SECTION 311100 SITE PREPARATION

1 GENERAL

1.01 SECTION INCLUDES

A. Provide labor and materials to complete the earthwork within the limit of work as shown on the Drawings and/or herein specified.
   1. Clearing and preparation of site.
   2. Stripping of topsoil
   3. Stockpiling
   4. Protection.

1.02 ALTERNATES

A. Alternates are not requested.

1.03 PROTECTION

A. Prior to excavation, verify the underground utilities, pipes, structures, and facilities; utilizing at least the following minimum measures::
   1. Pre-mark the boundaries of your planned excavation with white paint, flags or stakes, so utility crews know where to mark their lines.
   2. Call Dig Safe, at 1-888-DIGSAFE, at least three business days - but no more than 30 calendar days - before starting work. Don't assume someone else will make the call.
   3. If blasting, notify Dig Safe at least one business day in advance.
   4. Wait three business days for lines to be located and marked with color-coded paint, flags or stakes. Note the color of the marks and the type of utilities they indicate. Transfer these marks to the As-Built drawings.
   5. Contact the landowner and other "non-member" utilities (water, sewer, gas, etc.), for them to mark the locations of their underground facilities. Transfer these marks to the As-Built drawings.
   6. Re-notify Dig Safe and the non-member utilities if the digging, drilling or blasting does not occur within 30 calendar days, or if the marks are lost due to weather conditions, site work activity or any other reason.
   7. Hand dig within 18 inches in any direction of any underground line until the line is exposed. Mechanical methods may be used for initial site penetration, such as removal of pavement or rock.
   8. Dig Safe requirements are in addition to town, city and/or state DOT street opening permit requirements.
   9. For complete Dig Safe requirements, call the PUC or visit their website.
   10. If you damage, dislocate or disturb any underground utility line, immediately notify the affected utility. If damage creates safety concerns, call the fire department and take immediate steps to safeguard health and property.
   11. Any time an underground line is damaged or disturbed, or if lines are improperly marked, you must file an Incident Report with the PUC. For an Incident Report form visit www.state.me.us/mpuc or call the PUC at 800-452-4699.

B. Excavation, trenches, etc., shall be kept properly fenced and guarded. Lights shall be provided and maintained wherever and whenever necessary. Trees which are within the area of operations (and are to remain) shall be protected.

C. Shoring: Do shoring, bracing, etc., necessary to support soil adjoining the excavation and to protect surrounding property, in compliance with OSHA and all other Federal, State, and local codes.

D. Protect newly filled areas from traffic and erosion. Repair and re-establish grades to the specified tolerances in settled, eroded and rutted areas. Where completed compacted areas are disturbed by

subsequent construction operations or adverse weather, scarify the surface, re-shape and compact to the required density prior to further construction.

E. Protect the site from damage caused by settlement, lateral movement, undermining, washout and other hazards created by earthwork operations. Repair, or have repaired, all site damage which results from construction operations, at no additional expense to the Town, to the complete satisfaction of the Main-Land Development Consultants, Inc. and the Town.

1.04 QUALITY ASSURANCE

A. Materials used on-site are subject to the approval of the Main-Land Development Consultants, Inc. and unsuitable materials shall be removed from the site.

2 PRODUCTS- Not Applicable

3 EXECUTION

3.01 CLEARING AND SITE PREPARATION

A. Trees, brush, boulders, etc., within the limits of grading shall be removed from the site (except trees indicated as remaining or undisturbed) including grubbing and removal of organic material, stumps, and roots larger than 2" diameter and 3' long. Document this waste by the truckload, maintain records for the Town, and dispose in an approved waste site. Conform to Federal, State and local solid waste disposal regulations.

B. Remove street signs, fences, mailboxes, and other site features to be salvaged and stock-piled for later installation, or disposed of, as directed by the Town.

3.02 STRIPPING OF TOPSOIL

A. Topsoil within areas where excavation or filling will occur shall be stripped, cleaned of all stumps, rocks, debris, and roots larger than 2" diameter or 3' long, and stockpiled on site.

B. Prior to re-use as finished loam, topsoil must conform to the requirements of Section 329113. Soil which does not meet these requirements, either naturally, or by additives supplied by the Contractor, shall not be used as finished loam.

3.03 STOCKPILES

A. On-site stockpiles are temporary. Unless allowed by 311110.3.02, 311110.3.03.B, or the Town in writing, stockpiles shall be removed from the site.

B. Keep debris stockpiles out of public sight when practicable.

C. Do not stockpile immediately adjacent to natural resources such as the stream.

3.04 DISPOSAL

A. Dispose of unsuitable material, organic material, wood waste, rock material, and surplus excavated soil in excess of that required for rough grading, off the site in a disposal area obtained by the Contractor. Conform to Federal, State and local solid waste disposal regulations.

B. If hazardous waste or special waste as defined by the U. S. Environmental Protection Agency or State Department of Environmental Protection is encountered during excavation, the Contractor shall avoid disturbance of that material, and shall notify the Town immediately. The State Bureau of Oil and

Hazardous Waste Control must be notified and consulted prior to disturbance of the waste or contaminated soil. Removal and disposal of contaminated materials is not included in the Contract Bid, since it must be handled as directed by the regulatory agencies on a case-by-case basis.

3.05 REMOVAL OF EXISTING BITUMINOUS PAVEMENT

A. Where it is necessary to excavate and make cuts in bituminous pavement, the Contractor shall saw cut paving along neat straight lines where new pavement meets existing pavement.

B. Dispose of excavated pavement in suitable off-site recycling disposal area obtained by the Contractor.

END OF SECTION

SECTION 312316 EARTHWORK

1 GENERAL

1.01 SECTION INCLUDES

A. Provide labor and materials to complete the earthwork within the limit of work as shown on the Drawings and/or herein specified.
   1. Protection.
   2. Excavation:
      a. General excavation to lines and grades indicated.
      b. Trench excavation for footings, etc.
   3. General rough grading, cutting and filling as required.
   4. Filling and backfilling for excavations, including furnishing of extra material required.
   5. Compacted crushed stone under footings.
   6. Shoring, bracing, sheathing, and cribbing as required and removal of the same.
   7. Dewatering of excavation as may be required.

B. Quantity Allowance:
   1. There are no quantity allowances. Rock removal is not anticipated. Excavation and removal of rock, if encountered, shall be handled as a measured change order.

1.02 SUBMITTALS

A. Submit manufacturer's product literature and test results for approval on all materials. Make submissions in accordance with Submittals section.

1.03 QUALITY ASSURANCE

A. Compaction Control: Wherever a percentage of compaction for backfill is indicated or specified, it shall be the in-place dry density divided by the maximum dry density and multiplied by 100.

B. The maximum dry density shall be the dry density at optimum moisture as determined by ASTM D 1557-91 "Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort," latest revision. Method A, B or C shall be selected by the testing agency based on the gradation results of the sample taken. Adjustments to the laboratory density for oversize aggregate shall be made (if required) as specified in ASTM D 1557-91. These adjustments shall be made in accordance with ASTM D 4718-87, latest revision.

C. The in-place density shall be determined in accordance with ASTM Standard Method of Test for Density of soil and soil aggregate in-place by nuclear methods (shallow depth), Designation D2922.

D. Materials used on-site are subject to the approval of the Main-Land Development Consultants, Inc. and unsuitable materials shall be removed from the site.

1.04 MEASUREMENTS AND CLASSIFICATION

A. Measurements: Measurements used for calculating amounts of excavation shall be within a vertical line placed 1'-0" outside footing, and to the depth indicated. Excavation shall be taken to a minimum of 1'-0" below footing unless a different backfill thickness is indicated.

B. Classification:
   1. Earth excavation includes any and all material not having the qualities to classify as rock excavation.

2. Rock excavation includes the satisfactory removal and disposal of solid rock material which cannot be removed without systematic drilling and blasting. This includes rock material which is in ledges, bedded deposits, unstratified masses, and conglomerate deposits which are so firmly cemented that they possess the characteristics of solid rock. Fragmented "weathered" rock which can be removed by excavation equipment with "ripper" teeth will be considered earth. Boulders will be included only if each is two (2) cubic yard size or greater and cannot be excavated without drilling and blasting or pneumatic splitting. When, during the progress of excavation, ledge is encountered, Main-Land Development Consultants, Inc. shall be notified. Main-Land Development Consultants, Inc. shall determine the extent of rock excavation and classification.
3. The unit price for rock excavation is net and is not subject to credit for any other material which it may replace.
4. Excavation which measures 6'-0" or less in width, regardless of length, shall be classified as trench excavation. Measurements to be determined as outlined herein.
5. Excavation which does not meet the above requirements for trench excavation shall be classified as open excavation.

C. Rock excavation shall not be included under the basic Contract Price. Rock excavation required for the building project will be paid for on the basis of negotiated change order. Prior to blasting and rock excavation, provide survey grades of the top of the ledge surface, calculations of the expected rock quantities to be excavated, evidence of subcontractor cost of removal plus 20% contractor markup, and total cost of change order. Submit this data and obtain Main-Land Development Consultants, Inc.'s approval prior to proceeding with rock excavation.

1.05 SOIL TESTING

A. Soil compaction control including laboratory testing and on-site testing, will be done by a testing agency hired by the Contractor and reporting to the Contractor, Town, and Main-Land Development Consultants, Inc.

B. Provide samples of each fill material from the proposed source of supply. Allow sufficient time for testing and evaluation of results before material is needed. Submit samples from alternate sources if proposed material does not meet the specifications. Submit test results to Main-Land Development Consultants, Inc.

C. Tests of soil as delivered may be performed from time to time. Materials in question may not be used, pending test results. Remove rejected material and replace with new, approved soil.

D. Cooperate with the laboratory in obtaining field samples of in-place, bank-run, or stockpiled materials. Samples should be obtained by laboratory personnel from various suppliers, but other individuals may obtain and deliver samples if approved by Main-Land Development Consultants, Inc.

E. Coordinate schedule with testing agency and Main-Land Development Consultants, Inc. to allow testing agency representative to be on site prior to the start of filling operations.

F. In-place Compaction Test Frequency for Each Layer Placed:
Culvert Backfill: 1 test per lift/layer, per side of culvert, 1 test per 2,000 sq. ft. once backfilling overtop.
Roads: 1 test per 2000 sq. ft.
Trench: 1 test per 100 lin. ft.

2 PRODUCTS

2.01 GENERAL

A. On-site gravel will be suitable for use as common borrow only.

2.02 COMMON BORROW

A. Soil which is free from vegetable matter, roots, stumps, lumps of clay, perishable rubbish or peat, or frozen material, which can be placed and compacted to the required densities. 8-inch maximum stone size. Soil or loam "screenings" are not acceptable, since they are mostly stones and roots; these must be removed from the site.

2.03 GEOTEXTILE EARTH STABILIZATION

A. Polypropylene Permeable, Woven, Reinforcement Fabric with the Following Minimum Properties:

Weight	6.- oz./sy
Grab Tensile Strength	300 lbs.
Thickness	17 mils
Coef of permeability	0.01 cm/sec.
Tear strength	100 lbs.

B. Mirafi 600X; Terra Tex-HD, or approved equal.

2.04 CRUSHED STONE

A. Screened or crushed natural stone, free from shale, organic matter and debris conforming to the following gradation: (ASTM C-33 Size No.56)

SIEVE SIZE	PERCENT PASSING
2-1/2"	100%
2"	95 -100
1"	0 - 30
¾"	0 - 5

3 EXECUTION

3.01 CLEARING AND SITE PREPARATION

A. Prepare the site according to the drawings and specification 311110.

3.02 ROUGH GRADING

A. Rough grade the area within the limits of work to conform to grades indicated, making provision for finish materials, including necessary cutting and filling. Provide additional Common Borrow material from off-site sources, as necessary to complete the rough grading.

3.03 DISPOSAL

A. Dispose of unsuitable material, organic material, wood waste, rock material, and surplus excavated soil

in excess of that required for rough grading as indicated in 311110.

B. Grade the fill site to drain; use erosion control as necessary, and seed and mulch the fill conforming to Specification Section 329113.

C. If hazardous waste or special waste as defined by the U. S. Environmental Protection Agency or State Department of Environmental Protection is encountered during excavation, the Contractor shall avoid disturbance of that material, and shall notify the Town immediately. The State Bureau of Oil and Hazardous Waste Control must be notified and consulted prior to disturbance of the waste or contaminated soil. Removal and disposal of contaminated materials is not included in the Contract Bid, since it must be handled as directed by the regulatory agencies on a case-by-case basis.

3.04 EXCAVATION

A. Excavation shall be made to the proper depths required by design, including the proper allowance for forms, etc. Excavation shall be approximately level, clean and clear of loose material. Debris, rock material, organic material or unsuitable material encountered in the excavation shall be removed and disposed of as specified above. Excavation beyond the design limits, made without authorization from the Town or Geotechnical Engineer, will be refilled with common borrow material compacted to 95% maximum dry density at the Contractor's expense.

B. Exercise extreme caution during footing excavation to minimize disturbance of the subgrade soils. This will require excavation in the dry, use of smooth bucket excavator (without teeth), limiting traffic on the exposed soil, and dewatering below subgrade.

C. Draining of Excavation: The Contractor shall, by use of pumps, wells, well-points, or other approved means as may be necessary, prevent the accumulation of water in the excavated areas. Surface runoff and infiltration of groundwater must be controlled so that excavation, filling, footing construction, and backfilling will be completed in-the-dry. Water from construction dewatering operations shall be cleaned of sediment before discharge. Conform to the requirements of the Department of Environmental Protection, and specification Section 312514.

D. Prior to excavation, obtain confirmation from the Town and local utilities that all buried pipes and utilities are located accurately on the Drawings and in the field. Completeness or accuracy of subsurface information is not guaranteed. Obtain the services of 'Dig-Safe' or other qualified detection firm. Provide test pits as necessary to verify location and depth of buried pipes and utilities.

3.05 BLASTING

A. Set no charges and do no blasting prior to coordinating schedule and locations with the Town. When explosives are used for rock removal, the work shall be done by experienced blasters, with a minimum of 5 years documented experience. Avoid blasting which will disturb new building foundations and compacted soil backfill. Perform surveys and monitoring as described in this specification. Following blasting activity, blasting records, pre-blast survey, and seismograph readings shall be compiled in a report and submitted to the Town.

B. Comply with applicable laws, rules, ordinances, and regulations of the federal government, State of Maine, and the local Town or City, governing the transportation, storage, handling and use of explosives. Prior to blasting, obtain applicable State and local permits, including the local Fire Department permit.

C. Prior to the start of blasting work, perform a "pre-blast survey" of all structures and wells within 500 ft. of blasting locations. The pre-blast survey firm shall have 5-years experience in similar survey work. For the survey, interview the land owner of the buildings and wells, obtain a certified water test for nitrates and coliform of each well, photograph and videotape glass, plaster, chimneys, concrete

foundations, and other masonry components of each structure. When blasting along roadways, take still photos at 50' maximum spacing along the construction area, and videotape the entire construction length with commercial grade equipment.

D. Prior to the start of blasting work, submit a blasting plan containing details of proposed blasting and construction operations to the Town and Main-Land Development Consultants, Inc. for review, including:
   1. Sequence and schedule of blasting rounds including the general sequence of drilling, blasting, and excavating, etc.
   2. Specifics of typical trench blast rounds and open cut blast rounds in deepest rock cut areas and areas closest to existing structures.
   3. Methods of matting or covering of the blast area to prevent flyrock and excessive airblast overpressure.
   4. Name and qualifications of the licensed blaster who will be on site at all times directly supervising the loading and detonation of each blast round.
   5. Details of an audible advance signal system to be employed at the job site as a means of informing workers, Town, and the general public that a blast is about to occur.
   6. Listing of instrumentation that the Contractor proposes to use monitor vibrations and airblast overpressure levels complete with performance specifications and user's manuals supplied by the manufacturer.

E. Conduct blasting in accordance with 25 M.R.S.A. ch. 318, and 38 M.R.S.A. sec. 490, and meet the listed standards. Limit the charge pounds-per-delay to minimize particle velocity in strict accordance with current Department of Interior Rules 816.61-68 and 817.610-68, and the Blasting Guidance Manual, Office of Surface Mining, Reclamation and Enforcement, covering this type of work. Conduct blasting activity in such a manner that the peak particle velocity of ground vibration measured at the nearest property line and the locations of the nearest structures to the blast does not exceed the "safe limits" recommended by the U.S. Bureau of Mines in Appendix B of BUMINES RI 8507, as indicated on Figure B-1.

F. Control airblast overpressure to the limits specified in Maine Department of Environmental Protection, Site Location of Development Regulations, Chapter 375.10(C)(4)(c), which limit sound levels to a range of 123 dBL to 129 dBL, depending on the number of blasts per day. Measure blast sound in peak linear sound level(dBL) with a linear response down to 5 Hz.

G. Blast monitoring and reporting shall be conducted by a qualified professional trained in the use of a seismograph. Blasts shall be monitored by seismographs to record the effects at the nearest property line and on structures within the survey area, and demonstrate compliance with the regulations. A record of each blast must be kept for at least one year, and must be submitted to the Department of Environmental Protection upon request.

H. Blast Monitoring Instrumentation: All instrumentation proposed for use on the project shall have been calibrated within the previous six (6) months to a standard which is traceable to the National Bureau of Standards. Characteristics of required instrumentation are listed below:
   1. Measure the three (3) mutually perpendicular components of particle velocity in directions vertical, radial, and perpendicular to the vibration source.
   2. Measure and display the maximum peak particle velocity component and airblast overpressure. These readings must be displayed and be able to be read in the field, immediately after each blast.
   3. Furnish a permanent time history record of particle velocity waveforms and airblast overpressure waveforms, so that frequency and time of maximum peak particle velocity or airblast overpressure can be determined.

I. Blast Monitoring Reports: Within 24 hours following each blast, the Contractor shall submit to the Town a Blast Monitoring Report. Blast Monitoring Reports shall consist of the information listed in 38 M.R.S.A. sec. 490-Z(14)(L), including the following items:

1. Blast round design data.
2. Blast Monitoring Location Plan, indicating the location of the blast, the monitoring locations, and the distances from the blast to monitoring locations.
3. Vibration and airblast overpressure data from each seismograph, including a copy of the strip chart (or other permanent record of velocity/time waveform) with calibration and monitoring record marked with date, time, and location of the blast.

J. Review by the Town or Main-Land Development Consultants, Inc. of blast designs and techniques shall not relieve the Contractor of the complete responsibility for the accuracy, adequacy and safety of the blasting, exercising proper supervision and field judgement, and producing the results within the blasting limits required by these specifications.

K. Blasting mats shall be utilized for blast rounds detonated to prevent the throw of flyrock from the blasting area, unless the Contractor's Independent Seismologist determines that the overburden is sufficient to prevent flyrock. At a minimum, flyrock must not leave the project boundary or enter a protected natural resource. Damage to structures caused by improper use of explosives shall be corrected at the Contractor's expense.

3.06 FILLING AND COMPACTION

A. General:
1. Fill shall be compacted in 6" to 12" layers to avoid settlement. In filling against culvert walls the fill shall be placed and compacted on both sides at the same time to avoid undue strain.
2. Compact fill under pavements and gravel areas to 95% of maximum dry density; and under grass or mulch areas to 90% of maximum dry density.
3. Provide additional material necessary to complete the filling.
4. Excavate, grade, and re-compact areas of settlement or improper backfill and compaction, at no additional cost to the Town.

END OF SECTION

312514 EROSION AND SEDIMENTATION CONTROL

1 GENERAL

1.01 SECTION INCLUDES

A. Provide temporary erosion control for entire duration of project.

B. Provide permanent erosion control measures.

1.02 SCHEDULING

A. Plan the sequence of construction so that the smallest practical area of land is exposed at any one time during construction. Schedule the work such that sedimentation barriers, dewatering measures, and bypass are installed early in the construction sequence, to prevent sediments from uphill areas reaching streams, wetlands, or property lines.

B. This project is subject to State Department of Environmental Protection oversight in that best management practices must be employed and contractor shall be DEP Certified.

1.03 SITE CONDITIONS

A. Take necessary steps to prevent soil erosion. Refer to publications of the Maine DEP and the Maine Soil and Water Conservation Commission for additional prevention measures to stop soil erosion and follow DEP "Best Management Practices." The Contractor shall conduct his operations in conformity with all Federal and State permit requirements concerning water, air, or noise pollution, or the disposal of contaminated or hazardous materials. Erosion control measures shown on the Plans are minimum only and are not intended to be exhaustive or complete for all situations. Satisfy the current requirements of the regulatory agencies.

2 PRODUCTS

2.01 MATERIALS

A. Erosion Control Mesh: Intended as a temporary erosion control measure that will decompose after stabilization. Open weave, single jute yarn of loosely twisted construction, not varying in thickness by more than 1/2 its normal diameter. The woven material shall weigh 0.9 pounds per square yard. Synthetic mesh material may be used as approved by Main-Land Development Consultants, Inc..

B. Erosion Control Blanket: Intended as a permanent erosion control measure that will reinforce the topsoil and vegetation against erosion after construction. Synthetic fiber matrix sandwiched between heavy duty UV stabilized netting. Blanket shall weigh not less than 0.9 pounds per square yard. North American Green P300 or approved equal.

C. Staples: No. 11 (or heavier) plain iron wire, made 6 inches in length.

D. Mulch: Cured straw free from primary noxious weed seeds and rough or woody materials.

E. Erosion Control Seed:

TYPE	% BY WEIGHT	% PURITY	% GERMINATION
Domestic Rye Grass	70	69.75	90
Perennial Rye Grass	30	28.00	85

F. Silt Fence:
1. Support Fence: 30-inch-high livestock fence, or high strength plastic mesh.
2. Post: Rolled steel manufactured line post or 2 inch diameter hardwood post, 4.5 feet in length.
3. Fabric: Pervious sheet of synthetic polymer meeting the following minimum requirements.

Weight	2.5 oz/sy
Width	36 inch
Thickness	12 mils
Equiv. Opening Size	20-50 sieve
Tear Strength	50 lb.
Ultraviolet stability	80%

   a. Mirafi 100X; Terra Tex-SC, or approved equal.
4. Pre-Manufactured Silt Fencing Systems: Separate support fence may be eliminated if fabric is manufactured with reinforcement, including top cord.
   a. Amoco Propex; AEF Silt Fence-III; or approved equal.

G. Erosion Control Soil/Bark Mix: Shall consist of a mix of recycled composted shredded bark, stump grindings, flume grit, and fragmented wood generated from water-flume log handling systems. The mix shall conform to the following:
1. pH - 5.0 to 6.0.
2. Screen size - 6 inch minus.
3. No less than 25 percent organic material.
4. No stones larger than 2 inches in diameter.

H. Hay Bales: Bales shall be at least 14" x 18" x 30" in size, staked twice per bale. Stakes shall be 1" x 1" x 36" wooden. Place bales with twine on sides of bale, not top and bottom.

I. Water, calcium chloride, or crushed stone for prevention of airborne dust.

3 EXECUTION

3.01 EROSION CONTROL BARRIER

A. Before earthwork is started, a silt fence, filter berm, or stone sediment dam shall be installed along the down-slope side of the construction site, as necessary, to prevent soil sediment migration away from the site. Install silt fence or filter berm along the down-slope side of all top-soil and subsoil stockpiles.

B. Erosion control barriers shall be removed after construction is complete, but not until finish grading, final seeding, and mulching has been completed and the established grass has stabilized the soil. Maintain barrier in good condition until removed.

C. Remove silt deposits from the site.

D. Silt Fence: Set fence post 8 feet O.C. to a depth of 2 feet. Attach support fence to post with fencing staples or appropriate wire ties. Overlap joints in support fence 12 inches. Apply fabric to full height of support fence and secure to prevent sagging, blow off, and loss. A 12-inch overlap of fabric for vertical

piecing shall be maintained, folded to a 3-inch width and securely attached to supports. No horizontal joints will be allowed. The bottom of the fabric shall be trenched into the existing ground a minimum of 6 inches. In addition, hay bales or ditch checks shall be installed along the silt fence to create sedimentation pools in low areas where run-off concentrates.

E. Filter Berm: Place uncompacted erosion control mix in a windrow at locations shown on the plan or as directed by Main-Land Development Consultants, Inc. but not within 50 feet of stream channel. At a minimum the berm shall be 3 feet wide at the base and 2 feet high at the center of all points along its length. Berm material, where the berm is still required, which has decomposed, clogged with sediment, eroded, or becomes ineffective, shall be replaced. The berm shall be removed from the site, when no longer required, as approved by Main-Land Development Consultants, Inc.

3.02 TEMPORARY SEEDING AND MULCHING

A. Topsoil stripped and stockpiled on site shall be immediately seeded with erosion control seed mix and mulched with hay.

B. Exposed earthwork areas, which will not be worked on for one week, shall be mulched with straw. Unfinished areas which are not to be worked on for one month, or will be wintered, shall be seeded with erosion control mix at a rate of 3 pounds of seed per 1000 sq. ft. and mulched with straw. Apply straw mulch at the rate of 75 pounds per 1000 sq.ft. Anchor mulch to prevent wind blown movement.

C. In sensitive areas (within 25 ft. of stream or wetland edge) temporary mulch must be applied at the end of each workday and prior to any storm event.

D. No fill shall be placed on hay mulch. Dispose of used hay mulch off site.

3.03 FALL AND WINTER STABILIZATION (September 15 or Later)

A. Stabilize exposed soils throughout the project site with permanent seed and mulch by September 15, with the exception of areas undergoing active earthmoving operations. These construction areas are primarily in the immediate vicinity of the building. For proposed grass areas not stabilized by permanent seed and mulch by this date, provide the following stabilization measures at no additional cost to the Owner. Select the appropriate methods from the options listed and obtain approval from Main-Land Development Consultants, Inc. prior to installation.
   1. Stabilize the soil with temporary vegetation, except for ditches, by October 1. Place winter rye seed at the rate of 3 pounds per 1000 sq.ft. and lightly mulch with hay or straw at 75 pounds per 1000 sq.ft. Place erosion control mesh over mulch and anchor.
   2. For slopes flatter than 3H:1V, place sod over the exposed soil by October 1. Roll the sod, anchor it with wire pins, and water it to promote growth.
   3. For grassed areas flatter than 10H:1V, stabilize the disturbed soil by November 1with temporary winter mulching by applying hay or straw at a rate of at least 150 pounds per 1000 sq.ft., such that no soil is visible through the mulch. Anchor mulch with erosion control mesh.
   4. For slopes steeper than 10H:1V and flatter than 2H:1V, place a 6" layer of erosion control soil/bark mix on the disturbed soil by November 1. Remove snow accumulated on the slope prior to installation. If groundwater seeps are present, place stone rip rap to thickness shown on drawing details over non-woven geotextile.
   5. For drainage ditches or channels, place a sod lining by October 1 or place a rip rap lining by November 1. Sod shall be rolled, fastened with wire pins, anchored with erosion control mesh, and watered. Rip rap shall be placed at the thickness shown on the drawing details over a layer of non-woven geotextile.

B. If the catch of permanent or temporary grass is less than 3" tall or covers less than 75% of the disturbed soil by November 1, apply additional hay mulch at a rate of 150 pounds per 1000 sq.ft.. Anchor mulch

with erosion control mesh.

A. If the catch of permanent or temporary grass is less than 3" tall or covers less than 75% of the disturbed soil on slopes steeper than 10H:1V and flatter than 2H:1V by November 1, place a 6" layer of erosion control soil/bark mix or a rip rap layer, as described above.

3.04 DRAINAGE DITCHES AND EMBANKMENTS

1. Drainage ditches shall be provided with a temporary stone check dams spaced such that the bottom of the upstream check dam is at the same elevation as the top of the next downstream checkdam.
   a. Temporary ditch check dams shall be constructed where indicated, using stones in the configurations shown on the detail sheet. Additional temporary ditch dams shall be installed from time to time during the construction where necessary to prevent soil particle migration from the work area. Where necessary due to terrain configuration, earth berms shall be constructed at one or both ends of the ditch check so as to contain runoff. The tops of earth berms shall be higher than the tops of the dams so that runoff will occur only over the dams. Sand bags may be used instead of earth berms at the Contractor's option but shall be faced with earth placed against the upstream face.

B. Grassed drainage ditches and swales shall be lined with a continuous matt of erosion control mesh for full bottom width and side slopes to 12" above bottom, within 48 hours of final grading and prior to a storm event, in order to stabilize the loam, seed, and mulch.

C. Where erosive velocities in ditches or embankments are anticipated or experienced, and soil cannot be stabilized with mulch and mesh alone, substitute erosion control soil/bark mix in place of loam. For this use, screen the erosion control soil/bark mix to remove wood, bark, and stones one-inch in size and greater. If erosion control soil/bark mix is used in ditches, and erosive velocities are excessive, provide a 12" thick stone rip rap lining along ditch bottom and up side slopes to one foot above the bottom elevation. Place non-woven geotextile beneath stone.

D. Stabilize pond embankments(interior and exterior), slopes steeper than 3 horizontal to one vertical, and drainage ditches by September 15. Stabilization shall consist of permanent seeding and mulch. If this date cannot be met, provide alternative permanent or temporary stabilization described as Fall and Winter Stabilization.

E. Install erosion control mesh over mulch on slopes steeper than 6 horizontal to one vertical (16%) and in conformance to DOT Standard Specifications, latest Edition, Section 613, paragraphs 613.03 through 613.06. Anchor mesh as recommended by manufacturer.

F. Permanently rip-rap inlets and outlets of culverts and pipe outfalls within 48 hours of installation, as shown on the Drawings.

G. Install permanent erosion control blanket around culvert inlets and outlets as shown on the Drawings, and according to manufacturer’s recommendations.
   1. Prepare soil with loam, fertilizer, and seed as specified in Section 329113 prior to installing erosion control blanket.
   2. Install permanent erosion control blanket 5 feet minimum in all directions around culvert inlets.
   3. Install permanent erosion control blanket 5 feet minimum in all directions around culvert outlets, and a 6 feet width centered along the outlet channel for 10 feet.
   4. Install staples as shown on the erosion control blanket detail on the Drawings, and throughout the blanket in an 18 by 18 inch grid.

3.05 ROADS

A. Place temporary stabilized construction exits where vehicles leave the site and enter existing paved roads; consisting of a 6" layer of 1-1/2" to 3" crushed stone. Tracking and spilling of earth and/or debris on public streets shall be avoided to the maximum extent possible. Clean up and remove such spillage.

B. As the crushed stone stabilized construction exits continue to scrub the soil from the trucks, the stone layer will tend to fill with sediments. When this occurs remove the stone and sediment and replaced it with a clean layer of stone.

C. As soon as possible after roads and parking areas are cleared, grubbed and graded to the required subgrade, the gravel base shall be placed.

3.06 DUST CONTROL

A. Use traffic control to restrict traffic to predetermined routes. Maintain as much natural vegetation as is practicable. Use phasing of construction to reduce the area of land disturbed at any one time. The use of temporary mulching, permanent mulching, temporary vegetative cover, permanent vegetative cover, or sodding will reduce the need for dust control. Use mechanical sweepers on paved surfaces where necessary to prevent dust buildup. Stationary sources of dust, i.e., rock crushers, shall utilize fine water sprays to control dust.

B. The exposed soil surface shall be moistened periodically with adequate water to control dust.

C. When temporary dust control measures are used, repetitive treatment shall be applied as needed to accomplish control.

3.07 CONSTRUCTION DE-WATERING

A. Water from construction dewatering operations shall be cleaned of sediment before reaching wetlands, water bodies, streams, or site boundaries. Utilize temporary sediment basins, erosion control soil filter berms backed by staked hay bales, “Dirt Bag 55" sediment filter bag by ACF Environmental Inc, or other approved Best Management Practices (BMP’s).

B. Alternatively, discharge the water from the de-watering operation into a temporary sediment basin created by a surrounding filter berm of uncompacted erosion control mix immediately backed by staked hay bales (see the site details). Locate the temporary sediment basin at least 100 feet from the nearest water body, such that the filtered water will flow through undisturbed vegetated soil areas prior to reaching the water body or property line.

3.08 ADDITIONAL MEASURES

A. Areas outside the Contract work limits shall be protected from lubricants, fuel, sediment and other pollutants.

B. Inspect erosion and sedimentation control weekly and after every storm and maintain in good working condition for project duration.

3.09 REMOVAL AND DISPOSAL

A. When permanent soil stabilization has been achieved, temporary materials and devices that are not readily degradable shall be removed and disposed of offsite. Silt fences, filter berms, and catch basin sediment filters must be fully removed. Re-usable materials are and shall remain the property of the Contractor.

END OF SECTION

SECTION 313713 RIPRAP

1 GENERAL

1.01 SECTION INCLUDES

A. Provide labor and materials to complete the specified work within the limit of work as shown on the Drawings and/or herein specified.
   1. Geotextile
   2. Rip rap.

1.02 SUBMITTALS

A. Submit manufacturer's product literature and test results for approval on all materials. Make submissions in accordance with Division 1 Submittals section.

1.03 PROTECTION

A. Prior to excavation, verify the underground utilities, pipes, structures, and facilities. See Specification 312316.

B. Shoring: Do shoring, bracing, etc., necessary to support soil adjoining the excavation, in compliance with OSHA and all other Federal, State, and local codes.

C. Protect newly filled areas from traffic and erosion. Repair and re-establish grades to the specified tolerances in settled, eroded and rutted areas. Where completed compacted areas are disturbed by subsequent construction operations or adverse weather, scarify the surface, re-shape and compact to the required density prior to further construction.

D. Protect from damage caused by settlement, lateral movement, undermining, washout and other hazards created by earthwork operations. Repair, or have repaired, all damage to existing utilities, structures, culverts, pavement, lawns, other public and private property which results from construction operations, at no additional expense to the Owner, to the complete satisfaction of the Main-Land Development Consultants, Inc., the utility, the property owner, and the Owner.

2 PRODUCTS

2.01 STONES FOR RIP-RAP

A. Size the stone mixture such that 50% of the stones, by weight, are larger than the specified d50 size. Stones shall not be schistosic.

B. Rip-Rap: 4" to 12" diameter, hard, sound angular stones, d50 = 6".

C. Heavy Duty Rip-Rap: 10" to 18" wide sound stones with flat top surface, d50 = 11".

2.02 NON-WOVEN DRAINAGE FABRIC

Weight	5- oz./sy
Grab Tensile Strength	120 lbs.
Flow Rate	110 - 135 gal/sec/sf
Tear strength	50 - 60 lbs.

A. Mirafi 140N/160N or approved equal.

3 EXECUTION

3.01 RIP-RAP

A. Non-woven geotextile fabric shall be installed on top of shaped subgrade with fabric contacting the soil (no bridging) and overlapping 12 inches when a seam is necessary. Seams shall not be allowed in the flow path of channels where concentrated run-off is intended.

B. The stones shall be placed on the geotextile with their beds at right angles to the slope, the larger stones being used in bottom courses. They shall be laid in close contact so as to break joints, and in such manner that the weight of the stone is carried by the earth and not the adjacent stones.

C. The spaces between the larger stones shall be filled with spalls securely rammed into place. The finished work shall present an even, tight and reasonably smooth surface conforming to the required contour and have a neat orderly appearance without scattered stones.

D. "Heavy Duty" rip-rap shall be placed in close contact to form an even, tight and reasonably smooth surface with relatively flat top surfaces. Use no small stones or spall.

END OF SECTION

SECTION 321123 GRAVEL BASE COURSES

1 GENERAL

1.01 SECTION INCLUDES

A. Provide labor and materials to complete the earthwork within the limit of work as shown on the Drawings and/or herein specified.
   1. Compacted gravel for roadways and drives.

1.02 SUBMITTALS

A. Submit manufacturer's product literature and test results for approval on all materials. Make submissions in accordance with Division 1 Submittals section.

1.03 QUALITY ASSURANCE

A. Compaction Control: Wherever a percentage of compaction for backfill is indicated or specified, it shall be the in-place dry density divided by the maximum dry density and multiplied by 100.

B. The maximum dry density shall be the dry density at optimum moisture as determined by ASTM D 1557-91 "Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort," latest revision. Method A, B or C shall be selected by the testing agency based on the gradation results of the sample taken. Adjustments to the laboratory density for oversize aggregate shall be made (if required) as specified in ASTM D 1557-91. These adjustments shall be made in accordance with ASTM D 4718-87, latest revision.

C. The in-place density shall be determined in accordance with ASTM Standard Method of Test for density of soil and soil aggregate in-place by nuclear methods (shallow depth), Designation D2922.

D. Materials used on-site are subject to the approval of the Main-Land Development Consultants, Inc. and unsuitable materials shall be removed from the site.

1.04 MEASUREMENTS AND CLASSIFICATION

A. Measurements: course thicknesses are in place and compacted, not as spread.

1.05 SOIL TESTING

A. Soils here-to refer to gravel materials.

B. Soil compaction control including laboratory testing, on site testing, and inspection of placement methods will be done by a testing agency hired by the Contractor, reporting to the Contractor, Town, and Main-Land Development Consultants, Inc.

C. Provide samples of each fill material from the proposed source of supply. Allow sufficient time for testing and evaluation of results before material is needed. Submit samples from alternate sources if proposed material does not meet the specifications. Submit test results to Main-Land Development Consultants, Inc.

D. Tests of soil as delivered may be performed from time to time. Materials in question may not be used, pending test results. Remove rejected material and replace with new, approved soil.

E. Cooperate with the laboratory in obtaining field samples of in-place, bank-run, or stockpiled materials. Samples should be obtained by laboratory personnel from various suppliers, but other individuals may obtain and deliver samples if approved by Main-Land Development Consultants, Inc..

F. Coordinate schedule with testing agency and Main-Land Development Consultants, Inc. to allow testing agency representative to be on site prior to foundation formwork and at the start of filling operations.

G. The Contractor shall bear cost of retesting when initial test results indicate non-compliance with specifications, or when alternate sources are submitted.

H. In-place Compaction Test Frequency for Each Layer Placed:
Roads: 1 test per 2000 sq. ft.

2 PRODUCTS

2.01 GENERAL

A. On-site gravel used to create the temporary access and to be excavated as part of the installation of permanent culvert will be suitable for use as common borrow only for bulk filling.

2.02 GRAVEL BASE AND SUB-BASE

A. Provide MDOT Gravel Base Type A for Base Course and MDOT Gravel Subbase Type D for Sub-Base Course.

3 EXECUTION

3.01 FILLING AND COMPACTION

A. General:
1. Fill shall be compacted in 6" to 12" layers to avoid settlement.
2. Compact fill under pavements and gravel areas to 95% of maximum dry density.
3. Excavate, grade, and re-compact areas of settlement or improper backfill and compaction, at no additional cost to the Town.

B. Roads:
1. Prepare subgrade to proper grade and proof-roll to 95% maximum dry density. Place fill in 6" to 12" layers compacted to 95% maximum dry density.
2. Place gravel sub-base and gravel base courses in 6" to 12" layers compacted to 95% maximum dry density.
3. Do no work when subgrade is muddy or frozen.
4. Finish surface tolerance shall be 3/8" above or below the required grade. Puddling in paved or unpaved areas will not be acceptable except in areas designated as ponds.
    a. Apply water as needed, for the purpose of dust control and to ensure proper compaction. Water may be added during fine grading to improve workability.
    b. Place and compact to the same requirements as gravel base course.
    c. Excess material, unless specified otherwise, shall become the property of the Contractor.

END OF SECTION

1 GENERAL

1.01 SECTION INCLUDES

A. Provide materials and labor for road paving and pavement markings.

1.02 STANDARD REFERENCE

A. Reference is made to the latest revision of "Standard Specifications for Highways and Bridges" of the State of Maine Department of Transportation (MDOT), modified by these specifications.

1.03 SUBMITTALS

A. Submit Maine DOT approved pavement mix design of each grade.

B. Submit field density test results of one test for each 100 tons of bituminous paving.

1.04 PAVEMENT TESTING

A. Pavements herein refer to bituminous asphalt flexible pavements.

B. Pavement testing control including laboratory testing of mix, on site density testing, and inspection of placement methods will be done by a testing agency hired by the Contractor, reporting to the Contractor, Town, and Main-Land Development Consultants, Inc. Agency shall be able to demonstrate experience and competence with inspection and testing of paving operations.

C. Provide samples of each pavement from source of supply. Submit test results to Main-Land Development Consultants, Inc.

D. If insufficient pavement mat thickness or performance is suspected due to inspector observations, a pavement core may be taken for confirmation testing.

E. Coordinate schedule with testing agency and Main-Land Development Consultants, Inc. to allow testing agency representative to be on site prior to start of placement.

F. The Contractor shall bear cost of retesting when initial test results indicate non-compliance with specifications, or when alternate sources are submitted.

2 PRODUCTS

2.01 BITUMINOUS CONCRETE MATERIALS

A. Hot bituminous pavement, MDOT, Section 403. Composition, preparation and transportation of bituminous concrete, including plant and equipment shall meet applicable portions of MDOT, Section 401, HOT MIX ASPHALT PAVEMENT.

B. Aggregate conforming to MDOT, Section 703.09, HMA Type 19 mm. Aggregate conforming to MDOT, Section 703.09, HMA Type 12.5 mm-fine. Aggregate conforming to MDOT, Section 703.09, HMA Type 9.5 mm-fine.

C. Pavement grade may change with base, binder, and surface courses. See the details on the drawings.

2.02 TACK COAT

A. A low viscosity liquid bituminous coating sprayed on an existing course prior to placing a new bituminous concrete course. Emulsified asphalt conforming to MDOT 702.04, Grade RS-1 or HFMS-1.

2.03 PAVEMENT MARKINGS

A. Latex paint designated for traffic use; meeting the requirements of AASHTO M248. Cosmicoat Traffic Paint, Sherwin-Williams Waterborne Traffic Paint, or approved equal. Color white and yellow.

B. Reflectorizing glass beads, as used by the Maine Department of Transportation, applied uniformly to the wet paint lines.

3 EXECUTION

3.01 CONSTRUCTION OF PAVEMENT

A. Hot bituminous concrete pavement shall be constructed over gravel in accordance with CONSTRUCTION REQUIREMENTS of MDOT, Section 401, except as modified herein. Exclude paragraphs 401.21 METHOD OF MEASUREMENT and 401.22 BASIS OF PAYMENT.

B. Do not place pavement over frozen gravel.

C. Replace existing pavement disturbed by the work of this Contract with new bituminous pavement of the thicknesses shown on the Drawings or match existing, whichever is greater.

D. Where new and existing pavement join, saw-cut square, perpendicular to direction of traffic, and form a smooth transition of grades.

E. Treat exposed existing pavement with sprayed bituminous tack coat prior to placing new adjacent or overlaying bituminous pavement. Pavement which has been in place longer than 30 days shall be considered existing. Conform to MDOT Section 409, excluding paragraphs 409.08 and 409.09.

F. Prior to placing surface course or tack coat, thoroughly clean the paved surface of soil, loose material, and other objectionable material, to the approval of Main-Land Development Consultants, Inc.

3.02 PAVEMENT MARKINGS

A. Apply lining paint in strict accordance with manufacturer's printed instructions after pavement has cured sufficiently to prevent bleeding or lifting (at least three weeks). Line width, 4" unless otherwise noted.

B. Perform work in accordance with the U. S. Department of Transportation Manual of Uniform Traffic Control Devices.

C. Finished lines and markings shall be straight, uniform, and well-defined without excessive overspray. Wet thickness of paint at least 15 mils.

D. Apply reflectorizing glass beads to painted lines and symbols except parking stalls. Apply glass beads with a system which will force the beads uniformly onto the wet paint at a rate of 4.5 pounds per gallon of paint.

END OF SECTION

329113 GRASSES

1 GENERAL

1.01 SECTION INCLUDES

A. Provide labor, materials and equipment required to complete loaming, fine grading, liming, fertilizing, seeding.

1.02 QUALITY ASSURANCE

A. Qualifications of Workmen: Provide at least one person who shall be present during execution of this portion of the Work, be thoroughly familiar with the type of materials being installed and the best methods for their installation, and direct work performed under this Section.

B. Standards:
1. Planting material shall meet or exceed the specifications of Federal and State laws requiring inspection for plant disease and insect control.

1.03 SUBMITTALS

A. Materials List: Before materials are delivered to the job site, submit to Main-Land Development Consultants, Inc. a complete list of seeding, mulching, soil amendments, and other items proposed to be installed.
1. Include complete data on source and quality.
2. Demonstrate complete conformance with the requirements of this Section.

B. Submit copies of all soil test reports; including initial and final testing.

C. Certificates:
1. Certificates required by law shall accompany shipments.
2. Prior to installation, deliver certificates to Main-Land Development Consultants, Inc.

1.04 PRODUCT HANDLING

A. Delivery and Storage:
1. Deliver items to the site in their original containers with labels intact and legible at time of Main-Land Development Consultants, Inc.'s inspection.
2. Immediately remove from the site seeding materials which are not true to name and materials which do not comply with the provisions of this Section of these Specifications.
3. Protect seeding materials before, during and after installation and to protect the installed work and materials of other trades.

B. Replacements: In the event of damage or rejection, immediately make repairs and replacements necessary to the approval of Main-Land Development Consultants, Inc., at no additional cost to the Town.

1.05 PLANTING TIME

A. Seeding: Seeding shall be done between August 15th to September 15th and/or April 15th to June 15th.

B. Variance: If special conditions exist which may warrant a variance in the above planting dates, a written

request shall be submitted to Main-Land Development Consultants, Inc. stating the special conditions for the proposed variance. Permission for the variance will be given if warranted in the opinion of Main-Land Development Consultants, Inc. Regardless of the time of seeding, the Contractor shall be responsible for full growth of grass.

C. Place permanent soil stabilization within 15 days of final grading.

2 PRODUCTS

2.01 TOPSOIL

A. General: Topsoil, except that existing on the site, will not be made available by the Town. The Contractor shall be responsible for supplying any additional topsoil needed and hauling it to the site. It shall be obtained from naturally well-drained areas. Whether from on-site or off-site source, the topsoil shall be a fertile, friable natural loam containing no less than 7% nor more than 15% organic matter, by weight. The pH of the soil shall be between 6 and 7 and shall not contain soluble salts greater than 500 parts per million. It shall not contain toxic substances which may be harmful to plant growth. Topsoil shall be without admixture of subsoil and shall be cleaned and free from clay lumps, stones, stumps, roots, or similar substances 3/4-inch or more in diameter, debris, or other objects which might be a hindrance to planting operations. Soil shall not be used for planting while in frozen or muddy condition. Furnish all topsoil required to complete the work. Materials removed shall be disposed of by the Contractor.

B. Maximum particle size of 3/4-inch, with maximum of 3% retained on the 1/4-inch mesh sieve. Composition in the following range:

Silt	15 to 40%
Sand	30 to 70%
Clay	3 to 15%

C. Initial Testing: Take representative samples of topsoil from the site and from borrow sources and submit samples to a Soil Testing Laboratory for chemical and physical analysis. Each sample shall be made by combining 10 small grab samples from throughout the source. Indicate to the testing agencies that turf is to be planted and the name of the Town. Forward to Main-Land Development Consultants, Inc. two copies of analysis and recommendations of the testing agencies.

D. Final Testing: After the final topsoil has been amended and mixed as recommended, take representative samples and submit them to a Soil Testing Laboratory for chemical and physical analysis. Each sample shall be made by combining 10 small grab samples from throughout the source. Make final amendments to the topsoil to meet the specification, based on the test results. Forward to Main-Land Development Consultants, Inc. two copies of analysis and recommendations of the testing agencies.

2.02 FERTILIZER

A. Starter Fertilizer: shall be a commercial balanced fertilizer (18-24-12), delivered to the site in bags labeled with manufacturer's guaranteed analysis. Approximately 30% to 50% of the fertilizer shall be a slow-release form (UF IDBU SCU).

B. Fertilizer shall be mixed, as specified, and delivered to the site in standard, unopened containers showing weight, guaranteed analysis, and name of manufacturer.

C. Special Protection: If stored at the site, protect fertilizer from the elements.

2.03 GRASS SEED

A. General: Grass seed shall be:
1. Free from noxious weed seeds and recleaned.
2. Grade A recent crop seed.
3. Treated with appropriate fungicide at time of mixing.
4. Delivered to the site in sealed containers with dealer's guaranteed analysis.
5. Each variety of seed shall have percentages of germination of not less than 80%, and a percentage of purity of not less than 85%.

B. Seed Mix Proportions by Weight:

Description	Kind of Grass	Proportion by Weight
Low Maintenance	MDOT Section 717.03, Method No. 3 'Roadside Mix' with Crown Vetch added.	

C. Weed seed content shall not exceed 0.25 percent. Wet, moldy, or otherwise damaged seed will be rejected.

2.04 MULCH

A. Mulch shall consist of long fibered hay or straw, reasonably free from noxious weeds or other undesirable material. No material shall be used which is so wet, decayed, or compacted as to inhibit even and uniform spreading. No chopped hay, grass clippings or other short fibered material shall be used unless directed.

3 EXECUTION

3.01 SURFACE CONDITIONS

A. Inspection:
1. Prior to work of this Section, carefully inspect the installed work of other trades, and verify that such work is complete to the point where this installation may properly commence.
2. Verify that seeding may be completed in accordance with the original design and the referenced standards.

3.02 SUBGRADE PREPARATION

A. The Contractor shall do whatever grading is necessary to bring the subgrade to a true, smooth slope, parallel and at the depth shown on the Drawings below finished grade, for seed bed areas.

B. Immediately prior to being covered with topsoil, the top 3" to 6" of the subgrade shall be raked or otherwise loosened and shall be free of stones, rock and other foreign material 1-1/2" or greater in dimensions.

3.03 FINISH GRADE PREPARATION

A. Topsoil shall not be delivered or worked in a frozen or muddy condition.

B. Place and spread topsoil over approved areas to a depth sufficiently greater than shown on the Drawings in "loam and seed" lawn areas and in plant bed areas so that after natural settlement and light rolling, the

completed work will conform to the lines, grades, and elevations indicated.

3.04 SEED BED PREPARATION

A. Apply starter fertilizer at a rate of 15# per 1000 sq. ft. just prior to final grading of the site. Thoroughly and evenly incorporate fertilizer with the soil to a depth of 3" by discing or other approved method. In areas inaccessible to power equipment, use hand tools.

B. Reconstitute the soil, as may be recommended by a soil testing agency, prior to use as planting soil. Any deficiencies in the topsoil shall be corrected by the Contractor, as recommended, at no expense to the Town.

3.05 SEEDING

A. Immediately before seeding, the ground shall be restored, as necessary, to a loose friable condition by discing or other approved method to a depth of not less than 2". The surface shall be cleared of all debris and of all stones 1" or more in diameter.

B. Seed with specified grass seed, sowing evenly with a Brillion seeder or other approved mechanical seeder at the rate of 5 pounds per 1,000 square feet. Spread seed when soil is moist.

C. Hydro-seeding may be used. Certify in writing that the hydro-seed fertilizer mix is as herein specified and applied at the equivalent rate.

D. Promptly after seeding, wet the seed bed thoroughly, keeping all areas moist throughout the germination period.

E. Mulch shall be placed immediately after seeding. Hay that has been thoroughly fluffed shall be spread evenly and uniformly at the rate of two to three tons per acre. Lumps and thick mulch materials shall be thinned. Anchor hay mulch with erosion control mesh on slopes steeper than 6 horizontal to one vertical (16%) and as necessary to prevent movement. Anchor mesh as recommended by manufacturer. Hydromulching is an acceptable method of mulching. The mulch shall consist of natural cellulose wood fibre containing no materials which will inhibit seed germination or plant growth. Sufficient non-toxic water soluble green dye shall be added to provide a definite color contrast to the ground surface to aid in even distribution. Wood fibre mulch shall be supplied in uniform packages not exceeding 100 pounds each. Each package shall be marked to show the air dry weight.

3.06 MAINTENANCE

A. Maintenance shall begin immediately after seeding operations and shall continue until Project Substantial Completion.

B. Maintenance of seed areas shall consist of watering, weeding, curing, repair of all erosion, and reseeding as necessary to establish a uniform stand of grass.

3.07 CLEAN-UP

A. After completion of planting operations, dispose of debris and excess material to the satisfaction of Main-Land Development Consultants, Inc.. Pavements shall be broomed clean.

3.08 FINAL INSPECTION AND ACCEPTANCE

A. At the end of the guarantee period, Main-Land Development Consultants, Inc. will inspect guaranteed

work for the Final Acceptance upon written request of the Contractor. The request shall be received at least 10 calendar days before the anticipated date for final inspection.

B. Upon completion and reinspection of repairs or renewals necessary in the judgement of Main-Land Development Consultants, Inc. at that time, he shall certify in writing to the Contractor as to the Final Acceptance of the project.

END OF SECTION

334113 STORM DRAINAGE

1 GENERAL

1.01 SECTION INCLUDES

A. Provide labor and materials to complete the storm drainage as shown on the Drawings and/or herein specified.
   1. Storm drain/ culverts.
   2. Underdrains.
   3. Trench insulation.
   4. Geotextile filter fabric.

1.02 SUBMITTALS

A. Submit manufacturer's product literature and Shop Drawings for approval on materials in accordance with Division 1 Submittals section.

B. Certified copies of test results.

C. As-built records of pipe location, depth, services, and repairs.

2 PRODUCTS

2.01 STORM DRAINS

A. Unless Otherwise Noted Use Any of the Following Pipe Materials:
   1. Polyvinylchloride (PVC), conforming to ASTM D3034, maximum ratio of outside diameter to wall thickness of 35 (SDR-35). Watertight push-on couplings with flexible O-ring gasket, conforming to ASTM D3212.
   2. High density polyethylene pipe (HDPE), conforming to ASTM D3350 and AASHTO M294 with corrugated exterior and smooth interior. Couplings and fittings of same material conform to AASHTO M294.

2.02 UNDERDRAINS

A. Use One of the Following for Underdrains:
   1. Polyvinylchloride (PVC), Type PS-46 conforming to ASTM F-789 or PSM (SDR 35)conforming to ASTM D-3034 perforated with two rows of 1/2-inch diameter holes. Gasketed push-on joints.
   2. Corrugated polyethylene drainage pipe, heavy-duty grade, perforated, conforming to AASHTO M252 and ASTM F 405. Pipe must be marked as "Heavy-Duty" conforming to ASTM F405, or pipe stiffness of 30 psi at 5% deflection, maximum of 5% elongation.

B. Provide cleanout risers to finish grade with threaded covers. Grease threads on cover.

2.03 GEOTEXTILE DRAINAGE FABRIC

A. Polypropylene or Polyester Non-woven, Needle-punched Drainage Fabric with the Following Minimum Properties:

Weight	4.5 oz/sy	Water Flow Rate	280 gpm/sf
Thickness	60 mils	Coef of Permeability	0.2 cm/sec

Tear Strength	50 lbs	Equiv. Opening Size	70-100 sieve

B. Mirafi 140N or approved equal.

2.04 TRENCH INSULATION

A. Extruded polystyrene with a "K" factor of 0.18, with 2.2 lb./cu. ft. density, and 30 psi compressive strength, manufactured by Dow Chemical, or approved equal.

3 EXECUTION

3.01 EXCAVATION AND BACKFILL

A. Conforming to the appropriate portions of Section 02200, Earthwork.

3.02 STORM PIPING

A. Lay pipe on stable bedding beginning at the downstream end and proceeding upstream with the bell end of the pipe upstream. Provide adequate trench drainage to prevent pipe floatation and insure proper bedding compaction.

B. Provide 4 foot wide layer of 2-inch thick rigid foam insulation on bedding material 6-inches above or below sewer or water pipe, where it crosses a storm drain pipe or other open air conduit with less than 5 feet of separation.

3.03 UNDERDRAINS

A. Set pipe in crushed stone bedding surrounding pipe, with perforations on the bottom half of the pipe. Slope pipe uniformly to drain. Fully wrap stone bedding with Geotextile fabric. Compact to 95% maximum density around pipe.

END OF SECTION

337100 ELECTRICAL AND COMMUNICATIONS

1 GENERAL

1.01 SECTION INCLUDES

A. Provide Labor, Materials, and Equipment for Site Improvements Shown on the Drawings or Specified Herein, Including:
   1. Temporary electrical provisions to facilitate the project work.

1.01 SUBMITTALS

A. Coordinate with CMP and other aerial phone, data, cable, utilities sharing space on utility poles. Submit narrative describing the plan for working safely around aforementioned utilities without incurring significant service interruption.

2 PRODUCTS

2.01 BURIED WARNING AND IDENTIFICATION TAPE

A. For non-metallic pipe use metallic core or metallic-faced, acid and alkali-resistant, polyethylene plastic warning tape manufactured specifically for warning and identification of buried utility lines. For metallic pipe use non-metallic polyethylene plastic warning tape. Provide tape on rolls, 3 inch minimum width, color coded as specified below for the intended utility with warning and identification imprinted in bold black letters continuously over the entire tape length. Warning and identification to read, “CAUTION, BURIED (intended service) LINE BELOW” or similar wording. Color and printing shall be permanent, unaffected by moisture or soil.

B. Minimum thickness of the tape shall be 0.004 inch. Tape shall have a minimum strength of 1500 psi lengthwise and 1250 psi crosswise. Metallic tape shall be manufactured with integral wires, foil backing, or other means of enabling detection by a metal detector when tape is buried up to 3 feet deep.

WARNING TAPE COLOR CODES	
Red	Electric
Orange	Telephone and other Communications

3 EXECUTION

3.01 WORK AROUND UTILITIES

A. Perform earthwork according to section 312316.

B. Temporary Electrical Conduits: Install out of the zone of immediate earthwork impacts. Suspend and support adequately to be stable over the stream without requiring bury within the stream channel.

C. Temporary Tieback: Prior to work and with adequate lead time, coordinate with utilities for temporary tieback or temporary hold of utilities while work is performed in the vicinity of aerial lines.

END OF SECTION

SECTION 340000 TRAFFIC CONTROL

1 GENERAL

1.01 DESCRIPTION OF REQUIREMENTS

A. Regulate traffic in the area of work being performed.

B. Perform work in a manner to limit the time of road closure to the public. Provide safe passage for the public when open to traffic.

C. Provide all signs, barricades, flags, traffic guards, and warning devices required.

D. Provide access for residents and abutting landowners along the Project to driveways and other normal outlets from their property.

2 PRODUCTS

2.01 SIGNS, BARRICADES, AND WARNING DEVICES

A. Comply with requirements in "Manual on Uniform Traffic Control Devices" published by Department of Transportation, Federal Highway Administration and requirements of Maine Department. of Transportation, current edition.

3 EXECUTION

3.01 MAINTENANCE OF TRAFFIC

A. Temporary road closure will be allowed during removal of existing culvert infrastructure and installation of new per the plans. Return traffic over backfilled culvert and stabilized subgrade as soon as possible and safe. Maintain at least one lane of passage once the road is reopened to traffic.

3.02 DETOURS

A. General: Provide, identify, and maintain suitable detours, including signage for alternate routes, when the Project is closed to public travel. When the Project is re-opened, restore the detour area, and any other disturbed areas, to the original condition as approved by the Town.

B. Approval: All detours must be prior approved by Town, police and fire departments, Maine Department of Transportation, and Engineer.

C. Notification: Notify Town, police department, fire department and Maine Department. of Transportation, and the Engineer when detours are put into use and when they are re-opened.

D. Request Approval of Detours: Make written request for detours 72 hours in advance of their proposed use.

3.03 SCHEDULING OF WORK

A. Revise the plan of work if, in the opinion of the Town, Engineer, or Maine Department of Transportation, it will create traffic hazard or an unreasonably long detour.

3.04 SIGNS, BARRICADES, AND WARNING DEVICES

A. Provide adequate warning signs, barricades, signal lights, and take other necessary precautions for the safety of the public.

B. Provide and illuminate suitable warning signs to show where construction, barricades, or detours exist.

C. Maintain necessary signs, and signs required by the Maine Department of Transportation, barricades, lights, and other safety precautions during authorized suspension of the work, weekends, holidays, or other times when construction work is not in progress.

3.05 TRAFFIC GUARDS AND FLAGGERS

A. Flaggers: Provide flaggers for traffic control whenever traffic is limited to one way traffic and as required by referenced standards.

3.06 EXISTING SIGNS

A. Temporarily reset and maintain street directory and regulatory signs which must be moved during construction. Relocate signs so that no traffic hazards are created.

B. Permanently reset signs at their original designated locations prior to completion of the Work.

END OF SECTION 340000

347100 ROADWAYS AND TRAFFIC

1 GENERAL

1.01 SECTION INCLUDES

A. Provide Labor, Materials, and Equipment for Site Improvements Shown on the Drawings or Specified Herein, Including:
   1. Pressure-treated timber.
   2. Permanent signs.
   3. Roadway guardrail

1.01 SUBMITTALS

A. Submit manufacturer's product literature and Shop Drawings for approval on materials in accordance with Division 1 Submittals section.

1.02 DELIVERY, STORAGE AND PROTECTION

A. Deliver materials to the site in an undamaged condition. Carefully store materials off the ground to provide proper protection against oxidation, and other damage caused by ground contact.

2 PRODUCTS

2.01 PRESSURE TREATED TIMBER

A. CCA pressure treated #2 and better, Southern Pine kiln-dried or air-seasoned to an average moisture content of 16% or less and planed on all sides. The amount of CCA preservation injected into timber shall be .40 pounds per cubic foot of wood. Exposed edges shall be chamfered 3/4".

B. Fasteners shall be hot-dipped galvanized, unless otherwise noted.

2.02 PERMANENT SIGNS

A. Standard metal traffic control signs conforming to U. S. DOT Manual on Uniform Traffic Control Devices.

B. Standard U-channel steel support post of 8 ft. length, green or black enamel finish, with theft-proof sign fasteners.

2.03 ROADWAY GUARDRAIL

A. Galvanized steel post and beam guardrail, conforming to MDOT 710.04, 710.07, and 710.08. Installation conforming to the pertinent portions of MDOT Section 606.

3 EXECUTION

3.01 HEIGHT

A. Install street signage such that the bottom of the sign is 66 inches above adjacent pavement grade.
B. Install guardrail at height of 29 inches from the ground to top of rail. Construction tolerance for height shall be 1 inch.

END OF SECTION