

Surface Penetration Guidelines v3.0



Toronto Pearson International Airport



For You. The World.





Surface Penetration Guidelines

2019 Current Edition: *v3.0*

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This document supersedes: “Surface Penetration Guidelines *v2.0*” created May 2017 & “Core Drilling Guidelines at Toronto Pearson *v1.1*” created July 2013.

The GTAA reserves the right to amend the content of the “Surface Penetration Guidelines” on an as-required basis.

All correspondence concerning or requesting clarification of any information contained in this document can be directed to:

Construction Compliance & Permits Office
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Toronto AMF, Ontario, Canada L5P 1B2
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Phone: (416) 776-5400

Digital copies of all the current FAP Process forms, checklists, guides and the Airport Construction Code are available on-line using the link below.

<https://www.torontopearson.com/en/operators-at-pearson/construction>



Version Control

Version	Date	Changes	Prepared by	Reviewed by	Approved by
3.0	August 2019	Issued "Surface Penetration Guidelines"	Sam Adile		Stuart Bricknell
2.0	May 2017	Issued "Surface Penetration Guidelines"	Sam Adile		Pat Neville
1.0	August 2013	Issued "Core Drilling Guidelines at Toronto Pearson"	Jonathan Lock		Garry Price

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Surface Penetration Guidelines

Construction Compliance & Permits

1. Purpose

The purpose of these Guidelines is to assist contractors working within GTAA Facilities in the planning and execution of construction activities requiring the penetration of floor and/or wall surfaces with a focus on safe, responsible and consistent procedures.

What this document is: these guidelines shall be used to:

- ensure that project design is in line with building standards prior to any surface penetrations;
- locate obstructions and reinforcement in the concrete slabs where surface penetrations are required;
- obtain engineering review of any proposed surface penetrations;
- safely execute surface penetrations involving concrete coring, drilling, chipping, cutting, etc. within any GTAA facilities at Toronto Pearson;
- ensure that accurate building records are maintained after the work is completed.

What this document is not: this is not intended to

- replace any existing GTAA processes or standards already in place for construction. A valid Facilities Alteration Permit (FAP), Activity Notice and/or Terminal Work Permit (TWP) must be in place prior to any construction work at the airport; or
- provide direction regarding fire-stopping requirements. All fire-stopping will be reviewed separately by GTAA Fire Prevention and/or GTAA's Independent Code Compliance Consultant (ICCC) as a part of the FAP process.

2. Roles and Responsibilities

Roles and Responsibilities
<p>Project Owner (PO) – is the company who is initiating the construction contract for the work being undertaken at Toronto Pearson. The PO must ensure that:</p> <ul style="list-style-type: none">• all surface penetrations i.e. coring, drilling, chipping, cutting, etc., are carried out in compliance with the requirements of these guidelines.• the General Contractor is made aware of these guidelines through the project specifications and construction contracts to facilitate full compliance with these guidelines.



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Roles and Responsibilities Cont'd
<p>General Contractor (GC) - is the company who with their submitted NOP to the MOL has taken responsibility for all aspects of construction activities for the specific project and to whom a FAP has been issued by Construction Compliance & Permits Office. The GC must ensure that:</p> <ul style="list-style-type: none"> • all applicable employees, sub-contractors, etc., are made aware of all requirements of these guidelines to facilitate full compliance. • arrangements are made with a reputable Scanning Services Contractor to scan and mark the locations on site of all proposed surface penetrations and surrounding obstructions prior to coring, drilling, chipping, cutting, etc. • arrangements are made with a reputable Structural Engineer (SE) to review the proposed locations of the penetrations and to help locate any obstructions and reinforcement prior to the commencement of any surface penetrations. When issues or concerns persist, the SE can refer to the Designated Structural Engineer (DSE) as listed in Appendix B. • arrangements are made with the Independent Safety Compliance Consultant (ISCC) to conduct an on-site safety review & provide their sign-off prior to commencing any work. • the surface penetrations i.e. coring, drilling, chipping, cutting, etc., are completed safely and in compliance with the reviewed PSSP and these guidelines. • all applicable documentation including: the surface penetration location(s) record drawings, structural engineer's reports and all scans completed, etc., are submitted to the Construction Compliance & Permits Office (CCPO).
<p>Structural Engineer (SE) - is part of the project consultant group or an independent consultant who has been retained by the Project Owner / Contractor to fulfill the requirements for the project design and/or construction overview as required by the Airport Construction Code (ACC).</p> <p>The SE must:</p> <ul style="list-style-type: none"> • review the base building as-built structural information and then help the General Contractor with the location of the structural slab rebar. • conduct a site review and provide a field report with any applicable comments for each penetration location, and then sign the GC's 'Surface Penetrations Request Form'.
<p>Designated Structural Engineers (DSE) – includes consultants who have an in-depth understanding of the base building structural components. The DSE will:</p> <ul style="list-style-type: none"> • provide assistance upon receiving a request from the Structural Engineer or the General Contractor in locating rebar or structural components within the structural slab.
<p>Independent Safety Compliance Consultant (ISCC) – GTAA's consultant who is responsible for the review of all Project Specific Safety Plans submitted for FAP applications and for ensuring that all work on Airport Lands is completed safely. The ISCC will:</p> <ul style="list-style-type: none"> • review Site Specific Safety Plan. • conduct a site safety review with the General Contractor prior to any surface penetrations being commenced and if all appropriate safety measures are in place, sign the GC's 'Surface Penetration Request Form'.
<p>Construction Compliance & Permits Office (CCPO) – AHJ for all construction activities carried out on Airport property.</p> <ul style="list-style-type: none"> • Receive copies of all structural review reports, scanning reports & as-builts documentation as applicable to any surface penetrations.



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3. General Guidelines

The following general guidelines shall be followed when executing the process outlined below:

1. All surface penetrations in any concrete floor or wall structure shall be kept to a minimum and shall be planned in accordance with this document and other associated building-specific guidelines regarding coring, drilling, chipping, cutting, etc. **Where possible, installations shall use existing penetrations.** New layouts shall be reviewed by the Project Structural Engineer (PSE) prior to any surface penetrations and revised where required.
2. The General Contractor (GC) shall include in their Project Specific Safety Plan (PSSP) submitted to the Construction Compliance & Permits Office (CCPO) with the FAP application all control measures and work safe procedures for any surface penetrations including all necessary precautions to prevent and capture any water or debris that may fall through the opening during the surface penetration(s).
3. Prior to commencing any surface penetrations, the GC shall arrange an onsite review by the Independent Safety Compliance Consultant (ISCC) to review the control measures that have been put in place in compliance with the GC's PSSP previously submitted with the FAP application.
4. The GC shall submit all required terminal work permits and/or shut-down requests and must have received confirmation that the requests are approved prior to any work commencing.
5. Barricades and signage identifying the hazards, shall be erected around all work areas, including the floor area below where the surface penetration (coring, drilling, chipping, cutting, etc.) is being carried out to ensure that only those involved with the work have access.
6. Additionally, in any location where the public or Airport employees are present, the GC shall position a spotter to direct persons away from the area during the surface penetration.
7. Effective communication must be maintained between the spotter and those executing the surface penetration(s).

4. Process

4.1 Locating Obstructions and Reinforcement in the Slab

- 4.1.1. The General Contractor shall arrange for scanning of structural flooring &/or walls for all proposed penetration locations which must include a scan for structural, electrical, and communications obstructions.
- 4.1.2. If electrical and/or communications obstructions are found in the floor concrete topping, then the proposed penetration **must** be relocated.
- 4.1.3. If scanning results for structural obstructions are inconclusive, the Project Structural Engineer may contact the Designated Structural Engineer, [or any Ontario licensed Structural Engineer](#) (see [Appendix A](#) for contact information) to request assistance.
- 4.1.4. Located obstructions must be clearly marked on the floor surface for further review by the structural engineer. Building gridline reference points must be used when referencing penetration locations on as-built documentation.



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4.2 Engineering Review

- 4.2.1. Once the slab reinforcement has been located, the General Contractor shall contact Project Structural Engineer to arrange a site review & sign-off the proposed penetration locations.
- 4.2.2. The Project Structural Engineer will review each proposed penetration location.
- 4.2.3. Upon completion of the site review, the Project Structural Engineer will issue a Structural Review Report to the General Contractor as a record of the review and then sign the 'Surface Penetrations Request Form'.

4.3 Executing Approved Core Drilling

- 4.3.1. The General Contractor shall arrange an onsite review with GTAA's Independent Safety Compliance Consultant (ISCC) upon receipt of the Structural Engineer's Review Report & sign-off and once all control measures are in place in compliance with the GC's PSSP.
- 4.3.2. Once the site has been reviewed and the ISCC is satisfied with all the required control measures in place, they will then sign the 'Surface Penetrations Request Form'. The General Contractor may only then proceed with the surface penetrations as planned.
- 4.3.3 Upon completion, the General Contractor shall submit to the Construction Compliance & Permits Office, copies of: the completed & signed 'Surface Penetrations Request Form'; the Structural Review Reports; the Scanning Reports; & the As-builts Documentation of all penetration locations that indicate the size of each hole and their distance in relation to the building grid line reference points.

Appendix A: Designated Structural Engineers (DSE) & Other Contact Information

Building	Company	Contact 1	Contact 2
Designated Structural Engineers (DSE)			
Terminal 1	Entuitive	Chongsong Yu, P.Eng. T: 416-309-0167 E:Chongsong.yu@entuitive.com	Wesley Peter, P.Eng. T: 416-477-7079 E: wesley.peter@entuitive.com
Terminal 3	Milman & Associates	Boris Millman, P.Eng. T: 905 760 1020 x 221 E: bmilman@ma-eng.ca	Jeff Mitchel, P.Eng. T: 905-760-1020 x 226 E: jmitchel@ma-eng.ca
Terminal 1 Parking Garage	EXP Services Inc.	Gordon Ho, P.Eng. T: 905-695-3217 x 3726 E: gordon.ho@exp.com	Weimin Liang, P. Eng. T: 905-695-3217 x 3734 E: weimin.liang@exp.com
Independent Safety Compliance Consultant (ISCC)			
All GTAA Facilities	TRH Group	Jack Papadopoulos T: 416-776-3878 M: 416-705-0234 E: Jack.Papadopoulos@gtaa.com	John Tomkow M: 416-705-0256 E: John.Tomkow@gtaa.com