

**Precast Panel Vault Installation, General
 Non-Network Area**



1. Scope

This standard covers the installation of panel vaults in the looped radial (non-Network) area. It does not cover ring vault, poured in place, or in-building vault installations. It does not cover panel vault installation in the SCL Network areas.

2. Application

A panel vault is used as a structure to pull electric high voltage cable and/ or to house utility electrical equipment below grade.

This standard is intended for use by contractors, SCL civil crews, SCL inspectors, and SCL design engineers for construction, inspection, and design.

3. Material List

| Item | Component Description | Stock Number | Quantity |
|------|---|---------------|---------------------|
| 1 | PANEL VAULT, including gasket and wall connection hardware | special order | 1 |
| 2 | BEDDING, 1-1/4 in crushed rock | special order | as needed |
| 3 | CONTROLLED DENSITY FILL, trench backfill per City of Seattle 2005, Standard Specifications for Municipal Construction, Section 9-01.5 | special order | as needed |
| 4 | GROUT, non-shrink, 3000 psi min | special order | included with vault |

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4. Excavation, Trenching, and Shoring

- 4.1 Work shall be done per the Washington Administrative Code, Chapter 296-155 Safety Standards for Construction Work.
- 4.2 The depth of the excavation shall allow for the individual components of the vault to be lowered into place.
- 4.3 A minimum clearance of 24 inches to 36 inches around the sidewalls of the vault is required for installation.
- 4.4 The excavation hole must not contain water when setting the vault.
- 4.5 Installations in poor soils may require special dewatering systems to avoid settlement of surrounding areas, including pavement, sidewalks and structures.
- 4.6 Shoring:
 - a. For projects installed by SCL: the Civil Engineering group will provide shoring drawings. If there are no utilities in the excavation area, shoring boxes may be used.
 - b. For projects installed by a contractor: the contractor's licensed civil engineer will provide shoring design.

5. Bedding

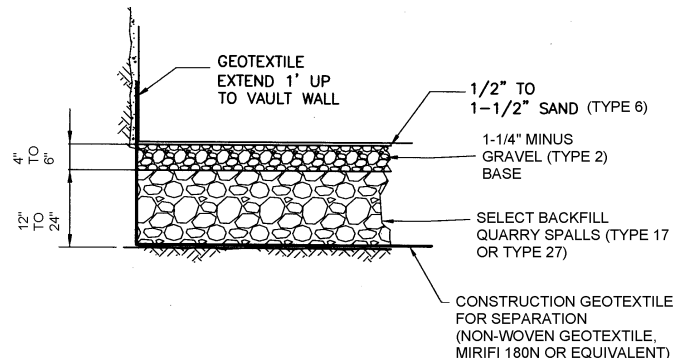
The bedding material shall consist of 4 inches to 12 inches of stable base material, 1-1/4 inch minus gravel (Type 2).

If the excavation bottom is saturated or consists of inadequate bearing material, then over-excavate area as directed by the SCL engineer and place a construction geotextile at the bottom, then 12 to 24 inches of quarry spalls (Select backfill Type 17 or 27). See Figure 5.

If excavation bottom is not saturated and consists of adequate bearing material prior to placing bedding material, compact bottom of excavation with two full compacting operations at right angles to each other with a mechanical compactor.

Place a layer of crushed rock 1-1/4 inch minus gravel (Type 2), screed and compact to a minimum thickness of 4 inches and add 1/2 to 1-1/2 inches of sand (Type 6) to create a level surface.

Figure 5. Over-Excavation Detail



6. Setting

- 6.1 General: First, the base section is lowered and leveled. Each of the wall sections is lowered and assembled. The seal surfaces between sections must be clean and the gaskets must be in place. The top ring is installed. Finally, the lid is lowered and leveled.
- 6.2 Setting Tolerances:
 - a. Horizontal alignment: end-to-end +/- 1/8" per 1' length of vault.
 - b. Vertical alignment: Confirm if panel vault floor has built-in slope. If floor has built-in slope, bedding shall be even and level. If floor does not have built-in slope, bedding shall be even and slope toward the sump to ensure proper drainage.
 - c. Vertical slope: 1/4" +/- 1/8" in 10' toward the sump.
- 6.3 Install gaskets per manufacturer's instructions.

7. Knockouts

- 7.1 Knockouts are provided in each of the four walls.
- 7.2 For conduit entry core drill the knockout area as appropriate. Knockouts should be removed per the SCL project specific drawing.
- 7.3 Knockout penetrations shall be sealed to prevent water intrusion.

8. Backfilling

Prior to backfilling, install all gaskets at top, bottom, and between walls and grout all seams and wall connections. Grout shall be non-shrink and reach 3000 psi minimum before backfilling.

Backfill with trench-type, controlled-density fill (CDF) that conforms to the City of Seattle Standard Specifications. Place backfill so that no voids are left under the reinforcing ribs or riser sections. The contractor/installer with the assistance of a Licensed Professional Engineer shall consult with the vault manufacturer to assure proper installation of the vault. Backfilling with some specified materials may require a multi-stage compaction processes to avoid damage to vault walls.

9. Grouting

Apply to fill all voids in the joint being sealed to prevent water intrusion.

10. Top Vault Section, Including Hatches and Doors

10.1 Hatches and doors in the top section of the panel vault are project specific, including quantity and location.

10.2 All covers (other than vented grates) shall have a slip-resistant surface that has been approved by City Light Standards Engineering.

Hatches and 42-inch round frames in planting strip or sidewalk may be H-20 rated.

Hatches, where subject to traffic, shall have a minimum H-30 rating.

42-inch round frames, where subject to traffic, shall have a minimum H-25 rating.

11. Concrete Collar

See SCL 0223.33.

12. Grounding Electrode System

Install and test grounding electrodes per SCL 0461.10.

13. Proximity to Other Utility Installations

Refer to SCL 0214.00 for required clearances to all utility conduits, mains, ducts, pipes and other installations.

14. References

SCL Construction Standard 0214.00; "Clearances between SCL Underground Structures and Other Structures"

SCL Construction Standard 0223.33; "Cast-in-Place Concrete Vault Collars"

SCL Construction Standard 0461.10; "Grounding Electrodes for Handholes and Vaults"

15. Sources

"Safety Standards for Construction Work"; *Washington Administrative Code*, Chapter 296-155, Washington State

"Controlled Density Fill —Trench Backfill"; *Standard Specifications for Municipal Construction*; Section 9-01.5, City of Seattle; 2005

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SCL Drawing A-5257, Rev. 1, dated 11-12-19, "Vault Installation-Overexcavation Detail"

SCL Material Standard 7204.70; "Frames and Covers, 42- Inch Round, Iron"

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"Vault Installation Instructions"; Utility Vault; 2006