Infrastructure Health and Safety Association

List of Solutions and/or Controls for the Top Primary Causal Factors Identified for Roof Shingling

Defined Risk Statement: Working at heights can pose serious unintended and adverse effects to the safety and well-being of a roof shingling installer, and nearby fellow workers.

Background:

Originally in 2015 and then again in 2019, IHSA partnered with the Ministry of Labour, Training and Skills Development (MLTSD) and industry-recognized subject matter experts to conduct a root-cause analysis on the causes construction workers in residential roofing falling while working at heights.

A total of **48 primary causal factors** were identified, ranked, and prioritized. All 48 primary causal factors were voted on, and based on the votes, a Top 10 list was created. This collective process was open, transparent, and collaborative. The ranking and prioritization of causal factors was done using employer and worker votes only. The MLTSD and IHSA did not participate in voting.

Based on the results of the Phase One Working at Heights Root Cause sector workshop, it was determined that the most effective way to complete the solutions and controls portion was to conduct individual trade specific workshops. Having Phase 2 split out into specific trades allowed for more targeted solutions and recommendations to emerge to reflect the uniqueness and complexity of the varied work tasks involved in working at heights during residential construction

Residential Roof Shingling trade Root Cause Control Workshop Introduction:
On March 31, 2020, in collaboration with the Ministry of Labour, Training and Skills Development (MLTSD), an in-person Trade Specific, Root Cause Control Workshop was convened at the Carpenters Union to determine the top health and safety concerns within the **Residential Roof Shingling trade**.

This workshop included peer-recognized subject matter experts from the Sheet Metal Workers (Local 51) and the Carpenters Union (Local 27) who came together in person to review and prioritize causal factors for the Roof Shingling Trade in Residential construction. Then most importantly the group identified solutions and controls for the top ranked causal factors. Note that the scope of this exercise did not include assessment of the listed solutions/controls. This list provides information on specific controls or activities that can be undertaken by the industry and/or regulator for the development or the support of a control. Although not part of the scope, it is understood that control performance should be specified, observable, measurable and auditable.

This is a supporting document for the root-cause control workshop report (a separate document) that should be referred to when using this information.

Roof Shingling – Labour Participants

Sheet Metal Workers International Association & Carpenters Union

Top 10 Root-Causes: Worker Falls when Working at Heights

Priority	Category	Root-Causes
1	Environment, Culture, People	Government (Enforcement, Policy, Regulation and Data)
2	Process, Culture, Tools & Machines	Inadequate/Improper Training
3	Culture	Piecework
4	People	Mental Health
5	Environment	Housekeeping
6	Process	Scheduling
7	Tools & Machines	Ladder, Other Equipment
8	Environment	Unskilled Trade
9	Environment	Weather
10	Culture, Environment, Process	Language and Literacy

Root-Cause details & Solutions/Controls that may reduce risk

1. **Government (Enforcement, Policy, Regulation and Data)**
   a. The Ministry does not provide valuable data. Data typically categorized into one category (not broken down by trade, for example, re-roofing, new construction). Another example: Not much there for "shingling" and all bundled into "flat roofing".
   b. Green book very vague.
   c. MLTSD interpretation between the written end of rules vs the practical end of the work.
   d. Inconsistent enforcement between inspectors depending on area.
   e. Systems allows "passing the buck" (builder to contractor to worker).
   f. Who is responsible for the anchor point?
   g. Workers are expected to do work out of their scope in order to comply with the "green book" and to be able to execute their work.
   h. Inspectors arrive on site because of a call; not part of a systemic inspection.
   i. Industry corruption ("old-boys club").
   j. Inspectors are not building a relationship to solve problems.

1	Political will to make the changes addressed in this document.
2	Make roofing a skilled trade.
3	Rework the categories in "the book". (Look at some of the best companies and see what they have as categories).
4	"Green book" is vague – a better/updated version required.
5	Reduce the grey areas – different ways to interpret "the book" means there are different ways to work around it.
6	"The green book" is too rigid. For E.g. the book says, "the boom should not be used, instead climb up a ladder", but the boom is safer in many situations.
7	The money for "fines" should be used for training; punishment is not prevention.
8	More inspectors to support "prevention"/compliance assistance instead of the "gotcha" attitude.
9	Fines should be a last resort.
10	Stop fining the "little guy". Builder/contractor also takes responsibilities.
11	Provide formal clarity on who is responsible for the anchor point.
12	Standard enforcement.
13	Consistent enforcement.
14	Reduce paperwork.
15	Government standards should be updated. Compare with Europe, America, RCABC, etc.
16	Define what it is to be safe, regardless of culture, age, position, trade.
17	Workers should be part of the Prevention Council, self-represented.
18	Hire inspectors from trades. Inspectors should have practical experience.
19	Do not have marked MLTSD vehicles.

2. Inadequate/Improper Training

a. Inadequate, improper & redundant training (E.g. Anchor point, PPE)
b. Not specified to address the different types of workspace for the different types of trades.
c. Depending on the site, there is confusion on what to do with your PPE, harness, and other tools.
d. No reasonable explanation to why tie-up from the side is unsafe.
e. Old practices
f. Training fatigue
g. Tasks are not assigned with consideration of workers age.
h. Some workers get trained but then leave to another job or to start their own business. Demotivates anyone wanting to train new workers.
i. Some procedures are passed-on experiences between workers, but there is no official collection of this knowledge.
j. Pitch of roof (steep designs).

1	Trade-specific Working at Heights (WAH) training.
2	All workers should have safety manuals; no matter how many years, or what position you are in.
3	Sign-off should be mandatory on the "policy books" by all levels of staff.
4	The money for "fines" should be used for training; punishment is not prevention.
5	Don't look at the cheapest solution as bare minimum way to comply because they are not practical.
6	General training should be unique as trades are all unique and should be treated as such.
7	Financial incentives for training and safe practices.
8	Build worker competency with a direct source of where their knowledge was gained (i.e. company, government, etc.).
9	Training should include real life experiences/ practical training (E.g. BC – RC/ABC Roofing Contract of BC; 1 full week of training).
10	Graduated licensing.
11	Extending the training credentials unless standards have changed. (WAH is every 3 years).
12	Young worker training.

3. Piecework

a. This is the way industry operates (piecework mentality).
b. Productivity trumps safety.
c. Hourly vs. piece time workers: piece time workers may rush, and hourly workers do not have this stress.
d. Pressure to get the work done.
e. Cutting corners.

1	Balance between productivity and safety.
2	Political will to manage the "piecework mentality" to ensure safety.
3	Make roofing a skilled trade.
4	Graduated licensing.
5	Need well-defined plan to minimize rushing (E.g. Delivery schedules, proper housekeeping, account for weather, etc.)
6	Limiting the speed of the build (E.g. limit workers/acre).
7	Hourly workers do not have the stress of "always rushing".
8	Proper supervision to ensure safety protocols are observed.

9	Financial incentives for training and safe practices.

4. Housekeeping

a. No preparation provided before work. Expected to do that yourself.
b. No concern that incoming worker may get hurt.
c. Working space on sites can be hard to maneuver.
d. Last minute cleanups can be costly and ineffective in reducing incidents.

1	Training in the practice of safe housekeeping.
2	Good housekeeping program.
3	Good understanding that effective housekeeping can control or eliminate workplace hazards.
4	Limiting the speed of the build (E.g. limit workers/acre).
5	Supervisor competency
6	Maintenance of equipment for cleanup.
7	Availability of equipment for cleanup.
8	Proper scheduling of trades.

5. Mental Health

a. Political will lacking to address the issues addressed in this document.
b. All causal factors identified here contribute towards an unhealthy attitude for the worker leading to adverse impacts on mental health.
c. Workers may spend around ½ hour to find decent parking, another ½ to make their working space "safe" and this makes the workers want to make up for their losses and cut corners.
d. Different levels of standards by inspectors leaves the workers annoyed
e. Too much training causes training fatigues and workers begin to see that as a burden.

1	Political will to address the challenges recorded in this document.
2	Make roofing a skilled trade.
3	Reduce the rush (i.e. Piecework)
4	Hourly/salary work.
5	Balance between productivity and safety.
6	Put measures in place where the "little guys" are not always liable.
7	Consistent enforcement.
8	Extending training credentials for those trainings that have not changed (i.e. WAH is every 3 years).
9	Financial incentives for training and safe practices.

6. Scheduling

a. Job sites are too fast paced (piecework mentality).
b. Always rushing.
c. On a site, there can be many trades working in the same congested area. Must work over multiple trades to do the job.
d. Weather is not factored into scheduling.

1	Each trade should have their own time to work in order to reduce the congestion in work sites. The builder and company should plan schedules around these considerations.

2	Limiting the speed of the build. A formula per acre on the lot you can only have **x** amount of number in the lot. Also limits the labor shortage, which limits those who have no concern for safety protocols.
3	Reduce the rush (i.e. piecework).

7. Ladders and Other Equipment

a. Unsafe set-up and misuse of ladders.
b. Enforcement gaps with regards to underground economy and re-roofing.
c. Unleveled platforms affect ladders and cherry pickers.
d. The use of the cherry picker is not practical (i.e. need to use a ladder to get up to a roof)
e. Odd/custom house designs causes workers to use ropes to dangle at odd angles, but the rope is meant to be used to catch you if you fall.

1	Stationary stairs – some stairs should be permanently up until the job/project is done.
2	Proper training that address the unique and specific needs of a trade.
3	Having safety reminders/nudges/signs on the wall.
4	Proper enforcement.
5	Financial incentive for "set-up"

8. Weather

a. Workers are expected to work through extreme conditions.
b. Workers use incorrect PPE for weather conditions and assume it is safe; instead it is a false sense of security.
c. Weather not factored into scheduling.

1	Proper training on the right PPE for different weather conditions.
2	Proper awareness of changing weather conditions.
3	Proper supervision during changing weather conditions.

9. Unskilled Trade

a. Trades are not licensed, and it enforces stereotypes.
b. Lack of licenses and permits cause a lack of liability.
c. What is expected of a worker would be more defined and inspectors would measure to that defined standard.

1	Political will to make roofing a skilled trade.
2	Make the industry "look" better by bringing down stereotypes and attract quality (hence safer) workers.
3	Require permits for work/ customers need to get permits; pushes people to permits, which pushes trades for license.
4	Graduated licensing.
5	Salary work.

10. Language and Literacy

a. Communication barriers.
b. Workers do not understand the culture surrounding safety standards in Ontario.
c. Immigration brings different cultures that have different definitions of health and safety.
d. Supervisor does nothing.

1	Define what it is to be safe, regardless of culture, age, position, trade.
2	Having safety reminders/nudges/signs on the wall.
3	Training in different languages that addresses different cultural beliefs on health and safety.
4	Supervisor competency when addressing safety with someone who does not speak the language

Recommendations and Conclusions:

The controls and solutions listed in this document are for the top primary causal factors that may contribute to workers falling, while working at heights, in the Roof Shingling trade in the low rise residential construction sector. Given recent fatalities in the sector, along with injury/fatality data available from the Workplace Safety and Insurance Board (WSIB) for Residential Roofing, it is important that specific solutions targeting systemic weaknesses be implemented immediately.

Based on the list of controls/solutions provided by the subject matter experts from industry, research and government (regulator), the following five action items are recommended:

1. **Address the lack of political will through greater enforcement of non-compliance and collaboration to focus on top industry issues identified in this workshop report** (i.e. underground economy, equipment use and practices)
   - ✓ Sector must address the identified key issues impacting safety in the sector.

2. **Promotion of industry specific fit for duty, mental health and wellness resources.**
   - ✓ Provide tailored support to workers, supervisors and other support staff.

3. **Greater implementation and enforcement of trade specific working at heights training.**
   - ✓ Trade and or site specific training and practices to be adopted and enforced.

4. **Address the negative impacts of the piecework culture**
   - ✓ Adverse effects of the piecework culture must be addressed.

5. **Classify Roof Shingling as a mandatory, licensed, skilled trade.**
   - ✓ To be adopted at the Provincial level

The above five recommendations provide a systemic foundation for reduction in fall related incidents while working at heights in the roof shingling trade. If ignored, the solutions listed for the top ranked primary causal factors will just serve as “band-aid” solutions. Based on the Swiss Cheese model of accident causation, risk assessment and root-cause analysis theory, we must focus on the causal factors and not just the symptoms.