

carcasses, and to prevent their migration to other adjacent areas. The toxicant should be an acute anti-coagulant pre-mixed bait and used in accordance with the labeled and regulatory laws.

All visible carcasses of rodents shall be removed and disposed of satisfactorily.

The toxic bait shall be renewed semi-monthly or as directed, throughout said maintenance period until the structures have been demolished and the cellar holes have been filled to the extent required.

All extermination operations shall be in accordance with the rules and regulations of the Municipality and State Health Departments.

COMPENSATION

119.81 Basis of Payment.

The work will be paid for at the contract lump sum price.

119.82 Payment Item.

119.	Rodent Control	Lump Sum
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SECTION 120

EXCAVATION

DESCRIPTION

120.20 General.

This work shall consist of excavation, disposal or compaction of all materials not being removed under some other item which is encountered within the limits of the Contract in accordance with the specifications and in close conformity with the lines, grades, thicknesses and cross sections shown on the plans or established by the Engineer. All excavation will be classified as "Earth Excavation", "Class A Rock Excavation", "Muck Excavation", "Topsoil Excavated and Stacked", "Bituminous Concrete Excavation by Cold Planer", and "Unclassified Excavation", as hereafter described.

Materials from all classes of excavation which are unsuitable, and any surplus of suitable materials remaining after completing the formation of embankments, shoulders, approaches, widening of roadway or embankment slopes as directed or backfilling, will be known as waste and shall be disposed of by the Contractor outside the Right-of-Way at his/her responsibility and expense, unless otherwise directed. Waste material shall not be disposed of in the flood channel areas of any stream.

120.21 Earth Excavation.

Earth Excavation shall consist of all excavation not included as Class A Rock Excavation or excavation which is otherwise classified and paid for.

Unless otherwise provided for in the Contract, Earth Excavation shall also include as incidental to the general work the removal and disposal of abandoned junk cars, trash, signs, fences, guardrails, guide posts, bituminous concrete berms and debris of every nature.

120.22 Class A Rock Excavation.

When encountered within the limits of roadway or channel excavation unless otherwise provided for the Proposal. Class A Rock Excavation shall consist of:

- (1) Igneous, metamorphic and sedimentary rock which cannot be excavated without blasting or the use of rippers.
- (2) All rock, stone, parts of stone, brick or cement concrete pavement, parts of cemented stone walls or masonry

structures measuring one (1) cubic meter or more that require blasting for removal.

120.23 Muck Excavation.

Muck excavation shall consist of the removal and disposal of saturated or unsaturated mixtures of soils and organic matter not suitable for foundation material regardless of moisture content.

120.24 Topsoil Excavated and Stacked.

The work to be done under this item consists of excavating topsoil from certain locations listed on the details sheet and where directed, to the depths shown on the cross sections or as directed, and stacking the topsoil in accordance with the provisions of Subsection 126.65.

120.25 Bituminous Concrete by Cold Planer.

The work to be done under this item consists of removing, by Cold Planer, bituminous concrete in designated areas.

120.26 Unclassified Excavation.

This work shall consist of all earth excavation as specified in Subsection 120.21, rock excavation as specified in Subsection 120.22 and all other excavation not provided for elsewhere in the Contract.

CONSTRUCTION METHODS

120.60 General.

A. Sequence of Operations.

When required, the Contractor shall so prosecute his/her work that traffic will be maintained over and through the work with a maximum of safety and convenience in accordance with the provisions of Subsection 7.09, "Public Safety and Convenience".

The sequence of all excavation operations, earth or rock, shall be such as to insure the most efficient utilization of excavated materials into embankments (as specified in Section 150) and the use of a minimum amount of borrow. When the plans require excavation in areas in close proximity to existing roads, structures and utilities it shall be the responsibility of the Contractor at his/her expense to construct suitable drainage ditches or use other satisfactory means and methods to protect and maintain the stability of such roads, and structures located immediately adjacent to but outside the limits of excavation.

The Contractor's attention is directed to the requirements of the Prevention of Water Pollution and Erosion. The Contractor shall prosecute the work as to prevent the ponding of water. Each lift of excavation shall be visibly crowned to allow drainage of surface and rain water.

B. Disposal of Excavated Materials.

All suitable materials obtained from the excavation or from the removal of present structures shall be used either in the formation of embankments, shoulders, slopes, loam or clay hardening, etc., or for backfill under, over, or around structures, pipe culverts or drains and at such other places as directed and the material shall be placed and compacted in a manner conforming to the specifications for the particular type of work required without additional compensation. It shall be the Contractor's responsibility to obtain from the Engineer approval for the use and placing of various materials encountered in excavation.

It shall be the Contractor's responsibility to dispose of material designated as unsuitable and any excavated material which is not required, except as noted in Paragraph C of this subsection, outside of the Right-of-Way in such a manner as not to obstruct streams or otherwise impair the drainage, appearance, safety or efficiency of any structure or any other part of the road.

No materials from the excavation, nor from construction, shall be deposited in flood plains nor within

35 meters of any body of water without compliance under provisions of Chapter 131, Section 40 of the Massachusetts Wetlands Protection Act. Notification to the Engineer, in writing, will be required wherein such filling has been authorized by the local Conservation Commission.

No excavated material shall be placed outside of and adjacent to the Right-of-Way without the written approval of the Engineer. The Contractor shall certify he/she has proper releases from property owners within 150 meters of Right-of-Way which is used as disposal areas for unsuitable material.

The Contractor shall construct sod or other adequate retaining banks around perimeters of the disposal areas outside the project to protect existing roads, stream channels, and adjoining properties (including underground water supplies) against the spread of, or contamination by, the excavated material. Stream channels and ditches within and adjacent to the project shall be maintained as at present or as specifically altered by the design of the project.

All waste areas shall be thoroughly stabilized by means of drains, proper grading, mulching, loaming and seeding as required to promote vegetation and to insure the areas will not be subject to erosion.

C. Grading Outside of the Location.

Where directed, earth, loam, or borrow of the kind required shall be used for grading outside of the Right-of-Way and the surface shall be raked, smoothed and rolled. Excavation shall be made as directed on slopes or surfaces outside of and adjoining the location.

When temporary or existing roads are abandoned within the limits of highway work and beyond the limits of the main roadway slopes, their surfaces shall be removed and graded and loamed for a neat and natural appearance for proper drainage of surface water, as directed.

120.61 Earth Excavation.

This work shall be performed in the manner specified in Subsection 120.60 and Subsection 170.60.

120.62 Class A Rock Excavation.

Class A Rock Excavation shall be performed in accordance with the requirements specified in Subsection 120.60, with the following additional requirements:

The Contractor shall prosecute his/her work so that all rock available for disposal in embankments shall be removed previous to the final embankment formation. Rock shall be partially or completely stripped of overburden, as directed, before removal operations are begun. Loose or shattered fragments of rock which may be a hazard to traffic shall be removed from the slopes.

120.63 Presplitting Rock.

Presplitting shall be required in rock cuts 3 meters or more in vertical height where designed slope is 1 horizontal to 4 vertical or steeper. Rock cuts more than 8 meters in vertical height may be presplit in stages (lifts) at the option of the Contractor, provided that no stage shall be less than 3 meters in depth and further provided that no payment will be made for additional excavated quantities caused by offsetting presplitting holes beyond the specified face in the top on successive stages. Presplitting holes in successive stages shall be offset not more than 600 millimeters inside of the previously presplit face.

Prior to the blasting of any rock for removal, the Contractor shall presplit the rock along the designated cut face by the method hereinafter described to produce a uniform plane of rupture, so that the resulting face will not be affected by subsequent fragmentation blasting and excavation operations.

The Contractor shall adjust his/her blasting operations according to the characteristics and structure of the rock formation to obtain the required slope without fracturing the rock beyond the presplit face.

The sequence of operations shall be as follows, unless otherwise directed:

1. Remove all overburden soil within the areas of proposed fragmentation blasting to expose the rock surface.
2. Drill 65 millimeter or 80 millimeter nominal diameter holes not more than 1 meter on centers along the top of the proposed slope line and at the required inclination, to the full depth of the cut or to a predetermined stage (lift)

elevation. Presplit holes shall deviate not more than 150 millimeters at any point from the plane of specified slope, nor more than 300 millimeters at any point from a vertical plane through the top of the hole and normal to the plane of slope.

3. Fragmentation blast holes shall be positioned so that no portion of any blast hole shall be within 1 meter of the designated presplit face, unless otherwise permitted by the Engineer.

The plane of presplitting slope as originally drilled shall not be penetrated by subsequent fragmentation blast holes.

4. The Contractor shall inspect and test each hole to determine the possible presence of any obstruction before placing the charge. No loading shall be permitted until the hole is clear of all obstructions. Precautions shall be used in placing the charge to prevent caving-in of material from the wall of the hole.

5. Cartridge explosives prepared and packaged by explosive manufacturing firms and approved by the Engineer shall be used in presplitting holes except, with prior permission of the Engineer, either of the following charges may be used as an alternative provided the results are satisfactory:

(a) Continuous column commercial explosives manufactured especially for presplitting.

(b) Multiple strands of high-strength detonating fuse (Primacord) taped together at 1.2 meter to 1.8 meter intervals.

6. The spacing of the dynamite charge in each hole shall be accomplished by securely taping (or attaching by other approved means) each piece of dynamite to the detonating fuse at the selected intervals or by deck-loading. If the latter method is used, the dynamite must be in intimate contact with the detonating fuse to assure detonation of all charges.

7. All space in each hole not occupied with the explosive charge shall be filled with 9.50 millimeter crushed stone meeting the requirements of Materials Subsection M2.01.6. No other material or type of stemming will be permitted.

8. The detonation of presplit charges shall precede the detonation of adjacent fragmentation charges within the section by a minimum of 25 milliseconds.

120.64 Muck Excavation.

The work of muck excavation shall be performed in accordance with the requirements of Subsection 120.60 with the following additional requirements.

Muck shall be excavated to the estimated widths and depths shown on the plans and/or so as to completely remove the muck. Where a proposed bridge or other structure comes within the limits of muck excavation, that portion of the excavation within the limits of the proposed structure will be paid for as Muck Excavation.

120.65 Topsoil Excavated and Stacked.

This work shall consist of removing topsoil and stacking it where and as directed in accordance with the relevant requirements of Sections 120 and 751.

Such of the topsoil as will be selected, after testing by Department of material obtained from test pits, shall be stacked neatly outside the limits of the proposed slopes within the Right-of-Way or such material may be temporarily stacked by the Contractor outside the Right-of-Way for his/her own convenience, with the approval of the Engineer, in which case the Contractor shall be responsible for all arrangements and negotiations. If the material stacked outside the Right-of-Way is not available when needed for use on the project, the Contractor will furnish at his/her expense an equal volume of equal material.

If the temporary storage areas outside the Right-of-Way require clearing and grubbing, the Contractor shall do such work without additional compensation.

Storage areas shall be cleared, grubbed and rough graded so that maximum amount of stacked material will be available for reuse.

The Contractor shall take reasonable care to avoid leaving any unsightly condition and to avoid unnecessary damage or injury to natural surroundings and roadside growth. The landscape shall be left in a satisfactory, neat and trim condition upon completion of the work.

120.66 Bituminous Concrete Excavation by Cold Planer.

This work consists of removing bituminous concrete by Cold Planer in designated areas. The Cold Planer must be equipped with an elevating device capable of loading planed material directly into dump trucks while operative. It shall have all necessary safety devices such as reflectors, headlights, taillights, flashing lights, and back up signals so as to operate safely in traffic both day and/or night.

The Cold Planer shall be designed and built for planing flexible pavements and possess the ability to plane cement concrete patches when encountered in bituminous pavement. It shall be self-propelled and have the means for planing without tearing or gouging the underlying surface. Variable lacing patterns shall be provided to permit a rough grooved or smooth surface as directed.

A 75 millimeter cut to predetermine grade or any specified lesser depth may be required in one pass. The minimum width of pavement planed in each pass shall be 2 meters, except in areas to be trimmed and edged. The machine shall be adjustable as to crown and depth and meet the standards set by the Air Quality Act for noise and air pollution.

The milled or planed surface shall conform generally to the grade and cross slope required. The surface shall not be torn, gouged, shoved, broken or excessively grooved. It shall be free of imperfections in workmanship that prevent resurfacing after this operation. Surface texture shall be as specified by the Engineer and excess material shall be removed so that the surface is acceptable to traffic if required.

120.67 Unclassified Excavation.

This work shall consist of the excavation, removal and satisfactory disposal, in accordance with the relevant provisions of Section 120.60, of all materials listed under Section 120 necessary for the construction of the proposed work as shown on the Plans or as directed, except those materials for which payment is specified under other items of the Contract.

COMPENSATION**120.80 Method of Measurement.**

All classes of excavation except topsoil will be measured in their original position by the cross section method except where such measurement is impracticable the volume shall be measured by such other methods as the Engineer may determine.

In any case, payments will be made only for excavation to lines and grades as indicated on the plans or as directed.

Pay limits for rock excavation actually removed will be as follows:

1. For side slopes.
 - (a) In excavation for side slopes up to a limit of 600 millimeters beyond and parallel to slope lines either shown on the plan, or ordered in writing by the Engineer.
 - (b) No allowance will be made for rock excavation beyond these specified lines in side slopes except that if ordinary borrow is required for the work and excess rock excavation is used in embankments such rock will be paid for as ordinary borrow.
2. Rock excavation in curb and edging trenches not already paid for in previous rock excavation will be paid up to a width of 500 millimeters, providing rock extends to that width.
3. For area between side slopes.
 - (a) In excavation to subgrade an allowance of a depth of 150 millimeters below subgrade lines.
 - (b) In any other rock excavation an allowance of a depth of 150 millimeters below lines of proposed excavation.

Boulders which are to be included in the item for rock excavation will be measured at the point of removal.

Presplitting of rock will be measured by the square meter of exposed rock face, measured from the top of

exposed rock to the bottom of the Class A Rock Excavation at the presplit face, as directed.

Topsoil excavation will be measured in its original position by measuring the surface area of topsoil to be removed and measuring the depth to be removed by test pits prior to removal, or by the cross section method as determined by the Engineer.

Bituminous Concrete Excavation by Cold Planer will be measured by the square meter to the limits shown on the plans or as directed.

120.81 Basis of Payment.

All classes of excavation will be paid for at the contract unit price for the particular type of excavation as defined hereinbefore.

In Contracts where ordinary borrow is required, excavated material taken by the Contractor with the prior written permission of the Engineer, and used on the project for purposes other than for forming embankments will be paid for at the contract price for the purpose of which it is used, in addition to the payment to be made for excavation, provided that any additional filling material made necessary by such use shall be replaced except Bituminous Concrete excavated by Cold Planer.

The amount of borrow to be replaced shall be as follows:

1. If Class A Rock Excavation is used in revetment, the revetment shall be measured in its final position, and this computed quantity shall be divided by 1.20 and the resulting quantity shall be the amount of borrow to be replaced.
2. If Earth Excavation is used for gravel borrow, special borrow, etc., the amount of gravel borrow, special borrow, etc., as computed (including any percentage added to in place measurement) shall be the amount of borrow to be replaced.

Payment shall be made only for the purpose the borrow was used until such time as replacement borrow is supplied, at which time an equal volume of excavation will be paid for.

In Contracts where excavated materials are used as described in the paragraph above and no additional filling material is required, the following will govern:

1. Material such as gravel, sand, special borrow, or impervious soil borrow obtained in excavation and used as gravel, sand borrow, special borrow or impervious soil borrow will be paid for only at the contract price for the purpose used.
2. Topsoil obtained in excavation and stacked for future use on the project will be paid for at the contract unit price for the item of Topsoil Excavated and Stacked (which price will include excavating for test pits required) but if such future use necessitates rehandling and spreading, payment will also be made at the contract unit price for Topsoil Rehandled and Spread.
3. No deduction from the item of Class A Rock Excavation will be made on account of the use of boulders or rock fragments in masonry or in revetment.

Presplitting of rock will be paid for at the contract unit price per square meter of exposed presplit rock face.

Bituminous Concrete Excavation by Cold Planer will be paid for at the contract unit price per square meter.

120.82 Payment Items.

120.	Earth Excavation	Cubic Meter
120.1	Unclassified Excavation	Cubic Meter
121.	Class A Rock Excavation	Cubic Meter
122.	Presplitting Rock	Square Meter
123.	Muck Excavation	Cubic Meter
125.	Topsoil Excavated and Stacked	Cubic Meter
129.	Bituminous Concrete Excavation by Cold Planer	Square Meter