The language provided in these specifications is meant to serve as a reminder and provide a generic example of the type of language that should be provided in final construction documents. This language will require modification and additional detail to fit the physical conditions of the site and the final design of the BMP.

TEMPORARY EROSION CONTROL

A. Install all temporary erosion control measures (in accordance with MNDOT General Conditions 2573) prior to site disturbance.

B. Install storm drain inlet protection to prevent clogging of stormsewer and increased sediment loading to downstream stormwater facilities or waterbodies.

C. If the stormwater BMP is being designed to serve as a temporary sedimentation basin, grade the BMP to within three (3) feet of final grade to prevent clogging of in-situ soil.

D. Inspect erosion control measures at least once a week and after each rainfall event. Make any required repairs immediately.

E. Silt fence fabric that collapses, tears, decomposes or otherwise becomes ineffective should be replaced within 24 hours of discovery.

F. Remove silt fence deposits once they reach 30 percent of the height of the silt fence or silt curtain. Care should be taken to avoid undermining of the fence during cleanout.

G. Erosion control devices shall be maintained until the site is stabilized, as determined by the Engineer.

INFITRATION TRENCH EXCAVATION, BACKFILL AND GRADING

A. If the infiltration trench is used as a temporary sedimentation basin, initial grading of the infiltration trench shall be performed in conjunction with rough grading of the site. Grade the BMP to within three (3) feet of final grade to prevent clogging of the in-situ soil. Once construction in the contributing drainage area has been completed and the site is stabilized, excavate the infiltration trench to final grade and complete the infiltration trench construction.
II. If alternative temporary sediment basin facilities being provided, grading and construction of the infiltration trench(es) shall not begin until all construction in the contributing drainage area has been completed and the site is stabilized.

B. Grading of the infiltration trenches shall be accomplished using low-impact earth-moving equipment to prevent compaction of the underlying soils. Wide tracked vehicles such as back hoes, small dozers and bobcats are recommended.

C. Excavate the infiltration trench to the specified depth (elevation). All sub material below the specified elevation shall be left undisturbed, unless otherwise directed by the Engineer.

D. Grade to the depth (elevation) specified in the construction documents unless otherwise directed by the Engineer.

E. In the event that sediment is introduced into the BMP during or immediately following excavation, the sediment will need to be removed from the infiltration trench prior to initiating the next step in the infiltration trench construction process.

F. Material excavated from the infiltration trench(es) shall be disposed of on-site at locations (temporary stockpile areas) designated by the Engineer.

G. Clean, washed 1 to 3-inch gravel shall be placed in the bottom of the infiltration trench to the depth specified in the construction documents. Gravel should be placed in lifts and lightly compacted with plate compactors. The gravel shall conform to the following requirements:

<table>
<thead>
<tr>
<th>Sieve Size</th>
<th>Percent Passing</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.0”</td>
<td>100</td>
</tr>
<tr>
<td>1.5”</td>
<td>85-100</td>
</tr>
<tr>
<td>1.0”</td>
<td>30-60</td>
</tr>
<tr>
<td>0.5”</td>
<td>0-10</td>
</tr>
</tbody>
</table>

H. The gravel filter shall conform to the following gradation or an Engineer approved equivalent:

<table>
<thead>
<tr>
<th>Sieve Size</th>
<th>Percent Passing</th>
</tr>
</thead>
<tbody>
<tr>
<td>1”</td>
<td>100</td>
</tr>
<tr>
<td>3/4”</td>
<td>85-100</td>
</tr>
<tr>
<td>3/8”</td>
<td>30-60</td>
</tr>
<tr>
<td>No. 4</td>
<td>0-10</td>
</tr>
</tbody>
</table>
I. Observation well shall be constructed of new perforated poly vinyl chloride (PVC) pipe (not previously used) and shall conform to MNDOT standard specifications 3245 or an approved equal. Observation well shall be located in the center of the trench at the lowest elevation and shall be fitted with a 12" by 12" by ¼" aluminum or iron plate to provide support. Observation well shall be perforated over the entire length of the pipe. Perforations shall be 0.25 inch in diameter, spaced 3 inches center to center and have a minimum of two rows of holes.

J. Seeding and installation of erosion control blanket shall be completed within 48 hours of final grading.

NATIVE SEEDING

Seeding native grasses and forbs (wildflowers) can be accomplished using a number of different methods. However, due to the complexity of seed sizes, textures and densities, a great deal of care needs to be taken to ensure that the site is well prepared and that seed is placed properly.

For more information on native seeding methods and specifications see the following source:

NATIVE PLANTS, PLANTING AND TRANSPLANTING

A. Native planting shall not commence until planting areas have been properly amended and prepared per the specifications.

B. Native planting shall not commence until the native seeding has been completed and any required erosion control blanket has been installed. The planting shall be completed within 72 hours of native seeding.

C. The site shall be free from all weeds and invasive plant species. If weeds and invasive plant species exist onsite, they shall be removed and disposed of properly.

D. Plant material shall be spaced in accordance with recommended dimensions. Adjust spacing as necessary to evenly fill planting bed with indicated quantity.

E. All plant material shall be thoroughly watered within 8 hours of planting.
CONSTRUCTION SEQUENCE SCHEDULING

An implementation schedule should be included as part of the erosion control plan to identify the order of operations for construction activities. This is particularly important when constructing stormwater BMPs that are designed to infiltrate stormwater runoff. There are many construction activities which may contribute to the failure of a stormwater BMP if they are not planned for accordingly. The following items should be considered in developing an implementation schedule for a project:

1. Perform continuous inspection of temporary construction access to ensure that it is providing adequate erosion and sedimentation control for the construction site.

2. Install silt fence along the perimeter of the site to prevent sediment from leaving the site during the construction process. Silt fence should be installed at a uniform elevation and constructed so that flow cannot bypass the ends. Install heavy duty silt fence along the perimeter of downstream waterbodies to prevent sediment pollution. Install heavy duty silt fence along the perimeter of grading prohibited areas and all stormwater BMPs to eliminate traffic in these areas during the construction process.

3. All down gradient perimeter sediment-control BMPs (e.g. temporary outlet controls) must be in place before any up gradient land-disturbing activity begins.

4. Remove topsoil from the site and place in temporary stockpile location. Seed stockpile with temporary seed mix and mulch with weed-free straw if the stockpile is to remain in place for more than three days.

5. Install underground utilities (water, sanitary sewer, electric, telephone, etc.) in a manner that minimizes adverse impacts to the location and function of the stormwater BMPs. For example, do not backfill utility areas with high clay content (low permeability) soils if BMPs designed for infiltration are to be constructed in the same location.

6. Rough grade the site. If the infiltration trench is to be used as a temporary sedimentation basin, grade the infiltration trench to within three (3) feet of final grade to protect the underlying soils from clogging. Once construction in the contributing drainage area has been completed and the site is stabilized, adjust the infiltration trench to final grade and complete trench construction.

7. Seed and mulch disturbed areas on site.
8. Construct the roads in a manner that minimizes adverse impacts to the location and function of the stormwater BMPs. For example, ensure that construction access or equipment staging areas do not conflict with the final location of the infiltration trench.

9. Perform all other site improvements in a manner that minimizes adverse impacts to the location and function of the stormwater BMPs.

10. Final grade the site.

11. Stabilize the site by implementing the native seeding portion of the landscaping plan.

12. Install any required erosion control blanket, ditch checks, and other semi-permanent and permanent erosion control measures.

13. Remove the silt fence after the site is stabilized per the Engineer’s approval.

CONSTRUCTION OBSERVATION

*It is strongly recommended that the design engineer be onsite during various stages of the construction process to ensure the following:*

1. Construction documents are being adhered to.

2. Physical conditions of the site meet assumptions made during the design process.

3. Erosion control measures have been installed correctly and are being maintained during the entire construction process.