PART 1 - GENERAL

1.1 SUMMARY
A. Section Includes:
1. Seeding, sodding and landscape planting:
   a. Soil preparation.
   b. Lawn-type seeding.
   c. Sodding.
   d. Plants and planting.
   e. Maintenance of new and transplanted materials.
   f. Pruning and repairing existing trees.
   g. Replacement of dead or impaired materials at the end of the first growing season.
B. Related Sections include but are not necessarily limited to:
   1. Division 0 - Bidding Requirements, Contract Forms, and Conditions of the Contract.
   2. Division 1 - General Requirements.
   3. Section 02260 - Topsoiling and Finished Grading.

1.2 QUALITY ASSURANCE
A. Referenced Standards:
      a. Z60.1, American Standard for Nursery Stock.
   2. AOAC International (AOAC).
   3. ASTM International (ASTM):
      b. D2028, Standard Specification for Cutback Asphalt (Rapid-Curing Type).
B. Quality Control:
   1. Fertilizer:
      a. If Engineer determines fertilizer requires sampling and testing to verify quality, testing will be done at Contractor's expense, in accordance with current methods of the AOAC.
      b. Upon completion of Project, a final check of total quantities of fertilizer used will be made against total area seeded.
      c. If minimum rates of application have not been met, Contractor will be required to distribute additional quantities to make up minimum application specified.
C. Qualifications:
   1. Pruning work to be performed by a licensed arborist.

1.3 SUBMITTALS
A. Shop Drawings:
   1. See Section 01340 for requirements for the mechanics and administration of the submittal process.
   2. Product technical data including:
      a. Acknowledgement that products submitted meet requirements of standards referenced.
      b. Manufacturer's installation instructions.
      c. Signed copies of vendor's statement for seed mixture required, stating botanical and common name, place of origin, strain, percentage of purity, percentage of germination, and amount of Pure Live Seed (PLS) per bag.
      d. Type of herbicide to be used during first growing season to contain annual weeds and application rate.
      e. Source and location of sod, plants, and plant material.
   3. Certification that each container of seed delivered will be labeled in accordance with Federal and State Seed Laws and equals or exceeds Specification requirements.
B. Miscellaneous Submittals:
   1. See Section 01340 for requirements for the mechanics and administration of the submittal process.
   2. Copies of invoices for fertilizer used on Project showing grade furnished, along with certification of quality and warranty.

1.4 DELIVERY, STORAGE, AND HANDLING
A. Furnish seed in sealed standard containers labeled with producer's name and seed analysis.
   1. Remove from the site seed which has become wet, moldy, or otherwise damaged in transit.
B. Furnish fertilizer uniform in composition, free flowing and suitable for application with approved equipment, delivered to site in bags or other containers, each fully labeled and bearing the name, and warranty of the producer.

1.5 SEQUENCING AND SCHEDULING
A. Installation Schedule:
1. MPW will meet with impacted property owners prior to construction to develop a restoration plan to include a restoration schedule, sod/shrub/tree replacement type, limits of disturbance, maintenance responsibilities, etc.
2. MPW will provide the Contractor written documentation outlining all restoration requirements.
B. Pre-installation Meeting:
1. Meet with Engineer and other parties as necessary to discuss schedule and methods, unless otherwise indicated by Engineer.

PART 2 - PRODUCTS
2.1 MATERIALS
A. Seed Quality:
1. Fresh, clean, new-crop seed labeled in accordance with USDA Rules and Regulations under the Federal Seed Act in effect on date of bidding.
2. Provide seed of species, proportions, and minimum percentages of purity, germination and maximum percentage of weed seed as specified.
B. Lawn-Type Seed Mixture:
1. Schedule No. 1 - Planting dates March 1 to August 15:

<table>
<thead>
<tr>
<th>Common Name of Seed</th>
<th>Rate A</th>
<th>Rate B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rye Grain</td>
<td>1.0</td>
<td>1.0</td>
</tr>
<tr>
<td>Common Bermuda (hulled)</td>
<td>0.0</td>
<td>1.5</td>
</tr>
<tr>
<td>Sericea Lespedeza</td>
<td>1.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Weeping Love Grass (sandy soils)</td>
<td>1.0</td>
<td>0.0</td>
</tr>
</tbody>
</table>

2. Schedule No. 2 – Planting dates August 16 – February 28:

<table>
<thead>
<tr>
<th>Common Name of Seed</th>
<th>Rate A</th>
<th>Rate B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rye Grain</td>
<td>0.0</td>
<td>1.0</td>
</tr>
<tr>
<td>Common Bermuda (hulled)</td>
<td>0.0</td>
<td>1.5</td>
</tr>
<tr>
<td>Brown Top Millet</td>
<td>5.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Common Bermuda ( unhulled)</td>
<td>0.0</td>
<td>2.0</td>
</tr>
</tbody>
</table>

C. Sod: Viable, dense, strongly rooted, not less than 2 years old.
1. Centipede Grass or match existing type as required.
2. Free of weeds and undesirable native grasses.
3. Strips 12 to 18 IN wide.
4. Mow prior to stripping from field.
5. Cut so 3/4 IN of soil is firmly attached to roots.
6. Not frozen or dormant.

D. Mulch:
1. For seeded areas:
   a. Clean, seed-free, threshed straw of oats, wheat, barley, rye, beans, peanuts, or other locally available mulch material which does not contain an excessive quantity of matured seeds of noxious weeds or other species that will grow or be detrimental to seeding, or provide a menace to surrounding land.
   b. Do not use material which is fresh or excessively brittle, or which is decomposed and will smother or retard growth of grass.
2. Trees and shrubs: Hardwood chips, shredded bark, or other material as approved by the Engineer.

E. Fertilizer:
1. Commercial fertilizer meeting applicable requirements of State and Federal law.
2. Cyanic compound or hydrated lime not permitted in mixed fertilizers.
3. For lawn-type seeding and sod: 5-10-5 analysis.

F. Limestone: Agricultural grade ground limestone containing not less than 88 percent of combined calcium and magnesium carbonates, 100 percent passing a 10-mesh sieve, 90 percent passing a 20-mesh sieve, and 60 percent passing a 100-mesh sieve.
G. Asphalt Binder: Emulsified asphalt per State specifications.
H. Water:
   1. Water free from substances harmful to grass or sod growth.
   2. Provide water from source approved prior to use.

PART 3 - EXECUTION
3.1 SOIL PREPARATION
A. General:
   1. Limit preparation to areas which will be planted soon after.
   2. Provide facilities to protect and safeguard all persons on or about premises.
   3. Protect existing trees designated to remain.
   4. Verify location and existence of all underground utilities.
      a. Take necessary precaution to protect existing utilities from damage due to construction activity.
      b. Repair all damages to utility items at Contractor’s expense.
   5. Provide facilities such as protective fences and/or watchmen to protect work from vandalism.
      a. Contractor to be responsible for vandalism until acceptance of work in whole or in part including all costs to completely repair the damaged restoration work.
   6. Work to be performed in compliance with these specifications unless a local nursery recommends otherwise.
B. Seed these areas immediately upon completion of grading or construction and clean-up operations.
   1. Slopes greater than four horizontal to one vertical.
   2. Utility rights-of-way adjacent to stream banks.
C. Areas ready for planting between August 16 and February 28 shall be planted with a temporary cover of Schedule No. 2. At the acceptable seasons for planting Schedule No. 1, the turf shall be destroyed by reworking the soil, and Schedule No. 1 seeding established as specified herein.
D. Use Rate A lbs. per 1000 sq. ft. on slopes over 5' horizontal to 1' vertical in height and use Rate B lbs. per 1000 sq. ft. on slopes less than 5' horizontal to 1' vertical.
E. Preparation for Lawn-Type Seeding, Sprigging, Plugging or Sodding:
   1. Loosen surface to minimum depth of 4 IN.
   2. Remove stones over 1 IN in any dimension and sticks, roots, rubbish, and other extraneous matter.
   3. Spread limestone uniformly over designated areas at a rate of 50 LBS per 1000 SF.
      a. Thoroughly mix and till through topsoil layer.
   4. Prior to applying fertilizer, loosen areas to be seeded with a double disc or other suitable device if the soil has become hard or compacted.
   5. Correct any surface irregularities in order to prevent pocket or low areas which will allow water to stand.
   6. Distribute fertilizer uniformly over areas to be seeded:
      a. For lawn-type seeding: 30 LBS per 1000 SF.
      b. For pasture seeding: 200 LBS per acre.
   7. Remove stones or other substances from surface which will interfere with turf development or subsequent mowing operations.
   8. Grade lawn areas to a smooth, even surface with a loose, uniformly fine texture.
      a. Roll and rake, remove ridges and fill depressions, as required to meet finish grades.
      b. Limit fine grading to areas which can be planted soon after preparation.
   9. Restore lawn areas to specified condition if eroded or otherwise disturbed after fine grading and before planting.

3.2 INSTALLATION
A. Lawn-Type and Pasture Seeding:
   1. Do not use seed which is wet, moldy, or otherwise damaged.
   2. Perform seeding work from March 1 to August 15 for spring planting, and August 16 to February 28 for fall planting, unless otherwise approved by Engineer.
   3. Employ satisfactory methods of sowing using mechanical power-driven drills or seeders, or mechanical hand seeders, or other approved equipment.
   4. Distribute seed evenly over entire area at rate of application not less than 4 LBS (PLS) of seed per 1000 SF, 50 percent sown in one direction, remainder at right angles to first sowing.
   5. Stop work when work extends beyond most favorable planting season for species designated, or when satisfactory results cannot be obtained because of drought, high winds excessive moisture, or other factors.
      a. Resume work only when favorable conditions develop.
   6. Lightly rake seed into soil followed by light rolling or cultipacking.
   7. Immediately protect seeded areas against erosion by mulching.
a. Spread mulch in continuous blanket using 1-1/2 tons per acre to a depth of 4 or 5 straws.

8. Protect seeded slopes against erosion with erosion netting or other methods approved by Engineer.
   a. Protect seeded areas against traffic or other use by erecting barricades and placing warning signs.

9. Immediately following spreading mulch, anchor mulch using a rolling coulter or a Wheatland land packer having wheels with V-shaped edges to force mulch into soil surface, or apply evenly distributed emulsified asphalt at rate of 10-13 GAL/1000 SF.
   a. SS-1 emulsion in accordance with ASTM D5276 or RC-1 cutback asphalt in accordance with ASTM D2028 are acceptable.
   b. If mulch and asphalt are applied in one treatment, use SS-1 emulsion with penetration test range between 150-200.
   c. Use appropriate shields to protect adjacent site improvements.

10. If hydroseeding is used, machinery must be approved, modern, properly equipped and operated by an experienced operator.
   a. Seed and fertilize at the rate specified.
   b. Use appropriate shields to protect adjacent site improvements.

B. Sodding
1. Moisten prepared surface immediately prior to laying sod.
2. Lay sod within 48 hours of being cut and within 24 hours after topsoil is prepared and fertilized.
3. Lay sod tight with no open joints visible, and no overlapping; stagger end joints 12-inches minimum.
   Do not stretch or overlap sod species.
4. Lay sod smooth aligning with adjoining grass areas.
5. Place top elevation of sod ½-inch below adjoining pavement.
6. On slopes 6-inches per foot or steeper, lay sod perpendicular to slope and secure every row with wooden pegs at a maximum 2-feet on center. When using “big roll”, lay sod parallel to slope. Drive pegs flush with soil portion of sod.
7. Do not place sod when temperature is lower than 32 degrees F.
8. Water sodded areas immediately after installation. Saturate soil to 4 inches.
9. Contractor to provide and pay for all water and will not use any customer’s water.
10. After sod and soil have dried, roll sodded areas to bond soil and to remove minor depressions and irregularities. Roll sodded areas with a lawn roller not exceeding 120 pounds.

3.3 PLANTING TREES, SHRUBS, AND GROUND COVERS

A. Notification:
1. Notify Engineer of source of plants and plant materials at least 30 days prior to planting to permit Engineer's inspection of source qualifications.

B. Preparation:
1. Handle plants so that roots or balls are adequately protected from breakage of balls, from sun or drying winds.
   a. Ensure tops or roots of plants are not permitted to dry out.
2. During transportation, protect materials from wind and sun to prevent tops and roots from drying out.
3. Protect tops of plants from damage.
   a. Plants with damaged tops will be rejected.
4. For purpose of inspection and planting identification, attach durable, legible labels to bundle or container of plant material delivered at the planting site.
   a. State correct plant name and size of each plant in weather-resistant ink on labels.
5. Do not prune trees and shrubs at nursery.
6. Perform all work as recommended by a local nursery.

C. Planting Season:
1. Plant deciduous shade trees and shrubs any time the ground is suitable between October 15 and June 1.
2. Plant evergreen material between September 1 and June 1.
3. Plant ground covers between March 15 to June 1.
4. In the event the Contractor is not able to plant during the planting season, at MPW’s discretion, retainage may be held until the Contractor can return during the planting season to complete the restoration.

D. Planting Procedure:
1. Indicate locations of plants for approval by Engineer before excavating plant locations.
2. In event underground construction, utilities, obstructions, or rock are encountered in excavation of plantings, secure alternate locations from Engineer.
   a. Make said changes without additional compensation.
   b. Where tree locations fall under existing overhead wires, or crowd existing trees, adjust locations as directed by Engineer.
3. Excavate pits and beds as necessary and in accordance with ANLA/ANSI Z60.1.
a. Loosen bottom of pits prior to planting.

b. Excavation is unclassified, excavate all materials without additional cost.

4. Tree and shrub pits to be circular in shape with vertical sides at least 1 FT greater in diameter than ball diameter.
   a. Pit to be of sufficient depth to provide 6 IN of planting soil under ball when set to natural grade.

5. Shrub and ground cover beds:
   a. Plant shrubs used in mass plantings in individual holes of required size.
   b. Strip all sod from among mass planting.
   c. For ground cover beds, remove sod from within limits of bed.
   d. Add soil amendments as specified and mix or rototill with existing topsoil to a depth of 6 IN.

6. Set plants straight or plumb, in locations when indicated and at such level that after settlement they bear same relationship to finished grade as they did in their former setting.
   a. Carefully tamp planting soil under and around base of balls to prevent voids.
   b. Remove burlap, rope and wires from top of balls.
   c. Do not remove burlap from sides and bottom of balls.

7. Backfill plants with planting soil.
   a. Tamp to 1/2 depth of pit and thoroughly water and puddle before bringing backfill to proper grade.
   b. After planting has been completed, flood pit again so that backfill is thoroughly saturated and settled.

8. After planting is complete, form a level saucer 3 IN high around each tree extending to limit of plant pit for watering purposes.

9. Mulch plant pit after saucer has been shaped.
   a. Mulch to limits of pit and uniformly over ground cover beds to a depth of 3 IN.
   b. In mass plantings of shrubs, mulch entire area uniformly among shrubs to a depth of 3 IN.
   c. If mulching is delayed and soil has dried out, water plants thoroughly before spreading mulch.

10. Staking: Stake trees immediately after planting as detailed on Drawings or in accordance with Nursery Standards.

11. Wrap deciduous trees 2 IN or more in caliper by neatly overlapping wrapping material between ground line and second branch.
   a. Place ties at top and bottom of wrapping material and not more than 12 IN apart between top and bottom ties.

12. Remove dead or damaged branches.
   a. Thin deciduous material to about two-thirds of initial branching.
   b. Remove only dead or damaged branches from evergreens.

13. Water plants during planting operations.
   a. Water each plant a minimum of once each week until final acceptance.
   b. Apply sufficient water to moisten backfill about each plant so that moisture will extend into the surrounding soil.

E. Pruning and Repairing Existing Trees:
   1. All pruning and repairing of existing trees must be approved by the Town of Mount Pleasant and MPW prior to performing the work. The Contractor shall hire a certified arborist to advise on all pruning and repairs and all work shall meet the Town of Mount Pleasant requirements.
   2. Remove dead or dying limbs, repair and treat wounds, remove limbs that interfere with construction or with vehicular traffic and repair, rotted or decayed areas specifically noted on Drawings.
   3. Procedure:
      a. To prevent stripping the bark, stub cut branches that are too large to be supported by hand.
      b. Coat branch cuts over 1 IN in diameter with an asphaltic varnish containing an antiseptic.
      c. Where existing trees interfere with construction, prune the limb back flush to the main trunk.
         1) Maintain 7 FT vertical clearance where evergreens overhang new sidewalks.
      d. Provide 10 FT vertical clearance along the main access road where the existing trees are subjected to vehicular traffic.
      e. Repair bark wounds by removing injured bark, shaping the wound to an elongated ellipse, disinfecting it and applying antiseptic paint.
      f. Repair all rotten areas.

3.4 MAINTENANCE AND REPLACEMENT
A. General:
   1. Begin maintenance of planted areas immediately after each portion is planted and continue until final acceptance or for a specific time period as stated in paragraph B below, whichever is the longer.
   2. Contractor shall provide and pay for all water and shall not use the property owner’s water source.
   3. Provide and maintain temporary piping, hoses, and watering equipment as required to convey water from water sources and to keep planted areas uniformly moist as required for proper growth.
4. Protection of new materials:
   a. Provide barricades, coverings or other types of protection necessary to prevent damage to existing improvements indicated to remain.
   b. Repair and pay for all damaged items.
5. Replace unacceptable materials with materials and methods identical to the original specifications unless otherwise approved by the Engineer.

B. Seeded or Sodded Lawns:
1. Maintain seeded and sodded lawns: 90 days, minimum, after installation and review of entire project area to be planted.
2. Maintenance period begins at completion of planting or installation of entire area to be seeded or sodded.
3. Engineer will review seeded or sodded lawn area after installation for initial acceptance.
4. Maintain lawns by watering, fertilizing, weeding, mowing, trimming, and other operations such as rolling, regrading, and replanting as required to establish a smooth, uniform lawn, free of weeds and eroded or bare areas.
5. Lay out temporary lawn watering system and arrange watering schedule to avoid walking over muddy and newly seeded areas.
   a. Use equipment and water to prevent puddling and water erosion and displacement of seed or mulch.
6. Mow lawns as soon as there is enough top growth to cut with mower set at recommended height for principal species planted.
   a. Repeat mowing as required to maintain height.
   b. Do not delay mowing until grass blades bend over and become matted.
   c. Do not mow when grass is wet.
   d. Time initial and subsequent mowings as required to maintain a height of 1-1/2 to 2 IN.
   e. Do not mow lower than 1-1/2 IN.
7. Remulch with new mulch in areas where mulch has been disturbed by wind or maintenance operations sufficiently to nullify its purpose.
   a. Anchor as required to prevent displacement.
8. Unacceptable plantings are those areas that do not meet the quality of the specified material, produce the specified results, or were not installed to the specified methods.
9. Replant bare areas using same materials specified.
10. Owner/Engineer will review final acceptability of installed areas at end of maintenance period.
11. Maintain repaired areas until remainder of maintenance period or approved by Engineer, whichever is the longer period.

END OF SECTION