INTRODUCTION

The purpose of this special provision is to outline CN's rules, policies, standards and procedures that the Contractor will be expected to abide by while working within the CN right-of-way (ROW).

Railway facilities and operations can be dangerous places for people who do not have a railroad background. It is important that proper measures be taken to ensure that access to CN property is controlled and the safety of all people is assured. The Contractor shall be responsible for reviewing the appropriate health, safety and regulatory documents and for determining their applicability in relation to the contract work prior to its use. The Contractor is solely responsible for ensuring compliance with this special provision.

All Contractor, and Sub-Contractor, personnel shall read and comply with the requirements of this special provision.

GENERAL REQUIREMENTS

1. The vertical construction clearance of 23 feet above the top of the highest rail and the horizontal construction clearances of 8 feet 6 inches from the centreline of tangent track, and 10 feet from the centreline of curved track, must be maintained at all times.

2. Access to the ROW must be protected, using chains, gates or by other means acceptable to CN, at all times when the CN flagperson is not present. Chains and gates shall be secured with a CN lock only.

3. The Contract Administrator may schedule and conduct bi-weekly liaison meetings with CN for the duration of the Contract, for which attendance by the Contractor is mandatory.

4. The Contractor shall supply the following items in the site trailer for the duration of the work:

   .1 First aid kits and a list of qualified first aid attendants.
   .2 Fire extinguisher.
   .3 Material safety data sheets.
   .4 Safety and evacuation plan.
   .5 Emergency procedures, including directions to the nearest hospital, and a list of emergency contact phone numbers.

5. In the event that ambient air temperatures approach 30 degrees Celsius or higher, CN reserves the right to restrict construction activities within the ROW.

6. The Contractor shall maintain positive drainage of CN's property for the duration of the work. Any dewatering of the site requires prior CN approval. After construction is complete, CN's property shall be restored to the satisfaction of CN. Any fencing removed to facilitate construction shall be restored and any temporary drainage facilities shall be removed.

7. The Contractor shall not store any material or equipment on CN's property. Equipment or vehicles shall be situated in a location so as not to block the sight lines at level crossings.

8. Metal measuring tapes or other metal appliances must not come into contact with the rail of any track. Walking or stepping on a rail, switch, interlocking machinery or connection is prohibited.

9. Red colour shall not be used for safety helmets, safety vests, apparel, or survey markers. Other highly visible colours, such as orange, are acceptable.

10. The Contractor's equipment shall be in good working condition and maintained on a regular basis. Inspection certificates, issued within the previous year, shall be kept in the cab of each piece of equipment.

11. The Contractor shall have certificates of conformity and inspection, signed and sealed by a professional engineer and issued within the previous year, for all lifting equipment. The inspection certificate shall be kept in the cab, and lift capacity shall be clearly indicated on all lifting equipment. Chains used for lifting must have a tag indicating the load limit.

12. All work executed by the Contractor shall not interfere with the continued, safe movement of rail traffic. Any object waved violently by anyone on or near the tracks is a signal for trains to stop. The Contractor shall be liable for all costs, direct and indirect, incurred by CN as a result of damage, disruption or inconvenience to CN's operations, property or infrastructure, caused by the Contractor's operations.

13. The Contractor shall note that, from time to time, CN or other work in the vicinity of the project limits may result in cancellation or reduced hours of rail traffic protection (flagging) and/or track closures scheduled for this contract. The Contractor shall have no claims for additional payment for delays in this regard.

14. The Contractor shall be liable for all costs, direct and indirect, incurred by CN due to the settlement of track(s) or any other problems related to CN's operations, property or infrastructure, that occur as a result of the Contractor's operations, for a period of one (1) year from the date of completion of the work.

15. The Contractor shall be responsible for all costs associated with delays or inconvenience to the Contractor's operations as a result of:

    .1 CN's requirements;
    .2 Failure by the Contractor to provide sufficient notification to CN as outlined in this special provision;
    .3 CN's inability to provide a CN flagperson, notwithstanding the Contractor providing sufficient notification as outlined in this special provision;
    .4 Stoppage of work within the ROW, by CN;
    .5 Downtime due to train movements;
    .6 Delay or shortened duration of the reduced minimum clearances by CN; or
    .7 Cancellation, delay, or reduced hours of the track closure(s), by CN, or stand-by time during the track closure to allow train passage.

16. Where any individual(s) in the employment or under the responsibility of the Contractor, or Sub-Contractor, is in violation of CN's safety rules, policies, standards, or procedures, or instructions / direction given by CN personnel, the Contractor shall be assessed a $5,000 penalty, per incident. This shall result in the immediate removal of the Contractor, and/or the offending personnel from CN property, stoppage of all work within the ROW, and closure of the site until the situation is corrected. Repeat offences shall result in the Contractor being prohibited from continuing all contract work within the ROW and from working on CN property in the future.

17. All accidents / incidents that occur on CN property, or adjacent to CN property with risk to rail operations, shall be reported to the CN flagman immediately, and to the CN Contact Person as soon as safely possible. All such incidents shall be fully investigated by the Contractor, with a written report sent to CN within seven (7) days detailing the nature of the incident, the cause(s), regulatory authorities notified, and a specific action plan to prevent recurrence.

CONTRACTOR SAFETY ORIENTATION

1. The Contractor shall ensure that **all** personnel working within the ROW, including Sub-Contractors, complete the CN safety orientation course, available on the Internet at the following address:

   www.cncontractor.com

2. ALL truck drivers, material supply drivers and service providers who will be accessing the ROW more than once shall complete the on-line course prior to entering the ROW. Upon request by CN or its designated representative, the Contractor shall supply a list of qualified personnel to CN confirming its compliance with the above.

3. The objective of this course is to outline CN's safety guidelines /policies, and shall not be considered as a substitute for the applicable government regulations. These guidelines are the minimum requirement and must be exceeded where the hazard or government regulations warrant.

4. The Contractor shall register each person that has completed the course, and will receive a qualification card and sticker for each person within ten (10) days of registration. The sticker shall be affixed to the employee's hardhat in a location where it is easily visible. The qualification card shall be carried on each employee, and each employee must have his/her name labelled on the front of his/her hard hat.

5. The cost of the course is $11.00 US per person. Qualification is valid for three (3) years after the date of completion. On or before the expiration date, the employee shall register and repeat this course.

SUBMISSIONS

1. Four (4) weeks prior to work within the ROW, the Contractor shall submit the following to the Contract Administrator for CN's review and approval:

   .1 Detailed drawings (designed, signed and sealed by a Professional Engineer) for:
      .1 Shoring / formwork / falsework / scaffolding.
      .2 Temporary supports / jacking systems at piers.
      .3 Track protection / debris containment system for deck / pier / abutment removal, designed to prevent possible damage to the rail, ties and fastenings and, excavated / removed material from fouling the ballast and sub-ballast.

   .2 Detailed procedures and schedules for:
      .1 Deck / pier / abutment removal, including positioning of all equipment relative to the track(s).

2. Two (2) months prior to the commencement of work within the ROW, the Contractor shall provide written notice for the requirement of a CN flagperson. The Contractor shall make all arrangements for the flagperson through the CN Contact person. Failure by the Contractor to provide the specified notification of any proposed work requiring flagging protection may result in no flagperson being provided and the work not being permitted to proceed until such time as a flagperson is available.

3. Two (3) weeks prior to the commencement of work within the ROW, the Contractor shall submit a request for the arrangement of CN cable locates. The Contractor shall have a representative on site to accompany the CN Signals & Communications Supervisor while locates are being provided.

4. Prior to commencement of work within the ROW, the Contractor shall submit the following documents to CN. The Contractor shall retain a copy of these documents on site at all times, and available for review by CN personnel.

   .1 Signed copy of the "Safety and Related Requirements and Instructions for Work on Railway Right-of-Way ("CN Right-of-Way") by Non-CN Personnel"
   .2 Signed copy of the "SCP-1005, Instructions to Excavators for the Protection of Underground S&C Cables"
   .3 Proof of CN Safety Orientation qualification
   .4 Signed copy of the "Right of Entry Form for Contractors"
   .5 Proof of insurance (as per Clause 8 of the Right of Entry Form for Contractors
   .6 Work schedule
   .7 Site specific safety plan
   .8 Site specific crossing plan

RAIL TRAFFIC PROTECTION

1. A CN flagperson must be present at all times when work progresses within the ROW, unless otherwise approved by CN. The presence of a flagperson in no way relieves the Contractor from liability for damage or disruption to CN property, infrastructure or rail traffic caused by his operations.

2. Flagpersons shall be furnished by CN and paid for by the Road Authority, at no cost to the Contractor, except as described in this special provision for unsafe work and non-adherence to CN rules and regulations, in which case, flagging costs shall be borne by the Contractor.

3. **Only one (1) flagperson per day shall be available for a maximum eight (8)-hour Contractor working day, which may be reduced at the discretion of CN. Overtime and weekend work shall not be permitted, unless otherwise approved by CN.**

4. The Contractor shall revise and reschedule his proposed works as may be reasonably required so as to minimize flagging costs and maximize utilization of the CN flagperson. Utilization of the flagperson shall be done in one block of time, if possible, as opposed to intermittent flagging, for which CN cannot guarantee availability. At least forty-eight (48) hours notice is required for cancellation of the flagperson. Rescheduling of the flagman shall be subject to the requirements of Item 2. of the "Submissions" section of this special provision.

5. The Contractor shall have a responsible person present on site at all times to whom CN personnel can issue orders or give direction regarding work within the ROW. All instructions from CN personnel shall be obeyed without dispute immediately by all personnel within the ROW.

6. All employees, subcontractors, truck drivers, material supply drivers and service providers shall attend, record and acknowledge understanding of the daily briefing session with the CN flagperson prior to the commencement of any work within the ROW. A subsequent briefing shall be required for new conditions or personnel within the ROW, not identified in the original briefing.

7. Work may be ceased under the authority of the CN flagperson at any time to accommodate train movements. There are approximately 7 trains per day at this location.

8. The CN flagperson may be required to leave the job site at any time, without notice, to provide emergency services at other locations. In this event, the Contractor shall cease all work within the ROW and immediately exit CN property prior to the CN flagperson leaving the site. The Contractor shall not enter onto CN's property until such time a flagperson is present. CN's Winter Operating Plan is in effect from November 15 to April 15 (dates are subject to change). During this time the flagperson is on call to provide emergency snow / ice removal services at critical locations such as GO Transit station platforms and track switches.

9. CN has the right to place a flagperson on site at any time, for any length of time, if there is reason to believe that the work is progressing unsafely and / or the Contractor is not adhering to CN's requirements, as outlined in this special provision, "Safety and Related Requirements and Instructions for Work on Railway Right-of-Way ("CN Right-of-Way") by Non-CN Personnel" and "Instructions to Excavators for the Protection of Underground S&C Cables". CN shall be the sole judge of unsafe work and non-adherence to CN regulations for all work within the ROW. All costs for CN flagging protection in this regard shall be borne by the Contractor.

CROSSING TRACKS

1. The Contractor shall not be permitted to cross the track(s) with vehicles or equipment, except on a CN approved temporary construction crossing.

2. The Contractor shall obtain a License for Temporary Crossing from CN. The license fee for a temporary crossing is **$1000**, and the cost for CN to install and remove the crossing is **$5,000** per single track crossing plus **$3,000** per additional track crossing for which the Contractor shall supply a certified cheque to CN. All other costs associated with the construction, maintenance and removal of the crossing shall be the responsibility of the Contractor.

3. The crossing shall be constructed at a location and to a standard acceptable to CN. The Contractor shall submit details for the crossing to CN for approval at least two (2) weeks prior to work commencing within the ROW.

4. The crossing shall:

   .1 Have a level gradient on either side for a distance of 8m or not less than the maximum length of vehicle using it.
   .2 Have approach grades not greater than 5%.
   .3 Have a crossing surface of suitable material extending at least 0.5m beyond the travelled width on both sides measured at right angles to the roadway.
   .4 Be of an overall safe width suitable for the use intended.

5. The Contractor shall:

   .1 Supply and install gates and stop signs at 13 feet from the gauge side of rail on each side of the tracks.
   .2 Supply and install temporary fencing as required by CN.
   .3 Supply the following material, to be installed by the Contractor, under the supervision of CN.
      .1 Filter fabric, Terrafix 360R or approved equivalent. Filter fabric must be placed underneath the planks for the full length of the crossing, including the 8 foot space between tracks (for 2 or more tracks), and for a minimum distance of 1 metre on each side of the crossing.
      .2 Crossing planks, 7" x 10" Spruce / Eastern Hemlock (7 planks per track). Alternatively, supply and install 6" x 10"'s with 1" plywood shims. Height of the crossing surface shall be level with the height of the rail.
      .3 4"x4" flangeway timbers (2 per track). The width of the flangeway shall not be less than 63mm and shall not be greater than 120mm. The depth of the flangeway shall not be less than 47mm and shall not be greater than 76mm.
      .4 Lag screws, 12" x ½", 3 per 20' plank.
   .4 Supply, place and compact granular material or clear stone (as directed by CN) within the 8 foot space between tracks (for 2 or more tracks). Granular material / clear stone shall be placed on top of filter fabric in order to prevent ballast contamination.
   .5 Construct and maintain the crossing approaches, culverts and ditches as required.
   .6 Maintain the crossing surface and keep the flangeways clear at all times.
   .7 Remove the crossing, approaches and all associated materials upon completion of construction.

6. The Contractor shall be responsible to provide and install any required protection of CN's underground cables at the approaches to the crossing, as directed and supervised by CN.

7. Use of the crossing shall be done only in the presence of a CN flagperson. The crossing gates shall be secured, with a CN lock only, at the end of each working day.

8. A safety plan which governs the use of the crossing shall be developed with CN and documented in writing. The Contractor shall designate a responsible person to ensure safe passage of traffic over the crossing. A highly visible sign shall be used when flagging vehicles over the crossing. A physical barricade shall be moved into position where it blocks vehicular, truck and equipment access to the crossing when not in use and upon notification of an approaching train from the CN flagperson. The barricade shall only be removed with permission of the CN flagperson.

9. Truck drivers, material supply drivers and service providers who shall enter the ROW only once and shall utilize the temporary track crossing, or traverse the ROW, but do not have Contractor Safety Orientation qualification, shall be escorted by the General Contractor while on the ROW.

10. Steel tracked equipment shall not come into contact with the rails at any time when traversing the crossing, as this could result in malfunction of CN's train signal system. The Contractor shall supply and place rubber matting / wood planking to protect the rails during use of the crossing by steel tracked equipment.

11. The Contractor shall make all attempts to ensure that the track ballast remains free of contamination from the deposit of mud, soils and other fines from construction operations. The presence of fines in the track ballast traps water, which results in poor track surface and necessary train speed reductions, which will not be tolerated by CN. Should ballast contamination be evident upon removal of the temporary track crossing, the Contractor shall be responsible for all costs for CN to repair the track structure.

TEMPORARY TRACK PROTECTION

1. Temporary track protection shall be installed where a slope of 1.5:1 measured ten (10) feet from the gauge side (inside) of the nearest rail, measured perpendicular to the rail, cannot be maintained.

2. The Contractor shall design temporary track protection systems in accordance with AREMA Manual, Chapters 8 and 15, with live loading Cooper E90 + Diesel Impact, CN Shoring Wall Design Guidelines, and CN Drawings F1, F2 and F3.

3. Active pressure coefficients can be used for the design of temporary track protection unless its stiffness prevents the mobilization of active pressure. The active pressure coefficient shall not be less than 0.5.

4. All excavations deeper than 5' (1.525 m) must be tied-back with soil or deadman anchors. The use of struts or rakers will not be permitted.

5. Timber lagging shall be designed taking into consideration soil and water conditions as well as train surcharge using the Theory of Elastic Analysis. Design calculations shall be included in the design notes. Thickness and quality of timber lagging shall conform with CN Shoring Wall Design Guidelines.

6. If there is risk of groundwater building up behind a lagged wall, or of washing in or soil particles, gaps should be left between the boards to allow drainage, and these gaps should be packed with straw or synthetic filter material to prevent loss of soil.

7. Lateral displacement of shoring shall conform to the requirements of CN Shoring Wall Design Guidelines. Settlement or lateral movement of the track(s) shall be minimized and shall not be greater than 5 mm unless otherwise approved by CN.

8. The Contractor shall submit detailed calculations along with the shop drawings (signed and sealed by a Professional Engineer) for review by CN.

9. The Contractor may be required to install a track monitoring system during the installation and function of the shoring system.

TRACK CLOSURES

1. All work executed by the Contractor shall not interfere with the continued, safe movement of rail traffic.

2. Six(6) weeks prior to the work that requires track closures, the Contractor shall submit:

   .1 A written request of the exact dates of the closures.
   .2 A detailed description of the available resources and methodology to be used specifically during the track closures.

3. The Contractor shall submit a detailed work schedule for each and every construction activity that will occur during the track closure on a weekly basis and prior to the work.

4. CN shall confirm the dates and times of the track closures one (1) week prior to the work, subject to cancellation or re-scheduling by CN at any time prior to the track closure. CN cannot guarantee that the scheduled start or finish times of any track closures can be provided due to train schedules.

5. Should it be required to re-schedule the track closures, CN may re-schedule on holidays, weekends and/or night time.

6. The Contractor shall take into consideration approx. 15% downtime during single-track closures to permit the passage of trains on the adjacent, live track.

7. Any portable forms or equipment used during the track closure must be removed off site or at a location acceptable to the CN flagperson, prior to the end of the track closure, on a daily basis. Preparatory work prior to the work to be executed during the track closure must not interfere with the continued and safe passage of trains.

LIQUIDATED DAMAGES

1. It is agreed by the parties to the contract that in the case that all the work called for under each track closure is not finished or completed within the allotted time block specified, a loss or damage will be sustained by CN. Since it is and will be impracticable and extremely difficult to ascertain and determine the actual loss or damage which CN will suffer in the event of and by reason of such delay, the parties hereto agree that the Contractor will pay to CN the following:

   .1 The Contractor shall pay to CN all costs incurred by CN for any additional track closures required to complete the work. The cost for each additional closure is agreed to be $5000.00.

   .2 These liquidated damages will be automatically deducted from the amounts due to the Contractor in the progress payments.

SLOW ORDER PENALTIES

1. If one or more trains are delayed, Applicant must pay to CN, under title of Damages of Liquid Assets and not under title of penalties, the following amounts depending on the situation:

   - Passenger Trains: $2,500 per delay + $25 per minute of delay
   - Freight Trains: $200 per minute of delay
   - Each train delay can lead to additional costs that you will be responsible to pay

   *Fees are subject to yearly changes without notification

2. Where remedial work is to be completed by CN, the duration of the slow order shall be dependent on the availability of CN to supply the necessary material, labour and equipment to complete the work. The Contractor shall be responsible for the cost of repairs to the track and signal plant required as a result of damage caused by his/her operations in addition to the slow order penalty assessed above.

UNDERGROUND & OVERHEAD CN OWNED & MAINTAINED CABLES

1. There are CN owned and maintained cables within the ROW. These cables are conveyors of high technology information. Disruption of this service is costly to repair and most importantly, causes severe loss of revenue and inconvenience to CN and its customers. In addition, the cables carry high voltages that could cause serious injury or fatality. Therefore, it is important that Contractors use extreme caution when working in the vicinity of any signals and communications cable.

2. Prior to mobilization within the ROW, the Contractor shall make a joint inspection with CN, while CN locates their underground cables by means of markers and / or fluorescent paint. The Contractor will be required to sign CN's locate form. This form is only valid for thirty (30) days.

    .1 The Contractor shall be responsible for the cost of cable locates, at a flat rate cost of **$141.00** (plus G.S.T) per hour on site, with a minimum charge of four (4) hours.
    .2 The Contractor shall ensure that prior to any excavation within the ROW, the CN locate sheet is current. If the locate sheet is more than 30 days old, the Contractor shall be responsible to arrange for new cable locates.
    .3 The Contractor will be required to provide the current locate sheet to the CN flagperson before the CN flagperson will permit any excavation within the ROW.

3. Contact the "Call Before You Dig Centre" at 1-877-865-6193 to arrange for Bell Canada (360 Networks) fibre optic cable locates.

4. The Contractor shall carry out all excavation operations in accordance with "Instructions for Excavators, Underground S&C Cable, SCP-1005". A copy of the bulletin is attached to these specifications. The Contractor shall take every conceivable precaution to ensure that the cables are not damaged.

5. Prior to commencing any excavation work or any work near and around the fibre optic cables, the Contractor shall receive authorization from CN that CN's Network Management Centre has been notified at (800) 661-3687, and provide confirmation of authorization to the Contract Administrator.

6. When working within one (1) metre (distance may be changed at the discretion of CN) of CN's underground cables, the Contractor shall expose the underground cables using an approved hydra-vac service only. The Contractor may also be required to provide hydra-vac services for the purpose of positive identification of cables. All hydra-vac work shall be done in the presence of the CN site supervisor and/or CN Signals and Communications maintainer.

7. When working within one (1) metre from the outer edge of the Bell Canada (360 Networks) duct system/cables, the Contractor shall perform this work under constant monitoring by an approved Bell Canada (360 Networks) representative.

8. When working within two (2) metres from the outer edge of the Bell Canada (360 Networks) duct system/cables, the Contractor shall perform any excavation work under constant monitoring by an approved Bell Canada (360 Networks) representative.

9. In the case that the buried cables have less than one (1) metre of ground cover, and when it is necessary to cross over CN's underground cables with heavy equipment (including at the approaches to a temporary construction crossing) the Contractor shall expose the cable(s) using a hydra-vac, and install protection (steel plate / steel troughing) as directed by and under the supervision of CN. The cables shall have at least one (1) metre of cover, or greater depth, as dictated by ground conditions and as determined by CN. Material used for cover shall be approved fill and separated from the ballast shoulder by means of heavy filter fabric, supplied and installed by the Contractor. The Contractor shall restore CN's roadbed to its original condition and elevations on completion of work within the ROW.

10. If there are fibre optic cables buried within the ROW, the Contractor shall submit details on the type of equipment to be used for pile driving, and estimate the vibrations that will be induced at ground level during operation.

    .1 The Contractor may be required to monitor vibrations levels during pile driving operations, for which the Contractor shall submit a procedure and the type of monitoring equipment to be used.
    .2 Induced vibrations shall be limited to a maximum peak particle velocity (PPV) of less than **100mm/sec** (measured in 3 mutually perpendicular directions taken at tie level / ground surface), and induced amplitude of movement shall be less than 0.2mm.

.3 If blasting is undertaken within 50 metres of Bell Canada (360 Networks) fibre optic cables, induced vibrations shall be limited to a maximum PPV of less than 50mm/sec.

.4 Notwithstanding any prior approved procedures, or allowable levels of PPV ground vibrations, should CN or the fibre optic company(s) deem pile driving operations to be a risk / harmful to their buried cables, the procedures for pile installation shall be abandoned and new procedures designed so as to minimize the impact to the fibre optic cables, to the satisfaction of CN and/ or the fibre optic company(s).

11. Any damage to a signals or communications cable shall be reported promptly to the CN flagperson, CN Contact person and the CN Signals and Communications maintainer. The Contractor shall make no attempt to repair damaged cables.

12. The Contractor shall be held liable for all costs related to repairs and loss of revenue as a result of disruption to the cable network caused by the Contractor's operations.

CN CONTACT PERSON

The contact person on behalf of CN is:

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