GENERAL SPECIFICATIONS

The Standard Specifications shall refer to the Vermont Agency of Transportation Standard Specifications for Construction (1990 Edition). All site work shall also be completed in accordance with any Town of Highgate's Public Works standards. Any discrepancies with the plans or specifications shall be reported to the Engineer prior to beginning that work.

A. Earthwork

1. The work area shall be cleared of all debris and vegetation, and all topsoil shall be stripped prior to placing any fill material. Debris and vegetation shall be disposed of at an approved location.

2. Grading

a. Perform all rough grading, including excavation, formation of embankments, shaping, sloping, compaction, construction of ditches, disposal of surplus or unsuitable material, and any work necessary to prepare the subgrades of all roadways, walks and parking areas. Grading shall be brought to the bottom of the base course under paved or surfaced areas and to within a minimum of 24 inches of finished grade under side slopes and/or embankment areas to receive loam along roadways, walks or parking areas.

b. Accomplish all excavation and fill within the slope and grade lines as indicated on the Drawings unless otherwise authorized in writing by the Owner. Paved areas shall be graded to full cross section width at sub-grade before placing any type of sub-base or pavement.

c. Do not use frozen material in the construction of embankments area.

d. Place all material in embankments in horizontal layers of uniform thickness across the full width of embankment, except when it is impractical to construct full width of the embankment and partial width layers are authorized by the Owner. Do not allow or place stumps, trees, rubbish or other unsuitable material in embankments. Begin layers of embankment at the deepest part of the fill.

e. Areas of soft, yielding or otherwise unsuitable material that will not meet compaction requirements shall be removed, replaced with suitable material and properly compacted at no cost to the Owner.

f. Place embankments for paved or surface areas in horizontal layers of depths which will result in layers of compacted material not exceeding 8 inches. Compact each layer as specified before placing each new layer. Use effective spreading equipment on each layer to obtain uniform thickness prior to compacting. Each layer shall be kept crowned to shed water to the outside edges of embankment and continuous leveling and manipulating will be required to assure uniform density. Construction equipment shall be routed over the entire surface of each layer.

g. If, during the construction of the embankments, there is any indication that serious bulging, cracking, or unsafe movement may occur, the placing of fill shall be stopped or retarded to allow the material to stabilize.

h. All ditches and drains shall be constructed so they will effectively drain the roadway or paved areas before any sub-base or surface course material is placed. In handling materials, tools and equipment, the Contractor shall protect the subgrade from damage. In no case shall vehicles be allowed to travel in a single track and form ruts. If ruts are formed, the subgrade shall be reshaped and compacted and any pockets of clay, sand or soft material that may have been left in the subgrade shall be removed, replaced with approved material and properly compacted at the Contractor's expense. The subgrade shall be kept in such condition that it will drain. Sub-base, base or surface material shall not be deposited on the sub-grade until the sub-grade has been checked and approved by the Owner. After the sub-grade has been approved, hauling shall not be done nor equipment moved over the sub-grade which will distort the cross section. A tolerance of 1/2 inch above or below the finished sub-grade will be allowed provided that this 1/2 inch above or below sub-grade is not maintained for a distance longer than 50 feet, and that the required cross section is maintained.

3. Compaction:

a. General: Control soil compaction during construction providing minimum percentage of density specified for each area classification.

b. Percentage of Maximum Density Requirements: Compact soil to not less than the following percentages of maximum dry density for soils which exhibit a well defined moisture-density relationship determined in accordance with ASTM D 2049.

1. Lawn or unpaved areas: Compact top 6" of sub-grade and each layer of backfill or fill material to 90% maximum dry density.

2. Compaction under paved and surfaced areas: The entire area of each layer shall be uniformly compacted to at least the required minimum density by using compaction equipment consisting of rollers, compactors or a combination thereof. Earth-moving and other equipment not specifically manufactured for compaction purposes will not be considered as compaction equipment. Each layer for its full width shall be compacted to not less than 90 percent of the maximum dry density as determined by the Standard Method of Test for Moisture-Density Relations of Soils, ASTM-D698, Method C, except that the material in the top two feet of any embankment, immediately below the sub- grade shall be compacted to not less than 95 percent of the maximum dry density. The field density determination will be made by a qualified testing laboratory using a nuclear density gauge.

3. Concrete Slabs: Compact each layer of backfill or material to 95% maximum dry density.

c. Moisture Control: Where sub-grades or layer of soil material must be moisture conditioned before compaction, uniformly apply water to surface of sub- grade, or layer of soil material, to prevent free water appearing on surface during or subsequent to compaction operations. Remove and replace, or scarify and air dry, soil material that is too wet to permit compaction to specified density.

B. Paved Access Drive, Parking Lot, and Yard Area

1. The sub-grade shall be prepared in accordance with Section 203.12 of the Standard Specifications.

2. Bank run gravel (gravel for sub-base) shall meet the following grading requirements (Section 704.04):

Sieve Designation	Percentage by Weight Passing Square Mesh Sieves
No. 4	20 – 60
No. 100	0 – 12
No. 200	0 – 6

The gravel shall be uniformly graded from coarse to fine and the maximum size stone particle shall not exceed 2/3 of the thickness of the layer being placed. The gravel sub-base shall be compacted to 95% of the maximum dry density as determined by AASHTO-T99.

3. Plant Mixed Course: This work shall consist of furnishing and placing one or more courses of crushed gravel or crushed stone, on a prepared surface in accordance with these specifications and in reasonably close conformity with the lines, grades, thickness and typical cross-sections shown on the plans or as established by the Engineer.

Materials

(a) Material shall meet the requirements of the following subsections of Division 700 – Materials.

Aggregate for Plant Mixed Base Course 704.03

Gradation.

(b) The materials shall be combined and graded to meet the following composition limits by weight:

Sieve Openings Sieve Size	Percentage Passing by Weight
1-3/4"	100
1-1/2"	95 – 100
1"	60 – 85
3/4"	50 – 70
1/2"	40 – 60
No. 4	20 – 40
No. 8	15 – 30
No. 200	0 – 4

GENERAL SPECIFICATIONS (CONT.)

4. Crushed Gravel for Sub-base: All materials shall be secured from approved sources. This gravel shall consist of angular and round fragments of hard durable rock of uniform quality throughout, reasonably free from thin elongated pieces, soft or disintegrated stone, dirt, organic or other objectionable matter. The grading requirements shall conform to the following table (Section 704.05 – Fine):

Sieve Designation	Percentage by Weight Passing Square Mesh Sieves
2"	100
1 1/2"	90 – 100
No. 4	30 – 60
No. 100	0 – 12
No. 200	0 – 6

The crushed gravel shall be compacted to 95% of the maximum dry density as determined by AASHTO-T99.

5. Dense Graded Crushed Stone for Sub-base: Dense graded crushed stone for sub-base shall consist of clean, hard, uniformly graded, crushed stone. It shall be reasonably free from dirt, deleterious material and pieces which are structurally weak and shall meet the following requirements:

a. Source: This material shall be obtained from approved sources and the area from which this material is obtained shall be stripped and cleaned before blasting.

b. Grading: This material shall meet the requirements of the following table:

Sieve Designation	Percentage by Weight Passing Square Mesh Sieves
3 1/2"	100
3"	90 – 100
2"	75 – 100
1"	50 – 80
1/2"	30 – 60
No. 4	15 – 40
No. 200	0 – 6

6. Granular Backfill for Structures: Granular backfill for structures shall be obtained from approved sources. It shall consist of satisfactorily graded, free draining material reasonably free from loam, silt, clay, and organic material.

Sieve Designation	Percentage by Weight Passing Square Mesh Sieves
3"	100
No. 4	45 – 75
No. 100	0 – 12
No. 200	0 – 6

7. Bituminous Concrete Pavement: The materials, grading and composition, placement, and finishing for bituminous concrete pavement (Type I, II, and III) shall meet the requirements of the Vermont Agency of Transportation Standard Specifications Sections 406, 702, and 704.10. Other requirements are as follows: Application of bituminous concrete pavement shall meet all the requirements of the Vermont Standard Specifications for Construction, Section 406, or as periodically amended, but not limited to, the following:

a. Weather Limitations: Bituminous material shall not be placed between November 1, and May 1. Material shall not be placed when the air temperature at the paving site in the shade and away from artificial heat is 40 degrees Fahrenheit or below.

b. Compaction: Immediately after the bituminous mixture has been spread, struck off, and surface irregularities adjusted, it shall be thoroughly and uniformly compacted by rolling. Along forms, curbs, headers, walls and other places not accessible to the rollers, the mixture shall be thoroughly compacted with hot or lightly oiled hand tampers, smoothing irons, or mechanical tampers. On depressed areas, a trench roller may be used, or cleated compression strips may be used under the roller to transmit compression to the depressed

c. Surface Tolerances: The surface will be tested by the Engineer using a 16-foot straightedge at selected locations parallel with the centerline. Any variations exceeding 3/16 of an inch between any two contacts shall be satisfactorily eliminated. A 10-foot straightedge may be used on a vertical curve. The straightedges shall be provided by the Contractor.

d. Matching Surfaces: When a new pavement is to match an existing bituminous pavement for a roadway or trench, the Contractor shall vertically smooth cut the existing pavement along a straight line a minimum of one foot (1') into the existing pavement, over the existing gravel base. The smooth cut shall be thoroughly cleaned and coated with Emulsified Asphalt, RS-1, just prior to paving.

8. Stabilization Fabric: Stabilization fabric where required by the Engineer shall be Mirafi 500X or equal. The fabric shall be installed in accordance with manufacturer's requirements.

9. All pavement markings shall be VT. 7.05 Fast Dry White Traffic Paint.

C. Drainage Systems

1. All culverts and storm drains shall meet the requirements of Section 601 of the Standard Specifications.

2. At the Contractor's option, the following materials may be used for the storm drainage:

a. Polyvinyl Chloride pipe conforming to ASTM Specification D3034 or F679, (PVC) sewer pipe and fittings SDR 35.

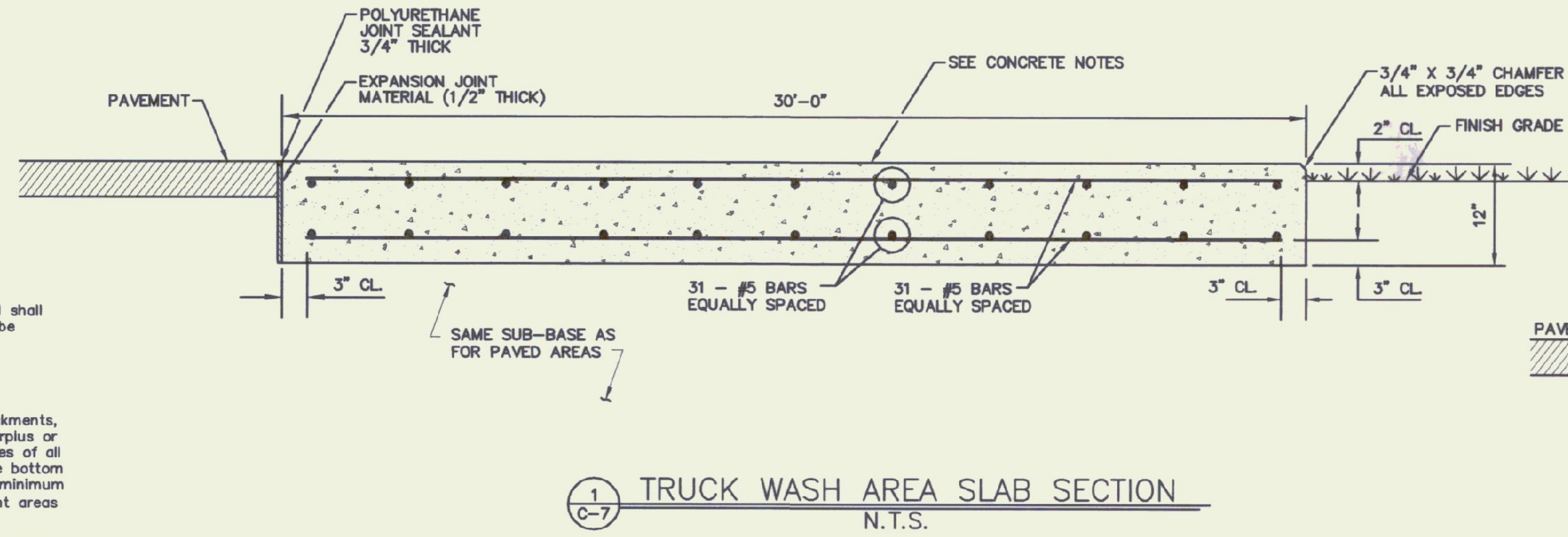
b. Reinforced concrete pipe meeting the requirements of Section 710.01.

c. Corrugated Polyethylene pipe meeting the requirements of Section 710.03.

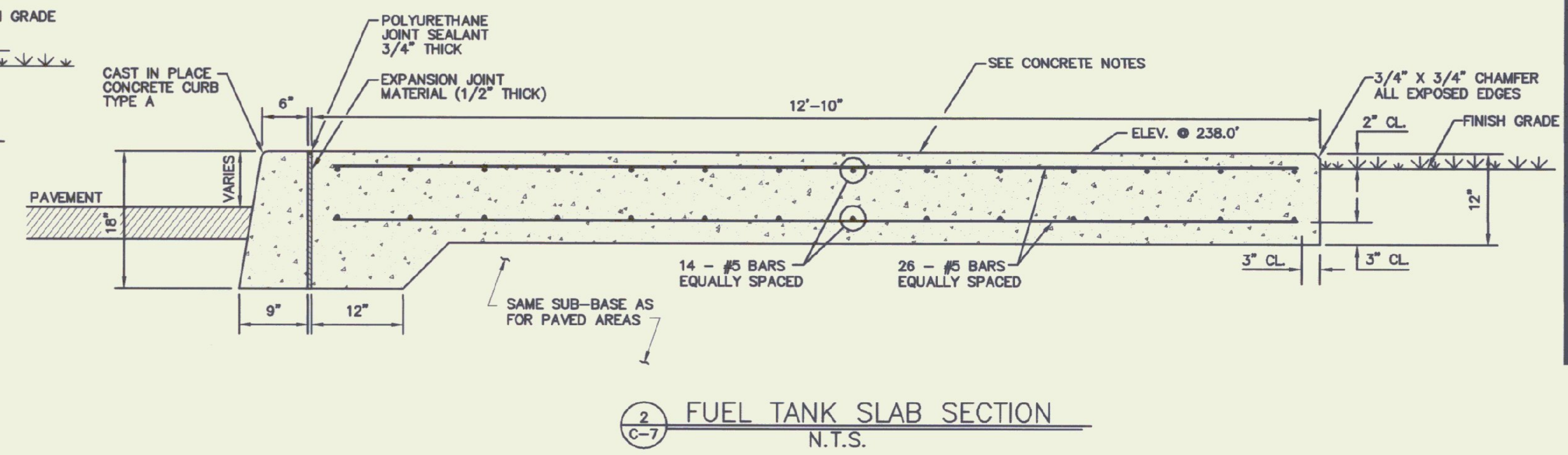
d. Corrugated aluminum alloy pipe meeting the requirements of Section 711.02.

D. Underground Utilities

For underground electrical and telephone (cable) services, the Contractor shall trench, place bedding, place conduit, and backfill in accordance with the utility company's requirements.



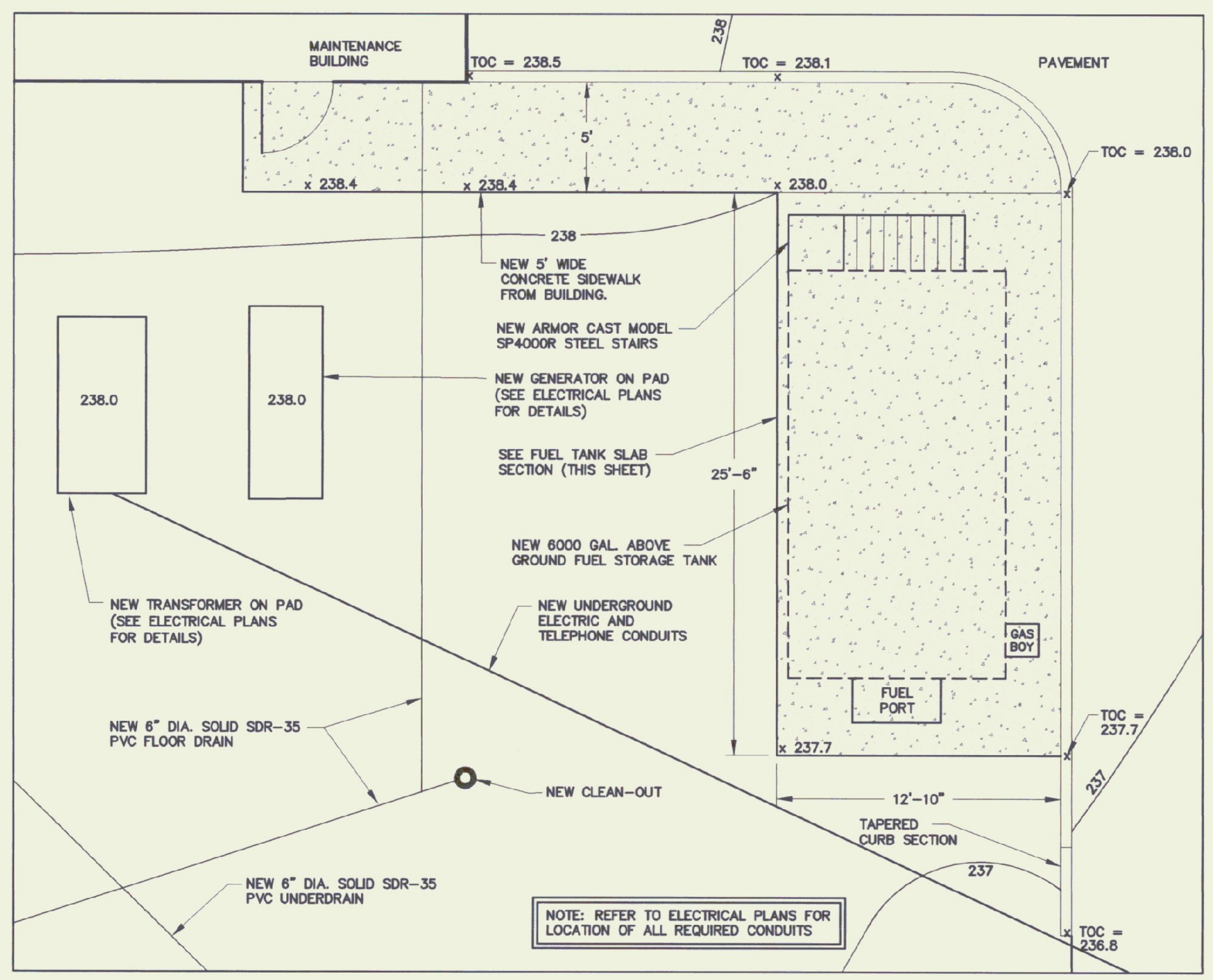
1 C-7 TRUCK WASH AREA SLAB SECTION
N.T.S.



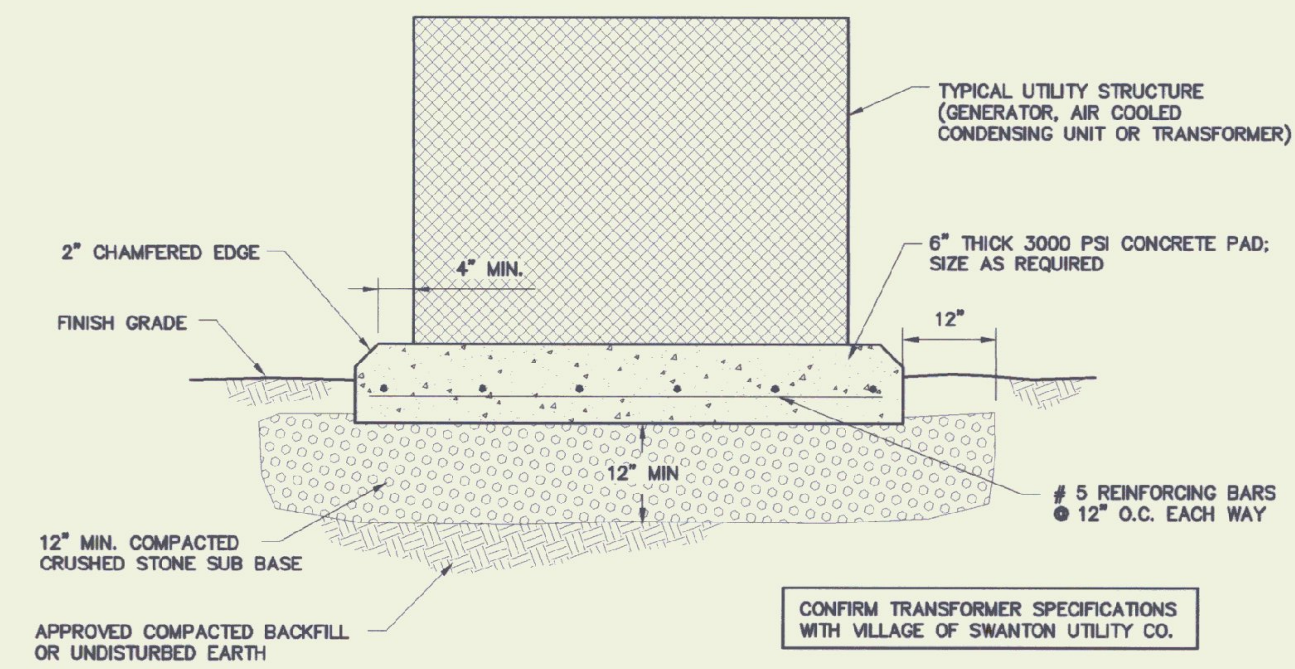
2 C-7 FUEL TANK SLAB SECTION
N.T.S.

CONCRETE NOTES

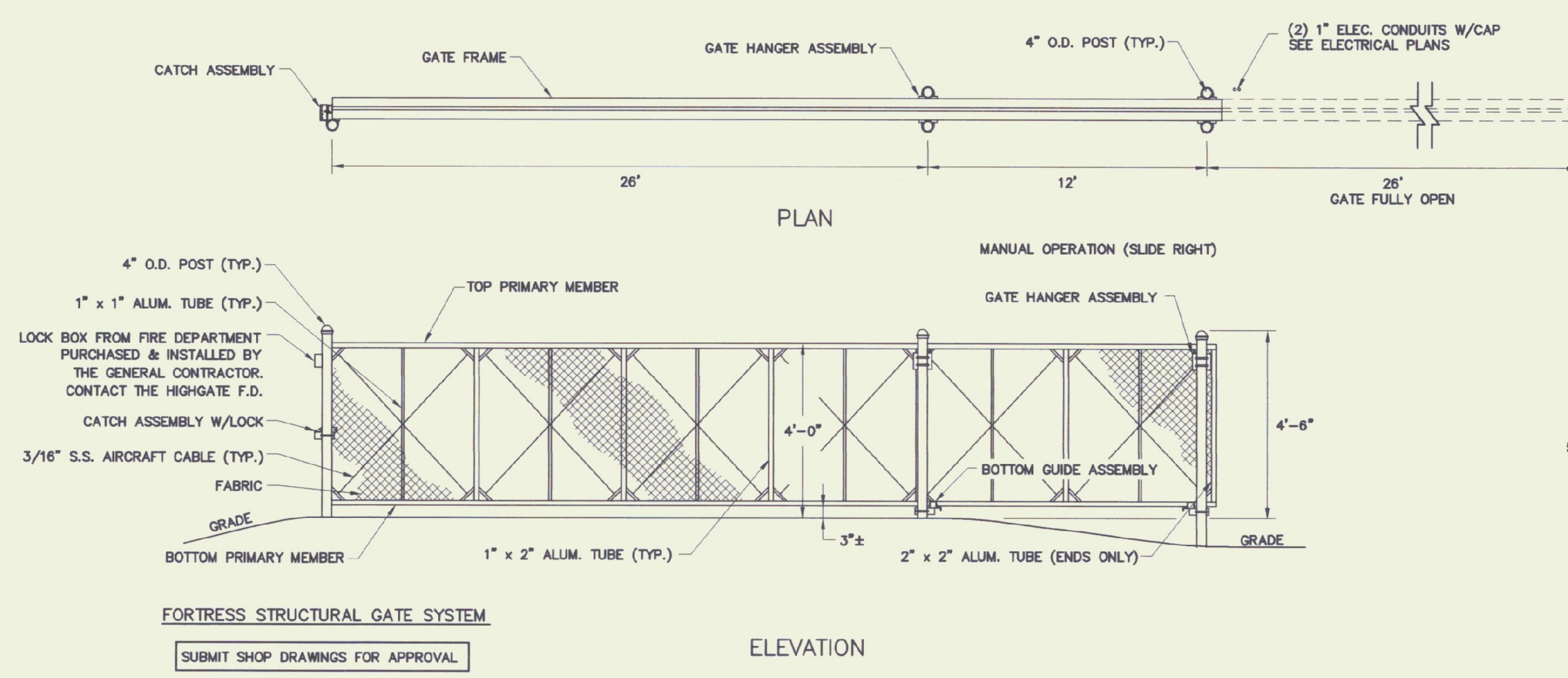
- ALL CONCRETE TO BE 4000 psi @ 28 DAYS
- MAXIMUM SLUMP OF 4"
- ALL REINFORCING STEEL SHALL BE GRADE 60
- CHAMFER ALL EXPOSED EDGES 3/4" X 3/4"
- CONCRETE SHALL BE AIR ENTRAINED 6–8%
- TROWEL FINISH TOP OF SLAB
- PLACEMENT AND CURING SHALL BE IN CONFORMANCE WITH DIVISION 500 OF THE STANDARD SPECIFICATIONS



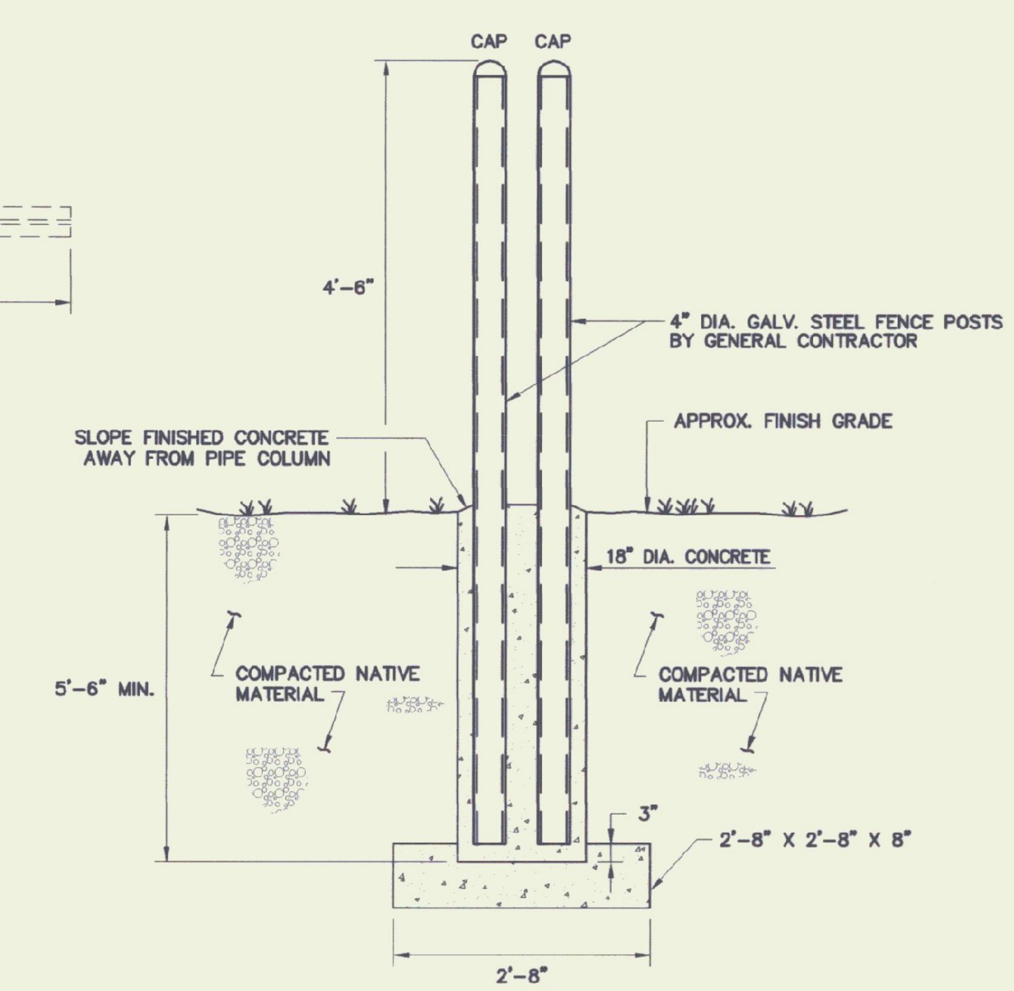
3 C-7 FUEL TANK AREA PLAN
SCALE: 1" = 5'



4 C-7 UTILITY PAD DETAIL
N.T.S.



5 C-7 ENTRANCE GATE DETAIL
N.T.S.



6 C-7 ENTRANCE GATE POSTS DETAIL
N.T.S.

Champlain Consulting ENGINEERS
85 PRIM ROAD, P.O. BOX 453 COLCHESTER, VERMONT 05446
PHONE: (802) 863-8060 FAX: (802) 864-1878

D&W DORE AND WHITTIER, INC. Architects • Project Managers
1795 WILLISTON RD, STE 5 S. BURLINGTON, VT 05403 Phone: (802) 863-1428 Fax: (802) 863-6955
1400 HANCOCK STREET QUINCY, MA 02169 Phone: (617) 471-2897 Fax: (617) 471-2516

STATE OF VERMONT
DEPARTMENT OF BUILDINGS AND GENERAL SERVICES
AGENCY OF ADMINISTRATION
MONTPELIER, VERMONT

AGENCY OF TRANSPORTATION
HIGHGATE MAINTENANCE FACILITY
HIGHGATE VERMONT

SCALE:	AS NOTED
DATE:	09/24/01
DRAWN BY:	CCE
APPR. BY:	PD

REVISIONS

HIGHGATE
MAINTENANCE GARAGE
DETAILS AND SPECIFICATIONS

C-7