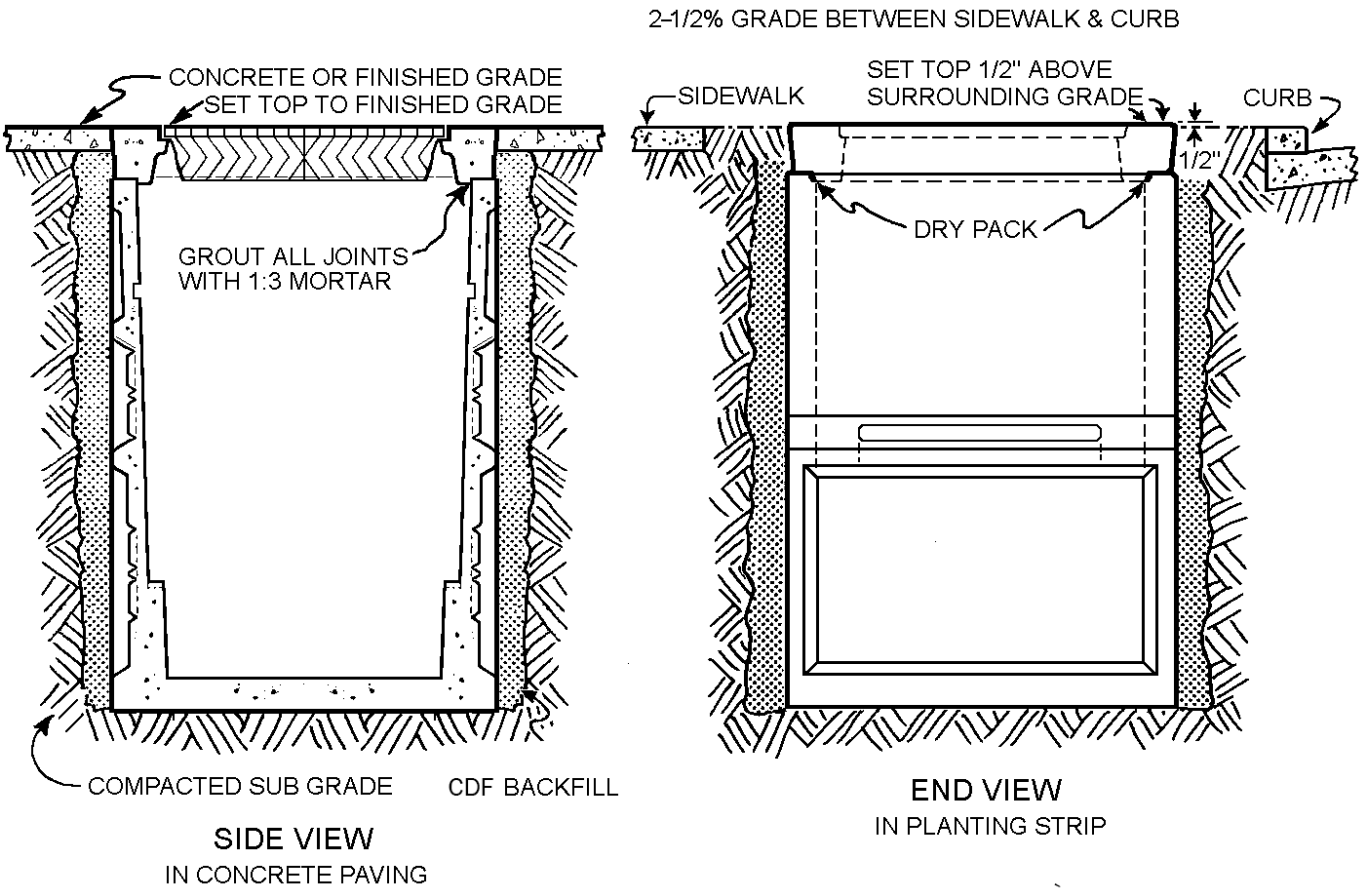
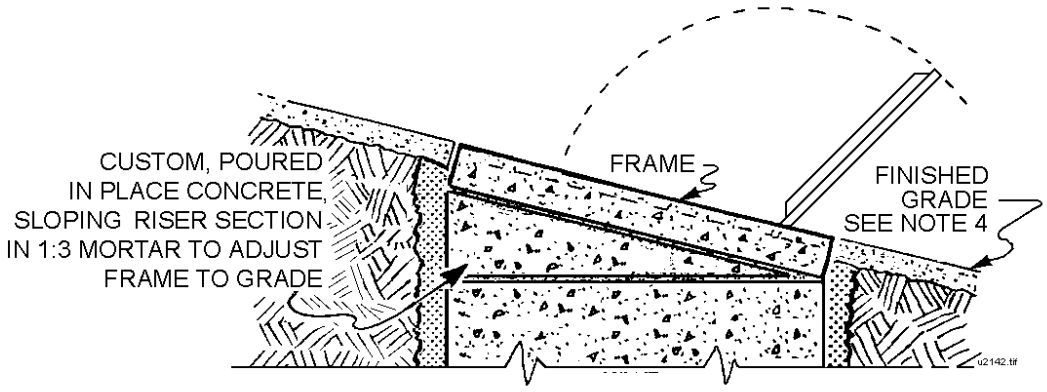
Vault Installation

Figure 1.





GRADE ADJUSTMENT DETAILS

1. **All work, including shoring and bracing**, shall be in compliance with the latest editions of: State of Washington Department of Labor and Industries WAC 296-46B-450 “Equipment for General Use – Transformers and Transformer Vaults,” Chapter 296-155- WAC “Safety Standards for Construction Work”, Seattle Building Code Section 414 “Transformer Vaults” and Appendix Chapter 4, Division IV, Section 436 “Utility Transformer Vaults”, and Seattle Board of Public Works, “Street and Sidewalk Pavement Openings and Restoration Rules”.
2. **Concrete** shall be Class 5.5 as specified in “City of Seattle Standard Plans and Specifications”. Trowel smooth.
3. **Drypack and seal** all holes tight after installation to prevent water intrusion.
4. When adjusting the **vault entrance** to a sloping grade, install a sloping riser section and a poured-in-place collar. Do not use brick and mortar slope adjustments if possible. Minimize the use of mortar adjustments and in no case shall the mortar thickness exceed one inch. Cast-in-place 42-in round and 54-in by 96-in rectangular risers shall comply with SCL 0231.03. For in-street use, a properly engineered sloping riser section is required. Where the riser section is specified at 12 inches deep or more, order a length of Unistrut cast into the side wall of the riser.
5. On **sloping grade** installations, hinge vault covers as noted. Hinged vault hatches shall be placed so that they lie flat when opened. Load break vaults shall not be installed if the grade exceeds 5.6% in any direction. This is to ensure proper hot stick operations.
6. The **divider**, when used, must come up tight to the vault cover. Brick up as necessary, or if over 4 inches of increase is required, order a special divider.
7. For **transformer and J-Box combinations** in 577 vaults, install rigid steel conduit through the transformer section of the vault as shown on page 1 of U9-5.
8. The preferred **vault orientation** for combination transformer and J-Box in 577 vaults is the length of the vault *perpendicular t*o the curb. See SCL 0214.00.
9. The length of the **grated vent slots** must run perpendicular to the dominant direction of travel of sidewalk traffic.
10. **Grounding Electrode System**

    Install and test grounding electrodes per SCL 0461.10.
11. Engineers shall specify conduit entrance locations into vault on work order. Contractors/installers shall verify before installation.
12. All covers (other than vented grates) shall have a slip resistant surface which has been approved by SCL 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.
13. **Bedding**

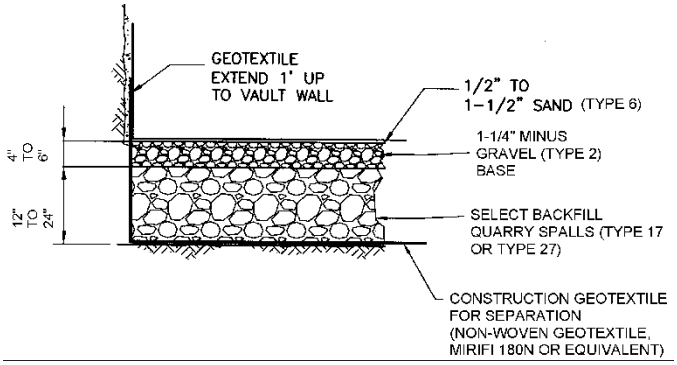
    The bedding material shall consist of 4 inches to 12 inches of stable base material, 1-1/4 inch minus gravel (Type 2).

    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 13.

    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 13. Over-Excavation Detail



14. Backfill

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 multi-stage compaction processes to avoid damage to vault walls.

Backfill excavation a minimum of 1 ft around vault or to undisturbed soil, whichever is greater.

15. Concrete Collar

See SCL 0223.33.

16. Access

Provide vault access per SCL 0214.00.

17. References

SCL Construction Standard 0231.03; “Cast-in-Place Risers”

SCL Construction Standard 0214.00; “Clearances between SCL Underground Structures and Other Structures”

SCL Construction Standard 0461.10; “Grounding Electrodes for Handholes and Vaults”

SCL Construction Guideline U9-5; “577 Vault Transformer and Junction Box Installation, Grounding and Connections”

18. Sources

SCL Construction Guideline U9-6; “577 Vault with Three Loadbreak Junction Boxes Installation, Grounding and Connections”

SCL Material Standard 7203.26; "444 Electric Vault, Primary Service"

SCL Material Standard 7203.36; "507 Electric Vault, Primary Service"

SCL Material Standard 7203.41; "577 Electric Vault, Primary Service"

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