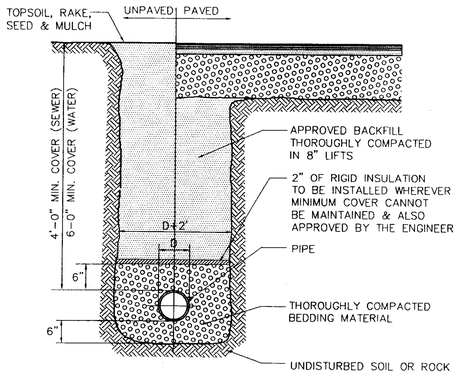
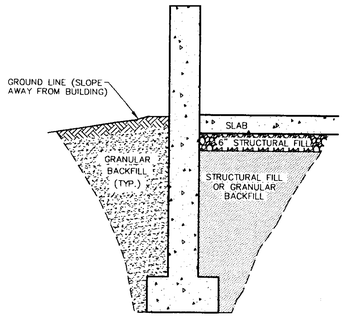


TYPICAL TRENCH DETAIL

N.T.S.

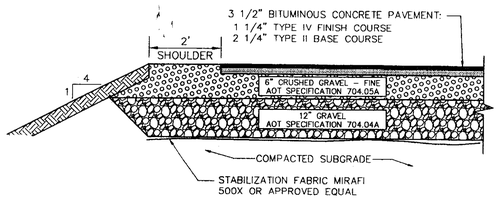
NOTES:

1. Typical trench for water, sewer, and drainage pipe.
2. Compaction of backfill and bedding shall be a minimum of 90% (95% under roadway surfaces) of maximum dry density determined in the modified proctor test (ASTM D1557).
3. Where 4 ft. of cover cannot be maintained the sewer pipe shall be protected against freezing by installation of a minimum of 3 inch thick styrofoam insulating sheets. Use 3" styrofoam sheets at all road crossings or areas that are to be plowed during the winter.
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. In trenches with unstable materials, trench bottom shall first be stabilized by placement of filter fabric then crushed stone (3/4" maximum).
7. 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.
8. Bedding material shall consist of crushed stone, gravel or sand with a maximum size of 3/4". Submit a sample to the Engineer for approval. Bedding material shall not be placed on frozen subgrade.



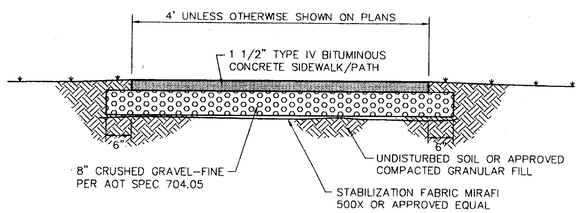
TYPICAL FOUNDATION BACKFILL SECTION

N.T.S.



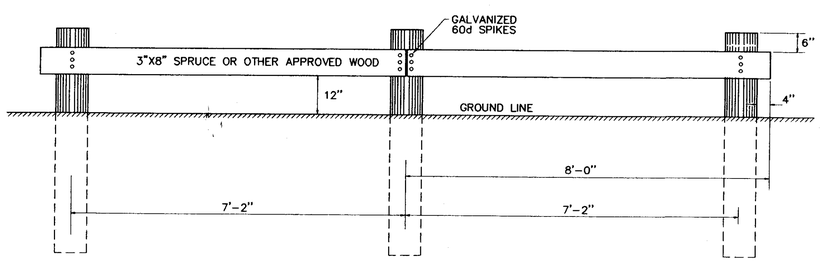
TYPICAL PAVEMENT SECTION

N.T.S.



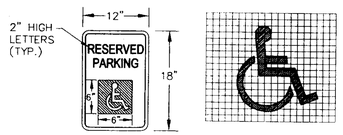
BITUMINOUS CONCRETE SIDEWALK/PATH DETAIL

N.T.S.



PLANK GUARD RAIL DETAIL

N.T.S.



COLOR: LEGEND AND BORDER – GREEN
WHITE SYMBOL ON BLUE BACKGROUND
BACKGROUND – WHITE
MATERIAL: AS PER VAOT STANDARD E-143M
POST: 2" (14 ga.) SQUARE STEEL SIGN POST INSTALL IN ACCORDANCE w/VAOT STANDARD E-164

HANDICAPPED PARKING SIGN DETAIL

N.T.S.

BUILDING BACKFILL

PART 1 – GENERAL

1.01 SUMMARY

A. Section includes:

1. Building perimeter and site structure backfilling to subgrade elevations.
2. Fill under slabs on grade.
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 D1557 – Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures

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 (Crushed Gravel, AOT Spec. 704.05A, Fine): Free of shale, 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
No. 4	30 – 60
No. 100	0 – 12
No. 200	0 – 6

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

Sieve Size	Percent Passing
3"	100
3/4"	75 – 100
No. 4	20 – 100
No. 100	0 – 20
No. 200	0 – 6

PART 3 – EXECUTION

3.01 EXAMINATION

A. Verify fill materials to be reused are acceptable.

B. Verify underground tanks are anchored to their own foundation to avoid floatation 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 insitu compaction. Backfill with crushed 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 D1557.

3.03 BACKFILLING

A. Backfill areas to contours and elevations with unfrozen materials.

B. Systematically 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 attain 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 ¼ inch per foot, or as shown in plans, unless noted otherwise.

J. Make 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 final graded to within a tolerance of ½" when tested with a 10' straight edge.

3.05 FIELD QUALITY CONTROL

A. Compaction Requirements: Modified Proctor/ASTM D1557.

B. If tests indicate Work does not meet specified requirements, remove Work, replace and retest at no cost to Owner.

3.06 SCHEDULE

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

LOCATION	MATERIAL	% COMPACTION MODIFIED PROCTOR ASTM D-1557
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% 95%
Exterior, Adjacent to Foundation Walls	Structural Fill: or Granular Backfill	90% 90%

SITE ENGINEER:

CIVIL ENGINEERING ASSOCIATES, INC.
P.O. BOX 485 SHELBURNE, VT 05482
802-985-2323 FAX: 802-985-2271 web: www.cea-vt.com

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DRAWN: PJM/PFL
CHECKED: BCE
APPROVED: BCE

OWNER:

STATE OF VERMONT
VERMONT AGENCY OF TRANSPORTATION
MONTPELIER, VERMONT

PROJECT:

CALEDONIA COUNTY STATE AIRPORT

PUDDING HILL ROAD LYNDON, VERMONT

DATE	CHECKED	REVISION
4/6/05	BCE	ADDED PLANK GUARD RAIL DET./ MINOR TEXT REVISION

SITE DETAILS and NOTES

DATE: JAN., 2005
SCALE: AS SHOWN
PROJ. NO.: 03146.03

DRAWING NUMBER: C3.0