

TOWN OF WATERBORO

**STREET DESIGN AND
CONSTRUCTION
STANDARDS ORDINANCE
FOR THE TOWN OF
WATERBORO**

ADOPTED MARCH 10, 1984

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ARTICLE 1 AUTHORITY

1.1 This Ordinance shall be entitled "Waterboro Street Design and Construction Standards Ordinance" and is enacted pursuant to the provisions of Title 30, M.R.S.A. Sections 1917 and 2151.

Waterboro, like many small rural towns, finds itself with a large area, a growing population, and a considerable mileage of roads to be maintained and upgraded. As the Town continues to grow, many existing roads will need to be reconstructed or extended in order to provide safe and economical service to the residents of the town.

The costs of maintaining and building roads has escalated quite dramatically. This situation requires that standards take into consideration the existing as well as potential future use of each road. The Town thereby has the option of applying lower standards to low volume roads and correspondingly higher standards to high volume roads. In this way, the Town will get the most mileage out of its limited highway budget.

The standards recommended herein are based on a review of available resource materials which include: road design and standards publications; rural road standards for Massachusetts, New Hampshire and Vermont; State aid road standards for Maine; and existing road standards for small Maine towns. A partial listing of this resource material is included in the bibliography.

The first step in determining which set of standards to apply to any given road is to determine what volume of traffic that particular road can be expected to carry. The road definitions are to assist the Town in classifying existing roads as well as proposed new roads. These classifications are intended for Town roads only and do not necessarily apply to any Federal or State highways or State aid roads within the Town.

ARTICLE 2 DEFINITIONS

2.1 PETITIONER: For the purpose of this Ordinance, a petitioner is defined as a person, firm, organization, corporation, developer or subdivide who petitions the Municipal Officers to accept a street as a Town way.

2.2 STREET: For the purpose of this Ordinance, a street is defined as any existing way within the boundaries of the Town of Waterboro including boulevards, avenues, roads, streets, alleys, lanes, private ways or other rights of way.

- A. **ARTERIAL TOWN ROAD:** An arterial Town road shall be defined as a major through road which may ultimately service more than 150 residences or carry average daily traffic (ADT) of 1,500 vehicles per day.
- B. **COLLECTOR TOWN ROAD:** A collector Town road shall be defined as a through road which may ultimately service at least 25 residences but not more than 150 residences or carry average daily traffic between 250 and 750 vehicles per day.
- C. **LOCAL TOWN ROAD:** A local town road shall be defined as a residential dead end or loop road which may ultimately serve less than 25 residences with average daily traffic less than 250 vehicles per day.
- D. **LOW VOLUME TOWN ROAD:** A low volume town road shall be defined as an existing town road which services less than 10 residences and carries average daily traffic less than 100 vehicles per day. This classification should not be applied to any proposed new roads.

**ARTICLE 3
STREET DESIGN AND CONSTRUCTION STANDARDS**

SECTION 1: GENERAL PROCEDURES AND REQUIREMENTS

4.1 Subdividers shall submit to the Planning Board, as part of an integral part of the plot plan an application for subdivision approval, the following information:

- 1. Applicant's name, address, phone number, signature and date;
- 2. Names of the owners of record of the land upon which the proposed street is located;
- 3. A statement of any legal encumbrances on the land upon which the proposed street is located;
- 4. The anticipated beginning and ending dates of each major phase of street construction;
- 5. A profile view, centerline view, and typical cross section view of the proposed street(s).
- 6. Engineer's or designer's name.

4.2 Plans: The plans and illustrations submitted as part of the application shall include the following information:

- 1. The date and scale of the plan;
- 2. The direction of magnetic north;
- 3. The beginning and ending points with relation to accepted Town ways, and any planned or anticipated future extensions of the streets proposed for acceptance. (All terminal points and the centerline alignment shall be identified by survey stationing);
- 4. The roadway and road landmarks;

5. Dimensions, both linear and angular, curved out necessary lines;
6. The lots as laid out and numbered on the proposed street showing the names of all owners or abutting property;
7. All natural waterways and watercourses in or on land contiguous to the proposed street;
8. The kind, size, location, profile and cross section of all existing and proposed drainage structures and their location with respect to the existing natural waterways and/or watercourses;
9. Complete curve data shall be indicated for all horizontal and vertical curves;
10. The turning radii at all intersections;
11. All centerline gradients;
12. The limits and location of all proposed sidewalks and curbing;
13. The location of all existing and proposed overhead and underground utilities, to include but not be limited to the following: public water supply system, sanitary sewer system, electric power line poles or underground vaults, telephone line poles or underground vaults, fire hydrants, street lights, fire alarm boxes.
14. Existing contours at 2' or 5' intervals depending on scale of plan.

4.3 Upon receipt of an application for subdivision approval which includes proposed streets, the Planning Board shall confirm, in writing, the classification of the proposed streets. In addition, the Planning Board shall notify the Board of Selectmen and the Road Commissioner of said application and its classifications, and shall request a review and comment of the proposed street plans.

The following table lists the minimum standards which shall be applied to the various Town road classifications and all subdivision roads proposed within the Town. These standards do not necessarily apply to any Federal or State highways or State aid highways within the Town.

MINIMUM SAFE SITE-DISTANCES

Posted Speed Limit (mph)*	30	35	40	45	50	55
For Passenger Cars	300'	350'	400'	450'	500'	550'
For Single-Unit Trucks	415'	475'	540'	600'	675'	750'
For Tractor-Trailers	530'	615'	700'	840'	975'	1100'

***Note:** Where it is impossible to meet these sight-distance standards, due to physical conditions, a maximum variance of 30% may be permitted, in accordance with the waiver provisions in Article 5. The 30% variance is consistent with the absolute minimum stopping distance requirements on wet pavements established by the Maine Department of Transportation.

MINIMUM DESIGN STANDARDS
TYPE OF ROAD

DESCRIPTION	ARTERIAL	COLLECTOR	LOCAL	LOW VOLUME
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Design Speed MPH	45	35	25	25
Right-of-way Width	60H	50H	50H	50H
Pavement width	24'A	22'	18-20'B	18'
Pavement type	Hot Bituminous ^F	Hot Bituminous ^F	Hot Bituminous	Asphalt Penetration ^D

Pavement Thickness

Base Course	1"-2" ^A	1"-1 1/2" ^A		
Surface Course	1"	1"		
Crushed gravel base	3"-4" ^A	3"	3"	3"
Gravel sub-base	18"	18"	15"	15"
Roadway crown	1/4"/ft	1/4"/ft	1/4"/ft	1/4"/ft
Shoulder width	4'-6' ^A	4'	2'-4' ^B	2'
Shoulder slope	1/2"/ft	1/2"/ft	1/2"/ft	1/2"/ft
Minimum grade	0.5%	0.5%	0.5%	0.5%
Maximum grade	6%	8% ^C	8% ^C	8% ^C
Max. intersection grade (w/in (50' of an intersection)	2%	3%	3%	3%
Min. angle of intersections	90°	90°	90° ^G	90° ^G
Min. tangent between curves of reverse alignments	300'	200'	100'	100'
Min. centerline radius	750'	250'	150'	150'
Min. property line radius at intersections	20'	10'	10'	10'
Min. centerline radius turnarounds	Not Allowed	Not allowed	75' ^E	75' ^E
Edge pavement radii at intersections	25'	20'	15'	
Min. ditch depth	2'-0"	1'-6"	1'-6"	1'-6"
Min. driveway culvert	12"	12'	12"	12"
Min. roadway culvert	15"	15"	15"	15"

Notes:

- A. Use higher values if heavy trucks are expected to exceed 5% of ADT, if used by a majority of school buses, or ADT is greater than 2500. Paved shoulders may be required if deemed necessary.
- B. Use higher values if ADT is greater than 50.

ADT = Average Daily Trip

- C. Board may allow grades 2% steeper for ADT greater than 250 and 4% steeper for ADT less than 250 for difficult terrain.
- D. Board may require Hot Bituminous pavement at their discretion.
- E. Board may require T type.
- F. Board may allow such pavement as shall meet Town specifications.
- G. Waiver may be granted if applicant can demonstrate a valid need beyond inconvenience and extra cost.
- H. The centerline of the roadway shall be the centerline of the right-of-way.

4.4 Sidewalks: Sidewalks installed shall meet the minimum requirements as set forth herein.

1. Bituminous sidewalks:

- A. The Gravel Aggregate Sub-base Course shall be not less than 6 inches in thickness.
- B. The Crushed Aggregate Base Course shall not be less than 2 inches in thickness.
- C. The Hot Bituminous Pavement Surface Course shall not be less than 2 inches in thickness, after compacting.

2. Bituminous Cement or Concrete Sidewalks:

- A. The sand base shall not be less than 6 inches in thickness.
- B. The Bituminous Cement or Concrete shall be reinforced with 6 inch square number 10 wire mesh and shall not be less than 4 inches in thickness.

4.5 Preparation:

- 1. Before any clearing has started on the right-of-way the center line of the new road shall be staked and side stepped at 50 foot intervals. Limits of clearing shall be marked by stakes or flagging. Distances from the center line shall be obtained from the cross sections.
- 2. Before grading is started, the entire right-of-way area shall be cleared of all stumps, roots, brush, and other objectionable material. All ledge, large boulders, and tree stumps shall be removed from the right-of-way to an authorized disposal site.
- 3. Tree stumps and all organic materials shall be removed to a depth of 2 feet below the sub-grade of the roadway. Soils which are designated as being Poor or Very Poor for road fill by the "Soil Suitability Guide for Land use Planning in Maine", as revised in February, 1975 shall be removed from the street site to a depth of 2 feet below the

sub-grade and shall be replaced where necessary with soils listed by the Soil Suitability Guide as being Good or Fair for road fill.

4. Side slopes shall not be steeper than a slope of 3 feet horizontal to 1 foot vertical, graded with top soil no less than 4 inches deep compacted free of stones 1 inch diameter and clay, fertilized and seeded. Planting strips to be limed at the rate of ten (10) pounds of a 10-10-10 fertilizer per 100 square feet or equivalent and seeded with a conservation mix meeting the standards of the York County Soil and Water Conservation District.
5. Street intersections and curves shall be so designed as to permit adequate visibility for both pedestrian and vehicular traffic. That portion of any corner lot which is necessary to allow 25 foot sight lines between intersecting streets shall be cleared of all growth (except isolated trees) and obstructions above the level two (2) feet higher than the center line of the street.

4.6 Material Specifications

GRAVEL SUB-BASE:

Gravel sub-base shall be placed in layers not exceeding six (6) inches and thoroughly compacted. This material shall conform to State of Maine Standard Highways Specifications, Section 703-06 (b) Type "D". The maximum size of stones is six (6) inches.

GRAVEL BASE:

Gravel base shall be placed and thoroughly compacted and graded as required. This material shall conform to State of Maine Standard Highway Specifications Section 703.06 (a) Type "A". The maximum size of stones is six (6) inches. Frost susceptible soils shall be removed to a depth of normal frost penetration and replaced with granular material not subject to ice formation. The immediate area should have sufficient to lower the ground water.

HOT BITUMINOUS PAVEMENT:

BASE COURSE: The aggregate for the base course shall conform to the requirements of the State of Maine Standard Highway Specifications Section 703.09 grading "B". The maximum size of stones is one (1) inch.

SURFACE COURSE: The aggregate for the surface course shall conform to the requirements of the State of Maine Standard Highway Specifications Section 703.09 Grading "E". The maximum size of stones is ½ inch.

ASPHALT PENETRATION PAVEMENT: Asphalt penetration pavement shall be accomplished by an approved method.

4.7 INSPECTIONS

Roads within the Town of Waterboro subject to these standards shall comply with the following inspection schedule:

Upon clearing the right-of-way and preparing the sub-grade and prior to placing any road gravel, the developer shall notify the town that the road sub-grade is ready for inspection. 24 hours notice shall be required for this inspection. Upon inspection and approval of the sub-grade by the Town's authorized agent, the developer may commence work on the gravel sub-base and base. Upon completion of the gravel base and prior to placing any pavement, the developer shall notify the Town that the road base is ready for inspection. 24 hours notice shall be required. Upon inspection and approval by the town's authorized agent shall inspect and approve all paving operations prior to final acceptance of any roads subject to these standards. All inspections will be at the developers expense.

The developer shall upon request provide documented evidence to the Town that all materials to be used to construct the road are in compliance with these standards and specifications.

Any work determined to be substandard by the Town shall be repaired and brought into acceptable standards before continuing with the work.

The developer shall keep a set of approved construction plans on the site of the work at all times. These plans shall be made available to the Town's inspector and shall show all changes that may be made during the execution of the work.

Upon completion of the work and before acceptance by the Town, the developer shall furnish the Town a set of "As-Built" plans which show the finished profile of the road as well as the horizontal alignment. All drainage structures shall be detailed with all sizes, inverts, slopes, alignments and materials noted. The "As-Built" plans shall be sealed by a Registered Engineer and certified with respect to their accuracy.

**ARTICLE 7
SEVERABILITY**

7.1 The Invalidity of any section or provision of this Ordinance shall not be held to invalidate any other section or provision of this Ordinance.

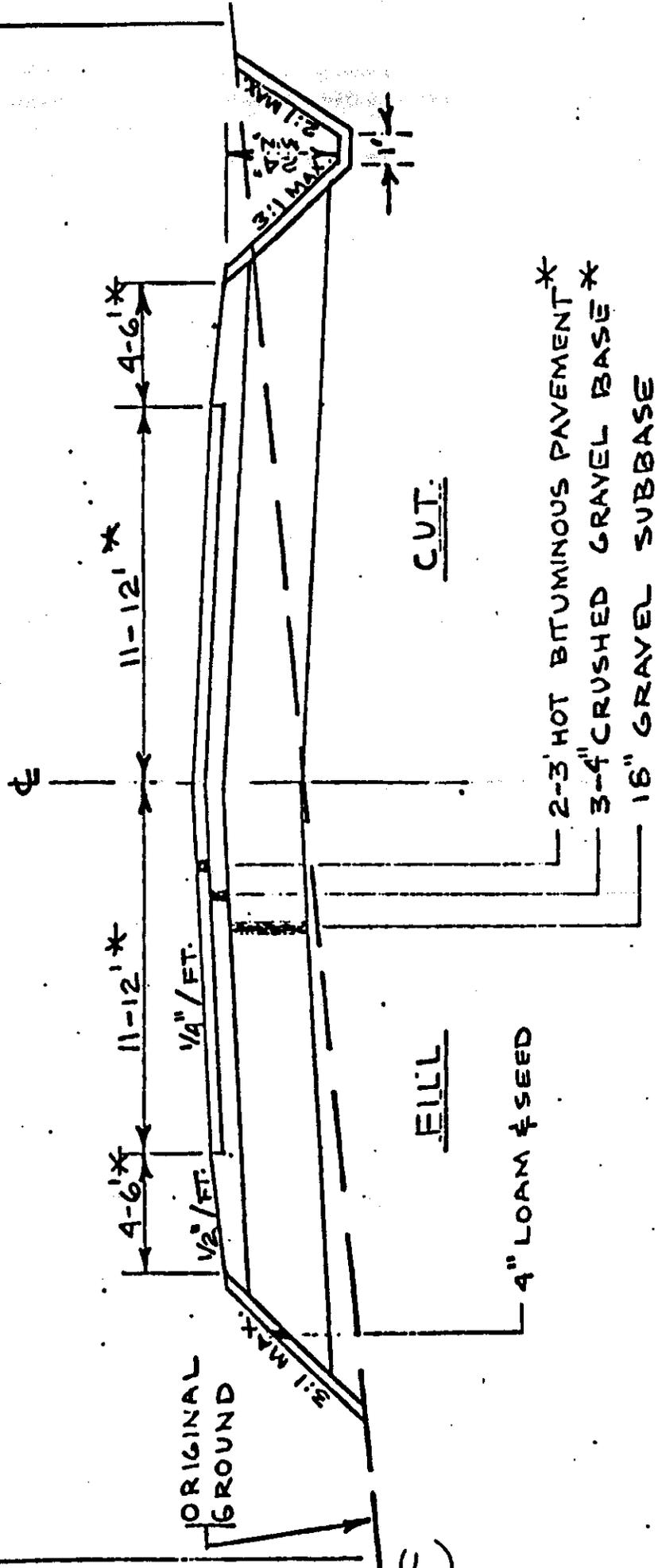
**ARTICLE 8
REPEAL**

8.1 All provisions of prior Ordinances pertaining to Town ways that are inconsistent with this Ordinance are hereby repealed.

**ARTICLE 9
EFFECTIVE DATE**

This Ordinance shall take effect immediately upon adoption of the same by a Town Meeting.

60' R.O.W.



FILL

CUT

4" LOAM & SEED

2-3" HOT BITUMINOUS PAVEMENT *
 3-4" CRUSHED GRAVEL BASE *
 18" GRAVEL SUBBASE

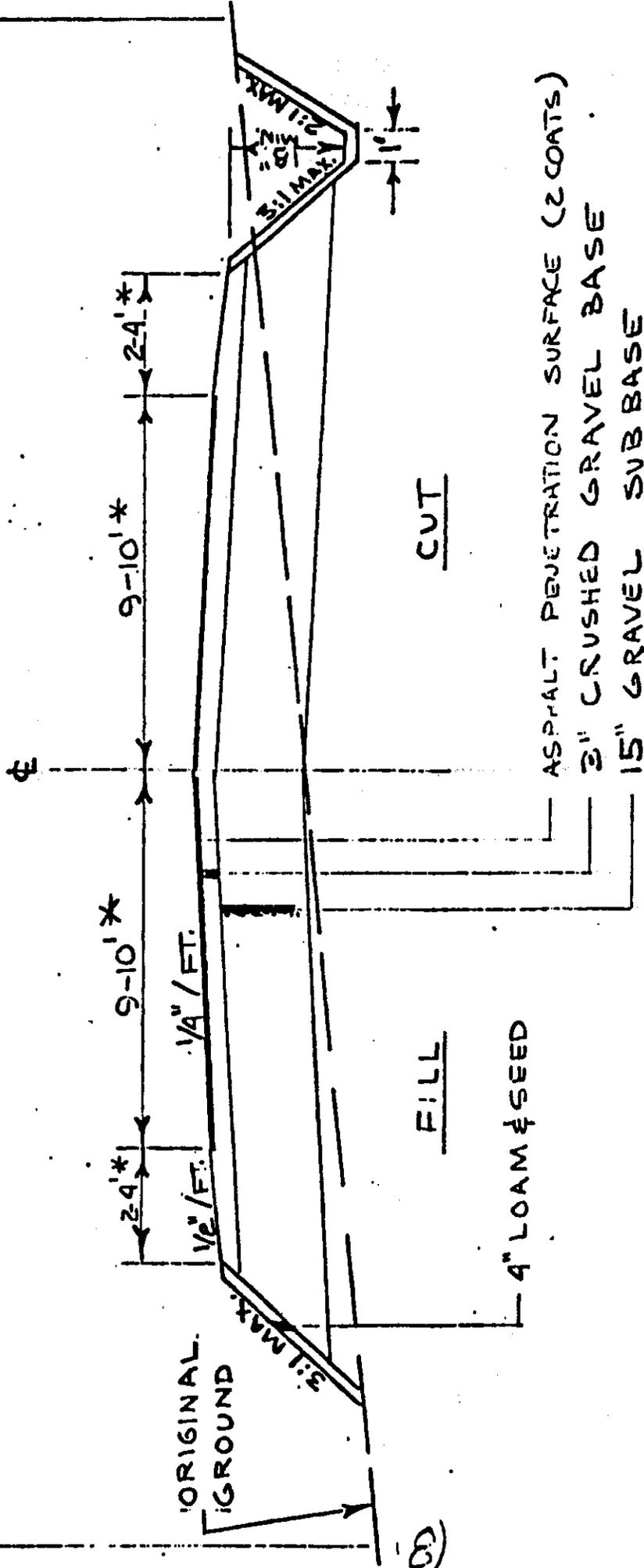
ARTERIAL TOWN ROAD

NOT TO SCALE

SERVES MORE THAN 150 RESIDENCES OR ADT OF 1500 VEHICLES PER DAY.

* USE HIGHER VALUES WHEN HEAVY TRUCKS WILL EXCEED 5% OF ADT.

50' R.O.W.



ASPHALT PENETRATION SURFACE (2 COATS)
 2" CRUSHED GRAVEL BASE
 15" GRAVEL SUBBASE

LOCAL TOWN ROAD

NOT TO SCALE

SERVES LESS THAN 25 RESIDENCES
 OR ADT < 250 VEHICLES PER DAY

* USE HIGHER VALUES FOR ADT > 250
 VEHICLES PER DAY

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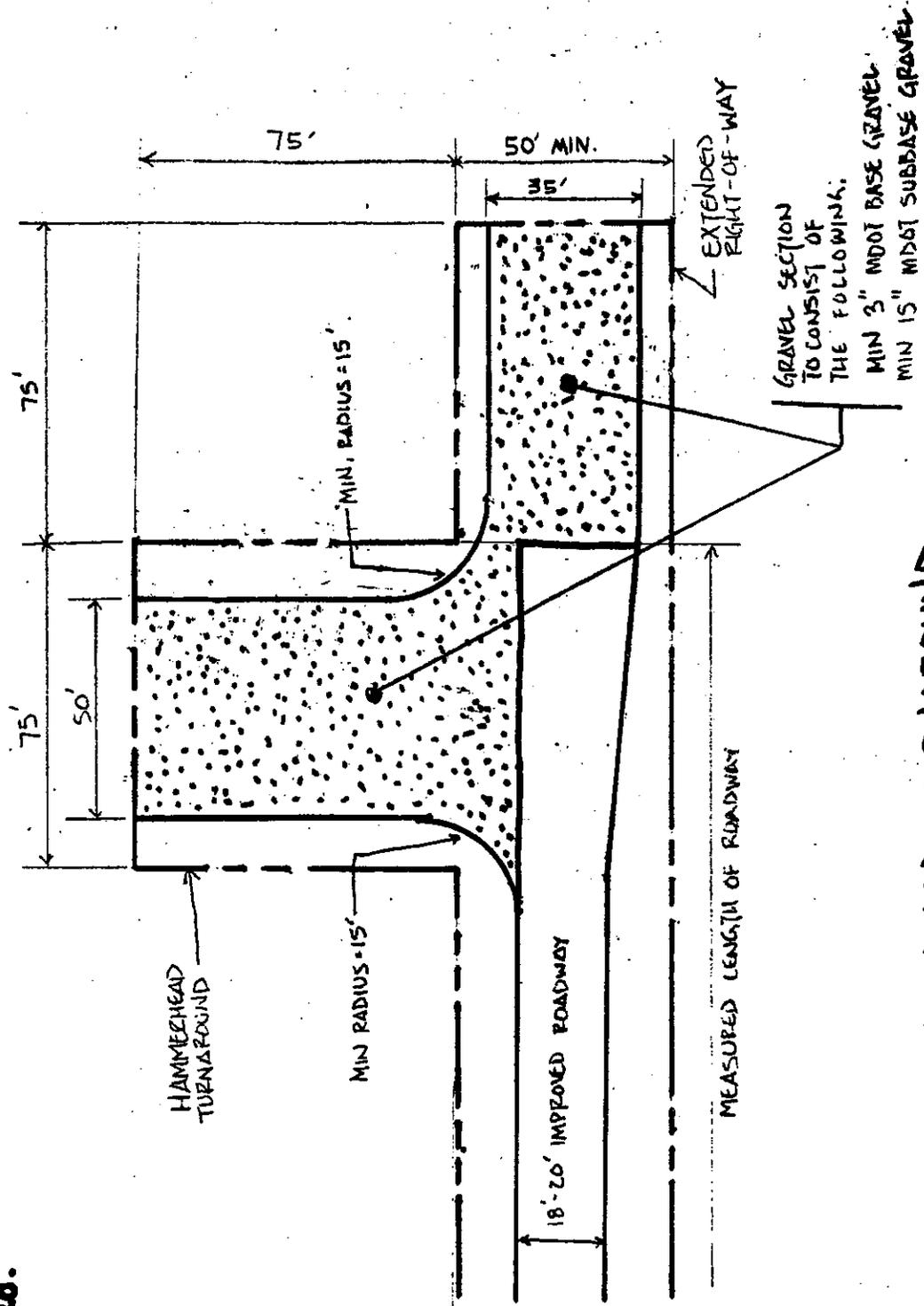
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Vermont, State of, Agency of Transportation. Minimum Rural Highway Typical Sections, October, 1979.

NOTE: ALL ROADWAY IMPROVEMENTS SHALL CONFORM TO THE STREET DESIGN AND CONSTRUCTION STANDARDS ORDINANCE FOR THE TOWN OF WATERBURY.



HAMMERHEAD TURNAROUND

1" = 40' ±

**COST ESTIMATES
1983**

ROAD TYPE	PAVEMENT WIDTH	PAVEMENT TYPE	SHOULDER WIDTH	COST/ L.F.	ADD FOR 5' BIKEWAY
Low Volume	18'	Gravel	2'	\$10.00	N/A
Local	18'	Asphalt Penetration	2'	\$15.00	\$2.50
Local	18'	1 1/2" cold mix	2'	\$15.50	\$2.75
Local	18'	2" Hot Bituminous	2'	\$21.00	\$4.25
Local	18'	Asphalt Penetration	4'	\$17.50	\$2.50
Local	20'	1 1/2" cold mix	4'	\$18.00	\$2.75
Local	20'	2" Hot Bituminous	4'	\$24.00	\$4.25
Collector	22'	1 1/2' Cold Mix	4'	\$20.50	\$2.85
Collector	22'	2" Hot Bituminous	4'	\$27.25	\$4.40
Collector	22'	2 1/2" Hot Bituminous	4'	\$30.00	\$5.00
Arterial	22'	1 1/2" cold mix	4'	\$22.50	\$2.85
Arterial	22'	2" Hot Bituminous	4'	\$29.25	\$4.40
Arterial	24'	3" Hot Bituminous	6'	\$40.00	\$5.50

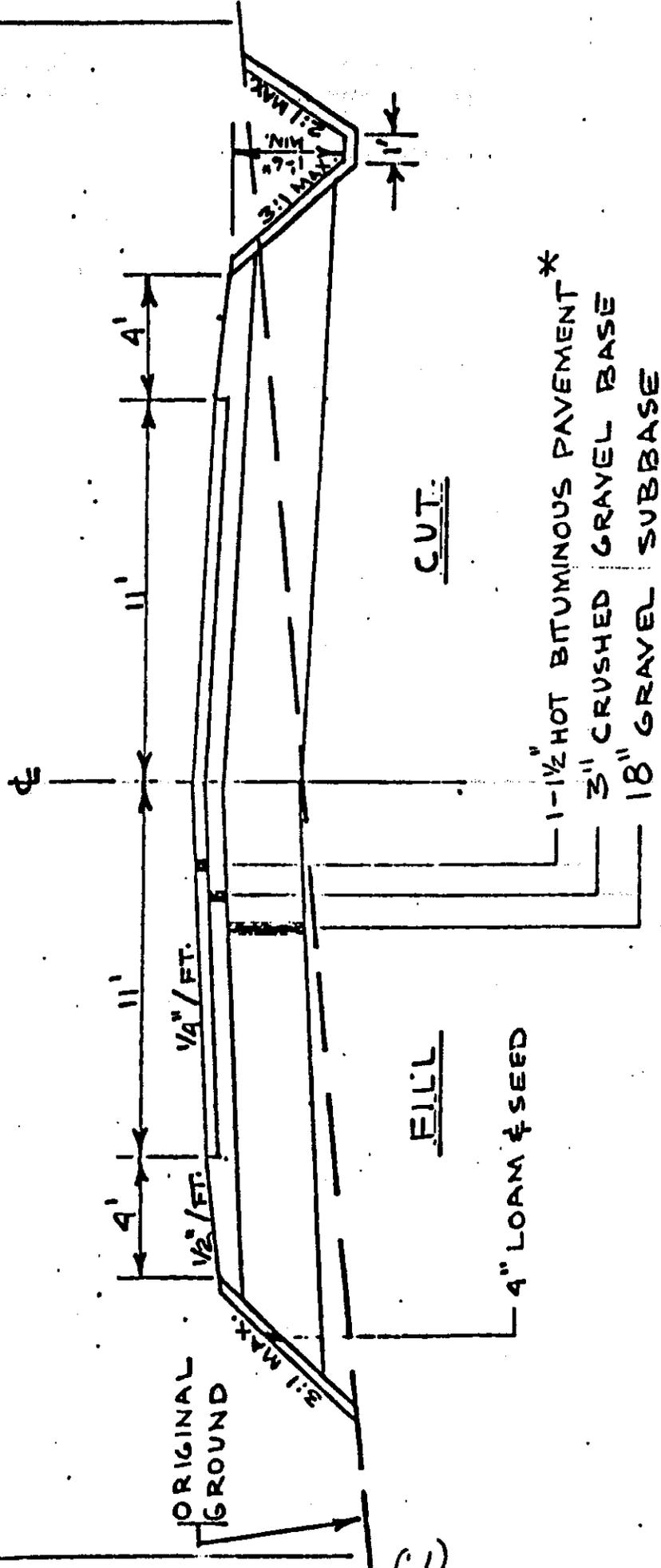
**ARTICLE 5
VARIANCES AND WAIVERS**

5.1 Where extraordinary hardship may result, or due to special circumstances, certain requirements of this Ordinance may be varied and/or waived by the Planning Board subject to appropriate conditions. In granting variances and/or waivers, the Planning Board shall require such conditions as well, in its judgment, secure substantially the objectives of the requirements so varied or waived.

**ARTICLE 6
APPEAL**

6.1 Any person aggrieved by a decision or failure to act of the Planning Board pursuant to this Ordinance may appeal to York County Superior court under Rule 80-B of the Court Rules of Civil Procedure within thirty (30) days of receipt of such decision or refusal to issue a decision.

50' R.O.W.



CUT:

FILL:

- 1-1/2" HOT BITUMINOUS PAVEMENT *
- 3" CRUSHED GRAVEL BASE
- 18" GRAVEL SUBBASE

4" LOAM & SEED

COLLECTOR TOWN ROAD
NOT TO SCALE

SERVES 25 TO 150 RESIDENCES OR
ADT 250 TO 750 VEHICLES PER DAY

* USE HIGHER VALUES WHEN HEAVY
TRUCKS WILL EXCEED 5% OF ADT

(D)