

**Section 1660**

**(C) General**

Treat stumps with a herbicide immediately after cutting to prevent sprouting. Use the herbicide and the method and rate of application specified in the Specifications. Follow all applicable instructions, warnings and safety precautions stated on the manufacturer's label, and comply with all laws and regulations governing herbicides that are in effect at the time of use.

When work is performed properly in accordance with these Specifications, no subsequent re-cutting of sprouts or seedling growth will be required.

Dispose of all trees and undergrowth cut in accordance with Article 200-5.

**1651-4 DAMAGE TO REMAINING VEGETATION**

Conduct operations so as to prevent injury to trees, shrubs or other types of vegetation that are to remain growing, and also to prevent damage to adjacent property.

Remove broken branches and rough edges of scarred trees or shrubs. Shape and make smooth these areas in accordance with generally accepted horticultural practice. Cut and dispose of any plants that are damaged beyond their value for landscape purposes and seed and mulch vegetation that is damaged by the Contractor at no cost to the Department.

**1651-5 MEASUREMENT AND PAYMENT**

*Selective Tree Removal* \_\_\_" will be measured and paid in units of each. Each tree removed will be paid at the contract unit price for the pay item size applicable to the actual tree diameter, measured at a height of 4.5 ft above the ground, as indicated in Table 1651-1.

<b>TABLE 1651-1 SELECT TREE REMOVAL PAY ITEM SIZES</b>	
<b>Pay Item Size</b>	<b>Actual Tree Diameter</b>
6 inch	4 inches up to 8 inches
10 inch	8 inches up to 12 inches
15 inch	12 inches up to 18 inches
18 inches	18 inches and over

*Selective Undergrowth Removal* will be measured and paid in acres, measured horizontally, completed and accepted.

Payment will be made under:

<b>Pay Item</b>	<b>Pay Unit</b>
Selective Tree Removal, 6"	Each
Selective Tree Removal, 10"	Each
Selective Tree Removal, 15"	Each
Selective Tree Removal, 18"	Each
Selective Undergrowth Removal	Acre

**SECTION 1660  
SEEDING AND MULCHING**

**1660-1 DESCRIPTION**

Prepare seedbed; furnish, place and incorporate limestone, fertilizer and seed; compact seedbed; furnish, place and secure mulch; mow; and perform other operations necessary for the permanent establishment of vegetation from seed on shoulders, slopes, ditches or other roadside areas.

Perform seeding and mulching on all earth areas disturbed by construction and on portions of areas seeded under previous contracts as directed where there is unsatisfactory vegetative cover.

1 Adapt operations to variations in weather or soil conditions as necessary for the successful  
2 establishment and growth of the grasses or legumes.

3 Preserve the required line, grade and cross section of the area treated.

4 The actual conditions which occur during the construction of the project will determine the  
5 quantity of mowing. The quantity of mowing may be increased, decreased or eliminated  
6 entirely as directed. Such variations in quantity will not be considered as alterations in the  
7 details of construction or a change in the character of the work.

#### 8 **1660-2 MATERIALS**

9 Refer to Division 10.

<b>Item</b>	<b>Section</b>
Fertilizer	1060-2
Limestone	1060-3
Seed	1060-4
Mulch for Erosion Control	1060-5

10 Use undiluted emulsified asphalt for tacking material.

11 The analysis of fertilizer and the kinds of seed will be as stated in the contract.

#### 12 **1660-3 COORDINATION WITH GRADING OPERATIONS**

13 Perform seeding and mulching operations on a section by section basis immediately upon  
14 completion of earthwork sections in accordance with Article 225-2.

15 When grading operations have been suspended, and seeding and mulching has been  
16 performed on areas where work has been suspended, include in the work of seeding and  
17 mulching of the adjacent sections any necessary overlapping of operations on previously  
18 established vegetative cover.

19 When the Contractor fails or neglects to coordinate grading with seeding and mulching  
20 operations and to pursue diligently the control of erosion and siltation, the Engineer may  
21 suspend the Contractor's grading operations until such time as the work is coordinated in  
22 a manner acceptable to the Engineer. Such suspension will be in accordance with  
23 Article 108-7.

#### 24 **1660-4 SEEDBED PREPARATION**

25 Cut and satisfactorily dispose of weeds or other unacceptable growth on the areas to be  
26 seeded. Shape and smooth uneven and rough areas outside of the graded section, such as crop  
27 rows, farm contours, ditches and ditch spoil banks, fence line and hedgerow soil  
28 accumulations and other minor irregularities which cannot be obliterated by normal seedbed  
29 preparation operations, to provide for more effective seeding and for ease of subsequent  
30 mowing operations.

31 Scarify or otherwise loosen the soil to a depth of not less than 5" except as otherwise provided  
32 below or otherwise directed. Break clods and work the top 2" to 3" of soil into an acceptable  
33 seedbed by the use of soil pulverizers, drags or harrows; or by other approved methods.  
34 Remove all rock and debris 3" or larger on median, shoulder and ditch cut or fill slopes which  
35 are 3:1 or flatter, before the application of seed and fertilizer. Remove rock 6" and larger  
36 displaced during seeding operations.

37 Scarify, groove, trench or puncture all slope surfaces. The depth of preparation and the  
38 degree of smoothness of the seedbed may be reduced on cut slopes that are 2:1 and steeper, as  
39 permitted by the Engineer.

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1 On cut slopes that are either 2:1 or steeper, the Engineer may permit the preparation of  
2 a partial or complete seedbed during the grading of the slope. If at the time of seeding and  
3 mulching operations such preparation is still in a condition acceptable to the Engineer,  
4 additional seedbed preparation may be reduced or eliminated.

5 Limit seedbed preparation to within 2 ft of the edge of any pavement to a depth of 2" to 3".

6 Do not prepare seedbed when the soil is frozen, extremely wet or when the Engineer  
7 determines that it is an otherwise unfavorable working condition.

### 8 **1660-5 APPLYING AND COVERING LIMESTONE, FERTILIZER AND SEED**

#### 9 **(A) General**

10 The contract will state the seasonal limitation for seeding operations; the kinds of grades  
11 of fertilizers; the kinds of seed; and the rates of application of limestone, fertilizer and  
12 seed.

13 Obtain approval from the Engineer before using equipment for the application, covering  
14 or compaction of limestone, fertilizer and seed. Approval may be revoked at any time if  
15 equipment is not maintained in satisfactory working condition, or if the equipment  
16 operation damages the seed.

17 Apply limestone, fertilizer and seed within 24 hours after completion of seedbed  
18 preparation unless otherwise permitted by the Engineer. When the Engineer determines  
19 that weather and soil conditions are unfavorable, do not distribute any limestone or  
20 fertilizer and do not sow any seed.

21 Take adequate precautions to prevent damage to traffic, structures, guardrails, traffic  
22 control devices or any other appurtenances during the application of fertilizer. Provide  
23 adequate covering or change methods of application as required to avoid such damage.  
24 Repair any damage that occurs, including any cleaning that may be necessary.

#### 25 **(B) Limestone and Fertilizer**

26 Limestone may be applied as a part of the seedbed preparation, provided it is  
27 immediately worked into the soil. If not so applied, distribute limestone and fertilizer  
28 uniformly over the prepared seedbed at the specified rate of application and then harrow,  
29 rake or otherwise thoroughly work or mix into the seedbed.

#### 30 **(C) Seed**

31 Distribute seed uniformly over the seedbed at the required rate of application, and  
32 immediately harrow, drag, rake or otherwise work so as to cover the seed with a layer of  
33 soil. Cover to a depth as directed by the Engineer. If 2 kinds of seed are to be used  
34 which require different depths of covering, sow separately.

35 When a combination seed and fertilizer drill is used, drill fertilizer with seed after  
36 applying and incorporating limestone into the soil. If using two kinds of seed requiring  
37 different depth of cover, the seed requiring the lighter cover may be sown broadcast or  
38 with a special attachment to the drill, or drilled lightly following the initial drilling  
39 operation.

40 When using a hydraulic seeder for application of seed and fertilizer, do not allow the seed  
41 to remain in water containing fertilizer for more than 30 minutes before application  
42 unless otherwise permitted.

43 Compact the seedbed immediately after seed has been properly covered in the manner  
44 and degree approved by the Engineer.

**(D) Modifications**

When adverse seeding conditions are encountered due to steepness of slope, height of slope or soil conditions, the Engineer may direct or permit that modifications be made in the above requirements which pertain to incorporating limestone into the seedbed; covering limestone, seed and fertilizer; and compaction of the seedbed.

Such modifications may include but not be limited to the following:

(1) The incorporation of limestone into the seedbed may be omitted as follows:

(a) On cut slopes steeper than 2:1;

(b) On 2:1 cut slopes when a seedbed has been prepared during the excavation of the cut and is still in an acceptable condition; or

(c) On areas of slopes where the surface of the area is too rocky to permit the incorporation of the limestone.

(2) The rates of application of limestone, fertilizer and seed on slopes 2:1 or steeper or on rocky surfaces may be reduced or eliminated.

(3) Compaction after seeding may be reduced or eliminated on slopes 2:1 or steeper, on rocky surfaces or on other areas where soil conditions would make compaction undesirable.

**1660-6 MULCHING****(A) General**

Mulch all seeded areas unless otherwise indicated in the contract or directed by the Engineer.

Use grain straw as mulch at any time of the year. If permission to use material other than grain straw is requested and the use of such material is approved by the Engineer, the seasonal limitations, the methods and rates of application, the type of binding material or other conditions governing the use of such material will be established by the Engineer at the time of approval.

**(B) Applying Mulch**

Apply mulch within 24 hours after completion of seeding unless otherwise permitted. Exercise care to prevent displacement of soil or seed or other damage to the seeded area during the mulching operations.

Spread mulch uniformly by hand or by approved mechanical spreaders or blowers which will provide an acceptable application. An acceptable application will be that which will allow some sunlight to penetrate and air to circulate but also partially shade the ground, reduce erosion and conserve soil moisture.

**(C) Holding Mulch**

Hold mulch in place by applying a sufficient amount of undiluted emulsified asphalt or other approved binding material. The Engineer will approve the rate and method of application of binding material. Apply the binding material directly with the mulch or immediately following the mulch application.

Take adequate precautions to prevent damage to traffic, structures, guardrails, traffic control devices or any other appurtenances during the application of asphalt binding material. Provide adequate covering or change methods of application as required to avoid such damage. Repair any damage that occurs, including any cleaning that may be necessary.

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1 Take sufficient precautions to prevent mulch from entering drainage structures through  
2 displacement by wind, water or other causes and promptly remove any blockage to  
3 drainage facilities which may occur.

4 **1660-7 MAINTENANCE OF SEEDING AND MULCHING**

5 Maintain areas where seeding and mulching have been performed in a satisfactory condition  
6 until final acceptance of the project.

7 Mow at the location and times as directed.

8 Correct areas of damage or failure due to any cause by repairing or completely reworking as  
9 directed.

10 Repair in accordance with Section 1661 where extensive seedbed preparation is unnecessary.

11 Rework seeding and mulching in accordance with this section where correction requires  
12 extensive seedbed preparation, or where earthwork repairs or complete reshaping are  
13 necessary.

14 As an exception to the above, repair areas of damage or failure resulting either from  
15 negligence on the part of the Contractor in performing subsequent construction operations or  
16 from not taking adequate precautions to control erosion and siltation as required throughout  
17 the various sections of the Specifications, at no cost to the Department.

18 **1660-8 MEASUREMENT AND PAYMENT**

19 *Seeding and Mulching* will be measured and paid in acres, measured along the surface of the  
20 ground completed and accepted. No direct payment will be made for furnishing and applying  
21 the limestone and fertilizer as such work and materials will be incidental to the work covered  
22 by *Seeding and Mulching*.

23 *Mowing* will be measured and paid in acres measured along the surface of the ground mowed  
24 as directed. Where an area has been mowed more than once at the direction of the Engineer,  
25 separate measurement will be made each time the area is mowed.

26 Corrective work will be compensated where seeding and mulching has been damaged or has  
27 failed to establish a satisfactory stand of vegetation.

28 Where correction can be made without extensive seedbed preparation, the work will be paid  
29 in accordance with Section 1661 for *Seed for Repair Seeding* and *Fertilizer for Repair*  
30 *Seeding*.

31 Where earthwork and seeding and mulching has been damaged to the extent that earthwork  
32 repairs or complete reshaping are necessary, the Contractor will be paid at the contract unit  
33 price for the excavated material required for repairs to the damaged earthwork, and at the  
34 contract unit price for *Seeding and Mulching* for correcting the damaged seeding and  
35 mulching.

36 As an exception to the above, repair, at no cost to the Department, any damage to earthwork  
37 or seeded and mulched areas which is due to carelessness or neglect on the part of the  
38 Contractor.

39 Payment will be made under:

<b>Pay Item</b>	<b>Pay Unit</b>
Seeding and Mulching	Acre
Mowing	Acre