

B. **Dewatering.** The intention of these specifications is that all construction work described herein shall be carried out under dry conditions. The Contractor shall promptly and continuously dispose of all water from any source that may accumulate in the tunnel or shaft. This shall include all necessary pumping, bailing, and draining. Water must be removed as specified even if necessary to construct the tunnel and water main without an outlet.

C. **Excavation**

1. **General.** All types of material encountered shall be excavated by approved tunneling methods and all excavated materials shall be removed from the interior of the tunnel and shafts. The excavated materials shall be transported and disposed of off the construction site, unless noted otherwise.
2. **Sequence.** With the written consent of the Engineer/Architect, the Contractor shall adjust his procedures of work for the purpose of securing the desired quality of work. The Contractor shall perform tunnel excavation from a shaft only in one continuous direction to the next shaft. Tunneling in two directions to meet between shafts will not be permitted. Excavation shall conform to the outside of the tunnel section as nearly as possible.
3. **Settlement.** Excavation shall be confined within the limits of the tunnel in a manner as to minimize any settlement in the ground over or near the tunnel. Only tunneling methods which minimize settlement or enable closer adherence to line and grade shall be used by the Contractor. The ultimate ground settlement at the surface shall not exceed 1 inch.
4. **Alignment and Grade.**
  - a. **Heading.** If the tunnel heading deviates from the plan line and grade, the Contractor shall immediately make the necessary changes in operation to return the tunneling to the correct position. Deviation in excess of 2 inches from the line and 2 inches from the grade shall be remedied by the Contractor at no cost to the Owner.
5. **Backfill.** Both the boring and receiving pits shall be backfilled with special backfill as detailed in Section 02226.

D. **Option 1, Encasement Pipe**

1. **Material.** The minimum size, type of material, and minimum thickness shall be as shown.
2. **Installation.** The encasement pipe shall be installed by boring and jacking.