

## SECTION 3730 - BEDDING AND BACKFILL FOR GRAVITY SEWERS

### PART 1 - GENERAL

#### 1.1 SCOPE OF WORK:

Provide all labor, materials, equipment and services required for bedding and backfill of sewer pipe and appurtenances.

### PART 2 - EXECUTION

#### 2.1 BEDDING:

- A. After preparation of the trench bottom, a pipe bed - of a minimum of 6" - shall be prepared using crushed stone or crushed gravel meeting the following requirements.

| <u>Nominal Pipe Size</u> | <u>AASHTO M43 Size</u> |
|--------------------------|------------------------|
| 15" or Less              | 67, 7, 8, or washed #9 |
| Greater than 15"         | 57, 6, or 67           |

- B. The bedding material shall be spread the full width of the trench bottom. The pipe layer shall carefully prepare the bed for the pipe both from line and grade standpoints. After the pipe is laid, aligned and graded, the bedding material shall be so placed as to fill the space under the lower part of the pipe by slicing under the haunches with a shovel.
- C. Special Pipe Bedding - In wet, yielding mucky locations where pipe is in danger of sinking below grade or floating out of line or grade, or where backfill materials are of such a fluid nature that such movements of the pipe might take place during the placing of the backfill, the pipe must be weighed or secured permanently in place by such means as will prove effective. When ordered by the ENGINEER, yielding and mucky material in subgrades shall be removed below ordinary trench depth in order to prepare a proper bed for the pipe. Foundation Aggregate, where required, shall be installed according to Section 3720, Paragraph 2.3 I.

#### 2.2 TRENCH BACKFILL:

- A. Backfill to 12 Inches Over Pipe Barrel. All trench excavations shall be backfilled immediately after pipe is laid. The same material that is used for bedding the pipe shall be used to backfill the trench from the bedding to a level of 12 inches over the top of the pipe barrel. No backfill shall be made with frozen material. The bedding material shall be placed in uniform 6 inch loose layers and each layer compacted so as to eliminate the possibility of settlement, pipe misalignment, or damage to joints.
- B. Backfill in New Subdivisions. Backfill in new subdivisions shall be according to the Butler County Engineer's Office compaction requirements for all trenches within the public right-of-way and the utility easement behind the right-of-way.
- C. Trench Backfill. From 12 inches above the pipe barrel to the surface, excavated trench material may be used as backfill material (except as required by paragraph 2.3). No material shall be used for backfill that contains frozen earth, debris, or earth with an exceptionally high void content. The CONTRACTOR may use mechanical equipment to place the backfill. This shall be done in such a manner that the material does not free fall, but shall be so placed that it will flow onto the previously placed material. The CONTRACTOR shall consolidate the backfill in such a manner as will ensure the minimum possible settlement and the least interference with traffic. No compacting of the backfill with mechanical equipment, such as wheeled vehicles, will be permitted unless sufficient cover is provided over the pipe to prevent damage to the pipe.
- D. Granular Material Backfill. Granular backfill shall be placed where excavated trench material is unsatisfactory for backfill or where otherwise directed by the ENGINEER, and shall be in accordance with Section 1180 of these specifications.

- E. Bulkheads. The CONTRACTOR shall place bulkheads of clean clay soil around the pipe across the full width of the trench at approximately the midpoint of each manhole span (or at 100 foot intervals where the gradient of the sewer is greater than 10%) to resist the movement of groundwater through the granular material. Such bulkheads shall be carefully compacted and shall extend approximately 3 feet in a direction parallel to the pipe and shall extend from the bottom of the trench to a height of twelve inches (12") above the top of the pipe barrel.
- F. Surface Conditions. The trench surface shall be periodically attended to during the course of the work. The trench surface shall be maintained in a safe condition and shall not interfere with natural drainage.

### **2.3 BACKFILLING UNDER ROADS AND STREETS:**

- A. When a sewer line is constructed within a road, street or driveway, trench backfill shall be placed per Section 1165. When a sewer line is constructed within a proposed road, street, or driveway, backfill shall be compacted according to the Butler County Engineer's Office compaction requirements.
- B. Granular backfill (Section 1180 of these specifications) is required for backfill where the trench is outside of the pavement but the nearest trench wall is within five feet (5') of the edge of pavement.

### **2.4 SETTLEMENT OF TRENCHES:**

- A. The CONTRACTOR shall be responsible for any trench settlement that occurs within one year from the time of final acceptance of the work. If paving or other restoration shall require replacement because of trench settlement within this time, it shall be replaced by the CONTRACTOR at no extra cost to the OWNER. Repair of settlement damage shall meet the approval of the ENGINEER, the OWNER, and the authority having jurisdiction within the right-of-way.

## **PART 3 - BASIS OF PAYMENT**

Bedding and backfill according to these specifications shall be included in the unit prices bid for the sewer line. Whenever special pipe bedding or backfill (foundation aggregate, granular backfill, etc.) is deemed necessary under the provisions of the detailed specifications, said material will be paid for at the Contract unit prices shown on the proposal forms, furnished and placed as specified, unless payment is specifically included in another pay item. The CONTRACTOR shall furnish the ENGINEER with duplicate weigh slips for all such material delivered to the project.

END OF SECTION