

CHAPTER 9 – EXCAVATION AND BACKFILL

EXCAVATION AND BACKFILL

MnDOT Standard Specifications for Construction (Spec Book) 2565.3, 2451 and 1805 serve as guidance for excavation and backfill activities.

9.1 Excavation and Backfill Specifications

A basic understanding of specifications related to excavation and backfill is needed to properly replace the disturbed soil and restore the condition of the excavated area. The size of the disturbed area should be kept to the minimum required to do the job. All areas disturbed during the project must be restored to the satisfaction of the engineer.



Figure 9-1: Excavation

9.2 Trenching

Trenching must be located at a distance from the edge of the pavement, back of curbing, or edge of surfaced shoulders as indicated in the contract documents, or as directed by the engineer. The distance must be such that no damage, or undermining, is done to the pavement or curb. The trench must be of uniform alignment for accurate referencing of the underground installation.

If trenching or excavation operations require the removal of concrete pavement or sidewalk, it must be first cut with a concrete saw and then removed. Removal must be to the nearest existing joint or as directed by the engineer.



Figure 9-2: Trenching



Figure 9-3: Excavation with Concrete Removal

9.3 Compaction

The contractor must have the proper operating compaction equipment on the site before any excavation is begun. A mechanical tamper is usually used in this type of work. The foot of the tamper must fit within the trench or excavation.

Excavations around foundations, handholes or conduits must be backfilled with the same material as the adjacent soils if the contract does not specify special backfill materials.

Specification 2451.3.D requires that backfill material be uniformly distributed horizontal layers throughout the excavation area in seams of no more than 6-inch compacted thickness.

Once the excavation for a structure or conduit is finished, the structure must be installed as soon as practical. When placing conduit or direct buried cable, backfilling and proper compaction must be done as soon as possible to prevent water contamination of the roadbed, shoulder, or slopes.



Figure 9-4: Compaction

Due to the ongoing issues with improper compaction around precast light foundations as shown below, certain installation requirements are necessary to ensure long term stability of the light foundations. The following images are examples of precast light foundations that were not adequately compacted when initially installed. Please see Chapter 10 for further information on precast foundations.



Figure 9-5: Improper Compaction

Excavated material must also be placed where it will not cause damage or obstruction to vehicles, pedestrians or interfere with surface drainage. Holes resulting from excavation must be covered and protected as soon as practical.

The contractor and inspector must not allow unprotected hazards or obstructions to exist for motorists or pedestrians during the project.



Figure 9-6: Work Zone Obstructions

9.4 Chapter 9 Resources

- MnDOT Standard Specifications for Construction 2565.3, 2451 and 1805