



Guidelines for

Safety Management Prestressed Systems Incorporated

Project Sites

Table of Contents

HISTORY OF THE PRESTRESSED GROUP OF COMPANIES -----	4
VISION STATEMENT (Our Vision / Our Mission) -----	5
HEALTH & SAFETY POLICY STATEMENT -----	6
WORKPLACE VIOLENCE & HARASSMENT POLICY-----	6A

PRECAST CONCRETE ERECTION SAFE WORK GUIDELINES:

PROTECT SELF AND OTHERS -----	7
TRAINING AND EDUCATION -----	8
PERSONAL PROTECTIVE EQUIPMENT -----	8
SAFETY BASICS-----	9
USE OF ACCESS EQUIPMENT -----	10
TRUCK OFF LOADING PROCEDURE -----	11
RIGGING-----	12
LOAD PRECAST UNITS ON SITE -----	13
UNLOAD AND STORE PRECAST UNITS -----	13
INSTALL AND ALIGN PRECAST UNITS -----	14
INSTALL BOLTED PRECAST CONNECTIONS -----	15
MAKE WELDED PRECAST CONNECTIONS -----	15
INSTALL DOWELLED PRECAST CONNECTIONS -----	16
HAND AND POWER TOOLS AND EQUIPMENT -----	16
APPLICATION OF GROUT -----	18
APPLICATION OF CAULKING -----	18
PROTECT PRECAST UNITS, HARDWARE AND JOINTS -----	19

APPENDIX:

IMPLEMENTATION OF WORKING AT HEIGHTS PLAN -----	21
GENERAL PERFORMANCE -----	21
HOLES -----	21
FLOOR AND ROOF DECK -----	22
TOTAL PRECAST CONCRETE STRUCTURES -----	26
PRECAST CONCRETE CLADDING -----	26
MISPLACED VERTICAL REINFORCEMENT -----	27
POWER LINES – SAFE WORK PROCEDURES -----	28
EMERGENCY ENVIRONMENTAL SPILL PLANNING -----	29
EMERGENCY PREPAREDNESS -----	30
FIRE EXTINGUISHERS -----	30
FIRST AID -----	30
INCIDENT/ACCIDENT REPORT & INVESTIGATION -----	31
CRITICAL INJURY DEFINED -----	31
INCIDENT/ACCIDENT REPORT FLOW CHART -----	32
UNDER THE INFLUENCE OF DRUGS OR ALCOHOL -----	33
RIGHT TO REFUSE OR TO STOP WORK -----	34
SITE SPECIFIC INSPECTION – FIELD ERECTION CHECKLIST -----	37
HAZARD RISK ANALYSIS (Safe Work Plan) -----	42

ATTACHMENTS

INSTALLATION OF PRECAST HOLLOWCORE SLABS

“SLAB GRAB” HOLLOWCORE ERECTION FALL ARREST

BACKING UP

HAND SIGNALS FOR ON-SITE TRAFFIC CONTROL

SAFETY TIPS – POWERLINE CONTACT! (Construction Safety Association of Ontario)

SAFETY TIPS – BOOMTRUCKS (Construction Safety Association of Ontario)

EMPLOYEE AGREEMENT AND ACKNOWLEDGEMENT

Resources:

Construction Safety Association

Occupational Health and Safety Act

Regulations for Construction Projects

PCI Erector’s Manual

PCI Erection Safety

Ontario Ministry of Training, Colleges and Universities

- Pre-Cast Concrete Erector
- Pre-Cast Concrete Finisher

PURPOSE

The Prestressed Group is dedicated to the protection of its employees from on the job injuries. All personnel employed by PSI have a responsibility for the safety of themselves and other workers on the job. The purpose of this plan is to aid in that responsibility.

RESPONSIBILITIES

It is the responsibility of all employees in the field to comply with the regulations contained in this guideline. It is the responsibility of each Foreman and/or Erection Field Manager to administer this guideline to the employees on the job site. The greatest responsibility lies with the erection foreman on the job. He/She must act as the compliance officer for the employees and with upper management to prevent injuries on the job. It is the responsibility of the employee to comply with the rules and regulations contained in this guideline, and to follow the instructions of the erection foreman and/or field manager. It is also the responsibility of the employee to bring to management’s attention those things that present a danger to workers on the job. Any changes to this guideline must be approved by the erection field manager and/or by upper management.

DISTRIBUTION

A copy of this guideline shall be provided to all field employees, field manager, and a copy to be kept with the company vehicle on site.

REVIEW AND UPDATE

The field manager in consultation with the Health and Safety Coordinator shall review this guideline at least annually. The guideline shall be updated in accordance with the findings of the review.

HISTORY OF THE PRESTRESSED GROUP OF COMPANIES

In 1975 Valentino Collavino and his son, Loris, founded Prestressed Systems Incorporated of Windsor Ontario. The company's focus was on manufacturing of hollowcore floor and roof slabs, and serviced all of Ontario. Throughout the years, as the company developed, their increased scope of work grew to include architectural and structural precast/prestressed concrete. The company has a U.S. subsidiary – International Precast Solutions, LLC, in River Rouge, Michigan.

Now with a workforce of over two hundred employees and projects ranging from Pittsburg to Kentucky, from Ontario to New York, The Prestressed Group, Formed by Prestressed Systems Incorporated and International Precast Solutions, LLC, is a national leader in the manufacture of prestressed/precast concrete solutions.

The combined capacity of the two production plants allows The Prestressed Group to produce over twenty thousand square feet of hollowcore plank and pour hundreds of cubic metres of architectural and structural products (double tees, beams, columns, walls, noise walls, etc.) on a daily basis.

The Prestressed Group has promoted precast systems in various types of building structures. This has allowed the company to take advantage of sales within the institutional, commercial, residential, government, transportation, civil, and industrial markets.

VISION STATEMENT

Our Vision

The most responsive and knowledgeable provider of customized precast solutions.

Our Mission

As a proud family owned and managed business, we will deliver products and services that meet or exceed our customer's requirements and expectations. To accomplish this, we are committed:

- 1) To provide customized solutions and services through innovative thinking, designs, applications, and technologies.
- 2) To prosper in a commodity market by creating an awareness of our value-added products and services for our customers.
- 3) To foster a tradition of teamwork and pride in everything we do.
- 4) To promote and provide a safe and healthy workplace by adopting and enforcing a responsible safety program at all levels for the benefit of our employees, customers, and the environment.
- 5) To develop and maintain enduring partnerships by dealing with customers and suppliers with honesty, integrity, and reliability.
- 6) To strengthen and reinforce a dedicated, knowledgeable workforce by promoting personal growth through comprehensive training, education, and continuous challenges.
- 7) To stimulate and reward creative thinking and innovative ideas.
- 8) To take a pro-active role as a good corporate citizen through continued community involvement.

Health & Safety Policy Statement

Management of Prestressed Systems Inc. ("PSI") is vitally interested in the health and safety of its employees. Protection of employees from injury or occupational disease is a major continuing objective. PSI will make every effort to provide a safe, healthy work environment. All supervisors and workers must be dedicated to the continuing objective of reducing risk of injury.

PSI as employer, is ultimately responsible for worker health and safety. Supervisors will be held accountable for the health and safety of workers under their supervision. Supervisors are responsible to ensure that machinery and equipment are safe and that workers work in compliance with established safe work practices and procedures. Workers must receive adequate training in their specific work tasks to protect their health and safety.

Every worker must protect his or her own health and safety by working in compliance with the law and with safe work practices and procedures established by the company.

PSI is committed to continual improvement in health, safety and environmental performance and, to that end, in planning and managing its facilities, operations, products and services. Management shall establish objectives and targets consistent with this policy and the company's commitment to "Zero" work related injuries. These objectives and targets will periodically be reviewed as part of the Company's commitment to continual improvement.

The Management of PSI is committed to conducting its operations in a manner that responsibly protects human health, safety and the environment. The commitment extends to the Company's employees, customers, suppliers, third party employees, guests, the communities where all our facilities are located, and those who may be impacted by our operations.

It is in the best interest of all parties to consider health and safety in every activity. Commitment to health and safety must form an integral part of this organization, from the chief executive officer to the workers.



Loris Collavino, Chief Executive Officer

February 24, 2018

Date



Don Little, President

February 24, 2018

Date



Workplace Violence and Harassment Policy

Prestressed Systems Inc. (PSI) is committed to providing a safe, healthy and supportive work environment for all employees that is free from violence and Harassment. PSI supports the principles of respect, dignity, integrity, and well-being of each employee as well as any other Person that a PSI employee may come into contact with when engaged in the performance of their official duties and company related activities.

This policy applies to workplace violence and/or harassment committed against or by any Prestressed Systems Inc. employees, subcontractors or visitors (i.e. vendors, public, delivery persons, family, intimate partners, etc.) on company projects, properties.

The following are the definitions for 'workplace harassment' and 'workplace violence'.

1. **Workplace Harassment** means,
 - a) Engaging in a course of vexatious comment or conduct against a worker in a workplace because of sex, sexual orientation, gender identity or gender expression, where the course of comment or conduct is known or ought reasonably to be known to be unwelcome; or
 - b) Making a sexual solicitation or advance where the person making the solicitation or advance is in a position to confer, grant or deny a benefit or advancement to the worker and the person knows or ought reasonably to know that the solicitation or advance is unwelcome.

2. **Workplace Violence** means, any act in which a person is abused, threatened, intimidated or assaulted in his or her employment. Workplace violence includes:
 - a) The exercise of physical force by a person against a worker, in a workplace, that causes or could cause physical injury to the worker;
 - b) An attempt to exercise physical force against a worker, in a workplace, that could cause physical injury to the worker;
 - c) A statement of behaviour that is reasonable for a worker to interpret as a threat to exercise physical force against the worker, in a workplace, that could cause physical injury to the worker.

Prestressed Systems Inc. will ensure that this policy and program is implemented and maintained and that all employees have the appropriate information and training to protect them from workplace violence and Harassment.

Risk assessments will be performed where and when required to evaluate the risk of violence and or harassment. Workplace violence or harassment committed by an employee, subcontractor or visitor can lead to disciplinary action up to and including termination from the company pending an investigation.

All incidents of workplace violence or harassment must be reported immediately to your supervisor, who in turn shall immediately notify management. Prestressed Systems Inc. pledges to investigate and deal with all incidents and complaints of workplace violence or harassment in a confidential, fair and timely manner, respecting the privacy of all concerned as much as possible.

All employees will be expected to work in compliance with this policy and program. The goal of Prestressed Systems Inc. is to prevent and eliminate workplace violence and harassment on all company properties and in every aspect of its company's operations.

Sincerely,

A handwritten signature in black ink, appearing to be a stylized name, is written over a horizontal line.

President

Date January 17, 2018

THE PRESTRESSED GROUP

PRECAST CONCRETE ERECTION GUIDELINES

PROTECT SELF AND OTHERS

GENERAL PERFORMANCE

Protect self and others by applying safety legislation, keeping the workplace clean and organized, following fire procedures, practicing first aid, ensuring proper lighting and installation of guardrails, using safety devices on tools and equipment, wearing and using protective apparel and devices, ensuring adequate ventilation, lifting and carrying correctly, setting up and using access equipment, avoiding hoisting over people, complying with company procedures, and reporting unsafe conditions.

- Apply the safety directives provided in legislation, such as the Occupational Health and Safety Act (including Workplace Hazardous Materials Information System – WHMIS-2015) and the Regulations for Construction Projects, and Construction Building Codes.
- Keep the workplace clean and well organized, with travel areas free from obstacles, to prevent injury from tripping or from falling objects.
- Follow fire regulations and procedures as prescribed.
- Practice basic first aid, including CPR training, and identify the location of first aid equipment and supplies.
- Confirm that the worksite has the required lighting, approximately one 200-watt bulb for every 400 square feet of area.
- Install and/or replace required guardrails to protect both workers and the public as per manufacturers' instructions and the Regulation for Construction Projects.
- Use the safety features of tools and equipment as prescribed by the manufacturers' instructions.
- Wear, adjust, use and maintain properly fitting protective apparel and devices, such as prescribed footwear, gloves, goggles, safety harnesses, and masks suitable for a specific job as per manufacturers' instructions and as required by the Occupational Health and Safety Act and Regulations for Construction Projects.
- Confirm required ventilation at the worksite to effectively eliminate noxious fumes and gases when working in confined spaces, as required by the Occupational Health and Safety Act.
- Lift and carry heavy objects in such a way as to avoid personal injury, such as back strain, in accordance with the Occupational Health and Safety Act.
- Identify and report to designated individuals, accidents, injury, and unsafe, hazardous and toxic conditions that might impair the health of exposed workers or bystanders.
- Select, set up, maintain, and use various types of access equipment such as ladders, scaffolds, and swing stages in compliance with the Occupational Health and Safety Act.
- Avoid hoisting over people, in accordance with the Occupational Health and Safety Act and Regulations for Construction Projects.
- Comply with the applicable procedures and policies affecting the workplace that are set out by precast concrete companies and associations.

TRAINING AND EDUCATION

GENERAL PERFORMANCE

Employee training is an essential component of any safety program in order to provide as much information as possible to all employees regarding “on the job safety”.

- First Aid/CPR – training to be provided to designated workers as required by the Workplace Safety and Insurance Board.
- WHMIS – Workplace Hazardous Materials Information System-2015 – review the training and instruction provided to the worker and the worker’s familiarity therewith at least annually.
- Fall Protection – review worker’s familiarity therewith at least every 3 years.
- Safety Meetings (daily huddles) – to remind crew about special job hazards, need for safety equipment, proper use of tools and equipment, site specific hazards, use of barricades, perimeter protections, etc.
- Rules and safe work practices – reviewed regularly to be remembered and to refresh workers concerning regulations and application.
- Toolbox training topics – either motivational or instructional, to create awareness and focus on worker protection, interactive with question and answer session, and should be kept to around 15 minutes.

PERSONAL PROTECTIVE EQUIPMENT

GENERAL PERFORMANCE

When working in situations, conditions, under circumstances, or in areas designated as requiring the use of personal protective equipment (PPE) appropriate in the circumstances, the workers are responsible to wear and use the PPE designated to reduce the risk of personal injury. Workers are responsible for the maintenance, care, cleaning, and inspection of PPE and report any defect of malfunctioning equipment to their supervisor immediately.

- Long pants and shirts with sleeves which cover the shoulder and upper arm are to be worn at all times on job sites; no shorts or torn clothing are to be worn at any time on job sites.
- Hardhats shall be worn to protect against impact and where there is a potential of falling objects, hair entanglement, burning, or electrical hazards. (CSA Standard Z94.1 – 1992)
- Appropriate safety footwear are to be CSA-certified, Grade 1, marked with a green triangle indicating they have both steeled toe and shank, non-slip soles, be of a high top design with a height of 150 mm (6 inches) or more to support the ankle and to provide protection from cuts or punctures to the ankle, and to be fully laced and tied to provide maximum protection.
- Eye protection will be worn when there are potentials of hazards from flying objects or particles, chemicals, arcing, glare, or dust. Where a worker is likely to encounter increased eye hazards because of their work activities, they shall select eyewear, which is appropriate in the circumstances, i.e., goggles, welding helmet, face shield, hood, etc.
- Hearing protection shall be made available and used when the noise level makes normal speech difficult to hear, i.e., cutting, grinding, drilling, etc.
- Protective gloves or clothing shall be worn when required to protect against a hazard, such as when working with chemicals or handling sharp material and during welding operations.

- Any worker who may be endangered by vehicular traffic including mobile equipment shall wear high visibility clothing.
- Harnesses and lanyards shall be utilized for fall protection as required by the regulation.
- A worker who may drown shall wear a lifejacket. “Lifejacket” means a personal flotation device that provides buoyancy adequate to keep a worker’s head above water, face up, without effort by a worker.

SAFETY BASICS

HAZARD AWARENESS

Crane

- operator error
- site conditions (soft or unstable ground)
- mechanical failure
- structural failure
- rigging failure
- crane signal/radio communication failure

Weather conditions

- wind (strong wind / sudden gusting), particularly a problem with the large surface areas of precast concrete members
- lightning
- snow / rain, fog / haze (visibility)
- cold, causing slowed reaction or mechanical problems
- heat, causing irritability and slowed reaction

Structure/product conditions

- lifting eye failure
- bearing failure or slippage
- structure shifting
- bracing failure
- product failure

Human error

- incorrect tag line procedure
- tag line hang-up
- incorrect or misunderstood crane signals
- misjudged elevation of member
- misjudged speed of member
- misjudged angle of member

LIFTING MEMBERS

- Communication is key! The crane operator and one assigned signaler in the erection crew should use hand signals or two-way radios.

- Be cautious during inclement, windy weather where control of the lifted precast member may be lost. High winds can increase the load or cause side loading on the boom and reduce its capacity.
- Never be positioned underneath or between a precast unit and something stationary.
- All personnel should be outside the drop zone when lifting/tilting or rotating a precast unit.
- Before making a lift review:
 - how to use the required rigging
 - crane load tables
 - Precaster's recommendation on how to lift the precast unit and how to upright the precast unit, if required.
 - weights of precast units
- Clear the area around the precast components of obstructions and barricade the swing area of the crane and counterweight.

SETTING, CONNECTING AND RELEASING PRECAST UNITS

- Before beginning operations, address fall protection needs for all phases of construction
- Crane operator must be aware that riggers are restrained in their movement when fall protection equipment is required
- Use ladders, personnel lifts, or scaffolding to gain access for making connections
- Before releasing a precast unit from the crane, make sure it is securely connected
- Do not use hands to reach under a precast unit to adjust a shim or bearing pad
- Ensure stability of the structure during erection by installing temporary bracing, shoring, or guying.

USE OF ACCESS EQUIPMENT

GENERAL PERFORMANCE

Select, use and maintain access equipment such as scaffolding, suspended access equipment, steps and ladders, "zoom booms" and scissor lifts, and related rigging and equipment, following safety legislation, prescribed safety procedures and manufacturers' instructions.

- Select the appropriate equipment to access the job to be done, taking into consideration the nature and location of the work and the jobsite, and weather conditions
- Select, erect, use, dismantle, store and maintain scaffolding equipment and components, including frames, cross bracing, stilts or leg extensions, platforms, casters, decking, powered climbers, manual traction climbers, guard rails and barriers, outrigger beams, counterweights and mobile working platforms, according to manufacturers' instructions and the Occupational Health and Safety Act.
- Select, install, use, dismantle and maintain suspended access equipment, including swing stages, rope fall equipment stages, climber stages (manual traction, drill-powered and conventionally powered traction, powered drum hoist), boatswain's chairs with rope falls, descent control devices, or powered climbers, and work cages with powered climber units, according to manufacturers' instructions and the Occupational Health and Safety Act.
- Select, use and maintain rigging for suspended access equipment, such as wire rope, rigging hardware, and personal safety devices, lifelines, full body harnesses, lanyards, rope grabbing devices, and triple sliding hitch, according to the Occupational Health and Safety Act.

- Set up, inspect and operate suspended access equipment, on approved existing structures and using, as required, counterweights, outrigger beams, tiebacks, parapet clamps, and anchorage points, within the rated limits of the equipment, in accordance with engineered standards and the Occupational Health and Safety Act.
- Select, use and maintain wooden, aluminum and fiberglass step ladders, conventional and extension ladders, cleat-type, double width, self-supporting, and vertical access ladders, according to manufacturers' instructions and the Occupational Health and Safety Act and Regulations for Construction Projects.
 - Maintain 3-point contact when climbing up or down.
 - Inspect ladders for defects before using and after any incidents, which could damage the ladder. Ladders found to be defective shall be taken out of service and either tagged for repair or scrapped
- Adjust and operate "zoom booms" and scissor lifts according to manufacturers' instructions and the Occupational Health and Safety Act, making sure that the ground conditions are appropriate (grade, stability, etc.), outriggers are extended, prescribed distance from electrical hazards is maintained, safety guards are in place, and protection is in place for the worker and the public.

TRUCK OFF LOADING PROCEDURE

GENERAL PERFORMANCE

Exercise caution during loading or off-loading procedures.

TRAFFIC CONTROL: Trucks having to back up or drivers requiring assistance when maneuvering (when operator's view is obstructed), shall be assisted by a signaler knowledgeable and instructed in traffic control procedures. The signaler shall wear a reflective vest.

BACKING UP: This procedure applies to all personnel operating or signaling company owned or contracted vehicles where backing up is required. See attachment for hand signals.

- Whenever possible, routes should be planned and vehicles should be parked so that backing up can be avoided.
- When a vehicle must be backed, the operator should do so with care.
- Operators of vehicles, machines and equipment shall be assisted by a signaler if either of the following applies:
 1. The operator's view of the intended path is obstructed
 2. A person could be endangered by the vehicle, machine or equipment or by its load.
- Vehicles equipped with audible alarm when operating in reverse shall be maintained in good working order.
- A single operator should go to the rear of his/her vehicle and ensure that all is clear before moving. Special care should be exercised when backing into or out of any garage or other building.
- When more than one employee is assigned to a vehicle, one member of the crew must act as a signaler while backing:
 - a) Wear visible PPE such as a tear away reflective safety vest or meets of the requirements of the Act.

- b) While acting as a signaler, the crewmember shall not ride on the rear of the vehicle and will stand in a location where he/she has a full view of its intended path of travel. He/she must also maintain visual contact with the operator while the vehicle is in motion.
- c) The signaler must continue his/her directions to the vehicle operator until the vehicle is brought to a complete stop.
- d) If the operator of the vehicle loses sight of the signaler while backing up, the vehicle must immediately be brought to a stop and remain stopped until visual contact with the signaler is re-established.
- Before backing a vehicle, activate the four-way flashers and sound the horn (two short blasts) as an added warning if the vehicle is not equipped with an automatic audible alarm. The horn should be sounded just prior to vehicle motion.

OFF LOADING: When off-loading or working around trucks or other large mobile machinery, all employees shall strictly adhere to the following rulings:

- Position the truck as close to the crane unloading area as possible
- Ensure the truck and crane is positioned well away from any overhead power lines.
- The truck should be situated on terrain that is as level as possible.
- Before mounting the truck/trailer, scrape off any mud from the soles of your safety footwear, to avoid slip hazards.
- Mount the truck/trailer platform in full view of the crane operator and signal person, so that the load or the crane hook does not strike you.
- When climbing up or down the truck platform, you must face the truck and maintain 3-point contact at all times with two hands or one foot, or two feet and one hand.
- Use steps or handrails if provided to mount the truck's platform. Stepping on tires or hubs provides poor footing. Secured ladder access may be required.
- Never place yourself down stream of a load.

RIGGING

GENERAL PERFORMANCE

General rigging safety includes knowledge of safe working loads, weight and size of precast member, inspection of rigging equipment, personal protective equipment, balance and stability, use of tag lines, limitations, avoiding contact with electric power lines, and inspection of lifting inserts.

- Determine the safe working load of the hoisting equipment, rigging and hardware before use and the conditions and limitations for each rigging assembly in accordance with manufacturer's instructions. Never exceed this limit.
- Check size and weight of the precast member as provided by the producer in advance of erection and rigging.
- Inspect rigging prior to use. Visually inspect for any broken wire or corrosion of the rope at the end fitting, examine all thimbles closely for wear in the crown, for evidence of throat biting into rope and for distortion or closure of the thimble (evidence of overloading). Replace and destroy any defective items.

- The load should be attached to the hoisting block by slings or other rigging devices that are adequate for the load being lifted. Never wrap the hoist line around the load for lifting purposes.
- Wear gloves when handling wire rope. Keep clothing, fingers, and feet clear from moving blocks, sheaves and running wire rope.
- Make sure all loads are properly rigged, balanced, and stable before hoisting. A stable load is one, which the centre of gravity is directly below the main hook and below the lowest point of attachment of the slings (the centre of gravity of an object is the point at which the object will balance).
- Tag lines should be used to control loads, when necessary, to prevent rotation or uncontrolled motion.
- When erecting precast concrete inside a building or in areas of limited space, check clearances and use the rigging that can both handle the loads and still allow proper clearance.
- Ensure that rigging and attachments do not contact power lines or any object.
- Inspect lifting inserts of the precast members for voids or other irregularities prior to hoisting. Document and report any discrepancies. Do not hoist the precast member until it is safe to do so.

LOAD PRECAST UNITS ON-SITE

GENERAL PERFORMANCE

Load precast units on-site by planning the load, putting in place prescribed supports and cushioning, loading sequentially onto a trailer, tying the load down, and preparing the load and the vehicle for the road and weather conditions.

- Calculate and plan the load so that it conforms to government transportation rules and regulations, with emphasis on legal size and weight limitations.
- Put in place prescribed supports, frames, blocking and cushioning to prevent in-transit damage of the concrete and the vehicle, in accordance with the Regulations for Construction Projects.
- Load precast units (new, or damaged returns) onto a trailer, using a crane, in a way that will permit their subsequent unloading in the proper sequence and orientation to minimize handling and hazards.
- Tie down the load with chains, binders, belts, etc. to stabilize the load and prevent damage to the precast and the trailer, in conformance with the Regulations for Construction Projects.
- Prepare the load and the trailer to accommodate the prevailing road and weather conditions.

UNLOAD AND STORE PRECAST UNITS

GENERAL PERFORMANCE

Unload and store precast concrete units by checking for product quality; locating, dropping and securing trailer; preparing for unloading; removing bracing and packing; hooking up units; securing remaining load; signaling for lifting, tilting and rotating; and storing the units.

- Check for product quality such as chipped edges, cracks, blemishes, stains, and edge condition, and report imperfections to the supervisor.

- Ensure trailer is located and “dropped” at the designated area and securely blocked to ensure that the trailer remains stable.
- Prepare to unload precast units by ensuring safe working conditions including safe access for workers to the trailer deck and to hook-up points.
- Remove all bracing, packing, and protective edges from the units, as required, and ensure safe return of same.
- Hook up units with the prescribed lifting equipment (such as hooks, shackles, chokers, slings, bolts, and swivel plates) under strict direction, paying particular attention to designated hook-up points and procedures.
- Secure balance of load (with chains, clamps, blocking, etc.) to the trailer or support frames to prevent overturning.
- Signal hoist operator to lift precast units from the trailer after making sure stability of the trailer is maintained and that care is exercised to prevent personal injury and damage to precast components from erection hardware and lifting devices.
- Signal the operator if it is required to tilt on the trailer, or on the ground, or to rotate units in the air, as specified by design and/or supervisor.
- Select and prepare the site storage area for precast units and/or trailers so that it allows hoisting equipment to locate and move materials safely and unobstructed.
- As required, store precast units with identification marks visible, on a well-drained, firm, level area to prevent over stressing from the effects of ground movements (such as frost heaves or sinking of backfill), and away from damaging construction activity.

INSTALL AND ALIGN PRECAST UNITS

GENERAL PERFORMANCE

Install and align precast concrete units by checking environmental conditions and materials and equipment; installing shoring, bracing and guying; pre-assembling precast sections; pre-installing erection hardware; locating trailer; checking cables, hooks and slings; placing hardware; hooking up units; guiding into final position; stabilizing units; installing temporary connections; checking alignment; and installing hardware and making permanent connections.

- Confirm that environmental conditions such as wind, icing, and electrical hazards are safe before proceeding with the work, and report hazardous conditions to the supervisor, in accordance with the Occupational Health and Safety Act and the Regulations for Construction Projects.
- Check the availability of all materials and support equipment (identified by the supervisor and required to proceed with the work) and report any shortages.
- Install shoring, bracing, and guying materials as directed by the supervisor or specified by the erection drawings and details, taking into account local conditions.
- Pre-assemble, using crow bars, wrenches, jigs, measuring and holding tools, sections of precast units by means of mechanical hardware or prepare for weldments where this procedure is required before hoisting and installation of the units, based on erection drawings.
- Pre-install erection hardware, using various types of wrenches, to units where required, prior to hoisting and installation of the units, as required by the erection drawings.
- Locate loaded trailer within operating range and lifting capacity of crane.
- Check cables, hooks and slings for defects, and bolts for thread damage, bending and correct size.

- Place shims, bearing pads, or other hardware upon which the precast unit is to be set. Do not use hands to reach under a pre-cast unit to adjust a shim or bearing pad.
- Hook up units with the prescribed lifting equipment (such as hooks, shackles, chokers, slings, bolts and swivel plates) under strict direction, paying particular attention to designated hook-up points and procedures, and in compliance with the Occupational Health and Safety Act.
- Guide units into position with guy lines and hooks, signal hoisting operator to lift and locate precast units into final position (transferred from existing benchmarks) and to bring the unit to the proper elevation and position.
- Stabilize the unit and install temporary connections (come-a-long, pony clamps, turnbuckles, tilt-up-jacks, guy lines and pre-fabricated devices), ensuring that they remain installed until the unit is in its proper position and the final connection is made.
- Check vertical and horizontal alignment of precast units and make proper adjustments using measuring devices, such as levels, rulers, squares and plumb bobs, observing specified tolerances and correcting deviations.
- Install designated hardware and make permanent connections as per detail drawing, using wrenches, hydraulic jacks, and welding equipment.

INSTALL BOLTED PRECAST CONNECTIONS

GENERAL PERFORMANCE

Install precast concrete connections by checking bolts and the depth of threaded inserts, cleaning or replacing inserts, checking clip-angle slots and holes; tightening bolted connections; and installing expansion bolts.

- Check and confirm that all bolts are of proper length, diameter and grade for the connections as indicated on approved erection drawings.
- Check the depth of threaded inserts in the unit to ensure minimum acceptable engagement for the bolt threads.
- Clean or replace inserts so that they are free of dirt, debris, ice or damaged threads.
- Check clip-angle slots and holes to make sure they agree with design drawings, for connections such as slip connections or rigid connections.
- Tighten bolted connections to the specified tolerance and torque, using appropriate torque wrench.
- Check bolt tightness following erection of a unit with slotted connections and, if required, install special steel washers to ensure that the specified tension has been developed in the bolt.
- Install expansion bolts using prescribed installation procedures and quality control specifications set out by the engineer.

MAKE WELDED PRECAST CONNECTIONS

GENERAL PERFORMANCE

Make welded precast connections by confirming availability of fire extinguisher, inspection, protecting welders, removing foreign materials from the weld area, preheating in cold, performing welding and cutting, preventing concrete cracking and metal distortion, and installing protective covers.

- Confirm availability of a fire extinguisher of required size and type and in operating condition, within reach of all burning and welding operations, as prescribed by the Occupational Health and Safety Act and Regulations for Construction Projects.
- Ensure the adequate inspection of all welding equipment including gauges, regulators, valves, hoses, insulation and electrical connections. Any defective equipment discovered during this periodic examination should be repaired or promptly replaced.
- Protect welders working close to the perimeter and around floor openings against falls, by providing perimeter guards, nets, or safety harnesses, as required by the Occupational Health and Safety Act and Regulations for Construction Projects.
- Remove loose or thick scale, slag, rust, moisture, grease, or other foreign material from surfaces to be welded, to ensure good weld penetration.
- Apply various preheating techniques, using a torch, when welding in cold temperatures to prevent spalling of the concrete adjacent to weld plates.
- Perform welding and cutting operations according to erection drawings, ensuring that the full welds are completed at all connections of the unit before temporary supports are released.
- Prevent cracking of concrete and metal distortion by using low heat and/or small-size welding rods, controlling the amount of weld metal deposited, or making long welds in intermittent stages to allow heat to dissipate.
- Install non-combustible protective covers to protect materials adjacent to the welding site (such as glass, window frames, etc.) from weld splatter and heat or smoke damage.
- Protect other workers in the area from weld flash or splatter by using a protective shield.

INSTALL DOWELLED PRECAST CONNECTIONS

GENERAL PERFORMANCE

Install doweled precast connections by selecting the required dowel, removing foreign materials; installing setting shims and grout holes, and mixing grout.

- Select the required size of dowel for the connection by reference to erection drawings.
- Remove all foreign material from the dowel pocket to achieve a good bond between the grout and the concrete.
- Install setting shims and grout holes before setting the precast units, unless access allows for post grouting.
- Mix grout as per manufacturers' and designer's specifications, making sure that its consistency will allow for the displacement of some grout when the unit is placed.

HAND AND POWER TOOLS AND EQUIPMENT

GENERAL PERFORMANCE

Select, use and maintain hand and power tools and equipment common to the trade to erect, finish and repair precast concrete.

- Select, use and maintain hand tools, such as pointing trowel, paint brush, acid brush, hammer, point chisel, bush hammer, flat chisel, hard steel brush, soft steel brush, flat trowel, pails, clamps, caulking guns, and hand stone.
 - Select, use and maintain power tools, such as grinders, bush hammers, chipping guns, power washers, masonry cutting saws, grout pumping equipment, and compressors.
 - Use safe, suitable material handling methods to transfer tools or equipment from one level to another, i.e., hand line, lifting devices, etc.
 - Do not place tools and equipment where they present a tripping hazard or can be knocked over the edge of the building or the work level.
 - Use personal protective equipment appropriate for the task being performed.
 - Clean equipment (according to manufacturers' instructions) and the worksite, leaving them in safe and reusable condition and dispose of refuse material according to the Occupational Health and Safety Act and the Regulations for Construction Projects.
1. Electric Power Operated Hand Tools
 - a) Power hand tools shall be double insulated or be properly grounded.
 - b) Make sure that the casings on double-insulated tools are not cracked or broken
 2. Fuel Powered Tools
 - a) Do not refuel gas or diesel powered tools while they are running
 - b) Do not refuel gas or diesel powered tools while welding or burning is going on in the immediate area.
 - c) Always make sure there is proper ventilation for gas or diesel powered tools if they are being used in an enclosed area.
 - d) Store gasoline or diesel fuel in approved containers only.
 3. Hand Held Concrete Saw
 - a) Check diamond cutting wheel for damage and replace as required.
 - b) Use appropriate hearing protection while operating the saw.
 - c) Unless wet cutting is used, a dust mask is necessary to protect against silica dust.
 - d) Always maintain a firm foothold. Never work from a ladder or any other insecure support.
 - e) Don't overreach or cut above shoulder height.
 - f) Hold saw firmly with both hands and cut away from the body.
 4. Lifting Jacks
 - a) Ensure that the jack has a rating sufficient to lift and sustain the load. The rated load shall be legible and permanently marked in a prominent location on the jack and shall not be exceeded. Be sure the jacking loads do not exceed the capacity of the member(s) that is supporting the jack.
 - b) After load has been raised, adequate safety blocking or shoring shall be provided. Load shall not be left supported on the jack.
 - c) Remove jack handles when not in use to prevent injury.
 - d) Inspect each jack thoroughly at regular intervals.

5. Bracing and Guying
 - a) Use braces as indicated in the manufacturer's specifications regarding load, unsupported length and inclined angle.
 - b) Install and remove shoring and bracing as shown on the approved erection or bracing drawings or as approved by a professional engineer with respect to location, size and type of bracing/guying.
 - c) Ensure guys are attached to suitable anchors or deadmen. Reinforcing steel in concrete should not be used as guy attachment.
 - d) Guys should be flagged at all locations where they cross a path or roadway.
 - e) Use of wire rope cable clips shall be in accordance with the procedures recommended by the manufacturer.
 - f) Ensure turnbuckle matches size and capacity with the guy being used. Turnbuckles with damaged threads, jamb nuts or bent frame members shall not be used.

6. Miscellaneous Tools
 - a) Hammers – strike squarely, face parallel with the surface being struck; avoid using glancing hammer blows; tools with mushroomed heads should be discarded.
 - b) Pry Bars – use the proper size for the task; keep body positioned out of the travel path if pry bar should slip; brace/position body to prevent a fall should pry bar slip or become trapped or if the load moves suddenly.
 - c) Torsion Tools – workers should be tied off or in a braced position to maintain balance when there is a danger of falling if the tool slips; inspect and replace tools such as wrenches if the jaws are sprung or are worn to the point where slippage occurs; use the proper size and length for the task.

APPLICATION OF GROUT

GENERAL PERFORMANCE

Apply grout by cleaning the surfaces to be grouted, preparing concrete surfaces, installing formwork around joints, and grouting.

- Clean all surfaces to be grouted of ice, snow, dirt, and other foreign matter, using water, brushes, and scrapers and other prescribed tools and materials.
- Prepare concrete surfaces by apply parging, priming, and bonding agents in accordance with manufacturers' specifications and the Occupational Health and Safety Act.
- Install formwork around joints when using flowable grout to avoid leakage and to resist grouting pressure.
- Apply grout with appropriate hand or power tools, using access, alignment, leveling, plumbing and forming tools and equipment selected for the specific job, and proceeding in accordance with the Occupational Health and Safety Act and Regulations for Construction Projects.
- Clean tools and equipment.

APPLICATION OF CAULKING

GENERAL PERFORMANCE

Applying caulking to pre-cast concrete joints by cleaning and preparing the surfaces to be treated, applying primer as required, preparing and applying caulking and sealant, tooling and finishing caulking, and cleaning tools and equipment.

- Clean all joints to be caulked of ice, snow, dirt and other foreign matter, using a wire brush or grinding machine, and ensure that the surface is dry.
- Apply primer, if required, taking precautions to avoid staining the outside face of the precast units, and install backer rod or other joint filler in accordance with manufacturers' specifications and the Occupational Health and Safety Act.
- Mix caulking and colouring with a drill and paddle, according to manufacturers' specifications and an approved sample, and apply to the joint using a caulking gun.
- Tool the caulking to a slightly concave shape to eliminate air pockets or voids, using tools such as margin trowels, putty knives or wooden sticks and avoiding contact with the skin, taking special precautions for different surfaces to be caulked.
- Clean tools and equipment with cleaning agent such as soap and water for latex-based caulking, or spirit solvent for oil-based caulking, according to WHMIS.

PROTECT PRECAST UNITS, HARDWARE AND JOINTS

GENERAL PERFORMANCE

Protect precast concrete units and related hardware and joint details by sequencing erection work, inspecting existing work, installing protective covers, and applying protective coatings.

- Sequence erection work according to the schedule, and in a manner that will avoid damage to any adjacent materials.
- Inspect existing work prior to erection and report any defects to the immediate supervisor.
- Install protective covers such as asbestos blankets, tarpaulins and plywood to avoid damaging existing precast, glazing, flooring, fixtures, brick, etc., in accordance with manufacturers' instructions.
- Apply protective coatings, such as rust inhibitive primer on welds and exposed steel components as per manufacturers' instructions and the Occupational Health and Safety Act.

APPENDIX

IMPLEMENTATION OF WORKING AT HEIGHTS PLAN

GENERAL PERFORMANCE

All fall hazards in the work area must be identified. Pay special attention to work areas with irregular shaped perimeters, floor openings, or locations near corners.

- all fall protection equipment must be inspected for damage, wear, and obvious defects by a competent worker before each use
- any worker required to use fall protection must be trained in its safe use and proper maintenance

Guardrail System: If it is reasonably possible, a guardrail system shall be installed where workers are exposed to fall hazards according to Regulations for Construction Projects, Sect. 26, (O.Reg.213/91).

Anchor Systems: Supports used to anchor a fall-arrest system, fall-restricting system, or travel-restraint system can be used if it meets the conditions in accordance with Regulations for Construction Projects, Sect. 26.7, (O.Reg.213/91).

Travel-Restraint Systems: Lets a worker travel just far enough to reach the edge but not far enough to fall over.

Fall-Arrest Systems: In the event of a fall, these systems must keep a worker from hitting the ground, the next level below, or any other objects below.

HOLES

All openings greater than 30 cm X 30 cm (12"x12") will have a perimeter guarding or covering. Before holes are cut on the job, proper protection for the holes must be provided to protect the workers.

Column erection through an existing deck requires that many holes be provided through the deck. These are to be covered and protected. Except for the opening being currently used to erect a column, all opening protection is to be left undisturbed. The opening being uncovered to erect a column will become part of the point of erection and will be addressed as part of the fall protection plan. This uncovering is to be done at the erection foreman's direction and will occur immediately before "feeding" the column through the opening. Once the end of the column is through the deck opening, a fall hazard will no longer exist at this location.

- Perimeter guarding and covers will be the responsibility of the General Contractor
- The contractor will be asked to sign off on a safety release for each floor, which will release The Prestressed Group and its employees from any responsibility for the safety on that floor.

FLOOR AND ROOF DECK

To provide safety standards specifically designed to cover fall protection during installation of hollowcore slabs, voided slabs, or double tees as a floor or roof deck.

- A) Placing the initial one or two precast units shall be performed using ladders (see: section on ladder safety).
- 1) A ladder is to be utilized on each side to guide these units into place. Working from the ladder will be the erector with a spotter to stabilize the ladder.
 - 2) A fall-arrest system will be used when work is performed from a ladder where a fall of 3 metres or more could occur.

B) Guardrails or other perimeter-guarding devices or methods on the erecting floor will pose problems to safe erection procedures. The perimeter of the floor and roof changes each time a new member is placed into position. It is unreasonable and virtually impossible to erect guardrails at the ever-changing leading edge of a floor or roof.

- 1) To position a member safely, it is necessary to remove all obstructions extending above the floor level near the point of erection. Such a procedure allows workers to swing a new member across the erected surface as necessary to position it properly without worrying about knocking material off of this surface.

Erection on the masonry wall requires installation of the perimeter protection where the masonry wall has to be constructed. This means the guardrail is installed then subsequently removed to continue the masonry construction. The erector will be exposed to a fall hazard for a longer period of time while installing and removing perimeter protection than while erecting the slabs.

In floor or roof deck work, as in other precast concrete erection, others are not typically on the work deck until the precast concrete erection is complete. The deck is not complete until the leveling, aligning, and grouting of the joints are done. It is normal practice to keep others off the deck until at least the next day after the installation is complete to allow the grout to harden.

- 2) There is no permanent boundary until all structural members have been placed on the floor or roof. At the leading edge, workers are operating at the temporary edge of the structure as they work to position the next member in the sequence. Compliance with the standard would require a guardrail be installed along this edge.

However, the presence of such a device would prevent a new member from being swung over the erected surface low enough to allow workers to control it safely during the positioning process. Further, these employees would have to work through the guardrail to align the new member and connect it to the structure. The guardrail would not protect an employee who must lean through it to do the necessary work; rather, it would hinder the employee to such a degree that a greater hazard is created than if the guardrail were absent.

- 3) Guardrail requirements pose a hazard at the leading edge of installed floor or roof sections by creating the possibility of employees being caught between guardrails and

suspended loads. The lack of a clear work area in which to guide the suspended load into position for placement and welding of members into the existing structure creates still further hazards.

C) Placing subsequent precast units:

- 1) The worker shall access the initial one or two units placed, and immediately proceed to install anchor device for fall protection system. The anchor clamp must be positioned in such a way that if and when the person using the safety anchor falls, the person should always be kept from hitting the ground, the next level below, or any other objects below.
- 2) Before installing anchor device inspect the precast unit to determine there is no compromise in the product, check for cracks or other signs of quality defects that would jeopardize the security of the anchor device. Is the condition of the safety anchor still suitable for use? Is the safety anchor suitable for the purpose you are using it for?
- 3) Once the anchor device is secured, the worker shall connect their lanyard to the anchor in such a way to prevent falling over any edge. Shorten lanyard if necessary.
- 4) Designated erectors, while waiting for the next floor or roof member are directed to stay a minimum of two metres from any leading edge.
- 5) Whenever possible the designated erectors will approach the incoming member at the leading edge only after it is at waist height so that the member itself provides protection against falls.
- 6) When the arriving floor or roof member is within five to ten centimeters of its final position, the designated erectors can then proceed to their position of erection at each end of the member being placed.
- 7) As subsequent precast units are placed the worker shall install another anchor and tie off to the new anchor using a second line. The worker will then remove the first line and anchor. The removed line and anchor should be kept close to the worker for subsequent use.

NOTE: AT NO TIME SHALL A WORKER PERMIT THEIR SAFETY LINE TO BE OF A LENGTH THAT WOULD ALLOW THE WORKER TO FALL OFF ANY EDGE.

D) Rescue Procedure in the event of a fall:

Free falling is the best way to possibly fall. Minimizing the time between a fall occurrence and medical attention of the worker is vitally important. Should a worker fall, the supervisor will immediately begin efforts to safely bring the employee back to the nearest ground level point. The supervisor or foreman must adhere to the following:

- ⇒ Evaluate the situation.
- ⇒ Check employee for consciousness and coherence.
- ⇒ Determine if worker can be safely hauled back up to the level from which they fell or pulled through a nearby opening, or
- ⇒ Appoint someone to retrieve a manlift, or other such equipment, to reach the area, and safely release the suspended worker.
- ⇒ If no equipment is available to release the employee, call 911 and have fire rescue assist. It is important to give clear, concise directions to the area.
- ⇒ Ensure employee is transported to the nearest hospital for medical assessment.

In the event that an employee falls or there is some other related serious incident occurring, this plan shall be reviewed to determine if additional practices, procedures, or training need to be implemented to prevent similar types of falls or incidents from occurring.

- E) If the roof area is of sufficient size to permit other workers of The Prestressed Group to access the roof, then a “CONTROL ZONE” shall be developed as follows (note: roof is used as a general term to describe a precast slab deck under construction – Sect. 207 of the Construction Regulation – O.Reg 213/91):

CONTROL ZONE means an area in which certain work may take place without the use of guardrail systems, travel restraints, personal fall arrest systems, or safety net systems, and the access to the zone is controlled.

- 1) Warning line systems shall be erected around all sides of the roof work area, not less than two metres from the edge, on all perimeter units, at each edge.
- 2) Points of access, materials handling areas, storage areas, and hoisting areas shall be connected to the work area by an access path formed by two (2) warning lines.
- 3) When the path to a point of access is not in use, a rope, wire, chair, or other barricade, equivalent in strength and height to the warning line, shall be placed across the path at the point where the path shall be offset, such that a person cannot walk directly into the work area.
- 4) Warning lines shall consist of rope, wire, or chains flagged with high-visibility material.
- 5) The rope, wire, or chain shall be rigged and supported in such a way that its lowest point (including sag) is no less than thirty-four inches from the walking/working surface, and its highest point is no more than thirty-nine inches from the walking/working surface.
- 6) The line shall be attached at each stanchion in such a way that pulling on one section of the line between the stanchions will not result in slack being taken up in the adjacent sections before the stanchion tips over.
- 7) No employee shall be allowed in the area between the roof edge and a warning line, unless the employee is performing leading edge work and is using a fall-arrest system.

- 8) The control line shall extend along the entire length of the unprotected or leading edge and shall be approximately parallel to the unprotected or leading edge.
- 9) Workers of The Prestressed Group may then work on the roof inside the CONTROL ZONE without using travel restraints, fall arrest, or safety nets. This includes grouting, drilling, patching, etc.

NOTE: IN THE AREA OUTSIDE THE CONTROL ZONE, WORKERS MUST USE A FALL-ARREST SYSTEM.

- 10) Before starting work inside the CONTROL ZONE you must make sure the contractor covers all openings and penetrations in the slabs.
- 11) Once you have completed erecting one floor of precast and have grouted it, you will ask the contractor to sign off on a safety release form for that floor. This will release you and the company of any responsibility for the safety of that floor.

THE REGULATION REQUIRES THAT ANY COMPONENT OF A FALL PROTECTION SYSTEM IS REMOVED FROM SERVICE UNTIL THE MANUFACTURER OR A QUALIFIED TESTING COMPANY HAS CERTIFIED IT FOR REUSE, in cases where:

- it has been used to stop a fall
- one or more of the components are damaged or broken
- there is any doubt about the condition of any of the components

TOTAL PRECAST CONCRETE STRUCTURES

The erection of a structure utilizing precast/prestressed concrete members involves the sequential placement of columns, beams, wall panels, and floor and roof members which are positioned by a crane in conjunction with a specialized crew and then welded, bolted and/or grouted together.

- In accordance with erection drawings, the structural frame made up of columns, walls and beams shall be installed and connected to create a stabilized support system for the floor and roof members. Structural stability of the system requires finalizing the connections of the floor and roof components prior to removing temporary guying and bracing and releasing the area to other trades.
- Employees engaged in initial connecting, point to point movement, or guying and bracing of the precast concrete frame members shall be designated by the competent person supervising the project as having received specialized training and possessing experience, skill and knowledge to work at the leading edge (designated erectors).
- Initial beam to column and/or wall connections and required point to point movements shall be made from ladders, scaffolds, mechanical work platforms, vehicle mounted elevated and rotating work platforms or similar equipment except for those documented erection tasks which, when performed in compliance with the fall protection requirements of the Occupational Health and Safety Act and the Regulations for Construction Projects create a greater hazard or are not feasible.
- The column or wall shall be adequately connected and/or braced to safely support the weight of a ladder (with an employee on it).

PRECAST CONCRETE CLADDING

Typically, precast concrete, when utilized strictly as a cladding member is attached to a concrete or structural steel frame provided by other contractors. Installation work is usually performed from finished working surfaces, with structural frame erection running well ahead of actual installation of the exterior wall components.

- Type and location (distance from edge) of the perimeter protection is reviewed at a preconstruction meeting to ensure that all precast concrete erection work can proceed safely and efficiently.
- Layout and other installation tasks (prewelding, etc.) shall not be performed without a proper personal fall arrest system if the perimeter protection on a given floor has not been installed.
- The locating of survey lines and precast concrete panel layout should not commence until floor perimeter and floor holes have been adequately protected by approved fall protection systems or with the use of proper personal fall arrest systems.
- Perimeter protection system may be removed as the cladding is being installed. Removal of perimeter protection, usually performed by the precast concrete erection crew, should be performed on a bay to bay basis, just ahead of precast erection to minimize temporarily unprotected floor edges and holes.
- Those workers receiving, positioning, and making initial connections of the precast concrete cladding shall (1) work behind perimeter protection; or (2) be tied off if they are working within 2 metres (6 ft) of unprotected perimeter.
- There is generally little need for fall protection after the perimeter cladding is installed as the cladding members replace the guardrail. However, if the perimeter is not fully protected against a fall by the cladding being at least 1 metre (39 inches) above the walking/working

surface, the workers finalizing setting and connections shall be tied off with approved fall protection devices such as body belt/harness systems, etc.

ERECTION PROCEDURE FOR MISPLACED VERTICAL REINFORCING IN MASONRY WALLS

Vertical reinforcing in masonry walls is not to interfere with the precast slab installation. Any interference could jeopardize the minimum bearing required for our precast product. If, during the course of installation, this condition is encountered, the following guidelines should be followed:

- Reinforcing rods should never be cut in order to bend it out of the way
- Bend vertical reinforcing out of the way for installation of the precast, only when it is safe to do so

If it is agreed to be unsafe or is not practical, the customer representative must be contacted to make a determination as to the appropriate corrective measures to be taken.

At all times, fall protection must be worn for work performed at an unprotected edge which is 10 feet (3m) or more above a lower level, substances, liquid tanks, water or other hazardous material.

These guidelines are put in place to ensure that the installation process will be conducted in a safe manner.

POWER LINES – SAFE WORK PROCEDURES

GENERAL PERFORMANCE

When working in the vicinity of overhead power lines the requirements of Section 106, 187, 188, and 189 of the Regulations for Construction Projects are to be met. This will apply to any vehicle including any dump truck, boom truck, crane, hoisting device, ladders, scaffolding, tools or equipment that is operated near an energized overhead electrical conductor and if it is possible for a part of the equipment or its load to encroach on the minimum distance permitted in the regulation.

- All sites shall be assessed to determine the associated risk and location of overhead wires that may pose a threat to activity common in the construction trade.
- Prior to beginning any work, field managers, supervisors or other designate at the site must determine the nominal phase-to-phase voltage rating of all overhead wires that may pose a threat to the work activity to determine the safe proximity distance specified in Section 188(2), Regulations for Construction Projects, which states:
 - No object shall be brought closer to an energized overhead electrical conductor with a nominal phase-to-phase voltage rating set out in Column 1 of the Table to this subsection than the distance specified opposite to it in Column 2.

TABLE

<u>Column 1</u>	<u>Column 2</u>
Nominal phase-to-phase voltage rating	Minimum distance
750 to 150,000 volts	3 metres
150,000 to 250,000 volts	4.5 metres
More than 250,000 volts	6 metres

O. Reg. 627/05, s. 7.

- Signal persons shall be in place at all times when working in the proximity of overhead wires warning the operator each time any part of the equipment or its load may approach the minimum distance.
- The signal person employed shall be:
 - Trained in and have knowledge of the hazards, and experienced to perform the work;
 - In full view of the operator at all times in accordance with Section 106(2) and 188(8) of the Regulations for Construction Projects;
106(2) a signaler shall be in full view of the operator of the vehicle, machine or equipment, crane or similar hoisting device, shovel, backhoe or similar excavating machine.
- **188(8)** a competent worker, designated as a signaler, shall be stationed so he or she is in full view of the operator and has a clear view of the electrical conductor and of the vehicle or equipment, and shall warn the operator each time any part of the vehicle or equipment or its load may approach the minimum distance.
 - Perform one task and one task only;
 - Communicate with all operators and shall advise that they are the designated signal person;
 - Give clear and concise instructions and signals when approaching overhead wires;
 - Ensure that the minimum distance to overhead wires is maintained at all times in accordance with Section 188(2) as set out in the Table above.
- If at any time the signal person is unsure of the requirements when working in proximity to overhead power lines, all activities must stop.

EMERGENCY ENVIRONMENT SPILL PLANNING

GENERAL

In the event of an unscheduled release or discharge of materials to the natural environment, The Prestressed Group will do everything practicable to prevent, eliminate and ameliorate adverse affects. The discharge may occur as a result of equipment failure, mishandling, or human error. The following procedures will describe our duty to respond.

PROCLAMATION

The Prestressed Group assumes a pro-active approach to all environmental issues. We encourage continuous development programs that protect human health and the environment.

- **Risk Identification/Assessment:** identification of all toxic and hazardous materials used and potential spill sources.
- **Eliminate Ignition Sources:** eliminate all ignition sources if flammable material is involved
- **Stop the Spill from Continuing:** confine spill rapidly to a small area, not allowing the material to spread. Dike, block or contain the size of the spread of liquid spill by using appropriate absorbing material (vermiculite, commercial absorbent, etc.). Attempt to prevent chemical from contaminating ground water and sewer system, if applicable. Consult MSDS for disposal procedures of absorbent material.
- **Prompt Notification:** Erection Supervisor will report all spills immediately to the General Contractor's Project Manager and/or Site Supervisor (if different from Project Manager), Project Manager and Health and Safety Coordinator of The Prestressed Group. The information to be given should include:
 1. Location of spill (within site)
 2. Substance (solid, liquid, gas)
 3. Pollutant
 4. Amount spilled
 5. Source
- **Isolation:** do not allow unauthorized personnel to enter the contaminated area.
- **SDS:** consult SDS for first aid and spills, leaks and waste disposal
- **Contact:** Emergency Personnel if area evacuation is necessary.

EMERGENCY PREPAREDNESS

FIRE EXTINGUISHERS

The Prestressed Group is committed to ensure that the inspection and maintenance of fire extinguishers is carried out and that fire extinguishers are readily available as required.

- Fire extinguishing equipment shall be protected from physical damage and from freezing.
- The fire extinguisher shall be accessible and regularly inspected for defects or deterioration at least once a month by a competent worker who shall record the date of the inspection on a tag attached to it.
- After a fire extinguisher has been used, it shall be refilled or replaced immediately.
- Every worker who may be required to use fire-extinguishing equipment shall be trained in its use.
- Fire extinguishers typically have a very short duration of discharge – approximately less than 10 seconds – therefore, be sure to aim at the base of the fire.

FIRST AID

First Aid is the emergency measure required to save lives, prevent further injury, and ease pain and discomfort until qualified medical assistance is obtained.

- The supervisor shall hold a current First Aid Certificate, and shall ensure there are sufficient workers who hold a current First Aid Certificate as required, who are authorized to take all necessary steps to ensure further medical treatment for the injured person, if required by the nature of the injury or illness.
- The supervisor will be responsible for periodic (monthly) inspections of the First Aid Kit and for prompt replenishing of necessary supplies.
- In the event that there is a need for First Aid treatment, proceed with whatever action you deem necessary, **provided it is within your level of competence.**
- Prevention is the first step in First Aid for hazardous material exposure or poisoning. Erection crewmembers will familiarize themselves with the products being used and the location of all SDS.
- Depending on the season, the erection crew will familiarize themselves via Safety Talks with vital signs of cold or heat stress, reactions to bee and wasp stings, and sunburns.
- The supervisor will familiarize the crew with the nearest hospital and/or clinic.
- If you take action in an emergency, you must follow with a report, stating the action taken and the reason for it, and forward a copy of the report to the Health and Safety Coordinator of The Prestressed Group.

INCIDENT/ACCIDENT REPORT & INVESTIGATION

Identify all immediate and basic causes of the incident/accident and make and implement the necessary recommendations so the incident/accident is not repeated.

- A report form is to be completed for any near miss, close call, or any injury that does not require medical attention.
- A report and accident investigation form or other reporting required by legislation, is to be carried out for any accident/incident which may produce a loss to people, equipment, material and environment:
 1. Fatality
 2. Critical injury/illness
 3. Lost time injury/illness
 4. Health care benefit (medical aid)
 5. Acute chronic occupational illness
 6. Near misses (incidents) with the potential for serious loss
 7. Equipment, machinery, material damage in excess of \$1,000
 8. Chemical spill/release in excess of 1,000 litres
 9. Fire/explosion
- In the event of a critical injury/fatality: the scene will be cordoned off using rope, tape, etc. The accident scene must be left undisturbed and no materials, equipment or machinery are to be removed from the area,
 - a) without authorization of the Ministry of Labour, local police, or the coroner, or
 - b) with exception for the purpose of saving life or relieving human suffering, maintaining an essential public service, or preventing unnecessary damage to equipment or other property.
- In the event of a critical injury/fatality, it is important to secure the area to prevent any further injury and contact emergency personnel. The site foreman shall be responsible for contacting the field manager or senior management who in turn will notify the Ministry of Labour, trade union, and ensure the family of the injured employee is notified. The employer shall, within forty-eight hours of the occurrence, send to a Director a written report of the circumstances of the occurrence containing such information and particulars as prescribed in the Regulations for Construction Projects Sect. 8 and 12.

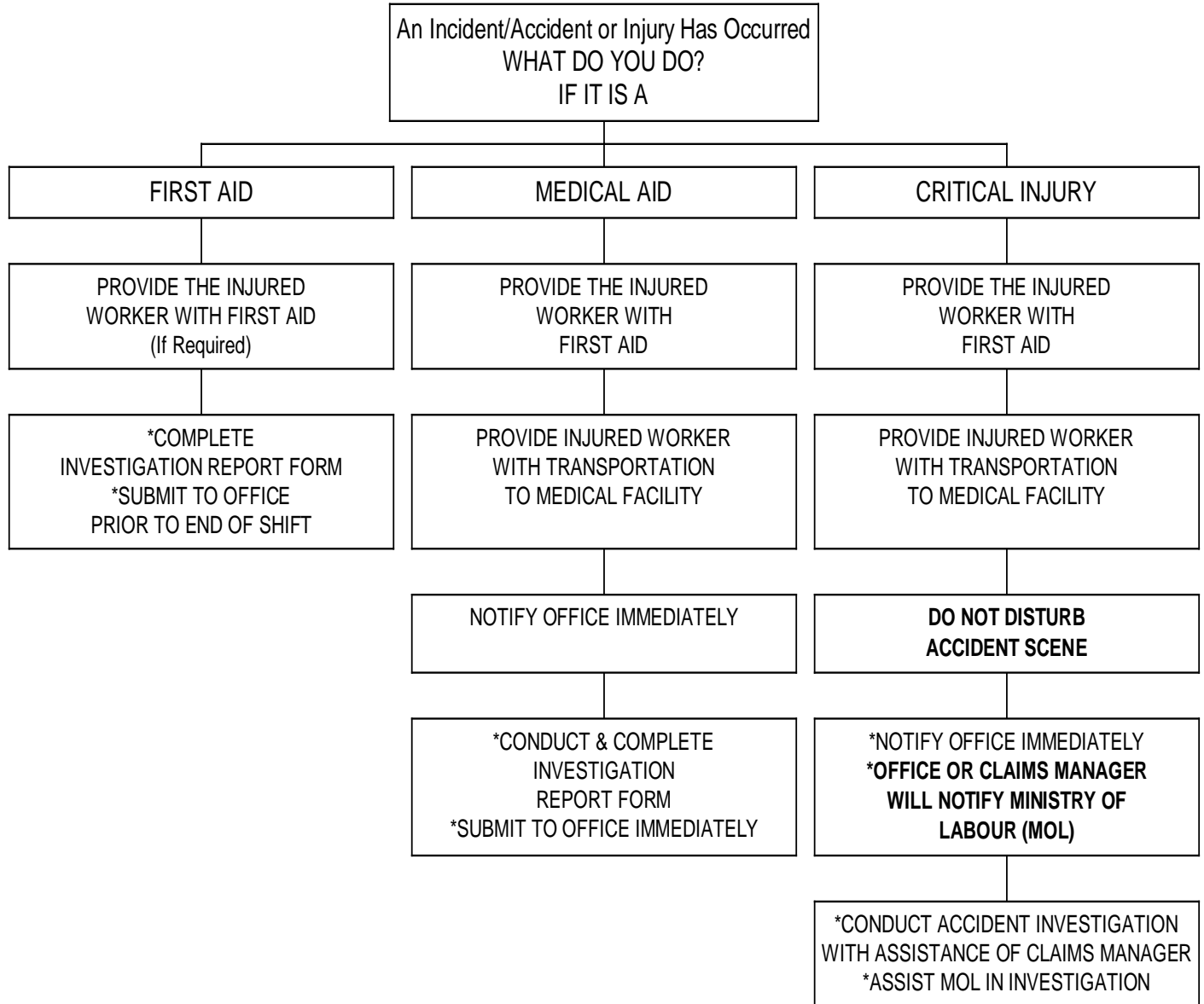
CRITICAL INJURY DEFINED

R.R.O. 1990, REG. 834

FOR THE PURPOSES OF THE ACT AND THE REGULATIONS, “CRITICALLY INJURED” MEANS AN INJURY OF A SERIOUS NATURE THAT,

- a) places life in jeopardy;
- b) produces unconsciousness;
- c) results in substantial loss of blood;
- d) involves the fracture of a leg or arm, but not a finger or toe;
- e) involves the amputation of a leg, arm, hand or foot, but not a finger or toe;
- f) consists of burns to a major portion of the body; or,
- g) causes the loss of sight in an eye.

INCIDENT/ACCIDENT REPORTING



REPORTING REQUIREMENTS TO COMPLY WITH “WSIB” AND “MOL” WILL BE COMPLETED BY THE OFFICE AND/OR WITH THE CLAIMS MANAGER:

- Workplace Safety and Insurance Board (WSIB)
- Ministry of Labour (MOL)

UNDER THE INFLUENCE OF DRUGS OR ALCOHOL

GENERAL PERFORMANCE

No employee shall illegally be in possession, use or be under the influence of illegal drugs or alcohol to the extent that job safety and/or job performance might be affected at anytime during their tour of duty, using company property, conducting company business or otherwise representing the Company. However, the employee is responsible for promptly notifying the field manager or foreman if legally prescribed medication will affect the employee's ability to perform any function of the job.

- It will be at the discretion of the field manager or foreman whether the employee should remain on site.
- The Company reserves the right to inspect in the presence of the employee (or with his/her knowledge) and/or union representative, all lockers, lunch boxes, company vehicles, or parcels brought onto or removed from the work site or company premises for intoxicants.
- Should an employee be suspected of being impaired by drugs or alcohol and therefore pose a safety risk to themselves or others around them, the following steps should be taken:
 1. Observe for evidence of impairment and the employee's inability to work safely and productively.
 2. Speak to the employee in person in the presence of a union representative, if available, to advise him/her that you believe they are impaired and are not capable of safely and effectively performing their duties. They are therefore suspended without pay for the balance of their shift.
 3. Immediately recommend that they not drive a vehicle and offer to contact a family member to pick them up or offer to contact a taxi for them. If they accept the taxi ride, provide the driver with the employee's home address.
 4. If the employee insists on driving him or herself, inform him/her that you will be contacting the Police to advise them. Note the model, colour and license number of the vehicle they are driving then provide this information to the Police.
 5. Provide a written report containing all the details for the employee file and written documentation for preparation and issuance of disciplinary action up to and including dismissal.

RIGHT TO REFUSE OR TO STOP WORK

GENERAL PERFORMANCE

This standard and its requirements are developed to reduce the potential for personal injury at the workplace; protect and uphold a worker's right to refuse work that may pose a danger; and ensure the reporting, investigating and resolution of work refusals or work stoppages comply with the statutory requirements and procedural steps outlined in OHS s. 43 & 44.

The right to refuse or to stop unsafe work is not only mandated in legislation but is also a required code of conduct with The Prestressed Group. A work refusal/stoppage, for safety reasons, is viewed by our company as a positive effort to bring to our attention an issue that could pose a serious safety threat. It allows us to collectively review the circumstances and take the appropriate action to resolve the problem.

- Workers shall promptly report any hazardous or dangerous condition to their immediate supervisor or to an available supervisor.
- Supervisors shall promptly investigate or arrange for the investigation of the report by a worker of a hazardous or dangerous condition that meets the conditions outlined below.
- Workers and supervisors are responsible, and will be held accountable for compliance with the procedural steps outlined in this policy.

This procedure applies to all managers, supervisors, employees, agents and subcontractors in our employ or under contract with The Prestressed Group.

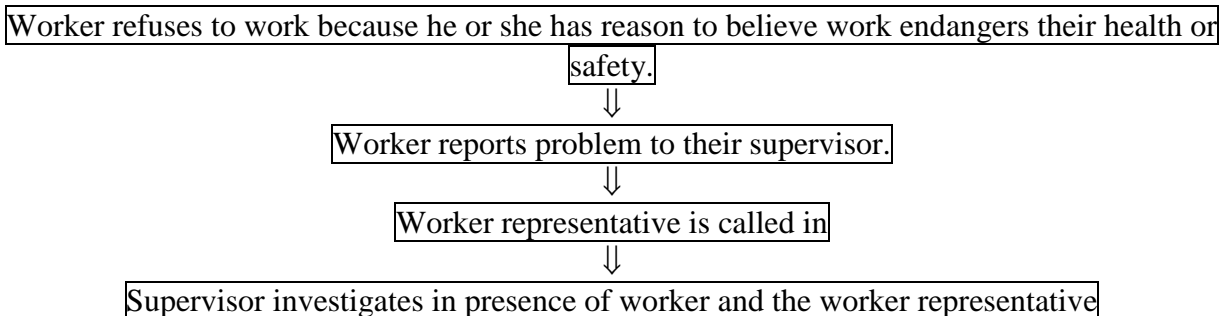
WORK REFUSAL

The Occupational Health and Safety Act of each province gives a worker the right to refuse work where he or she believes any of the following circumstances to be true:

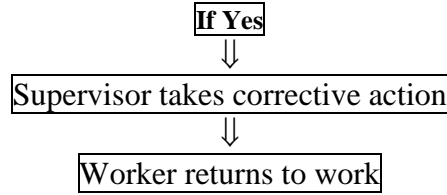
1. Any machine, equipment or tool that the worker is using or is told to use is likely to endanger himself/herself or another worker.
2. The physical condition of the workplace or workstation is likely to endanger the worker.
3. Workplace violence is likely to endanger himself or herself.
4. Any machine, equipment or tool that the worker is using, or the physical condition of the workplace, is in violation of the Act or Regulations and is likely to endanger himself/herself or another worker.

The Act sets out a specific procedure that must be followed in a work refusal. It is important that workers, employers, supervisors, and health and safety representatives understand this procedure.

STEPS FOR WORK REFUSAL PROCESS

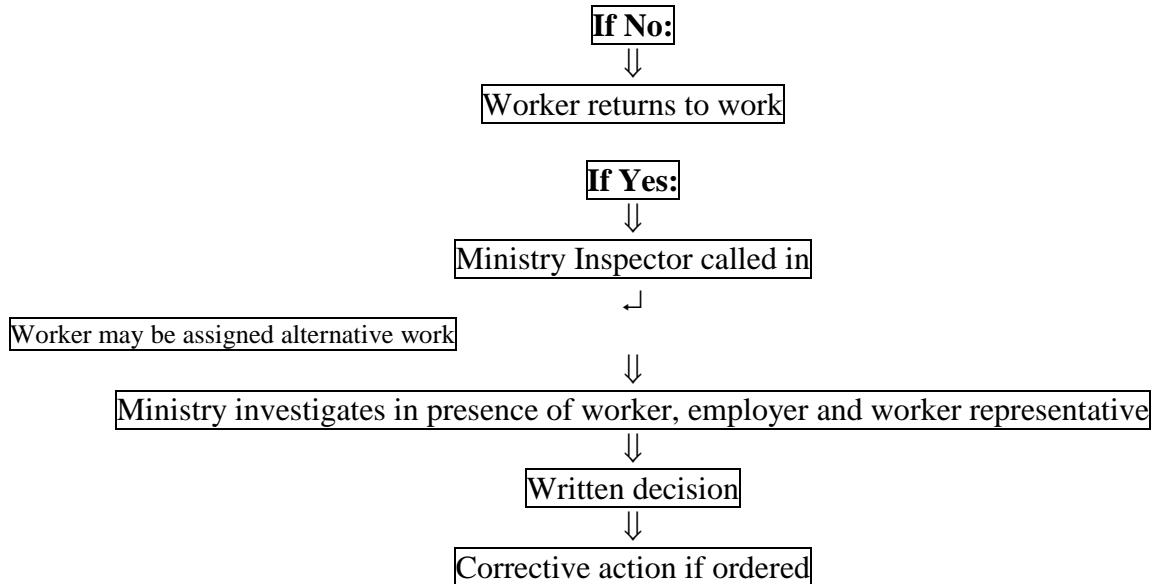


DOES SUPERVISOR AGREE THAT THE SITUATION ENDANGERS HEALTH OR SAFETY?



If No:

DOES WORKER HAVE REASONABLE GROUNDS TO BELIEVE WORK ENDANGERS HEALTH OR SAFETY?



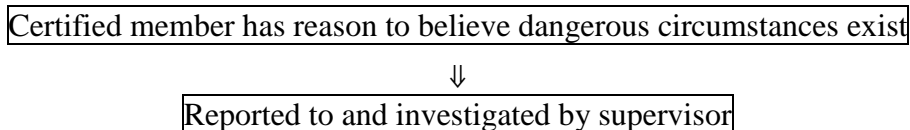
WORK STOPPAGE

The Occupational Health and Safety Act of each province gives the certified members, bilaterally, the right to stop work if they have reason to believe that *dangerous circumstances* exist and the *dangerous circumstances* meet the definition, OSHA s.44(1):

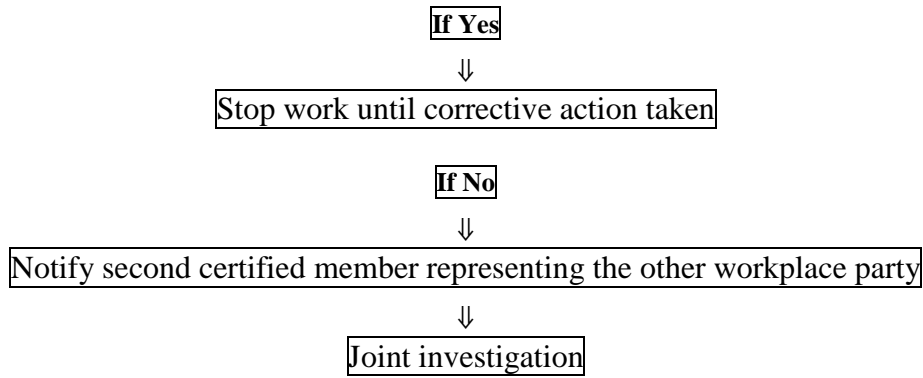
1. A provision of the Act or Regulation is being contravened;
2. The contravention poses a danger or a hazard to a worker; and
3. The danger or hazard is such that any delay in controlling it may seriously endanger a worker.

The Act sets out a specific procedure that must be followed in the reporting and investigation of *dangerous circumstances* to comply with the requirements of the Act. It is important that workers, employers, supervisor, and health and safety representative understand this procedure.

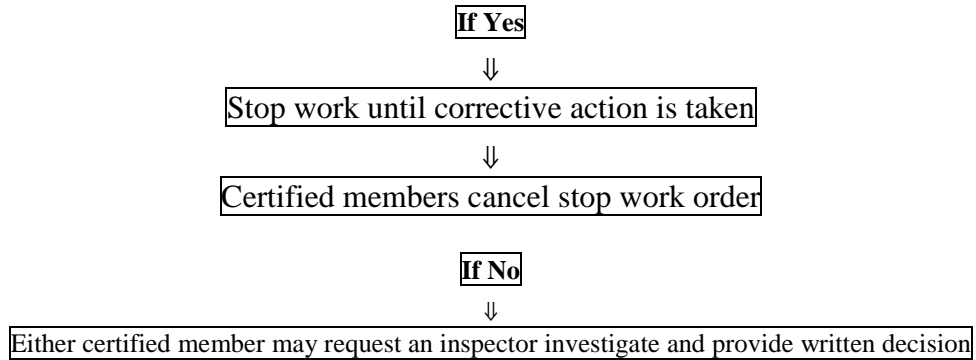
STEPS FOR CERTIFIED MEMBER WORK STOPPAGE



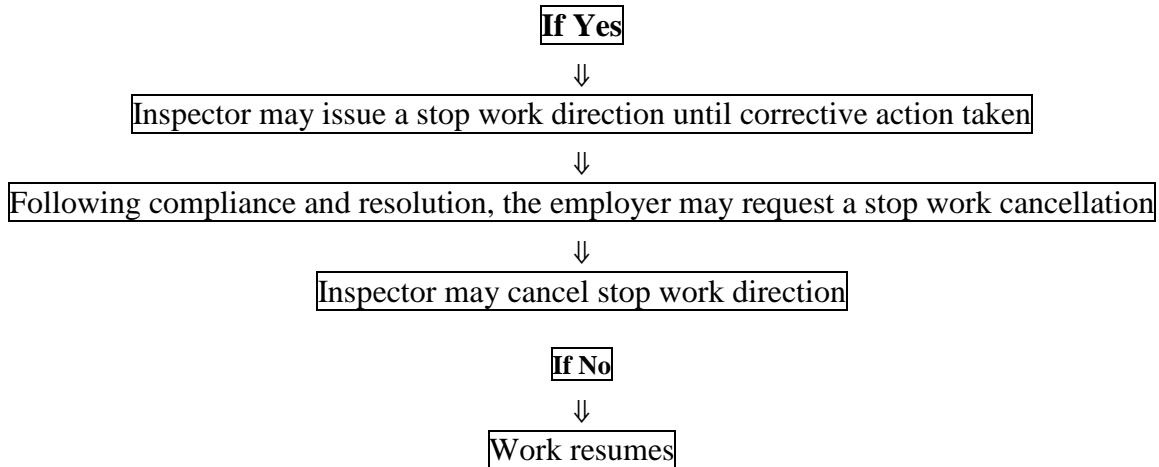
DOES SUPERVISOR AGREE THAT DANGEROUS CIRCUMSTANCES EXIST?



DO BOTH CERTIFIED MEMBERS AGREE?



DOES INSPECTOR AGREE THAT DANGEROUS CIRCUMSTANCES EXIST?



No disciplinary action or other actions will be taken against any employee who has a legitimate concern over their health and safety and exercises their right to refuse. Nothing in this policy prohibits or is meant to prohibit a worker from filing a complaint under the *alleged reprisal* found in OSHA s.50.

Copies of all investigation notes and statements will be provided to the JHSC for review and discussion. The company will track all refusals/stoppages in order to identify any trends or common issues, which need attention. Specific information on work refusals/stoppages can be found in OHS Act Part V, RIGHT TO REFUSE OR STOP WORK WHERE HEALTH OR SAFETY IN DANGER, s. 43-49.

**SITE SPECIFIC INSPECTION
FIELD ERECTION CHECKLIST**

Job Name: _____ PSI Job # _____

Job Location: _____

Date: _____ Inspection Performed By: _____

CODES: S=SATISFACTORY NS=NOT SATISFACTORY N/O=NOT OBSERVED N/A=NOT APPLICABLE

ITEM INSPECTED	S	NS	N/O	N/A	<u>Action Required/Comment</u>
TRANSPORTATION & UNLOADING					
• Site inspected before erection & delivery of equipment					
• Latest revision of drawings available at job site					
• Co-ordinate truck and crane access with GC/CM					
• Visual inspection of units on trailer prior to unloading					
• Notify PM of defect and irregular pieces					
• Workers stand clear during unloading and moving					
• Units remain under control during hoisting and placement					
FIELD CONSIDERATIONS FOR CONNECTIONS					
• No damage when adjustments made to move units					
• Connections installed exactly as shown on the drawings					
• Weld information obtained if not shown on the drawings					
• All welders have valid certificates					
• Completion of all welds checked					
• Material adjacent to weld are protected from splatter					
• Precast members aligned and level prior to grouting					

ITEM INSPECTED	S	NS	N/O	N/A	Action Required/Comment
INSTALLATION					
• Final review of hoisting equipment					
• Erection sequence plan on job site					
• Units stable and safely in position before unhooking					
• Bearing pads properly placed and position monitored as per erection drawings					
• Precast units erected at locations shown within tolerances					
• Written permission received before cutting openings or any plank					
• Supporting structure dimension checked, if lack of bearing					
• Bearing surfaces clean, smooth, level, and accurate					
• Each unit has at least the minimum required bearing					
• Grout key cleaned of debris before grouting					
• All shear keys between units properly filled with specified grout					
• Clean grout from ceiling joints or floor below					
• All units are level for grouting to remove potential camber					
• Precast unit quality in general					
SAFETY					
Site Access					
• Clean, level ground					
• Adequate ramps					
• Adequate stairs					
• Adequate ladders					
• Other _____					
Traffic Control / Public Way					
• Entrance to project site clearly marked					
• Meets minimum height and width requirements					
• Trained traffic controllers where required					
• Properly located					
• Properly dressed (including vest)					
• Identify overhead power lines					
• Back up signal person					
• Other _____					

ITEM INSPECTED	S	NS	N/O	N/A	Action Required/Comment
Housekeeping					
• Clear walkways					
• Clear work area					
• Clear access and landing					
• Other _____					
Personal Protective Equipment					
• Head protection					
• Foot protection					
• Eye protection					
• Hearing protection					
• Clothing (vests)					
• Welding hoods					
• Respiratory protection					
• Fall protection					
• Other _____					
Ladders					
• Secured					
• Proper angle (extension)					
• Proper size and type					
• Safe, usable condition					
• Properly used					
• Proper hand rails and landings where required					
• Other _____					
Guardrails and Warning Lines					
• Located where required					
• Properly constructed					
• Adequately secured					
• Other _____					
Power Hand Tools and Equipment					
• General condition					
• Proper guards, cords, and PPE					
• Use of defective tags					
• Other _____					
Temporary Power Supplies					
• Properly identified					
• Overhead lines flagged and secured					
• Surface cables adequately buried or protected					
• Cords placed to minimize tripping hazards					
• Cords in good condition and not frayed					
• Other _____					

ITEM INSPECTED	S	NS	N/O	N/A	Action Required/Comment
Extension Cords					
• General condition of casings and connections					
• GFI's used where required					
• Other _____					
Cranes, Hoists & Lifting Devices					
• Safe set up of equipment					
• Maintenance and pre-start inspection records					
• Competent operator					
• Slings & wire ropes have capacity tags attached					
• Safety clips on all hooks					
• Proper use of tag lines					
• Competent signal person where required					
• Product not erected or strung over other work areas					
• Other _____					
Welding					
• Rods and cylinders properly labeled					
• Properly secured ground cables where applicable					
• Proper eye protection worn					
• Proper screens and exhaust where required					
• Cylinders upright and secure					
• Caps on cylinders not in use					
• Permit on site for each torch					
• Other _____					
Work Platforms					
• All electrical and mechanical devices in good working condition					
• Load limits specified by the manufacturer is not exceeded					
• Approved safety harness with the lanyard attached to the platform and workers' mid-back area					
• Competent operator					
• Maintenance & pre-start inspection record					
• Other _____					

ITEM INSPECTED	S	NS	N/O	N/A	Action Required/Comment
Work Over / Around Water					
• Proper use of harness and lifeline where required					
• Proper wear / use of worker flotation devices					
• Second person in attendance					
• Boat, life buoy and line readily available					
• Other _____					
RECORDS					
• Daily project erection report at job site					
• Safety policy manual at job site					
• Documented daily/weekly tool box safety meetings					
• Valid welders' certificates at site					
• Valid proof of Fall Protection training at site					
• Completed erection field reports					
• Injury/hazard reports available					
• W.H.M.I.S. (MSDS) available at job site					
• Fall Protection Plan					
• First Aid Kit & Treatment Record					

HAZARD RISK ANALYSIS (Safe Work Plan)

<u>ACTIVITY</u>	<u>POTENTIAL HAZARD</u>	<u>COUNTER MEASURE</u>	<u>IMPLEMENTATION</u>
Product Delivery	Backing over / Hitting Someone	Utilizing signalman / high visibility vest Keep area clear	Foreman / Truck driver Foreman / Truck driver
Unloading Product	Concrete slab falling	ensure proper unloading/hoisting procedures	Foreman / Crane operator
Hoisting Product	Concrete slab falling	check all cables prior to hookup Sling concrete slab properly Never stand under concrete slab Radio contact with crane operator Hand signals - training	Foreman / Crane operator lifting crew Erection crew Foreman / Crane operator Erection Crew
Crane Operation	Outrigger not extending Crane failure Machine leaks	Repair outrigger Check log books Circle check prior to job start Enforce weight control	Crane operator / foreman Crane operator / foreman Crane operator Crane operator / foreman
Installation of Product	Tripping Equipment / tools falling	General housekeeping throughout the day keep tools away from leading edge	Entire erection crew Entire erection crew
	Ripped ends falling	Perform cuts on ground If necessary to cut while elevated – - remain away from leading edge	Saw operator Saw operator
	Pinch points	Tag lines Keep hands out from between slabs	Lifting crew / erectors Erection crew
	Falling – injury/death	Training on PPE Wearing PPE – wear proper fall arrest Installation of guardrails First piece tie-off using ladders/manlift Tie-off using slab grab	Entire erection crew Entire erection crew Erection crew / Contractor Erection crew Erection crew

HAZARD RISK ANALYSIS (Safe Work Plan)

<u>ACTIVITY</u>	<u>POTENTIAL HAZARD</u>	<u>COUNTER MEASURE</u>	<u>IMPLEMENTATION</u>
Sub-trades in area	Injury	Enforcing safety procedures Toolbox talks	Field Manager / Foreman Field Manager/Erection crew
Crane location	Backing over / hitting someone	Utilizing signalman Keep area clear	Foreman / Crane operator Foreman / Crane operator
Grout delivery	Spills Excess grout	Follow spill contingency plan Proper disposal methods	Field Manager / Foreman Erection crew
Cutting of product	Eye injury Respirable particulate	Wear proper PPE Wear proper PPE	Saw operator Saw operator
Refueling of saw	Spill	Refuel in proper area only	Erection crew

ATTACHMENT



Headquarters:
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 Windsor, ON
 N9A 6J3
 Tel. (519) 737-1216
 Fax. (519) 737-6464

EMPLOYEE AGREEMENT AND ACKNOWLEDGEMENT

I, _____, HEREBY ACKNOWLEDGE RECEIPT OF THE COMPANY'S **GUIDELINES FOR SAFETY MANAGEMENT AT ALL PRESTRESSED SYSTEMS INCORPORATED PROJECT SITES** AND RELATED **MATERIAL SAFETY DATA SHEETS**. I HAVE TAKEN ADEQUATE TIME TO READ AND FAMILIARIZE MYSELF WITH EACH AND EVERY SECTION. I UNDERSTAND THAT THE COMPANY MAY CHANGE ANY SECTION AT ITS DISCRETION, AND I WILL BE INFORMED OF ANY CHANGE BY MEANS OF A POSTING OR BY WRITTEN MEMORANDUM. I UNDERSTAND IT IS MY RESPONSIBILITY TO DO THE FOLLOWING:

- 1) REVIEW INFORMATION ON A REGULAR BASIS;
- 2) UPDATE THE INFORMATION WITH ANY CHANGES COMMUNICATED TO ME;
- 3) COMPLY WITH ALL SECTIONS AS OUTLINED AND UPDATED;
- 4) ALERT COMPANY MANAGEMENT OF ANY SITUATION WHERE OTHER EMPLOYEES MAY BE VIOLATING ANY ONE THE SECTIONS AND ITS UPDATES

DATED THIS _____ DAY OF _____ 20____.

 WITNESS

 EMPLOYEE SIGNATURE