

PURPOSE

The purpose of these guidelines is to ensure the in-slab utilities, the structural integrity of Tucker Hi-Rise Construction buildings, assist sub-contractors in their planning and execution of construction activities requiring the surface penetration of floor and/or wall surfaces, with a focus on safe, responsible, and consistent procedures. Note that these Guidelines apply to any surface penetration, regardless of the penetration size or depth, and are subject to Engineering discretion.

These guidelines shall be used to:

- a. ensure that project design & execution is in line with Tucker Hi-Rise Constructions requirements for maintaining building structural integrity, that all applicable reviews & assessments are completed, documented and that required signoffs are obtained prior to any surface penetrations commencing,
- b. locate embedded reinforcement and services within or installed underneath the concrete slabs where surface penetrations are required,
- c. obtain Designated Structural Engineering review & signoff for proposed surface penetrations when applicable,
- d. safely execute surface penetrations involving concrete coring, drilling, chipping, cutting, etc. within any Tucker Hi-Rise Construction building.

PROCEDURE

Pre-Task Planning:

- a. The Construction Manager in conjunction with the sub-contractor performing the work shall be responsible for completing a Surface Penetration Permit prior to any surface penetration activity. This permit will document the details of the surface penetration, including the location, size, depth, and the proposed method of penetration.
- b. The Construction Manager shall coordinate with the designated Structural Engineer (If specified in the drawings) to obtain approval for the surface penetration, ensuring it will not compromise the structural integrity of the building.

General Guidelines for Surface Penetrations:

- a. Prioritize non-destructive methods for utility detection and location before any penetrations.
- b. Clearly mark and identify the location of utility lines before commencing any surface penetration.

- c. Use appropriate tools and techniques for the specific type of penetration (e.g., chipping, cutting, drilling, or coring).
- d. Regularly inspect tools and equipment to ensure they are in proper working condition.
- e. Minimize vibrations and structural loads during surface penetration activities.
- f. Immediately repair or reinforce any structural damage caused by penetrations.
- g. Maintain a clear and documented communication process between the Construction Manager, subcontractors, and the designated Structural Engineer (if required).

RESPONSIBILITIES**Sub-contractor Responsibilities:**

- a. Assign a competent person to oversee surface penetration operations.
- b. Adhere to the established Surface Penetration Procedure and the requirements specified in the Surface Penetration Permit.
- c. Before commencing any surface penetration, use non-destructive methods to detect and verify the location of the utility line, i.e., scan, x-ray, or both.
- d. Clearly mark and identify the location of utility lines to avoid accidental strikes.
- e. Use appropriate tools and techniques for the specific type of penetration (e.g., chipping, cutting, drilling, or coring).
- f. Erect barricades and warning signage identifying the hazards around all work areas, including the floor area below where the surface penetration is going through the entire slab depth to ensure that only those involved with the work are permitted access.
- g. Additionally, in any location where the public is present, the Sub-Contractor shall position an adequate number of spotters to direct persons away from the area during the surface penetration. Effective communication must be maintained between the spotter(s) and those executing the surface penetration(s) at all times.
- h. Ensure all workers involved in surface penetration activities are adequately trained, equipped, and supervised.
- i. Implement proper Personal Protective Equipment (PPE) and safety measures during all surface penetration operations.
- j. Regularly inspect equipment and tools to ensure they are in good working condition.

- k. Immediately report any accidents, incidents, near misses, or damages related to surface penetrations to the Construction Manager.

Designated Structural Engineer Responsibilities (if drawings require involvement)

- a. Review and approve the Surface Penetration Permit prior to any surface penetration activity.
- b. Provide guidance on the location, size, and depth of surface penetrations to maintain structural integrity.
- c. Conduct a thorough inspection of the area before and after surface penetration activities.
- d. Review and approve any design modifications or reinforcements required for penetrations.
- e. Monitor the overall structural stability during and after surface penetration activities.
- f. Provide prompt feedback and recommendations to the Construction Manager and sub-contractors regarding structural concerns.

RECORDS

This Surface Penetration Procedure serves as a general guideline. Regular review and updates to the procedure are recommended to ensure ongoing safety and compliance. Once surface penetration operations have been completed, a copy of the surface penetration permit shall be returned to the Site Manager to be retained on file.