

SECTION 02225 - UTILITY TRENCHING AND BACKFILLING

PART 1 - GENERAL

1.01 SUMMARY

A. Section includes:
 1. Trench, backfill, and compact as specified herein and as needed for installation of underground utilities located 5' outside the buildings.

1.02 QUALITY ASSURANCE

A. Use adequate numbers of skilled workers who are thoroughly versed in the methods of trenching and backfilling. Use methods completely familiar with the specified requirements and the methods needed for proper performance of the work of this section.

B. Use equipment adequate in size, capacity, and numbers to accomplish the work in a timely manner.

C. Comply with all requirements of governmental agencies having jurisdiction.

PART 2 - PRODUCTS

2.01 SOIL MATERIALS

- A. Fill and backfill materials:
 1. deleterious substances, containing no rocks or lumps over 6" in greatest dimension.
- 2. Fill material is subject to the approval of the excavations or imported from off-site borrow areas, predominantly granular, non-expansive soil free from roots and other deleterious matter, having a dimension greater than 2" within 2' of the outside of pipe.
- 3. Cohesive material used for backfill: Provide sand free from organic material and other foreign matter, and as approved by the Engineer.

PART 3 - EXECUTION

3.01 PROCEDURES

- A. Existing Utilities:
 1. Unless shown to be removed, protect active utility lines Contractor prior to trenching. If damaged, repair or replace at no additional cost to the Owner.
- 2. When existing underground utilities, which are not to be removed, are encountered during excavation, they shall be adequately supported and protected from damage. Any damage to utilities shall be repaired promptly at no additional cost to the Owner.
- 3. This section includes a credit for existing damaged utility or no additional cost to the Owner.
- 4. If existing utilities are found to interfere with the permanent facilities being constructed under this section, the Contractor shall notify the Engineer and secure his instructions.
- 5. Do not proceed with permanent relocation of utilities until written instructions are received from the Engineer.

3.02 TRENCHING

- A. Core shall be exercised by the Contractor to avoid disrupting the operation of existing facilities without prior written approval of the Engineer.
- B. Provide shoring and shoring necessary for protection of the work and for the safety of personnel. Trenches shall be removed to the elevation of the pipe, but no shoring will be allowed to be pulled, removed, or disturbed below the pipe.
- C. A trench shall be excavated to the required depth and to a width sufficient to allow for joining of the pipe and compaction of the bedding and backfill material under and around the pipe. Where feasible, trench walls shall be vertical.
- D. The completed trench bottom shall be firm for its full length and width.
- E. If indicated on the plans or directed by the Engineer, poor foundation material encountered below the normal grade of the pipe bed shall be removed and replaced with granular backfill.
- F. Where pipes are to be placed in embankment fill, the excavation shall be made after the embankment has been completed and backfilled to the normal grade of the pipe above the designed grade of the pipe.
- G. Excavating for open-trenches:
 1. Excavating for open-trenches shall be done to a distance sufficient to leave at least 12" clear between outer surfaces and the embankment or shoring that may be used to hold and protect the banks and adjacencies. That has not been directed by the Engineer, fill will be sand, gravel, or lean concrete as directed by the Engineer, and of no additional cost to the Owner.
- H. Excavation shall not interfere with normal 45° bearing slope of foundations.
- I. All trenching shall be in accordance with the latest OSHA requirements.
- J. Where utility runs traverse public property or are subject to depth, bedding, cover, and other requirements as set forth by legally constituted authority having jurisdiction, but in no case less than the depth shown in the Contract Documents.

3.03 BEDDING

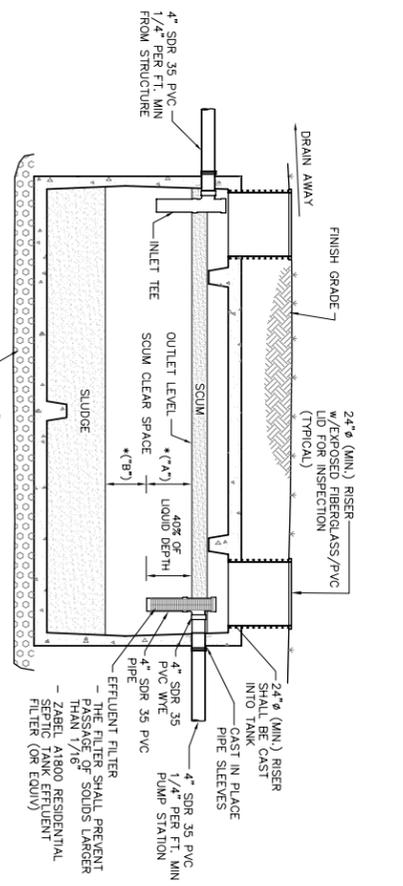
A. Pipe Bedding Area: Prior to laying pipe, bedding material shall be placed to the limits of the excavation and shall be either sand, gravel, or crushed stone and shall not contain large lumps and stones over one inch in diameter. As the pipe is laid, bedding material shall be extended to 6" above the pipe and covered along the sides of the trench.

3.04 BACKFILLING

- A. Backfilling shall not be done in freezing weather, with frozen materials, or when materials already placed are frozen.
- B. Unless otherwise specified or indicated on the plans, material used for backfilling trenches above the bedding area shall be suitable material which was removed during excavation or obtained from borrow and when compacted shall weigh 110 lbs per cubic foot. It shall be free from roots, individual roots more than 18 inches long or 1/2 inch thick, or stones greater than 50 pounds or larger than six inches in the widest dimension.
- C. If additional material is required, it shall be furnished from approved sources.
- D. Backfill material shall be evenly spread and compacted in lifts not more than 12 inches thick or as approved by the Engineer. Previously placed or new materials shall be compacted in lifts not more than 12 inches thick or as approved by the Engineer. Previously placed or new materials shall be compacted in lifts not more than 12 inches thick or as approved by the Engineer. Previously placed or new materials shall be compacted in lifts not more than 12 inches thick or as approved by the Engineer.
- E. Reopen trenches which have been improperly backfilled, to a depth of 6" or more, shall be backfilled to the normal grade as specified, or otherwise correct to the approval of the Engineer.
- F. Should any of the work be so declined or covered up before it has been approved, uncovered all such work and other approvals have been made, refill and compact as specified, at no additional cost to the Owner.
- G. Take special care in backfilling and bedding operations to not damage pipe and pipe coatings.
- H. No compaction shall be done when the material is too wet to be compacted properly. At such times the work shall be dried out sufficiently to permit proper compaction, or such other precautions are taken as may be necessary to obtain proper compaction.
- I. Backfill material shall be compacted to the following percentages of maximum dry density and in accordance with the following methods:
 1. Around all structures, under roadway paving shoulder and embankment, 95%
 2. All other areas, 90%.

3.05 TEST FOR DISPLACEMENT OF SEWERS AND STORMDRAINS

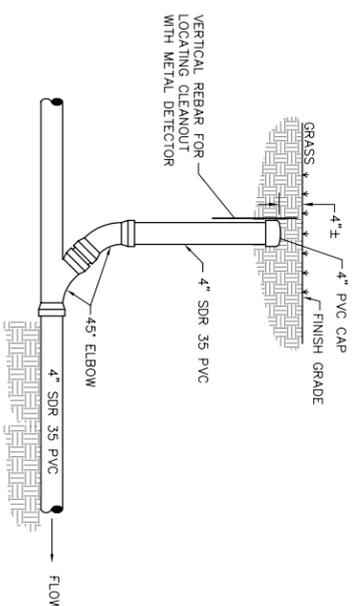
- A. Check sewers and stormdrains to determine whether displacement has occurred after the trench has been backfilled to above the pipe and has been compacted as specified.
- B. Flash a light between manholes or, if the manholes have not yet been constructed, between the locations of the manholes, by means of a flashlight or by reflecting sunlight with a mirror.
- C. If the illuminated interior of the pipe line shows poor alignment, displaced pipes, or any other defects, correct the defects before backfilling. Backfilling shall be done under specified conditions and at no additional cost to the Owner.



500 GALLON SEPTIC TANK
N.T.S.

Septic Tank Notes

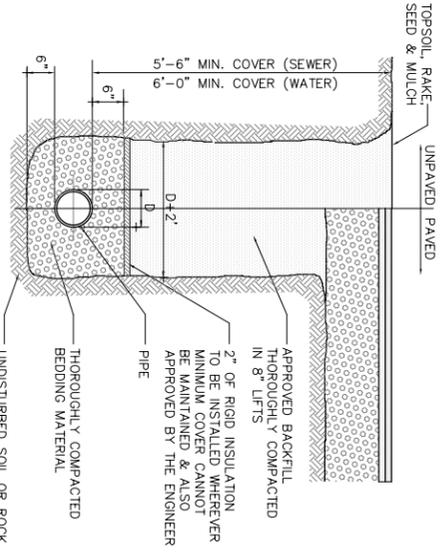
1. Septic tank shall be a precast concrete tank, unless otherwise approved.
2. Maintenance:
 - The tank should be pumped if measured. The tank should be pumped if:
 - The sludge is closer than three inches to the outlet bottle or.
 - Liquid consistency should appear over a septic tank.
 Recommendations:
 - The use of sprague grinders is discouraged as sludge accumulation in the septic tank can be increased by up to 40%. If used, the septic tank will require more frequent maintenance.
 - The septic system is designed to handle human waste and toilet paper, plus water from plumbing fixtures such as toilets, baths and sinks. Moderate use of household cleaners, detergents and bleach should not damage your system, however, excessive use of household cleaners, detergents, and bleach should not be put in your wastewater system, and any other non-biodegradable substances should not be put in your wastewater system.
 - Minimize the amount of water used in the household. Excessive water could flush the tank and dilute the bacteria. Excessive water could also cause the sludge to plug the tank. When sludge accumulates or the tank is plugged, it may stopper their use to reduce peak flows, i.e. stopper loads of laundry over several days instead of one day.
3. Make-up, patch and deck or other permanent structures should not be constructed over the septic tank.
 - The septic tank should be covered with a heavy, flat, non-slip cover.
 - The cover should be no less than 4 inches thick and should be made of a material that will not rot, warp, or break under load.
 - The cover should be secured in a way that it cannot be removed without the use of a special key system, screws, etc.
4. Make-up, patch and deck or other permanent structures should not be constructed over the septic tank.
5. Make-up, patch and deck or other permanent structures should not be constructed over the septic tank.



TYPICAL SEWER CLEANOUT DETAIL
N.T.S.

NOTES:

1. CONTRACTOR SHALL PROVIDE TWO TIES TO ALL BURIED C.O.'S ON THE AS-BUILT PLANS SUBMITTED TO THE OWNER.
2. CLEANOUT TO BE INSTALLED AT INTERVALS OF NOT MORE THAN 100 FEET, AND UPSTREAM OF BEND(S) IN BUILDING SEWER(S) WHEN CHANGE IN PIPE DIRECTION EXCEEDS 45° (USE LONG SWEEP FITTINGS WHEN EXCEEDING 45°)



TYPICAL TRENCH DETAIL
N.T.S.

1. Typical trench for water, sewer, and drainage pipe.
2. Composition of backfill and bedding shall be a minimum of 90% (95% under roadway surfaces) of maximum dry density determined in the standard proctor test (ASTM 0698).
3. Bedding material shall not be placed on frozen subgrade.
4. Approved backfill shall not contain any stones more than 6" in largest dimension, 2" maximum diameter when 2' or more outside of the pipe, or any frozen, or organic material.
5. Trenches shall be completely dewatered prior to placing of pipe bedding material and kept dewatered during installation of pipe and backfill.
6. The sides of trenches 4' or more in depth entered by personnel shall be sheeted or sloped to the angle of repose as defined by O.S.H.A. standards.
7. Bedding material for wastewater lines shall consist of crushed stone and gravel of maximum size of 3/4\"/>

SITE ENGINEER:

CIVIL ENGINEERING ASSOCIATES, INC.
 10 MANSFIELD NEW LANE, SOUTH BURLINGTON, VT 05403
 802-864-2233 FAX: 802-864-2271 WWW.CEAA.COM

OWNER:

JENNIFER & TJ
WHALEN
 646 LIME KILN ROAD
 CHARLOTTE
 VERMONT

PROJECT:

PROPOSED
ACCESSORY
STRUCTURE

646 LIME KILN ROAD
 CHARLOTTE
 VERMONT

LOCATION MAP
 1" = 200'

DATE	CHECKED	REVISION

DATE: MAY, 2009

SCALE: 1" = 20'

PROJ. NO.: 09143

DRAWING NUMBER: C2

SITE DETAILS AND SPECIFICATIONS

DATE: MAY, 2009

SCALE: 1" = 20'

PROJ. NO.: 09143

DRAWING NUMBER: C2