forklift, n.e.c.	0.01%		8.12678E-05
Pedestrian struck by vehicle, mobile equipment in parking lot or non-roadway area		1.105	
Forklift, n.e.c.	0.01%		8.98223E-05
Forklift, uns.	0.09%		0.000988045
Pedestrian struck by vehicle, mobile equipment, n.e.c.		1.000	
Forklift, uns.	0.07%		0.000650142
Struck against moving object		1.000	
Forklift, uns.	0.02%		0.000162536
Struck against object, n.e.c.		1.008	
Forklift, n.e.c.	0.01%		8.19179E-05
Forklift, uns.	0.02%		0.000163836
Struck against stationary object		1.012	
Forklift, uns.	0.02%		0.000246672
Struck by falling object		1.046	
Forklift, uns.	0.02%		0.000169959
Struck by object, n.e.c.		1.013	
Forklift, uns.	0.02%		0.000164691
Struck by rolling, sliding or falling objects on floor or ground level		1.000	
Forklift, uns.	0.02%		0.000162536
Struck by slipping handheld object		1.025	
Forklift, n.e.c.	0.01%		8.32638E-05
Sudden start or stop, n.e.c.		1.000	
Forklift, uns.	0.02%		0.000243803

Vehicle, mobile equipment struck stationary object		1.000	
Forklift, uns.	0.02%		0.000243803
Caught in or compressed by equipment or objects, uns.		1.120	
Nail guns -- powered	0.01%		9.10199E-05
Contact with objects and equipment, uns.		1.021	
Nails, brads, tacks	0.02%		0.000166018
Fall onto or against objects		1.005	
Nails, brads, tacks	0.02%		0.000163365
Overexertion in carrying, turning, wielding objects		1.000	
Nail guns -- powered	0.01%		8.12678E-05
Stepped on object		1.000	
Nails, brads, tacks	0.02%		0.000243803
Struck against object, uns.		1.000	
Nails, brads, tacks	0.02%		0.000162536
Struck against stationary object		1.012	
Nails, brads, tacks	0.02%		0.000164448
Struck by discharged object or substance		1.013	
Nail guns -- powered	0.02%		0.000164593
Nails, brads, tacks	0.67%		0.006830608
Struck by dislodged flying object, particle		1.019	
Nails, brads, tacks	0.01%		8.27868E-05
Struck by falling object		1.046	
Nail guns -- powered	0.02%		0.000254939
Nails, brads, tacks	0.01%		8.49795E-05
Struck by flying object, n.e.c.		1.000	
Nails, brads, tacks	0.04%		0.000406339
Struck by object, n.e.c.		1.013	
Nails, brads, tacks	0.03%		0.000329382
Struck by object, uns.		1.013	
Nails, brads, tacks	0.01%		8.22965E-05
Struck by slipping handheld object		1.025	
Nails, brads, tacks	0.01%		8.32638E-05

Process Step 3

Flip Floor

Resources

Risks

Carpenter 1			
Event Exposure/Source of Injury Combination	**Frequency (%)**	**Severity Factor**	**Frequency * Severity**
	0.05%	1.088212174	0.05%
Bodily reaction and exertion, n.e.c.		1.000	
Cranes -- mobile, truck, rail mounted	0.01%		8.12678E-05
Caught in or compressed by equipment or objects, n.e.c.		1.150	
Cranes -- mobile, truck, rail mounted	0.01%		9.34213E-05
Compressed or pinched by rolling, sliding, or shifting objects		1.314	
Cranes -- mobile, truck, rail mounted	0.01%		0.000106809
Struck against object, n.e.c.		1.008	
Cranes -- mobile, truck, rail mounted	0.01%		8.19179E-05
Struck against stationary object		1.012	
Cranes -- mobile, truck, rail mounted	0.01%		8.22239E-05
Struck by falling object		1.046	
Cranes -- mobile, truck, rail mounted	0.01%		8.49795E-05

Carpenter 2			
Event Exposure/Source of Injury Combination	**Frequency (%)**	**Severity Factor**	**Frequency * Severity**
	0.05%	1.088212174	0.05%
Bodily reaction and exertion, n.e.c.		1.000	
Cranes -- mobile, truck, rail mounted	0.01%		8.12678E-05
Caught in or compressed by equipment or objects, n.e.c.		1.150	
Cranes -- mobile, truck, rail mounted	0.01%		9.34213E-05
Compressed or pinched by rolling, sliding, or shifting objects		1.314	
Cranes -- mobile, truck, rail mounted	0.01%		0.000106809
Struck against object, n.e.c.		1.008	
Cranes -- mobile, truck, rail mounted	0.01%		8.19179E-05
Struck against stationary object		1.012	
Cranes -- mobile, truck, rail mounted	0.01%		8.22239E-05
Struck by falling object		1.046	
Cranes -- mobile, truck, rail mounted	0.01%		8.49795E-05

Carpenter 3			
Event Exposure/Source of Injury Combination	**Frequency (%)**	**Severity Factor**	**Frequency * Severity**
	0.05%	1.088212174	0.05%
Bodily reaction and exertion, n.e.c.		1.000	
Cranes -- mobile, truck, rail mounted	0.01%		8.12678E-05
Caught in or compressed by equipment or objects, n.e.c.		1.150	
Cranes -- mobile, truck, rail mounted	0.01%		9.34213E-05
Compressed or pinched by rolling, sliding, or shifting objects		1.314	
Cranes -- mobile, truck, rail mounted	0.01%		0.000106809
Struck against object, n.e.c.		1.008	
Cranes -- mobile, truck, rail mounted	0.01%		8.19179E-05
Struck against stationary object		1.012	
Cranes -- mobile, truck, rail mounted	0.01%		8.22239E-05
Struck by falling object		1.046	
Cranes -- mobile, truck, rail mounted	0.01%		8.49795E-05

Process Step 4

Flooring Insulation

Resources

Carpenter 1	Carpenter 2
Carpenter 3	Carpenter 4

Risks

Event Exposure/Source of Injury Combination	Frequency (%)	Severity Factor	Frequency * Severity
	7.83%	1.004223857	7.86%
Bending, climbing, crawling, reaching, twisting		1.000	
Bodily conditions of injured, ill worker	0.01%		8.12678E-05
Bodily motion or position of injured, ill worker	6.14%		0.06143844
Contact with objects and equipment, n.e.c.		1.000	
Cutting handtools -- nonpowered, n.e.c.	0.01%		8.12678E-05
Knives	0.06%		0.000568874
Contact with objects and equipment, uns.		1.021	
Knives	0.11%		0.001079912
Overexertion, n.e.c.		1.000	
Cutting handtools -- nonpowered, n.e.c.	0.01%		8.12678E-05
Cutting handtools -- power not determined, uns.	0.01%		8.12678E-05
Overexertion, uns.		1.000	
Knives	0.01%		8.12678E-05
Struck against moving object		1.000	
Knives	0.02%		0.000162536
Struck against object, n.e.c.		1.008	
Cutting handtools -- nonpowered, n.e.c.	0.01%		8.19179E-05
Cutting handtools -- nonpowered, uns.	0.01%		8.19179E-05
Knives	0.05%		0.000491508
Struck against stationary object		1.012	
Cutting handtools -- nonpowered, n.e.c.	0.01%		8.22239E-05
Struck by discharged object or substance		1.013	
Knives	0.01%		8.22965E-05
Struck by falling object		1.046	
Knives	0.01%		8.49795E-05
Struck by object, n.e.c.		1.013	
Knives	0.24%		0.002470368
Struck by object, uns.		1.013	
Cutting handtools -- nonpowered, uns.	0.01%		8.22965E-05
Knives	0.05%		0.000493779
Struck by slipping handheld object		1.025	
Cutting handtools -- nonpowered, n.e.c.	0.02%		0.000166528
Cutting handtools -- nonpowered, uns.	0.01%		8.32638E-05
Knives	1.02%		0.010491242
Overexertion in lifting (object) and turning (body)		1.000	
Fiberglass insulation	0.01%		8.12678E-05
Overexertion, uns.		1.000	
Tars, sealants, caulking, insulation, n.e.c.	0.01%		8.12678E-05
Rubbed or abraded by foreign matter in eye		1.000	
Tars, sealants, caulking, insulation, uns.	0.01%		8.12678E-05

Event Exposure/Source of Injury Combination	Frequency (%)	Severity Factor	Frequency * Severity
	7.83%	1.004223857	7.86%
Bending, climbing, crawling, reaching, twisting		1.000	
Bodily conditions of injured, ill worker	0.01%		8.12678E-05
Bodily motion or position of injured, ill worker	6.14%		0.06143844
Contact with objects and equipment, n.e.c.		1.000	
Cutting handtools -- nonpowered, n.e.c.	0.01%		8.12678E-05
Knives	0.06%		0.000568874
Contact with objects and equipment, uns.		1.021	
Knives	0.11%		0.001079912
Overexertion, n.e.c.		1.000	
Cutting handtools -- nonpowered, n.e.c.	0.01%		8.12678E-05
Cutting handtools -- power not determined, uns.	0.01%		8.12678E-05
Overexertion, uns.		1.000	
Knives	0.01%		8.12678E-05
Struck against moving object		1.000	
Knives	0.02%		0.000162536
Struck against object, n.e.c.		1.008	
Cutting handtools -- nonpowered, n.e.c.	0.01%		8.19179E-05
Cutting handtools -- nonpowered, uns.	0.01%		8.19179E-05
Knives	0.05%		0.000491508
Struck against stationary object		1.012	
Cutting handtools -- nonpowered, n.e.c.	0.01%		8.22239E-05
Struck by discharged object or substance		1.013	
Knives	0.01%		8.22965E-05
Struck by falling object		1.046	
Knives	0.01%		8.49795E-05
Struck by object, n.e.c.		1.013	
Knives	0.24%		0.002470368
Struck by object, uns.		1.013	
Cutting handtools -- nonpowered, uns.	0.01%		8.22965E-05
Knives	0.05%		0.000493779
Struck by slipping handheld object		1.025	
Cutting handtools -- nonpowered, n.e.c.	0.02%		0.000166528
Cutting handtools -- nonpowered, uns.	0.01%		8.32638E-05
Knives	1.02%		0.010491242
Overexertion in lifting (object) and turning (body)		1.000	
Fiberglass insulation	0.01%		8.12678E-05
Overexertion, uns.		1.000	
Tars, sealants, caulking, insulation, n.e.c.	0.01%		8.12678E-05
Rubbed or abraded by foreign matter in eye		1.000	
Tars, sealants, caulking, insulation, uns.	0.01%		8.12678E-05

Process Step 4			
Flooring Insulation			
Resources			
Carpenter 5			
Risks			
	Frequency (%)	**Severity Factor**	**Frequency * Severity**
Event Exposure/Source of Injury Combination	7.83%	1.004223857	7.86%
Bending, climbing, crawling, reaching, twisting		1.000	
Bodily conditions of injured, ill worker	0.01%		8.12678E-05
Bodily motion or position of injured, ill worker	6.14%		0.06143844
Contact with objects and equipment, n.e.c.		1.000	
Cutting handtools -- nonpowered, n.e.c.	0.01%		8.12678E-05
Knives	0.06%		0.000568874
Contact with objects and equipment, uns.		1.021	
Knives	0.11%		0.00107912
Overexertion, n.e.c.		1.000	
Cutting handtools -- nonpowered, n.e.c.	0.01%		8.12678E-05
Cutting handtools -- power not determined, uns.	0.01%		8.12678E-05
Overexertion, uns.		1.000	
Knives	0.01%		8.12678E-05
Struck against moving object		1.000	
Knives	0.02%		0.000162536
Struck against object, n.e.c.		1.008	
Cutting handtools -- nonpowered, n.e.c.	0.01%		8.19179E-05
Cutting handtools -- nonpowered, uns.	0.01%		8.19179E-05
Knives	0.05%		0.000491508
Struck against stationary object		1.012	
Cutting handtools -- nonpowered, n.e.c.	0.01%		8.22239E-05
Struck by discharged object or substance		1.013	
Knives	0.01%		8.22965E-05
Struck by falling object		1.046	
Knives	0.01%		8.49795E-05
Struck by object, n.e.c.		1.013	
Knives	0.24%		0.002470368
Struck by object, uns.		1.013	
Cutting handtools -- nonpowered, uns.	0.01%		8.22965E-05
Knives	0.05%		0.000493779
Struck by slipping handheld object		1.025	
Cutting handtools -- nonpowered, n.e.c.	0.02%		0.000166528
Cutting handtools -- nonpowered, uns.	0.01%		8.32638E-05
Knives	1.02%		0.010491242
Overexertion in lifting (object) and turning (body)		1.000	
Fiberglass insulation	0.01%		8.12678E-05
Overexertion, uns.		1.000	
Tars, sealants, caulking, insulation, n.e.c.	0.01%		8.12678E-05
Rubbed or abraded by foreign matter in eye		1.000	
Tars, sealants, caulking, insulation, uns.	0.01%		8.12678E-05

Process Step 5

Flooring

Resources

Risks

Carpenter 1

Event Exposure/Source of Injury Combination	Frequency (%)	Severity Factor	Frequency * Severity
	2.30%	1.028983164	2.37%
Contact with objects and equipment, n.e.c.		1.000	
Cutting handtools -- nonpowered, n.e.c.	0.01%		8.12678E-05
Knives	0.06%		0.000568874
Contact with objects and equipment, uns.		1.021	
Knives	0.11%		0.00107912
Overexertion, n.e.c.		1.000	
Cutting handtools -- nonpowered, n.e.c.	0.01%		8.12678E-05
Cutting handtools -- power not determined, uns.	0.01%		8.12678E-05
Overexertion, uns.		1.000	
Knives	0.01%		8.12678E-05
Struck against moving object		1.000	
Knives	0.02%		0.000162536
Struck against object, n.e.c.		1.008	
Cutting handtools -- nonpowered, n.e.c.	0.01%		8.19179E-05
Cutting handtools -- nonpowered, uns.	0.01%		8.19179E-05
Knives	0.05%		0.000491508
Struck against stationary object		1.012	
Cutting handtools -- nonpowered, n.e.c.	0.01%		8.22239E-05
Struck by discharged object or substance		1.013	
Knives	0.01%		8.22965E-05
Struck by falling object		1.046	
Knives	0.01%		8.49795E-05
Struck by object, n.e.c.		1.013	
Knives	0.24%		0.002470368
Struck by object, uns.		1.013	
Cutting handtools -- nonpowered, uns.	0.01%		8.22965E-05
Knives	0.05%		0.000493779
Struck by slipping handheld object		1.025	
Cutting handtools -- nonpowered, n.e.c.	0.02%		0.000166528
Cutting handtools -- nonpowered, uns.	0.01%		8.32638E-05
Knives	1.02%		0.010491242
Bodily reaction and exertion, n.e.c.		1.000	
Forklift, uns.	0.01%		8.12678E-05
Caught in or compressed by equipment or objects, n.e.c.		1.150	
Forklift, n.e.c.	0.02%		0.000186843
Forklift, uns.	0.10%		0.001121056
Caught in or compressed by equipment or objects, uns.		1.120	

Carpenter 2

Event Exposure/Source of Injury Combination	Frequency (%)	Severity Factor	Frequency * Severity
	1.37%	1.040228335	1.43%
Bodily reaction and exertion, n.e.c.		1.000	
Drills	0.02%		0.000162536
Drills -- power not determined	0.03%		0.000325071
Drills -- powered	0.09%		0.000893946
Bodily reaction and exertion, uns.		1.000	
Drills -- power not determined	0.01%		8.12678E-05
Caught in or compressed by equipment or objects, n.e.c.		1.150	
Drills -- power not determined	0.02%		0.000186843
Caught in running equipment or machinery		1.192	
Drills	0.01%		9.68616E-05
Drills -- power not determined	0.02%		0.000193723
Drills -- powered	0.05%		0.00058117
Contact with objects and equipment, uns.		1.021	
Drills -- powered	0.02%		0.000166018
Overexertion in carrying, turning, wielding objects		1.000	
Drills -- powered	0.01%		8.12678E-05
Overexertion, n.e.c.		1.000	
Drills -- powered	0.02%		0.000243803
Overexertion, uns.		1.000	
Drills	0.01%		8.12678E-05
Drills -- powered	0.02%		0.000162536
Stepped on object		1.000	
Drills -- power not determined	0.01%		8.12678E-05
Struck by falling object		1.046	
Drills -- powered	0.01%		8.49795E-05
Struck by object, n.e.c.		1.013	
Drills	0.01%		8.23456E-05
Drills -- power not determined	0.02%		0.000247037
Drills -- powered	0.08%		0.000823456
Struck by object, uns.		1.013	
Drills -- powered	0.01%		8.22965E-05
Struck by slipping handheld object		1.025	
Drills	0.02%		0.000166528
Drills -- power not determined	0.02%		0.000249791
Drills -- powered	0.03%		0.000333055
Struck by swinging or slipping object, uns.		1.038	
Drills	0.01%		8.43935E-05

Carpenter 3

Event Exposure/Source of Injury Combination	Frequency (%)	Severity Factor	Frequency * Severity
	0.72%	1.058816648	0.76%
Contact with skin, eye(s) or other exposed tissue		1.438	
Adhesives, glues, n.e.c.	0.02%		0.000233645
Inhalation of substance, uns.		1.118	
Adhesives, glues, n.e.c.	0.01%		9.08287E-05
Struck against moving object		1.000	
Containers -- pressurized, n.e.c.	0.01%		8.12678E-05
Struck against stationary object		1.012	
Containers -- pressurized, n.e.c.	0.02%		0.000246672
Struck by object, n.e.c.		1.013	
Containers -- pressurized, n.e.c.	0.01%		8.23456E-05
Bodily reaction and exertion, n.e.c.		1.000	
Forklift, uns.	0.01%		8.12678E-05
Caught in or compressed by equipment or objects, n.e.c.		1.150	
Forklift, n.e.c.	0.02%		0.000186843
Forklift, uns.	0.10%		0.001121056
Caught in or compressed by equipment or objects, uns.		1.120	
Forklift, uns.	0.02%		0.00018204
Compressed or pinched by rolling, sliding, or shifting objects		1.314	
Forklift, uns.	0.01%		0.000106809
Contact with objects and equipment, n.e.c.		1.000	
Forklift, uns.	0.02%		0.000162536
Fall from moving vehicle, mobile equipment -- nonhighway		1.000	
Forklift, uns.	0.01%		8.12678E-05
Fall onto or against objects		1.005	
Forklift, n.e.c.	0.01%		8.16824E-05
Forklift, uns.	0.02%		0.000245047
Fall, n.e.c.		1.000	
Forklift, uns.	0.01%		8.12678E-05
Jump to lower level, uns.		1.000	
Forklift, uns.	0.02%		0.000162536
Forklift, uns.	0.03%		0.000325071
Nonhighway Collision between vehicles or mobile equipment		1.000	
Forklift, uns.	0.02%		0.000243803
Overexertion in lifting		1.001	
Forklift, uns.	0.01%		8.13806E-05
Overexertion in pulling or pushing objects		1.000	
Forklift, uns.	0.01%		8.12678E-05

Forklift, uns.	0.02%		0.00018204
Compressed or pinched by rolling, sliding, or shifting objects		1.314	
Forklift, uns.	0.01%		0.000106809
Contact with objects and equipment, n.e.c.		1.000	
Forklift, uns.	0.02%		0.000162536
Fall from moving vehicle, mobile equipment -- nonhighway		1.000	
Forklift, uns.	0.01%		8.12678E-05
Fall onto or against objects		1.005	
Forklift, n.e.c.	0.01%		8.16824E-05
Forklift, uns.	0.02%		0.000245047
Fall, n.e.c.		1.000	
Forklift, uns.	0.01%		8.12678E-05
Jump to lower level, uns.		1.000	
Forklift, uns.	0.02%		0.000162536
Forklift, uns.	0.03%		0.000325071
Nonhighway Collision between vehicles or mobile equipment		1.000	
Forklift, uns.	0.02%		0.000243803
Overexertion in lifting		1.001	
Forklift, uns.	0.01%		8.13806E-05
Overexertion in pulling or pushing objects		1.000	
Forklift, uns.	0.01%		8.12678E-05
Overexertion, n.e.c.		1.000	
Forklift, uns.	0.01%		8.12678E-05
Overturned -- nonhighway accident		1.000	
Forklift, n.e.c.	0.01%		8.12678E-05
Pedestrian struck by vehicle, mobile equipment in parking lot or non-roadw		1.105	
Forklift, n.e.c.	0.01%		8.98223E-05
Forklift, uns.	0.09%		0.000988045
Pedestrian struck by vehicle, mobile equipment, n.e.c.		1.000	
Forklift, uns.	0.07%		0.000650142
Struck against moving object		1.000	
Forklift, uns.	0.02%		0.000162536
Struck against object, n.e.c.		1.008	
Forklift, n.e.c.	0.01%		8.19179E-05
Forklift, uns.	0.02%		0.000163836
Struck against stationary object		1.012	
Forklift, uns.	0.02%		0.000246672
Struck by falling object		1.046	
Forklift, uns.	0.02%		0.000169959
Struck by object, n.e.c.		1.013	
Forklift, uns.	0.02%		0.000164691
Struck by rolling, sliding or falling objects on floor or ground level		1.000	
Forklift, uns.	0.02%		0.000162536
Struck by slipping handheld object		1.025	
Forklift, n.e.c.	0.01%		8.32638E-05
Sudden start or stop, n.e.c.		1.000	
Forklift, uns.	0.02%		0.000243803
Vehicle, mobile equipment struck stationary object		1.000	
Forklift, uns.	0.02%		0.000243803

Drills -- powered	0.01%		8.43935E-05
Bodily reaction and exertion, n.e.c.		1.000	
Sanders -- power not determined	0.02%		0.000243803
Overexertion in carrying, turning, wielding objects		1.000	
Sanders -- powered	0.01%		8.12678E-05
Struck against moving object		1.000	
Sanders -- powered	0.01%		8.12678E-05
Struck against object, uns.		1.000	
Sanders	0.01%		8.12678E-05
Struck by object, n.e.c.		1.013	
Sanders	0.01%		8.23456E-05
Sanders -- power not determined	0.01%		8.23456E-05
Sanders -- powered	0.02%		0.000164691
Rubbed or abraded by kneeling on surface		1.000	
Floor of building	0.05%		0.000487607
Floor, uns.	0.02%		0.000162536
Floors, walkways, ground surfaces, n.e.c.	0.01%		8.12678E-05
Floors, walkways, ground surfaces, uns.	0.02%		0.000243803
Ground	0.01%		8.12678E-05
Bodily reaction and exertion, n.e.c.		1.000	
Forklift, uns.	0.01%		8.12678E-05
Caught in or compressed by equipment or objects, n.e.c.		1.150	
Forklift, n.e.c.	0.02%		0.000186843
Forklift, uns.	0.10%		0.001121056
Caught in or compressed by equipment or objects, uns.		1.120	
Forklift, uns.	0.02%		0.00018204
Compressed or pinched by rolling, sliding, or shifting objects		1.314	
Forklift, uns.	0.01%		0.000106809
Contact with objects and equipment, n.e.c.		1.000	
Forklift, uns.	0.02%		0.000162536
Fall from moving vehicle, mobile equipment -- nonhighway		1.000	
Forklift, uns.	0.01%		8.12678E-05
Fall onto or against objects		1.005	
Forklift, n.e.c.	0.01%		8.16824E-05
Forklift, uns.	0.02%		0.000245047
Fall, n.e.c.		1.000	
Forklift, uns.	0.01%		8.12678E-05
Jump to lower level, uns.		1.000	
Forklift, uns.	0.02%		0.000162536
Forklift, uns.	0.03%		0.000325071
Nonhighway Collision between vehicles or mobile equipment		1.000	
Forklift, uns.	0.02%		0.000243803
Overexertion in lifting		1.001	
Forklift, uns.	0.01%		8.13806E-05
Overexertion in pulling or pushing objects		1.000	
Forklift, uns.	0.01%		8.12678E-05
Overexertion, n.e.c.		1.000	
Forklift, uns.	0.01%		8.12678E-05
Overturned -- nonhighway accident		1.000	
Forklift, n.e.c.	0.01%		8.12678E-05
Pedestrian struck by vehicle, mobile equipment in parking lot or non-roadway area		1.105	
Forklift, n.e.c.	0.01%		8.98223E-05
Forklift, uns.	0.09%		0.000988045
Pedestrian struck by vehicle, mobile equipment, n.e.c.		1.000	
Forklift, uns.	0.07%		0.000650142
Struck against moving object		1.000	
Forklift, uns.	0.02%		0.000162536
Struck against object, n.e.c.		1.008	
Forklift, n.e.c.	0.01%		8.19179E-05
Forklift, uns.	0.02%		0.000163836
Struck against stationary object		1.012	
Forklift, uns.	0.02%		0.000246672
Struck by falling object		1.046	
Forklift, uns.	0.02%		0.000169959
Struck by object, n.e.c.		1.013	
Forklift, uns.	0.02%		0.000164691
Struck by rolling, sliding or falling objects on floor or ground level		1.000	
Forklift, uns.	0.02%		0.000162536
Struck by slipping handheld object		1.025	
Forklift, n.e.c.	0.01%		8.32638E-05
Sudden start or stop, n.e.c.		1.000	
Forklift, uns.	0.02%		0.000243803
Vehicle, mobile equipment struck stationary object		1.000	
Forklift, uns.	0.02%		0.000243803

Overexertion, n.e.c.		1.000	
Forklift, uns.	0.01%		8.12678E-05
Overturned -- nonhighway accident		1.000	
Forklift, n.e.c.	0.01%		8.12678E-05
Pedestrian struck by vehicle, mobile equipment in parking lot or non-roadway area		1.105	
Forklift, n.e.c.	0.01%		8.98223E-05
Forklift, uns.	0.09%		0.000988045
Pedestrian struck by vehicle, mobile equipment, n.e.c.		1.000	
Forklift, uns.	0.07%		0.000650142
Struck against moving object		1.000	
Forklift, uns.	0.02%		0.000162536
Struck against object, n.e.c.		1.008	
Forklift, n.e.c.	0.01%		8.19179E-05
Forklift, uns.	0.02%		0.000163836
Struck against stationary object		1.012	
Forklift, uns.	0.02%		0.000246672
Struck by falling object		1.046	
Forklift, uns.	0.02%		0.000169959
Struck by object, n.e.c.		1.013	
Forklift, uns.	0.02%		0.000164691
Struck by rolling, sliding or falling objects on floor or ground level		1.000	
Forklift, uns.	0.02%		0.000162536
Struck by slipping handheld object		1.025	
Forklift, n.e.c.	0.01%		8.32638E-05
Sudden start or stop, n.e.c.		1.000	
Forklift, uns.	0.02%		0.000243803
Vehicle, mobile equipment struck stationary object		1.000	
Forklift, uns.	0.02%		0.000243803

Process Step 6											
Side Wall Framing											
Resources											
Carpenter 1				Carpenter 2				Carpenter 3			
Risks											
	Frequency (%)	Severity Factor	Frequency * Severity		Frequency (%)	Severity Factor	Frequency * Severity		Frequency (%)	Severity Factor	Frequency * Severity
Event Exposure/Source of Injury Combination	1.64%	1.029247109	1.69%	Event Exposure/Source of Injury Combination	8.10%	1.018069903	8.25%	Event Exposure/Source of Injury Combination	8.10%	1.018069903	8.25%
Caught in or compressed by equipment or objects, uns.		1.120		**Walking -- without other incident**		1.000		**Walking -- without other incident**		1.000	
Nail guns -- powered	0.01%		9.10199E-05	Bodily motion or position of injured, ill worker	0.13%		0.001300284	Bodily motion or position of injured, ill worker	0.13%		0.001300284
Contact with objects and equipment, uns.		1.021		**Fall from floor, dock, or ground level, uns.**		1.000		**Fall from floor, dock, or ground level, uns.**		1.000	
Nails, brads, tacks	0.02%		0.000166018	Floor of building	0.02%		0.000162536	Floor of building	0.02%		0.000162536
Fall onto or against objects		1.005		**Fall on same level, n.e.c.**		1.000		**Fall on same level, n.e.c.**		1.000	
Nails, brads, tacks	0.02%		0.000163365	Floor of building	0.02%		0.000243803	Floor of building	0.02%		0.000243803
Overexertion in carrying, turning, wielding objects		1.000		Floor, uns.	0.01%		8.12678E-05	Floor, uns.	0.01%		8.12678E-05
Nail guns -- powered	0.01%		8.12678E-05	Floors, walkways, ground surfaces, n.e.c.	0.01%		8.12678E-05	Floors, walkways, ground surfaces, n.e.c.	0.01%		8.12678E-05
Stepped on object		1.000		Floors, walkways, ground surfaces, uns.	0.02%		0.000162536	Floors, walkways, ground surfaces, uns.	0.02%		0.000162536
Nails, brads, tacks	0.02%		0.000243803	Ground	0.03%		0.000325071	Ground	0.03%		0.000325071
Struck against object, uns.		1.000		Stairs, steps, uns.	0.01%		8.12678E-05	Stairs, steps, uns.	0.01%		8.12678E-05
Nails, brads, tacks	0.02%		0.000162536	**Fall on same level, uns.**		1.000		**Fall on same level, uns.**		1.000	
Struck against stationary object		1.012		Floor of building	0.01%		8.12678E-05	Floor of building	0.01%		8.12678E-05
Nails, brads, tacks	0.02%		0.000164448	Floor, uns.	0.01%		8.12678E-05	Floor, uns.	0.01%		8.12678E-05
Struck by discharged object or substance		1.013		Floors, walkways, ground surfaces, uns.	0.02%		0.000162536	Floors, walkways, ground surfaces, uns.	0.02%		0.000162536
Nail guns -- powered	0.02%		0.000164593	Ground	0.02%		0.000162536	Ground	0.02%		0.000162536
Nails, brads, tacks	0.67%		0.006830608	**Fall onto or against objects**		1.005		**Fall onto or against objects**		1.005	
Struck by dislodged flying object, particle		1.019		Floor of building	0.02%		0.000245047	Floor of building	0.02%		0.000245047
Nails, brads, tacks	0.01%		8.27868E-05	Floor of scaffold, staging, or temporary work platform	0.02%		0.000163365	Floor of scaffold, staging, or temporary work platform	0.02%		0.000163365
Struck by falling object		1.046		Floor, n.e.c.	0.02%		0.000163365	Floor, n.e.c.	0.02%		0.000163365
Nail guns -- powered	0.02%		0.000254939	Floor, uns.	0.02%		0.000163365	Floor, uns.	0.02%		0.000163365
Nails, brads, tacks	0.01%		8.49795E-05	Floors, walkways, ground surfaces, n.e.c.	0.02%		0.000163365	Floors, walkways, ground surfaces, n.e.c.	0.02%		0.000163365
Struck by flying object, n.e.c.		1.000		Floors, walkways, ground surfaces, uns.	0.03%		0.00032673	Floors, walkways, ground surfaces, uns.	0.03%		0.00032673
Nails, brads, tacks	0.04%		0.000406339	**Fall to floor, walkway, or other surface**		1.003		**Fall to floor, walkway, or other surface**		1.003	
Struck by object, n.e.c.		1.013		Floor of building	1.85%		0.018588824	Floor of building	1.85%		0.018588824
Nails, brads, tacks	0.03%		0.000329382	Floor of scaffold, staging, or temporary work platform	0.04%		0.00040765	Floor of scaffold, staging, or temporary work platform	0.04%		0.00040765
Struck by object, uns.		1.013		Floor, n.e.c.	0.06%		0.00057071	Floor, n.e.c.	0.06%		0.00057071
Nails, brads, tacks	0.01%		8.22965E-05	Floor, uns.	0.15%		0.001549069	Floor, uns.	0.15%		0.001549069
Struck by slipping handheld object		1.025		Floors, walkways, ground surfaces, n.e.c.	0.09%		0.000896829	Floors, walkways, ground surfaces, n.e.c.	0.09%		0.000896829
Nails, brads, tacks	0.01%		8.32638E-05	Floors, walkways, ground surfaces, uns.	1.22%		0.01222949	Floors, walkways, ground surfaces, uns.	1.22%		0.01222949
Contact with objects and equipment, uns.		1.021		Ground	1.68%		0.016876696	Ground	1.68%		0.016876696
Adhesives, glues, n.e.c.	0.02%		0.000166018	**Fall, n.e.c.**		1.000		**Fall, n.e.c.**		1.000	
Inhalation of substance, uns.		1.118		Floor of building	0.02%		0.000243803	Floor of building	0.02%		0.000243803
Adhesives, glues, n.e.c.	0.01%		9.08287E-05	Floor of scaffold, staging, or temporary work platform	0.01%		8.12678E-05	Floor of scaffold, staging, or temporary work platform	0.01%		8.12678E-05
Struck against moving object		1.000		Floor, uns.	0.02%		0.000162536	Floor, uns.	0.02%		0.000162536
Containers -- pressurized, n.e.c.	0.01%		8.12678E-05	Floors, walkways, ground surfaces, n.e.c.	0.02%		0.000162536	Floors, walkways, ground surfaces, n.e.c.	0.02%		0.000162536
Struck against stationary object		1.012		Floors, walkways, ground surfaces, uns.	0.08%		0.000812678	Floors, walkways, ground surfaces, uns.	0.08%		0.000812678
Containers -- pressurized, n.e.c.	0.02%		0.000246672	Forklift, uns.	0.01%		8.12678E-05	Forklift, uns.	0.01%		8.12678E-05
Struck by object, n.e.c.		1.013		Ground	0.05%		0.000487607	Ground	0.05%		0.000487607

Containers -- pressurized, n.e.c.	0.01%		8.23456E-05	**Fall, uns.**		1.045		**Fall, uns.**		1.045	
Bodily reaction and exertion, n.e.c.		1.000		Floor, uns.	0.01%		8.49618E-05	Floor, uns.	0.01%		8.49618E-05
Forklift, uns.	0.01%		8.12678E-05	Floors, walkways, ground surfaces, uns.	0.06%		0.000594732	Floors, walkways, ground surfaces, uns.	0.06%		0.000594732
Caught in or compressed by equipment or objects, n.e.c.		1.150		Ground	0.02%		0.000254885	Ground	0.02%		0.000254885
Forklift, n.e.c.	0.02%		0.000186843	**Bodily reaction and exertion, n.e.c.**		1.000		**Bodily reaction and exertion, n.e.c.**		1.000	
Forklift, uns.	0.10%		0.001121056	Wallboard, drywall	0.05%		0.000487607	Wallboard, drywall	0.05%		0.000487607
Caught in or compressed by equipment or objects, uns.		1.120		**Contact with objects and equipment, n.e.c.**		1.000		**Contact with objects and equipment, n.e.c.**		1.000	
Forklift, uns.	0.02%		0.00018204	Wallboard, drywall	0.01%		8.12678E-05	Wallboard, drywall	0.01%		8.12678E-05
Compressed or pinched by rolling, sliding, or shifting objects		1.314		**Fall, n.e.c.**		1.000		**Fall, n.e.c.**		1.000	
Forklift, uns.	0.01%		0.000106809	Wallboard, drywall	0.01%		8.12678E-05	Wallboard, drywall	0.01%		8.12678E-05
Contact with objects and equipment, n.e.c.		1.000		**Overexertion in carrying, turning, wielding objects**		1.000		**Overexertion in carrying, turning, wielding objects**		1.000	
Forklift, uns.	0.02%		0.000162536	Wallboard, drywall	0.02%		0.000162536	Wallboard, drywall	0.02%		0.000162536
Fall from moving vehicle, mobile equipment -- nonhighway		1.000		**Overexertion in lifting**		1.001		**Overexertion in lifting**		1.001	
Forklift, uns.	0.01%		8.12678E-05	Wallboard, drywall	0.15%		0.001546232	Wallboard, drywall	0.15%		0.001546232
Fall onto or against objects		1.005		**Overexertion in lifting (object) and turning (body)**		1.000		**Overexertion in lifting (object) and turning (body)**		1.000	
Forklift, n.e.c.	0.01%		8.16824E-05	Wallboard, drywall	0.03%		0.000325071	Wallboard, drywall	0.03%		0.000325071
Forklift, uns.	0.02%		0.000245047	**Overexertion in lifting and turning (object)**		1.000		**Overexertion in lifting and turning (object)**		1.000	
Fall, n.e.c.		1.000		Wallboard, drywall	0.02%		0.000162536	Wallboard, drywall	0.02%		0.000162536
Forklift, uns.	0.01%		8.12678E-05	**Overexertion in pulling or pushing objects**		1.000		**Overexertion in pulling or pushing objects**		1.000	
Jump to lower level, uns.		1.000		Wallboard, drywall	0.03%		0.000325071	Wallboard, drywall	0.03%		0.000325071
Forklift, uns.	0.02%		0.000162536	**Overexertion, n.e.c.**		1.000		**Overexertion, n.e.c.**		1.000	
Forklift, uns.	0.03%		0.000325071	Wallboard, drywall	0.02%		0.000162536	Wallboard, drywall	0.02%		0.000162536
Nonhighway Collision between vehicles or mobile equipment		1.000		**Overexertion, uns.**		1.000		**Overexertion, uns.**		1.000	
Forklift, uns.	0.02%		0.000243803	Wallboard, drywall	0.01%		8.12678E-05	Wallboard, drywall	0.01%		8.12678E-05
Overexertion in lifting		1.001		**Struck against stationary object**		1.012		**Struck against stationary object**		1.012	
Forklift, uns.	0.01%		8.13806E-05	Wallboard, drywall	0.01%		8.22239E-05	Wallboard, drywall	0.01%		8.22239E-05
Overexertion in pulling or pushing objects		1.000		**Struck by falling object**		1.046		**Struck by falling object**		1.046	
Forklift, uns.	0.01%		8.12678E-05	Wallboard, drywall	0.07%		0.000764816	Wallboard, drywall	0.07%		0.000764816
Overexertion, n.e.c.		1.000		**Struck by object, n.e.c.**		1.013		**Struck by object, n.e.c.**		1.013	
Forklift, uns.	0.01%		8.12678E-05	Wallboard, drywall	0.01%		8.23456E-05	Wallboard, drywall	0.01%		8.23456E-05
Overturned -- nonhighway accident		1.000		**Struck by object, uns.**		1.013		**Struck by object, uns.**		1.013	
Forklift, n.e.c.	0.01%		8.12678E-05	Wallboard, drywall	0.01%		8.22965E-05	Wallboard, drywall	0.01%		8.22965E-05
Pedestrian struck by vehicle, mobile equipment in parking lot or non-roadway area		1.105		**Bodily reaction and exertion, n.e.c.**		1.000		**Bodily reaction and exertion, n.e.c.**		1.000	
Forklift, n.e.c.	0.01%		8.98223E-05	Dimensional lumber, n.e.c.	0.02%		0.000162536	Dimensional lumber, n.e.c.	0.02%		0.000162536
Forklift, uns.	0.09%		0.000988045	Wood, lumber, n.e.c.	0.01%		8.12678E-05	Wood, lumber, n.e.c.	0.01%		8.12678E-05
Pedestrian struck by vehicle, mobile equipment, n.e.c.		1.000		Wood, lumber, uns.	0.07%		0.000650142	Wood, lumber, uns.	0.07%		0.000650142
Forklift, uns.	0.07%		0.000650142	**Caught in or compressed by equipment or objects, n.e.c.**		1.150		**Caught in or compressed by equipment or objects, n.e.c.**		1.150	
Struck against moving object		1.000		Dimensional lumber, n.e.c.	0.07%		0.000747371	Dimensional lumber, n.e.c.	0.07%		0.000747371
Forklift, uns.	0.02%		0.000162536	Dimensional lumber, uns.	0.02%		0.000186843	Dimensional lumber, uns.	0.02%		0.000186843
Struck against object, n.e.c.		1.008		Wood, lumber, n.e.c.	0.09%		0.001027635	Wood, lumber, n.e.c.	0.09%		0.001027635
Forklift, n.e.c.	0.01%		8.19179E-05	Wood, lumber, uns.	0.25%		0.002896061	Wood, lumber, uns.	0.25%		0.002896061
Forklift, uns.	0.02%		0.000163836	**Caught in or compressed by equipment or objects, uns.**		1.120		**Caught in or compressed by equipment or objects, uns.**		1.120	
Struck against stationary object		1.012		Dimensional lumber, n.e.c.	0.01%		9.10199E-05	Dimensional lumber, n.e.c.	0.01%		9.10199E-05
Forklift, uns.	0.02%		0.000246672	Wood, lumber, uns.	0.05%		0.000546119	Wood, lumber, uns.	0.05%		0.000546119

Struck by falling object		1.046		**Compressed or pinched by rolling, sliding, or shifting objects**		1.314		**Compressed or pinched by rolling, sliding, or shifting objects**		1.314	
Forklift, uns.	0.02%		0.000169959	Wood, lumber, n.e.c.	0.02%		0.000213618	Wood, lumber, n.e.c.	0.02%		0.000213618
Struck by object, n.e.c.		1.013		Wood, lumber, uns.	0.02%		0.000213618	Wood, lumber, uns.	0.02%		0.000213618
Forklift, uns.	0.02%		0.000164691	**Contact with objects and equipment, n.e.c.**		1.000		**Contact with objects and equipment, n.e.c.**		1.000	
Struck by rolling, sliding or falling objects on floor or ground level		1.000		Wood, lumber, uns.	0.01%		8.12678E-05	Wood, lumber, uns.	0.01%		8.12678E-05
Forklift, uns.	0.02%		0.000162536	**Contact with objects and equipment, uns.**		1.021		**Contact with objects and equipment, uns.**		1.021	
Struck by slipping handheld object		1.025		Wood, lumber, n.e.c.	0.01%		8.30092E-05	Wood, lumber, n.e.c.	0.01%		8.30092E-05
Forklift, n.e.c.	0.01%		8.32638E-05	**Fall onto or against objects**		1.005		**Fall onto or against objects**		1.005	
Sudden start or stop, n.e.c.		1.000		Wood, lumber, n.e.c.	0.01%		8.16824E-05	Wood, lumber, n.e.c.	0.01%		8.16824E-05
Forklift, uns.	0.02%		0.000243803	Wood, lumber, uns.	0.02%		0.000245047	Wood, lumber, uns.	0.02%		0.000245047
Vehicle, mobile equipment struck stationary object		1.000		**Fall to floor, walkway, or other surface**		1.003		**Fall to floor, walkway, or other surface**		1.003	
Forklift, uns.	0.02%		0.000243803	Wood, lumber, n.e.c.	0.02%		0.00016306	Wood, lumber, n.e.c.	0.02%		0.00016306
				Fall, n.e.c.		1.000		**Fall, n.e.c.**		1.000	
				Wallboard, drywall	0.01%		8.12678E-05	Wallboard, drywall	0.01%		8.12678E-05
				Rubbed or abraded by objects being handled		1.000		**Rubbed or abraded by objects being handled**		1.000	
				Wood, lumber, uns.	0.02%		0.000162536	Wood, lumber, uns.	0.02%		0.000162536
				Stepped on object		1.000		**Stepped on object**		1.000	
				Wood, lumber, uns.	0.03%		0.000325071	Wood, lumber, uns.	0.03%		0.000325071
				Struck against object, n.e.c.		1.008		**Struck against object, n.e.c.**		1.008	
				Wood, lumber, n.e.c.	0.02%		0.000163836	Wood, lumber, n.e.c.	0.02%		0.000163836
				Wood, lumber, uns.	0.02%		0.000163836	Wood, lumber, uns.	0.02%		0.000163836
				Struck against object, uns.		1.000		**Struck against object, uns.**		1.000	
				Wood, lumber, uns.	0.01%		8.12678E-05	Wood, lumber, uns.	0.01%		8.12678E-05
				Struck against stationary object		1.012		**Struck against stationary object**		1.012	
				Dimensional lumber, n.e.c.	0.01%		8.22239E-05	Dimensional lumber, n.e.c.	0.01%		8.22239E-05
				Wood, lumber, uns.	0.02%		0.000246672	Wood, lumber, uns.	0.02%		0.000246672
				Struck by object, n.e.c.		1.013		**Struck by object, n.e.c.**		1.013	
				Dimensional lumber, n.e.c.	0.03%		0.000329382	Dimensional lumber, n.e.c.	0.03%		0.000329382
				Wood, lumber, n.e.c.	0.07%		0.000658765	Wood, lumber, n.e.c.	0.07%		0.000658765
				Wood, lumber, uns.	0.20%		0.001976294	Wood, lumber, uns.	0.20%		0.001976294
				Struck by object, uns.		1.013		**Struck by object, uns.**		1.013	
				Dimensional lumber, n.e.c.	0.02%		0.000164593	Dimensional lumber, n.e.c.	0.02%		0.000164593
				Dimensional lumber, uns.	0.01%		8.22965E-05	Dimensional lumber, uns.	0.01%		8.22965E-05
				Wood, lumber, n.e.c.	0.02%		0.000164593	Wood, lumber, n.e.c.	0.02%		0.000164593
				Wood, lumber, uns.	0.03%		0.000329186	Wood, lumber, uns.	0.03%		0.000329186
				Struck by slipping handheld object		1.025		**Struck by slipping handheld object**		1.025	
				Wood, lumber, uns.	0.02%		0.000166528	Wood, lumber, uns.	0.02%		0.000166528
				Struck by swinging or slipping object, n.e.c.		1.042		**Struck by swinging or slipping object, n.e.c.**		1.042	
				Wood, lumber, n.e.c.	0.02%		0.000169403	Wood, lumber, n.e.c.	0.02%		0.000169403
				Wood, lumber, uns.	0.01%		8.47016E-05	Wood, lumber, uns.	0.01%		8.47016E-05
				Struck by swinging or slipping object, uns.		1.038		**Struck by swinging or slipping object, uns.**		1.038	
				Wood, lumber, uns.	0.01%		8.43935E-05	Wood, lumber, uns.	0.01%		8.43935E-05
				Bodily reaction and exertion, n.e.c.		1.000		**Bodily reaction and exertion, n.e.c.**		1.000	
				Forklift, uns.	0.01%		8.12678E-05	Forklift, uns.	0.01%		8.12678E-05

Caught in or compressed by equipment or objects, n.e.c.		1.150		**Caught in or compressed by equipment or objects, n.e.c.**		1.150	
Forklift, n.e.c.	0.02%		0.000186843	Forklift, n.e.c.	0.02%		0.000186843
Forklift, uns.	0.10%		0.001121056	Forklift, uns.	0.10%		0.001121056
Caught in or compressed by equipment or objects, uns.		1.120		**Caught in or compressed by equipment or objects, uns.**		1.120	
Forklift, uns.	0.02%		0.00018204	Forklift, uns.	0.02%		0.00018204
Compressed or pinched by rolling, sliding, or shifting objects		1.314		**Compressed or pinched by rolling, sliding, or shifting objects**		1.314	
Forklift, uns.	0.01%		0.000106809	Forklift, uns.	0.01%		0.000106809
Contact with objects and equipment, n.e.c.		1.000		**Contact with objects and equipment, n.e.c.**		1.000	
Forklift, uns.	0.02%		0.000162536	Forklift, uns.	0.02%		0.000162536
Fall from moving vehicle, mobile equipment -- nonhighway		1.000		**Fall from moving vehicle, mobile equipment -- nonhighway**		1.000	
Forklift, uns.	0.01%		8.12678E-05	Forklift, uns.	0.01%		8.12678E-05
Fall onto or against objects		1.005		**Fall onto or against objects**		1.005	
Forklift, n.e.c.	0.01%		8.16824E-05	Forklift, n.e.c.	0.01%		8.16824E-05
Forklift, uns.	0.02%		0.000245047	Forklift, uns.	0.02%		0.000245047
Fall, n.e.c.		1.000		**Fall, n.e.c.**		1.000	
Forklift, uns.	0.01%		8.12678E-05	Forklift, uns.	0.01%		8.12678E-05
Jump to lower level, uns.		1.000		**Jump to lower level, uns.**		1.000	
Forklift, uns.	0.02%		0.000162536	Forklift, uns.	0.02%		0.000162536
Forklift, uns.	0.03%		0.000325071	Forklift, uns.	0.03%		0.000325071
Nonhighway Collision between vehicles or mobile equipment		1.000		**Nonhighway Collision between vehicles or mobile equipment**		1.000	
Forklift, uns.	0.02%		0.000243803	Forklift, uns.	0.02%		0.000243803
Overexertion in lifting		1.001		**Overexertion in lifting**		1.001	
Forklift, uns.	0.01%		8.13806E-05	Forklift, uns.	0.01%		8.13806E-05
Overexertion in pulling or pushing objects		1.000		**Overexertion in pulling or pushing objects**		1.000	
Forklift, uns.	0.01%		8.12678E-05	Forklift, uns.	0.01%		8.12678E-05
Overexertion, n.e.c.		1.000		**Overexertion, n.e.c.**		1.000	
Forklift, uns.	0.01%		8.12678E-05	Forklift, uns.	0.01%		8.12678E-05
Overturned -- nonhighway accident		1.000		**Overturned -- nonhighway accident**		1.000	
Forklift, n.e.c.	0.01%		8.12678E-05	Forklift, n.e.c.	0.01%		8.12678E-05
Pedestrian struck by vehicle, mobile equipment in parking lot or non-roadway area		1.105		**Pedestrian struck by vehicle, mobile equipment in parking lot or non-roadway area**		1.105	
Forklift, n.e.c.	0.01%		8.98223E-05	Forklift, n.e.c.	0.01%		8.98223E-05
Forklift, uns.	0.09%		0.000988045	Forklift, uns.	0.09%		0.000988045
Pedestrian struck by vehicle, mobile equipment, n.e.c.		1.000		**Pedestrian struck by vehicle, mobile equipment, n.e.c.**		1.000	
Forklift, uns.	0.07%		0.000650142	Forklift, uns.	0.07%		0.000650142
Struck against moving object		1.000		**Struck against moving object**		1.000	
Forklift, uns.	0.02%		0.000162536	Forklift, uns.	0.02%		0.000162536
Struck against object, n.e.c.		1.008		**Struck against object, n.e.c.**		1.008	
Forklift, n.e.c.	0.01%		8.19179E-05	Forklift, n.e.c.	0.01%		8.19179E-05
Forklift, uns.	0.02%		0.000163836	Forklift, uns.	0.02%		0.000163836
Struck against stationary object		1.012		**Struck against stationary object**		1.012	
Forklift, uns.	0.02%		0.000246672	Forklift, uns.	0.02%		0.000246672
Struck by falling object		1.046		**Struck by falling object**		1.046	
Forklift, uns.	0.02%		0.000169959	Forklift, uns.	0.02%		0.000169959
Struck by object, n.e.c.		1.013		**Struck by object, n.e.c.**		1.013	
Forklift, uns.	0.02%		0.000164691	Forklift, uns.	0.02%		0.000164691
Struck by rolling, sliding or falling objects on floor or ground level		1.000		**Struck by rolling, sliding or falling objects on floor or ground level**		1.000	
Forklift, uns.	0.02%		0.000162536	Forklift, uns.	0.02%		0.000162536
Struck by slipping handheld object		1.025		**Struck by slipping handheld object**		1.025	
Forklift, n.e.c.	0.01%		8.32638E-05	Forklift, n.e.c.	0.01%		8.32638E-05
Sudden start or stop, n.e.c.		1.000		**Sudden start or stop, n.e.c.**		1.000	
Forklift, uns.	0.02%		0.000243803	Forklift, uns.	0.02%		0.000243803
Vehicle, mobile equipment struck stationary object		1.000		**Vehicle, mobile equipment struck stationary object**		1.000	
Forklift, uns.	0.02%		0.000243803	Forklift, uns.	0.02%		0.000243803

Process Step 7			
End Wall Framing			
Resources			
Carpenter 1			
Risks			
	Frequency (%)	**Severity Factor**	**Frequency * Severity**
Event Exposure/Source of Injury Combination	1.58%	1.029375542	1.62%
Caught in or compressed by equipment or objects, uns.		1.120	
Nail guns -- powered	0.01%		9.10199E-05
Contact with objects and equipment, uns.		1.021	
Nails, brads, tacks	0.02%		0.000166018
Fall onto or against objects		1.005	
Nails, brads, tacks	0.02%		0.000163365
Overexertion in carrying, turning, wielding objects		1.000	
Nail guns -- powered	0.01%		8.12678E-05
Stepped on object		1.000	
Nails, brads, tacks	0.02%		0.000243803
Struck against object, uns.		1.000	
Nails, brads, tacks	0.02%		0.000162536
Struck against stationary object		1.012	
Nails, brads, tacks	0.02%		0.000164448
Struck by discharged object or substance		1.013	
Nail guns -- powered	0.02%		0.000164593
Nails, brads, tacks	0.67%		0.006830608
Struck by dislodged flying object, particle		1.019	
Nails, brads, tacks	0.01%		8.27868E-05
Struck by falling object		1.046	
Nail guns -- powered	0.02%		0.000254939
Nails, brads, tacks	0.01%		8.49795E-05
Struck by flying object, n.e.c.		1.000	
Nails, brads, tacks	0.04%		0.000406339
Struck by object, n.e.c.		1.013	
Nails, brads, tacks	0.03%		0.000329382
Struck by object, uns.		1.013	
Nails, brads, tacks	0.01%		8.22965E-05
Struck by slipping handheld object		1.025	
Nails, brads, tacks	0.01%		8.32638E-05
Bodily reaction and exertion, n.e.c.		1.000	
Forklift, uns.	0.01%		8.12678E-05

Caught in or compressed by equipment or objects, n.e.c.		1.150	
Forklift, n.e.c.	0.02%		0.000186843
Forklift, uns.	0.10%		0.001121056
Caught in or compressed by equipment or objects, uns.		1.120	
Forklift, uns.	0.02%		0.00018204
Compressed or pinched by rolling, sliding, or shifting objects		1.314	
Forklift, uns.	0.01%		0.000106809
Contact with objects and equipment, n.e.c.		1.000	
Forklift, uns.	0.02%		0.000162536
Fall from moving vehicle, mobile equipment -- nonhighway		1.000	
Forklift, uns.	0.01%		8.12678E-05
Fall onto or against objects		1.005	
Forklift, n.e.c.	0.01%		8.16824E-05
Forklift, uns.	0.02%		0.000245047
Fall, n.e.c.		1.000	
Forklift, uns.	0.01%		8.12678E-05
Jump to lower level, uns.		1.000	
Forklift, uns.	0.02%		0.000162536
Forklift, uns.	0.03%		0.000325071
Nonhighway Collision between vehicles or mobile equipment		1.000	
Forklift, uns.	0.02%		0.000243803
Overexertion in lifting		1.001	
Forklift, uns.	0.01%		8.13806E-05
Overexertion in pulling or pushing objects		1.000	
Forklift, uns.	0.01%		8.12678E-05
Overexertion, n.e.c.		1.000	
Forklift, uns.	0.01%		8.12678E-05
Overturned -- nonhighway accident		1.000	
Forklift, n.e.c.	0.01%		8.12678E-05
Pedestrian struck by vehicle, mobile equipment in parking lot or non-roadway area		1.105	
Forklift, n.e.c.	0.01%		8.98223E-05
Forklift, uns.	0.09%		0.000988045
Pedestrian struck by vehicle, mobile equipment, n.e.c.		1.000	
Forklift, uns.	0.07%		0.000650142
Struck against moving object		1.000	
Forklift, uns.	0.02%		0.000162536
Struck against object, n.e.c.		1.008	
Forklift, n.e.c.	0.01%		8.19179E-05
Forklift, uns.	0.02%		0.000163836
Struck against stationary object		1.012	
Forklift, uns.	0.02%		0.000246672
Struck by falling object		1.046	
Forklift, uns.	0.02%		0.000169959
Struck by object, n.e.c.		1.013	
Forklift, uns.	0.02%		0.000164691
Struck by rolling, sliding or falling objects on floor or ground level		1.000	
Forklift, uns.	0.02%		0.000162536
Struck by slipping handheld object		1.025	
Forklift, n.e.c.	0.01%		8.32638E-05
Sudden start or stop, n.e.c.		1.000	
Forklift, uns.	0.02%		0.000243803
Vehicle, mobile equipment struck stationary object		1.000	
Forklift, uns.	0.02%		0.000243803

Process Step 8											
Roof Framing											
Resources											
Carpenter 1				Carpenter 2				Carpenter 3			
Risks											
	Frequency (%)	Severity Factor	Frequency * Severity		Frequency (%)	Severity Factor	Frequency * Severity		Frequency (%)	Severity Factor	Frequency * Severity
Event Exposure/Source of Injury Combination	1.64%	1.029247109	1.69%	Event Exposure/Source of Injury Combination	8.10%	1.018069903	8.25%	Event Exposure/Source of Injury Combination	8.10%	1.018069903	8.25%
Caught in or compressed by equipment or objects, uns.		1.120		**Walking -- without other incident**		1.000		**Walking -- without other incident**		1.000	
Nail guns -- powered	0.01%		9.10199E-05	Bodily motion or position of injured, ill worker	0.13%		0.001300284	Bodily motion or position of injured, ill worker	0.13%		0.001300284
Contact with objects and equipment, uns.		1.021		**Fall from floor, dock, or ground level, uns.**		1.000		**Fall from floor, dock, or ground level, uns.**		1.000	
Nails, brads, tacks	0.02%		0.000166018	Floor of building	0.02%		0.000162536	Floor of building	0.02%		0.000162536
Fall onto or against objects		1.005		**Fall on same level, n.e.c.**		1.000		**Fall on same level, n.e.c.**		1.000	
Nails, brads, tacks	0.02%		0.000163365	Floor of building	0.02%		0.000243803	Floor of building	0.02%		0.000243803
Overexertion in carrying, turning, wielding objects		1.000		Floor, uns.	0.01%		8.12678E-05	Floor, uns.	0.01%		8.12678E-05
Nail guns -- powered	0.01%		8.12678E-05	Floors, walkways, ground surfaces, n.e.c.	0.01%		8.12678E-05	Floors, walkways, ground surfaces, n.e.c.	0.01%		8.12678E-05
Stepped on object		1.000		Floors, walkways, ground surfaces, uns.	0.02%		0.000162536	Floors, walkways, ground surfaces, uns.	0.02%		0.000162536
Nails, brads, tacks	0.02%		0.000243803	Ground	0.03%		0.000325071	Ground	0.03%		0.000325071
Struck against object, uns.		1.000		Stairs, steps, uns.	0.01%		8.12678E-05	Stairs, steps, uns.	0.01%		8.12678E-05
Nails, brads, tacks	0.02%		0.000162536	**Fall on same level, uns.**		1.000		**Fall on same level, uns.**		1.000	
Struck against stationary object		1.012		Floor of building	0.01%		8.12678E-05	Floor of building	0.01%		8.12678E-05
Nails, brads, tacks	0.02%		0.000164448	Floor, uns.	0.01%		8.12678E-05	Floor, uns.	0.01%		8.12678E-05
Struck by discharged object or substance		1.013		Floors, walkways, ground surfaces, uns.	0.02%		0.000162536	Floors, walkways, ground surfaces, uns.	0.02%		0.000162536
Nail guns -- powered	0.02%		0.000164593	Ground	0.02%		0.000162536	Ground	0.02%		0.000162536
Nails, brads, tacks	0.67%		0.006830608	**Fall onto or against objects**		1.005		**Fall onto or against objects**		1.005	
Struck by dislodged flying object, particle		1.019		Floor of building	0.02%		0.000245047	Floor of building	0.02%		0.000245047
Nails, brads, tacks	0.01%		8.27868E-05	Floor of scaffold, staging, or temporary work platform	0.02%		0.000163365	Floor of scaffold, staging, or temporary work platform	0.02%		0.000163365
Struck by falling object		1.046		Floor, n.e.c.	0.02%		0.000163365	Floor, n.e.c.	0.02%		0.000163365
Nail guns -- powered	0.02%		0.000254939	Floor, uns.	0.02%		0.000163365	Floor, uns.	0.02%		0.000163365
Nails, brads, tacks	0.01%		8.49795E-05	Floors, walkways, ground surfaces, n.e.c.	0.02%		0.000163365	Floors, walkways, ground surfaces, n.e.c.	0.02%		0.000163365
Struck by flying object, n.e.c.		1.000		Floors, walkways, ground surfaces, uns.	0.03%		0.00032673	Floors, walkways, ground surfaces, uns.	0.03%		0.00032673
Nails, brads, tacks	0.04%		0.000406339	**Fall to floor, walkway, or other surface**		1.003		**Fall to floor, walkway, or other surface**		1.003	
Struck by object, n.e.c.		1.013		Floor of building	1.85%		0.018588824	Floor of building	1.85%		0.018588824
Nails, brads, tacks	0.03%		0.000329382	Floor of scaffold, staging, or temporary work platform	0.04%		0.00040765	Floor of scaffold, staging, or temporary work platform	0.04%		0.00040765
Struck by object, uns.		1.013		Floor, n.e.c.	0.06%		0.00057071	Floor, n.e.c.	0.06%		0.00057071
Nails, brads, tacks	0.01%		8.22965E-05	Floor, uns.	0.15%		0.001549069	Floor, uns.	0.15%		0.001549069
Struck by slipping handheld object		1.025		Floors, walkways, ground surfaces, n.e.c.	0.09%		0.000896829	Floors, walkways, ground surfaces, n.e.c.	0.09%		0.000896829
Nails, brads, tacks	0.01%		8.32638E-05	Floors, walkways, ground surfaces, uns.	1.22%		0.01222949	Floors, walkways, ground surfaces, uns.	1.22%		0.01222949
Contact with objects and equipment, uns.		1.021		Ground	1.68%		0.016876696	Ground	1.68%		0.016876696
Adhesives, glues, n.e.c.	0.02%		0.000166018	**Fall, n.e.c.**		1.000		**Fall, n.e.c.**		1.000	
Inhalation of substance, uns.		1.118		Floor of building	0.02%		0.000243803	Floor of building	0.02%		0.000243803
Adhesives, glues, n.e.c.	0.01%		9.08287E-05	Floor of scaffold, staging, or temporary work platform	0.01%		8.12678E-05	Floor of scaffold, staging, or temporary work platform	0.01%		8.12678E-05
Struck against moving object		1.000		Floor, uns.	0.02%		0.000162536	Floor, uns.	0.02%		0.000162536
Containers -- pressurized, n.e.c.	0.01%		8.12678E-05	Floors, walkways, ground surfaces, n.e.c.	0.02%		0.000162536	Floors, walkways, ground surfaces, n.e.c.	0.02%		0.000162536
Struck against stationary object		1.012		Floors, walkways, ground surfaces, uns.	0.08%		0.000812678	Floors, walkways, ground surfaces, uns.	0.08%		0.000812678
Containers -- pressurized, n.e.c.	0.02%		0.000246672	Forklift, uns.	0.01%		8.12678E-05	Forklift, uns.	0.01%		8.12678E-05
Struck by object, n.e.c.		1.013		Ground	0.05%		0.000487607	Ground	0.05%		0.000487607

Containers -- pressurized, n.e.c.	0.01%		8.23456E-05
Bodily reaction and exertion, n.e.c.		1.000	
Forklift, uns.	0.01%		8.12678E-05
Caught in or compressed by equipment or objects, n.e.c.		1.150	
Forklift, n.e.c.	0.02%		0.000186843
Forklift, uns.	0.10%		0.001121056
Caught in or compressed by equipment or objects, uns.		1.120	
Forklift, uns.	0.02%		0.00018204
Compressed or pinched by rolling, sliding, or shifting objects		1.314	
Forklift, uns.	0.01%		0.000106809
Contact with objects and equipment, n.e.c.		1.000	
Forklift, uns.	0.02%		0.000162536
Fall from moving vehicle, mobile equipment -- nonhighway		1.000	
Forklift, uns.	0.01%		8.12678E-05
Fall onto or against objects		1.005	
Forklift, n.e.c.	0.01%		8.16824E-05
Forklift, uns.	0.02%		0.000245047
Fall, n.e.c.		1.000	
Forklift, uns.	0.01%		8.12678E-05
Jump to lower level, uns.		1.000	
Forklift, uns.	0.02%		0.000162536
Forklift, uns.	0.03%		0.000325071
Nonhighway Collision between vehicles or mobile equipment		1.000	
Forklift, uns.	0.02%		0.000243803
Overexertion in lifting		1.001	
Forklift, uns.	0.01%		8.13806E-05
Overexertion in pulling or pushing objects		1.000	
Forklift, uns.	0.01%		8.12678E-05
Overexertion, n.e.c.		1.000	
Forklift, uns.	0.01%		8.12678E-05
Overturned -- nonhighway accident		1.000	
Forklift, n.e.c.	0.01%		8.12678E-05
Pedestrian struck by vehicle, mobile equipment in parking lot or non-roadway area		1.105	
Forklift, n.e.c.	0.01%		8.98223E-05
Forklift, uns.	0.09%		0.000988045
Pedestrian struck by vehicle, mobile equipment, n.e.c.		1.000	
Forklift, uns.	0.07%		0.000650142
Struck against moving object		1.000	
Forklift, uns.	0.02%		0.000162536
Struck against object, n.e.c.		1.008	
Forklift, n.e.c.	0.01%		8.19179E-05
Forklift, uns.	0.02%		0.000163836
Struck against stationary object		1.012	
Forklift, uns.	0.02%		0.000246672
Struck by falling object		1.046	
Forklift, uns.	0.02%		0.000169959
Struck by object, n.e.c.		1.013	

Fall, uns.		1.045	
Floor, uns.	0.01%		8.49618E-05
Floors, walkways, ground surfaces, uns.	0.06%		0.000594732
Ground	0.02%		0.000254885
Bodily reaction and exertion, n.e.c.		1.000	
Wallboard, drywall	0.05%		0.000487607
Contact with objects and equipment, n.e.c.		1.000	
Wallboard, drywall	0.01%		8.12678E-05
Fall, n.e.c.		1.000	
Wallboard, drywall	0.01%		8.12678E-05
Overexertion in carrying, turning, wielding objects		1.000	
Wallboard, drywall	0.02%		0.000162536
Overexertion in lifting		1.001	
Wallboard, drywall	0.15%		0.001546232
Overexertion in lifting (object) and turning (body)		1.000	
Wallboard, drywall	0.03%		0.000325071
Overexertion in lifting and turning (object)		1.000	
Wallboard, drywall	0.02%		0.000162536
Overexertion in pulling or pushing objects		1.000	
Wallboard, drywall	0.03%		0.000325071
Overexertion, n.e.c.		1.000	
Wallboard, drywall	0.02%		0.000162536
Overexertion, uns.		1.000	
Wallboard, drywall	0.01%		8.12678E-05
Struck against stationary object		1.012	
Wallboard, drywall	0.01%		8.22239E-05
Struck by falling object		1.046	
Wallboard, drywall	0.07%		0.000764816
Struck by object, n.e.c.		1.013	
Wallboard, drywall	0.01%		8.23456E-05
Struck by object, uns.		1.013	
Wallboard, drywall	0.01%		8.22965E-05
Bodily reaction and exertion, n.e.c.		1.000	
Dimensional lumber, n.e.c.	0.02%		0.000162536
Wood, lumber, n.e.c.	0.01%		8.12678E-05
Wood, lumber, uns.	0.07%		0.000650142
Caught in or compressed by equipment or objects, n.e.c.		1.150	
Dimensional lumber, n.e.c.	0.07%		0.000747371
Dimensional lumber, uns.	0.02%		0.000186843
Wood, lumber, n.e.c.	0.09%		0.001027635
Wood, lumber, uns.	0.25%		0.002896061
Caught in or compressed by equipment or objects, uns.		1.120	
Dimensional lumber, n.e.c.	0.01%		9.10199E-05
Wood, lumber, uns.	0.05%		0.000546119
Compressed or pinched by rolling, sliding, or shifting objects		1.314	
Wood, lumber, n.e.c.	0.02%		0.000213618
Wood, lumber, uns.	0.02%		0.000213618

Fall, uns.		1.045	
Floor, uns.	0.01%		8.49618E-05
Floors, walkways, ground surfaces, uns.	0.06%		0.000594732
Ground	0.02%		0.000254885
Bodily reaction and exertion, n.e.c.		1.000	
Wallboard, drywall	0.05%		0.000487607
Contact with objects and equipment, n.e.c.		1.000	
Wallboard, drywall	0.01%		8.12678E-05
Fall, n.e.c.		1.000	
Wallboard, drywall	0.01%		8.12678E-05
Overexertion in carrying, turning, wielding objects		1.000	
Wallboard, drywall	0.02%		0.000162536
Overexertion in lifting		1.001	
Wallboard, drywall	0.15%		0.001546232
Overexertion in lifting (object) and turning (body)		1.000	
Wallboard, drywall	0.03%		0.000325071
Overexertion in lifting and turning (object)		1.000	
Wallboard, drywall	0.02%		0.000162536
Overexertion in pulling or pushing objects		1.000	
Wallboard, drywall	0.03%		0.000325071
Overexertion, n.e.c.		1.000	
Wallboard, drywall	0.02%		0.000162536
Overexertion, uns.		1.000	
Wallboard, drywall	0.01%		8.12678E-05
Struck against stationary object		1.012	
Wallboard, drywall	0.01%		8.22239E-05
Struck by falling object		1.046	
Wallboard, drywall	0.07%		0.000764816
Struck by object, n.e.c.		1.013	
Wallboard, drywall	0.01%		8.23456E-05
Struck by object, uns.		1.013	
Wallboard, drywall	0.01%		8.22965E-05
Bodily reaction and exertion, n.e.c.		1.000	
Dimensional lumber, n.e.c.	0.02%		0.000162536
Wood, lumber, n.e.c.	0.01%		8.12678E-05
Wood, lumber, uns.	0.07%		0.000650142
Caught in or compressed by equipment or objects, n.e.c.		1.150	
Dimensional lumber, n.e.c.	0.07%		0.000747371
Dimensional lumber, uns.	0.02%		0.000186843
Wood, lumber, n.e.c.	0.09%		0.001027635
Wood, lumber, uns.	0.25%		0.002896061
Caught in or compressed by equipment or objects, uns.		1.120	
Dimensional lumber, n.e.c.	0.01%		9.10199E-05
Wood, lumber, uns.	0.05%		0.000546119
Compressed or pinched by rolling, sliding, or shifting objects		1.314	
Wood, lumber, n.e.c.	0.02%		0.000213618
Wood, lumber, uns.	0.02%		0.000213618

Forklift, uns.	0.02%		0.000164691	**Contact with objects and equipment, n.e.c.**		1.000		**Contact with objects and equipment, n.e.c.**		1.000	
Struck by rolling, sliding or falling objects on floor or ground level		1.000		Wood, lumber, uns.	0.01%		8.12678E-05	Wood, lumber, uns.	0.01%		8.12678E-05
Forklift, uns.	0.02%		0.000162536	**Contact with objects and equipment, uns.**		1.021		**Contact with objects and equipment, uns.**		1.021	
Struck by slipping handheld object		1.025		Wood, lumber, n.e.c.	0.01%		8.30092E-05	Wood, lumber, n.e.c.	0.01%		8.30092E-05
Forklift, n.e.c.	0.01%		8.32638E-05	**Fall onto or against objects**		1.005		**Fall onto or against objects**		1.005	
Sudden start or stop, n.e.c.		1.000		Wood, lumber, n.e.c.	0.01%		8.16824E-05	Wood, lumber, n.e.c.	0.01%		8.16824E-05
Forklift, uns.	0.02%		0.000243803	Wood, lumber, uns.	0.02%		0.000245047	Wood, lumber, uns.	0.02%		0.000245047
Vehicle, mobile equipment struck stationary object		1.000		**Fall to floor, walkway, or other surface**		1.003		**Fall to floor, walkway, or other surface**		1.003	
Forklift, uns.	0.02%		0.000243803	Wood, lumber, n.e.c.	0.02%		0.00016306	Wood, lumber, n.e.c.	0.02%		0.00016306
				Fall, n.e.c.		1.000		**Fall, n.e.c.**		1.000	
				Wallboard, drywall	0.01%		8.12678E-05	Wallboard, drywall	0.01%		8.12678E-05
				Rubbed or abraded by objects being handled		1.000		**Rubbed or abraded by objects being handled**		1.000	
				Wood, lumber, uns.	0.02%		0.000162536	Wood, lumber, uns.	0.02%		0.000162536
				Stepped on object		1.000		**Stepped on object**		1.000	
				Wood, lumber, uns.	0.03%		0.000325071	Wood, lumber, uns.	0.03%		0.000325071
				Struck against object, n.e.c.		1.008		**Struck against object, n.e.c.**		1.008	
				Wood, lumber, n.e.c.	0.02%		0.000163836	Wood, lumber, n.e.c.	0.02%		0.000163836
				Wood, lumber, uns.	0.02%		0.000163836	Wood, lumber, uns.	0.02%		0.000163836
				Struck against object, uns.		1.000		**Struck against object, uns.**		1.000	
				Wood, lumber, uns.	0.01%		8.12678E-05	Wood, lumber, uns.	0.01%		8.12678E-05
				Struck against stationary object		1.012		**Struck against stationary object**		1.012	
				Dimensional lumber, n.e.c.	0.01%		8.22239E-05	Dimensional lumber, n.e.c.	0.01%		8.22239E-05
				Wood, lumber, uns.	0.02%		0.000246672	Wood, lumber, uns.	0.02%		0.000246672
				Struck by object, n.e.c.		1.013		**Struck by object, n.e.c.**		1.013	
				Dimensional lumber, n.e.c.	0.03%		0.000329382	Dimensional lumber, n.e.c.	0.03%		0.000329382
				Wood, lumber, n.e.c.	0.07%		0.000658765	Wood, lumber, n.e.c.	0.07%		0.000658765
				Wood, lumber, uns.	0.20%		0.001976294	Wood, lumber, uns.	0.20%		0.001976294
				Struck by object, uns.		1.013		**Struck by object, uns.**		1.013	
				Dimensional lumber, n.e.c.	0.02%		0.000164593	Dimensional lumber, n.e.c.	0.02%		0.000164593
				Dimensional lumber, uns.	0.01%		8.22965E-05	Dimensional lumber, uns.	0.01%		8.22965E-05
				Wood, lumber, n.e.c.	0.02%		0.000164593	Wood, lumber, n.e.c.	0.02%		0.000164593
				Wood, lumber, uns.	0.03%		0.000329186	Wood, lumber, uns.	0.03%		0.000329186
				Struck by slipping handheld object		1.025		**Struck by slipping handheld object**		1.025	
				Wood, lumber, uns.	0.02%		0.000166528	Wood, lumber, uns.	0.02%		0.000166528
				Struck by swinging or slipping object, n.e.c.		1.042		**Struck by swinging or slipping object, n.e.c.**		1.042	
				Wood, lumber, n.e.c.	0.02%		0.000169403	Wood, lumber, n.e.c.	0.02%		0.000169403
				Wood, lumber, uns.	0.01%		8.47016E-05	Wood, lumber, uns.	0.01%		8.47016E-05
				Struck by swinging or slipping object, uns.		1.038		**Struck by swinging or slipping object, uns.**		1.038	
				Wood, lumber, uns.	0.01%		8.43935E-05	Wood, lumber, uns.	0.01%		8.43935E-05
				Bodily reaction and exertion, n.e.c.		1.000		**Bodily reaction and exertion, n.e.c.**		1.000	
				Forklift, uns.	0.01%		8.12678E-05	Forklift, uns.	0.01%		8.12678E-05
				Caught in or compressed by equipment or objects, n.e.c.		1.150		**Caught in or compressed by equipment or objects, n.e.c.**		1.150	
				Forklift, n.e.c.	0.02%		0.000186843	Forklift, n.e.c.	0.02%		0.000186843
				Forklift, uns.	0.10%		0.001121056	Forklift, uns.	0.10%		0.001121056
				Caught in or compressed by equipment or objects, uns.		1.120		**Caught in or compressed by equipment or objects, uns.**		1.120	
				Forklift, uns.	0.02%		0.00018204	Forklift, uns.	0.02%		0.00018204
				Compressed or pinched by rolling, sliding, or shifting objects		1.314		**Compressed or pinched by rolling, sliding, or shifting objects**		1.314	
				Forklift, uns.	0.01%		0.000106809	Forklift, uns.	0.01%		0.000106809

Contact with objects and equipment, n.e.c.		1.000		**Contact with objects and equipment, n.e.c.**		1.000	
Forklift, uns.	0.02%		0.000162536	Forklift, uns.	0.02%		0.000162536
Fall from moving vehicle, mobile equipment -- nonhighway		1.000		**Fall from moving vehicle, mobile equipment -- nonhighway**		1.000	
Forklift, uns.	0.01%		8.12678E-05	Forklift, uns.	0.01%		8.12678E-05
Fall onto or against objects		1.005		**Fall onto or against objects**		1.005	
Forklift, n.e.c.	0.01%		8.16824E-05	Forklift, n.e.c.	0.01%		8.16824E-05
Forklift, uns.	0.02%		0.000245047	Forklift, uns.	0.02%		0.000245047
Fall, n.e.c.		1.000		**Fall, n.e.c.**		1.000	
Forklift, uns.	0.01%		8.12678E-05	Forklift, uns.	0.01%		8.12678E-05
Jump to lower level, uns.		1.000		**Jump to lower level, uns.**		1.000	
Forklift, uns.	0.02%		0.000162536	Forklift, uns.	0.02%		0.000162536
Forklift, uns.	0.03%		0.000325071	Forklift, uns.	0.03%		0.000325071
Nonhighway Collision between vehicles or mobile equipment		1.000		**Nonhighway Collision between vehicles or mobile equipment**		1.000	
Forklift, uns.	0.02%		0.000243803	Forklift, uns.	0.02%		0.000243803
Overexertion in lifting		1.001		**Overexertion in lifting**		1.001	
Forklift, uns.	0.01%		8.13806E-05	Forklift, uns.	0.01%		8.13806E-05
Overexertion in pulling or pushing objects		1.000		**Overexertion in pulling or pushing objects**		1.000	
Forklift, uns.	0.01%		8.12678E-05	Forklift, uns.	0.01%		8.12678E-05
Overexertion, n.e.c.		1.000		**Overexertion, n.e.c.**		1.000	
Forklift, uns.	0.01%		8.12678E-05	Forklift, uns.	0.01%		8.12678E-05
Overturned -- nonhighway accident		1.000		**Overturned -- nonhighway accident**		1.000	
Forklift, n.e.c.	0.01%		8.12678E-05	Forklift, n.e.c.	0.01%		8.12678E-05
Pedestrian struck by vehicle, mobile equipment in parking lot or non-roadway area		1.105		**Pedestrian struck by vehicle, mobile equipment in parking lot or non-roadway area**		1.105	
Forklift, n.e.c.	0.01%		8.98223E-05	Forklift, n.e.c.	0.01%		8.98223E-05
Forklift, uns.	0.09%		0.000988045	Forklift, uns.	0.09%		0.000988045
Pedestrian struck by vehicle, mobile equipment, n.e.c.		1.000		**Pedestrian struck by vehicle, mobile equipment, n.e.c.**		1.000	
Forklift, uns.	0.07%		0.000650142	Forklift, uns.	0.07%		0.000650142
Struck against moving object		1.000		**Struck against moving object**		1.000	
Forklift, uns.	0.02%		0.000162536	Forklift, uns.	0.02%		0.000162536
Struck against object, n.e.c.		1.008		**Struck against object, n.e.c.**		1.008	
Forklift, n.e.c.	0.01%		8.19179E-05	Forklift, n.e.c.	0.01%		8.19179E-05
Forklift, uns.	0.02%		0.000163836	Forklift, uns.	0.02%		0.000163836
Struck against stationary object		1.012		**Struck against stationary object**		1.012	
Forklift, uns.	0.02%		0.000246672	Forklift, uns.	0.02%		0.000246672
Struck by falling object		1.046		**Struck by falling object**		1.046	
Forklift, uns.	0.02%		0.000169959	Forklift, uns.	0.02%		0.000169959
Struck by object, n.e.c.		1.013		**Struck by object, n.e.c.**		1.013	
Forklift, uns.	0.02%		0.000164691	Forklift, uns.	0.02%		0.000164691
Struck by rolling, sliding or falling objects on floor or ground level		1.000		**Struck by rolling, sliding or falling objects on floor or ground level**		1.000	
Forklift, uns.	0.02%		0.000162536	Forklift, uns.	0.02%		0.000162536
Struck by slipping handheld object		1.025		**Struck by slipping handheld object**		1.025	
Forklift, n.e.c.	0.01%		8.32638E-05	Forklift, n.e.c.	0.01%		8.32638E-05
Sudden start or stop, n.e.c.		1.000		**Sudden start or stop, n.e.c.**		1.000	
Forklift, uns.	0.02%		0.000243803	Forklift, uns.	0.02%		0.000243803
Vehicle, mobile equipment struck stationary object		1.000		**Vehicle, mobile equipment struck stationary object**		1.000	
Forklift, uns.	0.02%		0.000243803	Forklift, uns.	0.02%		0.000243803

Process Step 9

Attach Walls

Resources

Carpenter 1

Risks

Event Exposure/Source of Injury Combination	Frequency (%)	Severity Factor	Frequency * Severity
	1.01%	1.027021047	1.03%
Bodily reaction and exertion, n.e.c.		1.000	
Cranes -- mobile, truck, rail mounted	0.01%		8.12678E-05
Caught in or compressed by equipment or objects, n.e.c.		1.150	
Cranes -- mobile, truck, rail mounted	0.01%		9.34213E-05
Compressed or pinched by rolling, sliding, or shifting objects		1.314	
Cranes -- mobile, truck, rail mounted	0.01%		0.000106809
Struck against object, n.e.c.		1.008	
Cranes -- mobile, truck, rail mounted	0.01%		8.19179E-05
Struck against stationary object		1.012	
Cranes -- mobile, truck, rail mounted	0.01%		8.22239E-05
Struck by falling object		1.046	
Cranes -- mobile, truck, rail mounted	0.01%		8.49795E-05
Caught in or compressed by equipment or objects, uns.		1.120	
Nail guns -- powered	0.01%		9.10199E-05
Contact with objects and equipment, uns.		1.021	
Nails, brads, tacks	0.02%		0.000166018
Fall onto or against objects		1.005	
Nails, brads, tacks	0.02%		0.000163365
Overexertion in carrying, turning, wielding objects		1.000	
Nail guns -- powered	0.01%		8.12678E-05
Stepped on object		1.000	
Nails, brads, tacks	0.02%		0.000243803
Struck against object, uns.		1.000	
Nails, brads, tacks	0.02%		0.000162536
Struck against stationary object		1.012	
Nails, brads, tacks	0.02%		0.000164448
Struck by discharged object or substance		1.013	
Nail guns -- powered	0.02%		0.000164593
Nails, brads, tacks	0.67%	83	0.006830608
Struck by dislodged flying object, particle		1.019	
Nails, brads, tacks	0.01%		8.27868E-05
Struck by falling object		1.046	
Nail guns -- powered	0.02%		0.000254939
Nails, brads, tacks	0.01%		8.49795E-05
Struck by flying object, n.e.c.		1.000	
Nails, brads, tacks	0.04%		0.000406339
Struck by object, n.e.c.		1.013	
Nails, brads, tacks	0.03%		0.000329382
Struck by object, uns.		1.013	
Nails, brads, tacks	0.01%		8.22965E-05
Struck by slipping handheld object		1.025	
Nails, brads, tacks	0.01%		8.32638E-05
Compressed or pinched by rolling, sliding, or shifting objects		1.314	
Wood, lumber, n.e.c.	0.02%		0.000213618
Wood, lumber, uns.	0.02%		0.000213618

Carpenter 2

Event Exposure/Source of Injury Combination	Frequency (%)	Severity Factor	Frequency * Severity
	0.08%	1.17864159	0.10%
Bodily reaction and exertion, n.e.c.		1.000	
Cranes -- mobile, truck, rail mounted	0.01%		8.12678E-05
Caught in or compressed by equipment or objects, n.e.c.		1.150	
Cranes -- mobile, truck, rail mounted	0.01%		9.34213E-05
Compressed or pinched by rolling, sliding, or shifting objects		1.314	
Cranes -- mobile, truck, rail mounted	0.01%		0.000106809
Struck against object, n.e.c.		1.008	
Cranes -- mobile, truck, rail mounted	0.01%		8.19179E-05
Struck against stationary object		1.012	
Cranes -- mobile, truck, rail mounted	0.01%		8.22239E-05
Struck by falling object		1.046	
Cranes -- mobile, truck, rail mounted	0.01%		8.49795E-05
Compressed or pinched by rolling, sliding, or shifting objects		1.314	
Wood, lumber, n.e.c.	0.02%		0.000213618
Wood, lumber, uns.	0.02%		0.000213618

Carpenter 3

Event Exposure/Source of Injury Combination	Frequency (%)	Severity Factor	Frequency * Severity
	0.08%	1.17864159	0.10%
Bodily reaction and exertion, n.e.c.		1.000	
Cranes -- mobile, truck, rail mounted	0.01%		8.12678E-05
Caught in or compressed by equipment or objects, n.e.c.		1.150	
Cranes -- mobile, truck, rail mounted	0.01%		9.34213E-05
Compressed or pinched by rolling, sliding, or shifting objects		1.314	
Cranes -- mobile, truck, rail mounted	0.01%		0.000106809
Struck against object, n.e.c.		1.008	
Cranes -- mobile, truck, rail mounted	0.01%		8.19179E-05
Struck against stationary object		1.012	
Cranes -- mobile, truck, rail mounted	0.01%		8.22239E-05
Struck by falling object		1.046	
Cranes -- mobile, truck, rail mounted	0.01%		8.49795E-05
Compressed or pinched by rolling, sliding, or shifting objects		1.314	
Wood, lumber, n.e.c.	0.02%		0.000213618
Wood, lumber, uns.	0.02%		0.000213618

Process Step 10

Attach Roof

Resources

Risks

Carpenter 1

Event Exposure/Source of Injury Combination	Frequency (%)	Severity Factor	Frequency * Severity
	1.01%	1.027021047	1.03%
Bodily reaction and exertion, n.e.c.		1.000	
Cranes -- mobile, truck, rail mounted	0.01%		8.12678E-05
Caught in or compressed by equipment or objects, n.e.c.		1.150	
Cranes -- mobile, truck, rail mounted	0.01%		9.34213E-05
Compressed or pinched by rolling, sliding, or shifting objects		1.314	
Cranes -- mobile, truck, rail mounted	0.01%		0.000106809
Struck against object, n.e.c.		1.008	
Cranes -- mobile, truck, rail mounted	0.01%		8.19179E-05
Struck against stationary object		1.012	
Cranes -- mobile, truck, rail mounted	0.01%		8.22239E-05
Struck by falling object		1.046	
Cranes -- mobile, truck, rail mounted	0.01%		8.49795E-05
Caught in or compressed by equipment or objects, uns.		1.120	
Nail guns -- powered	0.01%		9.10199E-05
Contact with objects and equipment, uns.		1.021	
Nails, brads, tacks	0.02%		0.000166018
Fall onto or against objects		1.005	
Nails, brads, tacks	0.02%		0.000163365
Overexertion in carrying, turning, wielding objects		1.000	
Nail guns -- powered	0.01%		8.12678E-05
Stepped on object		1.000	
Nails, brads, tacks	0.02%		0.000243803
Struck against object, uns.		1.000	
Nails, brads, tacks	0.02%		0.000162536
Struck against stationary object		1.012	
Nails, brads, tacks	0.02%		0.000164448
Struck by discharged object or substance		1.013	
Nail guns -- powered	0.02%		0.000164593
Nails, brads, tacks	0.67%		0.006830608
Struck by dislodged flying object, particle		1.019	
Nails, brads, tacks	0.01%		8.27868E-05
Struck by falling object		1.046	
Nail guns -- powered	0.02%		0.000254939
Nails, brads, tacks	0.01%		8.49795E-05
Struck by flying object, n.e.c.		1.000	
Nails, brads, tacks	0.04%		0.000406339
Struck by object, n.e.c.		1.013	
Nails, brads, tacks	0.03%		0.000329382
Struck by object, uns.		1.013	
Nails, brads, tacks	0.01%		8.22965E-05
Struck by slipping handheld object		1.025	
Nails, brads, tacks	0.01%		8.32638E-05
Compressed or pinched by rolling, sliding, or shifting objects		1.314	
Wood, lumber, n.e.c.	0.02%		0.000213618
Wood, lumber, uns.	0.02%		0.000213618

Carpenter 2

Event Exposure/Source of Injury Combination	Frequency (%)	Severity Factor	Frequency * Severity
	0.08%	1.17864159	0.10%
Bodily reaction and exertion, n.e.c.		1.000	
Cranes -- mobile, truck, rail mounted	0.01%		8.12678E-05
Caught in or compressed by equipment or objects, n.e.c.		1.150	
Cranes -- mobile, truck, rail mounted	0.01%		9.34213E-05
Compressed or pinched by rolling, sliding, or shifting objects		1.314	
Cranes -- mobile, truck, rail mounted	0.01%		0.000106809
Struck against object, n.e.c.		1.008	
Cranes -- mobile, truck, rail mounted	0.01%		8.19179E-05
Struck against stationary object		1.012	
Cranes -- mobile, truck, rail mounted	0.01%		8.22239E-05
Struck by falling object		1.046	
Cranes -- mobile, truck, rail mounted	0.01%		8.49795E-05
Compressed or pinched by rolling, sliding, or shifting objects		1.314	
Wood, lumber, n.e.c.	0.02%		0.000213618
Wood, lumber, uns.	0.02%		0.000213618

Carpenter 3

Event Exposure/Source of Injury Combination	Frequency (%)	Severity Factor	Frequency * Severity
	0.08%	1.17864159	0.10%
Bodily reaction and exertion, n.e.c.		1.000	
Cranes -- mobile, truck, rail mounted	0.01%		8.12678E-05
Caught in or compressed by equipment or objects, n.e.c.		1.150	
Cranes -- mobile, truck, rail mounted	0.01%		9.34213E-05
Compressed or pinched by rolling, sliding, or shifting objects		1.314	
Cranes -- mobile, truck, rail mounted	0.01%		0.000106809
Struck against object, n.e.c.		1.008	
Cranes -- mobile, truck, rail mounted	0.01%		8.19179E-05
Struck against stationary object		1.012	
Cranes -- mobile, truck, rail mounted	0.01%		8.22239E-05
Struck by falling object		1.046	
Cranes -- mobile, truck, rail mounted	0.01%		8.49795E-05
Compressed or pinched by rolling, sliding, or shifting objects		1.314	
Wood, lumber, n.e.c.	0.02%		0.000213618
Wood, lumber, uns.	0.02%		0.000213618

Process Step 11							
1st Layer Insulation							
Resources							
Carpenter 1				Carpenter 2			
Risks							
	Frequency (%)	Severity Factor	Frequency * Severity		Frequency (%)	Severity Factor	Frequency * Severity
Event Exposure/Source of Injury Combination	10.87%	1.009711126	10.98%	Event Exposure/Source of Injury Combination	10.87%	1.009711126	10.98%
Contact with objects and equipment, n.e.c.		1.000		**Contact with objects and equipment, n.e.c.**		1.000	
Cutting handtools -- nonpowered, n.e.c.	0.01%		8.12678E-05	Cutting handtools -- nonpowered, n.e.c.	0.01%		8.12678E-05
Knives	0.06%		0.000568874	Knives	0.06%		0.000568874
Contact with objects and equipment, uns.		1.021		**Contact with objects and equipment, uns.**		1.021	
Knives	0.11%		0.00107912	Knives	0.11%		0.00107912
Overexertion, n.e.c.		1.000		**Overexertion, n.e.c.**		1.000	
Cutting handtools -- nonpowered, n.e.c.	0.01%		8.12678E-05	Cutting handtools -- nonpowered, n.e.c.	0.01%		8.12678E-05
Cutting handtools -- power not determined, uns.	0.01%		8.12678E-05	Cutting handtools -- power not determined, uns.	0.01%		8.12678E-05
Overexertion, uns.		1.000		**Overexertion, uns.**		1.000	
Knives	0.01%		8.12678E-05	Knives	0.01%		8.12678E-05
Struck against moving object		1.000		**Struck against moving object**		1.000	
Knives	0.02%		0.000162536	Knives	0.02%		0.000162536
Struck against object, n.e.c.		1.008		**Struck against object, n.e.c.**		1.008	
Cutting handtools -- nonpowered, n.e.c.	0.01%		8.19179E-05	Cutting handtools -- nonpowered, n.e.c.	0.01%		8.19179E-05
Cutting handtools -- nonpowered, uns.	0.01%		8.19179E-05	Cutting handtools -- nonpowered, uns.	0.01%		8.19179E-05
Knives	0.05%		0.000491508	Knives	0.05%		0.000491508
Struck against stationary object		1.012		**Struck against stationary object**		1.012	
Cutting handtools -- nonpowered, n.e.c.	0.01%		8.22239E-05	Cutting handtools -- nonpowered, n.e.c.	0.01%		8.22239E-05
Struck by discharged object or substance		1.013		**Struck by discharged object or substance**		1.013	
Knives	0.01%		8.22965E-05	Knives	0.01%		8.22965E-05
Struck by falling object		1.046		**Struck by falling object**		1.046	
Knives	0.01%		8.49795E-05	Knives	0.01%		8.49795E-05
Struck by object, n.e.c.		1.013		**Struck by object, n.e.c.**		1.013	
Knives	0.24%		0.002470368	Knives	0.24%		0.002470368
Struck by object, uns.		1.013		**Struck by object, uns.**		1.013	
Cutting handtools -- nonpowered, uns.	0.01%		8.22965E-05	Cutting handtools -- nonpowered, uns.	0.01%		8.22965E-05
Knives	0.05%		0.000493779	Knives	0.05%		0.000493779
Struck by slipping handheld object		1.025		**Struck by slipping handheld object**		1.025	
Cutting handtools -- nonpowered, n.e.c.	0.02%		0.000166528	Cutting handtools -- nonpowered, n.e.c.	0.02%		0.000166528
Cutting handtools -- nonpowered, uns.	0.01%		8.32638E-05	Cutting handtools -- nonpowered, uns.	0.01%		8.32638E-05
Knives	1.02%		0.010491242	Knives	1.02%		0.010491242
Bending, climbing, crawling, reaching, twisting		1.000		**Bending, climbing, crawling, reaching, twisting**		1.000	
Bodily conditions of injured, ill worker	0.01%		8.12678E-05	Bodily conditions of injured, ill worker	0.01%		8.12678E-05
Bodily motion or position of injured, ill worker	6.14%		0.06143844	Bodily motion or position of injured, ill worker	6.14%		0.06143844

Overexertion in lifting (object) and turning (body)		1.000	
Fiberglass insulation	0.01%		8.12678E-05
Overexertion, uns.		1.000	
Tars, sealants, caulking, insulation, n.e.c.	0.01%		8.12678E-05
Rubbed or abraded by foreign matter in eye		1.000	
Tars, sealants, caulking, insulation, uns.	0.01%		8.12678E-05
Bodily reaction and exertion, n.e.c.		1.000	
Scaffolds -- staging, uns.	0.05%		0.000487607
Caught in or compressed by equipment or objects, n.e.c.		1.150	
Scaffolds -- staging, n.e.c.	0.02%		0.000186843
Scaffolds -- staging, uns.	0.02%		0.000280264
Caught in or compressed by equipment or objects, uns.		1.120	
Scaffolds -- staging, uns.	0.01%		9.10199E-05
Fall from scaffold, staging, platform		1.061	
Scaffolds -- staging, uns.	0.01%		8.61931E-05
Fall onto or against objects		1.005	
Scaffolds -- staging, n.e.c.	0.02%		0.000163365
Scaffolds -- staging, uns.	0.03%		0.00032673
Fall to floor, walkway, or other surface		1.003	
Scaffolds -- staging, uns.	0.01%		8.15299E-05
Fall, n.e.c.		1.000	
Scaffolds -- staging, uns.	0.01%		8.12678E-05
Fall, uns.		1.045	
Scaffolds -- staging, uns.	0.01%		8.49618E-05
Overexertion in carrying, turning, wielding objects		1.000	
Scaffolds -- staging, uns.	0.02%		0.000243803
Overexertion in lifting		1.001	
Scaffolds -- self-supporting staging	0.01%		8.13806E-05
Scaffolds -- staging, uns.	0.05%		0.000488284
Overexertion in lifting (object) and turning (body)		1.000	
Scaffolds -- staging, uns.	0.02%		0.000243803
Overexertion in lifting and turning (object)		1.000	
Scaffolds -- staging, uns.	0.01%		8.12678E-05
Overexertion in pulling or pushing objects		1.000	
Scaffolds -- staging supported by structure or other means	0.01%		8.12678E-05
Scaffolds -- staging, uns.	0.02%		0.000162536
Struck against stationary object		1.012	
Scaffolds -- staging supported by structure or other means	0.01%		8.22239E-05
Scaffolds -- staging, n.e.c.	0.01%		8.22239E-05
Scaffolds -- staging, uns.	0.06%		0.000575567
Struck by falling object		1.046	
Scaffolds -- improvised staging	0.01%		8.49795E-05
Scaffolds -- staging, uns.	0.02%		0.000169959
Struck by rolling, sliding or falling objects on floor or ground level		1.000	
Scaffolds -- staging, uns.	0.01%		8.12678E-05
Fall from scaffold, staging, platform		1.061	
Floor of building	0.14%		0.001465283
Floor of scaffold, staging, or temporary work platform	0.02%		0.000258579
Floor, n.e.c.	0.01%		8.61931E-05
Floor, uns.	0.06%		0.000603352
Floors, walkways, ground surfaces, n.e.c.	0.02%		0.000258579
Floors, walkways, ground surfaces, uns.	0.24%		0.0024996
Ground	0.30%		0.003189145

Overexertion in lifting (object) and turning (body)		1.000	
Fiberglass insulation	0.01%		8.12678E-05
Overexertion, uns.		1.000	
Tars, sealants, caulking, insulation, n.e.c.	0.01%		8.12678E-05
Rubbed or abraded by foreign matter in eye		1.000	
Tars, sealants, caulking, insulation, uns.	0.01%		8.12678E-05
Bodily reaction and exertion, n.e.c.		1.000	
Scaffolds -- staging, uns.	0.05%		0.000487607
Caught in or compressed by equipment or objects, n.e.c.		1.150	
Scaffolds -- staging, n.e.c.	0.02%		0.000186843
Scaffolds -- staging, uns.	0.02%		0.000280264
Caught in or compressed by equipment or objects, uns.		1.120	
Scaffolds -- staging, uns.	0.01%		9.10199E-05
Fall from scaffold, staging, platform		1.061	
Scaffolds -- staging, uns.	0.01%		8.61931E-05
Fall onto or against objects		1.005	
Scaffolds -- staging, n.e.c.	0.02%		0.000163365
Scaffolds -- staging, uns.	0.03%		0.00032673
Fall to floor, walkway, or other surface		1.003	
Scaffolds -- staging, uns.	0.01%		8.15299E-05
Fall, n.e.c.		1.000	
Scaffolds -- staging, uns.	0.01%		8.12678E-05
Fall, uns.		1.045	
Scaffolds -- staging, uns.	0.01%		8.49618E-05
Overexertion in carrying, turning, wielding objects		1.000	
Scaffolds -- staging, uns.	0.02%		0.000243803
Overexertion in lifting		1.001	
Scaffolds -- self-supporting staging	0.01%		8.13806E-05
Scaffolds -- staging, uns.	0.05%		0.000488284
Overexertion in lifting (object) and turning (body)		1.000	
Scaffolds -- staging, uns.	0.02%		0.000243803
Overexertion in lifting and turning (object)		1.000	
Scaffolds -- staging, uns.	0.01%		8.12678E-05
Overexertion in pulling or pushing objects		1.000	
Scaffolds -- staging supported by structure or other means	0.01%		8.12678E-05
Scaffolds -- staging, uns.	0.02%		0.000162536
Struck against stationary object		1.012	
Scaffolds -- staging supported by structure or other means	0.01%		8.22239E-05
Scaffolds -- staging, n.e.c.	0.01%		8.22239E-05
Scaffolds -- staging, uns.	0.06%		0.000575567
Struck by falling object		1.046	
Scaffolds -- improvised staging	0.01%		8.49795E-05
Scaffolds -- staging, uns.	0.02%		0.000169959
Struck by rolling, sliding or falling objects on floor or ground level		1.000	
Scaffolds -- staging, uns.	0.01%		8.12678E-05
Fall from scaffold, staging, platform		1.061	
Floor of building	0.14%		0.001465283
Floor of scaffold, staging, or temporary work platform	0.02%		0.000258579
Floor, n.e.c.	0.01%		8.61931E-05
Floor, uns.	0.06%		0.000603352
Floors, walkways, ground surfaces, n.e.c.	0.02%		0.000258579
Floors, walkways, ground surfaces, uns.	0.24%		0.0024996
Ground	0.30%		0.003189145

Fall to lower level, n.e.c.		1.000		**Fall to lower level, n.e.c.**		1.000	
Floor of building	0.15%		0.001544088	Floor of building	0.15%		0.001544088
Floor, n.e.c.	0.01%		8.12678E-05	Floor, n.e.c.	0.01%		8.12678E-05
Floor, uns.	0.03%		0.000325071	Floor, uns.	0.03%		0.000325071
Floors, walkways, ground surfaces, n.e.c.	0.01%		8.12678E-05	Floors, walkways, ground surfaces, n.e.c.	0.01%		8.12678E-05
Floors, walkways, ground surfaces, uns.	0.13%		0.001300284	Floors, walkways, ground surfaces, uns.	0.13%		0.001300284
Ground	0.17%		0.001706623	Ground	0.17%		0.001706623
Floor of scaffold, staging, or temporary work platform	0.01%		8.12678E-05	Floor of scaffold, staging, or temporary work platform	0.01%		8.12678E-05
Fall to floor, walkway, or other surface		1.003		**Fall to floor, walkway, or other surface**		1.003	
Floor of scaffold, staging, or temporary work platform	0.04%		0.00040765	Floor of scaffold, staging, or temporary work platform	0.04%		0.00040765
Fall onto or against objects		1.005		**Fall onto or against objects**		1.005	
Floor of scaffold, staging, or temporary work platform	0.02%		0.000163365	Floor of scaffold, staging, or temporary work platform	0.02%		0.000163365
Caught in or compressed by equipment or objects, n.e.c.		1.150		**Caught in or compressed by equipment or objects, n.e.c.**		1.150	
Floor of scaffold, staging, or temporary work platform	0.01%		9.34213E-05	Floor of scaffold, staging, or temporary work platform	0.01%		9.34213E-05
Fall to lower level, uns.		1.077		**Fall to lower level, uns.**		1.077	
Floor of building	0.02%		0.000175038	Floor of building	0.02%		0.000175038
Floor of scaffold, staging, or temporary work platform	0.01%		8.75191E-05	Floor of scaffold, staging, or temporary work platform	0.01%		8.75191E-05
Floors, walkways, ground surfaces, uns.	0.06%		0.000612634	Floors, walkways, ground surfaces, uns.	0.06%		0.000612634
Ground	0.02%		0.000262557	Ground	0.02%		0.000262557
Fall, n.e.c.		1.000		**Fall, n.e.c.**		1.000	
Floor of scaffold, staging, or temporary work platform	0.01%		8.12678E-05	Floor of scaffold, staging, or temporary work platform	0.01%		8.12678E-05
Jump from scaffold, platform, loading dock		1.000		**Jump from scaffold, platform, loading dock**		1.000	
Floor of building	0.02%		0.000162536	Floor of building	0.02%		0.000162536
Ground	0.02%		0.000162536	Ground	0.02%		0.000162536
Jump to lower level, n.e.c.		1.000		**Jump to lower level, n.e.c.**		1.000	
Floor of building	0.04%		0.000406339	Floor of building	0.04%		0.000406339
Floor, uns.	0.01%		8.12678E-05	Floor, uns.	0.01%		8.12678E-05
Floors, walkways, ground surfaces, uns.	0.01%		8.12678E-05	Floors, walkways, ground surfaces, uns.	0.01%		8.12678E-05
Ground	0.03%		0.000325071	Ground	0.03%		0.000325071
Jump to lower level, uns.		1.000		**Jump to lower level, uns.**		1.000	
Floor of building	0.01%		8.12678E-05	Floor of building	0.01%		8.12678E-05
Floor of scaffold, staging, or temporary work platform	0.01%		8.12678E-05	Floor of scaffold, staging, or temporary work platform	0.01%		8.12678E-05
Floors, walkways, ground surfaces, uns.	0.01%		8.12678E-05	Floors, walkways, ground surfaces, uns.	0.01%		8.12678E-05
Struck against stationary object		1.012		**Struck against stationary object**		1.012	
Floor of scaffold, staging, or temporary work platform	0.01%		8.22239E-05	Floor of scaffold, staging, or temporary work platform	0.01%		8.22239E-05
Struck by falling object		1.046		**Struck by falling object**		1.046	
Floor of scaffold, staging, or temporary work platform	0.02%		0.000169959	Floor of scaffold, staging, or temporary work platform	0.02%		0.000169959
Bodily reaction and exertion, n.e.c.		1.000		**Bodily reaction and exertion, n.e.c.**		1.000	
Stairs, steps -- indoors	0.02%		0.000162536	Stairs, steps -- indoors	0.02%		0.000162536
Stairs, steps, n.e.c.	0.01%		8.12678E-05	Stairs, steps, n.e.c.	0.01%		8.12678E-05
Caught in or compressed by equipment or objects, n.e.c.		1.150		**Caught in or compressed by equipment or objects, n.e.c.**		1.150	
Stairs, steps, n.e.c.	0.01%		9.34213E-05	Stairs, steps, n.e.c.	0.01%		9.34213E-05
Stairs, steps, uns.	0.01%		9.34213E-05	Stairs, steps, uns.	0.01%		9.34213E-05
Fall down stairs or steps		1.000		**Fall down stairs or steps**		1.000	
Stairs, steps -- indoors	0.12%		0.001219017	Stairs, steps -- indoors	0.12%		0.001219017
Stairs, steps, n.e.c.	0.02%		0.000243803	Stairs, steps, n.e.c.	0.02%		0.000243803
Stairs, steps, uns.	0.26%		0.002600569	Stairs, steps, uns.	0.26%		0.002600569

Fall on same level, n.e.c.		1.000		**Fall on same level, n.e.c.**		1.000	
Stairs, steps, uns.	0.01%		8.12678E-05	Stairs, steps, uns.	0.01%		8.12678E-05
Fall onto or against objects		1.005		**Fall onto or against objects**		1.005	
Stairs, steps -- indoors	0.02%		0.000163365	Stairs, steps -- indoors	0.02%		0.000163365
Stairs, steps, n.e.c.	0.01%		8.16824E-05	Stairs, steps, n.e.c.	0.01%		8.16824E-05
Stairs, steps, uns.	0.05%		0.000490094	Stairs, steps, uns.	0.05%		0.000490094
Fall to floor, walkway, or other surface		1.003		**Fall to floor, walkway, or other surface**		1.003	
Stairs, steps -- indoors	0.02%		0.00016306	Stairs, steps -- indoors	0.02%		0.00016306
Stairs, steps, uns.	0.07%		0.000652239	Stairs, steps, uns.	0.07%		0.000652239
Fall, n.e.c.		1.000		**Fall, n.e.c.**		1.000	
Stairs, steps, uns.	0.01%		8.12678E-05	Stairs, steps, uns.	0.01%		8.12678E-05
Fall, uns.		1.045		**Fall, uns.**		1.045	
Stairs, steps, uns.	0.01%		8.49618E-05	Stairs, steps, uns.	0.01%		8.49618E-05
Overexertion in lifting		1.001		**Overexertion in lifting**		1.001	
Stairs, steps, n.e.c.	0.01%		8.13806E-05	Stairs, steps, n.e.c.	0.01%		8.13806E-05
Stairs, steps, uns.	0.01%		8.13806E-05	Stairs, steps, uns.	0.01%		8.13806E-05
Overexertion in pulling or pushing objects		1.000		**Overexertion in pulling or pushing objects**		1.000	
Stairs, steps, uns.	0.01%		8.12678E-05	Stairs, steps, uns.	0.01%		8.12678E-05
Struck against stationary object		1.012		**Struck against stationary object**		1.012	
Stairs, steps -- indoors	0.03%		0.000328895	Stairs, steps -- indoors	0.03%		0.000328895
Stairs, steps, n.e.c.	0.01%		8.22239E-05	Stairs, steps, n.e.c.	0.01%		8.22239E-05
Stairs, steps, uns.	0.02%		0.000164448	Stairs, steps, uns.	0.02%		0.000164448
Fall down stairs or steps		1.000		**Fall down stairs or steps**		1.000	
Floor of building	0.09%		0.000893946	Floor of building	0.09%		0.000893946
Floor, n.e.c.	0.01%		8.12678E-05	Floor, n.e.c.	0.01%		8.12678E-05
Floor, uns.	0.02%		0.000243803	Floor, uns.	0.02%		0.000243803
Floors, walkways, ground surfaces, uns.	0.11%		0.001056481	Floors, walkways, ground surfaces, uns.	0.11%		0.001056481
Ground	0.04%		0.000406339	Ground	0.04%		0.000406339

Process Step 12							
Complete Insulation							
Resources							
Carpenter 1				Carpenter 2			
Risks							
Event Exposure/Source of Injury Combination	**Frequency (%)**	**Severity Factor**	**Frequency * Severity**	**Event Exposure/Source of Injury Combination**	**Frequency (%)**	**Severity Factor**	**Frequency * Severity**
	10.87%	1.009711126	10.98%		10.87%	1.009711126	10.98%
Contact with objects and equipment, n.e.c.		1.000		**Contact with objects and equipment, n.e.c.**		1.000	
Cutting handtools -- nonpowered, n.e.c.	0.01%		8.12678E-05	Cutting handtools -- nonpowered, n.e.c.	0.01%		8.12678E-05
Knives	0.06%		0.000568874	Knives	0.06%		0.000568874
Contact with objects and equipment, uns.		1.021		**Contact with objects and equipment, uns.**		1.021	
Knives	0.11%		0.00107912	Knives	0.11%		0.00107912
Overexertion, n.e.c.		1.000		**Overexertion, n.e.c.**		1.000	
Cutting handtools -- nonpowered, n.e.c.	0.01%		8.12678E-05	Cutting handtools -- nonpowered, n.e.c.	0.01%		8.12678E-05
Cutting handtools -- power not determined, uns.	0.01%		8.12678E-05	Cutting handtools -- power not determined, uns.	0.01%		8.12678E-05
Overexertion, uns.		1.000		**Overexertion, uns.**		1.000	
Knives	0.01%		8.12678E-05	Knives	0.01%		8.12678E-05
Struck against moving object		1.000		**Struck against moving object**		1.000	
Knives	0.02%		0.000162536	Knives	0.02%		0.000162536
Struck against object, n.e.c.		1.008		**Struck against object, n.e.c.**		1.008	
Cutting handtools -- nonpowered, n.e.c.	0.01%		8.19179E-05	Cutting handtools -- nonpowered, n.e.c.	0.01%		8.19179E-05
Cutting handtools -- nonpowered, uns.	0.01%		8.19179E-05	Cutting handtools -- nonpowered, uns.	0.01%		8.19179E-05
Knives	0.05%		0.000491508	Knives	0.05%		0.000491508
Struck against stationary object		1.012		**Struck against stationary object**		1.012	
Cutting handtools -- nonpowered, n.e.c.	0.01%		8.22239E-05	Cutting handtools -- nonpowered, n.e.c.	0.01%		8.22239E-05
Struck by discharged object or substance		1.013		**Struck by discharged object or substance**		1.013	
Knives	0.01%		8.22965E-05	Knives	0.01%		8.22965E-05
Struck by falling object		1.046		**Struck by falling object**		1.046	
Knives	0.01%		8.49795E-05	Knives	0.01%		8.49795E-05
Struck by object, n.e.c.		1.013		**Struck by object, n.e.c.**		1.013	
Knives	0.24%		0.002470368	Knives	0.24%		0.002470368
Struck by object, uns.		1.013		**Struck by object, uns.**		1.013	
Cutting handtools -- nonpowered, uns.	0.01%		8.22965E-05	Cutting handtools -- nonpowered, uns.	0.01%		8.22965E-05
Knives	0.05%		0.000493779	Knives	0.05%		0.000493779
Struck by slipping handheld object		1.025		**Struck by slipping handheld object**		1.025	
Cutting handtools -- nonpowered, n.e.c.	0.02%		0.000166528	Cutting handtools -- nonpowered, n.e.c.	0.02%		0.000166528
Cutting handtools -- nonpowered, uns.	0.01%		8.32638E-05	Cutting handtools -- nonpowered, uns.	0.01%		8.32638E-05
Knives	1.02%		0.010491242	Knives	1.02%		0.010491242
Bending, climbing, crawling, reaching, twisting		1.000		**Bending, climbing, crawling, reaching, twisting**		1.000	
Bodily conditions of injured, ill worker	0.01%		8.12678E-05	Bodily conditions of injured, ill worker	0.01%		8.12678E-05
Bodily motion or position of injured, ill worker	6.14%		0.06143844	Bodily motion or position of injured, ill worker	6.14%		0.06143844

Overexertion in lifting (object) and turning (body)		1.000		**Overexertion in lifting (object) and turning (body)**		1.000	
Fiberglass insulation	0.01%		8.12678E-05	Fiberglass insulation	0.01%		8.12678E-05
Overexertion, uns.		1.000		**Overexertion, uns.**		1.000	
Tars, sealants, caulking, insulation, n.e.c.	0.01%		8.12678E-05	Tars, sealants, caulking, insulation, n.e.c.	0.01%		8.12678E-05
Rubbed or abraded by foreign matter in eye		1.000		**Rubbed or abraded by foreign matter in eye**		1.000	
Tars, sealants, caulking, insulation, uns.	0.01%		8.12678E-05	Tars, sealants, caulking, insulation, uns.	0.01%		8.12678E-05
Bodily reaction and exertion, n.e.c.		1.000		**Bodily reaction and exertion, n.e.c.**		1.000	
Scaffolds -- staging, uns.	0.05%		0.000487607	Scaffolds -- staging, uns.	0.05%		0.000487607
Caught in or compressed by equipment or objects, n.e.c.		1.150		**Caught in or compressed by equipment or objects, n.e.c.**		1.150	
Scaffolds -- staging, n.e.c.	0.02%		0.000186843	Scaffolds -- staging, n.e.c.	0.02%		0.000186843
Scaffolds -- staging, uns.	0.02%		0.000280264	Scaffolds -- staging, uns.	0.02%		0.000280264
Caught in or compressed by equipment or objects, uns.		1.120		**Caught in or compressed by equipment or objects, uns.**		1.120	
Scaffolds -- staging, uns.	0.01%		9.10199E-05	Scaffolds -- staging, uns.	0.01%		9.10199E-05
Fall from scaffold, staging, platform		1.061		**Fall from scaffold, staging, platform**		1.061	
Scaffolds -- staging, uns.	0.01%		8.61931E-05	Scaffolds -- staging, uns.	0.01%		8.61931E-05
Fall onto or against objects		1.005		**Fall onto or against objects**		1.005	
Scaffolds -- staging, n.e.c.	0.02%		0.000163365	Scaffolds -- staging, n.e.c.	0.02%		0.000163365
Scaffolds -- staging, uns.	0.03%		0.00032673	Scaffolds -- staging, uns.	0.03%		0.00032673
Fall to floor, walkway, or other surface		1.003		**Fall to floor, walkway, or other surface**		1.003	
Scaffolds -- staging, uns.	0.01%		8.15299E-05	Scaffolds -- staging, uns.	0.01%		8.15299E-05
Fall, n.e.c.		1.000		**Fall, n.e.c.**		1.000	
Scaffolds -- staging, uns.	0.01%		8.12678E-05	Scaffolds -- staging, uns.	0.01%		8.12678E-05
Fall, uns.		1.045		**Fall, uns.**		1.045	
Scaffolds -- staging, uns.	0.01%		8.49618E-05	Scaffolds -- staging, uns.	0.01%		8.49618E-05
Overexertion in carrying, turning, wielding objects		1.000		**Overexertion in carrying, turning, wielding objects**		1.000	
Scaffolds -- staging, uns.	0.02%		0.000243803	Scaffolds -- staging, uns.	0.02%		0.000243803
Overexertion in lifting		1.001		**Overexertion in lifting**		1.001	
Scaffolds -- self-supporting staging	0.01%		8.13806E-05	Scaffolds -- self-supporting staging	0.01%		8.13806E-05
Scaffolds -- staging, uns.	0.05%		0.000488284	Scaffolds -- staging, uns.	0.05%		0.000488284
Overexertion in lifting (object) and turning (body)		1.000		**Overexertion in lifting (object) and turning (body)**		1.000	
Scaffolds -- staging, uns.	0.02%		0.000243803	Scaffolds -- staging, uns.	0.02%		0.000243803
Overexertion in lifting and turning (object)		1.000		**Overexertion in lifting and turning (object)**		1.000	
Scaffolds -- staging, uns.	0.01%		8.12678E-05	Scaffolds -- staging, uns.	0.01%		8.12678E-05
Overexertion in pulling or pushing objects		1.000		**Overexertion in pulling or pushing objects**		1.000	
Scaffolds -- staging supported by structure or other means	0.01%		8.12678E-05	Scaffolds -- staging supported by structure or other means	0.01%		8.12678E-05
Scaffolds -- staging, uns.	0.02%		0.000162536	Scaffolds -- staging, uns.	0.02%		0.000162536
Struck against stationary object		1.012		**Struck against stationary object**		1.012	
Scaffolds -- staging supported by structure or other means	0.01%		8.22239E-05	Scaffolds -- staging supported by structure or other means	0.01%		8.22239E-05
Scaffolds -- staging, n.e.c.	0.01%		8.22239E-05	Scaffolds -- staging, n.e.c.	0.01%		8.22239E-05
Scaffolds -- staging, uns.	0.06%		0.000575567	Scaffolds -- staging, uns.	0.06%		0.000575567
Struck by falling object		1.046		**Struck by falling object**		1.046	
Scaffolds -- improvised staging	0.01%		8.49795E-05	Scaffolds -- improvised staging	0.01%		8.49795E-05
Scaffolds -- staging, uns.	0.02%		0.000169959	Scaffolds -- staging, uns.	0.02%		0.000169959
Struck by rolling, sliding or falling objects on floor or ground level		1.000		**Struck by rolling, sliding or falling objects on floor or ground level**		1.000	
Scaffolds -- staging, uns.	0.01%		8.12678E-05	Scaffolds -- staging, uns.	0.01%		8.12678E-05

Fall from scaffold, staging, platform		1.061		**Fall from scaffold, staging, platform**		1.061	
Floor of building	0.14%		0.001465283	Floor of building	0.14%		0.001465283
Floor of scaffold, staging, or temporary work platform	0.02%		0.000258579	Floor of scaffold, staging, or temporary work platform	0.02%		0.000258579
Floor, n.e.c.	0.01%		8.61931E-05	Floor, n.e.c.	0.01%		8.61931E-05
Floor, uns.	0.06%		0.000603352	Floor, uns.	0.06%		0.000603352
Floors, walkways, ground surfaces, n.e.c.	0.02%		0.000258579	Floors, walkways, ground surfaces, n.e.c.	0.02%		0.000258579
Floors, walkways, ground surfaces, uns.	0.24%		0.0024996	Floors, walkways, ground surfaces, uns.	0.24%		0.0024996
Ground	0.30%		0.003189145	Ground	0.30%		0.003189145
Fall to lower level, n.e.c.		1.000		**Fall to lower level, n.e.c.**		1.000	
Floor of building	0.15%		0.001544088	Floor of building	0.15%		0.001544088
Floor, n.e.c.	0.01%		8.12678E-05	Floor, n.e.c.	0.01%		8.12678E-05
Floor, uns.	0.03%		0.000325071	Floor, uns.	0.03%		0.000325071
Floors, walkways, ground surfaces, n.e.c.	0.01%		8.12678E-05	Floors, walkways, ground surfaces, n.e.c.	0.01%		8.12678E-05
Floors, walkways, ground surfaces, uns.	0.13%		0.001300284	Floors, walkways, ground surfaces, uns.	0.13%		0.001300284
Ground	0.17%		0.001706623	Ground	0.17%		0.001706623
Floor of scaffold, staging, or temporary work platform	0.01%		8.12678E-05	Floor of scaffold, staging, or temporary work platform	0.01%		8.12678E-05
Fall to floor, walkway, or other surface		1.003		**Fall to floor, walkway, or other surface**		1.003	
Floor of scaffold, staging, or temporary work platform	0.04%		0.00040765	Floor of scaffold, staging, or temporary work platform	0.04%		0.00040765
Fall onto or against objects		1.005		**Fall onto or against objects**		1.005	
Floor of scaffold, staging, or temporary work platform	0.02%		0.000163365	Floor of scaffold, staging, or temporary work platform	0.02%		0.000163365
Caught in or compressed by equipment or objects, n.e.c.		1.150		**Caught in or compressed by equipment or objects, n.e.c.**		1.150	
Floor of scaffold, staging, or temporary work platform	0.01%		9.34213E-05	Floor of scaffold, staging, or temporary work platform	0.01%		9.34213E-05
Fall to lower level, uns.		1.077		**Fall to lower level, uns.**		1.077	
Floor of building	0.02%		0.000175038	Floor of building	0.02%		0.000175038
Floor of scaffold, staging, or temporary work platform	0.01%		8.75191E-05	Floor of scaffold, staging, or temporary work platform	0.01%		8.75191E-05
Floors, walkways, ground surfaces, uns.	0.06%		0.000612634	Floors, walkways, ground surfaces, uns.	0.06%		0.000612634
Ground	0.02%		0.000262557	Ground	0.02%		0.000262557
Fall, n.e.c.		1.000		**Fall, n.e.c.**		1.000	
Floor of scaffold, staging, or temporary work platform	0.01%		8.12678E-05	Floor of scaffold, staging, or temporary work platform	0.01%		8.12678E-05
Jump from scaffold, platform, loading dock		1.000		**Jump from scaffold, platform, loading dock**		1.000	
Floor of building	0.02%		0.000162536	Floor of building	0.02%		0.000162536
Ground	0.02%		0.000162536	Ground	0.02%		0.000162536
Jump to lower level, n.e.c.		1.000		**Jump to lower level, n.e.c.**		1.000	
Floor of building	0.04%		0.000406339	Floor of building	0.04%		0.000406339
Floor, uns.	0.01%		8.12678E-05	Floor, uns.	0.01%		8.12678E-05
Floors, walkways, ground surfaces, uns.	0.01%		8.12678E-05	Floors, walkways, ground surfaces, uns.	0.01%		8.12678E-05
Ground	0.03%		0.000325071	Ground	0.03%		0.000325071
Jump to lower level, uns.		1.000		**Jump to lower level, uns.**		1.000	
Floor of building	0.01%		8.12678E-05	Floor of building	0.01%		8.12678E-05
Floor of scaffold, staging, or temporary work platform	0.01%		8.12678E-05	Floor of scaffold, staging, or temporary work platform	0.01%		8.12678E-05
Floors, walkways, ground surfaces, uns.	0.01%		8.12678E-05	Floors, walkways, ground surfaces, uns.	0.01%		8.12678E-05
Struck against stationary object		1.012		**Struck against stationary object**		1.012	
Floor of scaffold, staging, or temporary work platform	0.01%		8.22239E-05	Floor of scaffold, staging, or temporary work platform	0.01%		8.22239E-05
Struck by falling object		1.046		**Struck by falling object**		1.046	
Floor of scaffold, staging, or temporary work platform	0.02%		0.000169959	Floor of scaffold, staging, or temporary work platform	0.02%		0.000169959
Bodily reaction and exertion, n.e.c.		1.000		**Bodily reaction and exertion, n.e.c.**		1.000	
Stairs, steps -- indoors	0.02%		0.000162536	Stairs, steps -- indoors	0.02%		0.000162536
Stairs, steps, n.e.c.	0.01%		8.12678E-05	Stairs, steps, n.e.c.	0.01%		8.12678E-05

Caught in or compressed by equipment or objects, n.e.c.		1.150		**Caught in or compressed by equipment or objects, n.e.c.**		1.150	
Stairs, steps, n.e.c.	0.01%		9.34213E-05	Stairs, steps, n.e.c.	0.01%		9.34213E-05
Stairs, steps, uns.	0.01%		9.34213E-05	Stairs, steps, uns.	0.01%		9.34213E-05
Fall down stairs or steps		1.000		**Fall down stairs or steps**		1.000	
Stairs, steps -- indoors	0.12%		0.001219017	Stairs, steps -- indoors	0.12%		0.001219017
Stairs, steps, n.e.c.	0.02%		0.000243803	Stairs, steps, n.e.c.	0.02%		0.000243803
Stairs, steps, uns.	0.26%		0.002600569	Stairs, steps, uns.	0.26%		0.002600569
Fall on same level, n.e.c.		1.000		**Fall on same level, n.e.c.**		1.000	
Stairs, steps, uns.	0.01%		8.12678E-05	Stairs, steps, uns.	0.01%		8.12678E-05
Fall onto or against objects		1.005		**Fall onto or against objects**		1.005	
Stairs, steps -- indoors	0.02%		0.000163365	Stairs, steps -- indoors	0.02%		0.000163365
Stairs, steps, n.e.c.	0.01%		8.16824E-05	Stairs, steps, n.e.c.	0.01%		8.16824E-05
Stairs, steps, uns.	0.05%		0.000490094	Stairs, steps, uns.	0.05%		0.000490094
Fall to floor, walkway, or other surface		1.003		**Fall to floor, walkway, or other surface**		1.003	
Stairs, steps -- indoors	0.02%		0.00016306	Stairs, steps -- indoors	0.02%		0.00016306
Stairs, steps, uns.	0.07%		0.000652239	Stairs, steps, uns.	0.07%		0.000652239
Fall, n.e.c.		1.000		**Fall, n.e.c.**		1.000	
Stairs, steps, uns.	0.01%		8.12678E-05	Stairs, steps, uns.	0.01%		8.12678E-05
Fall, uns.		1.045		**Fall, uns.**		1.045	
Stairs, steps, uns.	0.01%		8.49618E-05	Stairs, steps, uns.	0.01%		8.49618E-05
Overexertion in lifting		1.001		**Overexertion in lifting**		1.001	
Stairs, steps, n.e.c.	0.01%		8.13806E-05	Stairs, steps, n.e.c.	0.01%		8.13806E-05
Stairs, steps, uns.	0.01%		8.13806E-05	Stairs, steps, uns.	0.01%		8.13806E-05
Overexertion in pulling or pushing objects		1.000		**Overexertion in pulling or pushing objects**		1.000	
Stairs, steps, uns.	0.01%		8.12678E-05	Stairs, steps, uns.	0.01%		8.12678E-05
Struck against stationary object		1.012		**Struck against stationary object**		1.012	
Stairs, steps -- indoors	0.03%		0.000328895	Stairs, steps -- indoors	0.03%		0.000328895
Stairs, steps, n.e.c.	0.01%		8.22239E-05	Stairs, steps, n.e.c.	0.01%		8.22239E-05
Stairs, steps, uns.	0.02%		0.000164448	Stairs, steps, uns.	0.02%		0.000164448
Fall down stairs or steps		1.000		**Fall down stairs or steps**		1.000	
Floor of building	0.09%		0.000893946	Floor of building	0.09%		0.000893946
Floor, n.e.c.	0.01%		8.12678E-05	Floor, n.e.c.	0.01%		8.12678E-05
Floor, uns.	0.02%		0.000243803	Floor, uns.	0.02%		0.000243803
Floors, walkways, ground surfaces, uns.	0.11%		0.001056481	Floors, walkways, ground surfaces, uns.	0.11%		0.001056481
Ground	0.04%		0.000406339	Ground	0.04%		0.000406339

Process Step 13							
Vapour Barrier							
Resources							
Carpenter 1				Carpenter 2			
Risks							
	Frequency (%)	Severity Factor	Frequency * Severity		Frequency (%)	Severity Factor	Frequency * Severity
Event Exposure/Source of Injury Combination	10.13%	1.011125458	10.25%	Event Exposure/Source of Injury Combination	10.13%	1.011125458	10.25%
Contact with objects and equipment, n.e.c.		1.000		**Contact with objects and equipment, n.e.c.**		1.000	
Cutting handtools -- nonpowered, n.e.c.	0.01%		8.12678E-05	Cutting handtools -- nonpowered, n.e.c.	0.01%		8.12678E-05
Knives	0.06%		0.000568874	Knives	0.06%		0.000568874
Contact with objects and equipment, uns.		1.021		**Contact with objects and equipment, uns.**		1.021	
Knives	0.11%		0.00107912	Knives	0.11%		0.00107912
Overexertion, n.e.c.		1.000		**Overexertion, n.e.c.**		1.000	
Cutting handtools -- nonpowered, n.e.c.	0.01%		8.12678E-05	Cutting handtools -- nonpowered, n.e.c.	0.01%		8.12678E-05
Cutting handtools -- power not determined, uns.	0.01%		8.12678E-05	Cutting handtools -- power not determined, uns.	0.01%		8.12678E-05
Overexertion, uns.		1.000		**Overexertion, uns.**		1.000	
Knives	0.01%		8.12678E-05	Knives	0.01%		8.12678E-05
Struck against moving object		1.000		**Struck against moving object**		1.000	
Knives	0.02%		0.000162536	Knives	0.02%		0.000162536
Struck against object, n.e.c.		1.008		**Struck against object, n.e.c.**		1.008	
Cutting handtools -- nonpowered, n.e.c.	0.01%		8.19179E-05	Cutting handtools -- nonpowered, n.e.c.	0.01%		8.19179E-05
Cutting handtools -- nonpowered, uns.	0.01%		8.19179E-05	Cutting handtools -- nonpowered, uns.	0.01%		8.19179E-05
Knives	0.05%		0.000491508	Knives	0.05%		0.000491508
Struck against stationary object		1.012		**Struck against stationary object**		1.012	
Cutting handtools -- nonpowered, n.e.c.	0.01%		8.22239E-05	Cutting handtools -- nonpowered, n.e.c.	0.01%		8.22239E-05
Struck by discharged object or substance		1.013		**Struck by discharged object or substance**		1.013	
Knives	0.01%		8.22965E-05	Knives	0.01%		8.22965E-05
Struck by falling object		1.046		**Struck by falling object**		1.046	
Knives	0.01%		8.49795E-05	Knives	0.01%		8.49795E-05
Struck by object, n.e.c.		1.013		**Struck by object, n.e.c.**		1.013	
Knives	0.24%		0.002470368	Knives	0.24%		0.002470368
Struck by object, uns.		1.013		**Struck by object, uns.**		1.013	
Cutting handtools -- nonpowered, uns.	0.01%		8.22965E-05	Cutting handtools -- nonpowered, uns.	0.01%		8.22965E-05
Knives	0.05%		0.000493779	Knives	0.05%		0.000493779
Struck by slipping handheld object		1.025		**Struck by slipping handheld object**		1.025	
Cutting handtools -- nonpowered, n.e.c.	0.02%		0.000166528	Cutting handtools -- nonpowered, n.e.c.	0.02%		0.000166528
Cutting handtools -- nonpowered, uns.	0.01%		8.32638E-05	Cutting handtools -- nonpowered, uns.	0.01%		8.32638E-05
Knives	1.02%		0.010491242	Knives	1.02%		0.010491242
Bending, climbing, crawling, reaching, twisting		1.000		**Bending, climbing, crawling, reaching, twisting**		1.000	
Bodily conditions of injured, ill worker	0.01%		8.12678E-05	Bodily conditions of injured, ill worker	0.01%		8.12678E-05
Bodily motion or position of injured, ill worker	6.14%		0.06143844	Bodily motion or position of injured, ill worker	6.14%		0.06143844

Bodily reaction and exertion, n.e.c.		1.000	
Scaffolds -- staging, uns.	0.05%		0.000487607
Caught in or compressed by equipment or objects, n.e.c.		1.150	
Scaffolds -- staging, n.e.c.	0.02%		0.000186843
Scaffolds -- staging, uns.	0.02%		0.000280264
Caught in or compressed by equipment or objects, uns.		1.120	
Scaffolds -- staging, uns.	0.01%		9.10199E-05
Fall from scaffold, staging, platform		1.061	
Scaffolds -- staging, uns.	0.01%		8.61931E-05
Fall onto or against objects		1.005	
Scaffolds -- staging, n.e.c.	0.02%		0.000163365
Scaffolds -- staging, uns.	0.03%		0.00032673
Fall to floor, walkway, or other surface		1.003	
Scaffolds -- staging, uns.	0.01%		8.15299E-05
Fall, n.e.c.		1.000	
Scaffolds -- staging, uns.	0.01%		8.12678E-05
Fall, uns.		1.045	
Scaffolds -- staging, uns.	0.01%		8.49618E-05
Overexertion in carrying, turning, wielding objects		1.000	
Scaffolds -- staging, uns.	0.02%		0.000243803
Overexertion in lifting		1.001	
Scaffolds -- self-supporting staging	0.01%		8.13806E-05
Scaffolds -- staging, uns.	0.05%		0.000488284
Overexertion in lifting (object) and turning (body)		1.000	
Scaffolds -- staging, uns.	0.02%		0.000243803
Overexertion in lifting and turning (object)		1.000	
Scaffolds -- staging, uns.	0.01%		8.12678E-05
Overexertion in pulling or pushing objects		1.000	
Scaffolds -- staging supported by structure or other means	0.01%		8.12678E-05
Scaffolds -- staging, uns.	0.02%		0.000162536
Struck against stationary object		1.012	
Scaffolds -- staging supported by structure or other means	0.01%		8.22239E-05
Scaffolds -- staging, n.e.c.	0.01%		8.22239E-05
Scaffolds -- staging, uns.	0.06%		0.000575567
Struck by falling object		1.046	
Scaffolds -- improvised staging	0.01%		8.49795E-05
Scaffolds -- staging, uns.	0.02%		0.000169959
Struck by rolling, sliding or falling objects on floor or ground level		1.000	
Scaffolds -- staging, uns.	0.01%		8.12678E-05
Fall from scaffold, staging, platform		1.061	
Floor of building	0.14%		0.001465283
Floor of scaffold, staging, or temporary work platform	0.02%		0.000258579
Floor, n.e.c.	0.01%		8.61931E-05
Floor, uns.	0.06%		0.000603352
Floors, walkways, ground surfaces, n.e.c.	0.02%		0.000258579
Floors, walkways, ground surfaces, uns.	0.24%		0.0024996
Ground	0.30%		0.003189145

Bodily reaction and exertion, n.e.c.		1.000	
Scaffolds -- staging, uns.	0.05%		0.000487607
Caught in or compressed by equipment or objects, n.e.c.		1.150	
Scaffolds -- staging, n.e.c.	0.02%		0.000186843
Scaffolds -- staging, uns.	0.02%		0.000280264
Caught in or compressed by equipment or objects, uns.		1.120	
Scaffolds -- staging, uns.	0.01%		9.10199E-05
Fall from scaffold, staging, platform		1.061	
Scaffolds -- staging, uns.	0.01%		8.61931E-05
Fall onto or against objects		1.005	
Scaffolds -- staging, n.e.c.	0.02%		0.000163365
Scaffolds -- staging, uns.	0.03%		0.00032673
Fall to floor, walkway, or other surface		1.003	
Scaffolds -- staging, uns.	0.01%		8.15299E-05
Fall, n.e.c.		1.000	
Scaffolds -- staging, uns.	0.01%		8.12678E-05
Fall, uns.		1.045	
Scaffolds -- staging, uns.	0.01%		8.49618E-05
Overexertion in carrying, turning, wielding objects		1.000	
Scaffolds -- staging, uns.	0.02%		0.000243803
Overexertion in lifting		1.001	
Scaffolds -- self-supporting staging	0.01%		8.13806E-05
Scaffolds -- staging, uns.	0.05%		0.000488284
Overexertion in lifting (object) and turning (body)		1.000	
Scaffolds -- staging, uns.	0.02%		0.000243803
Overexertion in lifting and turning (object)		1.000	
Scaffolds -- staging, uns.	0.01%		8.12678E-05
Overexertion in pulling or pushing objects		1.000	
Scaffolds -- staging supported by structure or other means	0.01%		8.12678E-05
Scaffolds -- staging, uns.	0.02%		0.000162536
Struck against stationary object		1.012	
Scaffolds -- staging supported by structure or other means	0.01%		8.22239E-05
Scaffolds -- staging, n.e.c.	0.01%		8.22239E-05
Scaffolds -- staging, uns.	0.06%		0.000575567
Struck by falling object		1.046	
Scaffolds -- improvised staging	0.01%		8.49795E-05
Scaffolds -- staging, uns.	0.02%		0.000169959
Struck by rolling, sliding or falling objects on floor or ground level		1.000	
Scaffolds -- staging, uns.	0.01%		8.12678E-05
Fall from scaffold, staging, platform		1.061	
Floor of building	0.14%		0.001465283
Floor of scaffold, staging, or temporary work platform	0.02%		0.000258579
Floor, n.e.c.	0.01%		8.61931E-05
Floor, uns.	0.06%		0.000603352
Floors, walkways, ground surfaces, n.e.c.	0.02%		0.000258579
Floors, walkways, ground surfaces, uns.	0.24%		0.0024996
Ground	0.30%		0.003189145

Fall to lower level, n.e.c.		1.000		**Fall to lower level, n.e.c.**		1.000	
Floor of building	0.15%		0.001544088	Floor of building	0.15%		0.001544088
Floor, n.e.c.	0.01%		8.12678E-05	Floor, n.e.c.	0.01%		8.12678E-05
Floor, uns.	0.03%		0.000325071	Floor, uns.	0.03%		0.000325071
Floors, walkways, ground surfaces, n.e.c.	0.01%		8.12678E-05	Floors, walkways, ground surfaces, n.e.c.	0.01%		8.12678E-05
Floors, walkways, ground surfaces, uns.	0.13%		0.001300284	Floors, walkways, ground surfaces, uns.	0.13%		0.001300284
Ground	0.17%		0.001706623	Ground	0.17%		0.001706623
Floor of scaffold, staging, or temporary work platform	0.01%		8.12678E-05	Floor of scaffold, staging, or temporary work platform	0.01%		8.12678E-05
Fall to floor, walkway, or other surface		1.003		**Fall to floor, walkway, or other surface**		1.003	
Floor of scaffold, staging, or temporary work platform	0.04%		0.00040765	Floor of scaffold, staging, or temporary work platform	0.04%		0.00040765
Fall onto or against objects		1.005		**Fall onto or against objects**		1.005	
Floor of scaffold, staging, or temporary work platform	0.02%		0.000163365	Floor of scaffold, staging, or temporary work platform	0.02%		0.000163365
Caught in or compressed by equipment or objects, n.e.c.		1.150		**Caught in or compressed by equipment or objects, n.e.c.**		1.150	
Floor of scaffold, staging, or temporary work platform	0.01%		9.34213E-05	Floor of scaffold, staging, or temporary work platform	0.01%		9.34213E-05
Fall to lower level, uns.		1.077		**Fall to lower level, uns.**		1.077	
Floor of building	0.02%		0.000175038	Floor of building	0.02%		0.000175038
Floor of scaffold, staging, or temporary work platform	0.01%		8.75191E-05	Floor of scaffold, staging, or temporary work platform	0.01%		8.75191E-05
Floors, walkways, ground surfaces, uns.	0.06%		0.000612634	Floors, walkways, ground surfaces, uns.	0.06%		0.000612634
Ground	0.02%		0.000262557	Ground	0.02%		0.000262557
Fall, n.e.c.		1.000		**Fall, n.e.c.**		1.000	
Floor of scaffold, staging, or temporary work platform	0.01%		8.12678E-05	Floor of scaffold, staging, or temporary work platform	0.01%		8.12678E-05
Jump from scaffold, platform, loading dock		1.000		**Jump from scaffold, platform, loading dock**		1.000	
Floor of building	0.02%		0.000162536	Floor of building	0.02%		0.000162536
Ground	0.02%		0.000162536	Ground	0.02%		0.000162536
Jump to lower level, n.e.c.		1.000		**Jump to lower level, n.e.c.**		1.000	
Floor of building	0.04%		0.000406339	Floor of building	0.04%		0.000406339
Floor, uns.	0.01%		8.12678E-05	Floor, uns.	0.01%		8.12678E-05
Floors, walkways, ground surfaces, uns.	0.01%		8.12678E-05	Floors, walkways, ground surfaces, uns.	0.01%		8.12678E-05
Ground	0.03%		0.000325071	Ground	0.03%		0.000325071
Jump to lower level, uns.		1.000		**Jump to lower level, uns.**		1.000	
Floor of building	0.01%		8.12678E-05	Floor of building	0.01%		8.12678E-05
Floor of scaffold, staging, or temporary work platform	0.01%		8.12678E-05	Floor of scaffold, staging, or temporary work platform	0.01%		8.12678E-05
Floors, walkways, ground surfaces, uns.	0.01%		8.12678E-05	Floors, walkways, ground surfaces, uns.	0.01%		8.12678E-05
Struck against stationary object		1.012		**Struck against stationary object**		1.012	
Floor of scaffold, staging, or temporary work platform	0.01%		8.22239E-05	Floor of scaffold, staging, or temporary work platform	0.01%		8.22239E-05
Struck by falling object		1.046		**Struck by falling object**		1.046	
Floor of scaffold, staging, or temporary work platform	0.02%		0.000169959	Floor of scaffold, staging, or temporary work platform	0.02%		0.000169959
Contact with skin, eye(s) or other exposed tissue		1.438		**Contact with skin, eye(s) or other exposed tissue**		1.438	
Adhesives, glues, n.e.c.	0.02%		0.000233645	Adhesives, glues, n.e.c.	0.02%		0.000233645
Inhalation of substance, uns.		1.118		**Inhalation of substance, uns.**		1.118	
Adhesives, glues, n.e.c.	0.01%		9.08287E-05	Adhesives, glues, n.e.c.	0.01%		9.08287E-05
Fall onto or against objects		1.005		**Fall onto or against objects**		1.005	
Staples	0.01%		8.16824E-05	Staples	0.01%		8.16824E-05
Stepped on object		1.000		**Stepped on object**		1.000	
Staples	0.01%		8.12678E-05	Staples	0.01%		8.12678E-05
Struck by discharged object or substance		1.013		**Struck by discharged object or substance**		1.013	
Staples	0.18%		0.001810523	Staples	0.18%		0.001810523
Struck by dislodged flying object, particle		1.019		**Struck by dislodged flying object, particle**		1.019	
Staples	0.02%		0.00024836	Staples	0.02%		0.00024836
Struck by object, n.e.c.		1.013		**Struck by object, n.e.c.**		1.013	
Staples	0.01%		8.23456E-05	Staples	0.01%		8.23456E-05
Struck by swinging or slipping object, n.e.c.		1.042		**Struck by swinging or slipping object, n.e.c.**		1.042	
Staples	0.01%		8.47016E-05	Staples	0.01%		8.47016E-05

Process Step 14

MDF Install

Resources

Carpenter 1			
Risks			
Event Exposure/Source of Injury Combination	**Frequency (%)** 0.93%	**Severity Factor** 1.013720999	**Frequency * Severity** 0.94%
Caught in or compressed by equipment or objects, uns.		1.120	
Nail guns -- powered	0.01%		9.10199E-05
Contact with objects and equipment, uns.		1.021	
Nails, brads, tacks	0.02%		0.000166018
Fall onto or against objects		1.005	
Nails, brads, tacks	0.02%		0.000163365
Overexertion in carrying, turning, wielding objects		1.000	
Nail guns -- powered	0.01%		8.12678E-05
Stepped on object		1.000	
Nails, brads, tacks	0.02%		0.000243803
Struck against object, uns.		1.000	
Nails, brads, tacks	0.02%		0.000162536
Struck against stationary object		1.012	
Nails, brads, tacks	0.02%		0.000164448
Struck by discharged object or substance		1.013	
Nail guns -- powered	0.02%		0.000164593
Nails, brads, tacks	0.67%		0.006830608
Struck by dislodged flying object, particle		1.019	
Nails, brads, tacks	0.01%		8.27868E-05
Struck by falling object		1.046	
Nail guns -- powered	0.02%		0.000254939
Nails, brads, tacks	0.01%		8.49795E-05
Struck by flying object, n.e.c.		1.000	
Nails, brads, tacks	0.04%		0.000406339
Struck by object, n.e.c.		1.013	
Nails, brads, tacks	0.03%		0.000329382
Struck by object, uns.		1.013	
Nails, brads, tacks	0.01%		8.22965E-05
Struck by slipping handheld object		1.025	
Nails, brads, tacks	0.01%		8.32638E-05

Carpenter 2			
Risks			
Event Exposure/Source of Injury Combination	**Frequency (%)** 8.55%	**Severity Factor** 1.005226566	**Frequency * Severity** 8.59%
Bending, climbing, crawling, reaching, twisting		1.000	
Bodily conditions of injured, ill worker	0.01%		8.12678E-05
Bodily motion or position of injured, ill worker	6.14%		0.06143844
Bodily reaction and exertion, n.e.c.		1.000	
Forklift, uns.	0.01%		8.12678E-05
Caught in or compressed by equipment or objects, n.e.c.		1.150	
Forklift, n.e.c.	0.02%		0.000186843
Forklift, uns.	0.10%		0.001121056
Caught in or compressed by equipment or objects, uns.		1.120	
Forklift, uns.	0.02%		0.00018204
Compressed or pinched by rolling, sliding, or shifting objects		1.314	
Forklift, uns.	0.01%		0.000106809
Contact with objects and equipment, n.e.c.		1.000	
Forklift, uns.	0.02%		0.000162536
Fall from moving vehicle, mobile equipment -- nonhighway		1.000	
Forklift, uns.	0.01%		8.12678E-05
Fall onto or against objects		1.005	
Forklift, n.e.c.	0.01%		8.16824E-05
Forklift, uns.	0.02%		0.000245047
Fall, n.e.c.		1.000	
Forklift, uns.	0.01%		8.12678E-05
Jump to lower level, uns.		1.000	
Forklift, uns.	0.02%		0.000162536
Forklift, uns.	0.03%		0.000325071
Nonhighway Collision between vehicles or mobile equipment		1.000	
Forklift, uns.	0.02%		0.000243803
Overexertion in lifting		1.001	
Forklift, uns.	0.01%		8.13806E-05
Overexertion in pulling or pushing objects		1.000	
Forklift, uns.	0.01%		8.12678E-05
Overexertion, n.e.c.		1.000	
Forklift, uns.	0.01%		8.12678E-05

Overturned -- nonhighway accident		1.000	
Forklift, n.e.c.	0.01%		8.12678E-05
Pedestrian struck by vehicle, mobile equipment in parking lot or non-roadway area		1.105	
Forklift, n.e.c.	0.01%		8.98223E-05
Forklift, uns.	0.09%		0.000988045
Pedestrian struck by vehicle, mobile equipment, n.e.c.		1.000	
Forklift, uns.	0.07%		0.000650142
Struck against moving object		1.000	
Forklift, uns.	0.02%		0.000162536
Struck against object, n.e.c.		1.008	
Forklift, n.e.c.	0.01%		8.19179E-05
Forklift, uns.	0.02%		0.000163836
Struck against stationary object		1.012	
Forklift, uns.	0.02%		0.000246672
Struck by falling object		1.046	
Forklift, uns.	0.02%		0.000169959
Struck by object, n.e.c.		1.013	
Forklift, uns.	0.02%		0.000164691
Struck by rolling, sliding or falling objects on floor or ground level		1.000	
Forklift, uns.	0.02%		0.000162536
Struck by slipping handheld object		1.025	
Forklift, n.e.c.	0.01%		8.32638E-05
Sudden start or stop, n.e.c.		1.000	
Forklift, uns.	0.02%		0.000243803
Vehicle, mobile equipment struck stationary object		1.000	
Forklift, uns.	0.02%		0.000243803
Bodily reaction and exertion, n.e.c.		1.000	
Stairs, steps -- indoors	0.02%		0.000162536
Stairs, steps, n.e.c.	0.01%		8.12678E-05
Caught in or compressed by equipment or objects, n.e.c.		1.150	
Stairs, steps, n.e.c.	0.01%		9.34213E-05
Stairs, steps, uns.	0.01%		9.34213E-05
Fall down stairs or steps		1.000	
Stairs, steps -- indoors	0.12%		0.001219017
Stairs, steps, n.e.c.	0.02%		0.000243803
Stairs, steps, uns.	0.26%		0.002600569
Fall on same level, n.e.c.		1.000	
Stairs, steps, uns.	0.01%		8.12678E-05
Fall onto or against objects		1.005	
Stairs, steps -- indoors	0.02%		0.000163365
Stairs, steps, n.e.c.	0.01%		8.16824E-05
Stairs, steps, uns.	0.05%		0.000490094
Fall to floor, walkway, or other surface		1.003	
Stairs, steps -- indoors	0.02%		0.00016306
Stairs, steps, uns.	0.07%		0.000652239
Fall, n.e.c.		1.000	
Stairs, steps, uns.	0.01%		8.12678E-05

Fall, uns.		1.045	
Stairs, steps, uns.	0.01%		8.49618E-05
Overexertion in lifting		1.001	
Stairs, steps, n.e.c.	0.01%		8.13806E-05
Stairs, steps, uns.	0.01%		8.13806E-05
Overexertion in pulling or pushing objects		1.000	
Stairs, steps, uns.	0.01%		8.12678E-05
Struck against stationary object		1.012	
Stairs, steps -- indoors	0.03%		0.000328895
Stairs, steps, n.e.c.	0.01%		8.22239E-05
Stairs, steps, uns.	0.02%		0.000164448
Fall down stairs or steps		1.000	
Floor of building	0.09%		0.000893946
Floor, n.e.c.	0.01%		8.12678E-05
Floor, uns.	0.02%		0.000243803
Floors, walkways, ground surfaces, uns.	0.11%		0.001056481
Ground	0.04%		0.000406339
Bodily reaction and exertion, n.e.c.		1.000	
Wallboard, drywall	0.05%		0.000487607
Contact with objects and equipment, n.e.c.		1.000	
Wallboard, drywall	0.01%		8.12678E-05
Fall, n.e.c.		1.000	
Wallboard, drywall	0.01%		8.12678E-05
Overexertion in carrying, turning, wielding objects		1.000	
Wallboard, drywall	0.02%		0.000162536
Overexertion in lifting		1.001	
Wallboard, drywall	0.15%		0.001546232
Overexertion in lifting (object) and turning (body)		1.000	
Wallboard, drywall	0.03%		0.000325071
Overexertion in lifting and turning (object)		1.000	
Wallboard, drywall	0.02%		0.000162536
Overexertion in pulling or pushing objects		1.000	
Wallboard, drywall	0.03%		0.000325071
Overexertion, n.e.c.		1.000	
Wallboard, drywall	0.02%		0.000162536
Overexertion, uns.		1.000	
Wallboard, drywall	0.01%		8.12678E-05
Struck against stationary object		1.012	
Wallboard, drywall	0.01%		8.22239E-05
Struck by falling object		1.046	
Wallboard, drywall	0.07%		0.000764816
Struck by object, n.e.c.		1.013	
Wallboard, drywall	0.01%		8.23456E-05
Struck by object, uns.		1.013	
Wallboard, drywall	0.01%		8.22965E-05
Caught in or compressed by equipment or objects, n.e.c.		1.150	
Table saws	0.01%		9.34213E-05
Contact with objects and equipment, n.e.c.		1.000	
Table saws	0.01%		8.12678E-05
Contact with objects and equipment, uns.		1.021	
Table saws	0.03%		0.000332037
Overexertion, uns.		1.000	
Table saws	0.01%		8.12678E-05
Struck against moving object		1.000	
Table saws	0.18%		0.001787891
Struck against object, n.e.c.		1.008	
Table saws	0.01%		8.19179E-05
Struck against object, uns.		1.000	
Table saws	0.03%		0.000325071
Struck by object, n.e.c.		1.013	
Table saws	0.02%		0.000164691
Struck by object, uns.		1.013	
Table saws	0.01%		8.22965E-05
Struck by slipping handheld object		1.025	
Table saws	0.03%		0.000333055

Process Step 14

MDF Install

Resources

Risks

Carpenter 3: Event Exposure/Source of Injury Combination	Frequency (%) 8.55%	Severity Factor 1.005226566	Frequency * Severity 8.59%	Carpenter 4: Event Exposure/Source of Injury Combination	Frequency (%) 8.55%	Severity Factor 1.005226566	Frequency * Severity 8.59%
Bending, climbing, crawling, reaching, twisting		1.000		**Bending, climbing, crawling, reaching, twisting**		1.000	
Bodily conditions of injured, ill worker	0.01%		8.12678E-05	Bodily conditions of injured, ill worker	0.01%		8.12678E-05
Bodily motion or position of injured, ill worker	6.14%		0.06143844	Bodily motion or position of injured, ill worker	6.14%		0.06143844
Bodily reaction and exertion, n.e.c.		1.000		**Bodily reaction and exertion, n.e.c.**		1.000	
Forklift, uns.	0.01%		8.12678E-05	Forklift, uns.	0.01%		8.12678E-05
Caught in or compressed by equipment or objects, n.e.c.		1.150		**Caught in or compressed by equipment or objects, n.e.c.**		1.150	
Forklift, n.e.c.	0.02%		0.000186843	Forklift, n.e.c.	0.02%		0.000186843
Forklift, uns.	0.10%		0.001121056	Forklift, uns.	0.10%		0.001121056
Caught in or compressed by equipment or objects, uns.		1.120		**Caught in or compressed by equipment or objects, uns.**		1.120	
Forklift, uns.	0.02%		0.00018204	Forklift, uns.	0.02%		0.00018204
Compressed or pinched by rolling, sliding, or shifting objects		1.314		**Compressed or pinched by rolling, sliding, or shifting objects**		1.314	
Forklift, uns.	0.01%		0.000106809	Forklift, uns.	0.01%		0.000106809
Contact with objects and equipment, n.e.c.		1.000		**Contact with objects and equipment, n.e.c.**		1.000	
Forklift, uns.	0.02%		0.000162536	Forklift, uns.	0.02%		0.000162536
Fall from moving vehicle, mobile equipment -- nonhighway		1.000		**Fall from moving vehicle, mobile equipment -- nonhighway**		1.000	
Forklift, uns.	0.01%		8.12678E-05	Forklift, uns.	0.01%		8.12678E-05
Fall onto or against objects		1.005		**Fall onto or against objects**		1.005	
Forklift, n.e.c.	0.01%		8.16824E-05	Forklift, n.e.c.	0.01%		8.16824E-05
Forklift, uns.	0.02%		0.000245047	Forklift, uns.	0.02%		0.000245047
Fall, n.e.c.		1.000		**Fall, n.e.c.**		1.000	
Forklift, uns.	0.01%		8.12678E-05	Forklift, uns.	0.01%		8.12678E-05
Jump to lower level, uns.		1.000		**Jump to lower level, uns.**		1.000	
Forklift, uns.	0.02%		0.000162536	Forklift, uns.	0.02%		0.000162536
Forklift, uns.	0.03%		0.000325071	Forklift, uns.	0.03%		0.000325071
Nonhighway Collision between vehicles or mobile equipment		1.000		**Nonhighway Collision between vehicles or mobile equipment**		1.000	
Forklift, uns.	0.02%		0.000243803	Forklift, uns.	0.02%		0.000243803
Overexertion in lifting		1.001		**Overexertion in lifting**		1.001	
Forklift, uns.	0.01%		8.13806E-05	Forklift, uns.	0.01%		8.13806E-05
Overexertion in pulling or pushing objects		1.000		**Overexertion in pulling or pushing objects**		1.000	
Forklift, uns.	0.01%		8.12678E-05	Forklift, uns.	0.01%		8.12678E-05
Overexertion, n.e.c.		1.000		**Overexertion, n.e.c.**		1.000	
Forklift, uns.	0.01%		8.12678E-05	Forklift, uns.	0.01%		8.12678E-05
Overturned -- nonhighway accident		1.000		**Overturned -- nonhighway accident**		1.000	
Forklift, n.e.c.	0.01%		8.12678E-05	Forklift, n.e.c.	0.01%		8.12678E-05
Pedestrian struck by vehicle, mobile equipment in parking lot or non-roadway area		1.105		**Pedestrian struck by vehicle, mobile equipment in parking lot or non-roadway area**		1.105	
Forklift, n.e.c.	0.01%		8.98223E-05	Forklift, n.e.c.	0.01%		8.98223E-05
Forklift, uns.	0.09%		0.000988045	Forklift, uns.	0.09%		0.000988045
Pedestrian struck by vehicle, mobile equipment, n.e.c.		1.000		**Pedestrian struck by vehicle, mobile equipment, n.e.c.**		1.000	
Forklift, uns.	0.07%		0.000650142	Forklift, uns.	0.07%		0.000650142
Struck against moving object		1.000		**Struck against moving object**		1.000	
Forklift, uns.	0.02%		0.000162536	Forklift, uns.	0.02%		0.000162536
Struck against object, n.e.c.		1.008		**Struck against object, n.e.c.**		1.008	
Forklift, n.e.c.	0.01%		8.19179E-05	Forklift, n.e.c.	0.01%		8.19179E-05
Forklift, uns.	0.02%		0.000163836	Forklift, uns.	0.02%		0.000163836
Struck against stationary object		1.012		**Struck against stationary object**		1.012	
Forklift, uns.	0.02%		0.000246672	Forklift, uns.	0.02%		0.000246672

Struck by falling object		1.046		**Struck by falling object**		1.046	
Forklift, uns.	0.02%		0.000169959	Forklift, uns.	0.02%		0.000169959
Struck by object, n.e.c.		1.013		**Struck by object, n.e.c.**		1.013	
Forklift, uns.	0.02%		0.000164691	Forklift, uns.	0.02%		0.000164691
Struck by rolling, sliding or falling objects on floor or ground level		1.000		**Struck by rolling, sliding or falling objects on floor or ground level**		1.000	
Forklift, uns.	0.02%		0.000162536	Forklift, uns.	0.02%		0.000162536
Struck by slipping handheld object		1.025		**Struck by slipping handheld object**		1.025	
Forklift, n.e.c.	0.01%		8.32638E-05	Forklift, n.e.c.	0.01%		8.32638E-05
Sudden start or stop, n.e.c.		1.000		**Sudden start or stop, n.e.c.**		1.000	
Forklift, uns.	0.02%		0.000243803	Forklift, uns.	0.02%		0.000243803
Vehicle, mobile equipment struck stationary object		1.000		**Vehicle, mobile equipment struck stationary object**		1.000	
Forklift, uns.	0.02%		0.000243803	Forklift, uns.	0.02%		0.000243803
Bodily reaction and exertion, n.e.c.		1.000		**Bodily reaction and exertion, n.e.c.**		1.000	
Stairs, steps -- indoors	0.02%		0.000162536	Stairs, steps -- indoors	0.02%		0.000162536
Stairs, steps, n.e.c.	0.01%		8.12678E-05	Stairs, steps, n.e.c.	0.01%		8.12678E-05
Caught in or compressed by equipment or objects, n.e.c.		1.150		**Caught in or compressed by equipment or objects, n.e.c.**		1.150	
Stairs, steps, n.e.c.	0.01%		9.34213E-05	Stairs, steps, n.e.c.	0.01%		9.34213E-05
Stairs, steps, uns.	0.01%		9.34213E-05	Stairs, steps, uns.	0.01%		9.34213E-05
Fall down stairs or steps		1.000		**Fall down stairs or steps**		1.000	
Stairs, steps -- indoors	0.12%		0.001219017	Stairs, steps -- indoors	0.12%		0.001219017
Stairs, steps, n.e.c.	0.02%		0.000243803	Stairs, steps, n.e.c.	0.02%		0.000243803
Stairs, steps, uns.	0.26%		0.002600569	Stairs, steps, uns.	0.26%		0.002600569
Fall on same level, n.e.c.		1.000		**Fall on same level, n.e.c.**		1.000	
Stairs, steps, uns.	0.01%		8.12678E-05	Stairs, steps, uns.	0.01%		8.12678E-05
Fall onto or against objects		1.005		**Fall onto or against objects**		1.005	
Stairs, steps -- indoors	0.02%		0.000163365	Stairs, steps -- indoors	0.02%		0.000163365
Stairs, steps, n.e.c.	0.01%		8.16824E-05	Stairs, steps, n.e.c.	0.01%		8.16824E-05
Stairs, steps, uns.	0.05%		0.000490094	Stairs, steps, uns.	0.05%		0.000490094
Fall to floor, walkway, or other surface		1.003		**Fall to floor, walkway, or other surface**		1.003	
Stairs, steps -- indoors	0.02%		0.00016306	Stairs, steps -- indoors	0.02%		0.00016306
Stairs, steps, uns.	0.07%		0.000652239	Stairs, steps, uns.	0.07%		0.000652239
Fall, n.e.c.		1.000		**Fall, n.e.c.**		1.000	
Stairs, steps, uns.	0.01%		8.12678E-05	Stairs, steps, uns.	0.01%		8.12678E-05
Fall, uns.		1.045		**Fall, uns.**		1.045	
Stairs, steps, uns.	0.01%		8.49618E-05	Stairs, steps, uns.	0.01%		8.49618E-05
Overexertion in lifting		1.001		**Overexertion in lifting**		1.001	
Stairs, steps, n.e.c.	0.01%		8.13806E-05	Stairs, steps, n.e.c.	0.01%		8.13806E-05
Stairs, steps, uns.	0.01%		8.13806E-05	Stairs, steps, uns.	0.01%		8.13806E-05
Overexertion in pulling or pushing objects		1.000		**Overexertion in pulling or pushing objects**		1.000	
Stairs, steps, uns.	0.01%		8.12678E-05	Stairs, steps, uns.	0.01%		8.12678E-05
Struck against stationary object		1.012		**Struck against stationary object**		1.012	
Stairs, steps -- indoors	0.03%		0.000328895	Stairs, steps -- indoors	0.03%		0.000328895
Stairs, steps, n.e.c.	0.01%		8.22239E-05	Stairs, steps, n.e.c.	0.01%		8.22239E-05
Stairs, steps, uns.	0.02%		0.000164448	Stairs, steps, uns.	0.02%		0.000164448

Fall down stairs or steps		1.000		**Fall down stairs or steps**		1.000	
Floor of building	0.09%		0.000893946	Floor of building	0.09%		0.000893946
Floor, n.e.c.	0.01%		8.12678E-05	Floor, n.e.c.	0.01%		8.12678E-05
Floor, uns.	0.02%		0.000243803	Floor, uns.	0.02%		0.000243803
Floors, walkways, ground surfaces, uns.	0.11%		0.001056481	Floors, walkways, ground surfaces, uns.	0.11%		0.001056481
Ground	0.04%		0.000406339	Ground	0.04%		0.000406339
Bodily reaction and exertion, n.e.c.		1.000		**Bodily reaction and exertion, n.e.c.**		1.000	
Wallboard, drywall	0.05%		0.000487607	Wallboard, drywall	0.05%		0.000487607
Contact with objects and equipment, n.e.c.		1.000		**Contact with objects and equipment, n.e.c.**		1.000	
Wallboard, drywall	0.01%		8.12678E-05	Wallboard, drywall	0.01%		8.12678E-05
Fall, n.e.c.		1.000		**Fall, n.e.c.**		1.000	
Wallboard, drywall	0.01%		8.12678E-05	Wallboard, drywall	0.01%		8.12678E-05
Overexertion in carrying, turning, wielding objects		1.000		**Overexertion in carrying, turning, wielding objects**		1.000	
Wallboard, drywall	0.02%		0.000162536	Wallboard, drywall	0.02%		0.000162536
Overexertion in lifting		1.001		**Overexertion in lifting**		1.001	
Wallboard, drywall	0.15%		0.001546232	Wallboard, drywall	0.15%		0.001546232
Overexertion in lifting (object) and turning (body)		1.000		**Overexertion in lifting (object) and turning (body)**		1.000	
Wallboard, drywall	0.03%		0.000325071	Wallboard, drywall	0.03%		0.000325071
Overexertion in lifting and turning (object)		1.000		**Overexertion in lifting and turning (object)**		1.000	
Wallboard, drywall	0.02%		0.000162536	Wallboard, drywall	0.02%		0.000162536
Overexertion in pulling or pushing objects		1.000		**Overexertion in pulling or pushing objects**		1.000	
Wallboard, drywall	0.03%		0.000325071	Wallboard, drywall	0.03%		0.000325071
Overexertion, n.e.c.		1.000		**Overexertion, n.e.c.**		1.000	
Wallboard, drywall	0.02%		0.000162536	Wallboard, drywall	0.02%		0.000162536
Overexertion, uns.		1.000		**Overexertion, uns.**		1.000	
Wallboard, drywall	0.01%		8.12678E-05	Wallboard, drywall	0.01%		8.12678E-05
Struck against stationary object		1.012		**Struck against stationary object**		1.012	
Wallboard, drywall	0.01%		8.22239E-05	Wallboard, drywall	0.01%		8.22239E-05
Struck by falling object		1.046		**Struck by falling object**		1.046	
Wallboard, drywall	0.07%		0.000764816	Wallboard, drywall	0.07%		0.000764816
Struck by object, n.e.c.		1.013		**Struck by object, n.e.c.**		1.013	
Wallboard, drywall	0.01%		8.23456E-05	Wallboard, drywall	0.01%		8.23456E-05
Struck by object, uns.		1.013		**Struck by object, uns.**		1.013	
Wallboard, drywall	0.01%		8.22965E-05	Wallboard, drywall	0.01%		8.22965E-05
Caught in or compressed by equipment or objects, n.e.c.		1.150		**Caught in or compressed by equipment or objects, n.e.c.**		1.150	
Table saws	0.01%		9.34213E-05	Table saws	0.01%		9.34213E-05
Contact with objects and equipment, n.e.c.		1.000		**Contact with objects and equipment, n.e.c.**		1.000	
Table saws	0.01%		8.12678E-05	Table saws	0.01%		8.12678E-05
Contact with objects and equipment, uns.		1.021		**Contact with objects and equipment, uns.**		1.021	
Table saws	0.03%		0.000332037	Table saws	0.03%		0.000332037
Overexertion, uns.		1.000		**Overexertion, uns.**		1.000	
Table saws	0.01%		8.12678E-05	Table saws	0.01%		8.12678E-05
Struck against moving object		1.000		**Struck against moving object**		1.000	
Table saws	0.18%		0.001787891	Table saws	0.18%		0.001787891
Struck against object, n.e.c.		1.008		**Struck against object, n.e.c.**		1.008	
Table saws	0.01%		8.19179E-05	Table saws	0.01%		8.19179E-05
Struck against object, uns.		1.000		**Struck against object, uns.**		1.000	
Table saws	0.03%		0.000325071	Table saws	0.03%		0.000325071
Struck by object, n.e.c.		1.013		**Struck by object, n.e.c.**		1.013	
Table saws	0.02%		0.000164691	Table saws	0.02%		0.000164691
Struck by object, uns.		1.013		**Struck by object, uns.**		1.013	
Table saws	0.01%		8.22965E-05	Table saws	0.01%		8.22965E-05
Struck by slipping handheld object		1.025		**Struck by slipping handheld object**		1.025	
Table saws	0.03%		0.000333055	Table saws	0.03%		0.000333055

Process Step 15

Partition Framing

Resources

Carpenter 1	Carpenter 2

Risks

Event Exposure/Source of Injury Combination	Frequency (%)	Severity Factor	Frequency * Severity	Event Exposure/Source of Injury Combination	Frequency (%)	Severity Factor	Frequency * Severity
	1.58%	1.029375542	1.62%		1.86%	1.065246508	1.98%
Caught in or compressed by equipment or objects, uns.		1.120		**Bodily reaction and exertion, n.e.c.**		1.000	
Nail guns -- powered	0.01%		9.10199E-05	Dimensional lumber, n.e.c.	0.02%		0.000162536
Contact with objects and equipment, uns.		1.021		Wood, lumber, n.e.c.	0.01%		8.12678E-05
Nails, brads, tacks	0.02%		0.000166018	Wood, lumber, uns.	0.07%		0.000650142
Fall onto or against objects		1.005		**Caught in or compressed by equipment or objects, n.e.c.**		1.150	
Nails, brads, tacks	0.02%		0.000163365	Dimensional lumber, n.e.c.	0.07%		0.000747371
Overexertion in carrying, turning, wielding objects		1.000		Dimensional lumber, uns.	0.02%		0.000186843
Nail guns -- powered	0.01%		8.12678E-05	Wood, lumber, n.e.c.	0.09%		0.001027635
Stepped on object		1.000		Wood, lumber, uns.	0.25%		0.002896061
Nails, brads, tacks	0.02%		0.000243803	**Caught in or compressed by equipment or objects, uns.**		1.120	
Struck against object, uns.		1.000		Dimensional lumber, n.e.c.	0.01%		9.10199E-05
Nails, brads, tacks	0.02%		0.000162536	Wood, lumber, uns.	0.05%		0.000546119
Struck against stationary object		1.012		**Compressed or pinched by rolling, sliding, or shifting objects**		1.314	
Nails, brads, tacks	0.02%		0.000164448	Wood, lumber, n.e.c.	0.02%		0.000213618
Struck by discharged object or substance		1.013		Wood, lumber, uns.	0.02%		0.000213618
Nail guns -- powered	0.02%		0.000164593	**Contact with objects and equipment, n.e.c.**		1.000	
Nails, brads, tacks	0.67%		0.006830608	Wood, lumber, uns.	0.01%		8.12678E-05
Struck by dislodged flying object, particle		1.019		**Contact with objects and equipment, uns.**		1.021	
Nails, brads, tacks	0.01%		8.27868E-05	Wood, lumber, n.e.c.	0.01%		8.30092E-05
Struck by falling object		1.046		**Fall onto or against objects**		1.005	
Nail guns -- powered	0.02%		0.000254939	Wood, lumber, n.e.c.	0.01%		8.16824E-05
Nails, brads, tacks	0.01%		8.49795E-05	Wood, lumber, uns.	0.02%		0.000245047
Struck by flying object, n.e.c.		1.000		**Fall to floor, walkway, or other surface**		1.003	
Nails, brads, tacks	0.04%		0.000406339	Wood, lumber, n.e.c.	0.02%		0.00016306
Struck by object, n.e.c.		1.013		**Fall, n.e.c.**		1.000	
Nails, brads, tacks	0.03%		0.000329382	Wallboard, drywall	0.01%		8.12678E-05
Struck by object, uns.		1.013		**Rubbed or abraded by objects being handled**		1.000	
Nails, brads, tacks	0.01%		8.22965E-05	Wood, lumber, uns.	0.02%		0.000162536
Struck by slipping handheld object		1.025		**Stepped on object**		1.000	
Nails, brads, tacks	0.01%		8.32638E-05	Wood, lumber, uns.	0.03%		0.000325071
Bodily reaction and exertion, n.e.c.		1.000		**Struck against object, n.e.c.**		1.008	
Forklift, uns.	0.01%		8.12678E-05	Wood, lumber, n.e.c.	0.02%		0.000163836
Caught in or compressed by equipment or objects, n.e.c.		1.150		Wood, lumber, uns.	0.02%		0.000163836

Forklift, n.e.c.	0.02%		0.000186843
Forklift, uns.	0.10%		0.001121056
Caught in or compressed by equipment or objects, uns.		1.120	
Forklift, uns.	0.02%		0.00018204
Compressed or pinched by rolling, sliding, or shifting objects		1.314	
Forklift, uns.	0.01%		0.000106809
Contact with objects and equipment, n.e.c.		1.000	
Forklift, uns.	0.02%		0.000162536
Fall from moving vehicle, mobile equipment -- nonhighway		1.000	
Forklift, uns.	0.01%		8.12678E-05
Fall onto or against objects		1.005	
Forklift, n.e.c.	0.01%		8.16824E-05
Forklift, uns.	0.02%		0.000245047
Fall, n.e.c.		1.000	
Forklift, uns.	0.01%		8.12678E-05
Jump to lower level, uns.		1.000	
Forklift, uns.	0.02%		0.000162536
Forklift, uns.	0.03%		0.000325071
Nonhighway Collision between vehicles or mobile equipment		1.000	
Forklift, uns.	0.02%		0.000243803
Overexertion in lifting		1.001	
Forklift, uns.	0.01%		8.13806E-05
Overexertion in pulling or pushing objects		1.000	
Forklift, uns.	0.01%		8.12678E-05
Overexertion, n.e.c.		1.000	
Forklift, uns.	0.01%		8.12678E-05
Overturned -- nonhighway accident		1.000	
Forklift, n.e.c.	0.01%		8.12678E-05
Pedestrian struck by vehicle, mobile equipment in parking lot or non-roadway area		1.105	
Forklift, n.e.c.	0.01%		8.98223E-05
Forklift, uns.	0.09%		0.000988045
Pedestrian struck by vehicle, mobile equipment, n.e.c.		1.000	
Forklift, uns.	0.07%		0.000650142
Struck against moving object		1.000	
Forklift, uns.	0.02%		0.000162536
Struck against object, n.e.c.		1.008	
Forklift, n.e.c.	0.01%		8.19179E-05
Forklift, uns.	0.02%		0.000163836
Struck against stationary object		1.012	
Forklift, uns.	0.02%		0.000246672
Struck by falling object		1.046	
Forklift, uns.	0.02%		0.000169959
Struck by object, n.e.c.		1.013	
Forklift, uns.	0.02%		0.000164691
Struck by rolling, sliding or falling objects on floor or ground level		1.000	
Forklift, uns.	0.02%		0.000162536

Struck against object, uns.		1.000	
Wood, lumber, uns.	0.01%		8.12678E-05
Struck against stationary object		1.012	
Dimensional lumber, n.e.c.	0.01%		8.22239E-05
Wood, lumber, uns.	0.02%		0.000246672
Struck by object, n.e.c.		1.013	
Dimensional lumber, n.e.c.	0.03%		0.000329382
Wood, lumber, n.e.c.	0.07%		0.000658765
Wood, lumber, uns.	0.20%		0.001976294
Struck by object, uns.		1.013	
Dimensional lumber, n.e.c.	0.02%		0.000164593
Dimensional lumber, uns.	0.01%		8.22965E-05
Wood, lumber, n.e.c.	0.02%		0.000164593
Wood, lumber, uns.	0.03%		0.000329186
Struck by slipping handheld object		1.025	
Wood, lumber, uns.	0.02%		0.000166528
Struck by swinging or slipping object, n.e.c.		1.042	
Wood, lumber, n.e.c.	0.02%		0.000169403
Wood, lumber, uns.	0.01%		8.47016E-05
Struck by swinging or slipping object, uns.		1.038	
Wood, lumber, uns.	0.01%		8.43935E-05
Bodily reaction and exertion, n.e.c.		1.000	
Forklift, uns.	0.01%		8.12678E-05
Caught in or compressed by equipment or objects, n.e.c.		1.150	
Forklift, n.e.c.	0.02%		0.000186843
Forklift, uns.	0.10%		0.001121056
Caught in or compressed by equipment or objects, uns.		1.120	
Forklift, uns.	0.02%		0.00018204
Compressed or pinched by rolling, sliding, or shifting objects		1.314	
Forklift, uns.	0.01%		0.000106809
Contact with objects and equipment, n.e.c.		1.000	
Forklift, uns.	0.02%		0.000162536
Fall from moving vehicle, mobile equipment -- nonhighway		1.000	
Forklift, uns.	0.01%		8.12678E-05
Fall onto or against objects		1.005	
Forklift, n.e.c.	0.01%		8.16824E-05
Forklift, uns.	0.02%		0.000245047
Fall, n.e.c.		1.000	
Forklift, uns.	0.01%		8.12678E-05
Jump to lower level, uns.		1.000	
Forklift, uns.	0.02%		0.000162536
Forklift, uns.	0.03%		0.000325071
Nonhighway Collision between vehicles or mobile equipment		1.000	
Forklift, uns.	0.02%		0.000243803
Overexertion in lifting		1.001	
Forklift, uns.	0.01%		8.13806E-05

Struck by slipping handheld object		1.025	
Forklift, n.e.c.	0.01%		8.32638E-05
Sudden start or stop, n.e.c.		1.000	
Forklift, uns.	0.02%		0.000243803
Vehicle, mobile equipment struck stationary object		1.000	
Forklift, uns.	0.02%		0.000243803

Overexertion in pulling or pushing objects		1.000	
Forklift, uns.	0.01%		8.12678E-05
Overexertion, n.e.c.		1.000	
Forklift, uns.	0.01%		8.12678E-05
Overturned -- nonhighway accident		1.000	
Forklift, n.e.c.	0.01%		8.12678E-05
Pedestrian struck by vehicle, mobile equipment in parking lot or non-roadway area		1.105	
Forklift, n.e.c.	0.01%		8.98223E-05
Forklift, uns.	0.09%		0.000988045
Pedestrian struck by vehicle, mobile equipment, n.e.c.		1.000	
Forklift, uns.	0.07%		0.000650142
Struck against moving object		1.000	
Forklift, uns.	0.02%		0.000162536
Struck against object, n.e.c.		1.008	
Forklift, n.e.c.	0.01%		8.19179E-05
Forklift, uns.	0.02%		0.000163836
Struck against stationary object		1.012	
Forklift, uns.	0.02%		0.000246672
Struck by falling object		1.046	
Forklift, uns.	0.02%		0.000169959
Struck by object, n.e.c.		1.013	
Forklift, uns.	0.02%		0.000164691
Struck by rolling, sliding or falling objects on floor or ground level		1.000	
Forklift, uns.	0.02%		0.000162536
Struck by slipping handheld object		1.025	
Forklift, n.e.c.	0.01%		8.32638E-05
Sudden start or stop, n.e.c.		1.000	
Forklift, uns.	0.02%		0.000243803
Vehicle, mobile equipment struck stationary object		1.000	
Forklift, uns.	0.02%		0.000243803

Process Step 17							
Install Transport Frame							
Resources							
Carpenter 1				Carpenter 2			
Risks							
	Frequency (%)	**Severity Factor**	**Frequency * Severity**		**Frequency (%)**	**Severity Factor**	**Frequency * Severity**
Event Exposure/Source of Injury Combination	6.28%	1.000706565	6.29%	**Event Exposure/Source of Injury Combination**	6.28%	1.000706565	6.29%
Bending, climbing, crawling, reaching, twisting		1.000		**Bending, climbing, crawling, reaching, twisting**		1.000	
Bodily conditions of injured, ill worker	0.01%		8.12678E-05	Bodily conditions of injured, ill worker	0.01%		8.12678E-05
Bodily motion or position of injured, ill worker	6.14%		0.06143844	Bodily motion or position of injured, ill worker	6.14%		0.06143844
Caught in or compressed by equipment or objects, n.e.c.		1.150		**Caught in or compressed by equipment or objects, n.e.c.**		1.150	
Jacks, n.e.c.	0.01%		9.34213E-05	Jacks, n.e.c.	0.01%		9.34213E-05
Jacks, uns.	0.01%		9.34213E-05	Jacks, uns.	0.01%		9.34213E-05
Struck by discharged object or substance		1.013		**Struck by discharged object or substance**		1.013	
Jacks -- hydraulic	0.01%		8.22965E-05	Jacks -- hydraulic	0.01%		8.22965E-05
Jacks, uns.	0.01%		8.22965E-05	Jacks, uns.	0.01%		8.22965E-05
Struck by falling object		1.046		**Struck by falling object**		1.046	
Jacks, uns.	0.02%		0.000254939	Jacks, uns.	0.02%		0.000254939
Struck by object, n.e.c.		1.013		**Struck by object, n.e.c.**		1.013	
Jacks -- hydraulic	0.02%		0.000164691	Jacks -- hydraulic	0.02%		0.000164691
Jacks, n.e.c.	0.01%		8.23456E-05	Jacks, n.e.c.	0.01%		8.23456E-05
Struck by swinging or slipping object, uns.		1.038		**Struck by swinging or slipping object, uns.**		1.038	
Jacks -- hydraulic	0.01%		8.43935E-05	Jacks -- hydraulic	0.01%		8.43935E-05
Fall onto or against objects		1.005		**Fall onto or against objects**		1.005	
Jacks, uns.	0.01%		8.16824E-05	Jacks, uns.	0.01%		8.16824E-05
Overexertion in lifting		1.001		**Overexertion in lifting**		1.001	
Jacks -- hydraulic	0.01%		8.13806E-05	Jacks -- hydraulic	0.01%		8.13806E-05
Overexertion in pulling or pushing objects		1.000		**Overexertion in pulling or pushing objects**		1.000	
Jacks, n.e.c.	0.01%		8.12678E-05	Jacks, n.e.c.	0.01%		8.12678E-05
Jacks, uns.	0.01%		8.12678E-05	Jacks, uns.	0.01%		8.12678E-05
Overexertion, n.e.c.		1.000		**Overexertion, n.e.c.**		1.000	
Jacks, n.e.c.	0.01%		8.12678E-05	Jacks, n.e.c.	0.01%		8.12678E-05

Appendix A3: Module Mobilization Risk Analysis

Process Step 1									
Drive Module from Alantra to Florenceville-Bristol									
Resources									
Labourer/Driver 1					Labourer/Driver 2				
Risks									
		Frequency (%)	Severity Factor	Frequency * Severity			Frequency (%)	Severity Factor	Frequency * Severity
Event Exposure/Source of Injury Combination	Frequency (#)	1.43%	1.067054656	1.527%	Event Exposure/Source of Injury Combination	Frequency (#)	1.43%	1.067054656	1.527%
Highway accident, n.e.c.			1.000		**Highway accident, n.e.c.**			1.000	
Truck, uns.	3	0.08%		0.000825537	Truck, uns.	3	0.08%		0.000825537
Highway accident, uns.			1.000		**Highway accident, uns.**			1.000	
Highway vehicle, nonmotorized, uns.	1	0.03%		0.000275179	Highway vehicle, nonmotorized, uns.	1	0.03%		0.000275179
Jack-knifed or overturned -- no collision			1.158		**Jack-knifed or overturned -- no collision**			1.158	
Highway vehicle, uns.	2	0.06%		0.000637256	Highway vehicle, uns.	2	0.06%		0.000637256
Pickup truck	1	0.03%		0.000318628	Pickup truck	1	0.03%		0.000318628
Semitrailer, tractor trailer, trailer truck	2	0.06%		0.000637256	Semitrailer, tractor trailer, trailer truck	2	0.06%		0.000637256
Truck, n.e.c.	2	0.06%		0.000637256	Truck, n.e.c.	2	0.06%		0.000637256
Truck, uns.	4	0.11%		0.001274513	Truck, uns.	4	0.11%		0.001274513
Moving and standing vehicle, mobile equipment -- in roadway			1.250		**Moving and standing vehicle, mobile equipment -- in roadway**			1.250	
Pickup truck	1	0.03%		0.000343974	Pickup truck	1	0.03%		0.000343974
Truck, n.e.c.	1	0.03%		0.000343974	Truck, n.e.c.	1	0.03%		0.000343974
Vehicle, uns.	1	0.03%		0.000343974	Vehicle, uns.	1	0.03%		0.000343974
Moving in intersection			1.000		**Moving in intersection**				
Pickup truck	1	0.03%		0.000275179	Pickup truck	1	0.03%		0.000275179
Moving in opposite directions, oncoming			1.083		**Moving in opposite directions, oncoming**			1.083	
Delivery truck	2	0.06%		0.000596221	Delivery truck	2	0.06%		0.000596221
Highway vehicle, uns.	3	0.08%		0.000894331	Highway vehicle, uns.	3	0.08%		0.000894331
Pickup truck	2	0.06%		0.000596221	Pickup truck	2	0.06%		0.000596221
Semitrailer, tractor trailer, trailer truck	1	0.03%		0.00029811	Semitrailer, tractor trailer, trailer truck	1	0.03%		0.00029811
Truck, n.e.c.	1	0.03%		0.00029811	Truck, n.e.c.	1	0.03%		0.00029811
Truck, uns.	2	0.06%		0.000596221	Truck, uns.	2	0.06%		0.000596221
Vehicle, uns.	1	0.03%		0.00029811	Vehicle, uns.	1	0.03%		0.00029811
Moving in same direction			1.000		**Moving in same direction**			1.000	
Automobile	1	0.03%		0.000275179	Automobile	1	0.03%		0.000275179
Dump truck	1	0.03%		0.000275179	Dump truck	1	0.03%		0.000275179
Highway vehicle, uns.	1	0.03%		0.000275179	Highway vehicle, uns.	1	0.03%		0.000275179
Pickup truck	1	0.03%		0.000275179	Pickup truck	1	0.03%		0.000275179
Snow plows	1	0.03%		0.000275179	Snow plows	1	0.03%		0.000275179
Truck, n.e.c.	1	0.03%		0.000275179	Truck, n.e.c.	1	0.03%		0.000275179
Truck, uns.	2	0.06%		0.000550358	Truck, uns.	2	0.06%		0.000550358
Van -- passenger or light delivery	1	0.03%		0.000275179	Van -- passenger or light delivery	1	0.03%		0.000275179
Noncollision accident, n.e.c.			1.000		**Noncollision accident, n.e.c.**			1.000	
Truck, uns.	2	0.06%		0.000550358	Truck, uns.	2	0.06%		0.000550358
Ran off highway -- no collision			1.000		**Ran off highway -- no collision**			1.000	
Semitrailer, tractor trailer, trailer truck	1	0.03%		0.000275179	Semitrailer, tractor trailer, trailer truck	1	0.03%		0.000275179
Truck, uns.	1	0.03%		0.000275179	Truck, uns.	1	0.03%		0.000275179
Van -- passenger or light delivery	1	0.03%		0.000275179	Van -- passenger or light delivery	1	0.03%		0.000275179
Transportation accident, uns.			1.000		**Transportation accident, uns.**			1.000	
Truck, uns.	1	0.03%		0.000275179	Truck, uns.	1	0.03%		0.000275179
Vehicle struck stationary object or equipment in roadway			1.000		**Vehicle struck stationary object or equipment in roadway**			1.000	
Highway vehicle, uns.	1	0.03%		0.000275179	Highway vehicle, uns.	1	0.03%		0.000275179
Semitrailer, tractor trailer, trailer truck	1	0.03%		0.000275179	Semitrailer, tractor trailer, trailer truck	1	0.03%		0.000275179
Vehicle struck stationary object, equipment on side of road			1.000		**Vehicle struck stationary object, equipment on side of road**			1.000	
Automobile	1	0.03%		0.000275179	Automobile	1	0.03%		0.000275179
Highway vehicle, uns.	2	0.06%		0.000550358	Highway vehicle, uns.	2	0.06%		0.000550358
Truck, uns.	1	0.03%		0.000275179	Truck, uns.	1	0.03%		0.000275179

Process Step 1									
Drive Module from Alantra to Florenceville-Bristol									
Resources									
Labourer/Pickup Driver 1					Labourer/Pickup Driver 2				
Risks									
Event Exposure/Source of Injury Combination	**Frequency (#)**	**Frequency (%)**	**Severity Factor**	**Frequency * Severity**	**Event Exposure/Source of Injury Combination**	**Frequency (#)**	**Frequency (%)**	**Severity Factor**	**Frequency * Severity**
		1.32%	1.066063596	1.408%			1.32%	1.066063596	1.408%
Highway accident, n.e.c.			1.000		**Highway accident, n.e.c.**			1.000	
Truck, uns.	3	0.08%		0.000825537	Truck, uns.	3	0.08%		0.000825537
Highway accident, uns.			1.000		**Highway accident, uns.**			1.000	
Highway vehicle, nonmotorized, uns.	1	0.03%		0.000275179	Highway vehicle, nonmotorized, uns.	1	0.03%		0.000275179
Jack-knifed or overturned -- no collision			1.158		**Jack-knifed or overturned -- no collision**			1.158	
Highway vehicle, uns.	2	0.06%		0.000637256	Highway vehicle, uns.	2	0.06%		0.000637256
Pickup truck	1	0.03%		0.000318628	Pickup truck	1	0.03%		0.000318628
Truck, n.e.c.	2	0.06%		0.000637256	Truck, n.e.c.	2	0.06%		0.000637256
Truck, uns.	4	0.11%		0.001274513	Truck, uns.	4	0.11%		0.001274513
Moving and standing vehicle, mobile equipment -- in roadway			1.250		**Moving and standing vehicle, mobile equipment -- in roadway**			1.250	
Pickup truck	1	0.03%		0.000343974	Pickup truck	1	0.03%		0.000343974
Truck, n.e.c.	1	0.03%		0.000343974	Truck, n.e.c.	1	0.03%		0.000343974
Vehicle, uns.	1	0.03%		0.000343974	Vehicle, uns.	1	0.03%		0.000343974
Moving in intersection			1.000		**Moving in intersection**			1.000	
Pickup truck	1	0.03%		0.000275179	Pickup truck	1	0.03%		0.000275179
Moving in opposite directions, oncoming			1.083		**Moving in opposite directions, oncoming**			1.083	
Delivery truck	2	0.06%		0.000596221	Delivery truck	2	0.06%		0.000596221
Highway vehicle, uns.	3	0.08%		0.000894331	Highway vehicle, uns.	3	0.08%		0.000894331
Pickup truck	2	0.06%		0.000596221	Pickup truck	2	0.06%		0.000596221
Semitrailer, tractor trailer, trailer truck	1	0.03%		0.00029811	Semitrailer, tractor trailer, trailer truck	1	0.03%		0.00029811
Truck, n.e.c.	1	0.03%		0.00029811	Truck, n.e.c.	1	0.03%		0.00029811
Truck, uns.	2	0.06%		0.000596221	Truck, uns.	2	0.06%		0.000596221
Vehicle, uns.	1	0.03%		0.00029811	Vehicle, uns.	1	0.03%		0.00029811
Moving in same direction			1.000		**Moving in same direction**			1.000	
Automobile	1	0.03%		0.000275179	Automobile	1	0.03%		0.000275179
Dump truck	1	0.03%		0.000275179	Dump truck	1	0.03%		0.000275179
Highway vehicle, uns.	1	0.03%		0.000275179	Highway vehicle, uns.	1	0.03%		0.000275179
Pickup truck	1	0.03%		0.000275179	Pickup truck	1	0.03%		0.000275179
Snow plows	1	0.03%		0.000275179	Snow plows	1	0.03%		0.000275179
Truck, n.e.c.	1	0.03%		0.000275179	Truck, n.e.c.	1	0.03%		0.000275179
Truck, uns.	2	0.06%		0.000550358	Truck, uns.	2	0.06%		0.000550358
Van -- passenger or light delivery	1	0.03%		0.000275179	Van -- passenger or light delivery	1	0.03%		0.000275179
Noncollision accident, n.e.c.			1.000		**Noncollision accident, n.e.c.**			1.000	
Truck, uns.	2	0.06%		0.000550358	Truck, uns.	2	0.06%		0.000550358
Ran off highway -- no collision			1.000		**Ran off highway -- no collision**			1.000	
Truck, uns.	1	0.03%		0.000275179	Truck, uns.	1	0.03%		0.000275179
Transportation accident, uns.			1.000		**Transportation accident, uns.**			1.000	
Truck, uns.	1	0.03%		0.000275179	Truck, uns.	1	0.03%		0.000275179
Vehicle struck stationary object or equipment in roadway			1.000		**Vehicle struck stationary object or equipment in roadway**			1.000	
Highway vehicle, uns.	1	0.03%		0.000275179	Highway vehicle, uns.	1	0.03%		0.000275179
Semitrailer, tractor trailer, trailer truck	1	0.03%		0.000275179	Semitrailer, tractor trailer, trailer truck	1	0.03%		0.000275179
Vehicle struck stationary object, equipment on side of road			1.000		**Vehicle struck stationary object, equipment on side of road**			1.000	
Automobile	1	0.03%		0.000275179	Automobile	1	0.03%		0.000275179
Highway vehicle, uns.	2	0.06%		0.000550358	Highway vehicle, uns.	2	0.06%		0.000550358
Truck, uns.	1	0.03%		0.000275179	Truck, uns.	1	0.03%		0.000275179

Process Step 2				
Park Truck				
Resources				
Labourer/Driver 1				
Risks				
		Frequency (%)	**Severity Factor**	**Frequency * Severity**
Event Exposure/Source of Injury Combination	**Frequency (#)**	1.29%	1.020574067	1.320%
Fall from nonmoving vehicle			1.019	
Floors, walkways, ground surfaces, n.e.c.	1	0.03%		0.000280371
Floors, walkways, ground surfaces, uns.	9	0.25%		0.002523338
Ground	27	0.74%		0.007570015
Parts and materials, uns.	1	0.03%		0.000280371
Struck by or slammed in swinging door or gate			1.125	
Truck, n.e.c.	1	0.03%		0.000309576
Truck, uns.	1	0.03%		0.000309576
Jump from nonmoving vehicle			1.000	
Floors, walkways, ground surfaces, uns.	1	0.03%		0.000275179
Ground	2	0.06%		0.000550358
Jump to lower level, n.e.c.			1.000	
Floors, walkways, ground surfaces, uns.	1	0.03%		0.000275179
Ground	3	0.08%		0.000825537

Process Step				
Prepping Module Storage Area				
Resources				
Labourer/Driver 2				
Risks				
Event Exposure/Source of Injury Combination	**Frequency (#)**	**Frequency (%)**	**Severity Factor**	**Frequency * Severity**
		10.46%	1.002717	10.49%
Fall on same level, n.e.c.			1.000	
Floors, walkways, ground surfaces, uns.	2	0.06%		0.000550358
Ground	3	0.08%		0.000825537
Structures and surfaces, n.e.c.	1	0.03%		0.000275179
Fall on same level, uns.			1.000	
Ground	2	0.06%		0.000550358
Unknown	1	0.03%		0.000275179
Fall onto or against objects			1.000	
Floors, walkways, ground surfaces, uns.	1	0.03%		0.000275179
Ice, sleet, snow	1	0.03%		0.000275179
Fall to floor, walkway, or other surface			1.004	
Floors, walkways, ground surfaces, n.e.c.	2	0.06%		0.000552366
Floors, walkways, ground surfaces, uns.	59	1.62%		0.016294807
Ground	100	2.75%		0.027618317
Other floors, walkways, ground surfaces, uns.	2	0.06%		0.000552366
Fall, n.e.c.			1.071	
Floors, walkways, ground surfaces, uns.	4	0.11%		0.001179338
Ground	1	0.03%		0.000294834
Other floors, walkways, ground surfaces, uns.	1	0.03%		0.000294834
Fall, uns.			1.000	
Floors, walkways, ground surfaces, uns.	1	0.03%		0.000275179
Ground	2	0.06%		0.000550358
Slip,trip,stepped on or in, loss of balance - with or without twisting - without fall,nec			1.000	
Bodily motion or position of injured, ill worker	54	1.49%		0.014859659
Slip,trip,stepped on or in, loss of balance - with or without twisting - without fall,uns			1.000	
Bodily motion or position of injured, ill worker	13	0.36%		0.003577325
Slipping on something - with or without twisting - without fall			1.000	
Bodily motion or position of injured, ill worker	51	1.40%		0.014034122
Standing			1.000	
Bodily motion or position of injured, ill worker	1	0.03%		0.000275179
Stepping in a hole or on an object - with or without twisting - without fall			1.000	
Bodily motion or position of injured, ill worker	58	1.60%		0.015960374
Struck against object, n.e.c.			1.000	
Ground	1	0.03%		0.000275179
Struck against stationary object			1.009	
Ground	1	0.03%		0.000277658
Tripping over something - with or without twisting - without fall			1.000	
Bodily motion or position of injured, ill worker	13	0.36%		0.003577325
Walking -- without other incident			1.000	
Bodily motion or position of injured, ill worker	5	0.14%		0.001375894

Process Step 3

Unstrap Load

Resources

Risks

Labourer/Driver 1

Event Exposure/Source of Injury Combination	Frequency (#)	Frequency (%)	Severity Factor	Frequency * Severity
		21.46%	1.001381	21.49%
Bending, climbing, crawling, reaching, twisting			1.000	
Bodily motion or position of injured, ill worker	252	6.93%		0.069345074
Bodily reaction and exertion, n.e.c.			1.000	
Bodily motion or position of injured, ill worker	9	0.25%		0.00247661
Hard hats	1	0.03%		0.000275179
Trailers	1	0.03%		0.000275179
Truck, n.e.c.	1	0.03%		0.000275179
Truck, uns.	2	0.06%		0.000550358
Bodily reaction and exertion, uns.			1.000	
Bodily motion or position of injured, ill worker	1	0.03%		0.000275179
Bodily reaction, n.e.c.			1.000	
Bodily motion or position of injured, ill worker	86	2.37%		0.023665382
Bodily reaction, uns.			1.000	
Bodily motion or position of injured, ill worker	7	0.19%		0.001926252
Person -- injured or ill worker, uns.	1	0.03%		0.000275179
Contact with objects and equipment, uns.			1.000	
Parts and materials, n.e.c.	1	0.03%		0.000275179
Trailers	1	0.03%		0.000275179
Fall from floor, dock, or ground level, n.e.c.			1.000	
Truck, uns.	1	0.03%		0.000275179
Fall on same level, n.e.c.			1.000	
Floors, walkways, ground surfaces, uns.	2	0.06%		0.000550358
Ground	3	0.08%		0.000825537
Structures and surfaces, n.e.c.	1	0.03%		0.000275179
Trailers	1	0.03%		0.000275179
Fall on same level, uns.			1.000	
Ground	2	0.06%		0.000550358
Fall onto or against objects			1.000	
Floors, walkways, ground surfaces, uns.	1	0.03%		0.000275179
Ice, sleet, snow	1	0.03%		0.000275179
Semitrailer, tractor trailer, trailer truck	2	0.06%		0.000550358
Trailers	4	0.11%		0.001100715
Truck, uns.	5	0.14%		0.001375894
Vehicle, uns.	1	0.03%		0.000275179
Fall to floor, walkway, or other surface			1.004	
Floors, walkways, ground surfaces, n.e.c.	2	0.06%		0.000552366
Floors, walkways, ground surfaces, uns.	59	1.62%		0.016294807
Ground	100	2.75%		0.027618317
Other floors, walkways, ground surfaces, uns.	2	0.06%		0.000552366

Labourer/Driver 2

Event Exposure/Source of Injury Combination	Frequency (#)	Frequency (%)	Severity Factor	Frequency * Severity
		21.46%	1.001381	21.49%
Bending, climbing, crawling, reaching, twisting			1.000	
Bodily motion or position of injured, ill worker	252	6.93%		0.069345074
Bodily reaction and exertion, n.e.c.			1.000	
Bodily motion or position of injured, ill worker	9	0.25%		0.00247661
Hard hats	1	0.03%		0.000275179
Trailers	1	0.03%		0.000275179
Truck, n.e.c.	1	0.03%		0.000275179
Truck, uns.	2	0.06%		0.000550358
Bodily reaction and exertion, uns.			1.000	
Bodily motion or position of injured, ill worker	1	0.03%		0.000275179
Bodily reaction, n.e.c.			1.000	
Bodily motion or position of injured, ill worker	86	2.37%		0.023665382
Bodily reaction, uns.			1.000	
Bodily motion or position of injured, ill worker	7	0.19%		0.001926252
Person -- injured or ill worker, uns.	1	0.03%		0.000275179
Contact with objects and equipment, uns.			1.000	
Parts and materials, n.e.c.	1	0.03%		0.000275179
Trailers	1	0.03%		0.000275179
Fall from floor, dock, or ground level, n.e.c.			1.000	
Truck, uns.	1	0.03%		0.000275179
Fall on same level, n.e.c.			1.000	
Floors, walkways, ground surfaces, uns.	2	0.06%		0.000550358
Ground	3	0.08%		0.000825537
Structures and surfaces, n.e.c.	1	0.03%		0.000275179
Trailers	1	0.03%		0.000275179
Fall on same level, uns.			1.000	
Ground	2	0.06%		0.000550358
Fall onto or against objects			1.000	
Floors, walkways, ground surfaces, uns.	1	0.03%		0.000275179
Ice, sleet, snow	1	0.03%		0.000275179
Semitrailer, tractor trailer, trailer truck	2	0.06%		0.000550358
Trailers	4	0.11%		0.001100715
Truck, uns.	5	0.14%		0.001375894
Vehicle, uns.	1	0.03%		0.000275179
Fall to floor, walkway, or other surface			1.004	
Floors, walkways, ground surfaces, n.e.c.	2	0.06%		0.000552366
Floors, walkways, ground surfaces, uns.	59	1.62%		0.016294807
Ground	100	2.75%		0.027618317
Other floors, walkways, ground surfaces, uns.	2	0.06%		0.000552366

Fall, n.e.c.			1.071		**Fall, n.e.c.**			1.071	
Floors, walkways, ground surfaces, uns.	4	0.11%		0.001179338	Floors, walkways, ground surfaces, uns.	4	0.11%		0.001179338
Ground	1	0.03%		0.000294834	Ground	1	0.03%		0.000294834
Other floors, walkways, ground surfaces, uns.	1	0.03%		0.000294834	Other floors, walkways, ground surfaces, uns.	1	0.03%		0.000294834
Fall, uns.			1.000		**Fall, uns.**			1.000	
Floors, walkways, ground surfaces, uns.	1	0.03%		0.000275179	Floors, walkways, ground surfaces, uns.	1	0.03%		0.000275179
Ground	2	0.06%		0.000550358	Ground	2	0.06%		0.000550358
Rubbed or abraded by kneeling on surface			1.000		**Rubbed or abraded by kneeling on surface**			1.000	
Floors, walkways, ground surfaces, n.e.c.	1	0.03%		0.000275179	Floors, walkways, ground surfaces, n.e.c.	1	0.03%		0.000275179
Floors, walkways, ground surfaces, uns.	2	0.06%		0.000550358	Floors, walkways, ground surfaces, uns.	2	0.06%		0.000550358
Slip,trip,stepped on or in, loss of balance - with or without twisting - without fall,nec			1.000		**Slip,trip,stepped on or in, loss of balance - with or without twisting - without fall,nec**			1.000	
Bodily motion or position of injured, ill worker	54	1.49%		0.014859659	Bodily motion or position of injured, ill worker	54	1.49%		0.014859659
Slip,trip,stepped on or in, loss of balance - with or without twisting - without fall,uns			1.000		**Slip,trip,stepped on or in, loss of balance - with or without twisting - without fall,uns**			1.000	
Bodily motion or position of injured, ill worker	13	0.36%		0.003577325	Bodily motion or position of injured, ill worker	13	0.36%		0.003577325
Slipping on something - with or without twisting - without fall			1.000		**Slipping on something - with or without twisting - without fall**			1.000	
Bodily motion or position of injured, ill worker	51	1.40%		0.014034122	Bodily motion or position of injured, ill worker	51	1.40%		0.014034122
Standing			1.000		**Standing**			1.000	
Bodily motion or position of injured, ill worker	1	0.03%		0.000275179	Bodily motion or position of injured, ill worker	1	0.03%		0.000275179
Static posture with the application of force to an object			1.000		**Static posture with the application of force to an object**			1.000	
Bodily motion or position of injured, ill worker	4	0.11%		0.001100715	Bodily motion or position of injured, ill worker	4	0.11%		0.001100715
Static posture without the application of force to an object			1.000		**Static posture without the application of force to an object**			1.000	
Bodily motion or position of injured, ill worker	9	0.25%		0.00247661	Bodily motion or position of injured, ill worker	9	0.25%		0.00247661
Stepping in a hole or on an object - with or without twisting - without fall			1.000		**Stepping in a hole or on an object - with or without twisting - without fall**			1.000	
Bodily motion or position of injured, ill worker	58	1.60%		0.015960374	Bodily motion or position of injured, ill worker	58	1.60%		0.015960374
Struck against object, n.e.c.			1.000		**Struck against object, n.e.c.**			1.000	
Ground	1	0.03%		0.000275179	Ground	1	0.03%		0.000275179
Trailers	1	0.03%		0.000275179	Trailers	1	0.03%		0.000275179
Truck, uns.	1	0.03%		0.000275179	Truck, uns.	1	0.03%		0.000275179
Struck against object, uns.			1.000		**Struck against object, uns.**			1.000	
Truck, uns.	1	0.03%		0.000275179	Truck, uns.	1	0.03%		0.000275179
Struck against stationary object			1.009		**Struck against stationary object**			1.009	
Ground	1	0.03%		0.000277658	Ground	1	0.03%		0.000277658
Parts and materials, uns.	1	0.03%		0.000277658	Parts and materials, uns.	1	0.03%		0.000277658
Truck, n.e.c.	1	0.03%		0.000277658	Truck, n.e.c.	1	0.03%		0.000277658
Truck, uns.	3	0.08%		0.000832974	Truck, uns.	3	0.08%		0.000832974
Tripping over something - with or without twisting - without fall			1.000		**Tripping over something - with or without twisting - without fall**			1.000	
Bodily motion or position of injured, ill worker	13	0.36%		0.003577325	Bodily motion or position of injured, ill worker	13	0.36%		0.003577325
Walking -- without other incident			1.000		**Walking -- without other incident**			1.000	
Bodily motion or position of injured, ill worker	5	0.14%		0.001375894	Bodily motion or position of injured, ill worker	5	0.14%		0.001375894

Process Step 4									
Partially Lift Load									
Resources									
Labourer/Driver 1					Labourer/Driver 2				
Risks									
		Frequency (%)	Severity Factor	Frequency * Severity			Frequency (%)	Severity Factor	Frequency * Severity
Event Exposure/Source of Injury Combination	Frequency (#)	0.03%	1.000000	0.028%	Event Exposure/Source of Injury Combination	Frequency (#)	0.03%	1.000000	0.028%
Standing			1.000		**Standing**			1.000	
Bodily motion or position of injured, ill worker	1	0.03%		0.000275179	Bodily motion or position of injured, ill worker	1	0.03%		0.000275179

Process Step 5									
Unstrap Load									
Resources									
Labourer/Driver 1					Labourer/Driver 2				
Risks									
		Frequency (%)	Severity Factor	Frequency * Severity			Frequency (%)	Severity Factor	Frequency * Severity
Event Exposure/Source of Injury Combination	Frequency (#)	21.46%	1.001381	21.49%	Event Exposure/Source of Injury Combination	Frequency (#)	21.46%	1.001381	21.49%
Bending, climbing, crawling, reaching, twisting			1.000		**Bending, climbing, crawling, reaching, twisting**			1.000	
Bodily motion or position of injured, ill worker	252	6.93%		0.069345074	Bodily motion or position of injured, ill worker	252	6.93%		0.069345074
Bodily reaction and exertion, n.e.c.			1.000		**Bodily reaction and exertion, n.e.c.**			1.000	
Bodily motion or position of injured, ill worker	9	0.25%		0.00247661	Bodily motion or position of injured, ill worker	9	0.25%		0.00247661
Hard hats	1	0.03%		0.000275179	Hard hats	1	0.03%		0.000275179
Trailers	1	0.03%		0.000275179	Trailers	1	0.03%		0.000275179
Truck, n.e.c.	1	0.03%		0.000275179	Truck, n.e.c.	1	0.03%		0.000275179
Truck, uns.	2	0.06%		0.000550358	Truck, uns.	2	0.06%		0.000550358
Bodily reaction and exertion, uns.			1.000		**Bodily reaction and exertion, uns.**			1.000	
Bodily motion or position of injured, ill worker	1	0.03%		0.000275179	Bodily motion or position of injured, ill worker	1	0.03%		0.000275179
Bodily reaction, n.e.c.			1.000		**Bodily reaction, n.e.c.**			1.000	
Bodily motion or position of injured, ill worker	86	2.37%		0.023665382	Bodily motion or position of injured, ill worker	86	2.37%		0.023665382
Bodily reaction, uns.			1.000		**Bodily reaction, uns.**			1.000	
Bodily motion or position of injured, ill worker	7	0.19%		0.001926252	Bodily motion or position of injured, ill worker	7	0.19%		0.001926252
Person -- injured or ill worker, uns.	1	0.03%		0.000275179	Person -- injured or ill worker, uns.	1	0.03%		0.000275179
Contact with objects and equipment, uns.			1.000		**Contact with objects and equipment, uns.**			1.000	
Parts and materials, n.e.c.	1	0.03%		0.000275179	Parts and materials, n.e.c.	1	0.03%		0.000275179
Trailers	1	0.03%		0.000275179	Trailers	1	0.03%		0.000275179
Fall from floor, dock, or ground level, n.e.c.			1.000		**Fall from floor, dock, or ground level, n.e.c.**			1.000	
Truck, uns.	1	0.03%		0.000275179	Truck, uns.	1	0.03%		0.000275179
Fall on same level, n.e.c.			1.000		**Fall on same level, n.e.c.**			1.000	
Floors, walkways, ground surfaces, uns.	2	0.06%		0.000550358	Floors, walkways, ground surfaces, uns.	2	0.06%		0.000550358
Ground	3	0.08%		0.000825537	Ground	3	0.08%		0.000825537
Structures and surfaces, n.e.c.	1	0.03%		0.000275179	Structures and surfaces, n.e.c.	1	0.03%		0.000275179
Trailers	1	0.03%		0.000275179	Trailers	1	0.03%		0.000275179
Fall on same level, uns.			1.000		**Fall on same level, uns.**			1.000	
Ground	2	0.06%		0.000550358	Ground	2	0.06%		0.000550358
Fall onto or against objects			1.000		**Fall onto or against objects**			1.000	
Floors, walkways, ground surfaces, uns.	1	0.03%		0.000275179	Floors, walkways, ground surfaces, uns.	1	0.03%		0.000275179
Ice, sleet, snow	1	0.03%		0.000275179	Ice, sleet, snow	1	0.03%		0.000275179
Semitrailer, tractor trailer, trailer truck	2	0.06%		0.000550358	Semitrailer, tractor trailer, trailer truck	2	0.06%		0.000550358
Trailers	4	0.11%		0.001100715	Trailers	4	0.11%		0.001100715
Truck, uns.	5	0.14%		0.001375894	Truck, uns.	5	0.14%		0.001375894
Vehicle, uns.	1	0.03%		0.000275179	Vehicle, uns.	1	0.03%		0.000275179
Fall to floor, walkway, or other surface			1.004		**Fall to floor, walkway, or other surface**			1.004	
Floors, walkways, ground surfaces, n.e.c.	2	0.06%		0.000552366	Floors, walkways, ground surfaces, n.e.c.	2	0.06%		0.000552366
Floors, walkways, ground surfaces, uns.	59	1.62%		0.016294807	Floors, walkways, ground surfaces, uns.	59	1.62%		0.016294807
Ground	100	2.75%		0.027618317	Ground	100	2.75%		0.027618317
Other floors, walkways, ground surfaces, uns.	2	0.06%		0.000552366	Other floors, walkways, ground surfaces, uns.	2	0.06%		0.000552366
Fall, n.e.c.			1.071		**Fall, n.e.c.**			1.071	
Floors, walkways, ground surfaces, uns.	4	0.11%		0.001179338	Floors, walkways, ground surfaces, uns.	4	0.11%		0.001179338
Ground	1	0.03%		0.000294834	Ground	1	0.03%		0.000294834
Other floors, walkways, ground surfaces, uns.	1	0.03%		0.000294834	Other floors, walkways, ground surfaces, uns.	1	0.03%		0.000294834
Fall, uns.			1.000		**Fall, uns.**			1.000	
Floors, walkways, ground surfaces, uns.	1	0.03%		0.000275179	Floors, walkways, ground surfaces, uns.	1	0.03%		0.000275179
Ground	2	0.06%		0.000550358	Ground	2	0.06%		0.000550358

Rubbed or abraded by kneeling on surface			1.000		**Rubbed or abraded by kneeling on surface**			1.000	
Floors, walkways, ground surfaces, n.e.c.	1	0.03%		0.000275179	Floors, walkways, ground surfaces, n.e.c.	1	0.03%		0.000275179
Floors, walkways, ground surfaces, uns.	2	0.06%		0.000550358	Floors, walkways, ground surfaces, uns.	2	0.06%		0.000550358
Slip,trip,stepped on or in, loss of balance - with or without twisting - without fall,nec			1.000		**Slip,trip,stepped on or in, loss of balance - with or without twisting - without fall,nec**			1.000	
Bodily motion or position of injured, ill worker	54	1.49%		0.014859659	Bodily motion or position of injured, ill worker	54	1.49%		0.014859659
Slip,trip,stepped on or in, loss of balance - with or without twisting - without fall,uns			1.000		**Slip,trip,stepped on or in, loss of balance - with or without twisting - without fall,uns**			1.000	
Bodily motion or position of injured, ill worker	13	0.36%		0.003577325	Bodily motion or position of injured, ill worker	13	0.36%		0.003577325
Slipping on something - with or without twisting - without fall			1.000		**Slipping on something - with or without twisting - without fall**			1.000	
Bodily motion or position of injured, ill worker	51	1.40%		0.014034122	Bodily motion or position of injured, ill worker	51	1.40%		0.014034122
Standing			1.000		**Standing**			1.000	
Bodily motion or position of injured, ill worker	1	0.03%		0.000275179	Bodily motion or position of injured, ill worker	1	0.03%		0.000275179
Static posture with the application of force to an object			1.000		**Static posture with the application of force to an object**			1.000	
Bodily motion or position of injured, ill worker	4	0.11%		0.001100715	Bodily motion or position of injured, ill worker	4	0.11%		0.001100715
Static posture without the application of force to an object			1.000		**Static posture without the application of force to an object**			1.000	
Bodily motion or position of injured, ill worker	9	0.25%		0.00247661	Bodily motion or position of injured, ill worker	9	0.25%		0.00247661
Stepping in a hole or on an object - with or without twisting - without fall			1.000		**Stepping in a hole or on an object - with or without twisting - without fall**			1.000	
Bodily motion or position of injured, ill worker	58	1.60%		0.015960374	Bodily motion or position of injured, ill worker	58	1.60%		0.015960374
Struck against object, n.e.c.			1.000		**Struck against object, n.e.c.**			1.000	
Ground	1	0.03%		0.000275179	Ground	1	0.03%		0.000275179
Trailers	1	0.03%		0.000275179	Trailers	1	0.03%		0.000275179
Truck, uns.	1	0.03%		0.000275179	Truck, uns.	1	0.03%		0.000275179
Struck against object, uns.			1.000		**Struck against object, uns.**			1.000	
Truck, uns.	1	0.03%		0.000275179	Truck, uns.	1	0.03%		0.000275179
Struck against stationary object			1.009		**Struck against stationary object**			1.009	
Ground	1	0.03%		0.000277658	Ground	1	0.03%		0.000277658
Parts and materials, uns.	1	0.03%		0.000277658	Parts and materials, uns.	1	0.03%		0.000277658
Truck, n.e.c.	1	0.03%		0.000277658	Truck, n.e.c.	1	0.03%		0.000277658
Truck, uns.	3	0.08%		0.000832974	Truck, uns.	3	0.08%		0.000832974
Tripping over something - with or without twisting - without fall			1.000		**Tripping over something - with or without twisting - without fall**			1.000	
Bodily motion or position of injured, ill worker	13	0.36%		0.003577325	Bodily motion or position of injured, ill worker	13	0.36%		0.003577325
Walking -- without other incident			1.000		**Walking -- without other incident**			1.000	
Bodily motion or position of injured, ill worker	5	0.14%		0.001375894	Bodily motion or position of injured, ill worker	5	0.14%		0.001375894

Process Step 5									
Unstrap Load									
Resources									
Labourer/Pickup Driver 1					Labourer/Pickup Driver 2				
Risks									
		Frequency (%)	Severity Factor	Frequency * Severity			Frequency (%)	Severity Factor	Frequency * Severity
Event Exposure/Source of Injury Combination	Frequency (#)	21.46%	1.001381	21.49%	Event Exposure/Source of Injury Combination	Frequency (#)	21.46%	1.001381	21.49%
Bending, climbing, crawling, reaching, twisting			1.000		**Bending, climbing, crawling, reaching, twisting**			1.000	
Bodily motion or position of injured, ill worker	252	6.93%		0.069345074	Bodily motion or position of injured, ill worker	252	6.93%		0.069345074
Bodily reaction and exertion, n.e.c.			1.000		**Bodily reaction and exertion, n.e.c.**			1.000	
Bodily motion or position of injured, ill worker	9	0.25%		0.00247661	Bodily motion or position of injured, ill worker	9	0.25%		0.00247661
Hard hats	1	0.03%		0.000275179	Hard hats	1	0.03%		0.000275179
Trailers	1	0.03%		0.000275179	Trailers	1	0.03%		0.000275179
Truck, n.e.c.	1	0.03%		0.000275179	Truck, n.e.c.	1	0.03%		0.000275179
Truck, uns.	2	0.06%		0.000550358	Truck, uns.	2	0.06%		0.000550358
Bodily reaction and exertion, uns.			1.000		**Bodily reaction and exertion, uns.**			1.000	
Bodily motion or position of injured, ill worker	1	0.03%		0.000275179	Bodily motion or position of injured, ill worker	1	0.03%		0.000275179
Bodily reaction, n.e.c.			1.000		**Bodily reaction, n.e.c.**			1.000	
Bodily motion or position of injured, ill worker	86	2.37%		0.023665382	Bodily motion or position of injured, ill worker	86	2.37%		0.023665382
Bodily reaction, uns.			1.000		**Bodily reaction, uns.**			1.000	
Bodily motion or position of injured, ill worker	7	0.19%		0.001926252	Bodily motion or position of injured, ill worker	7	0.19%		0.001926252
Person -- injured or ill worker, uns.	1	0.03%		0.000275179	Person -- injured or ill worker, uns.	1	0.03%		0.000275179
Contact with objects and equipment, uns.			1.000		**Contact with objects and equipment, uns.**			1.000	
Parts and materials, n.e.c.	1	0.03%		0.000275179	Parts and materials, n.e.c.	1	0.03%		0.000275179
Trailers	1	0.03%		0.000275179	Trailers	1	0.03%		0.000275179
Fall from floor, dock, or ground level, n.e.c.			1.000		**Fall from floor, dock, or ground level, n.e.c.**			1.000	
Truck, uns.	1	0.03%		0.000275179	Truck, uns.	1	0.03%		0.000275179
Fall on same level, n.e.c.			1.000		**Fall on same level, n.e.c.**			1.000	
Floors, walkways, ground surfaces, uns.	2	0.06%		0.000550358	Floors, walkways, ground surfaces, uns.	2	0.06%		0.000550358
Ground	3	0.08%		0.000825537	Ground	3	0.08%		0.000825537
Structures and surfaces, n.e.c.	1	0.03%		0.000275179	Structures and surfaces, n.e.c.	1	0.03%		0.000275179
Trailers	1	0.03%		0.000275179	Trailers	1	0.03%		0.000275179
Fall on same level, uns.			1.000		**Fall on same level, uns.**			1.000	
Ground	2	0.06%		0.000550358	Ground	2	0.06%		0.000550358
Fall onto or against objects			1.000		**Fall onto or against objects**			1.000	
Floors, walkways, ground surfaces, uns.	1	0.03%		0.000275179	Floors, walkways, ground surfaces, uns.	1	0.03%		0.000275179
Ice, sleet, snow	1	0.03%		0.000275179	Ice, sleet, snow	1	0.03%		0.000275179
Semitrailer, tractor trailer, trailer truck	2	0.06%		0.000550358	Semitrailer, tractor trailer, trailer truck	2	0.06%		0.000550358
Trailers	4	0.11%		0.001100715	Trailers	4	0.11%		0.001100715
Truck, uns.	5	0.14%		0.001375894	Truck, uns.	5	0.14%		0.001375894
Vehicle, uns.	1	0.03%		0.000275179	Vehicle, uns.	1	0.03%		0.000275179
Fall to floor, walkway, or other surface			1.004		**Fall to floor, walkway, or other surface**			1.004	
Floors, walkways, ground surfaces, n.e.c.	2	0.06%		0.000552366	Floors, walkways, ground surfaces, n.e.c.	2	0.06%		0.000552366
Floors, walkways, ground surfaces, uns.	59	1.62%		0.016294807	Floors, walkways, ground surfaces, uns.	59	1.62%		0.016294807
Ground	100	2.75%		0.027618317	Ground	100	2.75%		0.027618317
Other floors, walkways, ground surfaces, uns.	2	0.06%		0.000552366	Other floors, walkways, ground surfaces, uns.	2	0.06%		0.000552366
Fall, n.e.c.			1.071		**Fall, n.e.c.**			1.071	
Floors, walkways, ground surfaces, uns.	4	0.11%		0.001179338	Floors, walkways, ground surfaces, uns.	4	0.11%		0.001179338
Ground	1	0.03%		0.000294834	Ground	1	0.03%		0.000294834
Other floors, walkways, ground surfaces, uns.	1	0.03%		0.000294834	Other floors, walkways, ground surfaces, uns.	1	0.03%		0.000294834
Fall, uns.			1.000		**Fall, uns.**			1.000	
Floors, walkways, ground surfaces, uns.	1	0.03%		0.000275179	Floors, walkways, ground surfaces, uns.	1	0.03%		0.000275179
Ground	2	0.06%		0.000550358	Ground	2	0.06%		0.000550358

Rubbed or abraded by kneeling on surface			1.000		**Rubbed or abraded by kneeling on surface**			1.000	
Floors, walkways, ground surfaces, n.e.c.	1	0.03%		0.000275179	Floors, walkways, ground surfaces, n.e.c.	1	0.03%		0.000275179
Floors, walkways, ground surfaces, uns.	2	0.06%		0.000550358	Floors, walkways, ground surfaces, uns.	2	0.06%		0.000550358
Slip,trip,stepped on or in, loss of balance - with or without twisting - without fall,nec			1.000		**Slip,trip,stepped on or in, loss of balance - with or without twisting - without fall,nec**			1.000	
Bodily motion or position of injured, ill worker	54	1.49%		0.014859659	Bodily motion or position of injured, ill worker	54	1.49%		0.014859659
Slip,trip,stepped on or in, loss of balance - with or without twisting - without fall,uns			1.000		**Slip,trip,stepped on or in, loss of balance - with or without twisting - without fall,uns**			1.000	
Bodily motion or position of injured, ill worker	13	0.36%		0.003577325	Bodily motion or position of injured, ill worker	13	0.36%		0.003577325
Slipping on something - with or without twisting - without fall			1.000		**Slipping on something - with or without twisting - without fall**			1.000	
Bodily motion or position of injured, ill worker	51	1.40%		0.014034122	Bodily motion or position of injured, ill worker	51	1.40%		0.014034122
Standing			1.000		**Standing**			1.000	
Bodily motion or position of injured, ill worker	1	0.03%		0.000275179	Bodily motion or position of injured, ill worker	1	0.03%		0.000275179
Static posture with the application of force to an object			1.000		**Static posture with the application of force to an object**			1.000	
Bodily motion or position of injured, ill worker	4	0.11%		0.001100715	Bodily motion or position of injured, ill worker	4	0.11%		0.001100715
Static posture without the application of force to an object			1.000		**Static posture without the application of force to an object**			1.000	
Bodily motion or position of injured, ill worker	9	0.25%		0.00247661	Bodily motion or position of injured, ill worker	9	0.25%		0.00247661
Stepping in a hole or on an object - with or without twisting - without fall			1.000		**Stepping in a hole or on an object - with or without twisting - without fall**			1.000	
Bodily motion or position of injured, ill worker	58	1.60%		0.015960374	Bodily motion or position of injured, ill worker	58	1.60%		0.015960374
Struck against object, n.e.c.			1.000		**Struck against object, n.e.c.**			1.000	
Ground	1	0.03%		0.000275179	Ground	1	0.03%		0.000275179
Trailers	1	0.03%		0.000275179	Trailers	1	0.03%		0.000275179
Truck, uns.	1	0.03%		0.000275179	Truck, uns.	1	0.03%		0.000275179
Struck against object, uns.			1.000		**Struck against object, uns.**			1.000	
Truck, uns.	1	0.03%		0.000275179	Truck, uns.	1	0.03%		0.000275179
Struck against stationary object			1.009		**Struck against stationary object**			1.009	
Ground	1	0.03%		0.000277658	Ground	1	0.03%		0.000277658
Parts and materials, uns.	1	0.03%		0.000277658	Parts and materials, uns.	1	0.03%		0.000277658
Truck, n.e.c.	1	0.03%		0.000277658	Truck, n.e.c.	1	0.03%		0.000277658
Truck, uns.	3	0.08%		0.000832974	Truck, uns.	3	0.08%		0.000832974
Tripping over something - with or without twisting - without fall			1.000		**Tripping over something - with or without twisting - without fall**			1.000	
Bodily motion or position of injured, ill worker	13	0.36%		0.003577325	Bodily motion or position of injured, ill worker	13	0.36%		0.003577325
Walking -- without other incident			1.000		**Walking -- without other incident**			1.000	
Bodily motion or position of injured, ill worker	5	0.14%		0.001375894	Bodily motion or position of injured, ill worker	5	0.14%		0.001375894

Process Step 6									
Lower Load									
Resources									
Labourer/Driver 1					Labourer/Driver 2				
Risks									
		Frequency (%)	Severity Factor	Frequency * Severity			Frequency (%)	Severity Factor	Frequency * Severity
Event Exposure/Source of Injury Combination	Frequency (#)	0.03%	1.000000	0.028%	Event Exposure/Source of Injury Combination	Frequency (#)	0.03%	1.000000	0.028%
Standing			1.000		**Standing**			1.000	
Bodily motion or position of injured, ill worker	1	0.03%		0.000275179	Bodily motion or position of injured, ill worker	1	0.03%		0.000275179

Process Step 6									
Lower Load									
Resources									
Labourer/Pickup 1					Labourer/Pickup 2				
Risks									
		Frequency (%)	Severity Factor	Frequency * Severity			Frequency (%)	Severity Factor	Frequency * Severity
Event Exposure/Source of Injury Combination	Frequency (#)	0.03%	1.000000	0.028%	Event Exposure/Source of Injury Combination	Frequency (#)	0.03%	1.000000	0.028%
Standing			1.000		**Standing**			1.000	
Bodily motion or position of injured, ill worker	1	0.03%		0.000275179	Bodily motion or position of injured, ill worker	1	0.03%		0.000275179

Process Step 7							
Parked Truck							
Resources							
Labourer/Driver 1				Labourer/Driver 2			
Risks							
No risks				No risks			

Process Step 8

Align and Back Truck Up In Front of Trailer Jacks

Resources

Risks

Labourer/Driver 1

Event Exposure/Source of Injury Combination	Frequency (#)	Frequency (%)	Severity Factor	Frequency * Severity
		10.54%	1.005524	10.60%
Fall on same level, n.e.c.			1.000	
Floors, walkways, ground surfaces, uns.	2	0.06%		0.000550358
Ground	3	0.08%		0.000825537
Structures and surfaces, n.e.c.	1	0.03%		0.000275179
Trailers	1	0.03%		0.000275179
Fall on same level, uns.			1.000	
Ground	2	0.06%		0.000550358
Fall onto or against objects			1.000	
Floors, walkways, ground surfaces, uns.	1	0.03%		0.000275179
Ice, sleet, snow	1	0.03%		0.000275179
Fall to floor, walkway, or other surface			1.004	
Floors, walkways, ground surfaces, n.e.c.	2	0.06%		0.000552366
Floors, walkways, ground surfaces, uns.	59	1.62%		0.016294807
Ground	100	2.75%		0.027618317
Other floors, walkways, ground surfaces, uns.	2	0.06%		0.000552366
Fall, n.e.c.			1.071	
Floors, walkways, ground surfaces, uns.	4	0.11%		0.001179338
Ground	1	0.03%		0.000294834
Other floors, walkways, ground surfaces, uns.	1	0.03%		0.000294834
Fall, uns.			1.000	
Floors, walkways, ground surfaces, uns.	1	0.03%		0.000275179
Ground	2	0.06%		0.000550358
Slip,trip,stepped on or in, loss of balance - with or without twisting - without fall,nec			1.000	
Bodily motion or position of injured, ill worker	54	1.49%		0.014859659
Slip,trip,stepped on or in, loss of balance - with or without twisting - without fall,uns			1.000	
Bodily motion or position of injured, ill worker	13	0.36%		0.003577325
Slipping on something - with or without twisting - without fall			1.000	
Bodily motion or position of injured, ill worker	51	1.40%		0.014034122
Standing			1.000	
Bodily motion or position of injured, ill worker	1	0.03%		0.000275179
Static posture without the application of force to an object			1.000	
Bodily motion or position of injured, ill worker	9	0.25%		0.00247661
Stepping in a hole or on an object - with or without twisting - without fall			1.000	
Bodily motion or position of injured, ill worker	58	1.60%		0.015960374
Struck against object, n.e.c.			1.000	
Ground	1	0.03%		0.000275179
Struck against stationary object			1.009	
Ground	1	0.03%		0.000277658
Walking -- without other incident			1.000	
Bodily motion or position of injured, ill worker	5	0.14%		0.001375894
Pedestrian struck by vehicle, mobile equipment in parking lot or non-roadway area			1.167	
Pickup truck	1	0.03%		0.000321042
Semitrailer, tractor trailer, trailer truck	2	0.06%		0.000642084
Truck, n.e.c.	1	0.03%		0.000321042
Truck, uns.	1	0.03%		0.000321042
Pedestrian struck by vehicle, mobile equipment, n.e.c.			1.250	
Semitrailer, tractor trailer, trailer truck	1	0.03%		0.000343974
Pedestrian struck by vehicle, mobile equipment, uns.			1.000	
Truck, n.e.c.	1	0.03%		0.000275179

Labourer/Driver 2

Event Exposure/Source of Injury Combination	Frequency (#)	Frequency (%)	Severity Factor	Frequency * Severity
		0.11%	1.000000	0.11%
Noncollision accident, n.e.c.			1.000	
Truck, uns.	2	0.06%		0.000550358
Noncollision accident, n.e.c. -- nonhighway accident			1.000	
Vehicle, uns.	1	0.03%		0.000275179
Noncollision nonhighway accident, uns.			1.000	
Truck, uns.	1	0.03%		0.000275179

Process Step 8									
Align and Back Truck Up In Front of Trailer Jacks									
Resources									
Labourer/Pickup 1					Labourer/Pickup 2				
Risks									
		Frequency (%)	Severity Factor	Frequency * Severity			Frequency (%)	Severity Factor	Frequency * Severity
Event Exposure/Source of Injury Combination	Frequency (#)	10.54%	1.005524	10.60%	Event Exposure/Source of Injury Combination	Frequency (#)	10.54%	1.005524	10.60%
Fall on same level, n.e.c.			1.000		**Fall on same level, n.e.c.**			1.000	
Floors, walkways, ground surfaces, uns.	2	0.06%		0.000550358	Floors, walkways, ground surfaces, uns.	2	0.06%		0.000550358
Ground	3	0.08%		0.000825537	Ground	3	0.08%		0.000825537
Structures and surfaces, n.e.c.	1	0.03%		0.000275179	Structures and surfaces, n.e.c.	1	0.03%		0.000275179
Trailers	1	0.03%		0.000275179	Trailers	1	0.03%		0.000275179
Fall on same level, uns.			1.000		**Fall on same level, uns.**			1.000	
Ground	2	0.06%		0.000550358	Ground	2	0.06%		0.000550358
Fall onto or against objects			1.000		**Fall onto or against objects**			1.000	
Floors, walkways, ground surfaces, uns.	1	0.03%		0.000275179	Floors, walkways, ground surfaces, uns.	1	0.03%		0.000275179
Ice, sleet, snow	1	0.03%		0.000275179	Ice, sleet, snow	1	0.03%		0.000275179
Fall to floor, walkway, or other surface			1.004		**Fall to floor, walkway, or other surface**			1.004	
Floors, walkways, ground surfaces, n.e.c.	2	0.06%		0.000552366	Floors, walkways, ground surfaces, n.e.c.	2	0.06%		0.000552366
Floors, walkways, ground surfaces, uns.	59	1.62%		0.016294807	Floors, walkways, ground surfaces, uns.	59	1.62%		0.016294807
Ground	100	2.75%		0.027618317	Ground	100	2.75%		0.027618317
Other floors, walkways, ground surfaces, uns.	2	0.06%		0.000552366	Other floors, walkways, ground surfaces, uns.	2	0.06%		0.000552366
Fall, n.e.c.			1.071		**Fall, n.e.c.**			1.071	
Floors, walkways, ground surfaces, uns.	4	0.11%		0.001179338	Floors, walkways, ground surfaces, uns.	4	0.11%		0.001179338
Ground	1	0.03%		0.000294834	Ground	1	0.03%		0.000294834
Other floors, walkways, ground surfaces, uns.	1	0.03%		0.000294834	Other floors, walkways, ground surfaces, uns.	1	0.03%		0.000294834
Fall, uns.			1.000		**Fall, uns.**			1.000	
Floors, walkways, ground surfaces, uns.	1	0.03%		0.000275179	Floors, walkways, ground surfaces, uns.	1	0.03%		0.000275179
Ground	2	0.06%		0.000550358	Ground	2	0.06%		0.000550358
Slip,trip,stepped on or in, loss of balance - with or without twisting - without fall,nec			1.000		**Slip,trip,stepped on or in, loss of balance - with or without twisting - without fall,nec**			1.000	
Bodily motion or position of injured, ill worker	54	1.49%		0.014859659	Bodily motion or position of injured, ill worker	54	1.49%		0.014859659
Slip,trip,stepped on or in, loss of balance - with or without twisting - without fall,uns			1.000		**Slip,trip,stepped on or in, loss of balance - with or without twisting - without fall,uns**			1.000	
Bodily motion or position of injured, ill worker	13	0.36%		0.003577325	Bodily motion or position of injured, ill worker	13	0.36%		0.003577325
Slipping on something - with or without twisting - without fall			1.000		**Slipping on something - with or without twisting - without fall**			1.000	
Bodily motion or position of injured, ill worker	51	1.40%		0.014034122	Bodily motion or position of injured, ill worker	51	1.40%		0.014034122
Standing			1.000		**Standing**			1.000	
Bodily motion or position of injured, ill worker	1	0.03%		0.000275179	Bodily motion or position of injured, ill worker	1	0.03%		0.000275179
Static posture without the application of force to an object			1.000		**Static posture without the application of force to an object**			1.000	
Bodily motion or position of injured, ill worker	9	0.25%		0.00247661	Bodily motion or position of injured, ill worker	9	0.25%		0.00247661
Stepping in a hole or on an object - with or without twisting - without fall			1.000		**Stepping in a hole or on an object - with or without twisting - without fall**			1.000	
Bodily motion or position of injured, ill worker	58	1.60%		0.015960374	Bodily motion or position of injured, ill worker	58	1.60%		0.015960374
Struck against object, n.e.c.			1.000		**Struck against object, n.e.c.**			1.000	
Ground	1	0.03%		0.000275179	Ground	1	0.03%		0.000275179
Struck against stationary object			1.009		**Struck against stationary object**			1.009	
Ground	1	0.03%		0.000277658	Ground	1	0.03%		0.000277658
Walking -- without other incident			1.000		**Walking -- without other incident**			1.000	
Bodily motion or position of injured, ill worker	5	0.14%		0.001375894	Bodily motion or position of injured, ill worker	5	0.14%		0.001375894
Pedestrian struck by vehicle, mobile equipment in parking lot or non-roadway area			1.167		**Pedestrian struck by vehicle, mobile equipment in parking lot or non-roadway area**			1.167	
Pickup truck	1	0.03%		0.000321042	Pickup truck	1	0.03%		0.000321042
Semitrailer, tractor trailer, trailer truck	2	0.06%		0.000642084	Semitrailer, tractor trailer, trailer truck	2	0.06%		0.000642084
Truck, n.e.c.	1	0.03%		0.000321042	Truck, n.e.c.	1	0.03%		0.000321042
Truck, uns.	1	0.03%		0.000321042	Truck, uns.	1	0.03%		0.000321042
Pedestrian struck by vehicle, mobile equipment, n.e.c.			1.250		**Pedestrian struck by vehicle, mobile equipment, n.e.c.**			1.250	
Semitrailer, tractor trailer, trailer truck	1	0.03%		0.000343974	Semitrailer, tractor trailer, trailer truck	1	0.03%		0.000343974
Pedestrian struck by vehicle, mobile equipment, uns.			1.000		**Pedestrian struck by vehicle, mobile equipment, uns.**			1.000	
Truck, n.e.c.	1	0.03%		0.000275179	Truck, n.e.c.	1	0.03%		0.000275179

Process Step 10					
Check Alignment					
Resources					
Labourer/Driver 1					Labourer/Driver 2
Risks					
		Frequency (%)	Severity Factor	Frequency * Severity	
Event Exposure/Source of Injury Combination	Frequency (#)	10.35%	1.002746	10.38%	
Fall on same level, n.e.c.			1.000		**No risks**
Floors, walkways, ground surfaces, uns.	2	0.06%		0.000550358	
Ground	3	0.08%		0.000825537	
Structures and surfaces, n.e.c.	1	0.03%		0.000275179	
Trailers	1	0.03%		0.000275179	
Fall on same level, uns.			1.000		
Ground	2	0.06%		0.000550358	
Fall onto or against objects			1.000		
Floors, walkways, ground surfaces, uns.	1	0.03%		0.000275179	
Ice, sleet, snow	1	0.03%		0.000275179	
Fall to floor, walkway, or other surface			1.004		
Floors, walkways, ground surfaces, n.e.c.	2	0.06%		0.000552366	
Floors, walkways, ground surfaces, uns.	59	1.62%		0.016294807	
Ground	100	2.75%		0.027618317	
Other floors, walkways, ground surfaces, uns.	2	0.06%		0.000552366	
Fall, n.e.c.			1.071		
Floors, walkways, ground surfaces, uns.	4	0.11%		0.001179338	
Ground	1	0.03%		0.000294834	
Other floors, walkways, ground surfaces, uns.	1	0.03%		0.000294834	
Fall, uns.			1.000		
Floors, walkways, ground surfaces, uns.	1	0.03%		0.000275179	
Ground	2	0.06%		0.000550358	
Slip,trip,stepped on or in, loss of balance - with or without twisting - without fall,nec			1.000		
Bodily motion or position of injured, ill worker	54	1.49%		0.014859659	
Slip,trip,stepped on or in, loss of balance - with or without twisting - without fall,uns			1.000		
Bodily motion or position of injured, ill worker	13	0.36%		0.003577325	
Slipping on something - with or without twisting - without fall			1.000		
Bodily motion or position of injured, ill worker	51	1.40%		0.014034122	
Standing			1.000		
Bodily motion or position of injured, ill worker	1	0.03%		0.000275179	
Static posture without the application of force to an object			1.000		
Bodily motion or position of injured, ill worker	9	0.25%		0.00247661	
Stepping in a hole or on an object - with or without twisting - without fall			1.000		
Bodily motion or position of injured, ill worker	58	1.60%		0.015960374	
Struck against object, n.e.c.			1.000		
Ground	1	0.03%		0.000275179	
Struck against stationary object			1.009		
Ground	1	0.03%		0.000277658	
Walking -- without other incident			1.000		
Bodily motion or position of injured, ill worker	5	0.14%		0.001375894	

Process Step 11

Pull Truck Forward and Re-Align

Resources

Labourer/Driver 1

Risks

Event Exposure/Source of Injury Combination	Frequency (#)	Frequency (%)	Severity Factor	Frequency * Severity
		10.57%	1.005510	10.63%
Fall on same level, n.e.c.			1.000	
Floors, walkways, ground surfaces, uns.	2	0.06%		0.000550358
Ground	3	0.08%		0.000825537
Structures and surfaces, n.e.c.	1	0.03%		0.000275179
Trailers	1	0.03%		0.000275179
Fall on same level, uns.			1.000	
Ground	2	0.06%		0.000550358
Unknown	1	0.03%		0.000275179
Fall onto or against objects			1.000	
Floors, walkways, ground surfaces, uns.	1	0.03%		0.000275179
Ice, sleet, snow	1	0.03%		0.000275179
Fall to floor, walkway, or other surface			1.004	
Floors, walkways, ground surfaces, n.e.c.	2	0.06%		0.000552366
Floors, walkways, ground surfaces, uns.	59	1.62%		0.016294807
Ground	100	2.75%		0.027618317
Other floors, walkways, ground surfaces, uns.	2	0.06%		0.000552366
Fall, n.e.c.			1.071	
Floors, walkways, ground surfaces, uns.	4	0.11%		0.001179338
Ground	1	0.03%		0.000294834
Other floors, walkways, ground surfaces, uns.	1	0.03%		0.000294834
Fall, uns.			1.000	
Floors, walkways, ground surfaces, uns.	1	0.03%		0.000275179
Ground	2	0.06%		0.000550358
Slip,trip,stepped on or in, loss of balance - with or without twisting - without fall,nec			1.000	
Bodily motion or position of injured, ill worker	54	1.49%		0.014859659
Slip,trip,stepped on or in, loss of balance - with or without twisting - without fall,uns			1.000	
Bodily motion or position of injured, ill worker	13	0.36%		0.003577325
Slipping on something - with or without twisting - without fall			1.000	
Bodily motion or position of injured, ill worker	51	1.40%		0.014034122
Standing			1.000	
Bodily motion or position of injured, ill worker	1	0.03%		0.000275179
Static posture without the application of force to an object			1.000	
Bodily motion or position of injured, ill worker	9	0.25%		0.00247661
Stepping in a hole or on an object - with or without twisting - without fall			1.000	
Bodily motion or position of injured, ill worker	58	1.60%		0.015960374
Struck against object, n.e.c.			1.000	
Ground	1	0.03%		0.000275179
Struck against stationary object			1.009	
Ground	1	0.03%		0.000277658
Walking -- without other incident			1.000	
Bodily motion or position of injured, ill worker	5	0.14%		0.001375894
Pedestrian struck by vehicle, mobile equipment in parking lot or non-roadway area			1.167	
Pickup truck	1	0.03%		0.000321042
Semitrailer, tractor trailer, trailer truck	2	0.06%		0.000642084
Truck, n.e.c.	1	0.03%		0.000321042
Truck, uns.	1	0.03%		0.000321042
Pedestrian struck by vehicle, mobile equipment, n.e.c.			1.250	
Semitrailer, tractor trailer, trailer truck	1	0.03%		0.000343974
Pedestrian struck by vehicle, mobile equipment, uns.			1.000	
Truck, n.e.c.	1	0.03%		0.000275179

Labourer/Driver 2

Event Exposure/Source of Injury Combination	Frequency (#)	Frequency (%)	Severity Factor	Frequency * Severity
		0.11%	1.000000	0.11%
Noncollision accident, n.e.c.			1.000	
Truck, uns.	2	0.06%		0.000550358
Noncollision accident, n.e.c. -- nonhighway accident			1.000	
Vehicle, uns.	1	0.03%		0.000275179
Noncollision nonhighway accident, uns.			1.000	
Truck, uns.	1	0.03%		0.000275179

Process Step 13									
Lift Load									
Resources									
Labourer/Driver 1					Labourer/Driver 2				
Risks									
		Frequency (%)	Severity Factor	Frequency * Severity			Frequency (%)	Severity Factor	Frequency * Severity
Event Exposure/Source of Injury Combination	Frequency (#)	0.03%	1.000000	0.03%	Event Exposure/Source of Injury Combination	Frequency (#)	0.03%	1.000000	0.03%
Standing			1.000		**Standing**			1.000	
Bodily motion or position of injured, ill worker	1	0.03%		0.000275179	Bodily motion or position of injured, ill worker	1	0.03%		0.000275179

Process Step 15

Back Truck Up In Front of Trailer Jacks

Resources

Risks

Labourer/Driver 1

Event Exposure/Source of Injury Combination	Frequency (#)	Frequency (%) 10.54%	Severity Factor 1.005524	Frequency * Severity 10.60%
Fall on same level, n.e.c.			1.000	
Floors, walkways, ground surfaces, uns.	2	0.06%		0.000550358
Ground	3	0.08%		0.000825537
Structures and surfaces, n.e.c.	1	0.03%		0.000275179
Trailers	1	0.03%		0.000275179
Fall on same level, uns.			1.000	
Ground	2	0.06%		0.000550358
Fall onto or against objects			1.000	
Floors, walkways, ground surfaces, uns.	1	0.03%		0.000275179
Ice, sleet, snow	1	0.03%		0.000275179
Fall to floor, walkway, or other surface			1.004	
Floors, walkways, ground surfaces, n.e.c.	2	0.06%		0.000552366
Floors, walkways, ground surfaces, uns.	59	1.62%		0.016294807
Ground	100	2.75%		0.027618317
Other floors, walkways, ground surfaces, uns.	2	0.06%		0.000552366
Fall, n.e.c.			1.071	
Floors, walkways, ground surfaces, uns.	4	0.11%		0.001179338
Ground	1	0.03%		0.000294834
Other floors, walkways, ground surfaces, uns.	1	0.03%		0.000294834
Fall, uns.			1.000	
Floors, walkways, ground surfaces, uns.	1	0.03%		0.000275179
Ground	2	0.06%		0.000550358
Slip,trip,stepped on or in, loss of balance - with or without twisting - without fall,nec			1.000	
Bodily motion or position of injured, ill worker	54	1.49%		0.014859659
Slip,trip,stepped on or in, loss of balance - with or without twisting - without fall,uns			1.000	
Bodily motion or position of injured, ill worker	13	0.36%		0.003577325
Slipping on something - with or without twisting - without fall			1.000	
Bodily motion or position of injured, ill worker	51	1.40%		0.014034122
Standing			1.000	
Bodily motion or position of injured, ill worker	1	0.03%		0.000275179
Static posture without the application of force to an object			1.000	
Bodily motion or position of injured, ill worker	9	0.25%		0.00247661
Stepping in a hole or on an object - with or without twisting - without fall			1.000	
Bodily motion or position of injured, ill worker	58	1.60%		0.015960374
Struck against object, n.e.c.			1.000	
Ground	1	0.03%		0.000275179
Struck against stationary object			1.009	
Ground	1	0.03%		0.000277658
Walking -- without other incident			1.000	
Bodily motion or position of injured, ill worker	5	0.14%		0.001375894
Pedestrian struck by vehicle, mobile equipment in parking lot or non-roadway area			1.167	
Pickup truck	1	0.03%		0.000321042
Semitrailer, tractor trailer, trailer truck	2	0.06%		0.000642084
Truck, n.e.c.	1	0.03%		0.000321042
Truck, uns.	1	0.03%		0.000321042
Pedestrian struck by vehicle, mobile equipment, n.e.c.			1.250	
Semitrailer, tractor trailer, trailer truck	1	0.03%		0.000343974
Pedestrian struck by vehicle, mobile equipment, uns.			1.000	
Truck, n.e.c.	1	0.03%		0.000275179

Labourer/Driver 2

Event Exposure/Source of Injury Combination	Frequency (#)	Frequency (%) 0.11%	Severity Factor 1.000000	Frequency * Severity 0.11%
Noncollision accident, n.e.c.			1.000	
Truck, uns.	2	0.06%		0.000550358
Noncollision accident, n.e.c. -- nonhighway accident			1.000	
Vehicle, uns.	1	0.03%		0.000275179
Noncollision nonhighway accident, uns.			1.000	
Truck, uns.	1	0.03%		0.000275179

Process Step 10					
Check Alignment					
Resources					
Labourer/Driver 1					Labourer/Driver 2
Risks					
		Frequency (%)	**Severity Factor**	**Frequency * Severity**	
Event Exposure/Source of Injury Combination	**Frequency (#)**	10.35%	1.002746	10.38%	
Fall on same level, n.e.c.			1.000		**No risks**
Floors, walkways, ground surfaces, uns.	2	0.06%	2	0.000550358	
Ground	3	0.08%	2	0.000825537	
Structures and surfaces, n.e.c.	1	0.03%	2	0.000275179	
Trailers	1	0.03%	2	0.000275179	
Fall on same level, uns.			1.000		
Ground	2	0.06%	2	0.000550358	
Fall onto or against objects			1.000		
Floors, walkways, ground surfaces, uns.	1	0.03%	2	0.000275179	
Ice, sleet, snow	1	0.03%	2	0.000275179	
Fall to floor, walkway, or other surface			1.004		
Floors, walkways, ground surfaces, n.e.c.	2	0.06%	2	0.000552366	
Floors, walkways, ground surfaces, uns.	59	1.62%	2	0.016294807	
Ground	100	2.75%	2	0.027618317	
Other floors, walkways, ground surfaces, uns.	2	0.06%	2	0.000552366	
Fall, n.e.c.			1.071		
Floors, walkways, ground surfaces, uns.	4	0.11%	2	0.001179338	
Ground	1	0.03%	2	0.000294834	
Other floors, walkways, ground surfaces, uns.	1	0.03%	2	0.000294834	
Fall, uns.			1.000		
Floors, walkways, ground surfaces, uns.	1	0.03%	2	0.000275179	
Ground	2	0.06%	2	0.000550358	
Slip,trip,stepped on or in, loss of balance - with or without twisting - without fall,nec			1.000		
Bodily motion or position of injured, ill worker	54	1.49%	1	0.014859659	
Slip,trip,stepped on or in, loss of balance - with or without twisting - without fall,uns			1.000		
Bodily motion or position of injured, ill worker	13	0.36%	1	0.003577325	
Slipping on something - with or without twisting - without fall			1.000		
Bodily motion or position of injured, ill worker	51	1.40%	1	0.014034122	
Standing			1.000		
Bodily motion or position of injured, ill worker	1	0.03%	1	0.000275179	
Static posture without the application of force to an object			1.000		
Bodily motion or position of injured, ill worker	9	0.25%	1	0.00247661	
Stepping in a hole or on an object - with or without twisting - without fall			1.000		
Bodily motion or position of injured, ill worker	58	1.60%	1	0.015960374	
Struck against object, n.e.c.			1.000		
Ground	1	0.03%	2	0.000275179	
Struck against stationary object			1.009		
Ground	1	0.03%	2	0.000277658	
Walking -- without other incident			1.000		
Bodily motion or position of injured, ill worker	5	0.14%	1	0.001375894	

Process Step 11

Pull Truck Forward and Re-Align

Resources

Risks

Labourer/Driver 1

Event Exposure/Source of Injury Combination	Frequency (#)	Frequency (%)	Severity Factor	Frequency * Severity
		10.54%	1.005524	10.60%
Fall on same level, n.e.c.			1.000	
Floors, walkways, ground surfaces, uns.	2	0.06%	2	0.000550358
Ground	3	0.08%	2	0.000825537
Structures and surfaces, n.e.c.	1	0.03%	2	0.000275179
Trailers	1	0.03%	2	0.000275179
Fall on same level, uns.			1.000	
Ground	2	0.06%	2	0.000550358
Fall onto or against objects			1.000	
Floors, walkways, ground surfaces, uns.	1	0.03%	2	0.000275179
Ice, sleet, snow	1	0.03%	2	0.000275179
Fall to floor, walkway, or other surface			1.004	
Floors, walkways, ground surfaces, n.e.c.	2	0.06%	2	0.000552366
Floors, walkways, ground surfaces, uns.	59	1.62%	2	0.016294807
Ground	100	2.75%	2	0.027618317
Other floors, walkways, ground surfaces, uns.	2	0.06%	2	0.000552366
Fall, n.e.c.			1.071	
Floors, walkways, ground surfaces, uns.	4	0.11%	2	0.001179338
Ground	1	0.03%	2	0.000294834
Other floors, walkways, ground surfaces, uns.	1	0.03%	2	0.000294834
Fall, uns.			1.000	
Floors, walkways, ground surfaces, uns.	1	0.03%	2	0.000275179
Ground	2	0.06%	2	0.000550358
Slip,trip,stepped on or in, loss of balance - with or without twisting - without fall,nec			1.000	
Bodily motion or position of injured, ill worker	54	1.49%	1	0.014859659
Slip,trip,stepped on or in, loss of balance - with or without twisting - without fall,uns			1.000	
Bodily motion or position of injured, ill worker	13	0.36%	1	0.003577325
Slipping on something - with or without twisting - without fall			1.000	
Bodily motion or position of injured, ill worker	51	1.40%	1	0.014034122
Standing			1.000	
Bodily motion or position of injured, ill worker	1	0.03%	1	0.000275179
Static posture without the application of force to an object			1.000	
Bodily motion or position of injured, ill worker	9	0.25%	1	0.00247661
Stepping in a hole or on an object - with or without twisting - without fall			1.000	
Bodily motion or position of injured, ill worker	58	1.60%	1	0.015960374
Struck against object, n.e.c.			1.000	
Ground	1	0.03%	2	0.000275179
Struck against stationary object			1.009	
Ground	1	0.03%	2	0.000277658
Walking -- without other incident			1.000	
Bodily motion or position of injured, ill worker	5	0.14%	1	0.001375894
Pedestrian struck by vehicle, mobile equipment in parking lot or non-roadway area			1.167	
Pickup truck	1	0.03%	2	0.000321042
Semitrailer, tractor trailer, trailer truck	2	0.06%	3	0.000642084
Truck, n.e.c.	1	0.03%	2	0.000321042
Truck, uns.	1	0.03%	2	0.000321042
Pedestrian struck by vehicle, mobile equipment, n.e.c.			1.250	
Semitrailer, tractor trailer, trailer truck	1	0.03%	3	0.000343974
Pedestrian struck by vehicle, mobile equipment, uns.			1.000	
Truck, n.e.c.	1	0.03%	2	0.000275179

Labourer/Driver 2

Event Exposure/Source of Injury Combination	Frequency (#)	Frequency (%)	Severity Factor	Frequency * Severity
		0.11%	1.000000	0.11%
Noncollision accident, n.e.c.			1.000	
Truck, uns.	2	0.06%		0.000550358
Noncollision accident, n.e.c. -- nonhighway accident			1.000	
Vehicle, uns.	1	0.03%		0.000275179
Noncollision nonhighway accident, uns.			1.000	
Truck, uns.	1	0.03%		0.000275179

Process Step 20				
Lower Module Onto Trailer Jacks				
Resources				
Labourer/Driver 1				
Risks				
Event Exposure/Source of Injury Combination	**Frequency (#)**	**Frequency (%)** 0.30%	**Severity Factor** 1.104046	**Frequency * Severity** 0.33%
Caught in or compressed by equipment or objects, n.e.c.			1.127	
Parts and materials, n.e.c.	1	0.03%		0.000310173
Parts and materials, uns.	1	0.03%		0.000310173
Semitrailer, tractor trailer, trailer truck	3	0.08%		0.000930518
Trailers	4	0.11%		0.001240691
Contact with objects and equipment, uns.			1.000	
Parts and materials, n.e.c.	1	0.03%		0.000275179
Trailers	1	0.03%		0.000275179

Labourer/Driver 2				
Event Exposure/Source of Injury Combination	**Frequency (#)**	**Frequency (%)** 0.03%	**Severity Factor** 1.000000	**Frequency * Severity** 0.03%
Standing			1.000	
Bodily motion or position of injured, ill worker	1	0.03%		0.000275179

Process Step 20				
Lower Module Onto Trailer Jacks				
Resources				
Labourer/Pickup Driver 1				
Risks				
Event Exposure/Source of Injury Combination	**Frequency (#)**	**Frequency (%)** 0.03%	**Severity Factor** 1.000000	**Frequency * Severity** 0.03%
Standing			1.000	
Bodily motion or position of injured, ill worker	1	0.03%		0.000275179

Labourer/Pickup Driver 2				
Event Exposure/Source of Injury Combination	**Frequency (#)**	**Frequency (%)** 0.03%	**Severity Factor** 1.000000	**Frequency * Severity** 0.03%
Standing			1.000	
Bodily motion or position of injured, ill worker	1	0.03%		0.000275179

Process Step 21

Inspect Jack Placement and Stability

Resources

Risks

Labourer/Driver 1

Event Exposure/Source of Injury Combination	Frequency (#)	Frequency (%)	Severity Factor	Frequency * Severity
		10.48%	1.002828	10.51%
Fall on same level, n.e.c.			1.000	
Floors, walkways, ground surfaces, uns.	2	0.06%		0.000550358
Ground	3	0.08%		0.000825537
Structures and surfaces, n.e.c.	1	0.03%		0.000275179
Trailers	1	0.03%		0.000275179
Fall on same level, uns.			1.000	
Ground	2	0.06%		0.000550358
Fall onto or against objects			1.000	
Floors, walkways, ground surfaces, uns.	1	0.03%		0.000275179
Ice, sleet, snow	1	0.03%		0.000275179
Fall to floor, walkway, or other surface			1.004	
Floors, walkways, ground surfaces, n.e.c.	2	0.06%		0.000552366
Floors, walkways, ground surfaces, uns.	59	1.62%		0.016294807
Ground	100	2.75%		0.027618317
Other floors, walkways, ground surfaces, uns.	2	0.06%		0.000552366
Fall, n.e.c.			1.071	
Floors, walkways, ground surfaces, uns.	4	0.11%		0.001179338
Ground	1	0.03%		0.000294834
Other floors, walkways, ground surfaces, uns.	1	0.03%		0.000294834
Fall, uns.			1.000	
Floors, walkways, ground surfaces, uns.	1	0.03%		0.000275179
Ground	2	0.06%		0.000550358
Slip,trip,stepped on or in, loss of balance - with or without twisting - without fall,nec			1.000	
Bodily motion or position of injured, ill worker	54	1.49%		0.014859659
Slip,trip,stepped on or in, loss of balance - with or without twisting - without fall,uns			1.000	
Bodily motion or position of injured, ill worker	13	0.36%		0.003577325
Slipping on something - with or without twisting - without fall			1.000	
Bodily motion or position of injured, ill worker	51	1.40%		0.014034122
Standing			1.000	
Bodily motion or position of injured, ill worker	1	0.03%		0.000275179
Static posture without the application of force to an object			1.000	
Bodily motion or position of injured, ill worker	9	0.25%		0.00247661
Stepping in a hole or on an object - with or without twisting - without fall			1.000	
Bodily motion or position of injured, ill worker	58	1.60%		0.015960374
Struck against object, n.e.c.			1.000	
Ground	1	0.03%		0.000275179
Struck against stationary object			1.009	
Ground	1	0.03%		0.000277658
Parts and materials, uns.	1	0.03%		0.000277658
Truck, n.e.c.	1	0.03%		0.000277658
Truck, uns.	3	0.08%		0.000832974
Walking -- without other incident			1.000	
Bodily motion or position of injured, ill worker	5	0.14%		0.001375894

Labourer/Driver 2

Event Exposure/Source of Injury Combination	Frequency (#)	Frequency (%)	Severity Factor	Frequency * Severity
		10.48%	1.002828	10.51%
Fall on same level, n.e.c.			1.000	
Floors, walkways, ground surfaces, uns.	2	0.06%		0.000550358
Ground	3	0.08%		0.000825537
Structures and surfaces, n.e.c.	1	0.03%		0.000275179
Trailers	1	0.03%		0.000275179
Fall on same level, uns.			1.000	
Ground	2	0.06%		0.000550358
Fall onto or against objects			1.000	
Floors, walkways, ground surfaces, uns.	1	0.03%		0.000275179
Ice, sleet, snow	1	0.03%		0.000275179
Fall to floor, walkway, or other surface			1.004	
Floors, walkways, ground surfaces, n.e.c.	2	0.06%		0.000552366
Floors, walkways, ground surfaces, uns.	59	1.62%		0.016294807
Ground	100	2.75%		0.027618317
Other floors, walkways, ground surfaces, uns.	2	0.06%		0.000552366
Fall, n.e.c.			1.071	
Floors, walkways, ground surfaces, uns.	4	0.11%		0.001179338
Ground	1	0.03%		0.000294834
Other floors, walkways, ground surfaces, uns.	1	0.03%		0.000294834
Fall, uns.			1.000	
Floors, walkways, ground surfaces, uns.	1	0.03%		0.000275179
Ground	2	0.06%		0.000550358
Slip,trip,stepped on or in, loss of balance - with or without twisting - without fall,nec			1.000	
Bodily motion or position of injured, ill worker	54	1.49%		0.014859659
Slip,trip,stepped on or in, loss of balance - with or without twisting - without fall,uns			1.000	
Bodily motion or position of injured, ill worker	13	0.36%		0.003577325
Slipping on something - with or without twisting - without fall			1.000	
Bodily motion or position of injured, ill worker	51	1.40%		0.014034122
Standing			1.000	
Bodily motion or position of injured, ill worker	1	0.03%		0.000275179
Static posture without the application of force to an object			1.000	
Bodily motion or position of injured, ill worker	9	0.25%		0.00247661
Stepping in a hole or on an object - with or without twisting - without fall			1.000	
Bodily motion or position of injured, ill worker	58	1.60%		0.015960374
Struck against object, n.e.c.			1.000	
Ground	1	0.03%		0.000275179
Struck against stationary object			1.009	
Ground	1	0.03%		0.000277658
Parts and materials, uns.	1	0.03%		0.000277658
Truck, n.e.c.	1	0.03%		0.000277658
Truck, uns.	3	0.08%		0.000832974
Walking -- without other incident			1.000	
Bodily motion or position of injured, ill worker	5	0.14%		0.001375894

Labourer/Pickup Driver 1

Event Exposure/Source of Injury Combination	Frequency (#)	Frequency (%)	Severity Factor	Frequency * Severity
		10.48%	1.002828	10.51%
Fall on same level, n.e.c.			1.000	
Floors, walkways, ground surfaces, uns.	2	0.06%		0.000550358
Ground	3	0.08%		0.000825537
Structures and surfaces, n.e.c.	1	0.03%		0.000275179
Trailers	1	0.03%		0.000275179
Fall on same level, uns.			1.000	
Ground	2	0.06%		0.000550358
Fall onto or against objects			1.000	
Floors, walkways, ground surfaces, uns.	1	0.03%		0.000275179
Ice, sleet, snow	1	0.03%		0.000275179
Fall to floor, walkway, or other surface			1.004	
Floors, walkways, ground surfaces, n.e.c.	2	0.06%		0.000552366
Floors, walkways, ground surfaces, uns.	59	1.62%		0.016294807
Ground	100	2.75%		0.027618317
Other floors, walkways, ground surfaces, uns.	2	0.06%		0.000552366
Fall, n.e.c.			1.071	
Floors, walkways, ground surfaces, uns.	4	0.11%		0.001179338
Ground	1	0.03%		0.000294834
Other floors, walkways, ground surfaces, uns.	1	0.03%		0.000294834
Fall, uns.			1.000	
Floors, walkways, ground surfaces, uns.	1	0.03%		0.000275179
Ground	2	0.06%		0.000550358
Slip,trip,stepped on or in, loss of balance - with or without twisting - without fall,nec			1.000	
Bodily motion or position of injured, ill worker	54	1.49%		0.014859659
Slip,trip,stepped on or in, loss of balance - with or without twisting - without fall,uns			1.000	
Bodily motion or position of injured, ill worker	13	0.36%		0.003577325
Slipping on something - with or without twisting - without fall			1.000	
Bodily motion or position of injured, ill worker	51	1.40%		0.014034122
Standing			1.000	
Bodily motion or position of injured, ill worker	1	0.03%		0.000275179
Static posture without the application of force to an object			1.000	
Bodily motion or position of injured, ill worker	9	0.25%		0.00247661
Stepping in a hole or on an object - with or without twisting - without fall			1.000	
Bodily motion or position of injured, ill worker	58	1.60%		0.015960374
Struck against object, n.e.c.			1.000	
Ground	1	0.03%		0.000275179
Struck against stationary object			1.009	
Ground	1	0.03%		0.000277658
Parts and materials, uns.	1	0.03%		0.000277658
Truck, n.e.c.	1	0.03%		0.000277658
Truck, uns.	3	0.08%		0.000832974
Walking -- without other incident			1.000	
Bodily motion or position of injured, ill worker	5	0.14%		0.001375894

Process Step 22									
Lower Truck & Remove Truck from Module Jack Stand Area									
Resources									
Labourer/Driver 1					Labourer/Driver 2				
Risks									
Event Exposure/Source of Injury Combination	**Frequency (#)**	**Frequency (%)**	**Severity Factor**	**Frequency * Severity**	**Event Exposure/Source of Injury Combination**	**Frequency (#)**	**Frequency (%)**	**Severity Factor**	**Frequency * Severity**
		0.03%	1.000000	0.028%			0.41%	0.594444	0.245%
Standing			1.000		**Standing**			1.000	
Bodily motion or position of injured, ill worker	1	0.03%		0.028%	Bodily motion or position of injured, ill worker	1	0.03%		0.028%
					Pedestrian struck by vehicle, mobile equipment in parking lot or		0.19%	1.167	
					Semitrailer, tractor trailer, trailer truck	2	0.06%		0.064%
					Truck, n.e.c.	1	0.03%		0.032%
					Truck, uns.	1	0.03%		0.032%
					Pedestrian struck by vehicle, mobile equipment, n.e.c.			1.250	
					Semitrailer, tractor trailer, trailer truck	1	0.03%		0.034%
					Pedestrian struck by vehicle, mobile equipment, uns.			1.000	
					Truck, n.e.c.	1	0.03%		0.028%
					Noncollision nonhighway accident, uns.			1.000	
					Truck, uns.	1	0.03%		0.028%

Process Step 27

Secure Truck and Straps for Departure

Resources

Labourer/Driver 1					Labourer/Driver 2				
Risks									
Event Exposure/Source of Injury Combination	**Frequency (#)**	**Frequency (%)** 10.48%	**Severity Factor** 1.002828	**Frequency * Severity** 10.51%	**Event Exposure/Source of Injury Combination**	**Frequency (#)**	**Frequency (%)** 10.48%	**Severity Factor** 1.002828	**Frequency * Severity** 10.51%
Fall on same level, n.e.c.			1.000		**Fall on same level, n.e.c.**			1.000	
Floors, walkways, ground surfaces, uns.	2	0.06%		0.000550358	Floors, walkways, ground surfaces, uns.	2	0.06%		0.000550358
Ground	3	0.08%		0.000825537	Ground	3	0.08%		0.000825537
Structures and surfaces, n.e.c.	1	0.03%		0.000275179	Structures and surfaces, n.e.c.	1	0.03%		0.000275179
Trailers	1	0.03%		0.000275179	Trailers	1	0.03%		0.000275179
Fall on same level, uns.			1.000		**Fall on same level, uns.**			1.000	
Ground	2	0.06%		0.000550358	Ground	2	0.06%		0.000550358
Fall onto or against objects			1.000		**Fall onto or against objects**			1.000	
Floors, walkways, ground surfaces, uns.	1	0.03%		0.000275179	Floors, walkways, ground surfaces, uns.	1	0.03%		0.000275179
Ice, sleet, snow	1	0.03%		0.000275179	Ice, sleet, snow	1	0.03%		0.000275179
Fall to floor, walkway, or other surface			1.004		**Fall to floor, walkway, or other surface**			1.004	
Floors, walkways, ground surfaces, n.e.c.	2	0.06%		0.000552366	Floors, walkways, ground surfaces, n.e.c.	2	0.06%		0.000552366
Floors, walkways, ground surfaces, uns.	59	1.62%		0.016294807	Floors, walkways, ground surfaces, uns.	59	1.62%		0.016294807
Ground	100	2.75%		0.027618317	Ground	100	2.75%		0.027618317
Other floors, walkways, ground surfaces, uns.	2	0.06%		0.000552366	Other floors, walkways, ground surfaces, uns.	2	0.06%		0.000552366
Fall, n.e.c.			1.071		**Fall, n.e.c.**			1.071	
Floors, walkways, ground surfaces, uns.	4	0.11%		0.001179338	Floors, walkways, ground surfaces, uns.	4	0.11%		0.001179338
Ground	1	0.03%		0.000294834	Ground	1	0.03%		0.000294834
Other floors, walkways, ground surfaces, uns.	1	0.03%		0.000294834	Other floors, walkways, ground surfaces, uns.	1	0.03%		0.000294834
Fall, uns.			1.000		**Fall, uns.**			1.000	
Floors, walkways, ground surfaces, uns.	1	0.03%		0.000275179	Floors, walkways, ground surfaces, uns.	1	0.03%		0.000275179
Ground	2	0.06%		0.000550358	Ground	2	0.06%		0.000550358
Slip,trip,stepped on or in, loss of balance - with or without twisting - without fall,nec			1.000		**Slip,trip,stepped on or in, loss of balance - with or without twisting - without fall,nec**			1.000	
Bodily motion or position of injured, ill worker	54	1.49%		0.014859659	Bodily motion or position of injured, ill worker	54	1.49%		0.014859659
Slip,trip,stepped on or in, loss of balance - with or without twisting - without fall,uns			1.000		**Slip,trip,stepped on or in, loss of balance - with or without twisting - without fall,uns**			1.000	
Bodily motion or position of injured, ill worker	13	0.36%		0.003577325	Bodily motion or position of injured, ill worker	13	0.36%		0.003577325
Slipping on something - with or without twisting - without fall			1.000		**Slipping on something - with or without twisting - without fall**			1.000	
Bodily motion or position of injured, ill worker	51	1.40%		0.014034122	Bodily motion or position of injured, ill worker	51	1.40%		0.014034122
Standing			1.000		**Standing**			1.000	
Bodily motion or position of injured, ill worker	1	0.03%		0.000275179	Bodily motion or position of injured, ill worker	1	0.03%		0.000275179
Static posture without the application of force to an object			1.000		**Static posture without the application of force to an object**			1.000	
Bodily motion or position of injured, ill worker	9	0.25%		0.00247661	Bodily motion or position of injured, ill worker	9	0.25%		0.00247661
Stepping in a hole or on an object - with or without twisting - without fall			1.000		**Stepping in a hole or on an object - with or without twisting - without fall**			1.000	
Bodily motion or position of injured, ill worker	58	1.60%		0.015960374	Bodily motion or position of injured, ill worker	58	1.60%		0.015960374
Struck against object, n.e.c.			1.000		**Struck against object, n.e.c.**			1.000	
Ground	1	0.03%		0.000275179	Ground	1	0.03%		0.000275179
Struck against stationary object			1.009		**Struck against stationary object**			1.009	
Ground	1	0.03%		0.000277658	Ground	1	0.03%		0.000277658
Parts and materials, uns.	1	0.03%		0.000277658	Parts and materials, uns.	1	0.03%		0.000277658
Truck, n.e.c.	1	0.03%		0.000277658	Truck, n.e.c.	1	0.03%		0.000277658
Truck, uns.	3	0.08%		0.000832974	Truck, uns.	3	0.08%		0.000832974
Walking -- without other incident			1.000		**Walking -- without other incident**			1.000	
Bodily motion or position of injured, ill worker	5	0.14%		0.001375894	Bodily motion or position of injured, ill worker	5	0.14%		0.001375894

Appendix A4: On-Site Installation Risk Analysis

Process Step 1							
Deliver module to crane							
Resources							
Labourer - Spotter				Labourer - Driver			
Risks							
Event Exposure/Source of Injury Combination	**Frequency (%)** 11.14%	**Severity Factor** 1.035	**Frequency * Severity** 11.54%	**Event Exposure/Source of Injury Combination**	**Frequency (%)** 0.03%	**Severity Factor** 1.000	**Frequency * Severity** 0.03%
Caught in or compressed by equipment or objects, n.e.c.		**1.127**		**Noncollision nonhighway accident, uns.**		**1.000**	
Semitrailer, tractor trailer, trailer truck	0.083%		0.093%	Truck, uns.	0.028%		0.028%
Truck, uns.	0.028%		0.031%				
Trailer	0.110%		0.124%				
Fall from floor, dock, or ground level, n.e.c.		**1.000**					
Truck, uns.	0.028%		0.028%				
Fall onto or against objects		**1.000**					
Semitrailer, tractor trailer, trailer truck	0.055%		0.055%				
Truck, uns.	0.138%		0.138%				
Trailer	0.110%		0.110%				
Fall to floor, walkway, or other surface		**1.004**					
Floors, walkways, ground surfaces, n.e.c. + uns	1.679%		1.685%				
Ground	2.752%		2.763%				
Other floors, walkways, ground surfaces, uns.	0.055%		0.055%				
Fall, n.e.c. + uns		**2.071**					
Floors, walkways, ground surfaces, uns.	0.138%		0.285%				
Ground	0.083%		0.171%				
Ice, sleet, snow	0.055%		0.114%				
Other floors, walkways, ground surfaces, uns.	0.028%		0.057%				
Other events or exposures, n.e.c.		**1.000**					
Floors, walkways, ground surfaces, n.e.c.	0.028%		0.028%				
Pedestrian struck by vehicle, mobile equipment in parking lot or non-roadway area		**1.167**					
Semitrailer, tractor trailer, trailer truck	0.055%		0.064%				
Truck, n.e.c. + uns	0.055%		0.064%				
Pedestrian struck by vehicle, mobile equipment, n.e.c. + uns		**1.125**					
Semitrailer, tractor trailer, trailer truck	0.028%		0.031%				
Truck, n.e.c.	0.028%		0.031%				

Slip,trip,stepped on or in, loss of balance - with or without twisting - without fall,nec + uns		**1.000**	
Bodily motion or position of injured, ill worker	3.247%		3.247%
Standing			0.000%
Bodily motion or position of injured, ill worker	0.028%		0.028%
Stepping in a hole or on an object - with or without twisting - without fall		**1.000**	
Bodily motion or position of injured, ill worker	1.596%		1.596%
Struck against object, n.e.c. + uns		**1.000**	
Truck, uns.	0.055%		0.055%
Struck against stationary object		**1.000**	
Ground	0.028%		0.028%
Semitrailer, tractor trailer, trailer truck	0.055%		0.055%
Truck, n.e.c. + uns	0.110%		0.110%
Tripping over something - with or without twisting - without fall		**1.000**	
Bodily motion or position of injured, ill worker	0.358%		0.358%
Walking -- without other incident		**1.000**	
Bodily motion or position of injured, ill worker	0.138%		0.138%

Process Step 2			
Park truck			
Resources			
Labourer - Driver			
Risks			
	Frequency (%)	**Severity Factor**	**Frequency * Severity**
ent Exposure/Source of Injury Combinat	1.18%	1.021	1.21%
Fall from nonmoving vehicle		**1.000**	
Floors, walkways, ground surfaces, n.e.c. + uns	0.275%		0.275%
Ground	0.743%		0.743%
Fell from and struck by vehicle, mobile equipment		**1.667**	
Truck, n.e.c.	0.028%		0.046%
Jump from nonmoving vehicle		**1.000**	
Floors, walkways, ground surfaces, uns.	0.028%		0.028%
Ground	0.055%		0.055%
Struck by or slammed in swinging door or gate		**1.125**	
Truck, n.e.c. + uns	0.055%		0.062%

Process Step 3							
Put trailer jacks under module							
Resources							
Labourer - Spotter				Labourer - Driver			
Risks							
	Frequency (%)	**Severity Factor**	**Frequency * Severity**		**Frequency (%)**	**Severity Factor**	**Frequency * Severity**
Event Exposure/Source of Injury Combinatio	11.01%	1.001	11.02%	**Event Exposure/Source of Injury Combination**	11.01%	1.001	11.02%
Fall onto or against objects		**1.000**		**Fall onto or against objects**		**1.000**	
Semitrailer, tractor trailer, trailer truck	0.055%		0.055%	Semitrailer, tractor trailer, trailer truck	0.055%		0.055%
Truck, uns.	0.138%		0.138%	Truck, uns.	0.138%		0.138%
Trailer	0.110%		0.110%	Trailer	0.110%		0.110%
Fall to floor, walkway, or other surface		**1.000**		**Fall to floor, walkway, or other surface**		**1.000**	
Floors, walkways, ground surfaces, n.e.c. + uns	1.679%		1.679%	Floors, walkways, ground surfaces, n.e.c. + uns	1.679%		1.679%
Ground	2.752%		2.752%	Ground	2.752%		2.752%
Other floors, walkways, ground surfaces, uns.	0.055%		0.055%	Other floors, walkways, ground surfaces, uns.	0.055%		0.055%
Fall, n.e.c. + uns		**1.036**		**Fall, n.e.c. + uns**		**1.036**	
Floors, walkways, ground surfaces, uns.	0.138%		0.143%	Floors, walkways, ground surfaces, uns.	0.138%		0.143%
Ground	0.083%		0.086%	Ground	0.083%		0.086%
Other floors, walkways, ground surfaces, uns.	0.028%		0.029%	Other floors, walkways, ground surfaces, uns.	0.028%		0.029%
Ice, sleet, snow	0.055%		0.057%	Ice, sleet, snow	0.055%		0.057%
Other events or exposures, n.e.c.		**1.000**		**Other events or exposures, n.e.c.**		**1.000**	
Floors, walkways, ground surfaces, n.e.c.	0.028%		0.028%	Floors, walkways, ground surfaces, n.e.c.	0.028%		0.028%
Slip,trip,stepped on or in, loss of balance - with or without twisting - without fall,nec + uns		**1.000**		**Slip,trip,stepped on or in, loss of balance - with or without twisting - without fall,nec + uns**		**1.000**	
Bodily motion or position of injured, ill worker	1.844%		1.844%	Bodily motion or position of injured, ill worker	1.844%		1.844%
Slipping on something - with or without twisting - without fall		**1.000**		**Slipping on something - with or without twisting - without fall**		**1.000**	
Bodily motion or position of injured, ill worker	1.403%		1.403%	Bodily motion or position of injured, ill worker	1.403%		1.403%
Standing		**1.000**		**Standing**		**1.000**	
Bodily motion or position of injured, ill worker	0.028%		0.028%	Bodily motion or position of injured, ill worker	0.028%		0.028%
Stepping in a hole or on an object - with or without twisting - without fall		**1.000**		**Stepping in a hole or on an object - with or without twisting - without fall**		**1.000**	
Bodily motion or position of injured, ill worker	1.596%		1.596%	Bodily motion or position of injured, ill worker	1.596%		1.596%
Struck against object, n.e.c. + uns		**1.000**		**Struck against object, n.e.c. + uns**		**1.000**	
Truck, uns.	0.055%		0.055%	Truck, uns.	0.055%		0.055%
Trailer	0.028%		0.028%	Trailer	0.028%		0.028%

Struck against stationary object		**1.000**		**Struck against stationary object**		**1.000**	
Ground	0.028%		0.028%	Ground	0.028%		0.028%
Semitrailer, tractor trailer, trailer truck	0.055%		0.055%	Semitrailer, tractor trailer, trailer truck	0.055%		0.055%
Truck, n.e.c. + uns	0.110%		0.110%	Truck, n.e.c. + uns	0.110%		0.110%
Tripping over something - with or without twisting - without fall		**1.000**		**Tripping over something - with or without twisting - without fall**		**1.000**	
Bodily motion or position of injured, ill worker	0.358%		0.358%	Bodily motion or position of injured, ill worker	0.358%		0.358%
Walking -- without other incident			0.000%	**Walking -- without other incident**			0.000%
Bodily motion or position of injured, ill worker	0.138%		0.138%	Bodily motion or position of injured, ill worker	0.138%		0.138%
Fall on same level, n.e.c.		**1.000**		**Fall on same level, n.e.c.**		**1.000**	
Floors, walkways, ground surfaces, uns.	0.055%		0.055%	Floors, walkways, ground surfaces, uns.	0.055%		0.055%
Ground	0.083%		0.083%	Ground	0.083%		0.083%
Ice, sleet, snow	0.028%		0.028%	Ice, sleet, snow	0.028%		0.028%
Trailer	0.028%		0.028%	Trailer	0.028%		0.028%
Contact with objects and equipment, n.e.c.		**1.000**		**Contact with objects and equipment, n.e.c.**		**1.000**	
Bodily conditions of injured, ill worker	0.028%		0.028%	Bodily conditions of injured, ill worker	0.028%		0.028%
Trailer	0.028%		0.028%	Trailer	0.028%		0.028%

Process Step 4							
Lower module onto trailer jacks							
Resources							
Labourer - Spotter				Labourer - Driver			
Risks							
	Frequency (%)	Severity Factor	Frequency * Severity		Frequency (%)	Severity Factor	Frequency * Severity
Event Exposure/Source of Injury Combination	0.03%	1.127	0.03%	**Event Exposure/Source of Injury Combination**	0.03%	1.127	0.03%
Caught in or compressed by equipment or objects, n.e.c.		**1.127**		**Caught in or compressed by equipment or objects, n.e.c.**		**1.127**	
Truck, uns.	0.028%		0.031%	Truck, uns.	0.028%		0.031%

Process Step 5			
Install 3 tagline connection plates and tagline ropes to module			
Resources			
Labourer - Spotter			
Risk			
	Frequency (%)	**Severity Factor**	**Frequency * Severity**
Event Exposure/Source of Injury Combination	11.67%	1.003	11.70%
Bodily reaction and exertion, n.e.c.		1.000	
Drills, Drills -- power not determined, Drills -- powered	0.110%		0.110%
Hard hats	0.028%		0.028%
Fall from floor, dock, or ground level, n.e.c.		1.000	
Truck, uns.	0.028%		0.028%
Fall onto or against objects		1.000	
Semitrailer, tractor trailer, trailer truck	0.055%		0.055%
Truck, uns.	0.138%		0.138%
Trailer	0.110%		0.110%
Fall to floor, walkway, or other surface		1.004	
Floors, walkways, ground surfaces, n.e.c. + uns	1.679%		1.685%
Ground	2.752%		2.762%
Other floors, walkways, ground surfaces, uns.	0.055%		0.055%
Fall, n.e.c. + uns		1.036	
Floors, walkways, ground surfaces, uns.	0.138%		0.143%
Ground	0.083%		0.086%
Other floors, walkways, ground surfaces, uns.	0.028%		0.029%
Ice, sleet, snow	0.055%		0.057%
Other events or exposures, n.e.c.		1.000	
Floors, walkways, ground surfaces, n.e.c.	0.028%		0.028%
Overexertion in carrying, turning, wielding objects		1.020	
Drills -- powered	0.028%		0.028%
Overexertion, n.e.c. + uns		1.006	
Drills -- powered	0.083%		0.083%
Drills	0.028%		0.028%

Slip,trip,stepped on or in, loss of balance - with or without twisting - without fall,nec + uns		1.000	
Bodily motion or position of injured, ill worker	1.844%		1.844%
Slipping on something - with or without twisting - without fall		1.000	
Bodily motion or position of injured, ill worker	1.403%		1.403%
Standing		1.000	
Bodily motion or position of injured, ill worker	0.028%		0.028%
Stepping in a hole or on an object - with or without twisting - without fall		1.000	
Bodily motion or position of injured, ill worker	1.596%		1.596%
Stepped on object		1.000	
Drills -- power not determined	0.028%		0.028%
Struck by object, n.e.c.		1.000	
Drills -- power not determined	0.055%		0.055%
Drills -- powered	0.110%		0.110%
Struck by slipping handheld object		1.000	
Drills	0.055%		0.055%
Drills -- power not determined	0.055%		0.055%
Drills -- powered	0.055%		0.055%
Struck by swinging or slipping object, uns.		1.000	
Drills	0.028%		0.028%
Struck against object, n.e.c. + uns		1.000	
Truck, uns.	0.055%		0.055%
Struck against stationary object		1.009	
Ground	0.028%		0.028%
Semitrailer, tractor trailer, trailer truck	0.055%		0.056%
Truck, n.e.c.	0.028%		0.028%
Truck, uns.	0.083%		0.083%
Tripping over something - with or without twisting - without fall		1.000	
Bodily motion or position of injured, ill worker	0.358%		0.358%
Walking -- without other incident		1.000	
Bodily motion or position of injured, ill worker	0.138%		0.138%
Fall on same level, n.e.c.		1.000	
Floors, walkways, ground surfaces, uns.	0.055%		0.055%
Ground	0.083%		0.083%
Ice, sleet, snow	0.028%		0.028%
Trailer	0.028%		0.028%
Contact with objects and equipment, n.e.c.		1.029	
Bodily conditions of injured, ill worker	0.028%		0.028%
Trailer	0.028%		0.028%

Process Step 7											
Lower rigging equipment over module											
Resources											
Crane Operator				Labourer - Spotter				Labourer - Driver			
Risk											
					Frequency (%)	**Severity Factor**	**Frequency * Severity**		**Frequency (%)**	**Severity Factor**	**Frequency * Severity**
No risks				**Event Exposure/Source of Injury Combination**	0.03%	1.033	0.03%	**Event Exposure/Source of Injury Combination**	0.03%	1.033	0.03%
				Struck by swinging or slipping object, n.e.c.		1.033		**Struck by swinging or slipping object, n.e.c.**		1.033	
				Hoisting accessories, n.e.c.	0.000275179		0.028%	Hoisting accessories, n.e.c.	0.000275179		0.028%

Process Step 8								
Connect rigging equipment to module at hoisting brackets								
Resources								
Crane Operator	Labourer - Spotter				Labourer - Driver			
Risk								
		Frequency (%)	Severity Factor	Frequency * Severity		Frequency (%)	Severity Factor	Frequency * Severity
No risks	Event Exposure/Source of Injury Combination	22.34%	1.002	22.38%	Event Exposure/Source of Injury Combination	22.34%	1.002	22.38%
	Bending, climbing, crawling, reaching, twisting		1.000		**Bending, climbing, crawling, reaching, twisting**		1.000	
	Bodily motion or position of injured, ill worker	6.935%		6.935%	Bodily motion or position of injured, ill worker	6.935%		6.935%
	Unknown	0.028%		0.028%	Unknown	0.028%		0.028%
	Bodily reaction and exertion, n.e.c. + uns		1.000		**Bodily reaction and exertion, n.e.c. + uns**		1.000	
	Bodily motion or position of injured, ill worker	0.275%		0.275%	Bodily motion or position of injured, ill worker	0.275%		0.275%
	Truck, n.e.c.	0.028%		0.028%	Truck, n.e.c.	0.028%		0.028%
	Truck, uns.	0.055%		0.055%	Truck, uns.	0.055%		0.055%
	Hard hats	0.028%		0.028%	Hard hats	0.028%		0.028%
	Trailer	0.028%		0.028%	Trailer	0.028%		0.028%
	Bodily reaction, n.e.c. + uns		1.000		**Bodily reaction, n.e.c. + uns**		1.000	
	Bodily motion or position of injured, ill worker	2.559%		2.559%	Bodily motion or position of injured, ill worker	2.559%		2.559%
	Person -- injured or ill worker, uns.	0.028%		0.028%	Person -- injured or ill worker, uns.	0.028%		0.028%
	Caught in or compressed by equipment or objects, n.e.c.		1.127		**Caught in or compressed by equipment or objects, n.e.c.**		1.127	
	Hoisting accessories, uns.	0.028%		0.031%	Hoisting accessories, uns.	0.028%		0.031%
	Contact with objects and equipment, n.e.c.		1.029		**Contact with objects and equipment, n.e.c.**		1.029	
	Bodily conditions of injured, ill worker	0.028%		0.028%	Bodily conditions of injured, ill worker	0.028%		0.028%
	Trailer	0.028%		0.028%	Trailer	0.028%		0.028%
	Fall from floor, dock, or ground level, n.e.c.		1.000		**Fall from floor, dock, or ground level, n.e.c.**		1.000	
	Truck, uns.	0.028%		0.028%	Truck, uns.	0.028%		0.028%
	Fall on same level, n.e.c. + uns		1.000		**Fall on same level, n.e.c. + uns**		1.000	
	Floors, walkways, ground surfaces, uns.	0.055%		0.055%	Floors, walkways, ground surfaces, uns.	0.055%		0.055%
	Ground	0.138%		0.138%	Ground	0.138%		0.138%
	Ice, sleet, snow	0.028%		0.028%	Ice, sleet, snow	0.028%		0.028%
	Trailer	0.028%		0.028%	Trailer	0.028%		0.028%
	Fall onto or against objects		1.000		**Fall onto or against objects**		1.000	
	Floors, walkways, ground surfaces, uns.	0.028%		0.028%	Floors, walkways, ground surfaces, uns.	0.028%		0.028%
	Ice, sleet, snow	0.028%		0.028%	Ice, sleet, snow	0.028%		0.028%
	Semitrailer, tractor trailer, trailer truck	0.055%		0.055%	Semitrailer, tractor trailer, trailer truck	0.055%		0.055%
	Structures and surfaces, n.e.c.	0.028%		0.028%	Structures and surfaces, n.e.c.	0.028%		0.028%
	Truck, uns.	0.138%		0.138%	Truck, uns.	0.138%		0.138%
	Trailer	0.110%		0.110%	Trailer	0.110%		0.110%

Fall to floor, walkway, or other surface		1.004		**Fall to floor, walkway, or other surface**		1.004	
Floors, walkways, ground surfaces, n.e.c.	0.055%		0.055%	Floors, walkways, ground surfaces, n.e.c.	0.055%		0.055%
Floors, walkways, ground surfaces, uns.	1.624%		1.629%	Floors, walkways, ground surfaces, uns.	1.624%		1.629%
Ground	2.752%		2.762%	Ground	2.752%		2.762%
Other floors, walkways, ground surfaces, uns.	0.055%		0.055%	Other floors, walkways, ground surfaces, uns.	0.055%		0.055%
Fall, n.e.c. + uns		1.036		**Fall, n.e.c. + uns**		1.036	
Floors, walkways, ground surfaces, uns.	0.138%		0.143%	Floors, walkways, ground surfaces, uns.	0.138%		0.143%
Ground	0.083%		0.086%	Ground	0.083%		0.086%
Other floors, walkways, ground surfaces, uns.	0.028%		0.029%	Other floors, walkways, ground surfaces, uns.	0.028%		0.029%
Ice, sleet, snow	0.055%		0.057%	Ice, sleet, snow	0.055%		0.057%
Repetitive motion, n.e.c. + uns		1.000		**Repetitive motion, n.e.c. + uns**		1.000	
Bodily motion or position of injured, ill worker	1.486%		1.486%	Bodily motion or position of injured, ill worker	1.486%		1.486%
Rubbed or abraded by kneeling on surface		1.000		**Rubbed or abraded by kneeling on surface**		1.000	
Floors, walkways, ground surfaces, n.e.c.	0.028%		0.028%	Floors, walkways, ground surfaces, n.e.c.	0.028%		0.028%
Floors, walkways, ground surfaces, uns.	0.055%		0.055%	Floors, walkways, ground surfaces, uns.	0.055%		0.055%
Slip,trip,stepped on or in, loss of balance - with or without twisting - without fall,nec + uns		1.000		**Slip,trip,stepped on or in, loss of balance - with or without twisting - without fall,nec + uns**		1.000	
Bodily motion or position of injured, ill worker	1.844%		1.844%	Bodily motion or position of injured, ill worker	1.844%		1.844%
Slipping on something - with or without twisting - without fall		1.000		**Slipping on something - with or without twisting - without fall**		1.000	
Bodily motion or position of injured, ill worker	1.403%		1.403%	Bodily motion or position of injured, ill worker	1.403%		1.403%
Standing		1.000		**Standing**		1.000	
Bodily motion or position of injured, ill worker	0.028%		0.028%	Bodily motion or position of injured, ill worker	0.028%		0.028%
Stepping in a hole or on an object - with or without twisting - without fall		1.000		**Stepping in a hole or on an object - with or without twisting - without fall**		1.000	
Bodily motion or position of injured, ill worker	1.596%		1.596%	Bodily motion or position of injured, ill worker	1.596%		1.596%
Struck against object, n.e.c. + uns		1.000		**Struck against object, n.e.c. + uns**		1.000	
Ground	0.028%		0.028%	Ground	0.028%		0.028%
Truck, uns.	0.055%		0.055%	Truck, uns.	0.055%		0.055%
Trailer	0.028%		0.028%	Trailer	0.028%		0.028%
Struck against stationary object		1.009		**Struck against stationary object**		1.009	
Cranes -- mobile, truck, rail mounted	0.028%		0.028%	Cranes -- mobile, truck, rail mounted	0.028%		0.028%
Ground	0.028%		0.028%	Ground	0.028%		0.028%
Truck, n.e.c. + uns	0.110%		0.111%	Truck, n.e.c. + uns	0.110%		0.111%
Walking -- without other incident		1.000		**Walking -- without other incident**		1.000	
Bodily motion or position of injured, ill worker	0.138%		0.138%	Bodily motion or position of injured, ill worker	0.138%		0.138%

Process Step 9												
Remove slack in rigging equipment												
Resources												
Crane Operator					Labourer - Spotter				Labourer - Driver			
Risk												
						Frequency (%)	**Severity Factor**	**Frequency * Severity**		**Frequency (%)**	**Severity Factor**	**Frequency * Severity**
No risks					**Event Exposure/Source of Injury Combination**	0.03%	1.127	0.03%	**Event Exposure/Source of Injury Combination**	0.03%	1.127	0.03%
					Caught in or compressed by equipment or objects, n.e.c.		1.127		**Caught in or compressed by equipment or objects, n.e.c.**		1.127	
					Hoisting accessories, uns.	0.028%		0.031%	Hoisting accessories, uns.	0.028%		0.031%

Process Step 10											
Test lift											
Resources											
Crane Operator				Labourer - Spotter				Labourer - Driver			
Risks											
	Frequency (%)	**Severity Factor**	**Frequency * Severity**		**Frequency (%)**	**Severity Factor**	**Frequency * Severity**		**Frequency (%)**	**Severity Factor**	**Frequency * Severity**
Event Exposure/Source of Injury Combination	0.03%	1.125	0.03%	**Event Exposure/Source of Injury Combination**	0.36%	1.049	0.38%	**Event Exposure/Source of Injury Combination**	0.36%	1.049	0.38%
Overturned -- nonhighway accident		1.125		**Struck by falling object**		1.055		**Struck by falling object**		1.055	
Cranes -- mobile, truck, rail mounted	0.028%		0.031%	Cranes, uns.	0.028%		0.029%	Cranes, uns.	0.028%		0.029%
				Struck by object, n.e.c.		1.000		**Struck by object, n.e.c.**		1.000	
				Cranes, uns.	0.028%		0.028%	Cranes, uns.	0.028%		0.028%
				Trailer	0.028%		0.028%	Trailer	0.028%		0.028%
				Bodily reaction and exertion, n.e.c.		1.000		**Bodily reaction and exertion, n.e.c.**		1.000	
				Cranes -- mobile, truck, rail mounted	0.028%		0.028%	Cranes -- mobile, truck, rail mounted	0.028%		0.028%
				Hard hats	0.028%		0.028%	Hard hats	0.028%		0.028%
				Caught in or compressed by equipment or objects, n.e.c.		1.127		**Caught in or compressed by equipment or objects, n.e.c.**		1.127	
				Cranes -- mobile, truck, rail mounted	0.028%		0.031%	Cranes -- mobile, truck, rail mounted	0.028%		0.031%
				Cranes, uns.	0.028%		0.031%	Cranes, uns.	0.028%		0.031%
				Compressed or pinched by rolling, sliding, or shifting objects		1.133		**Compressed or pinched by rolling, sliding, or shifting objects**		1.133	
				Cranes -- mobile, truck, rail mounted	0.028%		0.031%	Cranes -- mobile, truck, rail mounted	0.028%		0.031%
				Overturned -- nonhighway accident		1.125		**Overturned -- nonhighway accident**		1.125	
				Cranes -- mobile, truck, rail mounted	0.028%		0.031%	Cranes -- mobile, truck, rail mounted	0.028%		0.031%
				Struck against object, n.e.c.		1.000		**Struck against object, n.e.c.**		1.000	
				Cranes -- mobile, truck, rail mounted	0.028%		0.028%	Cranes -- mobile, truck, rail mounted	0.028%		0.028%
				Struck against stationary object		1.009		**Struck against stationary object**		1.009	
				Cranes -- mobile, truck, rail mounted	0.028%		0.028%	Cranes -- mobile, truck, rail mounted	0.028%		0.028%
				Contact with objects and equipment, n.e.c.		1.029		**Contact with objects and equipment, n.e.c.**		1.029	
				Bodily conditions of injured, ill worker	0.028%		0.028%	Bodily conditions of injured, ill worker	0.028%		0.028%
				Trailer	0.028%		0.028%	Trailer	0.028%		0.028%

Process Step 11								
Add slack in rigging equipment and adjust								
Resources								
Crane Operator	Labourer - Spotter				Labourer - Driver			
Risks								
		Frequency (%)	Severity Factor	Frequency * Severity		Frequency (%)	Severity Factor	Frequency * Severity
No risks	**Event Exposure/Source of Injury Combination**	0.17%	1.095	0.18%	**Event Exposure/Source of Injury Combination**	0.17%	1.095	0.18%
	Contact with objects and equipment, n.e.c.		1.029		**Contact with objects and equipment, n.e.c.**		1.029	
	Bodily conditions of injured, ill worker	0.028%		0.028%	Bodily conditions of injured, ill worker	0.028%		0.028%
	Trailer	0.028%		0.028%	Trailer	0.028%		0.028%
	Caught in or compressed by equipment or objects, n.e.c.		1.127		**Caught in or compressed by equipment or objects, n.e.c.**		1.127	
	Trailer	0.110%		0.124%	Trailer	0.110%		0.124%

Process Step 12											
Module lift											
Resources											
Crane Operator				Labourer - Spotter				Labourer - Driver			
Risks											
	Frequency (%)	**Severity Factor**	**Frequency * Severity**		**Frequency (%)**	**Severity Factor**	**Frequency * Severity**		**Frequency (%)**	**Severity Factor**	**Frequency * Severity**
Event Exposure/Source of Injury Combination	0.03%	1.125	0.03%	**Event Exposure/Source of Injury Combination**	0.36%	1.079	0.39%	**Event Exposure/Source of Injury Combination**	0.36%	1.079	0.39%
Overturned -- nonhighway accident		1.125		**Struck by object, n.e.c.**		1.000		**Struck by object, n.e.c.**		1.000	
Cranes -- mobile, truck, rail mounted	0.028%		0.031%	Cranes, uns.	0.028%		0.028%	Cranes, uns.	0.028%		0.028%
				Trailer	0.028%		0.028%	Trailer	0.028%		0.028%
				Caught in or compressed by equipment or objects, n.e.c.		1.127		**Caught in or compressed by equipment or objects, n.e.c.**		1.127	
				Cranes -- mobile, truck, rail mounted	0.028%		0.031%	Cranes -- mobile, truck, rail mounted	0.028%		0.031%
				Cranes, uns.	0.028%		0.031%	Cranes, uns.	0.028%		0.031%
				Trailer	0.110%		0.124%	Trailer	0.110%		0.124%
				Compressed or pinched by rolling, sliding, or shifting objects		1.133		**Compressed or pinched by rolling, sliding, or shifting objects**		1.133	
				Cranes -- mobile, truck, rail mounted	0.028%		0.031%	Cranes -- mobile, truck, rail mounted	0.028%		0.031%
				Overturned -- nonhighway accident		1.125		**Overturned -- nonhighway accident**		1.125	
				Cranes -- mobile, truck, rail mounted	0.028%		0.031%	Cranes -- mobile, truck, rail mounted	0.028%		0.031%
				Struck against object, n.e.c.		1.000		**Struck against object, n.e.c.**		1.000	
				Cranes -- mobile, truck, rail mounted	0.028%		0.028%	Cranes -- mobile, truck, rail mounted	0.028%		0.028%
				Struck against stationary object		1.009		**Struck against stationary object**		1.009	
				Cranes -- mobile, truck, rail mounted	0.028%		0.028%	Cranes -- mobile, truck, rail mounted	0.028%		0.028%
				Struck by object, n.e.c.		1.000		**Struck by object, n.e.c.**		1.000	
				Trailer	0.028%		0.028%	Trailer	0.028%		0.028%

Process Step 12			
Module lift			
Resources			
Labourer - Roof Connection 1			
Risks			
Event Exposure/Source of Injury Combination	Frequency (%) 0.36%	Severity Factor 1.079	Frequency * Severity 0.39%
Struck by object, n.e.c.		1.000	
Cranes, uns.	0.028%		0.028%
Trailer	0.028%		0.028%
Caught in or compressed by equipment or objects, n.e.c.		1.127	
Cranes -- mobile, truck, rail mounted	0.028%		0.031%
Cranes, uns.	0.028%		0.031%
Trailer	0.110%		0.124%
Compressed or pinched by rolling, sliding, or shifting objects		1.133	
Cranes -- mobile, truck, rail mounted	0.028%		0.031%
Overturned -- nonhighway accident		1.125	
Cranes -- mobile, truck, rail mounted	0.028%		0.031%
Struck against object, n.e.c.		1.000	
Cranes -- mobile, truck, rail mounted	0.028%		0.028%
Struck against stationary object		1.009	
Cranes -- mobile, truck, rail mounted	0.028%		0.028%
Struck by object, n.e.c.		1.000	
Trailer	0.028%		0.028%

Labourer - Roof Connection 2			
Event Exposure/Source of Injury Combination	Frequency (%) 0.36%	Severity Factor 1.079	Frequency * Severity 0.39%
Struck by object, n.e.c.		1.000	
Cranes, uns.	0.028%		0.028%
Trailer	0.028%		0.028%
Caught in or compressed by equipment or objects, n.e.c.		1.127	
Cranes -- mobile, truck, rail mounted	0.028%		0.031%
Cranes, uns.	0.028%		0.031%
Trailer	0.110%		0.124%
Compressed or pinched by rolling, sliding, or shifting objects		1.133	
Cranes -- mobile, truck, rail mounted	0.028%		0.031%
Overturned -- nonhighway accident		1.125	
Cranes -- mobile, truck, rail mounted	0.028%		0.031%
Struck against object, n.e.c.		1.000	
Cranes -- mobile, truck, rail mounted	0.028%		0.028%
Struck against stationary object		1.009	
Cranes -- mobile, truck, rail mounted	0.028%		0.028%
Struck by object, n.e.c.		1.000	
Trailer	0.028%		0.028%

Labourer - Front Connection			
Event Exposure/Source of Injury Combination	Frequency (%) 0.36%	Severity Factor 1.079	Frequency * Severity 0.39%
Struck by object, n.e.c.		1.000	
Cranes, uns.	0.028%		0.028%
Trailer	0.028%		0.028%
Caught in or compressed by equipment or objects, n.e.c.		1.127	
Cranes -- mobile, truck, rail mounted	0.028%		0.031%
Cranes, uns.	0.028%		0.031%
Trailer	0.110%		0.124%
Compressed or pinched by rolling, sliding, or shifting objects		1.133	
Cranes -- mobile, truck, rail mounted	0.028%		0.031%
Overturned -- nonhighway accident		1.125	
Cranes -- mobile, truck, rail mounted	0.028%		0.031%
Struck against object, n.e.c.		1.000	
Cranes -- mobile, truck, rail mounted	0.028%		0.028%
Struck against stationary object		1.009	
Cranes -- mobile, truck, rail mounted	0.028%		0.028%
Struck by object, n.e.c.		1.000	
Trailer	0.028%		0.028%

Process Step 12			
Module lift			
Resources			
Labourer - Back Connection			
Risks			
	Frequency (%)	**Severity Factor**	**Frequency * Severity**
Event Exposure/Source of Injury Combination	0.36%	1.079	0.39%
Struck by object, n.e.c.		1.000	
Cranes, uns.	0.028%		0.028%
Trailer	0.028%		0.028%
Caught in or compressed by equipment or objects, n.e.c.		1.127	
Cranes -- mobile, truck, rail mounted	0.028%		0.031%
Cranes, uns.	0.028%		0.031%
Trailer	0.110%		0.124%
Compressed or pinched by rolling, sliding, or shifting objects		1.133	
Cranes -- mobile, truck, rail mounted	0.028%		0.031%
Overturned -- nonhighway accident		1.125	
Cranes -- mobile, truck, rail mounted	0.028%		0.031%
Struck against object, n.e.c.		1.000	
Cranes -- mobile, truck, rail mounted	0.028%		0.028%
Struck against stationary object		1.009	
Cranes -- mobile, truck, rail mounted	0.028%		0.028%
Struck by object, n.e.c.		1.000	
Trailer	0.028%		0.028%

Process Step 14											
Lower module											
Resources											
Crane Operator				Labourer - Spotter				Labourer - Driver			
Risks											
	Frequency (%)	Severity Factor	Frequency * Severity		Frequency (%)	Severity Factor	Frequency * Severity		Frequency (%)	Severity Factor	Frequency * Severity
Event Exposure/Source of Injury Combination	0.03%	1.125	0.03%	Event Exposure/Source of Injury Combination	0.19%	1.074	0.21%	Event Exposure/Source of Injury Combination	0.19%	1.074	0.21%
Overturned -- nonhighway accident		1.125		**Struck by object, n.e.c.**		1.000		**Struck by object, n.e.c.**		1.000	
Cranes -- mobile, truck, rail mounted	0.028%		0.031%	Cranes, uns.	0.028%		0.028%	Cranes, uns.	0.028%		0.028%
				Caught in or compressed by equipment or objects, n.e.c.		1.127		**Caught in or compressed by equipment or objects, n.e.c.**		1.127	
				Cranes -- mobile, truck, rail mounted	0.028%		0.031%	Cranes -- mobile, truck, rail mounted	0.028%		0.031%
				Cranes, uns.	0.028%		0.031%	Cranes, uns.	0.028%		0.031%
				Compressed or pinched by rolling, sliding, or shifting objects		1.133		**Compressed or pinched by rolling, sliding, or shifting objects**		1.133	
				Cranes -- mobile, truck, rail mounted	0.028%		0.031%	Cranes -- mobile, truck, rail mounted	0.028%		0.031%
				Overturned -- nonhighway accident		1.125		**Overturned -- nonhighway accident**		1.125	
				Cranes -- mobile, truck, rail mounted	0.028%		0.031%	Cranes -- mobile, truck, rail mounted	0.028%		0.031%
				Struck against object, n.e.c.		1.000		**Struck against object, n.e.c.**		1.000	
				Cranes -- mobile, truck, rail mounted	0.028%		0.028%	Cranes -- mobile, truck, rail mounted	0.028%		0.028%
				Struck against stationary object		1.009		**Struck against stationary object**		1.009	
				Cranes -- mobile, truck, rail mounted	0.028%		0.028%	Cranes -- mobile, truck, rail mounted	0.028%		0.028%

Process Step 14

Lower module

Resources

Labourer - Roof Connection 1				Labourer - Roof Connection 2				Labourer - Front Connection			
Risks											
	Frequency (%)	**Severity Factor**	**Frequency * Severity**		**Frequency (%)**	**Severity Factor**	**Frequency * Severity**		**Frequency (%)**	**Severity Factor**	**Frequency * Severity**
Event Exposure/Source of Injury Combination	0.33%	1.086	0.36%	**Event Exposure/Source of Injury Combination**	0.33%	1.086	0.36%	**Event Exposure/Source of Injury Combination**	0.33%	1.086	0.36%
Struck by object, n.e.c.		1.000		**Struck by object, n.e.c.**		1.000		**Struck by object, n.e.c.**		1.000	
Cranes, uns.	0.028%		0.028%	Cranes, uns.	0.028%		0.028%	Cranes, uns.	0.028%		0.028%
Trailer	0.028%		0.028%	Trailer	0.028%		0.028%	Trailer	0.028%		0.028%
Caught in or compressed by equipment or objects, n.e.c.		1.127		**Caught in or compressed by equipment or objects, n.e.c.**		1.127		**Caught in or compressed by equipment or objects, n.e.c.**		1.127	
Cranes -- mobile, truck, rail mounted	0.028%		0.031%	Cranes -- mobile, truck, rail mounted	0.028%		0.031%	Cranes -- mobile, truck, rail mounted	0.028%		0.031%
Cranes, uns.	0.028%		0.031%	Cranes, uns.	0.028%		0.031%	Cranes, uns.	0.028%		0.031%
Trailer	0.110%		0.124%	Trailer	0.110%		0.124%	Trailer	0.110%		0.124%
Compressed or pinched by rolling, sliding, or shifting objects		1.133		**Compressed or pinched by rolling, sliding, or shifting objects**		1.133		**Compressed or pinched by rolling, sliding, or shifting objects**		1.133	
Cranes -- mobile, truck, rail mounted	0.028%		0.031%	Cranes -- mobile, truck, rail mounted	0.028%		0.031%	Cranes -- mobile, truck, rail mounted	0.028%		0.031%
Overturned -- nonhighway accident		1.125		**Overturned -- nonhighway accident**		1.125		**Overturned -- nonhighway accident**		1.125	
Cranes -- mobile, truck, rail mounted	0.028%		0.031%	Cranes -- mobile, truck, rail mounted	0.028%		0.031%	Cranes -- mobile, truck, rail mounted	0.028%		0.031%
Struck against object, n.e.c.		1.000		**Struck against object, n.e.c.**		1.000		**Struck against object, n.e.c.**		1.000	
Cranes -- mobile, truck, rail mounted	0.028%		0.028%	Cranes -- mobile, truck, rail mounted	0.028%		0.028%	Cranes -- mobile, truck, rail mounted	0.028%		0.028%
Struck against stationary object		1.009		**Struck against stationary object**		1.009		**Struck against stationary object**		1.009	
Cranes -- mobile, truck, rail mounted	0.028%		0.028%	Cranes -- mobile, truck, rail mounted	0.028%		0.028%	Cranes -- mobile, truck, rail mounted	0.028%		0.028%

Process Step 14			
Lower module			
Resources			
Labourer - Back Connection			
Risks			
	Frequency (%)	**Severity Factor**	**Frequency * Severity**
Event Exposure/Source of Injury Combination	0.33%	1.086	0.36%
Struck by object, n.e.c.		1.000	
Cranes, uns.	0.028%		0.028%
Trailer	0.028%		0.028%
Caught in or compressed by equipment or objects, n.e.c.		1.127	
Cranes -- mobile, truck, rail mounted	0.028%		0.031%
Cranes, uns.	0.028%		0.031%
Trailer	0.110%		0.124%
Compressed or pinched by rolling, sliding, or shifting objects		1.133	
Cranes -- mobile, truck, rail mounted	0.028%		0.031%
Overturned -- nonhighway accident		1.125	
Cranes -- mobile, truck, rail mounted	0.028%		0.031%
Struck against object, n.e.c.		1.000	
Cranes -- mobile, truck, rail mounted	0.028%		0.028%
Struck against stationary object		1.009	
Cranes -- mobile, truck, rail mounted	0.028%		0.028%

Process Step 15											
Align module											
Resources											
Crane Operator				Labourer - Front Connection				Labourer - Back Connection			
Risks											
	Frequency (%)	Severity Factor	Frequency * Severity	Event Exposure/Source of Injury Combination	Frequency (%)	Severity Factor	Frequency * Severity	Event Exposure/Source of Injury Combination	Frequency (%)	Severity Factor	Frequency * Severity
					10.18%	1.003	10.21%		10.18%	1.003	10.21%
No risks				**Struck by object, n.e.c.**		1.000		**Struck by object, n.e.c.**		1.000	
				Cranes, uns.	0.028%		0.028%	Cranes, uns.	0.028%		0.028%
				Caught in or compressed by equipment or objects, n.e.c.		1.127		**Caught in or compressed by equipment or objects, n.e.c.**		1.127	
				Cranes -- mobile, truck, rail mounted + uns	0.055%		0.062%	Cranes -- mobile, truck, rail mounted + uns	0.055%		0.062%
				Trailer	0.110%		0.124%	Trailer	0.110%		0.124%
				Compressed or pinched by rolling, sliding, or shifting objects		1.133		**Compressed or pinched by rolling, sliding, or shifting objects**		1.133	
				Cranes -- mobile, truck, rail mounted	0.028%		0.031%	Cranes -- mobile, truck, rail mounted	0.028%		0.031%
				Overturned -- nonhighway accident		1.125		**Overturned -- nonhighway accident**		1.125	
				Cranes -- mobile, truck, rail mounted	0.028%		0.031%	Cranes -- mobile, truck, rail mounted	0.028%		0.031%
				Struck against object, n.e.c.		1.000		**Struck against object, n.e.c.**		1.000	
				Cranes -- mobile, truck, rail mounted	0.028%		0.028%	Cranes -- mobile, truck, rail mounted	0.028%		0.028%
				Struck against stationary object		1.009		**Struck against stationary object**		1.009	
				Cranes -- mobile, truck, rail mounted	0.028%		0.028%	Cranes -- mobile, truck, rail mounted	0.028%		0.028%
				Bending, climbing, crawling, reaching, twisting		1.000		**Bending, climbing, crawling, reaching, twisting**		1.000	
				Bodily motion or position of injured, ill worker	6.935%		6.935%	Bodily motion or position of injured, ill worker	6.935%		6.935%
				Bodily reaction and exertion, n.e.c. + uns		1.000		**Bodily reaction and exertion, n.e.c. + uns**		1.000	
				Bodily motion or position of injured, ill worker	0.275%		0.275%	Bodily motion or position of injured, ill worker	0.275%		0.275%
				Lifelines, lanyards, safety belts or harnesses	0.028%		0.028%	Lifelines, lanyards, safety belts or harnesses	0.028%		0.028%
				Hard hats	0.028%		0.028%	Hard hats	0.028%		0.028%
				Trailer	0.028%		0.028%	Trailer	0.028%		0.028%
				Bodily reaction, n.e.c. + uns		1.000		**Bodily reaction, n.e.c. + uns**		1.000	
				Bodily motion or position of injured, ill worker	2.559%		2.559%	Bodily motion or position of injured, ill worker	2.559%		2.559%
				Person -- injured or ill worker, uns.	0.028%		0.028%	Person -- injured or ill worker, uns.	0.028%		0.028%

Process Step 16											
Drill module											
Resources											
Crane Operator				Labourer - Roof Connection 1				Labourer - Roof Connection 2			
Risks											
					Frequency (%)	**Severity Factor**	**Frequency * Severity**		**Frequency (%)**	**Severity Factor**	**Frequency * Severity**
		Severity	**Potential Energy**	**Event Exposure/Source of Injury Combination**	11.20%	1.004	11.24%	**Event Exposure/Source of Injury Combination**	11.21%	1.004	11.25%
No risks				**Bodily reaction and exertion, n.e.c. + uns**		1.000		**Bodily reaction and exertion, n.e.c. + uns**		1.000	
				Drills, Drills -- power not determined, Drills -- powered	0.003026968		0.303%	Drills, Drills -- power not determined, Drills -- powered	0.00302697		0.303%
				Bodily motion or position of injured, ill worker	0.028%		0.028%	Bodily motion or position of injured, ill worker	0.028%		0.028%
				Hard hats	0.028%		0.028%	Hard hats	0.028%		0.028%
				Caught in or compressed by equipment or objects, n.e.c.		1.127		**Caught in or compressed by equipment or objects, n.e.c.**		1.127	
				Drills -- power not determined	0.028%		0.031%	Drills -- power not determined	0.028%		0.032%
				Caught in running equipment or machinery		1.071		**Caught in running equipment or machinery**		1.071	
				Drills -- power not determined	0.028%		0.029%	Drills -- power not determined	0.028%		0.030%
				Drills -- powered	0.055%		0.059%	Drills -- powered	0.055%		0.059%
				Fall to floor, walkway, or other surface		1.004		**Fall to floor, walkway, or other surface**		1.004	
				Floors, walkways, ground surfaces, n.e.c. + uns	1.679%		1.685%	Floors, walkways, ground surfaces, n.e.c. + uns	1.679%		1.686%
				Ground	2.752%		2.763%	Ground	2.752%		2.763%
				Other floors, walkways, ground surfaces, uns.	0.055%		0.055%	Other floors, walkways, ground surfaces, uns.	0.055%		0.055%
				Fall, n.e.c. + uns		1.036		**Fall, n.e.c. + uns**		1.036	
				Floors, walkways, ground surfaces, uns.	0.138%		0.143%	Floors, walkways, ground surfaces, uns.	0.138%		0.143%
				Ground	0.083%		0.086%	Ground	0.083%		0.086%
				Other floors, walkways, ground surfaces, uns.	0.028%		0.029%	Other floors, walkways, ground surfaces, uns.	0.028%		0.029%
				Ice, sleet, snow	0.055%		0.057%	Ice, sleet, snow	0.055%		0.057%
				Other events or exposures, n.e.c.		1.000		**Other events or exposures, n.e.c.**		1.000	
				Floors, walkways, ground surfaces, n.e.c.	0.028%		0.028%	Floors, walkways, ground surfaces, n.e.c.	0.028%		0.028%
				Overexertion in carrying, turning, wielding objects		1.020		**Overexertion in carrying, turning, wielding objects**		1.020	
				Drills -- powered	0.028%		0.028%	Drills -- powered	0.028%		0.029%
				Overexertion, n.e.c. + uns		1.006		**Overexertion, n.e.c. + uns**		1.006	
				Drills -- powered	0.110%		0.111%	Drills -- powered	0.110%		0.111%
				Slip,trip,stepped on or in, loss of balance - with or without twisting - without fall,nec + uns		1.000		**Slip,trip,stepped on or in, loss of balance - with or without twisting - without fall,nec + uns**		1.000	
				Bodily motion or position of injured, ill worker	1.844%		1.844%	Bodily motion or position of injured, ill worker	1.844%		1.844%

				Slipping on something - with or without twisting - without fall		1.000		**Slipping on something - with or without twisting - without fall**		1.000	
				Bodily motion or position of injured, ill worker	1.403%		1.403%	Bodily motion or position of injured, ill worker	1.403%		1.403%
				Standing		1.000		**Standing**		1.000	
				Bodily motion or position of injured, ill worker	0.028%		0.028%	Bodily motion or position of injured, ill worker	0.028%		0.028%
				Stepping in a hole or on an object - with or without twisting - without fall		1.000		**Stepping in a hole or on an object - with or without twisting - without fall**		1.000	
				Bodily motion or position of injured, ill worker	1.596%		1.596%	Bodily motion or position of injured, ill worker	1.596%		1.596%
				Stepped on object		1.000		**Stepped on object**		1.000	
				Drills -- power not determined	0.028%		0.028%	Drills -- power not determined	0.028%		0.028%
				Struck by object, n.e.c.		1.000		**Struck by object, n.e.c.**		1.000	
				Drills -- power not determined, Drills -- powered	0.165%		0.165%	Drills -- power not determined, Drills -- powered	0.165%		0.165%
				Struck by slipping handheld object		1.000		**Struck by slipping handheld object**		1.000	
				Drills, Drills -- power not determined, Drills -- powered	0.165%		0.165%	Drills, Drills -- power not determined, Drills -- powered	0.165%		0.165%
				Struck by swinging or slipping object, uns.		1.000		**Struck by swinging or slipping object, uns.**		1.000	
				Drills	0.028%		0.028%	Drills	0.028%		0.028%
				Struck against stationary object		1.009		**Struck against stationary object**		1.009	
				Ground	0.028%		0.028%	Ground	0.028%		0.028%
				Tripping over something - with or without twisting - without fall		1.000		**Tripping over something - with or without twisting - without fall**		1.000	
				Bodily motion or position of injured, ill worker	0.358%		0.358%	Bodily motion or position of injured, ill worker	0.358%		0.358%
				Walking -- without other incident		1.000		**Walking -- without other incident**		1.000	
				Bodily motion or position of injured, ill worker	0.138%		0.138%	Bodily motion or position of injured, ill worker	0.138%		0.138%

Process Step 16								
Drill module								
Resources								
Labourer - Front Connection				Labourer - Back Connection				Labourer - Spotter
Risks								
	Frequency (%)	Severity Factor	Frequency * Severity		Frequency (%)	Severity Factor	Frequency * Severity	
Event Exposure/Source of Injury Combination	4.57%	1.006	4.59%	**Event Exposure/Source of Injury Combination**	4.57%	1.006	4.59%	
Bodily reaction and exertion, n.e.c.		1.000		**Bodily reaction and exertion, n.e.c.**		1.000		No risks
Drills, Drills -- power not determined, Drills -- powered	0.003026968		0.303%	Drills, Drills -- power not determined, Drills -- powered	0.003026968		0.303%	
Crowbars	0.055%		0.055%	Crowbars	0.055%		0.055%	
Hard hats	0.028%		0.028%	Hard hats	0.028%		0.028%	
Caught in or compressed by equipment or objects, n.e.c.		1.127		**Caught in or compressed by equipment or objects, n.e.c.**		1.127		
Drills -- power not determined	0.028%		0.031%	Drills -- power not determined	0.028%		0.031%	
Caught in running equipment or machinery		1.071		**Caught in running equipment or machinery**		1.071		
Drills -- power not determined, Drills -- powered	0.083%		0.088%	Drills -- power not determined, Drills -- powered	0.083%		0.088%	
Overexertion in carrying, turning, wielding objects		1.020		**Overexertion in carrying, turning, wielding objects**		1.020		
Drills -- powered	0.028%		0.028%	Drills -- powered	0.028%		0.028%	
Crowbars	0.028%		0.028%	Crowbars	0.028%		0.028%	
Tools, instruments, and equipment, n.e.c. + uns	0.055%		0.056%	Tools, instruments, and equipment, n.e.c. + uns	0.055%		0.056%	
Overexertion, n.e.c. + uns		1.006		**Overexertion, n.e.c. + uns**		1.006		
Drills -- powered, Drills	0.110%		0.111%	Drills -- powered, Drills	0.110%		0.111%	
Crowbars	0.138%		0.138%	Crowbars	0.138%		0.138%	
Tools, instruments, and equipment, uns.	0.055%		0.055%	Tools, instruments, and equipment, uns.	0.055%		0.055%	
Standing		1.000		**Standing**		1.000		
Bodily motion or position of injured, ill worker	0.028%		0.028%	Bodily motion or position of injured, ill worker	0.028%		0.028%	
Stepped on object		1.000		**Stepped on object**		1.000		
Drills -- power not determined	0.028%		0.028%	Drills -- power not determined	0.028%		0.028%	
Struck by object, n.e.c.		1.000		**Struck by object, n.e.c.**		1.000		
Drills -- power not determined, Drills -- powered	0.165%		0.165%	Drills -- power not determined, Drills -- powered	0.165%		0.165%	
Crowbars	0.055%		0.055%	Crowbars	0.055%		0.055%	
Struck by slipping handheld object		1.000		**Struck by slipping handheld object**		1.000		
Drills, Drills -- power not determined, Drills -- powered	0.165%		0.165%	Drills, Drills -- power not determined, Drills -- powered	0.165%		0.165%	
Struck by swinging or slipping object, uns.		1.000		**Struck by swinging or slipping object, uns.**		1.000		
Drills	0.028%		0.028%	Drills	0.028%		0.028%	

Bodily reaction and exertion, n.e.c. + uns		1.000		**Bodily reaction and exertion, n.e.c. + uns**		1.000	
Bodily motion or position of injured, ill worker	0.275%		0.275%	Bodily motion or position of injured, ill worker	0.275%		0.275%
Hard hats	0.028%		0.028%	Hard hats	0.028%		0.028%
Bodily reaction, n.e.c. + uns		1.000		**Bodily reaction, n.e.c. + uns**		1.000	
Bodily motion or position of injured, ill worker	2.559%		2.559%	Bodily motion or position of injured, ill worker	2.559%		2.559%
Person -- injured or ill worker, uns.	0.028%		0.028%	Person -- injured or ill worker, uns.	0.028%		0.028%
Compressed or pinched by rolling, sliding, or shifting objects		1.133		**Compressed or pinched by rolling, sliding, or shifting objects**		1.133	
Crowbars	0.028%		0.031%	Crowbars	0.028%		0.031%
Tools, instruments, and equipment, n.e.c.	0.055%		0.062%	Tools, instruments, and equipment, n.e.c.	0.055%		0.062%
Overexertion in lifting		1.000		**Overexertion in lifting**		1.000	
Crowbars	0.028%		0.028%	Crowbars	0.028%		0.028%
Tools, instruments, and equipment, n.e.c. + uns	0.055%		0.055%	Tools, instruments, and equipment, n.e.c. + uns	0.055%		0.055%
Struck by discharged object or substance		1.033		**Struck by discharged object or substance**		1.033	
Crowbars	0.028%		0.028%	Crowbars	0.028%		0.028%
Struck by slipping handheld object		1.000		**Struck by slipping handheld object**		1.000	
Crowbars	0.110%		0.110%	Crowbars	0.110%		0.110%

Process Step 16			
Drill module			
Resources			
Labourer - Driver			
Risks			
No risks			

Process Step 17							
Bottom insulation							
Resources							
Labourer - Roof Connection 1				Labourer - Roof Connection 2			
Risk							
	Frequency (%)	Severity Factor	Frequency * Severity		Frequency (%)	Severity Factor	Frequency * Severity
Event Exposure/Source of Injury Combination	11.64%	1.002	11.67%	**Event Exposure/Source of Injury Combination**	11.64%	1.002	11.67%
Bodily reaction and exertion, n.e.c.		1.000		**Bodily reaction and exertion, n.e.c.**		1.000	
Drills, Drills -- power not determined, Drills -- powered	0.110%		0.110%	Drills, Drills -- power not determined, Drills -- powered	0.110%		0.110%
Hard hats	0.028%		0.028%	Hard hats	0.028%		0.028%
Fall to floor, walkway, or other surface		1.004		**Fall to floor, walkway, or other surface**		1.004	
Floors, walkways, ground surfaces, n.e.c. + uns	1.679%		1.685%	Floors, walkways, ground surfaces, n.e.c. + uns	1.679%		1.685%
Ground	2.752%		2.762%	Ground	2.752%		2.762%
Other floors, walkways, ground surfaces, uns.	0.055%		0.055%	Other floors, walkways, ground surfaces, uns.	0.055%		0.055%
Fall, n.e.c. + uns		1.036		**Fall, n.e.c. + uns**		1.036	
Floors, walkways, ground surfaces, uns.	0.138%		0.143%	Floors, walkways, ground surfaces, uns.	0.138%		0.143%
Ground	0.083%		0.086%	Ground	0.083%		0.086%
Other floors, walkways, ground surfaces, uns.	0.028%		0.029%	Other floors, walkways, ground surfaces, uns.	0.028%		0.029%
Ice, sleet, snow	0.055%		0.057%	Ice, sleet, snow	0.055%		0.057%
Other events or exposures, n.e.c.		1.000		**Other events or exposures, n.e.c.**		1.000	
Floors, walkways, ground surfaces, n.e.c.	0.028%		0.028%	Floors, walkways, ground surfaces, n.e.c.	0.028%		0.028%
Overexertion in carrying, turning, wielding objects		1.020		**Overexertion in carrying, turning, wielding objects**		1.020	
Drills -- powered	0.028%		0.028%	Drills -- powered	0.028%		0.028%
Overexertion, n.e.c. + uns		1.006		**Overexertion, n.e.c. + uns**		1.006	
Drills -- powered, Drills	0.110%		0.111%	Drills -- powered, Drills	0.110%		0.111%
Slip,trip,stepped on or in, loss of balance - with or without twisting - without fall,nec + uns		1.000		**Slip,trip,stepped on or in, loss of balance - with or without twisting - without fall,nec + uns**		1.000	
Bodily motion or position of injured, ill worker	1.844%		1.844%	Bodily motion or position of injured, ill worker	1.844%		1.844%
Slipping on something - with or without twisting - without fall		1.000		**Slipping on something - with or without twisting - without fall**		1.000	
Bodily motion or position of injured, ill worker	1.403%		1.403%	Bodily motion or position of injured, ill worker	1.403%		1.403%
Standing		1.000		**Standing**		1.000	
Bodily motion or position of injured, ill worker	0.028%		0.028%	Bodily motion or position of injured, ill worker	0.028%		0.028%
Stepping in a hole or on an object - with or without twisting - without fall		1.000		**Stepping in a hole or on an object - with or without twisting - without fall**		1.000	
Bodily motion or position of injured, ill worker	1.596%		1.596%	Bodily motion or position of injured, ill worker	1.596%		1.596%

Stepped on object		1.000		**Stepped on object**		1.000	
Drills -- power not determined	0.028%		0.028%	Drills -- power not determined	0.028%		0.028%
Struck by object, n.e.c.		1.000		**Struck by object, n.e.c.**		1.000	
Drills -- power not determined, Drills -- powered	0.165%		0.165%	Drills -- power not determined, Drills -- powered	0.165%		0.165%
Struck by slipping handheld object		1.000		**Struck by slipping handheld object**		1.000	
Drills, Drills -- power not determined, Drills -- powered	0.165%		0.165%	Drills, Drills -- power not determined, Drills -- powered	0.165%		0.165%
Struck by swinging or slipping object, uns.		1.000		**Struck by swinging or slipping object, uns.**		1.000	
Drills	0.028%		0.028%	Drills	0.028%		0.028%
Struck against stationary object		1.009		**Struck against stationary object**		1.009	
Ground	0.028%		0.028%	Ground	0.028%		0.028%
Tripping over something - with or without twisting - without fall		1.000		**Tripping over something - with or without twisting - without fall**		1.000	
Bodily motion or position of injured, ill worker	0.358%		0.358%	Bodily motion or position of injured, ill worker	0.358%		0.358%
Walking -- without other incident		1.000		**Walking -- without other incident**		1.000	
Bodily motion or position of injured, ill worker	0.138%		0.138%	Bodily motion or position of injured, ill worker	0.138%		0.138%
Rubbed or abraded by kneeling on surface		1.000		**Rubbed or abraded by kneeling on surface**		1.000	
Floors, walkways, ground surfaces, n.e.c. + uns	0.083%		0.083%	Floors, walkways, ground surfaces, n.e.c. + uns	0.083%		0.083%
Roof	0.055%		0.055%	Roof	0.055%		0.055%
Repetitive use of tools		1.000		**Repetitive use of tools**		1.000	
Bodily motion or position of injured, ill worker	0.605%		0.605%	Bodily motion or position of injured, ill worker	0.605%		0.605%
Overexertion in lifting (object) and turning (body)		1.000		**Overexertion in lifting (object) and turning (body)**		1.000	
Fibreglass insulation	0.028%		0.028%	Fibreglass insulation	0.028%		0.028%

Process Step 18							
Top insulation							
Resources							
Labourer - Roof Connection 1				Labourer - Roof Connection 2			
Risk							
	Frequency (%)	**Severity Factor**	**Frequency * Severity**		**Frequency (%)**	**Severity Factor**	**Frequency * Severity**
Event Exposure/Source of Injury Combination	20.58%	1.007	20.72%	**Event Exposure/Source of Injury Combination**	7.57%	1.001	7.58%
Bending, climbing, crawling, reaching, twisting		1.000		**Overexertion in carrying, turning, wielding objects**		1.020	
Bodily motion or position of injured, ill worker	6.935%		6.935%	Ladders, uns.	0.028%		0.028%
Drills -- powered	0.220%		0.220%	Ladders, uns.	0.028%		0.028%
Ladders, n.e.c. + uns	0.275%		0.275%	**Overexertion in pulling or pushing objects**		1.000	
Bodily reaction and exertion, uns + nec		1.000		Tools, instruments, and equipment, n.e.c. + uns	0.055%		0.055%
Bodily motion or position of injured, ill worker	0.028%		0.028%	Overexertion, uns.	1.046%		1.046%
Hard hats	0.028%		0.028%	Ladders, uns.	0.083%		0.087%
Bodily reaction, n.e.c. + uns		1.000		Tools, instruments, and equipment, uns.	0.028%		0.029%
Bodily motion or position of injured, ill worker	0.215%		0.215%	**Struck by object, n.e.c.**		1.000	
Person -- injured or ill worker, uns.	0.028%		0.028%	Drills -- power not determined, Drills -- powered	0.165%		0.165%
Caught in or compressed by equipment or objects, n.e.c.		1.127		Ladders, uns.	0.028%		0.028%
Drills -- power not determined	0.028%		0.031%	Tools, instruments, and equipment, n.e.c.	0.028%		0.028%
Ladders, uns.	0.110%		0.124%	**Struck by slipping handheld object**		1.000	
Tools, instruments, and equipment, n.e.c.	0.028%		0.031%	Tools, instruments, and equipment, n.e.c.	0.028%		0.028%
Caught in running equipment or machinery		1.071		Struck by swinging or slipping object, uns.	0.165%		0.165%
Drills -- power not determined, Drills -- powered	0.083%		0.088%	Drills	0.028%		0.028%
Contact with objects and equipment, n.e.c.		1.029		**Fall on same level, n.e.c.**		1.000	
Bodily conditions of injured, ill worker	0.028%		0.028%	Floors, walkways, ground surfaces, uns.	0.055%		0.055%
Fall from ladder		1.022		Ice, sleet, snow	0.028%		0.028%
Floor, uns.	0.165%		0.169%				
Floors, walkways, ground surfaces, n.e.c. + uns	1.101%		1.125%	**Fall onto or against objects**		1.000	
Ground	1.376%		1.406%	Floor of building	0.028%		0.028%
Ice, sleet, snow	0.055%		0.056%	Ice, sleet, snow	0.028%		0.028%
Ladders, uns.	0.358%		0.366%	Ladders, uns.	0.138%		0.138%
Other floors, walkways, ground surfaces, uns.	0.028%		0.028%	**Slip,trip,stepped on or in, loss of balance - with or without twisting - without fall,nec**		1.000	
Fall on same level, n.e.c.		1.000		Bodily motion or position of injured, ill worker	1.844%		1.844%

Floors, walkways, ground surfaces, uns.	0.055%		0.055%
Ice, sleet, snow	0.028%		0.028%
Fall onto or against objects		1.000	
Floor of building	0.028%		0.028%
Ice, sleet, snow	0.028%		0.028%
Ladders, uns.	0.138%		0.138%
Screws	0.055%		0.055%
Structures and surfaces, n.e.c.	0.028%		0.028%
Tools, instruments, and equipment, n.e.c.	0.055%		0.055%
Fall to floor, walkway, or other surface		1.004	
Floor, n.e.c. + uns	0.083%		0.083%
Floors, walkways, ground surfaces, n.e.c. + uns	1.679%		1.685%
Other floors, walkways, ground surfaces, uns.	0.055%		0.055%
Fall to lower level, n.e.c.		1.000	
Floor of building	0.248%		0.248%
Floor, n.e.c. + uns	0.110%		0.110%
Floors, walkways, ground surfaces, n.e.c. + uns	0.275%		0.275%
Fall to lower level, uns.		1.000	
Floor of building	0.028%		0.028%
Floors, walkways, ground surfaces, uns.	0.138%		0.138%
Fall, n.e.c. + uns		1.036	
Floors, walkways, ground surfaces, uns.	0.138%		0.143%
Other floors, walkways, ground surfaces, uns.	0.028%		0.029%
Ice, sleet, snow	0.055%		0.057%
Overexertion in carrying, turning, wielding objects		1.020	
Drills -- powered	0.028%		0.028%
Tools, instruments, and equipment, n.e.c. + uns	0.055%		0.056%
Overexertion in lifting		1.000	
Tools, instruments, and equipment, n.e.c. + uns	0.055%		0.055%
Overexertion, n.e.c.		1.011	
Drills -- powered	0.055%		0.056%
Tools, instruments, and equipment, uns.	0.055%		0.056%
Overexertion in pulling or pushing objects		1.000	
Tools, instruments, and equipment, n.e.c. + uns	0.055%		0.055%
Overexertion, uns.		1.000	
Drills, Drills -- powered	0.055%		0.055%
Tools, instruments, and equipment, uns.	0.028%		0.028%
Slip,trip,stepped on or in, loss of balance - with or without twisting - without fall,nec + uns		1.000	
Bodily motion or position of injured, ill worker	1.844%		1.844%
Slipping on something - with or without twisting - without fall		1.000	
Bodily motion or position of injured, ill worker	1.403%		1.403%
Stepped on object		1.000	
Drills -- power not determined	0.028%		0.028%
Stepping in a hole or on an object - with or without twisting - without fall		1.000	
Bodily motion or position of injured, ill worker	1.596%		1.596%
Struck against stationary object		1.009	
Ladders, uns.	0.110%		0.111%
Struck by discharged object or substance		1.033	
Tripping over something - with or without twisting - without fall	0.358%		0.369%
Bodily motion or position of injured, ill worker	0.358%		0.369%
Walking -- without other incident		1.000	
Bodily motion or position of injured, ill worker	0.138%		0.138%
Overexertion in lifting (object) and turning (body)		1.000	
Fibreglass insulation	0.028%		0.028%

Slipping on something - with or without twisting - without fall		1.000	
Bodily motion or position of injured, ill worker	1.403%		1.403%
Stepped on object		1.000	
Drills -- power not determined	0.028%		0.028%
Stepping in a hole or on an object - with or without twisting - without fall		1.000	
Bodily motion or position of injured, ill worker	1.596%		1.596%
Struck against stationary object		1.009	
Ladders, uns.	0.110%		0.111%
Struck by discharged object or substance		1.033	
Lifelines, lanyards, safety belts or harnesses	0.028%		0.028%
Tripping over something - with or without twisting - without fall		1.000	
Bodily motion or position of injured, ill worker	0.358%		0.358%
Walking -- without other incident		1.000	
Bodily motion or position of injured, ill worker	0.138%		0.138%
Standing		1.000	
Bodily motion or position of injured, ill worker	0.028%		0.028%
Overexertion in lifting (object) and turning (body)		1.000	
Ladders, uns.	0.028%		0.028%
Fibreglass insulation	0.028%		0.028%

Process Step 19							
Disconnect rigging from module							
Resources							
Labourer - Roof Connection 1				Labourer - Roof Connection 2			
Risk							
Event Exposure/Source of Injury Combination	**Frequency (%)** 6.58%	**Severity Factor** 1.002	**Frequency * Severity** 6.59%	**Event Exposure/Source of Injury Combination**	**Frequency (%)** 6.58%	**Severity Factor** 1.002	**Frequency * Severity** 6.59%
Fall on same level, n.e.c.		1.000		**Fall on same level, n.e.c.**		1.000	
Floors, walkways, ground surfaces, uns.	0.055%		0.055%	Floors, walkways, ground surfaces, uns.	0.055%		0.055%
Ice, sleet, snow	0.028%		0.028%	Ice, sleet, snow	0.028%		0.028%
Roof	0.055%		0.055%	Roof	0.055%		0.055%
Fall onto or against objects		1.000		**Fall onto or against objects**		1.000	
Floor of building	0.028%		0.028%	Floor of building	0.028%		0.028%
Floors, walkways, ground surfaces, uns.	0.028%		0.028%	Floors, walkways, ground surfaces, uns.	0.028%		0.028%
Ice, sleet, snow	0.028%		0.028%	Ice, sleet, snow	0.028%		0.028%
Roof	0.055%		0.055%	Roof	0.055%		0.055%
Screws	0.055%		0.055%	Screws	0.055%		0.055%
Structures and surfaces, n.e.c.	0.028%		0.028%	Structures and surfaces, n.e.c.	0.028%		0.028%
Fall to floor, walkway, or other surface		1.004		**Fall to floor, walkway, or other surface**		1.004	
Floor, n.e.c.	0.028%		0.028%	Floor, n.e.c.	0.028%		0.028%
Floor, uns.	0.055%		0.055%	Floor, uns.	0.055%		0.055%
Floors, walkways, ground surfaces, n.e.c.	0.055%		0.055%	Floors, walkways, ground surfaces, n.e.c.	0.055%		0.055%
Floors, walkways, ground surfaces, uns.	1.624%		1.629%	Floors, walkways, ground surfaces, uns.	1.624%		1.629%
Other floors, walkways, ground surfaces, uns.	0.055%		0.055%	Other floors, walkways, ground surfaces, uns.	0.055%		0.055%
Roof	0.165%		0.166%	Roof	0.165%		0.166%
Fall, n.e.c. + uns		1.036		**Fall, n.e.c. + uns**		1.036	
Floors, walkways, ground surfaces, uns.	0.138%		0.143%	Floors, walkways, ground surfaces, uns.	0.138%		0.143%
Other floors, walkways, ground surfaces, uns.	0.028%		0.029%	Other floors, walkways, ground surfaces, uns.	0.028%		0.029%
Roof	0.028%		0.029%	Roof	0.028%		0.029%
Ice, sleet, snow	0.055%		0.057%	Ice, sleet, snow	0.055%		0.057%
Slip,trip,stepped on or in, loss of balance - with or without twisting - without fall,nec + uns		1.000		**Slip,trip,stepped on or in, loss of balance - with or without twisting - without fall,nec + uns**		1.000	
Bodily motion or position of injured, ill worker	1.844%		1.844%	Bodily motion or position of injured, ill worker	1.844%		1.844%
Slipping on something - with or without twisting - without fall		1.000		**Slipping on something - with or without twisting - without fall**		1.000	
Bodily motion or position of injured, ill worker	1.403%		1.403%	Bodily motion or position of injured, ill worker	1.403%		1.403%
Static posture without the application of force to an object		1.000		**Static posture without the application of force to an object**		1.000	
Bodily motion or position of injured, ill worker	0.248%		0.248%	Bodily motion or position of injured, ill worker	0.248%		0.248%
Tripping over something - with or without twisting - without fall		1.000		**Tripping over something - with or without twisting - without fall**		1.000	
Bodily motion or position of injured, ill worker	0.358%		0.358%	Bodily motion or position of injured, ill worker	0.358%		0.358%
Walking -- without other incident		1.000		**Walking -- without other incident**		1.000	
Bodily motion or position of injured, ill worker	0.138%		0.138%	Bodily motion or position of injured, ill worker	0.138%		0.138%

Process Step 20										
Crane lifts rigging equipment										
Resources										
Crane Operator			Labourer - Roof Connection 1				Labourer - Roof Connection 2			
Risk										
				Frequency (%)	Severity Factor	Frequency * Severity		Frequency (%)	Severity Factor	Frequency * Severity
			Event Exposure/Source of Injury Combination	0.03%	1.033	0.03%	Event Exposure/Source of Injury Combination	0.03%	1.033	0.03%
			Struck by swinging or slipping object, n.e.c.		1.033		Struck by swinging or slipping object, n.e.c.		1.033	
			Hoisting accessories, n.e.c.	0.000275179		0.028%	Hoisting accessories, n.e.c.	0.000275179		0.028%

Process Step 21										
Crane swings rigging equipment over next module										
Resources										
Crane Operator			Labourer - Spotter				Labourer - Driver			
Risk										
				Frequency (%)	Severity Factor	Frequency * Severity		Frequency (%)	Severity Factor	Frequency * Severity
		Severity	Event Exposure/Source of Injury Combination	0.03%	1.033	0.03%	Event Exposure/Source of Injury Combination	0.03%	1.033	0.03%
			Struck by swinging or slipping object, n.e.c.		1.033		Struck by swinging or slipping object, n.e.c.		1.033	
			Hoisting accessories, n.e.c.	0.000275179		0.028%	Hoisting accessories, n.e.c.	0.000275179		0.028%

Appendix A5: Prefabricated Panel Install Risk Analysis

Process Step 1

Prepare panels for lift

Resources

Risks

Foreman

Event Exposure/Source of Injury Combination	Frequency (%)	Severity Factor	Frequency * Severity
	21.11%	1.001486637	21.14%
Bending, climbing, crawling, reaching, twisting		1	
Bodily motion or position of injured, ill worker	6.93%		6.93%
Bodily reaction and exertion, n.e.c.		1	
Bodily motion or position of injured, ill worker	0.25%		0.25%
Bodily reaction and exertion, uns.		1	
Bodily motion or position of injured, ill worker	0.03%		0.03%
Bodily reaction, n.e.c.		1	
Bodily motion or position of injured, ill worker	2.37%		2.37%
Bodily reaction, uns.		1	
Bodily motion or position of injured, ill worker	0.19%		0.19%
Slip,trip,stepped on or in, loss of balance - with or without twisting - without fall,nec		1	
Bodily motion or position of injured, ill worker	1.49%		1.49%
Slip,trip,stepped on or in, loss of balance - with or without twisting - without fall,uns		1	
Bodily motion or position of injured, ill worker	0.36%		0.36%
Slipping on something - with or without twisting - without fall		1	
Bodily motion or position of injured, ill worker	1.40%		1.40%
Stepping in a hole or on an object - with or without twisting - without fall		1	
Bodily motion or position of injured, ill worker	1.60%		1.60%
Tripping over something - with or without twisting - without fall		1	
Bodily motion or position of injured, ill worker	0.36%		0.36%
Walking -- without other incident		1	
Bodily motion or position of injured, ill worker	0.14%		0.14%
Fall on same level, n.e.c.		1	
Floor of building	0.03%		0.03%
Floors, walkways, ground surfaces, uns.	0.06%		0.06%
Ground	0.08%		0.08%
Fall on same level, uns.		1	
Floor of building	0.03%		0.03%
Ground	0.06%		0.06%
Fall onto or against objects		1	
Floor of building	0.03%		0.03%
Floor of scaffold, staging, or temporary work platform	0.06%		0.06%
Floors, walkways, ground surfaces, uns.	0.03%		0.03%
Fall to floor, walkway, or other surface		1.003649635	
Floor of building	0.80%		0.80%
Floor, uns.	0.06%		0.06%
Floors, walkways, ground surfaces, n.e.c.	0.06%		0.06%
Floors, walkways, ground surfaces, uns.	1.62%		1.63%
Ground	2.75%		2.76%
Manlifts	0.03%		0.03%
Other floors, walkways, ground surfaces, uns.	0.06%		0.06%
Fall, n.e.c.		1.071428571	
Floors, walkways, ground surfaces, uns.	0.11%		0.12%
Ground	0.03%		0.03%
Other floors, walkways, ground surfaces, uns.	0.03%		0.03%
Fall, uns.		1	
Floors, walkways, ground surfaces, uns.	0.03%		0.03%
Ground	0.06%		0.06%
Other events or exposures, n.e.c.		1	
Floors, walkways, ground surfaces, n.e.c.	0.03%		0.03%

Labourer 3

Event Exposure/Source of Injury Combination	Frequency (%)	Severity Factor	Frequency * Severity
	21.11%	1.001486637	21.14%
Bending, climbing, crawling, reaching, twisting		1	
Bodily motion or position of injured, ill worker	6.93%		6.93%
Bodily reaction and exertion, n.e.c.		1	
Bodily motion or position of injured, ill worker	0.25%		0.25%
Bodily reaction and exertion, uns.		1	
Bodily motion or position of injured, ill worker	0.03%		0.03%
Bodily reaction, n.e.c.		1	
Bodily motion or position of injured, ill worker	2.37%		2.37%
Bodily reaction, uns.		1	
Bodily motion or position of injured, ill worker	0.19%		0.19%
Slip,trip,stepped on or in, loss of balance - with or without twisting - without fall,nec		1	
Bodily motion or position of injured, ill worker	1.49%		1.49%
Slip,trip,stepped on or in, loss of balance - with or without twisting - without fall,uns		1	
Bodily motion or position of injured, ill worker	0.36%		0.36%
Slipping on something - with or without twisting - without fall		1	
Bodily motion or position of injured, ill worker	1.40%		1.40%
Stepping in a hole or on an object - with or without twisting - without fall		1	
Bodily motion or position of injured, ill worker	1.60%		1.60%
Tripping over something - with or without twisting - without fall		1	
Bodily motion or position of injured, ill worker	0.36%		0.36%
Walking -- without other incident		1	
Bodily motion or position of injured, ill worker	0.14%		0.14%
Fall on same level, n.e.c.		1	
Floor of building	0.03%		0.03%
Floors, walkways, ground surfaces, uns.	0.06%		0.06%
Ground	0.08%		0.08%
Fall on same level, uns.		1	
Floor of building	0.03%		0.03%
Ground	0.06%		0.06%
Fall onto or against objects		1	
Floor of building	0.03%		0.03%
Floor of scaffold, staging, or temporary work platform	0.06%		0.06%
Floors, walkways, ground surfaces, uns.	0.03%		0.03%
Fall to floor, walkway, or other surface		1.003649635	
Floor of building	0.80%		0.80%
Floor, uns.	0.06%		0.06%
Floors, walkways, ground surfaces, n.e.c.	0.06%		0.06%
Floors, walkways, ground surfaces, uns.	1.62%		1.63%
Ground	2.75%		2.76%
Manlifts	0.03%		0.03%
Other floors, walkways, ground surfaces, uns.	0.06%		0.06%
Fall, n.e.c.		1.071428571	
Floors, walkways, ground surfaces, uns.	0.11%		0.12%
Ground	0.03%		0.03%
Other floors, walkways, ground surfaces, uns.	0.03%		0.03%
Fall, uns.		1	
Floors, walkways, ground surfaces, uns.	0.03%		0.03%
Ground	0.06%		0.06%
Other events or exposures, n.e.c.		1	
Floors, walkways, ground surfaces, n.e.c.	0.03%		0.03%

Labourer 4

Event Exposure/Source of Injury Combination	Frequency (%)	Severity Factor	Frequency * Severity
	21.11%	1.0015	21.14%
Bending, climbing, crawling, reaching, twisting		1	
Bodily motion or position of injured, ill worker	6.93%		6.93%
Bodily reaction and exertion, n.e.c.		1	
Bodily motion or position of injured, ill worker	0.25%		0.25%
Bodily reaction and exertion, uns.		1	
Bodily motion or position of injured, ill worker	0.03%		0.03%
Bodily reaction, n.e.c.		1	
Bodily motion or position of injured, ill worker	2.37%		2.37%
Bodily reaction, uns.		1	
Bodily motion or position of injured, ill worker	0.19%		0.19%
Slip,trip,stepped on or in, loss of balance - with or without twisting - without fall,nec		1	
Bodily motion or position of injured, ill worker	1.49%		1.49%
Slip,trip,stepped on or in, loss of balance - with or without twisting - without fall,uns		1	
Bodily motion or position of injured, ill worker	0.36%		0.36%
Slipping on something - with or without twisting - without fall		1	
Bodily motion or position of injured, ill worker	1.40%		1.40%
Stepping in a hole or on an object - with or without twisting - without fall		1	
Bodily motion or position of injured, ill worker	1.60%		1.60%
Tripping over something - with or without twisting - without fall		1	
Bodily motion or position of injured, ill worker	0.36%		0.36%
Walking -- without other incident		1	
Bodily motion or position of injured, ill worker	0.14%		0.14%
Fall on same level, n.e.c.		1	
Floor of building	0.03%		0.03%
Floors, walkways, ground surfaces, uns.	0.06%		0.06%
Ground	0.08%		0.08%
Fall on same level, uns.		1	
Floor of building	0.03%		0.03%
Ground	0.06%		0.06%
Fall onto or against objects		1	
Floor of building	0.03%		0.03%
Floor of scaffold, staging, or temporary work platform	0.06%		0.06%
Floors, walkways, ground surfaces, uns.	0.03%		0.03%
Fall to floor, walkway, or other surface		1.0036	
Floor of building	0.80%		0.80%
Floor, uns.	0.06%		0.06%
Floors, walkways, ground surfaces, n.e.c.	0.06%		0.06%
Floors, walkways, ground surfaces, uns.	1.62%		1.63%
Ground	2.75%		2.76%
Manlifts	0.03%		0.03%
Other floors, walkways, ground surfaces, uns.	0.06%		0.06%
Fall, n.e.c.		1.0714	
Floors, walkways, ground surfaces, uns.	0.11%		0.12%
Ground	0.03%		0.03%
Other floors, walkways, ground surfaces, uns.	0.03%		0.03%
Fall, uns.		1	
Floors, walkways, ground surfaces, uns.	0.03%		0.03%
Ground	0.06%		0.06%
Other events or exposures, n.e.c.		1	
Floors, walkways, ground surfaces, n.e.c.	0.03%		0.03%

Process Step 2											
Prepare panel installation area											
Resources											
Foreman				Labourer 1				Labourer 2			
Risks											
Event Exposure/Source of Injury Combination	Frequency (%)	Severity Factor	Frequency * Severity	Event Exposure/Source of Injury Combination	Frequency (%)	Severity Factor	Frequency * Severity	Event Exposure/Source of Injury Combination	Frequency (%)	Severity Factor	Frequency * Severity
	9.99%	1	9.99%		9.99%	1	9.99%		9.99%	1	9.99%
Bending, climbing, crawling, reaching, twisting		1		**Bending, climbing, crawling, reaching, twisting**		1		**Bending, climbing, crawling, reaching, twisting**		1	
Bodily motion or position of injured, ill worker	**6.93%**		6.93%	**Bodily motion or position of injured, ill worker**	**6.93%**		6.93%	**Bodily motion or position of injured, ill worker**	**6.93%**		6.93%
Bodily reaction and exertion, n.e.c.		1		**Bodily reaction and exertion, n.e.c.**		1		**Bodily reaction and exertion, n.e.c.**		1	
Bodily motion or position of injured, ill worker	**0.25%**		0.25%	**Bodily motion or position of injured, ill worker**	**0.25%**		0.25%	**Bodily motion or position of injured, ill worker**	**0.25%**		0.25%
Bodily reaction and exertion, uns.		1		**Bodily reaction and exertion, uns.**		1		**Bodily reaction and exertion, uns.**		1	
Bodily motion or position of injured, ill worker	**0.03%**		0.03%	**Bodily motion or position of injured, ill worker**	**0.03%**		0.03%	**Bodily motion or position of injured, ill worker**	**0.03%**		0.03%
Bodily reaction, n.e.c.		1		**Bodily reaction, n.e.c.**		1		**Bodily reaction, n.e.c.**		1	
Bodily motion or position of injured, ill worker	**2.37%**		2.37%	**Bodily motion or position of injured, ill worker**	**2.37%**		2.37%	**Bodily motion or position of injured, ill worker**	**2.37%**		2.37%
Bodily reaction, uns.		1		**Bodily reaction, uns.**		1		**Bodily reaction, uns.**		1	
Bodily motion or position of injured, ill worker	**0.19%**		0.19%	**Bodily motion or position of injured, ill worker**	**0.19%**		0.19%	**Bodily motion or position of injured, ill worker**	**0.19%**		0.19%
Rubbed or abraded by kneeling on surface		1		**Rubbed or abraded by kneeling on surface**		1		**Rubbed or abraded by kneeling on surface**		1	
Floor of building	**0.08%**		0.08%	**Floor of building**	**0.08%**		0.08%	**Floor of building**	**0.08%**		0.08%
Floor, uns.	**0.03%**		0.03%	**Floor, uns.**	**0.03%**		0.03%	**Floor, uns.**	**0.03%**		0.03%
Floors, walkways, ground surfaces, n.e.c.	**0.03%**		0.03%	**Floors, walkways, ground surfaces, n.e.c.**	**0.03%**		0.03%	**Floors, walkways, ground surfaces, n.e.c.**	**0.03%**		0.03%
Floors, walkways, ground surfaces, uns.	**0.06%**		0.06%	**Floors, walkways, ground surfaces, uns.**	**0.06%**		0.06%	**Floors, walkways, ground surfaces, uns.**	**0.06%**		0.06%
Other floors, walkways, ground surfaces, uns.	**0.03%**		0.03%	**Other floors, walkways, ground surfaces, uns.**	**0.03%**		0.03%	**Other floors, walkways, ground surfaces, uns.**	**0.03%**		0.03%

Process Step 2											
Prepare panel installation area											
Resources											
Labourer 3				Labourer 4				Labourer 5			
Risks											
	Frequency (%)	Severity Factor	Frequency * Severity		Frequency (%)	Severity Factor	Frequency * Severity		Frequency (%)	Severity Factor	Frequency * Severity
Event Exposure/Source of Injury Combination	9.99%	1	9.99%	Event Exposure/Source of Injury Combination	9.99%	1	9.99%	Event Exposure/Source of Injury Combination	9.99%	1	9.99%
Bending, climbing, crawling, reaching, twisting		1		Bending, climbing, crawling, reaching, twisting		1		Bending, climbing, crawling, reaching, twisting		1	
Bodily motion or position of injured, ill worker	6.93%		6.93%	Bodily motion or position of injured, ill worker	6.93%		6.93%	Bodily motion or position of injured, ill worker	6.93%		6.93%
Bodily reaction and exertion, n.e.c.		1		Bodily reaction and exertion, n.e.c.		1		Bodily reaction and exertion, n.e.c.		1	
Bodily motion or position of injured, ill worker	0.25%		0.25%	Bodily motion or position of injured, ill worker	0.25%		0.25%	Bodily motion or position of injured, ill worker	0.25%		0.25%
Bodily reaction and exertion, uns.		1		Bodily reaction and exertion, uns.		1		Bodily reaction and exertion, uns.		1	
Bodily motion or position of injured, ill worker	0.03%		0.03%	Bodily motion or position of injured, ill worker	0.03%		0.03%	Bodily motion or position of injured, ill worker	0.03%		0.03%
Bodily reaction, n.e.c.		1		Bodily reaction, n.e.c.		1		Bodily reaction, n.e.c.		1	
Bodily motion or position of injured, ill worker	2.37%		2.37%	Bodily motion or position of injured, ill worker	2.37%		2.37%	Bodily motion or position of injured, ill worker	2.37%		2.37%
Bodily reaction, uns.		1		Bodily reaction, uns.		1		Bodily reaction, uns.		1	
Bodily motion or position of injured, ill worker	0.19%		0.19%	Bodily motion or position of injured, ill worker	0.19%		0.19%	Bodily motion or position of injured, ill worker	0.19%		0.19%
Rubbed or abraded by kneeling on surface		1		Rubbed or abraded by kneeling on surface		1		Rubbed or abraded by kneeling on surface		1	
Floor of building	0.08%		0.08%	Floor of building	0.08%		0.08%	Floor of building	0.08%		0.08%
Floor, uns.	0.03%		0.03%	Floor, uns.	0.03%		0.03%	Floor, uns.	0.03%		0.03%
Floors, walkways, ground surfaces, n.e.c.	0.03%		0.03%	Floors, walkways, ground surfaces, n.e.c.	0.03%		0.03%	Floors, walkways, ground surfaces, n.e.c.	0.03%		0.03%
Floors, walkways, ground surfaces, uns.	0.06%		0.06%	Floors, walkways, ground surfaces, uns.	0.06%		0.06%	Floors, walkways, ground surfaces, uns.	0.06%		0.06%
Other floors, walkways, ground surfaces, uns.	0.03%		0.03%	Other floors, walkways, ground surfaces, uns.	0.03%		0.03%	Other floors, walkways, ground surfaces, uns.	0.03%		0.03%

Process Step 3			
Swing crane over to panel			
Resources			
Crane Operator			
Risks			
Event Exposure/Source of Injury Combination			
No risks for the operator			

Process Step 4				
Connect panel to crane + hoisting equipment				
Resources				
Crane Operator	Labourer 3			
Risks				
		Frequency (%)	**Severity Factor**	**Frequency * Severity**
	Event Exposure/Source of Injury Combination	9.85%	1.00009311	9.85%
No risks for the operator	**Struck by flying object, n.e.c.**		1	
	Chains, n.e.c.	**0.03%**		0.03%
	Struck by object, uns.		1	
	Chains, n.e.c.	**0.03%**		0.03%
	Struck by swinging or slipping object, n.e.c.		1.033333333	
	Chains, n.e.c.	**0.03%**		0.03%
	Bending, climbing, crawling, reaching, twisting		1	
	Bodily motion or position of injured, ill worker	**6.93%**		6.93%
	Bodily reaction and exertion, n.e.c.		1	
	Bodily motion or position of injured, ill worker	**0.25%**		0.25%
	Bodily reaction and exertion, uns.		1	
	Bodily motion or position of injured, ill worker	**0.03%**		0.03%
	Bodily reaction, n.e.c.		1	
	Bodily motion or position of injured, ill worker	**2.37%**		2.37%
	Bodily reaction, uns.		1	
	Bodily motion or position of injured, ill worker	**0.19%**		0.19%

Process Step 5							
Connect panel to forklift + hoisting equipment							
Resources							
Foreman				Labourer 3			
Risks							
	Frequency (%)	Severity Factor	Frequency * Severity		Frequency (%)	Severity Factor	Frequency * Severity
Event Exposure/Source of Injury Combination	10.02%	1.001834495	10.03%	**Event Exposure/Source of Injury Combination**	10.02%	1.001834495	10.03%
Caught in or compressed by equipment or objects, n.e.c.		1.12716763		**Caught in or compressed by equipment or objects, n.e.c.**		1.12716763	
Forklift, uns.	0.06%		0.06%	Forklift, uns.	0.06%		0.06%
Contact with objects and equipment, n.e.c.		1.029411765		**Contact with objects and equipment, n.e.c.**		1.029411765	
Forklift, uns.	0.03%		0.03%	Forklift, uns.	0.03%		0.03%
Overexertion in lifting		1		**Overexertion in lifting**		1	
Forklift, uns.	0.03%		0.03%	Forklift, uns.	0.03%		0.03%
Overturned -- nonhighway accident		1.125		**Overturned -- nonhighway accident**		1.125	
Forklift, n.e.c.	0.03%		0.03%	Forklift, n.e.c.	0.03%		0.03%
Pedestrian struck by vehicle, mobile equipment, n.e.c.		1.25		**Pedestrian struck by vehicle, mobile equipment, n.e.c.**		1.25	
Forklift, uns.	0.03%		0.03%	Forklift, uns.	0.03%		0.03%
Struck against stationary object		1.009009009		**Struck against stationary object**		1.009009009	
Forklift, uns.	0.03%		0.03%	Forklift, uns.	0.03%		0.03%
Struck by shifting load -- nonhighway accident		1		**Struck by shifting load -- nonhighway accident**		1	
Forklift, uns.	0.03%		0.03%	Forklift, uns.	0.03%		0.03%
Struck by shifting load -- nonhighway accident		1		**Struck by shifting load -- nonhighway accident**		1	
Forklift, uns.	**0.03%**		0.03%	**Forklift, uns.**	**0.03%**		0.03%
Bending, climbing, crawling, reaching, twisting		1		**Bending, climbing, crawling, reaching, twisting**		1	
Bodily motion or position of injured, ill worker	**6.93%**		6.93%	**Bodily motion or position of injured, ill worker**	**6.93%**		6.93%
Bodily reaction and exertion, n.e.c.		1		**Bodily reaction and exertion, n.e.c.**		1	
Bodily motion or position of injured, ill worker	**0.25%**		0.25%	**Bodily motion or position of injured, ill worker**	**0.25%**		0.25%
Bodily reaction and exertion, uns.		1		**Bodily reaction and exertion, uns.**		1	
Bodily motion or position of injured, ill worker	**0.03%**		0.03%	**Bodily motion or position of injured, ill worker**	**0.03%**		0.03%
Bodily reaction, n.e.c.		1		**Bodily reaction, n.e.c.**		1	
Bodily motion or position of injured, ill worker	**2.37%**		2.37%	**Bodily motion or position of injured, ill worker**	**2.37%**		2.37%
Bodily reaction, uns.		1		**Bodily reaction, uns.**		1	
Bodily motion or position of injured, ill worker	**0.19%**		0.19%	**Bodily motion or position of injured, ill worker**	**0.19%**		0.19%

Process Step 6							
Lift panel							
Resources							
Foreman				Labourer 3			
Risks							
Event Exposure/Source of Injury Combination	**Frequency (%)**	**Severity Factor**	**Frequency * Severity**	**Event Exposure/Source of Injury Combination**	**Frequency (%)**	**Severity Factor**	**Frequency * Severity**
	0.19%	1.050475023	0.20%		0.19%	1.050475023	0.20%
Caught in or compressed by equipment or objects, n.e.c.		1.12716763		**Caught in or compressed by equipment or objects, n.e.c.**		1.12716763	
Cranes, uns.	**0.03%**		0.03%	**Cranes, uns.**	**0.03%**		0.03%
Overexertion, n.e.c.		1.011111111		**Overexertion, n.e.c.**		1.011111111	
Cranes, n.e.c.	**0.03%**		0.03%	**Cranes, n.e.c.**	**0.03%**		0.03%
Struck by falling object		1.054545455		**Struck by falling object**		1.054545455	
Cranes, uns.	**0.03%**		0.03%	**Cranes, uns.**	**0.03%**		0.03%
Struck by flying object, n.e.c.		1		**Struck by flying object, n.e.c.**		1	
Cranes, n.e.c.	**0.03%**		0.03%	**Cranes, n.e.c.**	**0.03%**		0.03%
Struck by object, n.e.c.		1		**Struck by object, n.e.c.**		1	
Cranes, uns.	**0.03%**		0.03%	**Cranes, uns.**	**0.03%**		0.03%
Caught in or compressed by equipment or objects, n.e.c.		1.12716763		**Caught in or compressed by equipment or objects, n.e.c.**		1.12716763	
Hoisting accessories, uns.	**0.03%**		0.03%	**Hoisting accessories, uns.**	**0.03%**		0.03%
Struck by swinging or slipping object, n.e.c.		1.033333333		**Struck by swinging or slipping object, n.e.c.**		1.033333333	
Hoisting accessories, n.e.c.	**0.03%**		0.03%	**Hoisting accessories, n.e.c.**	**0.03%**		0.03%

Process Step 6							
Lift panel							
Resources							
Labourer 4				Crane Operator			
Risks							
	Frequency (%)	**Severity Factor**	**Frequency * Severity**				
Event Exposure/Source of Injury Combination	0.19%	1.050475023	0.20%				
Caught in or compressed by equipment or objects, n.e.c.		1.12716763		No risks for the operator			
Cranes, uns.	**0.03%**		0.03%				
Overexertion, n.e.c.		1.011111111					
Cranes, n.e.c.	**0.03%**		0.03%				
Struck by falling object		1.054545455					
Cranes, uns.	**0.03%**		0.03%				
Struck by flying object, n.e.c.		1					
Cranes, n.e.c.	**0.03%**		0.03%				
Struck by object, n.e.c.		1					
Cranes, uns.	**0.03%**		0.03%				
Caught in or compressed by equipment or objects, n.e.c.		1.12716763					
Hoisting accessories, uns.	**0.03%**		0.03%				
Struck by swinging or slipping object, n.e.c.		1.033333333					
Hoisting accessories, n.e.c.	**0.03%**		0.03%				

Process Step 7

Swing panel into position

Resources

Risks

Foreman

Event Exposure/Source of Injury Combination	Frequency (%)	Severity Factor	Frequency * Severity
	5.48%	1.000968966	5.48%
Caught in or compressed by equipment or objects, n.e.c.		1.12716763	
Cranes, uns.	0.03%		0.03%
Overexertion, n.e.c.		1.011111111	
Cranes, n.e.c.	0.03%		0.03%
Struck by falling object		1.054545455	
Cranes, uns.	0.03%		0.03%
Struck by flying object, n.e.c.		1	
Cranes, n.e.c.	0.03%		0.03%
Struck by object, n.e.c.		1	
Cranes, uns.	0.03%		0.03%
Slip,trip,stepped on or in, loss of balance - with or without twisting - without fall,nec		1	
Bodily motion or position of injured, ill worker	1.49%		1.49%
Slip,trip,stepped on or in, loss of balance - with or without twisting - without fall,uns		1	
Bodily motion or position of injured, ill worker	0.36%		0.36%
Slipping on something - with or without twisting - without fall		1	
Bodily motion or position of injured, ill worker	1.40%		1.40%
Stepping in a hole or on an object - with or without twisting - without fall		1	
Bodily motion or position of injured, ill worker	1.60%		1.60%
Tripping over something - with or without twisting - without fall		1	
Bodily motion or position of injured, ill worker	0.36%		0.36%
Walking -- without other incident		1	
Bodily motion or position of injured, ill worker	0.14%		0.14%

Labourer 1

Event Exposure/Source of Injury Combination	Frequency (%)	Severity Factor	Frequency * Severity
	11.47%	1.003196821	11.51%
Caught in or compressed by equipment or objects, n.e.c.		1.12716763	
Cranes, uns.	0.03%		0.03%
Overexertion, n.e.c.		1.011111111	
Cranes, n.e.c.	0.03%		0.03%
Struck by falling object		1.054545455	
Cranes, uns.	0.03%		0.03%
Struck by flying object, n.e.c.		1	
Cranes, n.e.c.	0.03%		0.03%
Struck by object, n.e.c.		1	
Cranes, uns.	0.03%		0.03%
Slip,trip,stepped on or in, loss of balance - with or without twisting - without fall,nec		1	
Bodily motion or position of injured, ill worker	1.49%		1.49%
Slip,trip,stepped on or in, loss of balance - with or without twisting - without fall,uns		1	
Bodily motion or position of injured, ill worker	0.36%		0.36%
Slipping on something - with or without twisting - without fall		1	
Bodily motion or position of injured, ill worker	1.40%		1.40%
Stepping in a hole or on an object - with or without twisting - without fall		1	
Bodily motion or position of injured, ill worker	1.60%		1.60%
Tripping over something - with or without twisting - without fall		1	
Bodily motion or position of injured, ill worker	0.36%		0.36%
Walking -- without other incident		1	
Bodily motion or position of injured, ill worker	0.14%		0.14%
Fall on same level, n.e.c.		1	
Floor of building	0.03%		0.03%
Floors, walkways, ground surfaces, uns.	0.06%		0.06%
Ground	0.08%		0.08%
Fall on same level, uns.		1	
Floor of building	0.03%		0.03%
Ground	0.06%		0.06%
Fall onto or against objects		1	
Floor of building	0.03%		0.03%
Floor of scaffold, staging, or temporary work platform	0.06%		0.06%
Floors, walkways, ground surfaces, uns.	0.03%		0.03%
Fall to floor, walkway, or other surface		1.003649635	
Floor of building	0.80%		0.80%
Floor, uns.	0.06%		0.06%
Floors, walkways, ground surfaces, n.e.c.	0.06%		0.06%
Floors, walkways, ground surfaces, uns.	1.62%		1.63%
Ground	2.75%		2.76%
Manlifts	0.03%		0.03%
Other floors, walkways, ground surfaces, uns.	0.06%		0.06%
Fall, n.e.c.		1.071428571	
Floors, walkways, ground surfaces, uns.	0.11%		0.12%
Ground	0.03%		0.03%
Other floors, walkways, ground surfaces, uns.	0.03%		0.03%
Fall, uns.		1	
Floors, walkways, ground surfaces, uns.	0.03%		0.03%
Ground	0.06%		0.06%
Other events or exposures, n.e.c.		1	
Floors, walkways, ground surfaces, n.e.c.	0.03%		0.03%

Labourer 3

Event Exposure/Source of Injury Combination	Frequency (%)	Severity Factor	Frequency * Severity
	6.52%	1.005624787	6.56%
Caught in or compressed by equipment or objects, n.e.c.		1.12716763	
Cranes, uns.	0.03%		0.03%
Overexertion, n.e.c.		1.011111111	
Cranes, n.e.c.	0.03%		0.03%
Struck by falling object		1.054545455	
Cranes, uns.	0.03%		0.03%
Struck by flying object, n.e.c.		1	
Cranes, n.e.c.	0.03%		0.03%
Struck by object, n.e.c.		1	
Cranes, uns.	0.03%		0.03%
Standing		1	
Bodily motion or position of injured, ill worker	0.03%		0.03%
Static posture with the application of force to an object		1	
Bodily motion or position of injured, ill worker	0.11%		0.11%
Static posture without the application of force to an object		1	
Bodily motion or position of injured, ill worker	0.25%		0.25%
Fall on same level, n.e.c.		1	
Floor of building	0.03%		0.03%
Floors, walkways, ground surfaces, uns.	0.06%		0.06%
Ground	0.08%		0.08%
Fall on same level, uns.		1	
Floor of building	0.03%		0.03%
Ground	0.06%		0.06%
Fall onto or against objects		1	
Floor of building	0.03%		0.03%
Floor of scaffold, staging, or temporary work platform	0.06%		0.06%
Floors, walkways, ground surfaces, uns.	0.03%		0.03%
Fall to floor, walkway, or other surface		1.003649635	
Floor of building	0.80%		0.80%
Floor, uns.	0.06%		0.06%
Floors, walkways, ground surfaces, n.e.c.	0.06%		0.06%
Floors, walkways, ground surfaces, uns.	1.62%		1.63%
Ground	2.75%		2.76%
Manlifts	0.03%		0.03%
Other floors, walkways, ground surfaces, uns.	0.06%		0.06%
Fall, n.e.c.		1.071428571	
Floors, walkways, ground surfaces, uns.	0.11%		0.12%
Ground	0.03%		0.03%
Other floors, walkways, ground surfaces, uns.	0.03%		0.03%
Fall, uns.		1	
Floors, walkways, ground surfaces, uns.	0.03%		0.03%
Ground	0.06%		0.06%
Other events or exposures, n.e.c.		1	
Floors, walkways, ground surfaces, n.e.c.	0.03%		0.03%

Process Step 7				
Swing panel into position				
Resources				
Labourer 4				Crane Operator
Risks				
Event Exposure/Source of Injury Combination	**Frequency (%)**	**Severity Factor**	**Frequency * Severity**	
	0.52%	1.010148642	0.53%	
Caught in or compressed by equipment or objects, n.e.c.		1.12716763		No risks for the operator
Cranes, uns.	**0.03%**		0.03%	
Overexertion, n.e.c.		1.011111111		
Cranes, n.e.c.	**0.03%**		0.03%	
Struck by falling object		1.054545455		
Cranes, uns.	**0.03%**		0.03%	
Struck by flying object, n.e.c.		1		
Cranes, n.e.c.	**0.03%**		0.03%	
Struck by object, n.e.c.		1		
Cranes, uns.	**0.03%**		0.03%	
Standing		1		
Bodily motion or position of injured, ill worker	**0.03%**		0.03%	
Static posture with the application of force to an object		1		
Bodily motion or position of injured, ill worker	**0.11%**		0.11%	
Static posture without the application of force to an object		1		
Bodily motion or position of injured, ill worker	**0.25%**		0.25%	

Process Step 8

Level panel

Resources

Risks

Foreman

Event Exposure/Source of Injury Combination	Frequency (%)	Severity Factor	Frequency * Severity
	10.54%	1.001059322	10.55%
Rubbed or abraded by kneeling on surface		1	
Floor of building	**0.08%**		0.08%
Floor, uns.	**0.03%**		0.03%
Floors, walkways, ground surfaces, n.e.c.	**0.03%**		0.03%
Floors, walkways, ground surfaces, uns.	**0.06%**		0.06%
Other floors, walkways, ground surfaces, uns.	**0.03%**		0.03%
Bodily reaction and exertion, n.e.c.		1	
Crowbars	0.06%		0.06%
Compressed or pinched by rolling, sliding, or shifting objects		1.133333333	
Crowbars	0.03%		0.03%
Overexertion in carrying, turning, wielding objects		1.020408163	
Crowbars	0.03%		0.03%
Overexertion in lifting		1	
Crowbars	0.03%		0.03%
Overexertion, n.e.c.		1.011111111	
Crowbars	0.14%		0.14%
Struck by discharged object or substance		1.032786885	
Crowbars	0.03%		0.03%
Struck by falling object		1.054545455	
Crowbars	0.08%		0.09%
Struck by object, n.e.c.		1	
Crowbars	0.06%		0.06%
Struck by slipping handheld object		1	
Crowbars	0.11%		0.11%
Bending, climbing, crawling, reaching, twisting		1	
Bodily motion or position of injured, ill worker	**6.93%**		6.93%
Bodily reaction and exertion, n.e.c.		1	
Bodily motion or position of injured, ill worker	**0.25%**		0.25%
Bodily reaction and exertion, uns.		1	
Bodily motion or position of injured, ill worker	**0.03%**		0.03%
Bodily reaction, n.e.c.		1	
Bodily motion or position of injured, ill worker	**2.37%**		2.37%
Bodily reaction, uns.		1	
Bodily motion or position of injured, ill worker	**0.19%**		0.19%

Labourer 1

Event Exposure/Source of Injury Combination	Frequency (%)	Severity Factor	Frequency * Severity
	3.71%	1.008989869	3.75%
Bodily reaction and exertion, n.e.c.		1	
Crowbars	0.06%		0.06%
Compressed or pinched by rolling, sliding, or shifting objects		1.133333333	
Crowbars	0.03%		0.03%
Overexertion in carrying, turning, wielding objects		1.020408163	
Crowbars	0.03%		0.03%
Overexertion in lifting		1	
Crowbars	0.03%		0.03%
Overexertion, n.e.c.		1.011111111	
Crowbars	0.14%		0.14%
Caught in or compressed by equipment or objects, n.e.c.		1.12716763	
Manlifts	0.06%		0.06%
Fall from scaffold, staging, platform		1.01	
Floor of building	**0.36%**		0.36%
Floor of scaffold, staging, or temporary work platform	**0.08%**		0.08%
Floor, n.e.c.	**0.03%**		0.03%
Floor, uns.	**0.14%**		0.14%
Floors, walkways, ground surfaces, n.e.c.	**0.06%**		0.06%
Floors, walkways, ground surfaces, uns.	**0.58%**		0.58%
Ground	**0.83%**		0.83%
Fall to lower level, n.e.c.		1	
Floor of building	**0.25%**		0.25%
Floor of scaffold, staging, or temporary work platform	**0.03%**		0.03%
Floor, n.e.c.	**0.03%**		0.03%
Floor, uns.	**0.08%**		0.08%
Floors, walkways, ground surfaces, n.e.c.	**0.03%**		0.03%
Floors, walkways, ground surfaces, uns.	**0.25%**		0.25%
Ground	**0.36%**		0.36%
Fall to lower level, uns.		1	
Floor of building	**0.03%**		0.03%
Floor of scaffold, staging, or temporary work platform	**0.03%**		0.03%
Floors, walkways, ground surfaces, uns.	**0.14%**		0.14%
Ground	**0.06%**		0.06%
Fall onto or against objects		1	
Floor of scaffold, staging, or temporary work platform	**0.06%**		0.06%

Labourer 2

Event Exposure/Source of Injury Combination	Frequency (%)	Severity Factor	Frequency * Severity
	3.44%	1.008034682	3.47%
Caught in or compressed by equipment or objects, n.e.c.		1.12716763	
Manlifts	0.06%		0.06%
Fall from scaffold, staging, platform		1.01	
Floor of building	**0.36%**		0.36%
Floor of scaffold, staging, or temporary work platform	**0.08%**		0.08%
Floor, n.e.c.	**0.03%**		0.03%
Floor, uns.	**0.14%**		0.14%
Floors, walkways, ground surfaces, n.e.c.	**0.06%**		0.06%
Floors, walkways, ground surfaces, uns.	**0.58%**		0.58%
Ground	**0.83%**		0.83%
Fall to lower level, n.e.c.		1	
Floor of building	**0.25%**		0.25%
Floor of scaffold, staging, or temporary work platform	**0.03%**		0.03%
Floor, n.e.c.	**0.03%**		0.03%
Floor, uns.	**0.08%**		0.08%
Floors, walkways, ground surfaces, n.e.c.	**0.03%**		0.03%
Floors, walkways, ground surfaces, uns.	**0.25%**		0.25%
Ground	**0.36%**		0.36%
Fall to lower level, uns.		1	
Floor of building	**0.03%**		0.03%
Floor of scaffold, staging, or temporary work platform	**0.03%**		0.03%
Floors, walkways, ground surfaces, uns.	**0.14%**		0.14%
Ground	**0.06%**		0.06%
Fall onto or against objects		1	
Floor of scaffold, staging, or temporary work platform	**0.06%**		0.06%

Process Step 8

Level panel

Resources

Risks

Labourer 3

Event Exposure/Source of Injury Combination	Frequency (%)	Severity Factor	Frequency * Severity
	10.32%	1.000523795	10.32%
Rubbed or abraded by kneeling on surface		1	
Floor of building	**0.08%**		0.08%
Floor, uns.	**0.03%**		0.03%
Floors, walkways, ground surfaces, n.e.c.	**0.03%**		0.03%
Floors, walkways, ground surfaces, uns.	**0.06%**		0.06%
Other floors, walkways, ground surfaces, uns.	**0.03%**		0.03%
Struck by discharged object or substance		1.032786885	
Crowbars	0.03%		0.03%
Struck by falling object		1.054545455	
Crowbars	0.08%		0.09%
Struck by object, n.e.c.		1	
Crowbars	0.06%		0.06%
Struck by slipping handheld object		1	
Crowbars	0.11%		0.11%
Bending, climbing, crawling, reaching, twisting		1	
Bodily motion or position of injured, ill worker	**6.93%**		6.93%
Bodily reaction and exertion, n.e.c.		1	
Bodily motion or position of injured, ill worker	**0.25%**		0.25%
Bodily reaction and exertion, uns.		1	
Bodily motion or position of injured, ill worker	**0.03%**		0.03%
Bodily reaction, n.e.c.		1	
Bodily motion or position of injured, ill worker	**2.37%**		2.37%
Bodily reaction, uns.		1	
Bodily motion or position of injured, ill worker	**0.19%**		0.19%
Overexertion in pulling or pushing objects		1	
Fasteners, connectors, ropes, ties, uns.	**0.03%**		0.03%
Ropes, ties, uns.	**0.03%**		0.03%

Labourer 4

Event Exposure/Source of Injury Combination	Frequency (%)	Severity Factor	Frequency * Severity
	10.26%	1.000526604	10.27%
Rubbed or abraded by kneeling on surface		1	
Floor of building	**0.08%**		0.08%
Floor, uns.	**0.03%**		0.03%
Floors, walkways, ground surfaces, n.e.c.	**0.03%**		0.03%
Floors, walkways, ground surfaces, uns.	**0.06%**		0.06%
Other floors, walkways, ground surfaces, uns.	**0.03%**		0.03%
Struck by discharged object or substance		1.032786885	
Crowbars	0.03%		0.03%
Struck by falling object		1.054545455	
Crowbars	0.08%		0.09%
Struck by object, n.e.c.		1	
Crowbars	0.06%		0.06%
Struck by slipping handheld object		1	
Crowbars	0.11%		0.11%
Bending, climbing, crawling, reaching, twisting		1	
Bodily motion or position of injured, ill worker	**6.93%**		6.93%
Bodily reaction and exertion, n.e.c.		1	
Bodily motion or position of injured, ill worker	**0.25%**		0.25%
Bodily reaction and exertion, uns.		1	
Bodily motion or position of injured, ill worker	**0.03%**		0.03%
Bodily reaction, n.e.c.		1	
Bodily motion or position of injured, ill worker	**2.37%**		2.37%
Bodily reaction, uns.		1	
Bodily motion or position of injured, ill worker	**0.19%**		0.19%

Labourer 5

Event Exposure/Source of Injury Combination	Frequency (%)	Severity Factor	Frequency * Severity
	10.32%	1.000523795	10.32%
Rubbed or abraded by kneeling on surface		1	
Floor of building	**0.08%**		0.08%
Floor, uns.	**0.03%**		0.03%
Floors, walkways, ground surfaces, n.e.c.	**0.03%**		0.03%
Floors, walkways, ground surfaces, uns.	**0.06%**		0.06%
Other floors, walkways, ground surfaces, uns.	**0.03%**		0.03%
Struck by discharged object or substance		1.032786885	
Crowbars	0.03%		0.03%
Struck by falling object		1.054545455	
Crowbars	0.08%		0.09%
Struck by object, n.e.c.		1	
Crowbars	0.06%		0.06%
Struck by slipping handheld object		1	
Crowbars	0.11%		0.11%
Bending, climbing, crawling, reaching, twisting		1	
Bodily motion or position of injured, ill worker	**6.93%**		6.93%
Bodily reaction and exertion, n.e.c.		1	
Bodily motion or position of injured, ill worker	**0.25%**		0.25%
Bodily reaction and exertion, uns.		1	
Bodily motion or position of injured, ill worker	**0.03%**		0.03%
Bodily reaction, n.e.c.		1	
Bodily motion or position of injured, ill worker	**2.37%**		2.37%
Bodily reaction, uns.		1	
Bodily motion or position of injured, ill worker	**0.19%**		0.19%
Overexertion in pulling or pushing objects		1	
Fasteners, connectors, ropes, ties, uns.	**0.03%**		0.03%
Ropes, ties, uns.	**0.03%**		0.03%

Process Step 8			
Level panel			
Resources			
Crane Operator			
Risks			
No risk for the operator - just waiting			

Process Step 9

Connect panel/drill connections

Resources

Risks

Foreman

Event Exposure/Source of Injury Combination	Frequency (%)	Severity Factor	Frequency * Severity
	11.03%	1.001447648	11.05%
Bodily reaction and exertion, n.e.c.		1	
Drills	**0.03%**		0.03%
Drills -- power not determined	**0.06%**		0.06%
Drills -- powered	**0.22%**		0.22%
Caught in or compressed by equipment or objects, n.e.c.		1.12716763	
Drills -- power not determined	**0.03%**		0.03%
Caught in running equipment or machinery		1.071428571	
Drills -- power not determined	**0.03%**		0.03%
Drills -- powered	**0.06%**		0.06%
Overexertion, n.e.c.		1.011111111	
Drills -- powered	**0.06%**		0.06%
Overexertion, uns.		1	
Drills	**0.03%**		0.03%
Drills -- powered	**0.03%**		0.03%
Stepped on object		1	
Drills -- power not determined	**0.03%**		0.03%
Struck by object, n.e.c.		1	
Drills -- power not determined	**0.06%**		0.06%
Drills -- powered	**0.11%**		0.11%
Struck by slipping handheld object		1	
Drills	**0.06%**		0.06%
Drills -- power not determined	**0.06%**		0.06%
Drills -- powered	**0.06%**		0.06%
Struck by swinging or slipping object, uns.		1	
Drills	**0.03%**		0.03%
Overexertion in carrying, turning, wielding objects		1.020408163	
Drills -- powered	**0.03%**		0.03%
Bending, climbing, crawling, reaching, twisting		1	
Bodily motion or position of injured, ill worker	**6.93%**		6.93%
Bodily reaction and exertion, n.e.c.		1	
Bodily motion or position of injured, ill worker	**0.25%**		0.25%
Bodily reaction and exertion, uns.		1	
Bodily motion or position of injured, ill worker	**0.03%**		0.03%
Bodily reaction, n.e.c.		1	
Bodily motion or position of injured, ill worker	**2.37%**		2.37%
Bodily reaction, uns.		1	
Bodily motion or position of injured, ill worker	**0.19%**		0.19%
Overexertion in pulling or pushing objects		1	
Fasteners, connectors, ropes, ties, uns.	**0.03%**		0.03%
Ropes, ties, uns.	**0.03%**		0.03%
Struck by discharged object or substance		1.032786885	
Crowbars	0.03%		0.03%
Struck by falling object		1.054545455	
Crowbars	0.08%		0.09%
Struck by object, n.e.c.		1	
Crowbars	0.06%		0.06%
Struck by slipping handheld object		1	
Crowbars	0.11%		0.11%

Labourer 1

Event Exposure/Source of Injury Combination	Frequency (%)	Severity Factor	Frequency * Severity
	4.38%	1.008732195	4.41%
Bodily reaction and exertion, n.e.c.		1	
Drills	**0.03%**		0.03%
Drills -- power not determined	**0.06%**		0.06%
Drills -- powered	**0.22%**		0.22%
Caught in or compressed by equipment or objects, n.e.c.		1.12716763	
Drills -- power not determined	**0.03%**		0.03%
Caught in running equipment or machinery		1.071428571	
Drills -- power not determined	**0.03%**		0.03%
Drills -- powered	**0.06%**		0.06%
Overexertion, n.e.c.		1.011111111	
Drills -- powered	**0.06%**		0.06%
Overexertion, uns.		1	
Drills	**0.03%**		0.03%
Drills -- powered	**0.03%**		0.03%
Stepped on object		1	
Drills -- power not determined	**0.03%**		0.03%
Struck by object, n.e.c.		1	
Drills -- power not determined	**0.06%**		0.06%
Drills -- powered	**0.11%**		0.11%
Struck by slipping handheld object		1	
Drills	**0.06%**		0.06%
Drills -- power not determined	**0.06%**		0.06%
Drills -- powered	**0.06%**		0.06%
Struck by swinging or slipping object, uns.		1	
Drills	**0.03%**		0.03%
Overexertion in carrying, turning, wielding objects		1.020408163	
Drills -- powered	**0.03%**		0.03%
Caught in or compressed by equipment or objects, n.e.c.		1.12716763	
Manlifts	0.06%		0.06%
Fall from scaffold, staging, platform		1.01	
Floor of building	**0.36%**		0.36%
Floor of scaffold, staging, or temporary work platform	**0.08%**		0.08%
Floor, n.e.c.	**0.03%**		0.03%
Floor, uns.	**0.14%**		0.14%
Floors, walkways, ground surfaces, n.e.c.	**0.06%**		0.06%
Floors, walkways, ground surfaces, uns.	**0.58%**		0.58%
Ground	**0.83%**		0.83%
Fall to lower level, n.e.c.		1	
Floor of building	**0.25%**		0.25%
Floor of scaffold, staging, or temporary work platform	**0.03%**		0.03%
Floor, n.e.c.	**0.03%**		0.03%
Floor, uns.	**0.08%**		0.08%
Floors, walkways, ground surfaces, n.e.c.	**0.03%**		0.03%
Floors, walkways, ground surfaces, uns.	**0.25%**		0.25%
Ground	**0.36%**		0.36%
Fall to lower level, uns.		1	
Floor of building	**0.03%**		0.03%
Floor of scaffold, staging, or temporary work platform	**0.03%**		0.03%
Floors, walkways, ground surfaces, uns.	**0.14%**		0.14%
Ground	**0.06%**		0.06%
Fall onto or against objects		1	
Floor of scaffold, staging, or temporary work platform	**0.06%**		0.06%

Labourer 2

Event Exposure/Source of Injury Combination	Frequency (%)	Severity Factor	Frequency * Severity
	3.44%	1.008034682	3.47%
Caught in or compressed by equipment or objects, n.e.c.		1.12716763	
Manlifts	0.06%		0.06%
Fall from scaffold, staging, platform		1.01	
Floor of building	**0.36%**		0.36%
Floor of scaffold, staging, or temporary work platform	**0.08%**		0.08%
Floor, n.e.c.	**0.03%**		0.03%
Floor, uns.	**0.14%**		0.14%
Floors, walkways, ground surfaces, n.e.c.	**0.06%**		0.06%
Floors, walkways, ground surfaces, uns.	**0.58%**		0.58%
Ground	**0.83%**		0.83%
Fall to lower level, n.e.c.		1	
Floor of building	**0.25%**		0.25%
Floor of scaffold, staging, or temporary work platform	**0.03%**		0.03%
Floor, n.e.c.	**0.03%**		0.03%
Floor, uns.	**0.08%**		0.08%
Floors, walkways, ground surfaces, n.e.c.	**0.03%**		0.03%
Floors, walkways, ground surfaces, uns.	**0.25%**		0.25%
Ground	**0.36%**		0.36%
Fall to lower level, uns.		1	
Floor of building	**0.03%**		0.03%
Floor of scaffold, staging, or temporary work platform	**0.03%**		0.03%
Floors, walkways, ground surfaces, uns.	**0.14%**		0.14%
Ground	**0.06%**		0.06%
Fall onto or against objects		1	
Floor of scaffold, staging, or temporary work platform	**0.06%**		0.06%

Process Step 9
Connect panel/drill connections

Resources

Labourer 3

Risks

Event Exposure/Source of Injury Combination	Frequency (%)	Severity Factor	Frequency * Severity
	0.47%	1.011554309	0.47%
Struck by discharged object or substance		1.032786885	
Crowbars	0.03%		0.03%
Struck by falling object		1.054545455	
Crowbars	0.08%		0.09%
Struck by object, n.e.c.		1	
Crowbars	0.06%		0.06%
Struck by slipping handheld object		1	
Crowbars	0.11%		0.11%
Struck by slipping handheld object		1	
Drills	**0.06%**		0.06%
Drills -- power not determined	**0.06%**		0.06%
Drills -- powered	**0.06%**		0.06%
Struck by swinging or slipping object, uns.		1	
Drills	**0.03%**		0.03%

Labourer 4

Risks

Event Exposure/Source of Injury Combination	Frequency (%)	Severity Factor	Frequency * Severity
	0.69%	1.00785693	0.69%
Struck by discharged object or substance		1.032786885	
Crowbars	0.03%		0.03%
Struck by falling object		1.054545455	
Crowbars	0.08%		0.09%
Struck by object, n.e.c.		1	
Crowbars	0.06%		0.06%
Struck by slipping handheld object		1	
Crowbars	0.11%		0.11%
Struck by slipping handheld object		1	
Drills	**0.06%**		0.06%
Drills -- power not determined	**0.06%**		0.06%
Drills -- powered	**0.06%**		0.06%
Struck by swinging or slipping object, uns.		1	
Drills	**0.03%**		0.03%
Rubbed or abraded by kneeling on surface		1	
Floor of building	**0.08%**		0.08%
Floor, uns.	**0.03%**		0.03%
Floors, walkways, ground surfaces, n.e.c.	**0.03%**		0.03%
Floors, walkways, ground surfaces, uns.	**0.06%**		0.06%
Other floors, walkways, ground surfaces, uns.	**0.03%**		0.03%

Process Step 9				
Connect panel/drill connections				
Resources				
Labourer 5				Crane Operator
Risks				
	Frequency (%)	**Severity Factor**	**Frequency * Severity**	
Event Exposure/Source of Injury Combination	0.69%	1.00785693	0.69%	
Struck by discharged object or substance		1.032786885		No risks for operator
Crowbars	0.03%		0.03%	
Struck by falling object		1.054545455		
Crowbars	0.08%		0.09%	
Struck by object, n.e.c.		1		
Crowbars	0.06%		0.06%	
Struck by slipping handheld object		1		
Crowbars	0.11%		0.11%	
Struck by slipping handheld object		1		
Drills	**0.06%**		0.06%	
Drills -- power not determined	**0.06%**		0.06%	
Drills -- powered	**0.06%**		0.06%	
Struck by swinging or slipping object, uns.		1		
Drills	**0.03%**		0.03%	
Rubbed or abraded by kneeling on surface		1		
Floor of building	**0.08%**		0.08%	
Floor, uns.	**0.03%**		0.03%	
Floors, walkways, ground surfaces, n.e.c.	**0.03%**		0.03%	
Floors, walkways, ground surfaces, uns.	**0.06%**		0.06%	
Other floors, walkways, ground surfaces, uns.	**0.03%**		0.03%	

Process Step 10

Connect panel bracing

Resources

Risks

Foreman

Event Exposure/Source of Injury Combination	Frequency (%) 10.76%	Severity Factor 1.000982311	Frequency * Severity 10.77%
Bodily reaction and exertion, n.e.c.		1	
Drills	**0.03%**		0.03%
Drills -- power not determined	**0.06%**		0.06%
Drills -- powered	**0.22%**		0.22%
Caught in or compressed by equipment or objects, n.e.c.		1.12716763	
Drills -- power not determined	**0.03%**		0.03%
Caught in running equipment or machinery		1.071428571	
Drills -- power not determined	**0.03%**		0.03%
Drills -- powered	**0.06%**		0.06%
Overexertion, n.e.c.		1.011111111	
Drills -- powered	**0.06%**		0.06%
Overexertion, uns.		1	
Drills	**0.03%**		0.03%
Drills -- powered	**0.03%**		0.03%
Stepped on object		1	
Drills -- power not determined	**0.03%**		0.03%
Struck by object, n.e.c.		1	
Drills -- power not determined	**0.06%**		0.06%
Drills -- powered	**0.11%**		0.11%
Struck by slipping handheld object		1	
Drills	**0.06%**		0.06%
Drills -- power not determined	**0.06%**		0.06%
Drills -- powered	**0.06%**		0.06%
Struck by swinging or slipping object, uns.		1	
Drills	**0.03%**		0.03%
Overexertion in carrying, turning, wielding objects		1.020408163	
Drills -- powered	**0.03%**		0.03%
Bending, climbing, crawling, reaching, twisting		1	
Bodily motion or position of injured, ill worker	**6.93%**		6.93%
Bodily reaction and exertion, n.e.c.		1	
Bodily motion or position of injured, ill worker	**0.25%**		0.25%
Bodily reaction and exertion, uns.		1	
Bodily motion or position of injured, ill worker	**0.03%**		0.03%
Bodily reaction, n.e.c.		1	
Bodily motion or position of injured, ill worker	**2.37%**		2.37%
Bodily reaction, uns.		1	
Bodily motion or position of injured, ill worker	**0.19%**		0.19%
Overexertion in pulling or pushing objects		1	
Fasteners, connectors, ropes, ties, uns.	**0.03%**		0.03%
Ropes, ties, uns.	**0.03%**		0.03%

Labourer 1

Event Exposure/Source of Injury Combination	Frequency (%) 4.38%	Severity Factor 1.008732195	Frequency * Severity 4.41%
Bodily reaction and exertion, n.e.c.		1	
Drills	**0.03%**		0.03%
Drills -- power not determined	**0.06%**		0.06%
Drills -- powered	**0.22%**		0.22%
Caught in or compressed by equipment or objects, n.e.c.		1.12716763	
Drills -- power not determined	**0.03%**		0.03%
Caught in running equipment or machinery		1.071428571	
Drills -- power not determined	**0.03%**		0.03%
Drills -- powered	**0.06%**		0.06%
Overexertion, n.e.c.		1.011111111	
Drills -- powered	**0.06%**		0.06%
Overexertion, uns.		1	
Drills	**0.03%**		0.03%
Drills -- powered	**0.03%**		0.03%
Stepped on object		1	
Drills -- power not determined	**0.03%**		0.03%
Struck by object, n.e.c.		1	
Drills -- power not determined	**0.06%**		0.06%
Drills -- powered	**0.11%**		0.11%
Struck by slipping handheld object		1	
Drills	**0.06%**		0.06%
Drills -- power not determined	**0.06%**		0.06%
Drills -- powered	**0.06%**		0.06%
Struck by swinging or slipping object, uns.		1	
Drills	**0.03%**		0.03%
Overexertion in carrying, turning, wielding objects		1.020408163	
Drills -- powered	**0.03%**		0.03%
Caught in or compressed by equipment or objects, n.e.c.		1.12716763	
Manlifts	0.06%		0.06%
Fall from scaffold, staging, platform		1.01	
Floor of building	**0.36%**		0.36%
Floor of scaffold, staging, or temporary work platform	**0.08%**		0.08%
Floor, n.e.c.	**0.03%**		0.03%
Floor, uns.	**0.14%**		0.14%
Floors, walkways, ground surfaces, n.e.c.	**0.06%**		0.06%
Floors, walkways, ground surfaces, uns.	**0.58%**		0.58%
Ground	**0.83%**		0.83%
Fall to lower level, n.e.c.		1	
Floor of building	**0.25%**		0.25%
Floor of scaffold, staging, or temporary work platform	**0.03%**		0.03%
Floor, n.e.c.	**0.03%**		0.03%
Floor, uns.	**0.08%**		0.08%
Floors, walkways, ground surfaces, n.e.c.	**0.03%**		0.03%
Floors, walkways, ground surfaces, uns.	**0.25%**		0.25%
Ground	**0.36%**		0.36%
Fall to lower level, uns.		1	
Floor of building	**0.03%**		0.03%
Floor of scaffold, staging, or temporary work platform	**0.03%**		0.03%
Floors, walkways, ground surfaces, uns.	**0.14%**		0.14%
Ground	**0.06%**		0.06%
Fall onto or against objects		1	
Floor of scaffold, staging, or temporary work platform	**0.06%**		0.06%

Labourer 2

Event Exposure/Source of Injury Combination	Frequency (%) 3.44%	Severity Factor 1.008034682	Frequency * Severity 3.47%
Caught in or compressed by equipment or objects, n.e.c.		1.12716763	
Manlifts	0.06%		0.06%
Fall from scaffold, staging, platform		1.01	
Floor of building	**0.36%**		0.36%
Floor of scaffold, staging, or temporary work platform	**0.08%**		0.08%
Floor, n.e.c.	**0.03%**		0.03%
Floor, uns.	**0.14%**		0.14%
Floors, walkways, ground surfaces, n.e.c.	**0.06%**		0.06%
Floors, walkways, ground surfaces, uns.	**0.58%**		0.58%
Ground	**0.83%**		0.83%
Fall to lower level, n.e.c.		1	
Floor of building	**0.25%**		0.25%
Floor of scaffold, staging, or temporary work platform	**0.03%**		0.03%
Floor, n.e.c.	**0.03%**		0.03%
Floor, uns.	**0.08%**		0.08%
Floors, walkways, ground surfaces, n.e.c.	**0.03%**		0.03%
Floors, walkways, ground surfaces, uns.	**0.25%**		0.25%
Ground	**0.36%**		0.36%
Fall to lower level, uns.		1	
Floor of building	**0.03%**		0.03%
Floor of scaffold, staging, or temporary work platform	**0.03%**		0.03%
Floors, walkways, ground surfaces, uns.	**0.14%**		0.14%
Ground	**0.06%**		0.06%
Fall onto or against objects		1	
Floor of scaffold, staging, or temporary work platform	**0.06%**		0.06%

Process Step 10								
Connect panel bracing								
Resources								
Labourer 3				Labourer 4				Crane Operator
Risks								
Event Exposure/Source of Injury Combination	Frequency (%)	Severity Factor	Frequency * Severity	Event Exposure/Source of Injury Combination	Frequency (%)	Severity Factor	Frequency * Severity	
	0.39%	1	0.39%		0.39%	1	0.39%	
Struck by object, n.e.c.		1		**Struck by object, n.e.c.**		1		No risks for operator
Drills -- power not determined	**0.06%**		0.06%	**Drills -- power not determined**	**0.06%**		0.06%	
Drills -- powered	**0.11%**		0.11%	**Drills -- powered**	**0.11%**		0.11%	
Struck by slipping handheld object		1		**Struck by slipping handheld object**		1		
Drills	**0.06%**		0.06%	**Drills**	**0.06%**		0.06%	
Drills -- power not determined	**0.06%**		0.06%	**Drills -- power not determined**	**0.06%**		0.06%	
Drills -- powered	**0.06%**		0.06%	**Drills -- powered**	**0.06%**		0.06%	
Struck by swinging or slipping object, uns.		1		**Struck by swinging or slipping object, uns.**		1		
Drills	**0.03%**		0.03%	**Drills**	**0.03%**		0.03%	
Overexertion in lifting (object) and turning (body)		1		**Overexertion in lifting (object) and turning (body)**		1		
Braces	**0.03%**		0.03%	**Braces**	**0.03%**		0.03%	

Process Step 11								
Disconnect crane rigging								
Resources								
Labourer 1				Labourer 2				Crane Operator
Risks								
Event Exposure/Source of Injury Combination	Frequency (%)	Severity Factor	Frequency * Severity	Event Exposure/Source of Injury Combination	Frequency (%)	Severity Factor	Frequency * Severity	
	3.52%	1.008106786	3.55%		3.52%	1.008106786	3.55%	
Caught in or compressed by equipment or objects, n.e.c.		1.12716763		**Caught in or compressed by equipment or objects, n.e.c.**		1.12716763		No risks for operator
Manlifts	0.06%		0.06%	Manlifts	0.06%		0.06%	
Fall from scaffold, staging, platform		1.01		**Fall from scaffold, staging, platform**		1.01		
Floor of building	**0.36%**		0.36%	**Floor of building**	**0.36%**		0.36%	
Floor of scaffold, staging, or temporary work platform	**0.08%**		0.08%	**Floor of scaffold, staging, or temporary work platform**	**0.08%**		0.08%	
Floor, n.e.c.	**0.03%**		0.03%	**Floor, n.e.c.**	**0.03%**		0.03%	
Floor, uns.	**0.14%**		0.14%	**Floor, uns.**	**0.14%**		0.14%	
Floors, walkways, ground surfaces, n.e.c.	**0.06%**		0.06%	**Floors, walkways, ground surfaces, n.e.c.**	**0.06%**		0.06%	
Floors, walkways, ground surfaces, uns.	**0.58%**		0.58%	**Floors, walkways, ground surfaces, uns.**	**0.58%**		0.58%	
Ground	**0.83%**		0.83%	**Ground**	**0.83%**		0.83%	
Fall to lower level, n.e.c.		1		**Fall to lower level, n.e.c.**		1		
Floor of building	**0.25%**		0.25%	**Floor of building**	**0.25%**		0.25%	
Floor of scaffold, staging, or temporary work platform	**0.03%**		0.03%	**Floor of scaffold, staging, or temporary work platform**	**0.03%**		0.03%	
Floor, n.e.c.	**0.03%**		0.03%	**Floor, n.e.c.**	**0.03%**		0.03%	
Floor, uns.	**0.08%**		0.08%	**Floor, uns.**	**0.08%**		0.08%	
Floors, walkways, ground surfaces, n.e.c.	**0.03%**		0.03%	**Floors, walkways, ground surfaces, n.e.c.**	**0.03%**		0.03%	
Floors, walkways, ground surfaces, uns.	**0.25%**		0.25%	**Floors, walkways, ground surfaces, uns.**	**0.25%**		0.25%	
Ground	**0.36%**		0.36%	**Ground**	**0.36%**		0.36%	
Fall to lower level, uns.		1		**Fall to lower level, uns.**		1		
Floor of building	**0.03%**		0.03%	**Floor of building**	**0.03%**		0.03%	
Floor of scaffold, staging, or temporary work platform	**0.03%**		0.03%	**Floor of scaffold, staging, or temporary work platform**	**0.03%**		0.03%	
Floors, walkways, ground surfaces, uns.	**0.14%**		0.14%	**Floors, walkways, ground surfaces, uns.**	**0.14%**		0.14%	
Ground	**0.06%**		0.06%	**Ground**	**0.06%**		0.06%	
Fall onto or against objects		1		**Fall onto or against objects**		1		
Floor of scaffold, staging, or temporary work platform	**0.06%**		0.06%	**Floor of scaffold, staging, or temporary work platform**	**0.06%**		0.06%	
Struck by flying object, n.e.c.		1		**Struck by flying object, n.e.c.**		1		
Chains, n.e.c.	**0.03%**		0.03%	**Chains, n.e.c.**	**0.03%**		0.03%	
Struck by object, uns.		1		**Struck by object, uns.**		1		
Chains, n.e.c.	**0.03%**		0.03%	**Chains, n.e.c.**	**0.03%**		0.03%	
Struck by swinging or slipping object, n.e.c.		1.033333333		**Struck by swinging or slipping object, n.e.c.**		1.033333333		
Chains, n.e.c.	**0.03%**		0.03%	**Chains, n.e.c.**	**0.03%**		0.03%	

Appendix B: Severity Factors

Appendix B1: Construction Severity Factors

Event Exposure	Number of "Hi_severity " Incidents	Total Number of Lost Time Incident s	Ratio of High Severity to Lost Time Incident s	Severity Factor
Drowning, submersion, uns.	1	1	1.0	2.000
Exposure to caustic, noxious, or allergenic substances, n.e.c.	1	1	1.0	2.000
Exposure to welding light	6	6	1.0	2.000
Struck by lightning	1	1	1.0	2.000
Transportation accident, n.e.c.	1	1	1.0	2.000
Fell from and struck by vehicle, mobile equipment	2	3	0.7	1.667
Exposure to electrical energy from machine, tool, appliance, or light fixture	3	6	0.5	1.500
Exposure to electrical energy, unspecified	1	2	0.5	1.500
Inhalation of substance, uns.	1	2	0.5	1.500
Explosion of pressure vessel or piping	1	3	0.3	1.333
Fire, n.e.c.	1	3	0.3	1.333
Caught in or crushed in collapsing materials, n.e.c.	2	7	0.3	1.286
Exposure to electrical energy from wiring, transformers, or other electrical components	2	7	0.3	1.286
Caught in or compressed by equipment or objects, uns.	3	11	0.3	1.273
Assaults, violent acts or harassment by person(s), n.e.c.	1	4	0.3	1.250
Moving and standing vehicle, mobile equipment -- in roadway	1	4	0.3	1.250
Pedestrian struck by vehicle, mobile equipment, n.e.c.	1	4	0.3	1.250
Contact with skin, eye(s) or other exposed tissue	6	31	0.2	1.194
Pedestrian struck by vehicle, mobile equipment in parking lot or non-roadway area	2	12	0.2	1.167
Jack-knifed or overturned -- no collision	3	19	0.2	1.158

Compressed or pinched by rolling, sliding, or shifting objects	2	15	0.1	1.133
Caught in or compressed by equipment or objects, n.e.c.	22	173	0.1	1.127
Overturned -- nonhighway accident	1	8	0.1	1.125
Struck by or slammed in swinging door or gate	2	16	0.1	1.125
Fall from roof, uns.	4	33	0.1	1.121
Fall through existing floor opening	1	11	0.1	1.091
Fall from roof, n.e.c.	1	12	0.1	1.083
Moving in opposite directions, oncoming	1	12	0.1	1.083
Caught in running equipment or machinery	2	28	0.1	1.071
Fall, n.e.c.	1	14	0.1	1.071
Struck by falling object	9	165	0.1	1.055
Contact with hot objects or substances	1	28	0.0	1.036
Struck by swinging or slipping object, n.e.c.	1	30	0.0	1.033
Struck by discharged object or substance	2	61	0.0	1.033
Contact with objects and equipment, n.e.c.	1	34	0.0	1.029
Fall from ladder	4	180	0.0	1.022
Overexertion in carrying, turning, wielding objects	1	49	0.0	1.020
Fall from nonmoving vehicle	1	53	0.0	1.019
Overexertion, n.e.c.	1	90	0.0	1.011
Fall from scaffold, staging, platform	1	100	0.0	1.010
Struck against stationary object	1	111	0.0	1.009
Fall to floor, walkway, or other surface	1	274	0.0	1.004
Bending, climbing, crawling, reaching, twisting	0	265	0.0	1.000
Overexertion in lifting	0	261	0.0	1.000
Bodily reaction and exertion, n.e.c.	0	146	0.0	1.000
Struck by object, n.e.c.	0	135	0.0	1.000
Struck by slipping handheld object	0	122	0.0	1.000
Fall onto or against objects	0	98	0.0	1.000
Overexertion in pulling or pushing objects	0	96	0.0	1.000
Bodily reaction, n.e.c.	0	92	0.0	1.000

Stepping in a hole or on an object - with or without twisting - without fall	0	68	0.0	1.000
Slip,trip,stepped on or in, loss of balance - with or without twisting - without fall,nec	0	54	0.0	1.000
Slipping on something - with or without twisting - without fall	0	54	0.0	1.000
Fall to lower level, n.e.c.	0	52	0.0	1.000
Struck against object, n.e.c.	0	52	0.0	1.000
Repetitive motion, n.e.c.	0	51	0.0	1.000
Exposure to noise over time	0	49	0.0	1.000
Contact with objects and equipment, uns.	0	45	0.0	1.000
Struck by dislodged flying object, particle	0	41	0.0	1.000
Overexertion in lifting (object) and turning (body)	0	40	0.0	1.000
Rubbed or abraded by foreign matter in eye	0	39	0.0	1.000
Overexertion, uns.	0	38	0.0	1.000
Fall, uns.	0	36	0.0	1.000
Fall down stairs or steps	0	31	0.0	1.000
Struck by flying object, n.e.c.	0	31	0.0	1.000
Struck against moving object	0	30	0.0	1.000
Unknown	0	26	0.0	1.000
Struck against object, uns.	0	25	0.0	1.000
Exposure from witnessing or hearing about traumatic or stressful event, NEC	0	24	0.0	1.000
Repetitive use of tools	0	22	0.0	1.000
Struck by object, uns.	0	17	0.0	1.000
Fall on same level, n.e.c.	0	15	0.0	1.000
Rubbed or abraded by kneeling on surface	0	15	0.0	1.000
Fall to lower level, uns.	0	14	0.0	1.000
Slip,trip,stepped on or in, loss of balance - with or without twisting - without fall,uns	0	14	0.0	1.000
Tripping over something - with or without twisting - without fall	0	14	0.0	1.000
Explosion, n.e.c.	0	12	0.0	1.000
Struck by rolling, sliding or falling objects on floor or ground level	0	12	0.0	1.000

Overexertion in lifting and turning (object)	0	11	0.0	1.000
Overexertion in throwing objects	0	11	0.0	1.000
Static posture without the application of force to an object	0	10	0.0	1.000
Bodily reaction, uns.	0	9	0.0	1.000
Moving in same direction	0	9	0.0	1.000
Struck by swinging or slipping object, uns.	0	8	0.0	1.000
Walking -- without other incident	0	8	0.0	1.000
Fall from ground level to lower level	0	7	0.0	1.000
Jump to lower level, n.e.c.	0	7	0.0	1.000
Noncollision accident, n.e.c. -- nonhighway accident	0	7	0.0	1.000
Exposure to caustic, noxious, or allergenic substances, uns.	0	6	0.0	1.000
Noncollision accident, n.e.c.	0	6	0.0	1.000
Stepped on object	0	6	0.0	1.000
Fall through floor surface	0	5	0.0	1.000
Jump from nonmoving vehicle	0	5	0.0	1.000
Other events or exposures, n.e.c.	0	5	0.0	1.000
Repetitive motion, uns.	0	5	0.0	1.000
Repetitive placing, grasping, or moving objects, except tools	0	5	0.0	1.000
Static posture with the application of force to an object	0	5	0.0	1.000
Explosion, uns.	0	4	0.0	1.000
Exposure to environmental heat	0	4	0.0	1.000
Fall from moving vehicle, mobile equipment -- nonhighway	0	4	0.0	1.000
Fall on same level, uns.	0	4	0.0	1.000
Inhalation in enclosed, restricted, or confined space	0	4	0.0	1.000
Rubbed or abraded by friction or pressure, n.e.c.	0	4	0.0	1.000
Vehicle struck stationary object, equipment on side of road	0	4	0.0	1.000
Bee, wasp, hornet sting	0	3	0.0	1.000
Fall from piled or stacked material	0	3	0.0	1.000
Fall from roof edge	0	3	0.0	1.000
Fall through roof surface	0	3	0.0	1.000
Highway accident, n.e.c.	0	3	0.0	1.000

Inhalation in open or nonconfined space	0	3	0.0	1.000
Pedestrian struck by vehicle, mobile equipment, uns.	0	3	0.0	1.000
Ran off highway -- no collision	0	3	0.0	1.000
Sudden start or stop, n.e.c. -- nonhighway accident	0	3	0.0	1.000
Bodily reaction and exertion, uns.	0	2	0.0	1.000
Collision between vehicles, mobile equipment, n.e.c.	0	2	0.0	1.000
Collision between vehicles, mobile equipment, uns.	0	2	0.0	1.000
Contact with cold objects or substances	0	2	0.0	1.000
Excavation or trenching cave-in	0	2	0.0	1.000
Exposure to electrical energy, n.e.c.	0	2	0.0	1.000
Fall from loading dock	0	2	0.0	1.000
Jump from structure, structural element, n.e.c.	0	2	0.0	1.000
Nonhighway accident, n.e.c.	0	2	0.0	1.000
Rubbed, abraded, or jarred by other machine or equipment vibration	0	2	0.0	1.000
Struck by shifting load -- nonhighway accident	0	2	0.0	1.000
Struck or pierced by needle (without transmitting disease)	0	2	0.0	1.000
Vehicle struck stationary object or equipment in roadway	0	2	0.0	1.000
Caught in or crushed in collapsing materials, uns.	0	1	0.0	1.000
Collision between railway vehicle and other vehicle	0	1	0.0	1.000
Emotional reaction	0	1	0.0	1.000
Exposure to electrical energy from overhead power lines	0	1	0.0	1.000
Exposure to harmful substances or environments, n.e.c.	0	1	0.0	1.000
Exposure to noise in single incident	0	1	0.0	1.000
Exposure to noise, uns.	0	1	0.0	1.000
Fall from building girders or other structural steel	0	1	0.0	1.000
Fall from floor, dock, or ground level, n.e.c.	0	1	0.0	1.000
Fall from floor, dock, or ground level, uns.	0	1	0.0	1.000

Fall on ship, boat	0	1	0.0	1.000
Fall through existing roof opening	0	1	0.0	1.000
Fire in residence, building, or other structure	0	1	0.0	1.000
Highway accident, uns.	0	1	0.0	1.000
Hitting, kicking, beating	0	1	0.0	1.000
Inhalation of substance, n.e.c.	0	1	0.0	1.000
Injections, stings, venomous bites, uns.	0	1	0.0	1.000
Jump from scaffold, platform, loading dock	0	1	0.0	1.000
Jump to lower level, uns.	0	1	0.0	1.000
Moving in intersection	0	1	0.0	1.000
Noncollision nonhighway accident, uns.	0	1	0.0	1.000
Nonhighway Collision between vehicles or mobile equipment	0	1	0.0	1.000
Nonvenomous bites	0	1	0.0	1.000
Other stings or venomous bites	0	1	0.0	1.000
Pedestrian struck by vehicle, mobile equipment in roadway	0	1	0.0	1.000
Standing	0	1	0.0	1.000
Struck by flying object, uns.	0	1	0.0	1.000
Sudden start or stop, n.e.c.	0	1	0.0	1.000
Transportation accident, uns.	0	1	0.0	1.000
Vehicle, mobile equipment struck stationary object	0	1	0.0	1.000

Appendix B2: Manufacturing Severity Factors

Event Exposure	Number of "Hi_severity" Incidents	Total Number of Lost Time Incidents	Ratio of High Severity to Lost Time Incidents	Severity Factor
Exposure to electrical energy from machine, tool, appliance, or light fixture	16	3	5.333	6.333
Exposure to electrical energy, n.e.c.	5	1	5.000	6.000
Exposure to welding light	18	4	4.500	5.500
Excavation or trenching cave-in	1	1	1.000	2.000
Water vehicle accident, n.e.c.	1	1	1.000	2.000
Exposure to electrical energy from wiring, transformers, or other electrical components	3	6	0.500	1.500
Contact with skin, eye(s) or other exposed tissue	49	112	0.438	1.438
Exposure to caustic, noxious, or allergenic substances, n.e.c.	3	7	0.429	1.429
Caught in or crushed in collapsing materials, n.e.c.	2	6	0.333	1.333
Compressed or pinched by rolling, sliding, or shifting objects	11	35	0.314	1.314
Fire, n.e.c.	1	5	0.200	1.200
Caught in running equipment or machinery	52	271	0.192	1.192
Struck by flying object, uns.	1	6	0.167	1.167
Unknown	2	12	0.167	1.167
Caught in or compressed by equipment or objects, n.e.c.	83	555	0.150	1.150
Caught in or compressed by equipment or objects, uns.	12	100	0.120	1.120
Inhalation of substance, uns.	2	17	0.118	1.118
Pedestrian struck by vehicle, mobile equipment in parking lot or non-roadway area	2	19	0.105	1.105
Exposure to caustic, noxious, or allergenic substances, uns.	3	32	0.094	1.094
Contact with hot objects or substances	8	97	0.082	1.082
Fall to lower level, uns.	1	13	0.077	1.077

Fall from nonmoving vehicle	2	31	0.065	1.065
Inhalation in open or nonconfined space	4	63	0.063	1.063
Fall from scaffold, staging, platform	2	33	0.061	1.061
Struck by falling object	19	416	0.046	1.046
Fall, uns.	4	88	0.045	1.045
Struck by swinging or slipping object, n.e.c.	3	71	0.042	1.042
Struck by swinging or slipping object, uns.	1	26	0.038	1.038
Struck by slipping handheld object	7	285	0.025	1.025
Contact with objects and equipment, uns.	3	140	0.021	1.021
Ingestion of substance	1	53	0.019	1.019
Struck by dislodged flying object, particle	2	107	0.019	1.019
Struck by object, n.e.c.	5	377	0.013	1.013
Struck by discharged object or substance	2	158	0.013	1.013
Struck by object, uns.	1	79	0.013	1.013
Struck against stationary object	5	425	0.012	1.012
Struck against object, n.e.c.	1	125	0.008	1.008
Fall onto or against objects	1	196	0.005	1.005
Fall to floor, walkway, or other surface	2	620	0.003	1.003
Repetitive motion, n.e.c.	1	489	0.002	1.002
Overexertion in lifting	1	720	0.001	1.001
Assaults, violent acts or harassment by person(s), n.e.c.	0	4	0.000	1.000
Assaults, violent acts or harassment by person(s), uns.	0	1	0.000	1.000
Attacks by animals, n.e.c.	0	2	0.000	1.000
Bee, wasp, hornet sting	0	2	0.000	1.000
Bending, climbing, crawling, reaching, twisting	0	565	0.000	1.000
Bodily conditions, n.e.c.	0	1	0.000	1.000
Bodily reaction and exertion, n.e.c.	0	334	0.000	1.000
Bodily reaction and exertion, uns.	0	17	0.000	1.000
Bodily reaction, n.e.c.	0	222	0.000	1.000
Bodily reaction, uns.	0	45	0.000	1.000

Collision between vehicles, mobile equipment, uns.	0	1	0.000	1.000
Contact with cold objects or substances	0	3	0.000	1.000
Contact with objects and equipment, n.e.c.	0	102	0.000	1.000
Contact with temperature extremes, n.e.c.	0	4	0.000	1.000
Explosion of pressure vessel or piping	0	3	0.000	1.000
Explosion, n.e.c.	0	6	0.000	1.000
Explosion, uns.	0	2	0.000	1.000
Exposure from witnessing or hearing about traumatic or stressful event, NEC	0	11	0.000	1.000
Exposure to environmental cold	0	2	0.000	1.000
Exposure to environmental heat	0	8	0.000	1.000
Exposure to harmful substances or environments, n.e.c.	0	6	0.000	1.000
Exposure to noise in single incident	0	3	0.000	1.000
Exposure to noise over time	0	296	0.000	1.000
Exposure to noise, uns.	0	5	0.000	1.000
Exposure to radiation, n.e.c.	0	1	0.000	1.000
Fall down stairs or steps	0	85	0.000	1.000
Fall from floor, dock, or ground level, n.e.c.	0	1	0.000	1.000
Fall from floor, dock, or ground level, uns.	0	2	0.000	1.000
Fall from ground level to lower level	0	4	0.000	1.000
Fall from ladder	0	74	0.000	1.000
Fall from loading dock	0	3	0.000	1.000
Fall from moving vehicle, mobile equipment -- nonhighway	0	1	0.000	1.000
Fall from piled or stacked material	0	2	0.000	1.000
Fall from roof, uns.	0	2	0.000	1.000
Fall on same level, n.e.c.	0	11	0.000	1.000
Fall on same level, uns.	0	5	0.000	1.000
Fall on ship, boat	0	8	0.000	1.000
Fall through existing floor opening	0	9	0.000	1.000

Fall through existing roof opening	0	1	0.000	1.000
Fall through floor surface	0	6	0.000	1.000
Fall to lower level, n.e.c.	0	50	0.000	1.000
Fall, n.e.c.	0	46	0.000	1.000
Fire or explosion, n.e.c.	0	1	0.000	1.000
Hitting, kicking, beating	0	8	0.000	1.000
Ignition of clothing from controlled heat source	0	4	0.000	1.000
Inhalation in enclosed, restricted, or confined space	0	16	0.000	1.000
Inhalation of substance, n.e.c.	0	10	0.000	1.000
Injections, stings, venomous bites, n.e.c.	0	2	0.000	1.000
Injections, stings, venomous bites, uns.	0	1	0.000	1.000
Jack-knifed or overturned -- no collision	0	10	0.000	1.000
Jump from nonmoving vehicle	0	3	0.000	1.000
Jump from scaffold, platform, loading dock	0	3	0.000	1.000
Jump from structure, structural element, n.e.c.	0	2	0.000	1.000
Jump to lower level, n.e.c.	0	16	0.000	1.000
Jump to lower level, uns.	0	4	0.000	1.000
Moving in intersection	0	1	0.000	1.000
Moving in same direction	0	1	0.000	1.000
Noncollision accident, n.e.c.	0	5	0.000	1.000
Noncollision accident, n.e.c. -- nonhighway accident	0	14	0.000	1.000
Nonhighway accident, n.e.c.	0	4	0.000	1.000
Nonhighway Collision between vehicles or mobile equipment	0	3	0.000	1.000
Nonvenomous bites	0	1	0.000	1.000
Not coded	0	6992	0.000	1.000
Other events or exposures, n.e.c.	0	5	0.000	1.000
Overexertion in carrying, turning, wielding objects	0	102	0.000	1.000
Overexertion in lifting (object) and turning (body)	0	149	0.000	1.000
Overexertion in lifting and turning (object)	0	34	0.000	1.000
Overexertion in pulling or pushing objects	0	488	0.000	1.000

Overexertion in throwing objects	0	24	0.000	1.000
Overexertion, n.e.c.	0	309	0.000	1.000
Overexertion, uns.	0	111	0.000	1.000
Overturned -- nonhighway accident	0	4	0.000	1.000
Pedestrian struck by vehicle, mobile equipment in roadway	0	2	0.000	1.000
Pedestrian struck by vehicle, mobile equipment, n.e.c.	0	8	0.000	1.000
Ran off highway -- no collision	0	1	0.000	1.000
Repetitive motion, uns.	0	65	0.000	1.000
Repetitive placing, grasping, or moving objects, except tools	0	247	0.000	1.000
Repetitive use of tools	0	134	0.000	1.000
Rubbed or abraded by foreign matter in eye	0	103	0.000	1.000
Rubbed or abraded by friction or pressure, n.e.c.	0	3	0.000	1.000
Rubbed or abraded by friction or pressure, uns.	0	1	0.000	1.000
Rubbed or abraded by kneeling on surface	0	12	0.000	1.000
Rubbed or abraded by objects being handled	0	5	0.000	1.000
Rubbed, abraded, or jarred by other machine or equipment vibration	0	1	0.000	1.000
Rubbed, abraded, or jarred by vehicle or mobile equipment vibration	0	4	0.000	1.000
Rubbed, abraded, or jarred by vibration, n.e.c.	0	3	0.000	1.000
Running-without other incident	0	1	0.000	1.000
Slip,trip,stepped on or in, loss of balance - with or without twisting - without fall,nec	0	133	0.000	1.000
Slip,trip,stepped on or in, loss of balance - with or without twisting - without fall,uns	0	33	0.000	1.000
Slipping on something - with or without twisting - without fall	0	116	0.000	1.000
Squeezing, pinching, scratching, twisting	0	1	0.000	1.000
Standing	0	5	0.000	1.000
Static posture with the application of force to an object	0	21	0.000	1.000

Static posture without the application of force to an object	0	13	0.000	1.000
Stepped on object	0	12	0.000	1.000
Stepping in a hole or on an object - with or without twisting - without fall	0	83	0.000	1.000
Struck against moving object	0	110	0.000	1.000
Struck against object, uns.	0	73	0.000	1.000
Struck by flying object, n.e.c.	0	74	0.000	1.000
Struck by or slammed in swinging door or gate	0	27	0.000	1.000
Struck by rolling, sliding or falling objects on floor or ground level	0	46	0.000	1.000
Struck by shifting load -- nonhighway accident	0	1	0.000	1.000
Struck or pierced by needle (without transmitting disease)	0	2	0.000	1.000
Sudden reaction when surprised, frightened, startled	0	2	0.000	1.000
Sudden start or stop, n.e.c.	0	6	0.000	1.000
Sudden start or stop, n.e.c. -- nonhighway accident	0	6	0.000	1.000
Transportation accident, uns.	0	1	0.000	1.000
Tripping over something - with or without twisting - without fall	0	35	0.000	1.000
Typing or keyentry	0	2	0.000	1.000
Vehicle struck stationary object or equipment in roadway	0	1	0.000	1.000
Vehicle struck stationary object, equipment on side of road	0	2	0.000	1.000
Vehicle, mobile equipment struck stationary object	0	8	0.000	1.000
Walking -- without other incident	0	13	0.000	1.000

Appendix C: Process Risk Exposure Duration Analysis

Appendix C1: Module Mobilization Duration Analysis

	Cycle 1			Cycle 2			
	LAB 1	**LAB 2**	**LAB 3**	**LAB 1**	**LAB 2**	**LAB 3**	**Lab 4**
Task	**Duration of tasks (in minutes)**						
Drive to site	150:00:00	150:00:00	150:00:00	150:00:00	150:00:00	150:00:00	150:00:00
Park truck	1:46				0:37		
Prepping module storage area		8:20					
Unstrap load	3:30			1:32	7:47	1:32	1:32
Lift load	1:05			1:17	1:22	1:17	1:17
Unstrap load	4:44	7:39	6:19	5:29	5:24	5:29	5:29
Lower load	0:44			0:46	0:46	0:28	0:28
Parked	5:31			1:16	1:16		
Align truck in front of trailer jacks	2:52	2:52		4:48	4:48		
Check alignment	1:07	1:07					
Pull truck forward and re-align	4:19	4:19					
Lift load	0:33	0:33		3:02	3:02		
Back Truck up over trailer jacks	6:12	6:12		3:06	0:22		
Check alignment	3:37	3:37		1:57	1:57		
Pull truck forward and re-align	5:17	5:17		0:33	0:33		
Lower module onto trailer jacks	0:51	0:51	0:51	2:47	2:47	2:47	2:47
Inspect jack placement and stability	1:56	1:56	1:56		0:18		
Lower truck and remove from area	4:50				5:42		
Secure truck	6:24				5:18		

Average durations (in hours)				
	LAB 1	**LAB 2**	**LAB 3**	**LAB 4**
Task	Duration of tasks (in hours)			
Drive to site	2.5	2.5	2.5	2.5
Park truck	0.03	0.01		
Prepping module storage area		0.14		
Unstrap load	0.04	0.13		
Lift load	0.02	0.02		
Unstrap load	0.09	0.11	0.03	0.03
Lower load	0.01	0.01	0.02	0.02
Parked	0.06	0.02	0.10	0.10
Align truck in front of trailer jacks	0.06	0.06	0.01	0.01
Check alignment	0.02	0.02		
Pull truck forward and re-align	0.07	0.07		
Lift load	0.03	0.03		
Back Truck up over trailer jacks	0.08	0.05		
Check alignment	0.05	0.05		
Pull truck forward and re-align	0.05	0.05		
Lower module onto trailer jacks	0.03	0.03	0.03	0.05
Inspect jack placement and stability	0.03	0.02	0.03	
Lower truck and remove from area	0.08	0.10		
Secure truck	0.11	0.09		

Appendix C2: On-Site Install Duration Analysis

Cycle 1										
Task	Task Code	Count (1 = 30 seconds)							Sum	
Deliver Module to Crane	DM	0	0	0	0	0	0	0	0	0%
Park Truck	PT	0	0	0	0	0	0	0	0	0%
Put Trailer Jacks Under Module	TJ	0	0	0	0	0	0	0	0	0%
Lower Module Onto Trailer Jacks	LOM	0	0	0	0	0	0	0	0	0%
Install Connection Plates and Taglines to Module	ICP	0	0	0	0	0	0	0	0	0%
Lower Rigging Equipment Over Module	LR	0	0	1	0	0	0	0	1	0%
Connect Rigging Equipment to Module at Hoisting Brackets	CR	3	2	4	0	0	0	3	12	4%
Remove Slack in Rigging Equipment	RS	0	0	0	0	0	0	0	0	0%
Test Lift	TL	15	15	15	0	0	0	0	45	14%
Add Slack in Rigging Equipment and Adjust	AS	0	0	0	0	0	0	0	0	0%
Lift Module	LIM	0	0	7	0	0	0	0	7	2%
Guide Module with Taglines	GM	10	11	0	0	0	0	0	21	7%
Lower Module Towards Structure	LMS	0	0	3	0	0	0	0	3	1%
Align Module	AM	0	0	9	0	0	9	4	22	7%
Drill Module onto Structure	DRM	0	0	34	4	0	34	29	101	32%
Install Insulation Along Bottom of Module Wall	INB	0	0	0	3	0	0	0	3	1%
Install Insulation Along Top of Module Wall	INT	0	0	0	30	30	0	0	60	19%
Disconnect Rigging From Module	DR	0	0	0	0	0	0	0	0	0%
Crane Lifts Rigging Equipment	CLR	0	0	3	0	0	0	0	3	1%
Crane Swings Rigging Over Next Module	CSR	0	0	2	0	0	0	0	2	1%
Waiting	WA	0	0	0	0	0	0	0	0	0%
Walking	W	9	7	0	12	1	0	5	34	11%
		37	35	78	49	31	43	41	314	
		12%	11%	25%	16%	10%	14%	13%		

Cycle 2										
Task	Task Code	Count (1 = 30 seconds)							Sum	
Deliver Module to Crane	DM	24	26	0	0	0	0	0	50	9%
Park Truck	PT	0	0	0	0	0	0	0	0	0%
Put Trailer Jacks Under Module	TJ	5	0	0	0	0	0	0	5	1%
Lower Module Onto Trailer Jacks	LOM	8	0	0	0	0	0	0	8	1%
Install Connection Plates and Taglines to Module	ICP	0	0	0	0	0	0	0	0	0%
Lower Rigging Equipment Over Module	LR	0	0	2	0	0	0	0	2	0%
Connect Rigging Equipment to Module at Hoisting Brackets	CR	16	12	13	0	0	0	0	41	7%
Remove Slack in Rigging Equipment	RS	0	0	3	0	0	0	0	3	1%
Test Lift	TL	4	4	4	0	0	0	0	12	2%
Add Slack in Rigging Equipment and Adjust	AS	0	0	0	0	0	0	0	0	0%
Lift Module	LIM	0	0	5	0	0	0	0	5	1%
Guide Module with Taglines	GM	10	14	0	0	0	0	0	24	4%
Lower Module Towards Structure	LMS	0	0	3	0	0	0	0	3	1%
Align Module	AM	0	0	4	0	0	4	4	12	2%
Drill Module onto Structure	DRM	0	0	83	0	30	83	61	257	47%
Install Insulation Along Bottom of Module Wall	INB	0	0	0	8	8	0	0	16	3%
Install Insulation Along Top of Module Wall	INT	0	0	0	18	18	0	0	36	7%
Disconnect Rigging From Module	DR	0	0	0	0	0	0	0	0	0%
Crane Lifts Rigging Equipment	CLR	0	0	3	0	0	0	0	3	1%
Crane Swings Rigging Over Next Module	CSR	0	0	2	0	0	0	0	2	0%
Waiting	WA	6	1	17	1	0	0	6	31	6%
Walking	W	1	5	0	7	4	1	19	37	7%
		74	62	139	34	60	88	90	547	
		14%	11%	25%	6%	11%	16%	16%		

Cycle 3										
Task	Task Code	Count (1 = 30 seconds)							Sum	
Deliver Module to Crane	DM	22	22	0	0	0	0	0	44	11%
Park Truck	PT	0	0	0	0	0	0	0	0	0%
Put Trailer Jacks Under Module	TJ	0	0	0	0	0	0	0	0	0%
Lower Module Onto Trailer Jacks	LOM	0	0	0	0	0	0	0	0	0%
Install Connection Plates and Taglines to Module	ICP	0	0	0	0	0	0	0	0	0%
Lower Rigging Equipment Over Module	LR	0	0	0	0	0	0	0	0	0%
Connect Rigging Equipment to Module at Hoisting Brackets	CR	7	7	7	0	0	0	0	21	5%
Remove Slack in Rigging Equipment	RS	2	2	2	0	0	0	0	6	1%
Test Lift	TL	14	14	14	0	0	0	0	42	10%
Add Slack in Rigging Equipment and Adjust	AS	15	15	15	0	0	0	0	45	11%
Lift Module	LIM	0	0	5	0	0	0	0	5	1%
Guide Module with Taglines	GM	9	9	0	0	0	0	0	18	4%
Lower Module Towards Structure	LMS	0	0	4	0	0	0	0	4	1%
Align Module	AM	0	0	4	0	0	4	4	12	3%
Drill Module onto Structure	DRM	0	0	32	0	0	32	32	96	23%
Install Insulation Along Bottom of Module Wall	INB	0	0	0	17	17	0	0	34	8%
Install Insulation Along Top of Module Wall	INT	0	0	0	9	9	0	0	18	4%
Disconnect Rigging From Module	DR	0	0	0	0	0	0	0	0	0%
Crane Lifts Rigging Equipment	CLR	0	0	5	0	0	0	0	5	1%
Crane Swings Rigging Over Next Module	CSR	0	0	4	0	0	0	0	4	1%
Waiting	WA	0	0	0	0	0	2	22	24	6%
Walking	W	0	0	0	12	14	10	1	37	9%
		69	69	92	38	40	48	59	415	
		17%	17%	22%	9%	10%	12%	14%		

Average Durations										
		Spotter	**Driver**	**CO**	**RC1**	**RC2**	**FC**	**BC**	**Process**	**Process %**
Task	Task Code	Count (1 = 30 seconds)								
Deliver Module to Crane	DM	15	16	0	0	0	0	0	**31**	8.45%
Park Truck	PT	0	0	0	0	0	0	0	**0**	0.00%
Put Trailer Jacks Under Module	TJ	2	0	0	0	0	0	0	**2**	0.45%
Lower Module Onto Trailer Jacks	LOM	3	0	0	0	0	0	0	**3**	0.72%
Install Connection Plates and Taglines to Module	ICP	0	0	0	0	0	0	0	**0**	0.00%
Lower Rigging Equipment Over Module	LR	0	0	1	0	0	0	0	**1**	0.27%
Connect Rigging Equipment to Module at Hoisting Brackets	CR	9	7	8	0	0	0	1	**25**	6.65%
Remove Slack in Rigging Equipment	RS	1	1	2	0	0	0	0	**3**	0.81%
Test Lift	TL	11	11	11	0	0	0	0	**33**	8.89%
Add Slack in Rigging Equipment and Adjust	AS	5	5	5	0	0	0	0	**15**	4.04%
Lift Module	LIM	0	0	6	0	0	0	0	**6**	1.53%
Guide Module with Taglines	GM	10	11	0	0	0	0	0	**21**	5.66%
Lower Module Towards Structure	LMS	0	0	3	0	0	0	0	**3**	0.90%
Align Module	AM	0	0	6	0	0	6	4	**15**	4.13%
Drill Module onto Structure	DRM	0	0	50	1	10	50	41	**151**	40.79%
Install Insulation Along Bottom of Module Wall	INB	0	0	0	9	8	0	0	**18**	4.76%
Install Insulation Along Top of Module Wall	INT	0	0	0	19	19	0	0	**38**	10.24%
Disconnect Rigging From Module	DR	0	0	0	0	0	0	0	**0**	0.00%
Crane Lifts Rigging Equipment	CLR	0	0	4	0	0	0	0	**4**	0.99%
Crane Swings Rigging Over Next Module	CSR	0	0	3	0	0	0	0	**3**	0.72%
	Resource	**55**	**51**	**97**	**30**	**37**	**55**	**46**	**371**	

Appendix C3: Prefabricated Panel Installation Analysis

Cycle 1										
		Count (1 = 30 seconds)								**Sum**
Task	**Task Code**	**Foreman**	**Wkr1**	**Wkr2**	**Wkr3**	**Wkr4**	**Wkr5**	**CO**	**Process**	
Swing Crane Boom to Position	SB	0	0	0	0	0	0	3	3	1%
Connect Panel to Crane Boom	CPM	0	0	0	0	0	0	3	3	1%
Connect Panel to Forklift	CPF	0	0	0	0	0	0	0	0	0%
Swing Panel Into Position	SP	10	0	0	5	5	0	9	29	13%
Lift Panel	LP	4	0	0	0	4	0	4	12	5%
Level Panel	LVP	8	0	6	8	8	0	9	39	18%
Drill Connections	DC	20	0	27	11	27	0	33	118	53%
Connect Brackets	CB	0	0	0	0	0	0	0	0	0%
Disconnect Panel From Boom	DPB	0	0	1	0	1	0	1	3	1%
Preparation of Panel	PP	6	0	0	3	6	0	0	15	7%
Preparation of Install Area	PIA	0	0	0	0	0	0	0	0	0%
	Resource	48	0	34	27	51	0	62	222	
		22%	0%	15%	12%	23%	0%	28%	100%	

Cycle 2										
		Count (1 = 30 seconds)								
Task	**Task Code**	**Foreman**	**Wkr1**	**Wkr2**	**Wkr3**	**Wkr4**	**Wkr5**	**CO**	**Process**	**%**
Swing Crane Boom to Position	SB	0	0	0	0	0	0	6	6	1%
Connect Panel to Crane Boom	CPM	0	0	0	4	0	0	17	21	5%
Connect Panel to Forklift	CPF	2	0	1	8	0	0	0	11	2%
Swing Panel Into Position	SP	0	23	0	16	0	0	23	62	14%
Lift Panel	LP	0	0	0	1	0	0	6	7	2%
Level Panel	LVP	22	24	20	31	0	14	24	135	30%
Drill Connections	DC	18	12	9	4	0	0	31	74	16%
Connect Brackets	CB	15	2	7	12	24	0	15	75	16%
Disconnect Panel From Boom	DPB	0	0	1	0	3	0	3	7	2%
Preparation of Panel	PP	0	0	0	6	6	0	0	12	3%
Preparation of Install Area	PIA	3	0	25	3	4	12	0	47	10%
	Resource	60	61	63	85	37	26	125	457	
		13%	13%	14%	19%	8%	6%	27%	100%	

Cycle 3										
		Count (1 = 30 seconds)								
Task	**Task Code**	**Foreman**	**Wkr1**	**Wkr2**	**Wkr3**	**Wkr4**	**Wkr5**	**CO**	**Process**	**Sum**
Swing Crane Boom to Position	SB	0	0	0	0	0	0	12	12	3%
Connect Panel to Crane Boom	CPM	0	0	0	4	0	0	5	9	2%
Connect Panel to Forklift	CPF	0	0	0	4	0	0	0	4	1%
Swing Panel Into Position	SP	0	0	0	13	13	0	13	39	10%
Lift Panel	LP	0	0	0	3	12	0	12	27	7%
Level Panel	LVP	0	4	18	21	15	7	21	86	21%
Drill Connections	DC	0	0	0	7	2	2	7	18	4%
Connect Brackets	CB	0	14	14	10	13	0	40	91	22%
Disconnect Panel From Boom	DPB	0	2	0	0	0	0	0	2	0%
Preparation of Panel	PP	0	0	0	1	0	0	0	1	0%
Preparation of Install Area	PIA	25	17	17	8	16	36	0	119	29%
	Resource	25	37	49	71	71	45	110	408	
		6%	9%	12%	17%	17%	11%	27%	100%	

Average Durations (in hours)								
Task	Task Code	**Foreman**	**Wkr1**	**Wkr2**	**Wkr3**	**Wkr4**	**Wkr5**	**CO**
Swing Crane Boom to Position	SB	0.00	0.00	0.00	0.00	0.00	0.00	0.06
Connect Panel to Crane Boom	CPM	0.00	0.00	0.00	0.02	0.00	0.00	0.07
Connect Panel to Forklift	CPF	0.01	0.00	0.00	0.03	0.00	0.00	0.00
Swing Panel Into Position	SP	0.03	0.06	0.00	0.09	0.05	0.00	0.13
Lift Panel	LP	0.01	0.00	0.00	0.01	0.04	0.00	0.06
Level Panel	LVP	0.08	0.08	0.12	0.17	0.06	0.06	0.15
Drill Connections	DC	0.11	0.03	0.10	0.06	0.08	0.01	0.20
Connect Brackets	CB	0.04	0.04	0.06	0.06	0.10	0.00	0.15
Disconnect Panel From Boom	DPB	0.00	0.01	0.01	0.00	0.01	0.00	0.01
Preparation of Panel	PP	0.02	0.00	0.00	0.03	0.03	0.00	0.00
Preparation of Install Area	PIA	0.08	0.05	0.12	0.03	0.06	0.13	0.00

Appendix D: On-Site Construction Daily Log

Daily Log List Calendar

Export

Search Add Filter

Today Mon Oct 19, 2020

Daily Log Completed
The Daily Log was completed by Ryan Morton on Fri Oct 23, 2020 at 08:11 am ADT.

Weather

Manpower

10.0 Workers | 106 Total Hours

Company	Workers *	Hours *	Total Hours	Location	Comments	Attachments
Carleton Enterprises Limited	1	10.0	10.0		Continued excavation and backfill for plumbing. Hauling material to site and compaction on-going. IMC assisting with site work.	No Attachments
Seaside Plumbing & Mechanical Inc.	3	10.0	30.0		Continued underground plumbing in the kitchen area. Water tested the common washroom areas ready for plumbing inspection in the morning.	No Attachments
IRON MAPLE CONSTRUCTORS	6	11.0	66.0		Continued framing wall panels and interior walls. Framing on going and is progressing well. Continued cutting insulation around perimeter of wall for slab detail. Backfilling and compaction on going.	No Attachments

Notes

Issue?	Location	Comments	Attachments
☐		Carlton will be on site tomorrow to start the Cistern ceiling.	No Attachments

Photos






> E-mails

Curriculum Vitae

Candidate's full name: Nicole Tamara Odo

Universities attended: University of New Brunswick
May 2017, Bachelor of Science in Engineering First Division (Civil Engineering)

Publications:

Odo, Nicole, and Rankin, J. 2022**.** *Quantifying Safety Performance in Off-Site Construction.* International Council for Research and Innovation in Building and Construction World Building Congress 2022. Melbourne, Australia.

Academic Awards:

2021-22 APEGNB Advanced Studies Scholarship

2020-21 APEGNB Ottis I. Logue Graduate Scholarship

2020-21 R.H.B Fellowship in Civil Engineering

2016-17 Eric C. Garland Scholarship

2016-17 Zula V. Hallett Scholarship (Marysville)

2015-16 Dr. Walter J. Dohaney Memorial Scholarship

2014-15 Charles S. Bennett Memorial Scholarship

2013-14 Bea Phillips CFUW Fredericton Scholarship

2013-17 H. Harrison McCain Bursary