## Revision Table

<table>
<thead>
<tr>
<th>Version</th>
<th>Approval Date</th>
<th>Release Date</th>
<th>Description</th>
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<tbody>
<tr>
<td>1.0</td>
<td>August 2011</td>
<td>August 2011</td>
<td>Created and released</td>
</tr>
<tr>
<td>2.0</td>
<td>January 18, 2012</td>
<td>January 18, 2012</td>
<td>Updated transmission line maps and substation exception</td>
</tr>
<tr>
<td>4.0</td>
<td>March 2012</td>
<td>March 2012</td>
<td>Changes to contractor acknowledgement</td>
</tr>
<tr>
<td>5.0</td>
<td>March 20, 2015</td>
<td>March 2015</td>
<td>Updated: see Summary of Changes Table</td>
</tr>
<tr>
<td>6.0</td>
<td>January 27, 2017</td>
<td>March 1, 2017</td>
<td>Updated: see Summary of Changes Table</td>
</tr>
<tr>
<td>7.0</td>
<td>August 30, 2018</td>
<td>September 10, 2018</td>
<td>Updated: see Summary of Changes Table</td>
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# Summary of Changes from Version 6.0 to 7.0

<table>
<thead>
<tr>
<th>Section</th>
<th>Topic</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.1</td>
<td>AltaLink’s Health and Safety Policy</td>
<td>Added in the AltaLink Health and Safety Policy</td>
</tr>
<tr>
<td>3.1</td>
<td>Incident Categories and Classifications</td>
<td>Updated Table 1 to reflect changes to descriptions of Class 1 Hazards, Class 1 near miss, Class 2 Significant Near Miss, Environment Class 1 and Environment Class 2 incidents.</td>
</tr>
<tr>
<td>3.2</td>
<td>Reporting and Investigating</td>
<td>Updated table. 48 hour call, now 24 hour call</td>
</tr>
<tr>
<td>3.2.2</td>
<td>Class 2 Near Misses and Incidents Report Information Requirements</td>
<td>Conference call in 24 hours changed from 48 hour call.</td>
</tr>
<tr>
<td>4.2</td>
<td>Safety Incident and Significant Near Miss</td>
<td>Updated reporting to a government body</td>
</tr>
<tr>
<td>4.3</td>
<td>Regulatory Reportable Environmental Incident</td>
<td>Updated Reporting to a government body</td>
</tr>
<tr>
<td>5</td>
<td>Health and Safety Statistical Reporting</td>
<td>All information must now be submitted prior to the fifth working day of the month.</td>
</tr>
<tr>
<td>8.3</td>
<td>UV and IR Protection Eyewear</td>
<td>Removed reference to Uvex - SCT Gray</td>
</tr>
<tr>
<td>9.3</td>
<td>Use of Conductor Cart</td>
<td>Changed the minimum size of bundled conductor that can be used with a conductor cart is 397.5 MCM ACSR 26/7. (used to be Partridge 266.8)</td>
</tr>
<tr>
<td>10.2</td>
<td>Human Performance Flagging Methods</td>
<td>Section added.</td>
</tr>
<tr>
<td>10.6.1</td>
<td>Excavations and Trenching within a Substation</td>
<td>Added in information about ALS-1405</td>
</tr>
<tr>
<td>10.7</td>
<td>Equipment accessing and egressing</td>
<td>Section added.</td>
</tr>
<tr>
<td>10.11</td>
<td>Minimum Approach Distances and updates to tables</td>
<td>Table 11, was incorrectly labelled and is now AltaLink Modified Limit of Approach For Trained Substation Workers, Non-utility Work Observers.</td>
</tr>
<tr>
<td>10.12</td>
<td>Low Voltage Safety Standard</td>
<td>Added information about low voltage work requirements and added Low Voltage standard to the appendix list.</td>
</tr>
<tr>
<td>10.22</td>
<td>Fire Protection and Fire Fighting Equipment</td>
<td>Updated as per the Alberta <em>Forest and Prairie Protection Act</em> and associated regulations and included requirements to develop and implement fire prevention plans.</td>
</tr>
<tr>
<td>Section 10.23</td>
<td>Asbestos</td>
<td>Updated with a statement that contractor must follow Alberta Asbestos Abatement Manual</td>
</tr>
<tr>
<td>Section</td>
<td>Description</td>
<td>Changes</td>
</tr>
<tr>
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</tr>
<tr>
<td>10.25</td>
<td>Off-road vehicles</td>
<td>Added in the need to have a program to safely operate off-road vehicles</td>
</tr>
<tr>
<td>10.26</td>
<td>Power Mobile Equipment</td>
<td>Added in the need to have a program in place for the safe operation of powered mobile equipment.</td>
</tr>
<tr>
<td>10.27</td>
<td>HVDC Converter stations Auxiliary Systems</td>
<td>Section Added</td>
</tr>
<tr>
<td>14</td>
<td>Contractor Environmental Expectations</td>
<td>Renamed Contractor Environmental Requirements.</td>
</tr>
<tr>
<td>14.7</td>
<td>Records</td>
<td>New section, describes requirements and process for contractors to provide records to AltaLink.</td>
</tr>
<tr>
<td>14.8</td>
<td>Environmental Inspections</td>
<td>New section.</td>
</tr>
<tr>
<td>14.9</td>
<td>Environmental Standards and Procedures</td>
<td>Revised section to provide a detailed listing of environmental standards, procedures and forms according to environmental aspect/topic area. Removed references obsolete documents:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Mat Installation Standard (AL-ENV-5005)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Transmission Line Project Access and Workspace Standard for Working in Wet Weather and Other Sensitive Conditions (AL-ENV5006)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Injured Wildlife Handling and Capture Guidelines</td>
</tr>
<tr>
<td>15.0</td>
<td>References</td>
<td>Added:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Work in and Around Water Standard (AL-ENV-6003)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Work in and Around Water Procedure (AL-ENV-6004)</td>
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<tr>
<td></td>
<td></td>
<td>• Wildlife Management Standard (AL-ENV-6005)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Wildlife Management Procedure (AL-ENV-6006)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Temporary Access Standard (AL-ENV-6007)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Temporary Access Procedure (AL-ENV-6008) (for reference)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Waste Management Standard (AL-ENV-6009)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Waste Management Procedure (AL-ENV-6010) (for reference)</td>
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<tr>
<td></td>
<td></td>
<td>• Waste and Recyclables Management Plan (AL-ENV-6009F1)</td>
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<td></td>
<td></td>
<td>• Contaminated Soil Handling Standard (AL-ENV-6011)</td>
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<tr>
<td></td>
<td></td>
<td>• Contaminated Soil Handling Procedure (AL-ENV-6012) (for reference)</td>
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<td></td>
<td></td>
<td>• Reclamation Standard (AL-ENV-6013)</td>
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<tr>
<td></td>
<td></td>
<td>• Post-construction Reclamation Procedure (AL-ENV-6014)</td>
</tr>
<tr>
<td>15</td>
<td>Definitions</td>
<td>Revised definition of near miss to and added definitions for non-conformance, non-compliance and qualified environmental professional.</td>
</tr>
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<tr>
<td>Appendix 1</td>
<td>AltaLink Environment Release Reporting Requirements</td>
<td>Updated table to align with revised release reporting requirements.</td>
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1 INTRODUCTION

These specifications and requirements are to be effectively integrated into contractors’ safety and environment management system and plans. Where a project has identified specific requirements, both are applicable and the most stringent apply.

Contractors must actively promote safe working performance on the part of their employees and personnel and must implement and participate in activities to provide safe working environments.

The requirements are not intended to be an all-inclusive or definitive set of rules to meet all situations; however, they are the minimum acceptable levels of performance all contractors must adhere to. Contractors must ensure their subcontractors receives and also adheres to these specifications and requirements as a minimum level of performance. Where there is conflict between regulations, codes, standards, best practices or AltaLink requirements, the most stringent shall apply.

The contractor, for the purpose of this document, unless otherwise specified, refers to both contractors and sub-contractors.

1.1 Distribution of Information

AltaLink has a website available to contractors that contains the specifications and requirements for contractors and the various AltaLink standards that must be followed. The site also contains internal AltaLink standards, which contractors can use as reference documents to develop their own standards.

All safety and environment documents that are referenced in this document can be downloaded from the Contractor Safety website. In section 15 there is a table listing all safety and environment documents that are referenced in this document.

AltaLink’s safety initiatives include distributing safety bulletins and incident alerts for any class 2 and 3 incidents that have occurred on our sites. These bulletins and alerts should be reviewed so workers are aware of safe work practices and informed of incidents so discussions can take place to prevent similar incidents from recurring. Contractors are responsible for forwarding these safety bulletins and incident alerts to their sub-contractors who are working on AltaLink sites. These bulletins and alerts are also found on the contractor website.

To obtain access to the Contractor Safety website, send a request to healthandsafetyadministrator@altalink.ca.

2 CONTRACTOR REQUIREMENTS

2.1 AltaLink’s Health and Safety Policy

Contractors are expected to comply with AltaLink’s Health and Safety Policy (ALS-1081). This policy establishes the values and principles that guide AltaLink’s commitment to their employees, their contractors, customers and the public. All contractors need to be knowledgeable about the policy and be responsible and accountable for understanding and incorporating health and safety requirements.
into their daily work activities with the obligation to meet or surpass all legislation, regulations and other applicable requirements. The policy is available on the Contractor Safety Site.

### 2.2 Acts, Regulations, Laws and Codes

Contractors must at all times during the performance and execution of the services abide by and be responsible for meeting or exceeding all applicable federal, provincial and local laws or regulations.

Any act, regulation or safety code exemption that has been applied for and/or granted to any contractor performing work must inform AltaLink and submit all relevant information for review and approval by AltaLink for their work sites.

### 2.3 ISNetworld

For those contractors who are associated with ISNetworld, AltaLink, as the owner, has the capacity to access contractor information through ISNetworld.

For those contractors who are associated with ISNetworld, it is AltaLink’s expectation that contractors maintain information to ensure their grade is current and ensure the following are updated:

- Insurance requirements
- Worker compensation requirements
- Performance statistics
- Health and safety management program

### 2.4 Alcohol, Drugs and Substance Abuse

Contractors must have an alcohol and drug policy in place and effectively implemented for workers under their employment while performing AltaLink work. Refer to AltaLink safety standard:

- ALS-2026: Alcohol, Drugs and Substance Abuse – A Contractor Requirement

### 2.5 Life Saving Rules

The Life Saving Rules are to reinforce the importance of following the controls that are put in place for our most common critical hazards. Deviation from these controls for any reason could result in very serious injury or worse.

These rules must be followed by all individuals performing work for AltaLink and/or on an AltaLink worksite for any reason.

Non-compliance with the Life Saving Rules, pending investigation outcome, may result in disciplinary action up to and including permanent removal from site.
Table 1: Life Saving Rules

<table>
<thead>
<tr>
<th>Focus Area</th>
<th>Rule</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Permission to Work</strong></td>
<td>Before proceeding to perform work, you must first receive permission to work from the proper authority controlling the work site.</td>
</tr>
<tr>
<td><strong>Isolation Points</strong></td>
<td>You must not remove or modify any safe isolation points without authorization.</td>
</tr>
<tr>
<td><strong>Safe Work Planning and Hazard Assessment</strong></td>
<td>Prior to starting work, and when the work condition change, you must conduct a hazard assessment and have a safe work plan.</td>
</tr>
<tr>
<td><strong>Working at Heights</strong></td>
<td>When working at heights of 3 metres and above, you must use fall protection.</td>
</tr>
<tr>
<td><strong>Limits of Approach</strong></td>
<td>When required to work around energized equipment, you must observe and maintain your limits of approach distances.</td>
</tr>
<tr>
<td><strong>Grounding</strong></td>
<td>When grounding is required, you must have and follow a documented grounding plan to ensure the worksite is safely grounded and bonded.</td>
</tr>
<tr>
<td><strong>Mechanical Lifting Devices</strong></td>
<td>When using mechanical lifting devices, you must ensure the equipment is certified, you are trained to operate it, and the rigging is appropriate for the load.</td>
</tr>
</tbody>
</table>

### 2.6 Obligation to Refuse Unsafe Work

AltaLink obligates all personnel working on a work site to not:

- Carry out any work if, on reasonable and probable grounds, the worker believes there exists an imminent danger to the health or safety of that worker.
- Carry out any work if, on reasonable and probable grounds, the worker believes that it will cause to exist an imminent danger to the health or safety of that worker or another worker present at the work site.
- Operate any tool, appliance or equipment if, on reasonable and probable grounds, the worker believes that it will cause to exist an imminent danger to the health or safety of that worker or another worker present at the work site.
- Perform any task he or she is not trained to perform.

### 2.7 Respect in the Workplace

AltaLink is committed to providing a work environment in which all individuals are treated with respect and dignity. Every person has the right to work in an environment that is safe, healthy and free from harassment, violence and discriminatory practices.

This applies to all AltaLink employees and to individuals from outside the company that have interactions with AltaLink employees, such as, but not limited to, contractors, suppliers, consultants, clients and business partners. If a complaint is received against an individual from outside the company, AltaLink will contact his or her employer immediately.
2.8 Smoking

Contractors must comply with the Tobacco Reduction Act. As a minimum contractors must:

- Designate a smoking area
- Provide receptacles
- Post signage

2.9 Workplace Hazardous Materials Information System

Contractors must meet or exceed the requirements of Part 29 of the *Alberta Occupational Health and Safety Act, Regulation and Code* for any hazardous materials. If a product is used, stored, handled on a worksite, the prime contractor or if there is no prime contractor, the contractor responsible for that work site must ensure that:

- The controlled product is labelled.
- The most current material safety data sheet (MSDS) is readily available to the workers on site.
- The worker who works with or is in proximity to the controlled product receives training with respect to the controlled product.

2.10 Working Alone

Contractors shall ensure a program is in place for effective communication with workers who are working alone, both during normal and unexpected work situations, as outlined in Part 28 of the *Alberta Occupational Health and Safety Act, Regulation and Code*. This would include workers required to travel alone to remote locations or where there is no routine interaction with other people. This communication system can consist of radio communication, landline or cellular communication or some other effective means of electronic communication that includes regular contact with the worker at appropriate intervals. The contractor shall ensure a hazard assessment is performed and written safe work procedures are established prior to any situation where a worker will be working alone.

2.11 Resumes of Key Project Personnel

Upon request, AltaLink may require a contractor to submit resumes of the persons proposed to occupy leadership positions within the organization. A definition of reporting relationships of corporate individuals and project assignees may also be required, where applicable.

2.12 Contractor Designated Health and Safety Professional(s)

- AltaLink believes that contractor leadership is accountable and responsible for managing the health and safety aspects of the work and for the work performed by the crews.
- Work leaders/supervisors/persons-in-charge are accountable for the work and are responsible for the health and safety performance of all personnel while in the areas of control.
- The following information specifies when a health and safety professional is required on a project, as a minimum, when on a per shift basis there is a total of:
• **1 to 10 Contractor** employees and/or subcontracted workers on site – the contractor’s highest level of authority on site must be responsible for all health and safety activities and duties. Every two weeks, a designated member of management is to complete a safety inspection on each crew.

• **11 to 25 Contractor** employees and/or subcontracted workers on site – the contractor’s highest level of authority on site must be responsible for all health and safety activities and duties with the assistance of a part-time designated health and safety professional who must attend the project site at least weekly and spend a minimum of four hours on site per visit.

• **26 to 100 Contractor** employees and/or subcontracted workers on site – the contractor’s highest level of authority on site must be responsible for all health and safety activities and duties with the assistance of a full-time designated health and safety professional.

• **101 to 200 Contractor** employees and/or subcontracted workers on site – the contractor’s highest level of authority on site must be responsible for all health and safety activities and duties with the assistance of two full-time designated health and safety professional.

• As each additional century mark is reached an additional full time health and safety professional is required.

• AltaLink, while acting in a reasonable manner, reserves the right to ask the contractor to remove and replace the health and safety professional(s).

• Health and safety professionals shall have relevant certification and training and have successfully completed any of the following:
  - Occupational Health Safety Certificate
  - Canadian Registered Safety Professional
  - National Construction Safety Officer
  - Others as reviewed and agreed to by AltaLink.

### 2.13 Leadership

Contractors must ensure that site leadership is trained and is competent to perform their roles. Knowledge and abilities that leadership must have include, but are not limited to, the following:

- Knowledge of the laws and regulations applicable to the work to be performed.
- Knowledge of and expertise in the applicable safe work practices.
- Knowledge of hazard identification and controls related to the work to be performed.
- Ability to respond to work site emergencies.
- Knowledge of the duties and responsibilities of all workers supervised.
- Ability to delegate duties to qualified individuals when appropriate.
2.14 Training

Contractors must institute a site-specific orientation that incorporates AltaLink materials as specified.

Contractors must ensure all workers are trained in the specific aspects of the work they will perform during all phases of the project, and they are made fully aware of the hazards and the controls to be used for those hazards.

Contractors must ensure that all material for training, written rules and procedures and work site signs/instructions, etc. are in languages that match all workers’ language(s) for effective comprehension. If providing all materials and signs, etc. in a language that is minimally used and is deemed impractical to accomplish, individual workers and/or work crews must be supplied with an interpreter that will enable workers to communicate effectively.

Refer to AltaLink safety standards for additional information regarding training while on an AltaLink operated site.

- ALS-1717: Safety Certification Standard
- ALS-1942: Process for Obtaining Switching, GOI and Grounding Certifications

2.15 Acceptance of Prime Contractor

Where AltaLink assigns and the contractor accepts the role of prime contractor, ALS-2012: Prime Contractor Standard must be followed. All aspects of this specification are inclusive in the role of prime contractor.

3 INCIDENT MANAGEMENT

Contractors must report to AltaLink all incidents that occur when they are working on AltaLink projects. This requires contractors to have a documented incident management system in place for reporting, notifying, investigating and analyzing all incidents.

Contractors must review incident findings, make recommendations, and develop action plans to prevent similar incidents.

3.1 Incident Categories and Classifications

Contractors may have their own classification system for the purpose of reporting near misses and incidents. When reporting to AltaLink, the AltaLink classification system will be followed.

Incidents may be categorized as:

- Hazards
- Near misses
- Injury/Illness
- Environment
- Power loss
• Security/reputation
• Asset damage

When near miss incidents happen, no harm, injury, illness or damage occurred; however, the situation was such that there was potential for a more serious outcome. Near misses are classified as either class 1 or 2.

The other categories (injury/illness, environment, power loss, security/reputation and asset damage) are classified as class 1, 2 or 3 depending on actual outcome and/or potential outcome. The most significant outcome across all categories shall be used to classify the incident.

An incident may have multiple impacts or the potential for impact, such as an injury, asset damage and environmental. In these cases the incident will be classified according to the most serious outcome and/or potential outcome.

Table 2 shall be used for guidance when establishing the severity of the actual outcome and/or potential outcome.

Table 2: Categories and Classifications

<table>
<thead>
<tr>
<th>Hazards</th>
<th>Examples:</th>
</tr>
</thead>
</table>
| Class 1 | • Poor housekeeping.  
          | • Missing security tags or keys.  
          | • Doors/ gates/ padlocks left unlocked or open.  
          | • Slightly worn components on a vehicle or equipment.  
          | • External hazards or damage to perimeter fence.  
          | • Bonds or grounds are damaged prior to entering the site.  
          | • Visual evidence of release of electrical insulating oil from in-service equipment as a result of normal equipment operation of an estimated volume of <200L.  
          | • Wildlife interactions that do not result in injury or mortality but require mitigation or other corrective actions. |

<table>
<thead>
<tr>
<th>Health and Safety</th>
<th>Examples:</th>
</tr>
</thead>
</table>
| Class 1 Near Miss | • Non treatment injuries.  
                   | • Slip or trip but didn’t fall. |
| Class 2 Significant Near Miss | Examples: |
|                   | • Potential for a significant injury.  
                   | • Open excavation that is not barricaded or signed.  
                   | • Mobilizing equipment near an unidentified power line.  
                   | • Working at heights without wearing the required personal protective equipment. |
- Isolation incidents (e.g., guarantee of isolation, construction isolation, switching, recloser block, grounding).
- A breach of using or following a procedure, process or standard that had the potential for a significant incident.
- Unsecured load where equipment fell – no impact to public or property.
- Mobile equipment upset.
- A violation of limits of approach or overhead or underground power line contact that did not result in injury or power loss but had the potential to do so.
- A compliance or stop work order from a government body (applicable for safety incidents only).
- Entering a facility without checking in with the person-in-charge.

### Class 1 Injury/Illness
- First aid as per definition.

### Class 2 Injury/Illness
- Lost time incident.
- Restricted work or occupational injury or illness as per definition.
- Medical aid as per definition.

### Class 3 Injury/Illness
- Fatality.

### Environment

#### Class 1 Near Miss
- Release of less than 5 litres of:
  - In-service polychlorinated biphenyl (PCB) electrical insulating oil (<50 ppm) resulting in a cumulative PCB release of <0.75 grams.
  - Any environmentally sensitive liquid (not including battery acid).
- Any non-conformance with an AltaLink standard, procedure, or project specific environmental requirement that can be rectified immediately.

#### Class 2 Significant Near Miss
- A release of in-service polychlorinated biphenyl (PCB) (PCB) electrical insulating oil (<50 ppm) resulting in a cumulative PCB release of >0.75 grams of PCB but less than 1.0 grams of PCB.
- An action or event that had the potential to result in a Class I environmental incident.

#### Class 1
- Release of greater than 5 litres of:
  - In-service polychlorinated biphenyl (PCB) electrical insulating oil (<50ppm) not resulting in a cumulative PCB release of >0.75 grams.
  - Any environmentally sensitive liquid (not including battery acid).
- Any release of battery acid <5L.
- A release of a greenhouse gas (i.e., refrigerants, SF6, CF4) less than 10 kg or less than a 10 minute sustained release.
- An activity that results in the death or injury of wildlife listed as “non-licence animals.”
- Discovery of dead or injured wildlife on or within AltaLink facilities or rights-of-way.
<table>
<thead>
<tr>
<th>Class</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Class 2</strong></td>
<td>Any non-conformance with an AltaLink environmental specification, requirement, standard, or procedure that cannot be rectified immediately.</td>
</tr>
<tr>
<td></td>
<td>A release of a product or substance to the environment in excess of the quantities identified in Appendix 1 - <em>AltaLink Release Reporting Requirements</em>.</td>
</tr>
<tr>
<td></td>
<td>A product or substance released in any volume to a surface water body (including a wetland or watercourse) or groundwater.</td>
</tr>
<tr>
<td></td>
<td>The disposal of waste at an unauthorized waste management facility.</td>
</tr>
<tr>
<td></td>
<td>An activity that results in the disturbance or death of a migratory bird, disturbance or destruction of legally protected habitat, or injury/death of a species-at-risk.</td>
</tr>
<tr>
<td></td>
<td>Deposition of a substance that is harmful to migratory birds, or permitting such a substance to be deposited, in waters or an area frequented by migratory birds or in a place from which the substance may enter such waters or such an area.</td>
</tr>
<tr>
<td></td>
<td>Commencement of construction, operations, or maintenance activities or works without the proper environmental approvals or notifications in place.</td>
</tr>
<tr>
<td></td>
<td>Any activities or works that are in non-compliance with the conditions of provincial or federal regulations, legislation, authorization, or approval.</td>
</tr>
<tr>
<td></td>
<td>Formal notice of investigation or an environmental order issued by a provincial or federal environmental regulatory agency issues.</td>
</tr>
<tr>
<td><strong>Class 3</strong></td>
<td>Stop work order from a provincial or federal environmental regulatory agency.</td>
</tr>
<tr>
<td></td>
<td>Incident resulting in a significant adverse effect on the environment.</td>
</tr>
<tr>
<td></td>
<td>Charges, fines, or administrative penalties laid by a provincial or federal environmental regulatory agency.</td>
</tr>
</tbody>
</table>

† **Power Loss** (This is only taken into effect when the incident is human driven.)

| Class 1 | Any human performance issue arising from activities at substations, control centers, telecom/network, energy management systems (EMS) or operational engineering that have an unexpected consequence, and puts the system/load, or the ACC’s ability to manage the system, at a higher level of risk.  
**NOTE:** Class 1 power loss events are reported and investigated according to guidelines for class 2 or 3 incidents. |
| Class 2 | Any human performance issue arising from activities at substations, control centers, telecom/network, engineering management standards or operational engineering that have an unexpected consequence, and results in loss of load or generation within the following ranges:  
**Load** - Loss of 0-299MW  
**Generation** - Loss of single or multiple units totaling 0-499MW |
### Class 3
- Any human performance issue arising from activities at substations, control centers, telecom/network, engineering management standards or operational engineering that have an unexpected consequence, and results in loss of load or generation within the following ranges:

<table>
<thead>
<tr>
<th>Load</th>
<th>Loss of ≥300MW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Generation</td>
<td>Loss of single or multiple units ≥500MW</td>
</tr>
</tbody>
</table>

### Security / Reputation

<table>
<thead>
<tr>
<th>Near Miss Class 1</th>
<th>Vehicle left unlocked</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Class 1</strong></td>
<td></td>
</tr>
<tr>
<td>• Property damage to exterior of site (e.g., perimeter fence, building, etc.) with no entry gained.</td>
<td></td>
</tr>
<tr>
<td>• Property damage minor in nature (e.g., camera broken, vehicle damaged, etc.).</td>
<td></td>
</tr>
<tr>
<td>• Trespassing (e.g., climbing towers, onto private property, etc.).</td>
<td></td>
</tr>
<tr>
<td>• Car prowling with access into vehicle.</td>
<td></td>
</tr>
<tr>
<td>• Tailgate resulting in unauthorized access.</td>
<td></td>
</tr>
<tr>
<td>• Antagonistic mail/contact (no threat of harm/damage).</td>
<td></td>
</tr>
<tr>
<td>• Lost or stolen non-critical infrastructure protection (CIP) access device (reported and deactivated outside of 48 hours).</td>
<td></td>
</tr>
<tr>
<td>• Lost or stolen critical infrastructure protection (CIP) device (reported and deactivated outside of 24 hours).</td>
<td></td>
</tr>
<tr>
<td>• Lost or stolen substation keys.</td>
<td></td>
</tr>
<tr>
<td>• Theft minor in nature (e.g., license plates).</td>
<td></td>
</tr>
<tr>
<td>• External contractor thefts (working for AltaLink but nothing of AltaLink’s damaged or stolen).</td>
<td></td>
</tr>
</tbody>
</table>

| **Class 2**       |                       |
| • Property damage to exterior of site (e.g., perimeter fence, building, etc.) with entry gained. |
| • Property damage significant in nature (e.g., shooting line insulators, damaging breakers inside substation by striking it with objects). |
| • Trespassing to complete an action (e.g., climb tower and hang dummy, etc.). |
| • Tailgate resulting in unauthorized access to CIP site. |
| • Threat of harm. |
| • Lost or stolen non-CIP access device which is “used” (attempt or actual). |
| • Lost or stolen Grand Master (facility buildings) and CIP keys. |
| • Theft that is more significant in nature (e.g., vehicles, expensive equipment, etc.). |
| • Security system offline for a significant period. |

| **Class 3** | Shut down or reroute power due to a physical security theft or incident. |
| • Physical attack on employee. |
- Evacuation of site (threat or event).
- Lost or stolen Grand Master (Facility buildings) and CIP keys “used.”
- Lost or stolen CIP access device which is “used” (attempt or actual).

<table>
<thead>
<tr>
<th>Asset Damage – Property/ Equipment or Vehicle</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class 1</td>
</tr>
<tr>
<td>• Property damage under $100,000.</td>
</tr>
<tr>
<td>• Vehicle accident with damage under $5,000.</td>
</tr>
<tr>
<td>• Preventable vehicle accident (PVA)</td>
</tr>
<tr>
<td>• Class 1 PVA will require a tap root investigation</td>
</tr>
<tr>
<td>Class 2</td>
</tr>
<tr>
<td>• Property damage between $100,000 and $999,999.</td>
</tr>
<tr>
<td>• Vehicle accident with damage above $5,000.</td>
</tr>
<tr>
<td>• Preventable vehicle accident (PVA)</td>
</tr>
<tr>
<td>Class 3</td>
</tr>
<tr>
<td>• Property damage exceeding $1,000,000.</td>
</tr>
</tbody>
</table>

†All power loss events are captured and investigated within The Transmission Outage Statistics System within System Operations including power losses less than the class 1 criteria.

### 3.2 Reporting and Investigating

All near misses or actual incidents that occur during work must be reported to the AltaLink project manager. Incident notification and reporting requirements vary depending on type and classification of incident. Refer to Table 3 for notification and reporting requirements.

Depending on the severity or potential severity of an incident, post incident alcohol and drug testing may be required as part of the investigation. Refer to ALS-2026 – Drug and Alcohol Requirements for Contractors for guidance.
Table 3: Classifications and Reporting Requirements

<table>
<thead>
<tr>
<th>Injury / Illness, Environment, Power Loss, Security / Reputation and Asset Damage</th>
<th>Verbal notification within 2 hours</th>
<th>Preliminary report required within 24 hours</th>
<th>24 hour conference call required</th>
<th>Root cause methodology investigation and action plan required</th>
<th>Final report required within 7 calendar days</th>
<th>Final report required within 48 hours including learnings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class 1</td>
<td>Yes</td>
<td>Yes</td>
<td>No*</td>
<td>No **</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Class 2</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Class 3</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
</tr>
</tbody>
</table>

** Near Miss Reporting**

| Class 1 Near Miss | No | No | No | No | No | Yes*** |
| Class 2 Near Miss | Yes | Yes | Yes | Yes | Yes | No |

* Class 1 power loss events are reported and investigated according to guidelines for class 2 or 3 incidents.

** Upon request from an AltaLink project manager, a root cause methodology investigation may be required.

*** As a minimum, the report must include the information outlined below. If a contractor has a document that includes or exceeds this information it will be accepted. ALS-2006F1: Class 1 Near Miss Report can be used if contractor does not have a form. See ALS-2006F1 on the Contractor Safety Website.

### 3.2.1 Class 1 Near Miss Report Information Requirements

The following information must be included when reporting a class 1 near miss:

- Date
- Time
- Contractor – Organization contracted directly to AltaLink
- Sub-Contractor – Organization that experienced the incident (if different)
- AltaLink project manager
- AltaLink project number
- Title identifying the incident
- Description of events
- Immediate actions
- Learnings

### 3.2.2 Class 2 Near Misses and Incidents

AltaLink requires a conference call to be conducted within 24 hours of a class 2 or class 3 near miss or incident occurring. The vice president of the organizational unit where the incident occurred conducts a conference call within 24 hours of the near miss or incident being reported. At a minimum, the call must include the organizational unit manager, director, vice president EHS and contractors as required. The reason for the conference call is to discuss the incident and review immediate actions taken.

When investigating an incident, root cause methodology must be used.
AltaLink reserves the right to:

- Request an investigation of any incident.
- Participate in a contractor’s investigation team or to perform a separate investigation.
- Request to have available all information and personnel related to an incident under investigation.
- Request copies of all documentation from the contractor to facilitate the investigation process.

### 3.3 Incident Management Procedure

When an incident occurs, managing the incident begins promptly, starting with securing and controlling the scene, completing an investigation and determining an action plan.

#### 3.3.1 Controlling and Securing the Scene

In order to prevent further possible losses, immediate remedial actions must be taken at the incident scene and incident information must be reported. When an incident occurs, the person-in-charge must do the following:

- Take control of the scene:
  - Stop all work if necessary.
  - Access for hazards.
  - Secure the site to minimize the risk of further injury, property or environmental damages.
- Ensure first aid and call for emergency services as needed:
  - Refer to the Emergency Contact List and Project Emergency Response Plan.
- Control potential secondary incidents:
  - Actions need to consider the consequences.
- Preserve the scene:
  - Cordon off the site and keep others away so the scene remains as undisturbed as possible.
  - Notice people who leave the scene.
  - Ensure that no material or equipment is moved.
- Preserve evidence:
  - Position (photos, sketches, measurements).
  - People (witness statements).
  - Paper (safe work plans, procedures, permits, etc.).
  - Parts (view and examine physical items).
- Notify the AltaLink Project Manager and investigate as per Table 3: Classifications and Reporting Requirements.
4 NOTIFICATIONS TO A GOVERNMENT BODY

4.1 Safety Incident and Significant Near Miss

When an injury or incident or any other incident that has the potential of causing serious injury to a person occurs at a work site, the prime contractor or, if there is no prime contractor, the employer shall verbally report the time, place and nature of injury or incident to a government body as soon as possible.

Incidents where AltaLink is the prime contractor, AltaLink EHS Department shall verbally report the time, place, and nature of injury or incident to a government body as soon as possible.

Reporting requirements are summarized below:

Table 4: Notification Requirements to Government Body

<table>
<thead>
<tr>
<th>Incident</th>
<th>SAFETY</th>
</tr>
</thead>
</table>
| Incident | • An injury or accident that results in death.  
|          | • An injury or accident that results in a worker being admitted to a hospital.  
|          | • An unplanned or uncontrolled explosion, fire or flood that causes a serious injury or that has the potential of causing a serious injury.  
|          | • The collapse or upset of a crane, derrick or hoist.  
|          | • The collapse or failure of any component of a building or structure necessary for the structural integrity of the building or structure.  
|          | • Any injury or incident or a class of injuries or incidents specified in the regulations. |

<table>
<thead>
<tr>
<th>Significant Near Miss</th>
<th>Incident that has the potential of causing serious injury to a person.</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Regulatory Agency</th>
<th>Alberta Occupational Health and Safety (OH&amp;S Act S. 18(2))</th>
</tr>
</thead>
<tbody>
<tr>
<td>Verbal Notification Requirements</td>
<td>Verbal notification must be made by the prime contractor as soon as possible when an incident occurs.</td>
</tr>
</tbody>
</table>
| Reporting Requirements | • Prepare a written report outlining the circumstances of the injury or incident and the corrective action undertaken to prevent a recurrence of the injury or incident.  
|                              | • Provide a copy of the report to a government body.  
|                              | • Provide a copy of the report to the Joint Work Site Health and Safety Committee. |

4.2 Regulatory Reportable Environmental Incident

An incident may require immediate verbal notification and may need to be followed by a written report to a government body by the prime contractor. Prior to making verbal notification to a regulatory agency, the prime contractor shall notify an AltaLink EH&S manager in order to confirm incident
classification. Verbal notification and reporting requirements for each incident type are summarized below:

Table 5: Notification Requirements to Government Body

<table>
<thead>
<tr>
<th>Incident</th>
<th>ENVIRONMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Regulatory Agencies</strong></td>
<td>• Alberta Environment and Parks (AEP)</td>
</tr>
<tr>
<td></td>
<td>• Fisheries and Oceans Canada</td>
</tr>
<tr>
<td></td>
<td>• Environment and Climate Change Canada (ECC)</td>
</tr>
<tr>
<td><strong>Verbal Notification Requirements</strong></td>
<td>• Where an incident occurs that requires verbal notification to be made to AEP</td>
</tr>
<tr>
<td></td>
<td>or ECC. The contact information for the prescribed authority is:</td>
</tr>
<tr>
<td></td>
<td><strong>AEP 24-Hour Energy &amp; Environmental Response Line (1-800-222-6514)</strong></td>
</tr>
<tr>
<td><strong>Reporting Requirements</strong></td>
<td>• The person responsible for the verbal notification must prepare a written</td>
</tr>
<tr>
<td></td>
<td>letter report and submit it to AEP within 7 calendar days.</td>
</tr>
<tr>
<td></td>
<td>• The AltaLink environmental manager will prepare a transmittal letter to</td>
</tr>
<tr>
<td></td>
<td>accompany the AEP written letter report.</td>
</tr>
<tr>
<td><strong>Incident</strong></td>
<td>• When a release or anticipated release meets the requirements under S8.2</td>
</tr>
<tr>
<td></td>
<td>and/or S8.4 of the Transportation of Dangerous Goods Regulation (TDGR).</td>
</tr>
<tr>
<td></td>
<td>• Release or Anticipated Release Reporting is required in all instances in</td>
</tr>
<tr>
<td></td>
<td>which a means of containment is damaged (e.g., in an accident or through</td>
</tr>
<tr>
<td></td>
<td>handling) such that its integrity is compromised in a way that may lead to</td>
</tr>
<tr>
<td></td>
<td>a release.</td>
</tr>
<tr>
<td></td>
<td>• There are exemptions for release reporting if the dangerous goods meet the</td>
</tr>
<tr>
<td></td>
<td>requirements of the 150 kg exemption. Refer to the TDGR S. 1.15 for more</td>
</tr>
<tr>
<td></td>
<td>information.</td>
</tr>
<tr>
<td><strong>Regulatory Agency</strong></td>
<td>Transport Canada (TDGR S. 8.2, 8.3, 8.4, 8.5)</td>
</tr>
<tr>
<td><strong>Verbal Notification Requirements</strong></td>
<td>• The person who has possession of the dangerous goods at the time of the</td>
</tr>
<tr>
<td></td>
<td>release or anticipated release must make the verbal notification(s).</td>
</tr>
<tr>
<td></td>
<td>• If a release or anticipated release meets TDGR S. 8.2, an Emergency Report</td>
</tr>
<tr>
<td></td>
<td>must be made immediately to local police and the appropriate provincial</td>
</tr>
<tr>
<td></td>
<td>authority:</td>
</tr>
<tr>
<td></td>
<td><strong>Alberta Dangerous Goods 24 Hour Information Centre (1-800-272-9600)</strong></td>
</tr>
<tr>
<td></td>
<td>• Following local and provincial notifications above, if a release or</td>
</tr>
<tr>
<td></td>
<td>anticipated release meets TDGR S. 8.4, a Release or Anticipated Release Report</td>
</tr>
<tr>
<td></td>
<td>must be made to</td>
</tr>
<tr>
<td></td>
<td><strong>CANUTEC (1-888-CANUTEC)</strong></td>
</tr>
<tr>
<td></td>
<td>• Following local, provincial, and federal notifications, the release or</td>
</tr>
<tr>
<td></td>
<td>anticipated release must be reported to the consignor of the dangerous goods.</td>
</tr>
</tbody>
</table>
### 5 HEALTH AND SAFETY STATISTICAL REPORTING

Contractors are required to track health and safety performance statistics for the work and submit the information to AltaLink on an agreed upon time frame. Proactive and reactive measures will be monitored and reported. As a minimum, all information must be submitted monthly, prior to the fifth working day of the month. This following information can be submitted to safetyexposurehours@altalink.ca.

- Number of health, safety and environmental work site inspections completed versus planned.
- Total worker exposure hours in the month.
- Number of restricted work/modified work, lost time injuries, medical aid injuries and first aid cases in the period.
- Number of near miss incidents in the period.
- Number of motor vehicle incidents in the period.
- Number of reportable environmental incidents.
- Asset damage incidents.
- Number of line contacts.
- Security incidents.

### 6 FIRST AID, MEDICAL AND EMERGENCY RESPONSE

#### 6.1 First Aid and Medical

The contractor must have a documented program in place to ensure Part 11 and Schedule 2 of the Alberta Occupational Health and Safety Act, Regulations and Code requirements have been met.

#### 6.2 Emergency Preparedness and Response

The contractor must have a written emergency response plan as outlined in Part 7 of the Alberta Occupational Health and Safety Act, Regulations and Code to handle all emergency situations that could
arise on the site. This plan must be effectively communicated to personnel and key response information affixed at strategic locations in the workplace.

In addition to the requirements in the Alberta Occupational Health and Safety Act, Regulations and Code the emergency response plan must also include:

- A site specific transportation plan, with a map and preferred route to the nearest medical facility.
- Emergency phone numbers.
- Designated workers to supervise, perform emergency response activities.
- Emergency Links Centre phone number (1-888-888-4567).

**Note:** All workers on site must sign off on the emergency response plan indicating they understand and are comfortable with executing the plan.

### 6.2.1 STARS Emergency Links Centre

The STARS Emergency Link Centre is the first point of contact in the event of a significant injury or medical emergency.

The STARS Emergency Link Centre site identification number (ID#) must be in place before work begins.

- **For substations, the site ID# is permanently open;** however, the person-in-charge must contact the STARS Emergency Links Centre to confirm it is still active.
- **For line sites or other AltaLink facilities without a permanent Link ID #,** a temporary Link ID # must be set up. The person-in-charge must temporarily register the site by phoning the STARS Emergency Link Centre and describe the work locations and the activity start and end dates. These methods are preferred to identify your location:
  - GPS – Latitude and Longitude (either the decimal or minutes and seconds format is acceptable)
  - LSD (Legal Subdivision) – In NAD83 Format (01-010001-01 W1M)
  - Petroleum and Gas (PNG) grid number (A-01-A/94-A-2)

Notify the STARS Emergency Link Centre if the worksite moves more than one kilometer.

Once work on the temporary site is complete, contact the STARS Emergency Link Centre to close the Links ID #.

STARS Emergency Link Centre personnel will help determine the best transportation method to a medical facility.

- If an injured worker is transported to a medical facility using transportation from the worksite, the worker must be accompanied by at least one first aider in addition to the operator of the transportation.
6.3 Rescue

- Worker(s) must be trained in rescue procedures appropriate to the worksite and the potential emergencies identified on the emergency response plan.
- Worker(s) must be designated to perform rescue duties and documented on the emergency response plan.
- Appropriate rescue equipment must be on the worksite and readily available.
- A minimum of two appropriately trained workers must be readily available to perform rescue duties if needed.
- Mock rescues must be performed and documented at reasonable intervals based on the emergency response plan.

6.4 Fire Fighting and Prevention

Contractors are responsible for prevention planning, response and control of any fires resulting from the project activities.

Contractors must maintain, at the work site(s), sufficient portable firefighting equipment in good working order and execute best efforts to extinguish any fire caused by project activities in the area.

Also see section 10.21 Fire Prevention and Fire Fighting Equipment.

7 HAZARD MANAGEMENT AND CONTROL

7.1 Hazard Management

Contractors must meet or exceed the governing provincial laws and regulations regarding the necessity for formal hazard and risk assessments to be performed prior to work commencement.

Contractors must conduct hazard assessments at each work phase and whenever there is a significant change in the physical or environmental conditions on the work site. All manner of hazards—physical, chemical, electrical and environmental—must be identified, assessed and eliminated if possible. If elimination is not possible, adequate controls must be devised and implemented.

Prior to initiating work, the nature of the work to be performed must be reviewed on a task-by-task basis. Tasks seen to have a significant potential for harm to personnel, environment or equipment must be identified for a more rigorous hazard assessment.

Contingency actions must be pre-planned to cover the circumstances of a possible loss of control of a hazard. The plans must account for the possible escalation of consequences due to loss of control of a hazard.

Results of hazard management activities must be recorded and kept on site. It must include a description of the hazard(s), the possible adverse scenarios, controls needed to contain the hazard(s), and protective and precautionary measures for personnel and the environment.
Workers must be fully aware of all identified hazards and controls and have signed off on the assessment.

7.2 Tailboard Meetings

Individual work crews must hold a documented tailboard meeting prior to work commencement. The tailboard document must include the following information:

- Supervisor in charge.
- Emergency response information.
- A description of the work to be performed.
- Existing and potential hazards associated with the work.
- Methods used to control or eliminate the hazards identified.
- All specific actions required from a safe work permit, if one is issued.
- Signatures from all personnel involved to show they have participated in the hazard assessment and they are aware of the hazards and the identified control measures.

The documented tailboard meeting process must be repeated:

- Daily.
- When change to work scope is introduced.
- When there is a change in the worksite conditions.
- When unforeseen or unplanned complications arise.
- After any incident.
- At reasonably practicable intervals to prevent the development of unsafe and/or unhealthy working conditions.

At the end of the day, a safety close-out meeting is required, giving workers the opportunity to sign off indicating there are no unreported injuries, incidents or new hazards as a result of the day’s activities.

7.3 Work Authorization

Contractors must employ a work authorization system to effectively manage the work. The work authorization system used on the project will be in effect from the start of construction.

Note: This system needs to be in alignment with the requirements contained in the following AltaLink safety standards:

- ALS-1717: AltaLink Safety Certification Standard
- ALS-1942: AltaLink Process for Obtaining Switching, GOI and Grounding Certifications
- ALS-818: Facility Isolation and Permissions to Work
8 PERSONAL PROTECTIVE EQUIPMENT

8.1 General

Contractors must have a program in place that meets or exceeds the requirements of Part 18 of the Alberta Occupational Health and Safety Act, Regulation and Code. The selection of personal protective equipment will be determined by the results of the hazard assessment and regulatory compliance. In addition, the personal protective equipment requirements will be selected in accordance to specific Material Safety Data Sheet (MSDS) requirements.

Contractors must ensure all personnel visiting or working on the AltaLink work site complies with the minimum personal protective equipment requirements. This equipment must include, but not be limited to, Canadian Standards Association (CSA) approved, where applicable:

- Hard hat
- Safety boots
- Protective eyewear
- High visibility clothing
- Hand protection appropriate for the task

At all AltaLink worksites, long sleeve shirts and long pants must be worn.

Contractors are responsible to ensure that proper protective equipment is available, maintained and used in accordance with governing laws and regulations.

8.2 PPE Exceptions

If for any reason the minimum PPE requirements, as outlined in section 8.1, will not be met; a formal hazard assessment must be completed and the AltaLink project manager must approve the exception before work can proceed. The formal hazard assessment must identify the specific tasks and/or areas that will be performed under the PPE exception.

8.3 UV and IR Protection Eyewear

For workers performing switching, live line work or other work that may expose the workers to short duration electrical arc (> 250 v), AltaLink requires the workers to have eye protection from UV and IR.

8.4 Fire-retardant Clothing

In some instances “arc rated” fire-retardant clothing may be required. Contractors must determine that need and ensure personnel are equipped with such clothing before arriving on site. Once the facility is connected to the power system, fire-retardant clothing is mandatory for working on the isolated lines or equipment. The minimum arc thermal protective value of 8 is required for clothing worn inside energized substations or right-of-ways with energized lines.
8.5 Anti-slip Footwear

Appropriate anti-slip footwear is required based on the hazard assessment of the task and to suit footing conditions (e.g., winter conditions) when it adds to the worker’s safety. Workers must assess ice slipping hazards before work begins and throughout the day if conditions change. If workers are unable to remove the hazard with the site controls, additional traction devices must be added to the footwear to increase grip and the anti-slip effectiveness of the footwear.

Care must be exercised when wearing anti-slip footwear indoors or on metal surfaces. Anti-slip footwear with metal studs or spikes may become very slippery in metal-to-metal conditions.

When selecting anti-slip footwear or when adding traction devices to existing footwear, ensure the electrical shock resistant rating of the footwear is not lessened. For example, footwear with steel studs screwed into the sole of the boot must not be used when working on power line right-of-ways or substations that are energized. Additional traction devices with steel studs that attach to the sole of boot, but do not penetrate into the sole of the boot are acceptable.

8.6 Hand Protection

- Glove usage is required on all sites.
- The level of glove required is job dependant; personal preference is considered, as long as the gloves meet the minimum requirements for the job being performed.
- Those attending site visits must have gloves readily available and on the person.
- Wear gloves that are appropriate for the task and according to the hazard to be protected against. These include but not limited to:
  - Impacts, cuts, and abrasions.
  - Extreme temperatures.
  - Chemical, toxic, biological, corrosive and other hazardous substances.

If your hazard assessment determines that cut resistant gloves must be worn, the minimum rating level for gloves is a cutting resistance of Level 3 based on the table below. A Level 2 glove can be worn if combined with a leather glove.

Table 6: ANSI/ ISEA 105-2005 Mechanical Ratings

<table>
<thead>
<tr>
<th>Rating</th>
<th>Level 0</th>
<th>Level 1</th>
<th>Level 2</th>
<th>Level 3</th>
<th>Level 4</th>
<th>Level 5</th>
<th>Level 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abrasion Resistance* (Cycles)</td>
<td>&lt; 100</td>
<td>≥ 100</td>
<td>≥ 500</td>
<td>≥ 1000</td>
<td>≥ 3000</td>
<td>≥ 10000</td>
<td>≥ 20000</td>
</tr>
<tr>
<td>Cut Resistance (Grams)**</td>
<td>&lt; 200</td>
<td>≥ 200</td>
<td>≥ 500</td>
<td>≥ 1000</td>
<td>≥ 1500</td>
<td>≥ 3500</td>
<td>-</td>
</tr>
</tbody>
</table>

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### 8.7 Respiratory Protective Equipment

Contractors must have a respiratory code of practice in place that meets or exceeds the requirements of Part 18 of the *Alberta Occupational Health and Safety Act, Regulation and Code*.

### 8.8 Jewelry, Hair and Loose Clothing Requirements

Contractors must have a program in place that addresses worker safety when working around machinery and equipment with moving parts as outlined in Part 25 of the *Alberta Occupational Health and Safety Act, Regulation and Code*. If contact between moving parts of machinery, electrically energized equipment or part of the work process and a worker’s clothing, jewelry or hair is likely, a worker must:

- Wear clothing that fits close to the body and does not have any loose or dangling strings or zipper pulls.
- Not wear bracelets, rings, dangling neckwear, a wristwatch or similar articles.
- Have head or facial hair that is short or confined and cannot be snagged or caught.

### 8.9 Noise / Hearing Requirements

Contractors must implement a noise and hearing management program that meets or exceeds Part 16 of the *Alberta Occupational Health and Safety Act, Regulations and Code*.

### 9 WORKING AT HEIGHTS

#### 9.1 Fall Protection

Contractors shall establish a fall protection program that meets or exceeds Part 9 of the *Alberta Occupational Health and Safety Act, Regulations and Code*.

All workers who will be working at heights are required to use fall protection equipment and must attend fall protection training and demonstrate competency in using the equipment.

A fall protection plan must be developed if a fall of greater than 3 metres vertical distance or more is present and the worker is not protected by guardrails. The plan must specify:

- The fall hazards at the site.
- The fall protection system that will be used.
- The anchors to be used.
The clearance distances below the work area must be confirmed to prevent a worker striking the ground or objects or levels below the work area.

- A procedure to assemble, maintain, inspect, use and disassemble fall protection systems as applicable.

- Rescue procedures to be implemented in the event of a fall where a worker is suspended and needs rescue.

The fall protection plan must be available at the work site and be reviewed by all workers prior to any work at heights beginning. The plan must be updated whenever conditions affecting fall protection change.

Rescue procedures must be developed and be available at the work site, along with the appropriate rescue equipment outlined in these procedures. A minimum of two appropriately trained workers must be readily available to perform rescue duties if needed.

### 9.2 Drop Zones

- When tasks are being performed from heights the hazard assessment must address “dropped objects” and adequate mitigations must be in place before proceeding. Where practicable, workers must create a physically visible safe control zone below those working at heights using flagging, ribbon or pylons. Have all work above stop when workers below have to enter the safe work zone.

- Establish good communication between ground and heights. Using two way radios could be an effective communication tool to ensure workers at heights and workers on the ground can communicate to each other.

- When it is necessary for workers on the ground to be below workers who are moving into position to work or who are working at heights, ensure all work above is stopped and all tools and materials are secured.
  
  - Tie off tools and materials with a small piece of rope or rated sling attached to both the tools or materials and the work area.
  
  - Send tool bags on a handline to workers working at heights when a work position has been established and then the hoisted bags can be secured in position so they cannot be accidentally turned upside down.
  
  - Use tool pouches with covers to prevent tools from falling out. Once workers are in position, work can be performed using tied off tools.
  
  - Ensure no tools or materials are left unsecured when at heights.

- Ensure workers inspect their tool holders (frogs, nose bags) daily prior to climbing at heights and replace them when damaged or worn out.

- Workers who are working at heights but are immediately below others working above are also at risk. Care must be taken to ensure all tools and materials above are secured before work commences below.
9.3 Use of Conductor Carts

Conductor cart use is not permitted when the following conditions apply:

- Execution of a workable rescue plan is not possible.
- On an overhead shield wire.
- On a single-conductor configuration smaller than 795 Drake.
- On a single-conductor configuration, 795 Drake or larger, where there is damage or a splice within the span to be worked on, without permission from AltaLink engineering.
- On bundled conductor sizes smaller than 397.5 MCM ACSR 26/7.
- Total weight of the cart, tools, equipment and worker exceed 400 kgs.

9.4 Flight Operations

All contractors using aircraft to perform work are expected to have a flight operations safety management program which includes the elements outlined in this section.

9.4.1 Flight Planning and Scheduling

All flights (including UAVs, fixed wing, and helicopter) over existing or proposed facilities require flight planning and scheduling as per the AltaLink standard ALS-2058 - Flight Planning and Scheduling.

9.4.2 Unmanned Aerial Vehicle (UAV) Operators

All UAV operators must have an approved Special Flight Operations Certificate (SFOC) for that location.

9.4.3 Helicopter Operations

9.4.3.1 Pre-qualification

Contractors intending to use helicopters to perform work for AltaLink must pre-qualify the helicopter company. In addition to traditional pre-qualification elements (e.g., WCB, proof of insurance, certificate of incorporation), the contractor shall have a set criteria for current regulatory aviation audits from helicopter companies they intend to use on AltaLink projects. The audit results should help gain a perspective on the functionality of the helicopter company (as pertaining to the working relationship with the contractor), its workers, and abilities to function safely in the wire environment. As a minimum, the audit scope should address the following elements:

- Flight operations, pilot experience, and training records
- Transportation of dangerous goods
- Flight and maintenance operations
- Safety management systems

Audit results must not identify major discrepancies that would contravene Alberta OH&S, the Canadian Aviation Regulations (if noted), the company Operations manuals, nor company Standard Operating Procedures. Any corrected audit findings must be satisfactory to the contractor. All operations must comply with the Canadian Aviation Regulations (CARS).
9.4.3.2 Training and Minimum Hours

Pilot – the contractor shall have set minimum pilot hours based on work within unrestricted work zones (and restricted as required), and for the type of work activity (platform, stringing, etc.) and aircraft type that meets or exceeds AltaLink requirements. Contractors shall have a defined level of accuracy for pilots and be able to provide proof of the helicopter pilot’s experience in the load operation(s) to be performed prior to any flight operations.

Table 7: AltaLink Requirements

<table>
<thead>
<tr>
<th>Work Activity</th>
<th>Minimum hours (not entering restricted zones)</th>
<th>Additional documented hours (if entering restricted zones) in a wire environment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Worker transportation</td>
<td>1500</td>
<td>+50</td>
</tr>
<tr>
<td>Platform work</td>
<td>3000</td>
<td>+100</td>
</tr>
<tr>
<td>Long Lining</td>
<td>3000</td>
<td>+50</td>
</tr>
<tr>
<td>Entry/Exit</td>
<td>3000</td>
<td>+100</td>
</tr>
<tr>
<td>Stringing</td>
<td>1500</td>
<td>+50</td>
</tr>
</tbody>
</table>

9.4.3.3 Restricted Helicopter Zone

For AltaLink’s purposes, a restricted helicopter zone is the area within 1,000 feet above the highest obstacle located within a horizontal distance of 500 feet from the aircraft. AltaLink uses this zone as defined by Transport Canada’s Minimum Altitudes and Distances (602.14) and Permissible Low Altitude Flight (602.15). Exemptions are not given for take-off and landing.

9.4.3.4 Crew Safety Protocols and Competencies

Contractors shall have in place; defined crew safety protocols for pre-flight, in-flight and post-flight operations along with minimum crew complements that meets or exceeds UFOC (Helicopter Association Canada) guidelines.

Work Leadership – The contractor must have in place a method to establish and demonstrate minimum competencies of work leaders for the work activities to be performed. Examples include: competency to supervise the work being performed, current certificates for rigging, leadership, etc.

The contractor must ensure all workers are deemed competent in relevant helicopter flight operations and have documented proof of training for the individual tasks that those workers will be assigned.

Workers must not perform work they do not have the training and competency to perform.

PPE requirements applicable to the type of work shall be addressed, along with any specialty equipment or survival gear.

9.4.3.5 Hazard Assessment and Safe Work Planning

When selecting an appropriate aircraft:
• The aircraft selected must be suitable for terrain, altitude, expected wind shear, number of passengers, cargo weight and size, flight duration, refueling considerations, and flight plan. Requirements must be communicated to the vendor in the planning stage.

All flights shall take place during daylight hours as defined by Transport Canada regulations: “day” or "daylight" - means the time between the beginning of morning civil twilight and the end of evening civil twilight.

Flights in the wires environment shall only occur between legal sunrise and legal sunset, as defined by Canadian Aviation Regulations (CARS).

Prior to any helicopter work being performed, the contractor must ensure a thorough hazard assessment and subsequent procedure is completed. At a minimum, the following elements must be considered where applicable:

• Method(s) to ensure safe drop zones are created and maintained.
• Method(s) to ensure minimum helicopter approach distances (MHAD) are maintained by all personnel, tools, materials, rigging, and equipment.
• Applicable secondary safeguard(s) required to ensure tools, materials, and equipment do not contact energized equipment in the event of a mechanical failure (wire strike devices on helicopters, tool lanyards, etc.).

The contractor shall have an internal process whereby the hazard assessment, procedures, and crew compliment are reviewed, accepted, and endorsed by a senior leader in the contractor’s organization.

Additionally, the contractor should have in place commonly used terminology along with definitions within their procedures for helicopter work. This is to ensure full comprehension of the terminology used between the contractor, pilots, and crew involved with the operation.

9.4.3.6 Inspections
The contractor shall have a defined process for site inspections to ensure compliance to standards and policies with intervals dependent upon the length of the project and scope of work. These inspections may be in the form of focus audits, worksite inspections, and review of documents, etc.

10 SAFE WORK PRACTICES

10.1 Housekeeping
• Good housekeeping is a basic requirement on all construction areas and must be maintained at all times.
• Special attention must be given to maintaining clear walkways and roadways, removing trash, removing slipping and tripping hazards and ensuring proper storage of material.
• Trash containers and / or garbage cans must be available in the various work areas.
• Remove all protruding nails, screws, staples, or other objects that present a hazard to employees or vehicles.
• Hoses, cables and cords should be elevated over walkways and landings. All hoses, cords, and cables shall be neatly coiled and hung on appropriately designed hangers off the ground. Only that hose, cord or cable needed for the required job shall be placed on the ground. Excess hose, cord or cable found on the ground shall be removed for the work area.

10.2 Human Performance Flagging

Human performance errors contribute to the frequency of incidents occurring when working around equipment in substations. Flagging equipment is a method or tool to visually identify safety and reliability hazards in order to reduce or eliminate the frequency personal incidents of this nature occur. Contractors are required to source their own work zone kits to flag equipment.

Some of the work activities that require flagging equipment to be applied are:
• Working on protection packages during maintenance activities
• Switching activities
• Installing new equipment within the control building
• Trouble shooting of equipment that may have failed

Information regarding flagging AltaLink equipment and work zone kits is available in the HPI Flagging Procedure (ALF-ALL-1999). Contractors can use the procedure with your teams, or you can create your own procedure. The HPI Flagging Procedure is available on the Contractor Safety website.

10.3 Use of Spotter

When the operation of vehicles or equipment has the potential to make inadvertent contact with people, materials, facilities, vehicles or equipment (i.e., has the potential to cause injury or damage due to its movement), a spotter must be used. Some examples of when spotters are required:

• The driver does not have a clear view of the intended path of travel due to blind spots, travelling in reverse, or other obstructions.
• There is limited visibility or space.
• Maneuvering large vehicles or equipment through gates, or into/out of buildings or structures.
• Backing or maneuvering vehicles pulling trailers.
• Operating in busy areas, or when traffic is present.
• Physical hazards are present.
• Operating near structures and buildings.
• Operating around people.
• *Operating near energized lines and equipment.

*Additional requirements are identified in section 10.10.4.

Contractors performing work for AltaLink are required to have a spotter program (including training) which includes the following elements:
When a spotter is required
- General spotter requirements
- Spotter responsibilities
- Operator responsibilities
- Hazard assessment and control
- Communication methods (including hand signals)
- Blind spot identification
- Spotter positioning

When it is identified that a spotter is required, all personnel involved in the work (e.g., operator, spotter, and other affected crew members) must perform a hazard assessment to identify what could potentially be contacted and how it will be avoided.

- Spotters shall not perform any other tasks while acting as spotter.
- The driver or equipment operator will not move the vehicle or equipment without clear direction by the spotter.
- The driver or equipment operator shall immediately stop if visual contact is lost, or if a spotter’s instruction or signal is unclear.
- The driver or equipment operator shall observe a stop signal from anyone in the vicinity.
- The spotter shall never move out of the driver’s line of sight without first stopping the vehicle or equipment.

10.4 Confined Space Entry

Contractors entering confined spaces shall develop a code of practice that meets or exceeds Part 5 of the Alberta Occupational Health and Safety Act, Regulation and Code. These procedures must be in writing and available to workers.

10.5 Ground Disturbance

All ground disturbance activities must follow all governing laws and regulations and industry best practices to safely execute the work.

10.6 Excavations and Trenching

Contractors are responsible to establish a program that protects workers and protects existing facilities that could be affected by excavating or trenching operations. The program must meet or exceed Part 32 of the Alberta Occupational Health and Safety Act, Regulations and Code.

Contractors must ensure all excavations, trenches and openings are properly fenced, barricaded or covered according to regulations, and access is controlled to sites where excavations or openings are left unattended. Appropriate notices must be posted warning of the potential danger.
10.6.1 Excavations and Trenching within a Substation
Any excavations within a substation which expose the ground grid within an energized substation must meet the requirements of ALS-1405 - *Working around Exposed Ground Grids in an Energized Substation*. Workers entering the excavation for any duration must be protected by a mitigation method outlined in Part 7 of the standard.

10.7 Equipment Access and Egress
Contractors must ensure they have three point contact requirements in place and traction/ grips aids are available when accessing or egressing equipment.

10.8 Propane Standards
- All propane equipment shall be used according to manufacturer recommendations and local applicable regulations.
- Propane tanks shall be barricaded.
- All contractors must ensure that pre-use inspections are carried out on all cylinders, valves, fittings, and hoses.
- All propane cylinders transported on site must be secured in an upright position during transportation.
- All propane cylinders shall be securely stored in an outdoor location when not in use.
- These cylinders, once fully discharged, are to be gathered at storage locations.
- Propane torches shall not be used for heating hoardings or any other enclosure.

10.9 Right-of-Way and Roadside Work
Contractors must have a program in place that provides an approved written plan relating to traffic control during roadside work activities. This plan must be in compliance with all local laws or requirements agreed to in crossing or road use agreements.

Contractors must ensure all requirements of any crossing or road use agreements are met.

Workers working in a public road right-of-way or otherwise exposed to traffic must be provided with and instructed to wear warning vests marked with or made of reflective or highly visible material and have received the proper level of training to do such work.

Workers must ensure they do not cause unnecessary hazards or impediments to the general motoring public. All applicable rules of the road must be adhered to when entering or leaving a work site, and vehicles must be pulled as far off roadways as possible. Workers shall not gather on any roadway where public traffic is present.

Barricades, cones, flashers and warning signs must be placed at strategic locations when working on or near roads and other areas where vehicular traffic may be a hazard. Signs must be staged within the applicable distances of the road use agreement, and promptly removed when no longer required.
10.10 Power Lines and High Voltage Work Areas

10.10.1 Live Work
All work that falls within the definition of “live work”, as defined with the Terms and Definitions section of ALS-2030: Live Work Standard is deemed to be safety critical and requires additional due diligence to safely execute and the expectations within the standard must be followed. AltaLink is required to approve all “live work.” Before live work is performed, the ALS-2030F: Live Work Acceptance Form must be completed. Refer to AltaLink safety standard:

- ALS-2030: Live Work Standard
- ALS-2030F: Live Work Acceptance Form

10.10.2 Significant Electrical Hazard Work
Some work activities formerly classified as live work have since been classified as “significant electrical hazard work.” These work activities include:

- Working directly above energized conductors.
- Working directly above an energized bus in a substation.
- Working on a line above energized underbuild on the same structure.
- Repairing or replacing guy wires above energized conductors.
- Working on a structure with energized transmission underground risers (i.e., connecting underground transmission line to overhead transmission line).
- Excavating or working within minimum approach distances of energized underground transmission cables.

The criteria for managing significant electrical hazard work are currently under development. Until the criteria has been finalized, significant electrical hazard work activities must follow the approval process of the Live Work Standard. Refer to AltaLink safety standard:

- ALS-2030: Live Work Standard
- ALS-2030F: Live Work Acceptance Form

10.10.3 Increased Electrical Hazard Work
Some work activities formerly classified as live work have since been classified as “increased electrical hazard work.” These work activities include:

- Stringing in a high induction corridor.
- Stringing over an energized conductor or energized equipment.
- Structure modifications or adjustments that have potential for the pole, structure or conductor to fail, move unexpectedly and come into contact with people or the ground.
- Working on a line that crosses over an energized line (in the same span).
- Climbing structures (i.e., towers or poles) past energized conductors while maintaining MAD from energized phases.
• Working on double circuit structures with one circuit energized.

Prior to performing increased electrical hazard work, contractors must:

• Create a thorough hazard assessment and subsequent safe work plan (or procedure) with a minimum of the following elements:
  • Method(s) to ensure minimum approach distances are maintained by all personnel, tools, materials, rigging, and equipment.
  • Method(s) to ensure safe drop zones are created and maintained.
  • Applicable secondary safeguard(s) required to ensure tools, materials, and equipment do not contact energized equipment in the event of a mechanical failure (e.g., rider poles).
  • Recloser blocks (necessary for most activities identified).
• Ensure all involved personnel are trained in the plan/procedure and are competent to perform their assigned tasks.
• Include an internal process whereas the hazard assessment, safe work plans/procedures, and crew compliment are reviewed, accepted, and endorsed by a senior leader in the organization.

10.10.4 Operating Equipment near Energized Facilities
Whenever practicable, facilities should be de-energized and isolated when travelling below or working nearby with equipment that has the ability to reach within the limits of approach.

It is imperative that adequate controls are in place whenever equipment is travelling below or working near energized facilities.

The contractor must have a system in place to adequately manage the hazards of operating equipment near energized facilities. The system must contain the following elements:

• A means to determine the voltage and subsequent limit of approach. If the voltage is unknown, the limit of approach is seven metres.
• Positive methods of control to ensure the limits of approach are not breached. Examples are:
  • Signage.
  • Goalposts.
  • Spotter(s).
• A method to communicate the hazards and subsequent controls to all involved in the work area.
• Training to ensure all involved personnel know what to do in the event of contact to avoid injury due to step/touch potential.

When a spotter is used, he or she must not be assigned any other tasks. The spotter must understand the hazards and the controls, and must have an audible means of contact with the equipment operator (e.g., radio communication, air horn).

Examples of acceptable means of control are:

• Equipment with boom (e.g., crane, trackhoe, backhoe) crossing below an energized power line.
• Signage
• Goalposts
• Hazard assessment and controls understood by all involved.

• Equipment with boom (e.g., crane, trackhoe, backhoe) working near an energized power line.
  • Signage
  • Spotter
  • Hazard assessment and controls understood by all involved.

• Equipment without a boom (e.g., dump truck, tractor-trailer) travelling below an energized power line.
  • Signage
  • Hazard assessment and controls (e.g., assurance that all implements are lowered before approaching line) understand by all involved.

10.10.5 Isolation and Grounding
Contractors must ensure any work performed inside an energized substation or any work involving transmission line conductors (on a power line right-of-way) that a project safe work plan and project grounding plan are created. The hazards of energization and energization due to induction must be mitigated to protect workers and be in alignment with the following standards:

• ALS-818: Facility Isolation and Permissions to Work, which describes the isolation of energy when the work is under the control of the ACC.
• AL-ALL-900001: Working on Isolated Transmission Facilities outlines the technical requirements associated with working on isolated and grounded power lines. This is an engineering standard available on the Contractor Engineering website. Access to this website can be obtained by contacting AltaLink.
• ALS-1991: AltaLink – FortisAlberta Distribution Power Cable Connection Standard, which defines specific procedures to safely install and connect FortisAlberta underground distribution power cables to AltaLink substations by clarifying operating authorities, work practices and procedures.

In addition, these procedures may apply:

• ALS – 1407: Multi Worker Lock Out and Tag Out of Utility System Components, which describes the isolation of energy when multiple work crews require their own lock and tag on the isolation points.
• ALS – 828: Lock Out and Tag Out not under ACC Control, which describes the isolation of a source of energy that is not under the control of the ACC, but under the control of the person-in-charge.

10.10.6 Substation Exception List
The Grounding Exception Tables and Maps standard is an excerpt taken from AltaLink engineering standard AL-ALL-20001 and is a list of substations where grounding practices other than the use of a single 2/0 TPG assembly are required. Refer to AltaLink safety standard:

• ALS-2007: AltaLink Grounding Exception Table and Maps
10.11 Minimum Approach Distances (MAD)

The limits of approach referred to in the AEUC must be followed by all personnel. An exception to the AEUC limits has been added for bare-hand work as outlined below.

For qualified utility employees performing live line work using bare-hand techniques, refer to Tables 15 and 16 below for AltaLink's deviation from Table 4-4 of the AEUC. As an extra safety factor, AltaLink has added 450 mm to the distances in Table 4-4 for both "Energized body parts to exposed structure surfaces or grounded parts" and "Energized body parts to exposed adjacent phases."

Table 8: Safe Limits of Approach Distances from Overhead Power Lines for the General Public or Non-utility Workers

<table>
<thead>
<tr>
<th>Operating Voltage of overhead power line conductors unless otherwise specified</th>
<th>Safe limit of approach distance for people and equipment</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 – 750 V insulated or polyethylene covered conductors¹</td>
<td>0.3 m</td>
</tr>
<tr>
<td>0 – 750 V bare, uninsulated</td>
<td>1.0 m</td>
</tr>
<tr>
<td>&gt; 750 V insulated conductors¹,²</td>
<td>1.0 m</td>
</tr>
<tr>
<td>-0.75- kV – 40 kV</td>
<td>3.0 m</td>
</tr>
<tr>
<td>69 kV, 72 kV</td>
<td>3.5 m</td>
</tr>
<tr>
<td>138 kV, 144 kV</td>
<td>4.0 m</td>
</tr>
<tr>
<td>230 kV, 260 kV</td>
<td>5.0 m</td>
</tr>
<tr>
<td>500 kV</td>
<td>7.0 m</td>
</tr>
<tr>
<td>500 kV DC Pole Ground</td>
<td>7.0 m</td>
</tr>
</tbody>
</table>

1. Conductors must be insulated or covered throughout their entire length to comply with these groups.
2. Conductors must be manufactured to rated and tested insulation levels.

---

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Table 9: Limit of Approach Distance in Millimetres for Utility Employees Working in a Substation

<table>
<thead>
<tr>
<th>Voltage Levels</th>
<th>Utility employees</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal voltage to ground (kV)</td>
<td>Nominal voltage phase to phase (kV)</td>
</tr>
<tr>
<td>Column 1</td>
<td>Column 2</td>
</tr>
<tr>
<td>0.6 (DC only)</td>
<td></td>
</tr>
<tr>
<td>0.3 – 2.4</td>
<td>0.6 – 4.16</td>
</tr>
<tr>
<td>8</td>
<td>13.8</td>
</tr>
<tr>
<td>14.4</td>
<td>25</td>
</tr>
<tr>
<td>19.9</td>
<td>34.5</td>
</tr>
<tr>
<td>69, 72</td>
<td></td>
</tr>
<tr>
<td>138, 144</td>
<td></td>
</tr>
<tr>
<td>230, 260</td>
<td></td>
</tr>
<tr>
<td>500</td>
<td></td>
</tr>
</tbody>
</table>

¹. Limit of approach distances in Column 4 have been calculated using IEEE minimum tool distances plus 750 mm safety factor, rounded to the nearest 50 mm.
Table 10: Limit of Approach Distance in Millimetres for Qualified Utility Employees Working in a Substation

<table>
<thead>
<tr>
<th>Voltage Levels</th>
<th>Nominal voltage to ground (kV)</th>
<th>Nominal voltage phase to phase (kV)</th>
<th>Maximum operating voltage phase to phase (kV)</th>
<th>Limit of approach to exposed energized parts (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Column 1</td>
<td>Column 2</td>
<td>Column 3</td>
<td>Column 4</td>
<td></td>
</tr>
<tr>
<td>0.6 (DC)</td>
<td>500</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.4</td>
<td>4.16</td>
<td>4.58</td>
<td>500</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>13.8</td>
<td>15.18</td>
<td>550</td>
<td></td>
</tr>
<tr>
<td>14.4</td>
<td>25</td>
<td>27.5</td>
<td>650</td>
<td></td>
</tr>
<tr>
<td>19.9</td>
<td>34.5</td>
<td>37.95</td>
<td>750</td>
<td></td>
</tr>
<tr>
<td></td>
<td>69, 72</td>
<td>79.2</td>
<td>1050</td>
<td></td>
</tr>
<tr>
<td></td>
<td>138, 144</td>
<td>158.4</td>
<td>1350</td>
<td></td>
</tr>
<tr>
<td></td>
<td>230, 260</td>
<td>285</td>
<td>1850</td>
<td></td>
</tr>
<tr>
<td></td>
<td>500</td>
<td>550</td>
<td>3150</td>
<td></td>
</tr>
</tbody>
</table>

1. Limit of approach distances in Column 4 have been calculated using IEEE minimum tool distances plus 450 mm safety factor, rounded to the nearest 50 mm.
Table 11: *Limit of Approach Distance in Millimetres for Utility Tree Trimmers*

<table>
<thead>
<tr>
<th>Voltage Levels</th>
<th>Nominal voltage to ground (kV)</th>
<th>Nominal voltage to phase (kV)</th>
<th>Maximum operating voltage to phase (kV)</th>
<th>Utility Tree Trimmers</th>
<th>Limit of approach for tree trimmers and conducting objects to exposed energized parts (mm)</th>
<th>Limit of approach for rated insulating tools to exposed energized parts (mm)</th>
<th>Limit of approach for rated insulating booms (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Column 1</td>
<td>Column 2</td>
<td>Column 3</td>
<td>Column 4¹</td>
<td>Column 5²</td>
<td>Column 6³</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.6(DC)</td>
<td>0.6</td>
<td>0.6</td>
<td>1050</td>
<td>40</td>
<td>500</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.4</td>
<td>4.16</td>
<td>4.58</td>
<td>1050</td>
<td>40</td>
<td>500</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>13.8</td>
<td>15.18</td>
<td>1100</td>
<td>120</td>
<td>550</td>
<td></td>
<td></td>
</tr>
<tr>
<td>14.4</td>
<td>25</td>
<td>27.5</td>
<td>1200</td>
<td>210</td>
<td>650</td>
<td></td>
<td></td>
</tr>
<tr>
<td>19.9</td>
<td>34.5</td>
<td>37.95</td>
<td>1300</td>
<td>290</td>
<td>750</td>
<td></td>
<td></td>
</tr>
<tr>
<td>69, 72</td>
<td>79.2</td>
<td>1600</td>
<td>610</td>
<td>1050</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>138, 144</td>
<td>158.4</td>
<td>1900</td>
<td>920</td>
<td>1350</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>230, 260</td>
<td>285</td>
<td>2400</td>
<td>1410</td>
<td>1850</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>500</td>
<td>550</td>
<td>3700</td>
<td>2710</td>
<td>3150</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1. Limit of approach distances in Column 4 have been calculated using IEEE minimum tool distances plus 1000 mm safety factor, rounded to the nearest 50 mm.
2. Limit of approach distances in Column 5 have been calculated using IEEE minimum tool distances, rounded to the nearest 10 mm.
3. The column does not apply to utility or qualified utility employees doing tree work near energized electrical equipment or lines.

Note: Column 4 must have recloser block.
Table 12: Tree to Energized Electrical Equipment or Lines Distances in Millimetres for Utility Tree Trimmers, Utility Tree Workers, and Other Workers

<table>
<thead>
<tr>
<th>Nominal voltage to ground (kV)</th>
<th>Nominal voltage phase to phase (kV)</th>
<th>Maximum operating voltage phase to phase (kV)</th>
<th>Tree to energized electrical equipment or lines distance for slashing and brushing (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Column 1</td>
<td>Column 2</td>
<td>Column 3</td>
<td>Column 4¹</td>
</tr>
<tr>
<td>0.6 (DC only)</td>
<td>800</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.4</td>
<td>4.16</td>
<td>4.58</td>
<td>800</td>
</tr>
<tr>
<td>8</td>
<td>13.8</td>
<td>15.18</td>
<td>850</td>
</tr>
<tr>
<td>14.4</td>
<td>25</td>
<td>27.5</td>
<td>950</td>
</tr>
<tr>
<td>19.9</td>
<td>34.5</td>
<td>37.95</td>
<td>1050</td>
</tr>
<tr>
<td></td>
<td>69, 72</td>
<td>79.2</td>
<td>1350</td>
</tr>
<tr>
<td></td>
<td>138, 144</td>
<td>158.4</td>
<td>1650</td>
</tr>
<tr>
<td></td>
<td>230, 260</td>
<td>285</td>
<td>2150</td>
</tr>
<tr>
<td></td>
<td>500</td>
<td>550</td>
<td>3450</td>
</tr>
</tbody>
</table>

1. Tree to energized electrical equipment or line distances in Column 4 have been calculated using IEEE tool distances plus 750 mm safety factor, rounded to the nearest 50 mm.
Table 13: Tree to Energized Electrical Equipment or Lines Distances in Millimetres for Utility Tree Trimmers Using Rated Insulating Tools.

<table>
<thead>
<tr>
<th>Voltage</th>
<th>Utility tree trimmers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal voltage to ground (kV)</td>
<td>Nominal voltage phase to phase (kV)</td>
</tr>
<tr>
<td>Column 1</td>
<td>Column 2</td>
</tr>
<tr>
<td>0.6 DC</td>
<td>4.16</td>
</tr>
<tr>
<td>2.4</td>
<td>13.8</td>
</tr>
<tr>
<td>8</td>
<td>25</td>
</tr>
<tr>
<td>14.4</td>
<td>34.5</td>
</tr>
<tr>
<td>19.9</td>
<td>69, 72</td>
</tr>
<tr>
<td></td>
<td>138, 144</td>
</tr>
<tr>
<td></td>
<td>230, 260</td>
</tr>
<tr>
<td></td>
<td>500</td>
</tr>
</tbody>
</table>

1. Tree to energized equipment or line distances in Column 4 have been calculated using IEEE tool distances plus 300 mm safety factor, rounded to the nearest 50 mm.
2. Tree to energized electrical equipment or line distances in Column 5 for 69 kV lines and higher have been calculated using IEEE tool distances rounded to the nearest 50 mm.

Table 14: AltaLink Modified Limit of Approach for Trained Substation Workers, Non-Utility Work Observers

<table>
<thead>
<tr>
<th>Voltage Levels</th>
<th>Modified Limits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal voltage to ground (kV)</td>
<td>Nominal voltage phase to phase (kV)</td>
</tr>
<tr>
<td>Column 1</td>
<td>Column 2</td>
</tr>
<tr>
<td>8</td>
<td>13.8</td>
</tr>
<tr>
<td>14.4</td>
<td>25</td>
</tr>
<tr>
<td>19.9</td>
<td>34.5</td>
</tr>
<tr>
<td></td>
<td>69, 72</td>
</tr>
<tr>
<td></td>
<td>138, 144</td>
</tr>
<tr>
<td></td>
<td>230, 260</td>
</tr>
<tr>
<td></td>
<td>500</td>
</tr>
</tbody>
</table>
Table 15 and Table 16 are for transmission lines only.

Table 15: *AltaLink’s Minimum Approach Distances for General Public, Low/Medium Voltage Workers and Utility Arborists*

<table>
<thead>
<tr>
<th>Column 1</th>
<th>Column 2</th>
<th>Column 3</th>
<th>Column 4</th>
<th>Column 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voltage Class Line-to-Line (kV)</td>
<td>Max Voltage (kV)</td>
<td>Public No Training</td>
<td>Low voltage (&lt;750V) electrical and other workers all meeting ALTALINK’s Safety Certification Process – minimum 1 year experience working in High Voltage Environment Other Utilities working near but NOT on ALTALINK Transmission Line Facilities</td>
<td>Electrical with 2 years experience in medium or high voltage (&gt;750V) or Line apprentice having successfully completed 2nd year Competency assessment signed off by manager</td>
</tr>
<tr>
<td>500</td>
<td>550</td>
<td>7000</td>
<td>5350</td>
<td>4750</td>
</tr>
<tr>
<td>240</td>
<td>264</td>
<td>5000</td>
<td>3600</td>
<td>3000</td>
</tr>
<tr>
<td>138</td>
<td>152.4</td>
<td>4000</td>
<td>2400</td>
<td>1800</td>
</tr>
<tr>
<td>69</td>
<td>75.9</td>
<td>3500</td>
<td>1850</td>
<td>1250</td>
</tr>
<tr>
<td>25</td>
<td>27.5</td>
<td>3000</td>
<td>1650</td>
<td>1050</td>
</tr>
<tr>
<td>13.8</td>
<td>15.2</td>
<td>3000</td>
<td>1600</td>
<td>1000</td>
</tr>
<tr>
<td>4.16</td>
<td>4.58</td>
<td>3000</td>
<td>1550</td>
<td>950</td>
</tr>
</tbody>
</table>

**Notes:**
1. Approach distances are based on standard atmospheric conditions. Standard atmospheric conditions are defined as temperatures above freezing, wind less than 24 km per hour, unsaturated air, normal barometer, uncontaminated air, and clean and dry insulators. If standard atmospheric conditions do not exist, extra care must be taken. [1]
2. Distances are based on altitudes below 1500 m.
3. MAID – Minimum Air Insulation Distance – bare minimum distance required to withstand the maximum electrical stress experienced by the gap.
4. MAD – Minimum Approach Distance – MAID plus an ergonomic factor which is dictated by level of training.
5. Column 3 is taken from the AEUC Table 2-1.
6. Column 4 – Transmission: (MAID reclose enabled + 1200 mm); Distribution: (MAID reclose enabled + 1500 mm) – RECLOSE ENABLED
7. Column 5 – Transmission: (MAID recloses enabled + 600 mm); Distribution: (MAID reclose enabled + 900 mm) – RECLOSE ENABLED
Table 16: AltaLink’s Minimum Approach Distances for Certified Competent Employees Working or Climbing on Energized Structures

<table>
<thead>
<tr>
<th>Column 1</th>
<th>Column 2</th>
<th>Column 3</th>
<th>Column 4</th>
<th>Column 5</th>
<th>Column 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voltage Class Line-to-Line (kV)</td>
<td>Max Voltage (kV)</td>
<td>ALTALOGIN Certified Competent JM Line worker or an apprentice line worker under the direction of the Competent JM climbing on structure (reclose enabled)</td>
<td>ALTALOGIN Certified and Competent JM Line worker or an apprentice line worker under the direction of the Competent JM (reclose blocked)</td>
<td>ALTALOGIN Certified Competent JM Line worker trained to perform Live Line Work or an apprentice line worker under the direction of the Competent JM trained in live work (reclose blocked) Line-to-Line MAD are for barehand work or Rubber glove work procedures</td>
<td>ALTALOGIN MHAD for Certified &amp; Competent JM Line Worker and trained and competent pilot under the direction of competent JM Line Worker (reclose blocked)</td>
</tr>
<tr>
<td>Phase-Ground</td>
<td>Phase-Ground</td>
<td>Phase-Ground</td>
<td>Phase-Ground</td>
<td>Phase-Ground</td>
<td>Phase-Ground</td>
</tr>
<tr>
<td>Voltage Class Line-to-Line (kV)</td>
<td>Max Voltage (kV)</td>
<td>ALTALOGIN Certified Competent JM Line worker or an apprentice line worker under the direction of the Competent JM climbing on structure (reclose enabled)</td>
<td>ALTALOGIN Certified and Competent JM Line worker or an apprentice line worker under the direction of the Competent JM (reclose blocked)</td>
<td>ALTALOGIN Certified Competent JM Line worker trained to perform Live Line Work or an apprentice line worker under the direction of the Competent JM trained in live work (reclose blocked) Line-to-Line MAD are for barehand work or Rubber glove work procedures</td>
<td>ALTALOGIN MHAD for Certified &amp; Competent JM Line Worker and trained and competent pilot under the direction of competent JM Line Worker (reclose blocked)</td>
</tr>
<tr>
<td>500</td>
<td>550</td>
<td>4600</td>
<td>3700</td>
<td>3550</td>
<td>5050</td>
</tr>
<tr>
<td>240</td>
<td>264</td>
<td>2850</td>
<td>2200</td>
<td>2050</td>
<td>2650</td>
</tr>
<tr>
<td>138</td>
<td>152.4</td>
<td>1650</td>
<td>1450</td>
<td>1300</td>
<td>1600</td>
</tr>
<tr>
<td>69</td>
<td>75.9</td>
<td>1100</td>
<td>1100</td>
<td>950</td>
<td>1100</td>
</tr>
<tr>
<td>25</td>
<td>27.5</td>
<td>900</td>
<td>900</td>
<td>600</td>
<td>700</td>
</tr>
<tr>
<td>13.8</td>
<td>15.2</td>
<td>850</td>
<td>850</td>
<td>550</td>
<td>550</td>
</tr>
<tr>
<td>4.16</td>
<td>4.58</td>
<td>800</td>
<td>800</td>
<td>500</td>
<td>500</td>
</tr>
</tbody>
</table>

**Notes:**
1. Approach distances are based on standard atmospheric conditions. Standard atmospheric conditions are defined as temperatures above freezing, wind less than 24 kilometres per hour, unsaturated air, normal barometer, uncontaminated air, and clean and dry insulators. If standard atmospheric conditions do not exist, extra care must be taken. [1]
2. Distances are based on altitudes below 1500 m.
3. MAID – Minimum Air Insulation Distance – bare minimum distance required to withstand the maximum electrical stress experienced by the gap.
4. MAD – Minimum Approach Distance – MAID plus an ergonomic factor which is dictated by level of training.
5. Column 3 – For voltages ≥69 kV IEC 61472-2004 + 450 mm ergonomic distance was used with overvoltage values of: 69 kV- 4 pu, 138 kV – 3.5 pu, 240 kV – 3.5 pu, 500 kV – 2.5 pu. Voltages <69 kV are based on IEEE 516-2009+ 750 mm ergonomic distance with overvoltage value of 4 pu. – RECLOSE ENABLED
6. Column 4 – For voltages ≥69 kV IEC 61472-2004 + 450 mm ergonomic distance was used with overvoltage values of: 69 kV- 4pu, 138 kV – 3 pu, 240 kV – 2.75 pu, 500 kV – 2.1pu. Voltages <69 kV are based on IEEE 516-2009+ 750 mm ergonomic distance with overvoltage value of 4 pu. – RECLOSE BLOCKED
7. Column 5 – For voltages ≥69 kV IEC 61472-2004 + 300 mm ergonomic distance was used with overvoltage values of: 69 kV- 4 pu, 138 kV – 3 pu, 240 kV – 2.75 pu, 500 kV – 2.1pu. Voltages <69 kV are based on IEEE 516-2009+ 450 mm ergonomic distance with overvoltage value of 4 pu. – RECLOSE BLOCKED
8. Column 6 – For voltages ≥69 kV – Column 5 + 10% to account for rotor wash, corona on helicopter and movement due to wind. 10% is an industry suggested value from IEEE 516-2009. Voltages <69 kV - helicopter work is not normally done at these voltage levels. – RECLOSE BLOCKED
10.12 Low Voltage Work

AltaLink’s Low Voltage Safety Standard (ALS-2047) outlines requirements for workplace electrical safety necessary for the practical safeguarding of workers working on or in proximity to low voltage energized electrical equipment. It aims to protect workers from the hazards of electric shock and arc flash and complements AltaLink engineering standard AL-STN-61003: AC Low Voltage Arc Flash Hazard Analysis, which provides for facility design that controls arc flash hazards through engineering solutions.

While AltaLink aims to reduce arc flash hazards to Level 2 or below (<8 cal cm2), this may not always be feasible. System changes can impact arc flash hazard levels and unless these are recognized and mitigated, may increase hazards to workers. The practices outlined the Low Voltage Safety Standard are to be followed whenever low voltage work is being performed.

The Low Voltage Safety Standard impacts all workers (AltaLink employees and contractors) who repair, maintain, or install equipment in proximity to low voltage apparatus and equipment and is in effect at all AltaLink facilities where low voltage (<750V) equipment exists. This standard applies to both AC and DC low voltage work. Refer to AltaLink safety standard:

- ALS-2047: Low Voltage Safety Standard

10.13 Fencing and Barricades

Contractors must ensure that, where applicable, facility access is controlled by ensuring gates are closed and locked at all times or a suitable watch is provided to prevent unauthorized access. If animals are in the vicinity, the gate must be kept closed.

Contractors must ensure that all excavations, trenches and openings are properly fenced, barricaded or covered according to regulations, and access is controlled to sites where excavations or openings are left unattended and notices are posted warning of the potential danger.

10.14 Radiation Producing Equipment

Contractors must have a program in place that protects the worker from radiation as per Part 20 in the Alberta Occupational Health and Safety Act, Regulations and Code.

- Only properly trained, qualified personnel shall be allowed to use radiation-producing equipment or materials at company facilities. Contractors must maintain records of all training and qualifications.
- Any area which may be affected by radiation must have radiation warning devices and signs containing the internationally recognized symbol for radiation placed around the perimeter.
- When radiographic equipment is used, contractors must ensure the area is clear and all personnel are a safe distance from the radiation source.
- Only properly trained and qualified persons shall be allowed entrance to these restricted areas.
10.15 Chains, Slings and Cables

Contractors must ensure:

- All chains, slings and cables are applicable for the job and are maintained according to the manufacturer’s requirements.
- All chains, slings and cables must have an identification tag attached indicating the load rating, last tested date and limitations. Never exceed the assigned load rating for chains/slings/cables.
- Daily inspections are conducted before use to look for wear, abrasions, collapse and other visible damage.
- Defective or damaged chains, slings, cables or components are removed from service immediately. Hooks, rings, links or any coupling devices must have the same or higher rating as the chain to which it is affixed. Never use makeshift links or coupling devices.
- Rigging fixtures such as spreader bars and crosses must bear name plates clearly stating capacities for tension, compression and transverse loads (as applicable). A copy of the rigging fixture drawing stating technical specification, certified by a professional engineer, must be available on site when the fixture is in use.
- Any tool, sling, shackle, etc. used for towing or recovery must be visually marked and only used for towing or recovery.

10.16 Handling and Use of Explosive Materials (Implosive Sleeves)

Contractors must ensure all explosive materials activities meet or exceed Part 33 of the Alberta Occupational Health and Safety Act, Regulations and Code. Contractors must ensure individuals handling, transporting or operating explosive actuated tools or equipment have received adequate training, have all permits and certificates required and are competent in completing the safety and hazard assessments needed to perform the job safely. The blaster must ensure all site workers are given a safety briefing and effective site control is maintained for the entire blasting operation. Signals for initiating blasts must be clearly defined so as not to be confused with other site emergency signals.

10.17 Mechanical Equipment and Motorized Vehicles

For all machinery and specialized equipment used on the project by the contractor, the contractor must ensure:

- It is of sufficient size, strength and design and made of suitable materials to withstand stresses imposed on it during operation, and it can perform the function for which it is intended or designed.
- The rated capacity or other limitations on the operation of the equipment, or any part of it as described in the manufacturer’s specifications or specifications certified by a professional engineer, are not exceeded.
- Modifications to equipment that may affect its structural integrity or stability are performed in accordance with the manufacturer’s specifications or specifications certified by a professional engineer.
• Equipment and supplies are erected, installed, assembled, started, operated, handled, stored, serviced, tested, adjusted, calibrated, maintained, repaired and dismantled in accordance with the manufacturer’s specifications or the specifications certified by a professional engineer.

All machinery, specialized equipment and motorized vehicles used on the project by contractors must be inspected for suitability and compliance with applicable governing laws and regulations prior to being dispatched to the project site. The equipment must arrive at the work site with a document attesting to the inspection findings. Official documents for all equipment that requires regulatory body certification must be produced on arrival at the work site and a copy retained in the contractor’s records.

Mobile motorized equipment including, but not limited to, lifting, excavating, piling, boring, earth moving and other mechanical equipment heavier than a three ton vehicle must be inspected daily and an individual signed and dated record kept of the findings and inspections. Where log books are legally required, the contractor must ensure the log books are kept up to date, located in the equipment and made available to personnel requesting access for inspection purposes.

All licensed vehicles must be road worthy and meet or exceed the conditions of the Highway Traffic Act. Contractors must ensure all vehicles in general service have the first aid equipment that meets the requirement of OHS Act, Regulation and Code, Schedule 2; and a fire extinguisher with current inspection records that meets the minimum rating of 2A-10BC (for moveable equipment) as per Alberta Safety Codes Act Fire Code Regulation.

10.18 Contractor Owned Fabricated Equipment

All contractor owned, fabricated or modified machinery and equipment used on the project by the contractor must be used, operated, tested, adjusted, calibrated, maintained, repaired and dismantled in accordance with specifications certified by a professional engineer. The certification must be in writing, must be stamped and signed by a professional engineer and a legible copy available on site when the equipment is present.

10.19 Cranes and Lifting Operations

All cranes, hoists and lifting gear must be operated, tested and maintained in accordance with the manufacturers’ specifications or those of a professional engineer and Part 6: Cranes, Hoists, and Lifting Devices of the Alberta Occupational Health and Safety Act, Regulations and Code (and standards identified therein).

Cranes and hoists must have, inside the cab, copies of:

• Crane capacity chart identifying the crane model, manufacturer, and identification number.
• Crane operator manual.
• Current issued certificates of inspection for all hoisting equipment that will be used for lifts.
An engineered lift plan is required for the following lifts:

- Using more than 80% of the crane capacity for all components and/or at the working radius.
- Tandem lifting by two cranes.
- Lifting over any live equipment (must be approved by owner of equipment).

### 10.20 Suspended Personnel Platforms

This specification refers to the use a manufactured personnel platform that is hoisted on the load line of a crane. This does not include bucket trucks or traditional aerial work platforms.

All cranes, personnel baskets, and lifting gear must be operated, tested, and maintained in accordance with the manufacturers’ specifications or those of a professional engineer and Part 6: Cranes, Hoists, and Lifting Devices of the *Alberta Occupational Health and Safety Act, Regulations and Code* (and standards identified therein).

Before using any suspended personnel platform, contractors must determine if an alternative means of reaching the work-site location is available.

Cranes used to hoist personnel must be equipped with a load monitoring device and an anti 2-block device.

When using a suspended personnel platform, the crane must not exceed 50% for all components at working radius.

Suspended personnel platforms are not to be used as elevating devices for convenience or be used for lifting or hoisting materials or tools.

Contractors must develop a procedure for the use of suspended personnel platforms that must include but is not limited to:

- Risk assessment for the scope of work.
- Personnel lift plan, which must include lift calculations.
- Pre-lift meeting checklist.
- Test-lift the basket for:
  - Secondary support using test weights at 125% of rated platform capacity (unoccupied).
  - Primary support using test weights at 125% of rated platform capacity which will include a radius check (unoccupied).
  - Primary support 30 cm off the ground for final check of all connections and rigging (occupied).

### 10.21 Chainsaws

Contractors shall ensure a chainsaw program is in place prior to commencement of work. The program shall include verification of training, an operator skills competency evaluation, a safe work plan review with hazard identification, PPE, transportation/storage and maintenance plan.
Personal protective equipment standard requirements for chainsaw use:

- **Eye Protection**: Safety glasses with side shields, safety goggles and face shields approved by CAN/CSA Standard Z94.3: Eye and Face Protectors or ANSI Standard Z87.1-2010: Occupational and Educational Personal Eye and Face Protection Devices. Note: A face shield attached to the hard hat without safety glasses does not provide the adequate eye protection.
- **Head protection**: A hard hat approved by CSA Standard Z94.1: Industrial Protective Headwear – Performance, Selection, Care and Use or ANSI Standard Z89.1 Industrial Head Protection.
- **Hearing protection**: CSA Z94.2 Standard: Hearing Protection Devices, Class A or equivalent approved protection.
- **Leg protection**: Le Bureau de normalisation du Quebec (CAN/BNQ) 1923-450 Category A or equivalent or better protection such as Workers’ Compensation Board of B.C. (WCB) PPE 1 - 1997. Protective chainsaw pants or chaps that cover from crotch to ankle in front and cover the lower leg, "calf regions" completely must be worn.
- **Hand protection**: Leather, Kevlar or ballistic nylon.
- **Foot/ankle protection**: Boots meeting CAN/CSA-Z195: Protective Footwear or ANSI Standard Z41: Personal Protection – Protective Footwear or equivalent (Note: footwear must cover the ankle and provide ankle support).

### 10.22 Fire Prevention and Fire Fighting Equipment

AltaLink is in the process of defining planning requirements associated with work-site fire prevention and mitigation when constructing on AltaLink right-of-ways or infrastructures. This will be released in a new Fire Risk Work Site Prevention and Mitigation Standard and Procedure for contractors and will be in effect for the entire calendar year. Below are the general highlights of the procedure, for contractors to follow when executing work on behalf of AltaLink.

Contractors must develop and implement fire prevention plans to prevent and respond to potential fire outbreaks. Appropriate measures will be specific to the location, conditions, and type of work being carried out.

In addition, contractors who are working within one kilometer of any public land must comply with the requirements of the Alberta Forest and Prairie Protection Act and associated regulations.

The fire season is typically March 1 to October 31 (Section 17 of the Act); contractors must be aware that the Minister may, at any time, extend or shorten the fire season for any area of Alberta and accordingly be attentive to media releases from the government.

AltaLink has adopted three fire risk operating zones as defined on the “Alberta Wildfire” website (www.wildfire.alberta.ca). For each of the three zones, varying levels of planning, review, and mitigation are required. Contractors are to provide a Work Site Fire Risk Mitigations and Prevention Plan when operating in orange/red or black zones:
1. Green and Yellow, Alberta Wildfire defines these as “No Restriction” and “Fire Advisory” zones. **AltaLink defines this as a Green/Yellow Zone.**
2. Orange and Red, Alberta Wildfire defines these as the “Fire Restriction” and “Fire Ban” zones. **AltaLink defines this as a Red/Orange Zone.**
3. Black, Alberta Wildfire defines this as the “Forest Area Closure” zone. **AltaLink defines this as a Black Zone**

### 10.22.1 Work Site Fire Risk Mitigations and Prevention Plans

Details to be provided in Work Site Fire Risk Mitigations and Prevention Plans include:

1. Work location including the GPS coordinates.
2. Adjusted work methods and procedures to ensure appropriate levels of fire prevention and mitigation as per the fire zone being operated in.
3. Site preparations, associated with fire prevention, required prior to executing work, e.g. wetting down the work site prior and throughout the duration of the work.
4. Specific firefighting equipment that will be required onsite as per the fire zone work is being executed in.
5. Work assignment responsibilities associated with fire prevention for specific individuals, e.g. spotter to monitor for smoke or fire development.
6. Communication plan description between fire prevention operators. Channels and frequency of radio communications required as defined in the “AltaLink Wildfire Management Plan”.
7. A Fire Response Plan if fire occurs at the work site regardless of the prevention methods implemented. Examples include:
   a. The first response contact information for the area being worked in, along with the contact information for the Provincial Forest Fire Centre 310-FIRE (3473).
   b. The Wildfire prevention officers contact information for the area being worked in.
   c. Evacuation procedure for personnel in the event a wildfire occurs.

It is the person-in-charge/crew lead/Construction manager’s responsibility to monitor changes in fire zone status and keep the Work Site Fire Risk Mitigations and Prevention Plan updated and reviewed in the FLHA/tailboard process.

### 10.22.2 Red/Orange/Black Specific Prevention/Mitigation Requirements

- Review and strict adherence to the requirements in AltaLink standards.
- Scale the resources required for fire prevention and mitigation. Personnel dedicated to only fire detection, prevention, and mitigation throughout the duration of the work may be required depending on the fire zone and worksite conditions.
- Confirm cellular service in the planned work location prior to travelling to site – otherwise satellite phone is required.
- Establish/create a fire barrier to surrounding vegetation if required as per the worksite conditions.
10.22.3  Green/Yellow Zone Procedure Requirements
- Adhere to the requirements set out by the Alberta Regulations.
- Adhere to the Forest and Prairie Protection (Ministerial) Regulation tools and equipment requirements.
- Review the annually released safety bulletin highlighting the dates of when Alberta is entering and exiting the wild fire season.
- AltaLink deems this green/yellow zones as “business as usual” but the following is still required when completing work during the fire season:
  - Fire-fighting equipment ample for the crew size.
  - Discuss fire hazards and include them in the safe work plan and hazard assessment along with controls.
  - Inspect fire extinguishers regularly as per requirements.
  - Refrain from parking vehicles on tall dry grass (where possible) and carefully control personal smoking areas.
  - Clean concealed areas around exhausts/heat shield plates to prevent equipment fire.

10.22.4  Red/Orange Zone Specific Procedure Requirements
- Submit for review a Work Site Fire Risk Mitigation and Prevention Plan; even though, there are no limitations on when work can be completed in a Red/Orange fire risk zone.
- Work may be delayed until mitigations outlined in the plan are achievable or the fire risk has decreased.
- Submit a detailed Work Site Fire Risk Mitigation and Prevention Plan meeting the minimum requirements and take the required actions when a red/orange fire zone occurs during the project execution stage.

10.22.5  Black Zone Specific Procedure Requirements
- Delay all maintenance work deemed non-emergency work until conditions improve, a black zone has an extreme fire risk and is deemed a forest closure area by the Alberta government.
- Only emergency work as declared by the ACC will be considered in a black zone (typically when a system critical Emergency Response Plan – ERP has been declared).
- Submit for initial review a detailed Work Site Fire Risk Mitigation and Prevention Plan to the AltaLink Project Manager for any immediate need to perform work in a black zone.
- Receive final approval and signoff to complete work in a black zone from:
  - The System Operations manager on call, and
  - The Director of Project Delivery.
Inform the AltaLink Project Manager to notify the Alberta Wildfire Prevention Officer of any work that will occur in a black zone. The officer will review the Work Site Fire Risk Mitigation and Prevention Plan.

10.22.6  Fire Equipment Requirements
Contractors must have at least the equipment listed in Table 17 in good working condition, according to the number of men employed at the site. In the event that there is conflict between this table and the
regulations, the regulations will prevail (From Schedule 1 of the [Forest and Prairie Protection (Ministerial) Regulation], as well as section 11 of the same regulation).

**Table 17: Required Fire Fighting Equipment**

<table>
<thead>
<tr>
<th>Men Employed at the Site of Operations</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6-10</th>
<th>11-20</th>
<th>21-30</th>
<th>31-40</th>
<th>41+</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shovels</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>5</td>
<td>10</td>
<td>15</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>Back pack w/pump</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>5</td>
<td>10</td>
<td>15</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>Axe or Pulaski</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>5</td>
<td>10</td>
<td>15</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>Fire pump</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fire hose (metres)</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>450</td>
<td>450</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power saw</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Director means Director of Forestry

Table 17 summarizes the equipment required on hand for various size crews. These regulations are from the Forest and Prairie Protection Act and Forest and Prairie Protection Regulation.

### 10.23 Asbestos

Based on the period of their construction, some AltaLink facilities have been identified as containing (or having the potential to contain) asbestos in its construction materials. Facilities with known or suspected asbestos are listed in ALS-2057: *Asbestos Release Standard and Procedure* which is an internal standard located on the contractor website in the *AltaLink Reference Safety Standards* section. Contractors must ensure the requirements of the Alberta Asbestos Abatement Manual (2012) are followed where any type of work is done where asbestos containing products may be disturbed, including submission of Notice of Project forms within the prescribed timeframes prior to any work beginning.

If work is to occur in a facility that has the potential to disturb asbestos, the AltaLink project manager is required to follow the identification and abatement process outlined in ALS-2057 before the work is to proceed.

If it is suspected that asbestos containing products are inadvertently disturbed, the person-in-charge of the work shall:

- Isolate the area immediately.
- Report the incident to their reporting manager or designate.
- Report the incident to the AltaLink project manager.
- Minimize any further disturbance.
- Flag off the area to prevent others from entering if suspected asbestos may be airborne.

Work is not to proceed until an assessment (and abatement if required) is completed and the area is deemed safe to re-enter.
10.24 Cutting Tool Selection and Use

Contractors must have a program to provide guidance on the proper selection, use, and maintenance of cutting tools (e.g., knives, cable strippers, etc.) and the appropriate cut resistant gloves to be used. At a minimum, the program must include the following elements:

- A process to determine if a cutting tool must be used to perform the task or if the requirement for a cutting tool can be practically eliminated.
- A process to determine if a cutting/shearing tool (e.g., wire cutters, cable skinner) can be used to perform the task instead of a knife.
- A process to determine what type of hand protection (i.e., cut resistant) must be worn to use the cutting tool.
- A determination of the key tasks performed by the organization that requires cutting tools and a determination of what cutting tool and hand protection will be used.
- Guidelines for maintaining and storing tools.

Box cutters or retractable knives are not to be used to strip or cut cables. When it is not suitable to use jacket skinners or wire strippers, a cable skinning knife with a fixed blade is required.

Knives with segmented blades (i.e., breakaway knife blades) are not to be used on AltaLink worksites.

When cut resistant gloves are required, a minimum of level 3 cut resistant gloves must be used.

10.25 Off-road Vehicle Use

Contractors must have a program in place for the safe use of off-road vehicles when accessing areas where there are no roads and minimal support services. The program must ensure there are measures in place to minimize impacts in sensitive environmental areas and addresses the hazards related to off-road vehicles and controls in place to mitigate these hazards.

10.26 Power Mobile Equipment

Contractors must have a program in place for the safe use and operation of powered mobile equipment. Workers must be authorized to use and be properly trained and qualified to operate the equipment.

10.27 HVDC Converter Stations: Auxiliary Systems

The HVDC converter stations have a variety of auxiliary equipment not under the direction and control of the ACC. There are unique sources of energy at the HVDC sites not typically found at the other substations. This requires lock-out and tag-out (LOTO) procedures to be in place to manage the control of hazardous energy for these systems. The HVDC facilities are also equipped with Kirk Key safety interlocking systems and Bay Control Units, which have interlocking bypass capabilities. HVDC operation technologists can issue auxiliary locks to auxiliary workers or contractors who do not have their own personal locks when they are working on auxiliary equipment.

If you are completing auxiliary work at one of the HVDC substations, you must follow ALS-2055 – HVDC Converter Stations: Auxiliary Systems – Safe Control of Hazardous Energy – Lock Out and Tag Out.
11 FACILITY SECURITY

Contractors must ensure that, where practicable, facility access is controlled by ensuring gates are closed and locked at all times or a suitable watch is provided to prevent unauthorized access. If animals are in the vicinity, the gate must be kept closed. If continuous access is required, the gate must be secured to prevent damage and must be closed and pinned as a minimum during periods of inactivity. Additionally:

- Metal temporary fencing must be bonded where applicable.
- Do not store anything within the substation fences (trucks, etc.).
- Storage of any non-site specific spare material/equipment is not permitted on site.
  - Examples of site specific spares are: GIL bushings, fuses, etc.
- Any site specific consumables shall not be stored outdoors.
- In buildings with windows, avoid placing any spares/consumables in view.
- Storage of copper wire/material is not permitted.
- Construction shacks are not permitted inside the substation.
- No project consumables (e.g., copper wire, connectors, fuel, etc.), trailers, or vehicles are to be stored inside the substation during non-working hours. If project work necessitates storage inside the substation, on-site security shall be used outside of working hours and be coordinated with AltaLink Security. Any exceptions must be approved by AltaLink Security.
- Following project completion no spare额外 material shall be left on site beyond any site specific spares.

12 HEALTH & SAFETY MEETINGS

Contractors must ensure that, as a minimum, monthly scheduled safety meetings are completed with all personnel.

13 FORMAL INSPECTIONS AND AUDITING

Contractor supervisors / foreman, health and safety representatives must perform a daily tour of their work site(s) with a focus on the health and safety aspects of worker activities and site conditions. Brief, written records of the observations must be recorded with the date, the activity or condition and any corrective actions identified or implemented.

Contractors must ensure that a formal compliance audit of the implementation of their health and safety management system at least every 12 months, or more frequently as a contractor may choose for his or her own purposes, depending on the phase of the work, changing conditions at the site or for performance related-reasons. A copy of the report must be provided to AltaLink. AltaLink reserves the right to perform a formal health and safety audit(s) of contractor project activities. The scope of these
audits shall cover compliance with the agreed health and safety management plans, policies, procedures, practices and with the governing laws and regulations.

14 CONTRACTOR ENVIRONMENTAL REQUIREMENTS

AltaLink’s commitment to managing environmental performance is demonstrated throughout the organization – from the Environmental RESPECT Policy to the environmental standards, procedures and requirements used to direct and execute work activities. Figure 1 demonstrates our commitment.

![Environmental Commitment Diagram]

The purpose of this section is to provide an overview of AltaLink’s general and Project Specific Environmental Requirements (AL-ENV-6015) for contractors.

14.1 AltaLink’s Environmental RESPECT Policy

Contractor environmental performance is critical in ensuring AltaLink meet its commitment to protect the environment. All contractors have the responsibility to be knowledgeable about AltaLink’s Environmental RESPECT policy. Contractors must be responsible and accountable for understanding and incorporating environmental requirements into their daily work activities with the obligation to meet or surpass all environmental legislation, regulations and other applicable requirements. The full policy can be viewed on AltaLink’s website (www.AltaLink.ca) as well as the Contractor Safety Site.

14.2 Legal and Other Requirements

There are many provincial and federal laws and regulations relating to environmental protection. It is the contractor’s responsibility to know, understand and comply with all applicable federal and provincial
environmental laws, regulations, approvals or permits and municipal/county requirements related to
the work being undertaken.

AltaLink’s environmental standards identify the applicable legal and other requirements that apply to
the construction and operation of AltaLink’s electrical infrastructure. Environmental standards apply to
both employees and contractors.

14.3 Competence and Awareness

Contractors must be technically competent to perform their work and understand applicable
environmental requirements, responsibilities and industry best practices. Contractors must also ensure
that subcontractors understand their environmental responsibilities and are competent to perform their
work.

Contractors may be required to have project specific plans developed by a qualified environmental
professional.

14.4 Environmental Incidents

All environmental incidents and near misses must be reported to AltaLink and investigated as outlined in
Section 3: Incident Management.

14.5 Project Specific Environmental Requirements

AltaLink will include Project Specific Environmental Requirements in the tender documents. The Project
Specific Environmental Requirements will provide contractors with copies of project specific permits,
approvals, authorizations and notifications, project specific commitment and mitigations. The Project
Specific Environmental Requirements will identify if the contractor is required to develop Project
Specific Plans (See section 14.6.1).

AltaLink will revise the Project Specific Environmental Requirements based on additional requirements
from regulators, receipt of new approvals, notifications, or authorizations, and additional project
specific environmental assessments. Revisions will be communicated with the contractor within 45 days.

14.6 Contractor Environmental Protection Plan Requirements

AltaLink requires all contractors develop an Environmental Protection Plan (EPP) specific to the work
they complete for AltaLink. The EPP must:

- Describe how the requirements within AltaLink’s Environmental RESPECT Policy and
  Environmental Standards and Procedures will be incorporated into work activities.
- Define and indicate how the work activities will comply with legal and other requirements.
- Describe who is accountable and responsible for implementing and monitoring the EPP.
- Identify mitigation measures that will be implemented to prevent and minimize environmental
effects.
- Indicate how environmental incidents will be reported and investigated in accordance with the
requirements in section 3: Incident Management.
- Include a Waste and Recyclables Management Plan (Refer to AL-ENV-6009: Waste Management Standard).

Contractors are required to develop and submit their EPP each calendar year, prior to January 31, to environment@altalink.ca unless otherwise contractually agreed.

**14.6.1 Project Specific Plans**
Contractors are required to develop Project Specific Plans based on the Project Specific Environmental Requirements AltaLink provides. The Project Specific Plans must describe how activities will conform and/or comply with the specific approvals, requirements, or commitments as well as, identify potential environmental effects of the activities, describe applicable roles and responsibilities for managing these issues and the control measures that will be used to minimize and mitigate the associated environmental effects. These plans must be developed by a qualified environmental professional as described in the corresponding environmental standard and/or tender document.

**14.7 Records**
The contractor must submit all required records to the AltaLink environmental advisor upon completion of the project, unless required earlier as specified in the Project Specific Environmental Requirements, a condition of approval, to support an incident investigation, tracking or auditing purposes. Records may include environmental monitoring reports, waste dockets, results of nesting behaviour searches and any other record as outlined in the Project Specific Environmental Requirements and tender document.

**14.8 Environmental Monitoring and Inspections**
Depending on the scope of the project, environmental monitoring of construction activities may be a condition of a regulatory permit or approval. Environmental monitoring requirements will be included in the Project Specific Environmental Requirements.

Environmental inspections will be conducted periodically to monitor conformance with AltaLink requirements and compliance with legal and other requirements. Any corrective actions identified from the inspection will be communicated to the onsite work lead. Contractors are required to address any corrective actions specified, in the final inspection report.

An AltaLink environmental advisor or designate may complete an environmental inspection.

**14.9 Environmental Standards and Procedures**
The following section outlines AltaLink’s environmental standards and procedures. Environmental standards apply to all AltaLink employees and contractors. Some environmental procedures may only apply to AltaLink employees; however, as indicated in the following sections, they have been provided to contractors for reference.
There may be additional applicable vegetation management or engineering standards that contain environment content as detailed in the project tender documents and/or design based memorandum. Access to these standards may be requested through the project manager.

14.9.1 Greenhouse Gases (SF₆, CF₄, RF10A, R22)
AltaLink uses several greenhouses gases in both electrical equipment (SF₆ and CF₄) and the operation and maintenance of HVAC systems (RF10A and R22). Due to the high global warming potential of these gases, all necessary measures and precautions must be taken to prevent releases. There may also be safety concerns with exposure to these gases and/or their residue.

All SF₆ cylinders used for pressurizing new equipment must be returned to the manufacturer or gas supplier. AltaLink requires confirmation that cylinders have been returned. Refer to:

- AL-ENV-6002: SF₆ Gas Reporting Procedure
- ALF-STN-1025: SF₆ Gas Handling Procedure
- ALF-STN-1025F1: Emissions from In-Service Equipment
- ALF-STN-1025F2: Emissions from Decommissions and Failed Equipment

14.9.2 Wildlife
Contractors will be advised of areas which contain known wildlife or wildlife habitat. Depending on the location and timing of work activity, consultation may be required with AltaLink environment. Refer to:

- AL-ENV-6005: Wildlife Management Standard
- AL-ENV-6006: Wildlife Management Procedure
- ALS-2009F7: Wildlife Mortality or Injury Report Form

14.9.3 Oil Filled Equipment & PCB Management
Contractors who handle transformer oil or in-service oil filled equipment must take necessary measures and precautions to prevent releasing any PCB oil into the environment. There are specific requirements for the maintenance, storage, transportation, recycling and disposal of PCB contaminated electrical equipment, equipment components and oil. Refer to:

- AL-ENV-2003: PCB Contaminated Electrical Equipment Handling Standard
- ALF-STN-1015: PCB Contaminated Oil and Equipment Handling Procedure

14.9.4 Contaminated Soil Handling
AltaLink has identified specific requirements for the handling, on site re-use, off site re-use, and offsite disposal of soils by an approved waste vendor while working on AltaLink facilities and properties during construction, maintenance, and operations activities. Refer to:

- AL-ENV-6011: Contaminated Soil Handling Standard
- AL-ENV-6012: Contaminated Soil Handling Procedure (for reference)
14.9.5 Clubroot

Spread of clubroot has been attributed to the movement of resting spores within agricultural soil carried by equipment between fields. At a minimum, all vehicles, equipment, footwear, PPE or tools in contact with soil must be rough-cleaned (e.g., using a wire brush, scraper, broom, shovel or hand to remove visible accumulations of mud and/or soil clumps and vegetation debris) prior to exiting a site. All mats brought to the site for installation must be clean, (e.g., free of visible accumulations of mud and/or soil clumps, and free of vegetation debris). Additional cleaning protocols may be required based on the activity and level of clubroot risk. Refer to:

- AL-ENV-2001: Clubroot Management Procedure

14.9.6 Temporary Access

If not managed appropriately, temporary access associated with construction and operations activities can negatively affect soil and vegetation. AltaLink has specific criteria in which temporary access or workspace activities must be modified or suspended. Refer to:

- AL-ENV-6007: Temporary Access Standard
- AL-ENV-6008: Temporary Access Procedure (for reference)

14.9.7 Work in and Around Water Bodies

Contractors are responsible to ensure that all of the appropriate permits and approvals are in place and available on site before conducting activities that may affect water bodies. Contractors are also responsible to conduct activities in accordance with any approval and/or permits and to minimize effects on water bodies. AltaLink has developed both general and specific procedures and requirements for common activities that occur directly in or in the vicinity of water bodies. Refer to:

- AL-ENV-6003: Work in and Around Water Standard
- AL-ENV-6004: Work in and Around Water Procedure

14.9.8 Historical Resources

AltaLink is required to secure a Historical Resources Act approval prior to the start of construction activities. AltaLink will notify contractors when all approvals have been issued. Contractors will be advised of areas designated as “no-activity areas” because of known historical resources (e.g., archaeological or paleontological sites). Those no-activity areas must be staked in the field for avoidance. Contractors must neither drive nor walk into an area staked for the purpose of protecting sensitive historical resources. It is important to understand that it is illegal to disturb, alter, mark, collect, etc. an historical resource.

If, during construction activities, a contractor discovers a previously unknown historical resource (e.g., bones or stone tools in a backhoe bucket), construction at that location must cease. The contractor must notify AltaLink environment immediately. In turn, AltaLink will contact the provincial government regulator who will determine appropriate mitigative action.
14.9.9 Waste Management
All waste and recyclable materials must be managed while on the work site and ultimately disposed of by an authorized waste vendor. Contractors who generate waste or recyclables are required to develop a Waste and Recyclables Management Plan. The plan must identify the various waste and recyclables streams, authorized waste vendor and receiving facility. Hazardous waste and recyclables have specific handling, storage, transport and disposal requirements and will require a greater level of planning to ensure regulatory requirements are met. Refer to:

- AL-ENV-6009: Waste Management Standard
- AL-ENV-6010: Waste Management Procedure (for reference)
- AL-ENV-6009F1: Waste and Recyclables Management Plan

14.9.10 Spill Prevention and Response
Contractors, who manage, handle, store or transport oil, fuel or other hazardous materials are required to develop a Spill Prevention and Response Plan, appropriate to their work activities. The Spill Prevention and Response Plan must describe appropriate spill prevention and response procedures so environmental emergencies are addressed in accordance with applicable legislation and best management practices to facilitate a safe, quick, and effective response and thus, minimize adverse effects to terrestrial and aquatic environments. Refer to:

- AL-ENV-6001: Spill Prevention and Response Requirements Standard
- AL-ENV-6001F1: Spill Prevention and Response Plan
- ALS-2009F8: Spill Report Form

14.9.11 Reclamation
Land disturbed by construction, operation and maintenance of AltaLink infrastructure must be reclaimed to mitigate potential future adverse effects, comply with regulatory requirements, and maintain positive relations with stakeholders. Contractors must understand AltaLink’s requirements for planning, implementing, and monitoring reclamation and incorporate these requirements into their work plans. Refer to:

- AL-ENV-6013: Reclamation Standard (to be released in October 2018)
- AL-ENV-6014: Post-Construction Reclamation Procedure (to be released in October 2018)
- AL-ENV-6014F1: Reclamation Documentation (to be released in October 2018)

15 REFERENCES

The following documents are references within this standard and they are located on AltaLink’s Contractor Safety website. To gain access to the Contractor Safety website, send a request to healthandsafetyadministrator@altalink.ca.
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### 16 Definitions

**Brown Field** – An AltaLink transmission line or substation that is connected or has been connected to AltaLink’s power system. The site is subject to the hazards of high voltage and induction from high voltage.

**Construction Authorization** – Is a project manager issued authorization, enabling construction work to begin. All construction work performed on the project occurs under the construction authorization. At the completion of the project the construction authorization is returned back to the project manager.

**Construction Manager** – Is the construction authority for new, electrically isolated, facilities or additions to existing functional facilities.

**Construction Isolation** – Issued by the construction manager. It defines all components of the new facility that must remain isolated from all other electrical components of the system (lines, substations, generation). Isolation points must be physically isolated by an open span or open jumper and not open switchable switch. For details see ALS-818 – *Facility Isolation and Permission to Work*.

**Contractor** – Unless otherwise specified, refers to both contractors and sub-contractors.

**First Aid Incident** – An occupational injury/illness that requires first aid treatment only and does not result in loss of time from work. First aid injuries include:

- a) Use of non-prescription medications at a non-prescription strength, including antiseptics;
- b) Administration of tetanus or diphtheria shot(s) or booster(s). Other immunizations such as Hepatitis B or rabies vaccine related to an injury are considered medical treatment;
- c) Cleaning, flushing or soaking wounds on skin surface;

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<td>AL-ENV-6012</td>
<td>Contaminated Soil Handling Procedure (for reference)</td>
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d) Use of wound coverings such as bandages including liquid bandages, gauze pads, steristrips or butterfly bandages, etc. Wound closing devices such as staples, sutures and skin glue are considered medical treatment;

e) Use of any hot/cold therapy (e.g., compresses, soaking, whirlpools, non-prescription skin creams/lotions for local relief, etc.);

f) Use of any totally non-rigid, non-immobilization means of support (e.g., elastic bandages, wraps);

 g) Use of temporary immobilization devices while transporting an accident victim;

h) Use of eye patches;

i) Removal of foreign bodies not embedded in the eye if only irrigation or removal with a cotton swab is required;

j) Removal of splinters or foreign material from areas other than eyes by irrigation, tweezers, cotton swabs or other simple means;

k) Use of finger guards;

l) Use of massages;

m) Drinking of fluids for relief of heat stress; and

n) Preserving warmth for relief of cold stress.

Green Field – An AltaLink transmission line or substation that is not connected or has never been connected to AltaLink’s power system. The line or substation must be isolated by an open span or open jumpers and must not be isolated from the AltaLink power system by a switchable switch. The site may be subject to the hazards of high-voltage induction from an energized high-voltage line.

Ground Disturbance – Any work or activity that results in a disturbance of the earth, including excavating, digging, trenching, plowing, drilling, tunneling, auguring, backfilling, blasting, topsoil stripping, land leveling, peat remving, quarrying, clearing and grading.

Guarantee of Isolation (GOI) – Is issued by the ACC operator to assure field staff that all “points of isolation” on a line or portion of the system have been opened, locked (where provision exists) and tagged. This gives the worker permission to test for potential on the equipment identified in the guarantee of isolation, install temporary protective grounds and issue a work permit. "Do not Operate" tags will be installed at all isolation points.

Medical Aid Incident – A classification of occupational injury/illness for medical treatment beyond first aid injury where there have been no lost days. The following are not considered medical treatment injuries:

a) Visit(s) to a health care provider limited to observation or counseling or prescribed restricted work;

b) Diagnostic procedures (e.g., x-rays, blood tests), including the use of prescription medications solely for diagnostic purposes (e.g., eye drops to dilate pupils).
Near Miss Incident
An unplanned event that did not result in injury, illness, damage or environmental impact but had the potential to do so. A near miss incident has a release of energy that had the potential to cause a serious injury, incident, impact or loss.

Non-conformance
A performed activity that does not follow AltaLink standards, procedures, or project specific environmental requirements.

Non-compliance
A performed activity that does not fulfil the conditions of provincial or federal regulations, legislation, or approvals.

Occupational Injury/ Illness – Any injury/ illness that is not recorded as a fatality, lost-time injury, medical aid or restricted work incident but has been medically diagnosed and determined to be work-related and the cause is verified trauma or workplace exposure. Examples include punctured eardrums and fractured or cracked bones.

Person-in-charge – Meets the requirements of the Electrical Utilities Code, Part 40 of the Alberta Occupational Health and Safety Act, Regulation and Code and AltaLink designated standards. The person-in-charge is responsible to coordinate the site from a safety perspective. This entails authorizing others to perform work and issuing work permits to independent work groups if appropriately qualified. The person-in-charge must remain on site at all times or transfer the role to an appropriate individual if he or she must leave the site. The ACC must be notified of any transfer of person-in-charge (ACC operator or site entry/exit notification).

Preventable Vehicle Accident (PVA)
An event involving harm caused by a motor-vehicle that resulted due to reasonably-avoidable error. This means any accident involving an employee driving an on-highway company or rental vehicle that results in death, injury or vehicle or property damage. This applies to any vehicle damage no matter how slight.

Qualified Environmental Professional: A scientist or technologist specializing in a relevant applied science or technology including, but not limited to agrology, forestry, biology, engineering, geomorphology, geology, hydrology or hydrogeology and registered in Alberta with an appropriate professional organization and who, through demonstrated suitable education, current experience, and detailed knowledge relevant to their particular discipline, may be reasonably relied upon to provide advice and develop plans within their area of expertise.

Restricted Work – When an employee, due to a work-related injury/illness, is medically determined to be unable to perform one or more routine functions or unable to work the normal time period of their pre-injury/illness work day, they are working in a “restricted” capacity.

Safety Meeting – General site safety meeting held at minimum monthly involving all workers and management on site.
**Significant Near Miss** – An unplanned event that had a high potential for a serious consequence and is classified as a class 2 near miss incident. The event could be a potential injury, damage or could affect reputation. A significant near miss incident can also include any spill/release as noted in Appendix 1 - *AltaLink Release Reporting Requirements*.

**Species-at-risk** – Include threatened or endangered species as per the provincial Wildlife Act and federal Species at Risk Act.

**Tailboard Meeting** – A safety meeting held each day on the work site that covers work tasks of the day. It includes a review of the work plan with a discussion on the inherent hazards and the required safety mitigation. All workers involved in the tasks to be performed must be in attendance.

**Work Authorization** – a generic term used in this document to include all types of authorizations and work permits that may be required for work on AltaLink functional facilities.
## APPENDIX 1 – ALTALINK RELEASE REPORTING REQUIREMENTS

### GENERAL ALTALINK RELEASE REPORTING REQUIREMENTS

<table>
<thead>
<tr>
<th>Product/Substance</th>
<th>Near Miss</th>
<th>Environmental Incident</th>
<th>Class 2 (Regulatory Reportable)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product/Substance that when released may cause, is causing or has caused an adverse effect to the environment</td>
<td></td>
<td></td>
<td>&gt; Any amount</td>
</tr>
<tr>
<td>Any product/substance released to a surface water body (including a wetland or watercourse) or groundwater</td>
<td></td>
<td></td>
<td>&gt; Any amount</td>
</tr>
<tr>
<td>PCBs:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Electric insulating oil (PCB ≥ 2 ppm) in-service¹</td>
<td>&lt; 5 liters</td>
<td>≥ 0.75 gram PCB equivalent (cumulating)</td>
<td>≥ 5 liters ≥ 1 gram PCB equivalent (cumulating)</td>
</tr>
<tr>
<td>Electric insulating oil (PCB ≥ 2 ppm) not in-service²</td>
<td></td>
<td></td>
<td>Any amount</td>
</tr>
<tr>
<td>Equipment and solids (PCB ≥ 50 ppm) not in-service²</td>
<td></td>
<td></td>
<td>Any amount</td>
</tr>
<tr>
<td>Electrical insulating oil (PCB &lt;2ppm)</td>
<td>&lt; 5 liters</td>
<td>≥ 5 liters</td>
<td>≥ 200 liters³</td>
</tr>
<tr>
<td>Flammable liquids (e.g. gasoline, diesel, Jet A/B)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hydraulic oil</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Herbicides</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Antifreeze</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Battery acid</td>
<td></td>
<td>&gt; 0 liters</td>
<td>≥ 5 liters</td>
</tr>
<tr>
<td>Greenhouse gases (i.e., refrigerants, SF6, CF4)</td>
<td></td>
<td>&lt; 10 kg or &lt; sustained 10 minute release</td>
<td>≥ 10 kg or ≥ sustained 10 min release</td>
</tr>
</tbody>
</table>

¹ In-service (in-use) – Equipment and its associated products that are being processed daily and used for the purposes for which it was manufactured. This includes emergency back-up equipment located at AltaLink facilities.

² Not in-service (not in-use) – Equipment and products stored for future use, or equipment being stored pending disposal.

³ VP EH&S has final discretion over whether the release is having or could have an adverse effect to the environment, and therefore whether it is regulatory reportable or not.
<table>
<thead>
<tr>
<th>Product/Substance</th>
<th>Near Miss</th>
<th>Environmental Incident</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Class 1</td>
<td>Class 2 (Regulatory Reportable)</td>
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<tr>
<td>Any release or anticipated release that results in: the death of a person, the treatment of a person’s injuries by a health care professional, an evacuation or shelter in place or the closure of a facility, road, main railway line.</td>
<td>&gt; Any amount</td>
<td></td>
</tr>
<tr>
<td>Class 1, packing group II Explosives (e.g., detonators, charges)</td>
<td>Less than 5 litres</td>
<td>≥ 5 litres</td>
</tr>
<tr>
<td>Class 2 Gases (e.g. propane, SF₆, CF₄)</td>
<td>≥ 5 litres</td>
<td>Any quantity that endangers or could endanger public safety</td>
</tr>
<tr>
<td>Class 3, packing group II Flammable liquids (e.g. gasoline)</td>
<td>Less than 5 litres</td>
<td>≥ 5 litres</td>
</tr>
<tr>
<td>Class 6.1, packing group I or II Toxic substances (e.g. pesticides)</td>
<td>≥ 5 litres</td>
<td>≥ 30 litres or kg, and the release endangers or could endanger public safety</td>
</tr>
<tr>
<td>Class 8, packing group I or II Corrosives (e.g. battery fluid)</td>
<td>≥ 5 litres</td>
<td>≥ 30 litres or kg, and the release endangers or could endanger public safety</td>
</tr>
<tr>
<td>Class 3, packing group III Flammable liquids (e.g. diesel)</td>
<td>Less than 5 litres</td>
<td>≥ 5 litres</td>
</tr>
<tr>
<td>Class 6.1, packing group III Toxic substances (e.g. pesticides)</td>
<td>≥ 5 litres</td>
<td>≥ 30 litres or kg, and the release endangers or could endanger public safety</td>
</tr>
<tr>
<td>Class 8, packing group III Corrosives (e.g. electric storage batteries)</td>
<td>≥ 5 litres</td>
<td>≥ 30 litres or kg, and the release endangers or could endanger public safety</td>
</tr>
<tr>
<td>Class 9 Miscellaneous (e.g. PCB ≥50 ppm)</td>
<td>≥ 5 litres</td>
<td>≥ 30 litres or kg, and the release endangers or could endanger public safety</td>
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