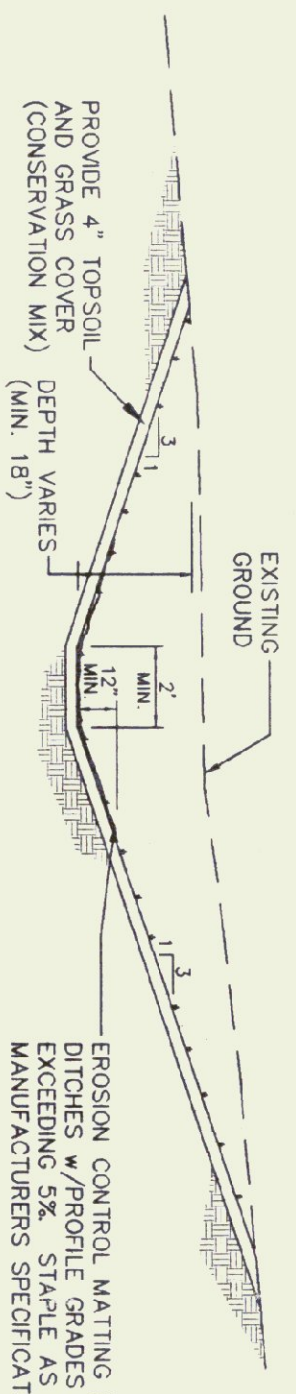
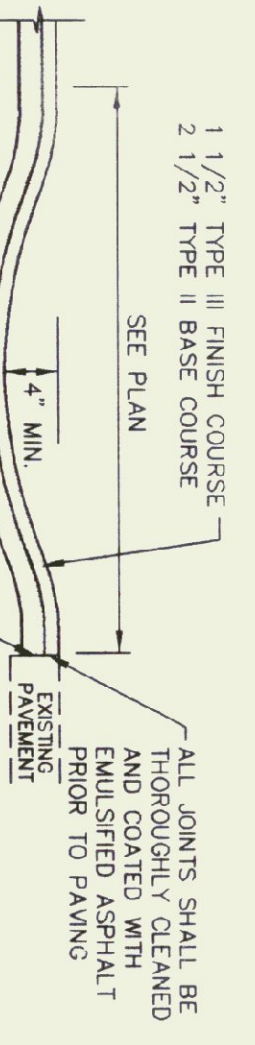


- NOTES:
1. Typical trench for water, sewer, and drainage pipe.
  2. Composition of backfill and bedding shall be a minimum of 90% (95% under roadway surfaces) of maximum dry density determined in the standard proctor test (ASTM D698).
  3. Bedding material shall not be placed on frozen subgrade.
  4. Approved backfill shall not contain any stones more than 6" in largest dimension, 2" maximum diameter within 2" of the 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 shored to the angle of repose as defined by O.S.H.A. standards.
  7. Bedding material for stormwater lines shall consist of crushed stone or gravel with maximum size of 3/4".

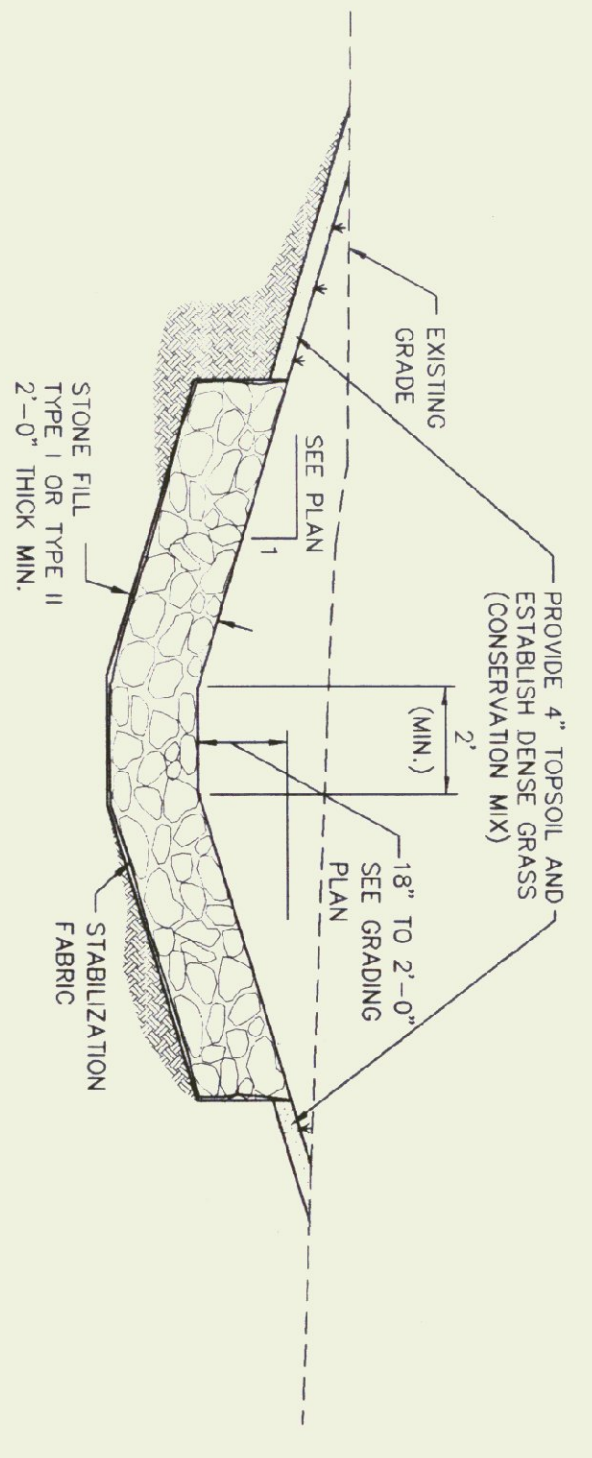
**TYPICAL TRENCH DETAIL**  
N.T.S.



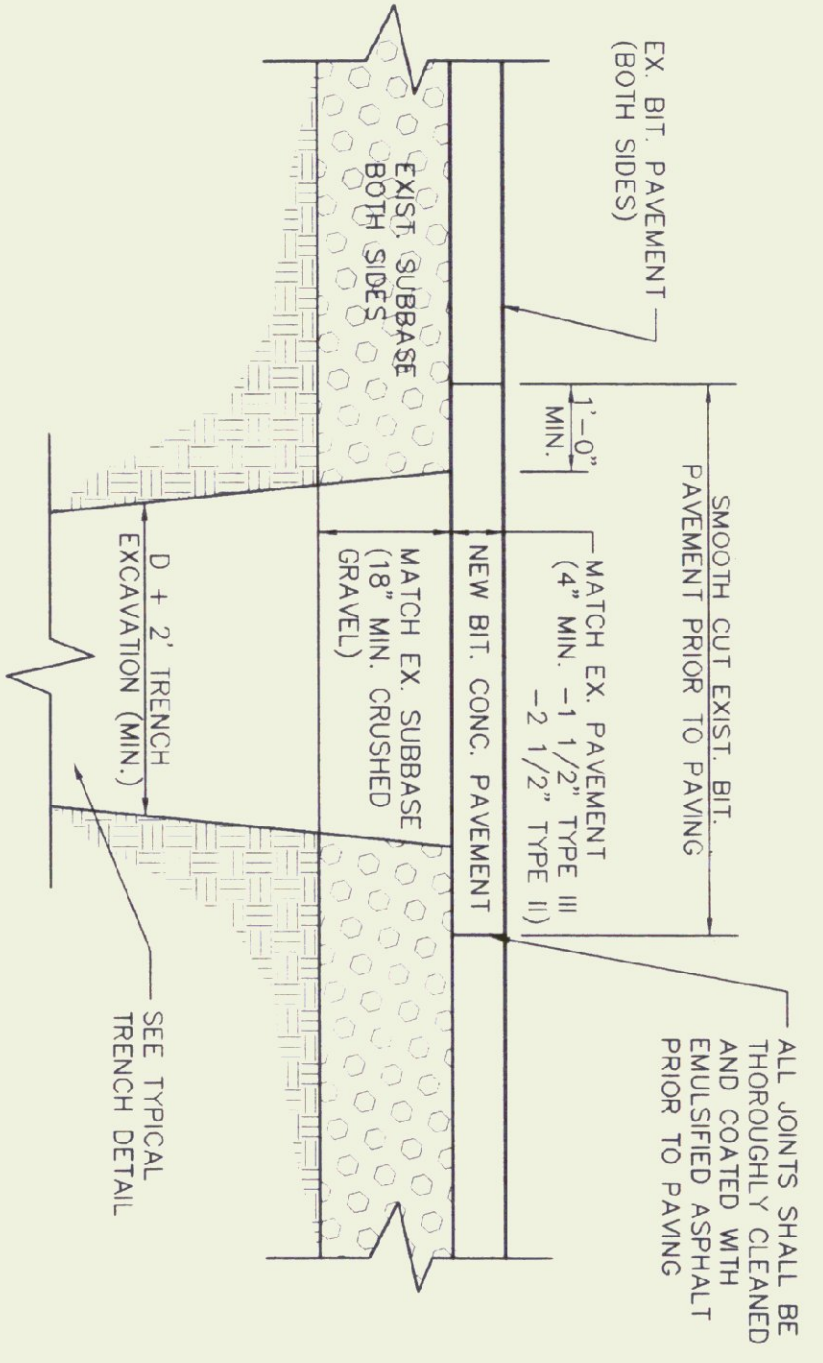
**GRASS LINED DITCH**  
N.T.S.



**BITUMINOUS CONCRETE GUTTER DETAIL**  
N.T.S.



**STONE LINED DITCH**  
N.T.S.



**REPLACEMENT OF EXIST. PAVEMENT**  
N.T.S.

- NOTES:
1. THE CONTRACTOR SHALL MAINTAIN AT LEAST ONE-FOURTH (1/4) OF ALL THICKS DURING WORK WITHIN THE R.O.W.
  2. MAINTENANCE AND PROTECTION OF TRAFFIC DURING WORK WITHIN THE HIGHWAY R.O.W. SHALL BE PROVIDED IN ACCORDANCE WITH THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES, THE STANDARD SPECIFICATIONS FOR THE R.O.W. WITHOUT APPROPRIATE CONSTRUCTION SIGNING IN PLACE.
  3. ALL BACKFILL SHALL BE MADE IN SIX (6") LIFTS AND COMPACTED TO NOT LESS THAN 95% MAXIMUM DRY DENSITY ACCORDING TO ASTM D698.
  4. REPLACE EXISTING ROAD STRIPING AS NECESSARY.

**BUILDING BACKFILL**

**PART 1 - GENERAL**

- 1.01 SUMMARY**
- A. Section includes
1. Building perimeter and site structure backfilling to subgrade elevations.
  2. Backfilling to subgrade elevations.
  3. Consolidation and compaction.
  4. Fill for over-excavation.

**1.02 REFERENCES**

- A. ANSI/ASTM C136 - Method for Sieve Analysis of Fine and Coarse Aggregates  
 B. ANSI/ASTM D698 - Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures using 5.5 pound rammer and 12 inch drop.

**1.03 SUBMITTALS**

- A. Testing laboratory reports indicating that material for backfill under structure meets requirements of this Section.  
 B. Field density test reports of backfill in place.

**PART 2 - PRODUCTS**

**2.01 FILL MATERIALS**

- A. Structural Fill (Granular Gownel AOT Spec. 704.02A, Freq): Free of stone, clay, friable material, sand, debris, graded in accordance with ANSI/ASTM C136 within the following limits:
- | Sieve Size | Percent Passing |
|------------|-----------------|
| 2"         | 100             |
| 1 1/2"     | 90 - 100        |
| 1"         | 0 - 12          |
| No. 200    | 0 - 6           |

**B. Compacted Fill/Granular Backfill:** Free of stone, clay, friable material, debris, and organic matter, graded in accordance with ANSI/ASTM C136 within the following limits:

Sieve Size	Percent Passing
3"	100
2 1/4"	90 - 100
No. 100	0 - 12
No. 200	0 - 6

**3.01 EXAMINATION**

- A. Verify fill materials to be raised are acceptable.  
 B. Verify underground tanks are anchored to their own foundation to avoid flotation after backfilling.

**3.02 PREPARATION**

- A. Generally, compact subgrade to density requirements for subsequent backfill materials.  
 B. Cut out soft areas of subgrade not capable of initial compaction. Backfill with graded gravel fill and compact to density equal to or greater than requirements for subsequent backfill material.  
 C. Prior to placement of aggregate base course material, compact subsoil to 95 percent of its maximum dry density in accordance with ANSI/ASTM D698.

**3.03 BACKFILLING**

- A. Backfill areas to contours and elevations with unfrozen materials.  
 B. Spherically backfill to allow maximum time for natural settlement. Do not backfill over porous, wet, frozen or spongy subgrade surfaces.  
 C. Place geotextile fabric as shown in the plans.  
 D. Granular Backfill: Place and compact materials in continuous layers not exceeding 8 inches compacted depth.  
 E. Employ a placement method that does not disturb or damage foundation perimeter drainage and utilities in trenches.  
 F. Maintain optimum moisture content of backfill materials to obtain required compaction density.  
 G. Backfill against supported foundation walls. Do not backfill against unsupported foundation walls. No backfill material shall be placed against a newly completed structure until the concrete has been cured for 7 days.  
 H. Backfill simultaneously on each side of unsupported foundation walls until supports are in place.  
 I. Slope grade away from building a minimum of 1/4 inch per foot, or as shown in plans, unless noted otherwise.  
 J. Wide grade changes gradual. Blend slope into level areas.

**3.04 TOLERANCES**

- A. Surface of fill under building slabs shall be graded smooth and even, free of voids, compacted as specified, and to the required elevation. Fill shall be fine graded to within a tolerance of 1/2" when tested with a 10' straight edge.

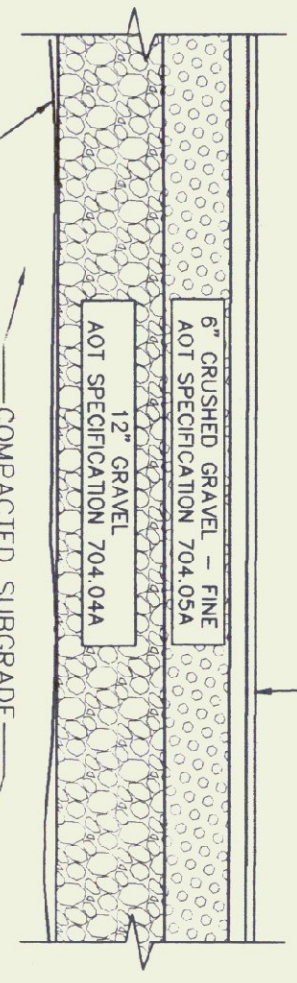
**3.05 FIELD QUALITY CONTROL**

- A. Compaction Requirements: Standard Proctor/ASTM D698.  
 B. If tests indicate work does not meet specified requirements, remove work, replace and retest at no cost to Owner.

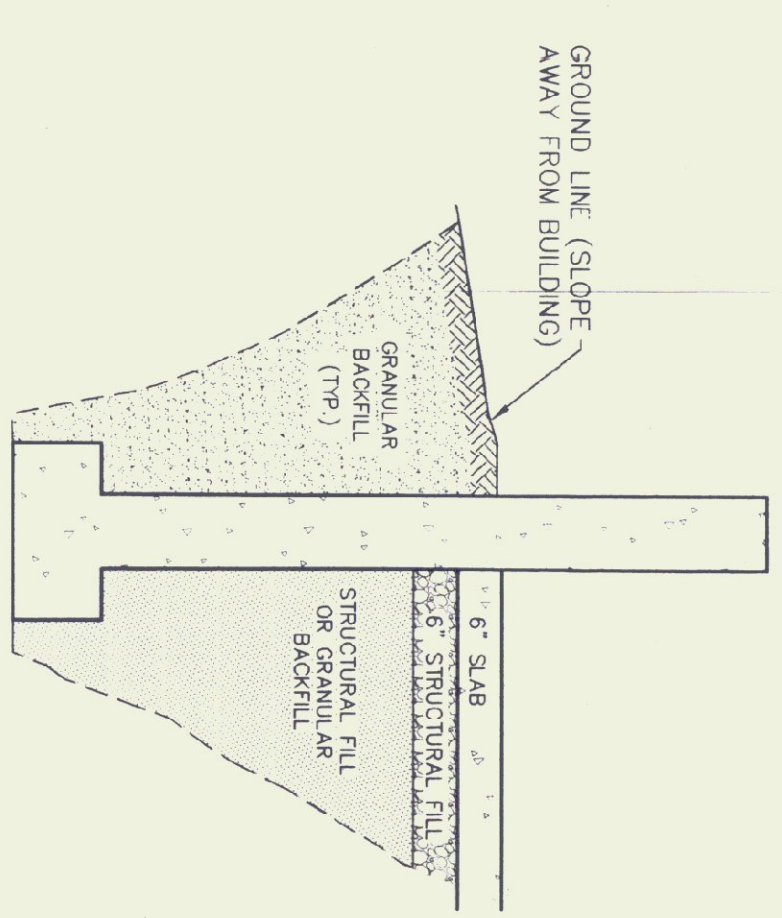
**3.08 SCHEDULE**

- All backfills to be placed in 8" (Maximum) lifts, compacted as specified below.

LOCATION	MATERIAL	% COMPACTION STANDARD PROCTOR ASTM D-698
Under Footings	Undisturbed Native Material or Structural Fill	98%
Interior Slab-on-Grade	Structural Fill	95%
Interior, Adjacent to Foundation Walls	Structural Fill, or Granular Backfill	95%
Exterior, Adjacent to Foundation Walls	Structural Fill, or Granular Backfill	90%



**TYPICAL PAVEMENT SECTION**  
N.T.S.



**TYPICAL FOUNDATION BACKFILL SECTION**  
N.T.S.

SITE ENGINEER:



**CIVIL ENGINEERING ASSOCIATES, INC.**  
 P.O. BOX 485 SHELBURNE VT 05482  
 802-885-5230 FAX: 802-885-5271 WWW: WWW.CEA-CT.COM

CONTRACT: © 2002 - ALL RIGHTS RESERVED  
 DRAWN: PJM  
 CHECKED: BCE  
 APPROVED: BCE  
 OWNER:

**STATE OF VERMONT**  
 DEPARTMENT OF BUILDINGS AND GENERAL SERVICES  
 MONTPELIER, VERMONT

PROJECT:  
**DERBY SALT and STORAGE SHEDS**  
 US ROUTE 5  
 DERBY, VERMONT

DATE	CHECKED	REVISION

**SITE DETAILS**

DATE: MARCH, 2003  
 SCALE: AS SHOWN  
 PROJ. NO.: 03112  
 DRAWING NUMBER: C3