

PART 302 – EXCAVATION AND BACKFILL, UNCLASSIFIED

- 302.1 The work under this item shall include all earth, shale, gravel, loose rock, solid rock, debris, junk, and/or other material excavated or otherwise removed in the preparation of the trench; all work in connection with the excavation, removal and subsequent handling and disposal of such material, regardless of its type, character, or condition; subgrade preparation, all sheeting, piling, shoring, bracing, and dewatering of trenches; protection of adjacent property; backfilling; sand cushion; grade base stabilization; all specified backfill consolidation; and other work necessary or required.
- 302.2 The trench shall be excavated so that the pipe can be laid to the alignment and grades shown on the drawings, or as directed by the Inspector. In dense or built-up areas or where unstable soils exist, the trench shall be excavated a maximum of 100 feet in advance of pipe laying. In open areas or where soil conditions permit, the trench excavation may be unlimited in advance of pipe laying, as approved by the Engineer. Opening of trenches in excess of the maximum requires specific approval of the Engineer. Trenches shall be dry when the trench bottom is prepared. The trench bottom shall be shaped so that even bearing is obtained for the barrel of the pipe with the bells unsupported. The standard trench width as shown on the Standard Details, shall not be exceeded at any elevation below a point 12 inches above the top of the pipe. If for any reason this portion of the trench exceeds the permitted width and if the Inspector shall determine that cradling or encasement then is required, said concrete cradle or encasement shall be installed. Any part of the bottom of the trench excavated more than 6 inches below the specified grade shall be corrected with approved material thoroughly compacted as directed by the Inspector. In the event suitable material is not available, sand shall be used. When rock is encountered and concrete cradle is required, it shall be excavated 4 to 6 inches below the bottom of the pipe and the trench refilled to grade with sand. When quicksand or other unstable earth is encountered, a water table cradle as shown on the Standard Details is required to prevent soil migration and stabilize the pipe foundation. Trench safety shall be in accordance with applicable OSHA, State, and local regulations.
- 302.3 Pipe embedment shall be as shown on the Standard Details and be free of organic matter, trash, and other deleterious materials. Unless otherwise shown, bedding shall be placed in the trench simultaneously on both sides of the pipe to a minimum elevation of 12 inches above the top of the pipe, being carefully worked and hand-tamped around the pipe in order to consolidate and ensure excellent bedding.
- 302.4 Backfill shall be as shown on the Standard Details and be free of organic matter, trash, and other deleterious materials. Backfill material shall not be placed in the trench covering the minimum 6-inch bedding cushion without prior approval of the Inspector. To prevent damage to the pipe, do not use compaction equipment within 18 vertical inches directly over the top of the pipe. Rocks greater than 3 inches shall not be allowed within 15 inches below finished grade or within 18 inches above the pipe crown.

- 302.5 Topsoil shall be segregated and stored during pipe installation. Topsoil shall be free of brush, rock, shale, and other deleterious materials, and restored to a minimum 5-inch plated-compacted depth. Sod shall be cut in and level with the surrounding grade.
- 302.6 Unless otherwise directed by the Engineer, all trenches excavated across any sidewalk, driveway, parking lot or other paved area, across any traveled portion of unpaved streets or alleys, across any proposed roadways or proposed roadway fills, and as shown on the drawings shall be bedded and backfilled with 1-1/2-inch Type A Aggregate Base (see 213.2), placed in 8-inch maximum lifts and compacted to 95% Standard Proctor Density, as measured by the Nuclear Density Method. Compaction shall be done by a vibratory hand tamper. Trenches excavated across existing street or alley paving shall be backfilled in accordance with the standard detail for Pavement Removal and Replacement. For excavations where there is more than 6 feet of cover over the top of the pipe and where the trench width is sufficient for use of heavy compaction equipment, an engineered fill using a suitable compactable material may be used in lieu of aggregate base, if approved in writing by the City Engineer. If the backfilling has been completed and the backfill material does not meet the requirements for compaction, all the material shall be removed and hauled from the job site and the trenches refilled with material as specified above. Failure of backfill shall be corrected immediately, as directed by the Engineer.
- 302.7 Payments: Payment for this item shall be made at the unit price bid per cubic yard. Volume will be computed as follows: standard trench width as shown in the Standard Details for trench and bedding; length of line, as the actual horizontal measurement along the centerline of the ditch; depth of excavation as the actual depth of ditch from the original ground surface to the flow line of the pipe as shown in the construction notes. Average end-area method of computing volume will be used. No payment for excavation will be made for material excavated outside the neat lines of the standard trench width. No additional payment will be made for: sand cushion; backfilling; compaction of backfill; crushed stone used for backfill under existing and/or proposed roadways, roadway fills, streets, alleys, driveways, sidewalks, parking lots, or as shown on the Drawings; removing and replacing top soils and obstruction, storm sewers or other obstructions; blasting; bracing and shoring; dewatering; pumping and draining; grade base stabilization; removal of excess excavated material; or restoration of the site. It is mutually understood that subterranean water, quicksand, or other unstable earth may be encountered, and the Contractor has taken such into consideration in making this bid. Where such is encountered, Contractor will be required to excavate to sufficient depth to permit backfilling with crushed stone in order to provide a stable base for the pipe. Extra payment will not be made because of such additional excavation or because it is necessary to excavate wider than the standard trench width; or for crushed stone.