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## Infrastructure Health and Safety Association

### List of Solutions and/or Controls for the Top Primary Causal Factors Identified for Homebuilding Trades

**Defined Risk Statement:** Working at heights can pose serious unintended and adverse effects to the safety and well-being of workers in the homebuilding trades, and other nearby fellow trade workers.

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#### **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

#### **Siding and Outside Finishing trades Root Cause Control Workshop Introduction:**

On August 19, 2021, IHSA hosted an in-person Trade Specific Root Cause Control Workshop to determine the top health and safety concerns within the **Residential Homebuilding trades**.

This workshop included peer-recognized subject matter experts from labour and management, who came together in person to identify and prioritize causal factors for various Homebuilding Trades 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.

## HOMEBUILDING TRADES

### Top 10 Root-Causes: Worker Falls When Working at Heights

Priority	Category	Root-Causes
1	Tools and Machines	<a href="#">Personal Protective Equipment (PPE)</a>
	Tools and Machines	<a href="#">Ladder</a>
	Tools and Machines	<a href="#">Mobile Elevating Work Platforms (MEWPs)</a>
2	Culture	<a href="#">Old Practices</a>
	People	<a href="#">Age</a>
3	People	<a href="#">Fit For Duty</a>
	Culture	<a href="#">Attitude</a>
	People	<a href="#">Transient Workforce</a>
4	People	<a href="#">Worker Non-Compliant</a>
5	Environment	<a href="#">Piecework</a>
6	Processes	<a href="#">Training</a>
	Processes	<a href="#">Supervision</a>
7	Environment	<a href="#">Lack of Enforcement, Oversight</a>
	Environment	<a href="#">Consultation</a>

8	Environment	<a href="#">Weather</a>
9	Processes	<a href="#">Scheduling</a>
	Processes	<a href="#">Material Delivery</a>
	Processes	<a href="#">Health and Safety Management Program</a>
10	Environment	<a href="#">Human Trafficking</a>

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

### 1. **Category:** Tools and Machines

#### **Primary Causal Factor 1:** Personal Protective Equipment (PPE)

- a) Different makes and models and pieces for application - needs to be more convenient for workers who are reportedly fighting the gear all day long:
  - a. Selection travel restraint and robe grab (use work positioning etc.);
  - b. Lack of tie-off points – ceiling joist or wall plates – no anchor points available:
    - i. Can't scaffold indoors in many situations on new floor (floor is finished tile, hardwood etc.) so to avoid damaging it, as well as potential access issues and weight restrictions of the floor;
    - ii. Lack of anchor points on ladders:
      1. Scheduling the work to be completed trimmers come in before painting, before flooring is installed – so we can have scaffolding on the floor;
      2. Finishing of drywall with beads vs trim.
- b) Workers know what type of harness they want to wear;
- c) Engineering requirements on scaffolds may on occasion be excessive, preventing their use;
- d) Practices - Build roof on the ground and hoisting and crane it in/up - but now need legal liable and engineering costs (who absorbs the cost?) – Flexibility in adapting and innovating solutions like building own scaffolding etc.;
- e) More consultation with workers on equipment they can use;
- f) Workers fighting their PPE will not want to wear it;
- g) Travel restraint with no rope grab easier to use and allows easier use for worker;
- h) Open to above windows have no tie off points / anchor points;
- i) Scaffolding is a problem as they don't want to erect them so floor doesn't get damaged;
- j) Scissor lifts not used due to access issues;
- k) Builders get that work trimmed before painting, flooring so proper scaffolding can be used;

- l) There was a time when town house roofs were built on the ground and then hoisted up – MLTSD wanted things engineered etc. Need to get back to this; and
- m) Tie off points will not be installed by builder as they are used infrequently and must be removed later, and homeowners allegedly don't want them.

Item	Suggested Controls and Solutions
1	Workers to be provided with equipment that they do not have to struggle using – review the CSA standard to see if other pieces of equipment, such as front-bridal arborist-style harnesses may be acceptable for use when performing work on sloped roofs.
2	Builders to schedule trimmers to come first to allow them the opportunity to use scaffolding and perform their work safely, as they lack suitable anchor points when they perform their scope of work later in the schedule.
3	Review the requirements for scaffolds and develop standards to ensure a reasonable option is available where there are no tie-off points available.
4	Review regulations to ensure it allows reasonable platforms to be built, suitable in the circumstance.
5	Trade-specific working at heights training – i.e. practical tips that are applied to homebuilding specifically that address its unique challenges.
6	Build equipment on the ground and hoist it in place – review regulations and various requirements to ensure it is economical to do so.
7	IHSA Consultants to provide education and training on safe work practices on site, supporting the industry.
8	Utilize ladder jacks to get materials (shingles etc.) on the roof safely.

**Category:** Tools and Machines

**Primary Causal Factor 2:** Ladder Use

- a) Builder to change the scheduling so scaffolding could be used;
- b) Guardrails around stairs;
- c) Zoom Boom – cages (engineering) (Framers);
- d) 2 person requirement (footing and securing) when using ladders;
- e) Platform and podium ladders – review the regulation and limitations to ladders and alternatives what can be reconsidered in what application;
- f) Ladder use – workers work from ladders as they are fast to set up, versatile, convenient, good for lack of space;
- g) Ladder needs to be in good working order;
- h) 3-point contact in some trades is not possible;
- i) Practical hands on training re ladder use is not provided;
- j) Ladder basics re ground, slippery surfaces, tied off, firm at bottom;
- k) Scheduling trim at a more appropriate time where ladder use is safer;
- l) Electrician and HVAC workers use ladders often; more convenient;
- m) Podium ladders / platform ladders – safe to use? This could be an option;
- n) Alternative access options should be available to workers.

Item	Suggested Controls and Solutions
1	Powered Elevating Work Platforms that have open front baskets to allow workers to be tied off and to more easily access the surface of the roof – Review regulations and standards to learn opportunities for this.
2	Employers to perform task observation and task analysis.
3	IHSA subject matter experts to work on site and provide consultation to the trades.
4	Employers to develop ladder policies and procedures, including the buddy system.
5	Ladder training that is practical/hands-on to be made available to the industry.
6	Access to data/stories of past incidents to help improve the culture.
7	Review regulations to ensure platform/podium ladders are an acceptable option for the industry.

**Category:** Tools and Machines

**Primary Causal Factor 3:** Mobile Elevating Work Platforms (MEWPs)

- a) MEWPs with travel restraint and open-ended platform would enable workers to use the equipment to access areas of the work comfortably, and because the railing cannot be removed legally it prevents workers from using what would otherwise be a safe and productive method; and
- b) Workers would be required to wear travel restraint PPE.

Item	Suggested Controls and Solutions
1	Review the regulations and applicable standards to determine if the front railings of MEWP platforms can be removed in order to allow workers to more easily/comfortably access the roof surface. Review applicability/feasibility of revising any regulations which prevent this from occurring.

**2. Category 1:** Culture:

**Primary Causal Factor:** Old Practices

- a) Old (unsafe) habits are a problem, because they are difficult to break and can negatively impact workplace safety culture for both current and new workers;
- b) Language literacy and learning issues among many in the industry;
- c) Advancements like COR etc., policy and procedures are too burdensome for small and independent contractors;
- d) We have a skills shortage;
- e) Worker complacency is very common and natural;
- f) Older workers are great workers re tasks but not great at Safety;
- g) The older workers know the tools / new workers using text book and need to apply it to their work – mentorship is needed for the next generation of workers;
- h) Training can only do so much – bobcat, forklift etc. if you’ve never worked with equipment on site it takes training and hands-on time; and

- i) Workers must demonstrate they are competent with tools.

Item	Suggested Controls and Solutions
1	Employer to ensure site-specific training of workers.
2	Industry to educate owners and constructors on their responsibilities and how they can have an influence on their work force to change behaviour.
3	Daily site-specific hazard assessments.
4	COR for small business.

### Category 2 People

#### Primary Causal Factor: Age

- a) Too young and too old (Lack of training we have lost the mentorship);
- b) Lack of promotion of trades and apprenticeship program and opportunities;
- c) Old practices of aging workforce mentoring the younger (duration of support is short);
- d) Generational acceptance of work conditions and tolerance (language etc.);
- e) Older generation don't follow the rules;
- f) Young worker afraid to challenge the norms;
- g) Site-specific training requirements;
- h) Promotion of trades to attract new workers;
- i) Ontario Home Builders – training etc., placements and 6-month government and job ready incentives and initiatives;
- j) Mentorship and lack of incentive is needed;
- k) High school – co-op and shop experience has been restricted, tools and experience has been limited;
- l) New workers are being mentored by very senior workers (and don't relate to each other);
- m) Experienced workers can teach – H&S related work issues;
- n) Different organizations lobbying for government assistance re trained workers (job ready) basic H&S training for construction;
- o) Employer site specific fall protection training needs to be completed and reviewed with new (all) workers.

Item	Suggested Controls and Solutions
1	Support skills training for students while in high school.
2	Company policies on competencies of workers.
3	Onboarding training, supervision and mentorship.

### 3. Category 1 People

#### Primary Causal Factor: Fit for Duty

- a) Substance abuse – including cannabis, alcohol and others;
- b) Stress from COVID (slowed it down, take your time and follow steps) – complacency back in;

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- c) Stress of workplace pressures and family pressures etc. – COVID fatigue (distractions) stress-related contribute to injuries or illnesses:
    - a. Mental Health Training;
    - b. Access to resources and benefit program;
    - c. Extending benefits to subcontractors (Contract programs);
    - d. Access to shared benefit plan and access to EFAP resources and benefits;
    - e. Unionized programs – extension of benefits to contractors, members and families – adopting unionized eligibility to a home builder (courtesy of coverage) to extend services to contractors, sub-contractors and community access.
  - d) Drinking night before (zero tolerance policy needs to be put into effect);
  - e) Fit for duty policy in place etc., - drug use, and do a tool box talk on it – fatigue identification and look out for co-workers everyone duty (Needs to be in collective agreement, procedure, protocol and expectations what to do);
  - f) Encourage communication culture (fear of losing the job);
  - g) Sharing of best practices and adoption of standard policy and procedure;
  - h) EAP available – depends on company;
  - i) Builder has benefits – tried to bring in sub-trades into their coverage but insurance companies don't allow it;
  - j) Lobby with government to allow pooling of group insurance;
  - k) Union has benefits that extends coverage to supervisors etc.;
  - l) Fit for duty policy needed – trades to comply; educate on the policy, develop an awareness on what to look for;
  - m) Everyone should be monitoring fit for duty (substance, fatigue etc.) as it effects everyone. Look out for co-worker;
  - n) If someone has a problem address it in order to provide assistance (resources etc.);
  - o) Encourage a communication culture (Builder, (sub-trades must understand for their workers)) that they will bring to your attention an issue so it can be addressed;
  - p) Need fit for duty policy in a collective agreement so everyone is aware of requirements; and
  - q) One or two person crew will cover up for each other.

Item	Suggested Controls and Solutions
1	Workers to receive fit-for-duty (drug/alcohol, fatigue etc.) training, supervision and mentorship on site – develop a framework within a health and safety management system that supports employers to achieve this.
2	Fit-for-duty policy for employers – IHSA to provide resource and guidance.
3	Fit-for-duty training for workers, such as a toolbox talk – IHSA to develop.
4	Evaluation program within the management system that encourages open communication.
5	Develop a comprehensive pooled resource to give workers access to mental health services.

## Category 2 Culture

### Primary Causal Factor: Attitude

- a) Training and orientation need it done before they show up;
- b) Shortage of workers, safety takes time;
- c) Worker motivation for doing it but choosing to wear the gear;
- d) Risk based choices;
- e) Site-specific, job-specific and empower staff and site supervisor training;
- f) Care of others;
- g) Motivation and ability to influence them to change behavior – near misses and examples, scenario based to make it real;
- h) Worker being prepared for the job, equipment and trade training completed;
- i) COR certified and HSMS sites and standards and expectations etc., those not COR certified:
  - i. They have invested in COR and want to keep their certification;
  - ii. Pre-qualifications and bidding requirements;
  - iii. Need an incentive.
- j) Generational differences in beliefs and risk based approach;
- k) Need to change the mentality / thought process of all (Safety Culture), similarly to how working on site not wearing hard-hat not tolerated today;
- l) Workers follow safety requirements on one site but not on another;
- m) Supervision is stronger at one site versus another;
- n) During Covid – builders in a short period of time implemented procedures on job sites (protocols on site etc.) it was clear to all. Compliance was because workers did not want the site to close down;
- o) Builder must set the rules of the site;
- p) Worker needs to feel the need to want to work safely and wear PPE;
- q) Worker knowledge / lack of motivation;
- r) Builders expects their workers to achieve a level of training knowledge when completing a training course. Often a worker will complete training may be involved in a fall incident shortly after. Even though they are trained and knew the proper procedures.

Item	Suggested Controls and Solutions
1	Increase access to quality industry data which while reasonably protecting confidential information, giving workers on site stories through real examples of workers having experienced critical injuries or fatalities while performing similar scopes of work – this recommendation is similar in concept as the CPWR dashboard, which provides thorough details of workers having been fatality injured at work. Stories such as these may be more able to shift the culture than relying on hypothetical situations or referring solely to laws.
2	Trade-specific working at heights training – focusing on the various hazards workers experience, including the practical use of ladders.
3	Health and Safety Management System to include daily site hazard assessments.
4	Develop subcontractor management systems to ensure quality of contractors.

### Category 3 People

#### Primary Causal Factor: Transient Workforce

- a) Lack of workers – we are short staff, unskilled and not in trades we need mentors – age of existing workers (Age of framer is 63 years old) – next generation;
- b) Not competent;
- c) Not training;
- d) No mentoring opportunities;
- e) Tracking and work history for skilled trade workers (unionized);
- f) Incentives for immigration program (temporary worker program) foreign worker program and SkillsPass;
- g) Need to promote and recruit and attract new people to the trades;
- h) Hiring competent people – contractors hiring people with limited skills;
- i) Hiring responsibilities fall on everyone – builder, contractors, sub-trades;
- a) Lack of skilled worker;
- b) Lack of training and availability;
- c) Changing so often going from crew to crew, site to site, province to province – hard to keep the consistency there:
  - o Union side record of where they work and skills trade;
  - o Shortage of workers for dispatching etc.

Item	Suggested Controls and Solutions
1	Make it easier to work in Canada legally.
2	Develop/enhance a training database such as SkillsPass to prevent workers from using fake training certificates.
3	Subcontractor management systems to ensure workers are legally able to work.

### 4. Category: People

#### Primary Causal Factor: Worker Non-Compliant

- a) Stops with Builder – Residential Site – ultimately accountable as Builder – policies and procedures and contractor management – down below;
- b) The Internal Responsibility System as a culture on projects is lacking and can be improved;
- c) Only meeting minimum, still not getting them to wear hard hats and safety boots – skilled trade worker shortage;
- d) New workers lack quality mentorship;
- e) There is a lack of supervision on site, and a lack of knowing who is all on site;
- f) There may be a lack of enforcement by the Ministry of Labour, Training and Skills Development; and
- g) Lack of knowledge, particularly relating to supervising.

Item	Suggested Controls and Solutions
1	Hire competent staff who have (or will) complete at least the IHSA Basics of Supervising course as well as the JHSC Certification course.
2	Builder to have subcontractor management system which includes enforcement as well as clearly defined responsibilities for each party on site.
3	MLTSD enforcement of supervisors not present while on site.
4	Constructors and builders to have/verify subcontractors have procedures and training – subcontractor management system.
5	Periodic inspections by the Builder.
6	IHSA/3 <sup>rd</sup> party project consulting to increase presence on site and act as a resource on how to complete work in a safe and productive manner – educating workers and supervisors.

## 5. Category: Environment

### Primary Causal Factor: Piecework

- a) Piecework is the Industry pricing structure based on production;
- b) The build price is determined, then price is set to build home as efficiently and safely as possible. Safety experiences may or may not be compromised;
- c) Workers often work extended hours on a job (16 – 18 hrs.) to meet deadlines;
- d) Competition with Tarion and extensions; inspections and building permits cause delays and can contribute to reduced time and pressure for workers to cut corners;
- e) Piecework fixes the cost and limits liability for the builder:
  - i. This is the industry pricing structure: production fixed cost (builder knows what it will cost; cost is less for piece work vs hourly operation (overhead));
  - ii. Contractor assigns work to pieceworker which leads to lack of supervision as it is the subcontractors' employee that supervises the work and often creates a deficiency in supervision;
  - iii. The construction sector is experiencing a transient workforce that goes from job to job.
- f) Some work is priced per sq. foot installation by subcontractors who are paid by piece work but are paying their workers hourly. This results in a mixed hourly, piecework pay structure;
- g) There is also pressure on hourly paid workers, i.e. core issues identified with piecework remain during the alternative of working hourly;
- h) Piecework mentality is: if I work faster, I can make it more money;
- i) Piecework does not factor in worker training and sufficient time to complete the job;
- j) Some trades quote a price per job or per square foot to complete work and if they use hourly paid workers they must rush the work;
- k) Piece work is typical today in construction. There is a need to change the conversation (mind shift) on this;
- l) Supervision of piece work is difficult and often a problem;
- m) The piecework environment is not conducive to training as it is production based (encourages rushing). At present more worker training is needed;

- n) The core issues that the participants felt contributed to workers falling from heights *attributed* to Piecework was pressure/high work demands, lack of supervision and scheduling.

Item	Suggested Controls and Solutions
Note	Piecework as a structure is likely not to be eliminated because it has many merits and there is the idea that the issues with piecework will still exist if replaced with hourly i.e. lack of adequate training and supervision, and rushing to get the job done quickly.
1	Health and Safety Management Systems which ensures consistency in scheduling of project work to alleviate some excess pressure.
2	Develop a subcontractor management system, whereby the Builder would be responsible for ensuring reasonable scheduling, conducting site-specific orientations for new workers to the project, as well as shared enforcement on site where non-compliance is identified.
3	Builder to hire security for projects to prevent subcontractors from working past standard working hours.
4	Develop procedures for subcontractor management, leadership, as well as toolbox talks on various hazards, including scaffolds.

## 6. Category: Processes

### Primary Causal Factor 1: Training

- a) A limited amount of training if any can be provided when a contractor is given a few days to complete the work;
- b) Employer training on site is a struggle in a piecework environment;
- c) There is a correlation between piecework, hourly paid work and a lack of training;
- d) Worker orientations are not being completed;
- e) Lack of procedures in place and worker understanding of policies and knowledge;
- f) Inconsistent application of safety talks and worksite reviews etc.;
- g) Scenario-based training is needed: real life experiences and/or picture or video based consequences, examples etc. that turn a story into a training experience;
- h) Customized and tasks specific WAH training is lacking;
- i) Site supervision and training customization to allow for better coordination of the trades and staffing supply;
- j) Training certificates and verification, as well as accuracy of documentation is needed;
- k) Workers unsure of what training is approved and what programs meet the needs;
- l) Train the Trainer and expand approved training programs to help employers expand training options (WAH and other programs etc.);
- m) SkillsPass and tracking of certificates should be used;
- n) Worker training must be trade-specific;
- o) Site specific training requirements need to be coordinated with respect to equipment and harness etc. Do not rely on the standard WAH training to meet all the training requirements. Site specific WAH training is needed as well and is often overlooked;
- p) A requirement for minimum orientation training standards must apply to all new and young workers;

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- q) Supervisor training for construction workers is required;
  - r) Worker mentorship on the job is critical;
  - s) MLTSD shows up at site and meets with builders' supervisor to verify training compliance of all assigned workers;
  - t) Builders expect subcontractors to provide qualified workers (written in contract) based on a mentorship program;
  - u) Builders function on an honour system with respect to worker verification of training qualifications and non-compliance situations can get overlooked;
  - v) Builders need to be more involved in the worker qualification, verification system;
  - w) Some builders get their trades at the start of the job to submit programs, policies etc., then come to the site office to complete worker orientation and produce training cards. Anyone with expired cards is not allowed on site;
  - x) When trades are working on-site, the builder will monitor activities on site and may ask about job procedures;
  - y) Good subcontractors complete tool box talks and review work procedures etc.;
  - z) Drywallers will lock a baker scaffold which takes time to learn and review applicable procedures;
  - aa) Every trade must show tool box talks, and procedures etc.;
  - bb) Training consistency from company to company is lacking at present;
  - cc) Both the constructor and the trade must follow safety training requirements;
  - dd) Constructors and supervisors must be consistent on worker training requirements and verification down the chain;
  - ee) Supervisors typically have documented training but are not competent in carrying out their responsibilities;
  - ff) There are not enough competently trained people available for the work that is needed. If training standards are established, a company still needs to get the workers;
  - gg) Effective training regarding on the job risks in respect of fall incidents is needed;
  - hh) Worker awareness of trade-specific work scenarios and job awareness is lacking;
  - ii) Companies must use systems such as SkillsPass and others etc. to monitor training credentials;
  - jj) Companies must only use approved training providers when required;
  - kk) More train-the-trainer programs are needed;
  - ll) Companies (builder and contractor) must ensure that proper validation of worker certificates is completed;
  - mm) When a work-site is not monitored or procedures enforced, non-compliance will result;
  - nn) There is a need to raise the training standards of all work sites with respect to training;
  - oo) A company that has invested in a training certification program (e.g. COR) does not want to lose it. This will result in a greater effort to achieve compliance;

- pp) Companies need some sort of incentive/benefit to encourage participation in a health and safety certification system program (e.g. COR, HSEP etc.) in order to impact improve work performance/compliance of a trade;
- qq) The builder often does not know the quality of the workers (experience in the trade, on the job etc.) the sub-contractor will bring to the site.

Item	Suggested Controls and Solutions
1	Increase access to quality industry data which while reasonably protecting confidential information, giving workers on site stories through real examples of workers having received critical injuries or fatalities while performing similar scopes of work – this recommendation is similar in concept as the CPWR dashboard, which provides thorough details of workers having been fatality injured at work. Stories such as these may be more able to shift the culture than relying on hypothetical situations or referring solely to laws.
2	Trade-specific working at heights training – focusing on the various hazards workers experience, including the practical use of ladders.
3	Fit-for-duty policy training.
4	Onboarding training, supervision and mentorship.
5	Supervisors to have at least IHSA Basics of Supervising training and JHSC Certification training.
6	Site-specific orientations for all new workers.
7	Train-the-trainer programs for better site-specific training (working at heights).
8	SkillsPass/digital centralized training platform to verify worker training, to avoid fake certificates as well as to retain records of transient workers.
9	Support skills training for students while in high school.
10	Train workers on procedures during adverse weather, such as high winds or excessive heat.

**Category:** Processes

**Primary Causal Factor 2:** Supervision

- a) Supervision effectiveness is based on training/company culture;
- b) Supervisor from company monitors on time and on budget;
- c) Often no supervisors on piecework crews – Supervisor on site generally;
- d) Multi-project and not have supervisor on each house, low rise vs multi-rise;
- e) Need supervisors on site – (sub-contractor – who am I bringing to the work – job based bringing in people not qualified, they don't know what they are doing, not trained on site);
- f) Subcontractor management – and risks trickle down;
- g) Constructor – their own supervisor and crew leader – if they were consistent with demands;
- h) Every site has a Supervisor – not checking trades, not qualified or competent;
- i) Foreman and responsibilities – and liabilities (not just watch guys) understand responsible;
- j) Need training standards etc.;
- k) Contractor management supervisor;

- l) Training & coordination of tasks and jobs – material delivery and scheduling etc., and empower supervisors to do that directly;
- m) Piecework is great economically but not for training apprentices due to lack of direct supervision;
- n) Hourly environment is contained and can be supervised;
- o) Builders cannot lock site and workers working after hours because they are behind; builder can't lock site. Builder can't supervise workers when this happens;
- p) Buck stops at the builder – why are roofers working at 7 pm when subcontractor knows site stops at 5pm. If they choose not to follow, how do you fix it?;
- q) Builders have contractual obligations and must jump from site to site which compromises supervision;
- r) The supervisor must be accountable;
- s) Constructor must outline requirements / trade supervision must monitor safety and procedural aspects;
- t) Supervisor training is critical, must monitor, act, re worker compliance;
- u) Someone is appointed supervisor and has not necessarily completed any specific required training;
- v) Supervisor – looking for tidiness of site, care of workers, behavior of workers (the safety culture);
- w) Difficult when a supervisor for a sub-trade does not act in this manner;
- x) Supervisor training down the chain must be consistent; and
- y) Supervisors have documented training but are not competent in carrying out their responsibilities.

Item	Suggested Controls and Solutions
1	Hire competent staff who have (or will) complete at least the IHSA Basics of Supervising course as well as the JHSC Certification course.
2	MLTSD enforcement of supervisors not present while on site.
3	Periodic inspections by the Builder.
4	Develop a subcontractor management system, whereby the Builder would be responsible for ensuring reasonable scheduling, conducting site-specific orientations for new workers to the project, as well as shared enforcement on site where non-compliance is identified.
5	Builder to hire security for projects to prevent subcontractors from working past standard working hours.
6	Health and Safety Management System to include daily site hazard assessments.
7	Onboarding training, supervision and mentorship.
8	Supervisors to have at least IHSA Basics of Supervising training and JHSC Certification training.
9	Site-specific orientations for all new workers.
10	Builder to have subcontractor management system which includes enforcement as well as clearly defined responsibilities for each party on site.

11	IHSA/3 <sup>rd</sup> party project consulting to increase presence on site and act as a resource on how to complete work in a safe and productive manner – educating workers and supervisors.
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**7. Category:** Environment

**Primary Causal Factor 1:** Lack of Enforcement, Oversight

- a) MLTSD need more presence and fines to worker motivation;
- b) Need more tickets to the workers and fines;
- c) MLTSD needs to do more of an education and coaching to correct the behavior and infractions;
- d) Internal fine system – infractions and tickets etc., - write tickets (don't always collect money) then JHSC this sub-contractor internal penalties;
- e) Consultant and SME walking the sites, inspections and assessment and help with Safety Talks etc.;
- f) Insurance company does site inspections – report card, dashboard approach rely on those;
- g) Internal Responsibility and collaborative approach;
- h) MLTSD Enforcement and number of incidents taking place forcing greater emphasis on compliance;
- i) MLTSD presence on site has an impact;
- j) Enforcement – builder should be at the top re responsibility; builder must require the sub-trades to have suitable supervision;
- k) Smaller trades/business do not have the procedural, supervision requirements;
- l) Greater MLTSD enforcement is needed – they will monitor bad performers;
- m) MLTSD must issue violations to non-compliant workers;
- n) Enforcement = builders understand the rules; do the subcontractors understand the rules. Must be clear cut builder, contractor, trades/labour – shared responsibilities re safety;
- o) MLTSD penalizes the biggest violators (builders) MLTSD needs to enforce with workers;
- p) MLTSD has gone from enforcement now towards education;
- q) MLTSD comes to a site and sees builder has met their requirements – they need to look at subcontractor;
- r) MLTSD writes tickets on site and worker is given progressive warnings then out;
- s) MLTSD inspectors – enforce only but some assist/educate and encourages better performance from supervisors on site;
- t) MLTSD volunteer to visit site for tool box talks;
- u) Have MLTSD involved in the conversation, may not be using equipment properly and suggest a resource for more info;
- v) IHSA, MLTSD reeducation – however it must be collaborative.

Item	Suggested Controls and Solutions
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1	Builder to have subcontractor management system which includes enforcement as well as clearly defined responsibilities for each party on site.
2	MLTSD enforcement of supervisors not present while on site.
3	Develop a subcontractor management system, whereby the Builder would be responsible for ensuring reasonable scheduling, conducting site-specific orientations for new workers to the project, as well as shared enforcement on site where non-compliance is identified.
4	MLTSD enforcement of supervisors not present while on site.
5	Periodic inspections by the Builder.

**Category:** Environment

**Primary Causal Factor 2:** Consultation

- a) MLTSD does not adequately provide information during site visits of how to perform work in a safe and productive manner;
- b) Task analysis and observation should be performed on site of the activities requiring working at heights during homebuilding; and
- c) IHSA consultants may be able to satisfy the need on site of providing knowledge and resources, including conducting toolbox talks.

Item	Suggested Controls and Solutions
1	Site visits by IHSA consultants to provide guidance on how to perform work safely and productively, to conduct toolbox talks, and to perform task analyses/observations.

**8. Category:** Environment

**Primary Causal Factor:** Weather

- a) Delays caused by weather;
- b) Heat – fatigue;
- c) Wind – unsafe conditions;
- d) We build in the elements:
  - a. Enough information and understanding of those things, flexibility in our own laws for example: 6 AM summer weather – complaints from the city due to early building starts and heat for example shingling – no flexibility;
  - b. Proper shoes and boots to be working on the roof – comfort and quality.
- e) Scaffolding – external – residential does not work settlement around the foundation. Weather and rain consolidation of building materials – maintenance back off jacks, plank and relevel the scaffolding – start to end – foundation poured, build entire house dismantle the scaffold – liability and who owns it, longevity of being there, settlement, protect foundation against ground water. (Foundation damage, needs to be constant touch up of ground grading, site maintained at grade level continuous);
- f) Elevated Work Platforms – using them in more forms than they are now – modified to use tasks safer (cage and basket);

- g) Construction takes place in the elements;
- h) Anyone who works outside needs to understand the challenges of working outside in poor weather; and
- i) Need proper shoes and boots to work on roof (or other conditions).

Item	Suggested Controls and Solutions
1	Build indoors in a controlled setting where practicable.
2	Weather policies on heat and wind, such as giving flexibility to work during cooler times of the day.

## 9. Category: Processes

### Primary Causal Factor 1: Scheduling

- a) Scheduling is greatly impacted by cost quotation in effect and the processes monitored by the supervisor;
- b) The builder and site supervisor must be aligned with respect to scheduling plans;
- c) Scheduling is a problem: Some subdivisions consist of 200-300 homes and are built and scheduled on certain specifications. Closing dates change and require assigned work crews to move around to complete the work to meet a deadline. This results in less work supervision, time sensitive work and a pressure on workers to finish the job. Shortcuts often get taken at the cost of safety;
- d) The contractor schedules work on a 40 hour week but the supervisor must complete work based on meeting a closing deadline;
- e) Builders are unable to lock worksites (gated residential restrictions apply);
- f) The contractor must work with a 7 AM to 5 PM work day and must schedule work outside of this window if they choose work extra hours. When that happens they must determine how to schedule the work and obtain additional qualified and trained people;
- g) Builder must adjust the trade work schedule in order to accommodate safer work. (e.g. schedule paint, trim before floor goes down to allow for scaffold to be set up);
- h) There is not enough time to start and finish a job due to lack of trades (with a 6 months closing):
  - o It takes 90 days minimum to complete the build (from foundation);
  - o Multi day trade coordination is needed:
    - Spatial separation (Space and Time) and rules are needed (e.g. 2 subs on the same lot is not feasible).
- i) Permit application approval takes from 10 – 30 days. This pushes timelines (jurisdictional timelines), deficiency lists (repair drawings), municipality issues with building departments. The Building Permit process delays the building timeline:
  - o Municipality does not follow the regulations, does not enforce it and does not deliver permits on time. This totally pushes the builder timeline and force them to build in unfavorable weather conditions, pace and time.
- j) Some trades (e.g. roofers) are given a limited timeline to get workers in place by the builder;

- k) An extreme difficulty to find qualified workers affects the work schedule;
- l) Some trades will sneak people in after hours in order to get work finished;
- m) Preparation of workers, knowing procedures and allotting sufficient time to complete the work happen often;
- n) Builder and site supervisor must complete scheduling and make adjustments as needed;
- o) Greater flexibility in the regulation and creativity for workers to complete the work is needed;
- p) The timing of property sale date versus delivering the house, results in corners being cut. Not enough time is allowed for builder to complete one house. Builders use 6 months as a minimum timeline for completion however an unwritten minimum time in the industry to complete 1 house is 90 days. When a development of 90 – 100 houses takes place, this is not possible as it takes various trades different time to complete their respective work.

Item	Suggested Controls and Solutions
1	Builders to schedule trimmers to come first to allow them the opportunity to use scaffolding and perform their work safely, as they lack suitable anchor points when they perform their scope of work later in the schedule.
2	Health and Safety Management Systems which ensures consistency in scheduling of project work to alleviate some excess pressure on trades.
3	Develop a subcontractor management system, whereby the Builder would be responsible for ensuring reasonable scheduling, conducting site-specific orientations for new workers to the project, as well as shared enforcement on site where non-compliance is identified.
4	Builders to provide sufficient notice to trades to avoid excessive pressure.

**Category:** Processes

**Primary Causal Factor 2:** Material Delivery

- a) for roofers accepting and receiving can bring materials – like flooring boxes (railings add obstructions, carpet bending etc., easier when no railings etc.;
- b) With flooring workers can we bring it into the house when railings are installed;
- c) Easier when nothing is in the way (scheduling / piece-work mentality);
- d) Hardwood being brought in can scratch railing;
- e) Site-specific, job specific, training for supervisors; and
- f) Coordination of work – e.g. 12' rolls carpet scratch things; site super knows what's going into a house and think of the process, how would you do each job, think about workers coming before and after to make it safe and simple for everyone involved. Need to empower supervisor to do this if they are properly trained. Builder trains and empower supervisors.

Item	Suggested Controls and Solutions
1	Procedure to use materials lifts and ladder jacks.
2	Subcontractor management system to ensure adequate scheduling and phasing of projects so materials are brought to site at the proper time.

3	Constructors and builders to have/verify subcontractors have procedures and training – subcontractor management system.
4	Develop subcontractor management systems to ensure quality of contractors.

**Category:** Processes

**Primary Causal Factor 3:** Health and Safety Management Program

- a) Unqualified workers and shortage of job – the subcontractor bringing in unskilled workers and not training not being mentored;
- b) The builder expects ABC roofing to provide trained workers / how is builder supposed to know when they sub utilizes inexperience untrained workers;
- c) Checklist for crew – WHMIS, clearance for member on crew;
- d) Not enforce vs subcontractor – what are they submitting;
- e) Age factor – mentorship program for young workers under age of 21;
- f) Bid – program and policy requirements – first day – site orientation, training card etc., (sent off site if not compliant) – multi trades on site – supervisor – when it is wrong ask for procedures etc.;
- g) Not pre-qualification procedures – ask them for separate policy or procedure they don’t know;
- h) Constructor ask every trade for submissions ask for it but not follow up – withhold contract to submit that) – Trade needs to build in time to review orientation, review procedure and take training;
- i) Lack of consistent management, lack of standards and expectations so not everyone is following same requirements – need a regulation on contractor management, voluntary (*standard like COR?*):
  - a. Need a law that would state contractor management.
- j) Job hiring, orientation and screening – and trickle down to subcontractors;
- k) Sub-contractor Management - Layers and level lower, understand the rules. Builder requirements, trade requirements, union requirements standards and shared responsibility (MLTSD penalize the contractor):
  - a. Enforcement and education component.
- l) Sub-contractor compliance management system is required;
- m) Sub or the sub of the sub = compliance problems;
- n) Sub-contractor management needed;
- o) Builders can implement things on the fly – contractor may lose work if don’t meet work completion;
- p) Relationship builder / contractor safety considerations must be clear;
- q) Due to the relationship with the builder, subcontractor Trade Supervisor is unlikely to move around to visit or supervise other work sites.

Item	Suggested Controls and Solutions
1	Health and Safety Management Systems which ensures consistency in scheduling of project work to alleviate some excess pressure.
2	Develop a subcontractor management system, whereby the Builder would be responsible for ensuring reasonable scheduling, conducting site-specific orientations for new workers to the project, as well as shared enforcement on site where non-compliance is identified.
3	Subcontractor management system to ensure adequate scheduling and phasing of projects so materials are brought to site at the proper time.
4	Subcontractor management systems to ensure workers are legally able to work.
5	Health and Safety Management System to include daily site hazard assessments.
6	Builder to have subcontractor management system which includes enforcement as well as clearly defined responsibilities for each party on site.
7	Constructors and builders to have/verify subcontractors have procedures and training – subcontractor management system.
8	Develop subcontractor management systems to ensure quality of contractors.

#### 10. Category: Environment

##### Primary Causal Factor: Human Trafficking

- a) Undocumented workers;
- b) Illegal workers or illegal residents;
- c) Not trained, not a provided same opportunity;
- d) Slave labour approach immigration being abused;
- e) Certain trades, can be more prevalent in certain areas geographically
- f) Temporary foreign worker program – permanent status and gaps – make it easier for foreign workers to become legal:
  - a. Formulate home builder associations and union associations to lobby and advocate.
- g) Abuse of labour bringing in people in unfavorable conditions, undocumented workers;
- h) When MLTSD comes to a site illegal workers will leave the site;
- i) This is more prevalent in major cities /not smaller sites;
- j) This is a subcontractor / management issue;
- k) Make it easier for foreign workers to become legal.

Item	Suggested Controls and Solutions
1	Make it easier to work in Canada legally.
2	Develop/enhance a training database such as Skills-Pass to prevent workers from using fake training certificates.
3	Subcontractor management systems to ensure workers are legally able to work.

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## 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 Homebuilding Trades 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 the 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. Address the need for homebuilder trade worker mentorship programs.**
  - ✓ Develop a mentorship program to address a labour shortage and widespread improvement in quality of training.

The above five recommendations provide a systemic foundation for reduction in fall related incidents while working at heights in the Homebuilding trades. 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.