

**SAFETY ANCHOR
INSTALLATION OF ANCHOR POINTS**

SECTION 1 – GENERAL REMARKS

1.1 Preamble

These specifications cover the installation of anchor points to be used for all work performed around the roof edge.

1.2 Qualification of Contractors

- .1 Only specialized companies with a minimum of five years' experience in the field may perform the work described in this section.
- .2 A list of projects carried out in the past five years and similar to the present project must be submitted before work begins.
- .3 The specialized company will hold overall responsibility for fabrication and installation work.

1.3 Scope of Work

- .1 The contractor shall supply the know-how, products and materials, equipment, tools, labour and services required to complete the work shown in the plans and described in this section.
- .2 The work described in this section covers the installation of anchor points used for attaching lifelines for worker safety, on various areas of the roof:
 - .1 To Supply and install 4 anchors attached to concrete structures (p.1/3) with epoxy adhesive to concrete slab (see installation detail type 6). These anchors will be connected by a horizontal cable with energy absorber. (See horizontal cable detail (P3/3));
 - .2 To add the anchor AT-TO-25 T-4 (P 1/1). See page 2/3 installation type T4. To modify the following existing anchor bases: #AC-23 (T4)-2008, AC-25 (T-4)-2008, AC-26-(T4)-2008 and AC-29 (T4)-2008. Add the horizontal cables with energy absorber;

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- .3 To supply and install the new equipment of type 1, 2, 3 described on the plan 1/1, as well as the horizontal cables. The horizontal cables will be of the type described on the plan, which is a continuous line allowing the user to reach an intermediate anchor without any specific manipulation. Equivalence is acceptable with the approbation of the project engineer
- .4 The contractor shall also carry out all other work required for the complete execution of the work according to standards and references recognized in the industry. This has to be done even if it is not mentioned in these specifications or shown on the drawings.
- .5 The contractor shall provide through his engineer, a protocol for the testing of the anchors, which will include the method that will be used and the load that will be applied. This protocol will be coordinated with the project engineer. Once accepted, the contractor will proceed to the loading tests on anchors, under the responsibility of his engineer and will submit a report following the tests.
- .6 Identify the anchors according to the CSA-Z259.15.12 standard.
- .7 To provide a complete one year warranty on the system

1.4 Timetable

- .1 The work in this section shall be coordinated with the related work.
- .2 The contractor shall submit a timetable before work begins.

1.5 References to Standards

- .1 National building code-Canada 2010
- .2 Safety Code for the construction industry
- .3 CSA Z259-16-04(2009), Design of Active Fall-Protection Systems
- .4 CSA Z259-13-04(2009) Flexible horizontal lifeline systems
- .5 CSA Z259-15-12 Anchorage connectors
- .6 CAN/CSA-S16-09, Limit States Design of Steel Structures
- .7 CSA A23.3-14 Design of concrete structures
- .8 CSA W47.1-[F92(C2001)], Certification of Companies for Fusion Welding of Steel

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1.6 Cleaning

- .1 Clean metal structures after their installation, in order to remove dust created by the construction work or by the surrounding environment.
- .2 Once the work has been completed, dispose, off-site, the extra materials, waste, tools and barriers used to protect the equipment.
- .3 Clean work and circulation areas daily.

SECTION 2 - TECHNICAL SPECIFICATIONS

2.1 Materials

- .1 Construction steel: in compliance with standards CAN/CSA-G40.20/G40.21, grade 300W/350W
- .2 Materials of the following types: galvanized steel, stainless steel and aluminum
- .3 Bolts, nuts and washers: in compliance with standard ASTM A325
- .4 Welders and welding firm: in compliance with standards W47.1 and W47.2.
- .5 Welding materials: in compliance with standards CSA W59 and CSA W59.2 as approved by the Canadian Welding Bureau.
- .6 Hot galvanizing by immersion: as indicated, galvanized steel elements in compliance with standard CAN/CSA-G164, with zinc coating of at least 600 g/m².
- .7 Grout: non-shrink, non-metallic, fluid, with strength of 15 MPa after 24 hours

2.2 Anchors to Steel Structure

This section refers to the plans and concerns all anchors.

- .1 End cable anchors have a load capacity of 5000 lb in the cable axis and 3600 lb in the potential falling direction.

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2. The intermediate anchors have a 3600 lb load capacity in the falling direction, which means perpendicular to the cable.
- .3 Hot-galvanized 350W steel anchors.
- .4 Visible welds must be continuous over the length of the joint; they must be filed off or grounded, in order to present a smooth, uniform surface.
- .5 To Fill bases with urethane at the factory.
- .6 On-site modifications or cutting of any structural framing element must be approved in advance by Service d'ingénierie Jean Massé.

2.3 Shop Drawings

- .1 Shop drawings must indicate or show the materials, web thickness, finishes, assemblies, joints, anchoring method and number of anchor devices, supports, reinforcing elements, details and accessories. The contractor shall supply three copies of these documents for approval.
- .2 Submit shop drawings showing all construction and assembly details of the project.
- .3 Shop drawings shall bear the seal and signature of a recognized engineer who is a member in good standing of the Ordre des ingénieurs du Québec. The engineer shall have at least five years' experience in this field.
- .4 Submit utilisation plans and utilisation instructions showing the maximal number of workers on the system, the type of fall protection equipment compatible with the system and all other required notes

2.4 Installation

- .1 Anchors will be installed by the trade responsible for the work in this section.

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SECTION 3 – SPECIFIC SITE CONDITIONS

3.1 Temporary Waterproofing

- .1 The contractor shall provide a method for temporarily waterproofing openings in case of sudden rain.

3.2 Protection for On-Site Welding Work

- .1 All necessary on-site protections shall be provided, so that no damage is caused to the premises or to equipment and materials on the work site or related sites. No welding may be carried out in the ceiling space or on the roof, excepting for the case mentioned at point 3 of this present section.
- .2 The necessary protective measures shall be taken against risks of damage from sparks, smoke or any other cause related to welding work.
- .3 If a temporary welding shop is set up on the roof or elsewhere, the contractor shall submit, in writing, the work method to be used and a description of the setup for approval. In such cases, the shop will have to contain the appropriate extinguishers.