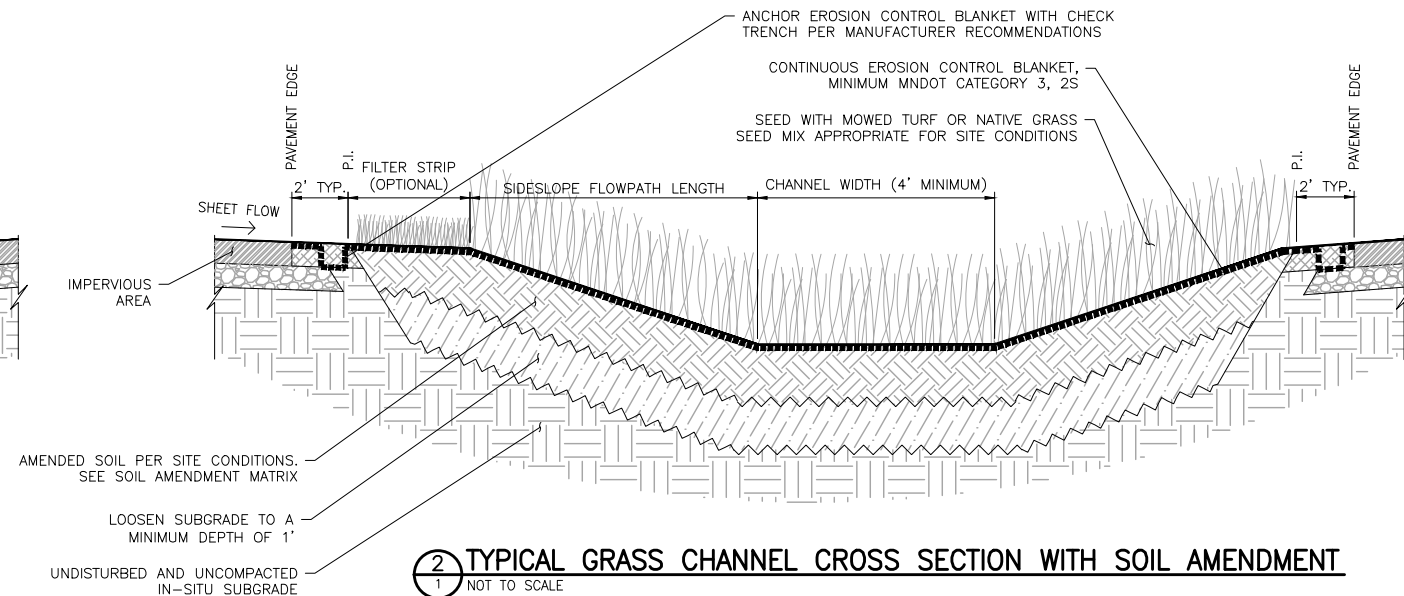
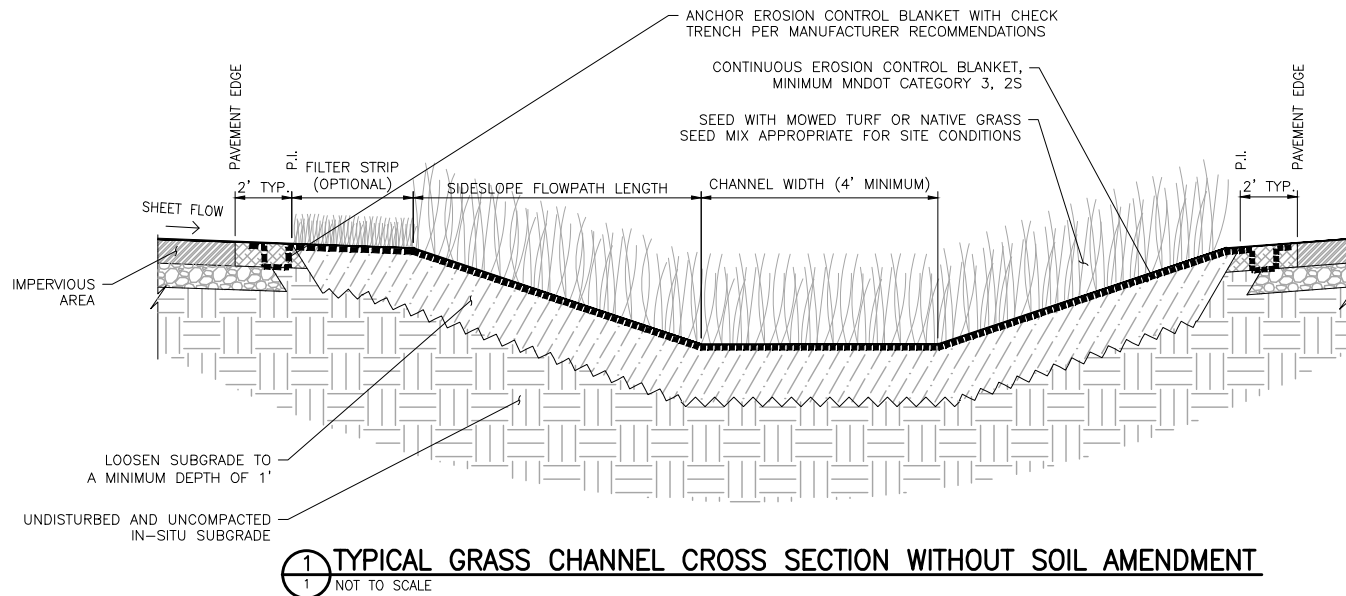


CADD USER: Candice M. Kentor FILE: P:\MPLS\23\_MN\62123621050\_MIDS\WORKFILES\PHASE2\PHASE2\_2 (DRY SWALES TASK 2.2)\DRAWINGS\CAD\MIDS\_DRY\_SWALE\_SECTIONS.DWG PLOT SCALE: 1:2 PLOT DATE: 6/28/2013 3:32 PM



**TABLE 1: MIDS GRASS CHANNEL SOIL AMENDMENT MATRIX**

| Vegetation Type                        | In-Situ Soil Type  |  |   |   |
|--|--|--|---|---|
|  | A  | B  | C   | D   |
| MOWED TURF SWALE OR NATIVE GRASS SWALE | Place 6" Imported topsoil**. Mix topsoil into subsoil by loosening subsoil to a minimum depth of 12" | Loosen subsoil to a minimum depth of 12" | Place 6" imported filtration soil* on top of subgrade and mix into subsoil by loosening subsoil to a minimum depth of 12" | Place 6" imported filtration soil* on top of subgrade and mix into subsoil by loosening subsoil to a minimum depth of 12" |

\* Filtration soil is defined as 80% clean sand mixed with 20% organic compost by volume  
 \*\* Topsoil shall be sandy loam, loamy sand, or loam texture per USDA textural triangle with less than 5% clay content

**GENERAL NOTES - GRASS CHANNELS AND DRY SWALES:**

- INSTALL ALL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES IN ACCORDANCE WITH THE SWPPP, PROJECT PLANS, AND SPECIFICATIONS IN ORDER TO EFFECTIVELY REDUCE THE VOLUME AND VELOCITY OF RUNOFF AND REDUCE EROSION OF SURFACE SOILS AND TO CONTROL SEDIMENT TRANSPORT OFF SITE DURING THE CONSTRUCTION PERIOD.
- INSPECT AND MAINTAIN ALL EROSION AND SEDIMENT CONTROL MEASURES DURING THE DURATION OF THE PROJECT.
- SEED MIX SHALL BE SELECTED BASED ON SITE CONDITIONS INCLUDING SOIL TYPE, MOISTURE CONDITIONS, FLOW CONDITIONS, SUN VS. SHADE CONDITIONS, AESTHETICS, AND MAINTENANCE REQUIREMENTS. MNDOT SPECIFICATION 3876 PROVIDES USEFUL CRITERIA FOR SELECTING APPROPRIATE SEED MIXTURES.
- EROSION CONTROL BLANKET SHALL BE SELECTED IN ACCORDANCE WITH MNDOT SPECIFICATION 3885 FOR THE SPECIFIC SITE CONDITIONS. THE MINIMUM RECOMMENDED EROSION CONTROL BLANKET IS CATEGORY 3, 2S. MORE PERMANENT EROSION CONTROL BLANKET MAY BE REQUIRED BASED ON SWALE GRADIENT, FLOW VELOCITY, AND FLOW DEPTH.
- EROSION CONTROL BLANKETS INSTALLATION SHALL BE IN ACCORDANCE WITH MNDOT SPECIFICATION 3885 AND MANUFACTURERS RECOMMENDATIONS FOR ANCHORING, CHECK TRENCHES, AND EDGE AND END OVERLAPS.
- AVOID COMPACTION OF ALL IN-SITU SOILS AND IMPORTED SOILS UNLESS DIRECTED OTHERWISE. DO NOT LOOSEN SUBSOIL UNDER CHECK DAMS.
- IF POSSIBLE, RESTRICT FLOW OR DIVERT FLOW FROM SWALE UNTIL VEGETATION IS ESTABLISHED.

**TYPICAL CONSTRUCTION SEQUENCING-GRASS CHANNEL:**

- EXCAVATE CHANNEL TO SUBGRADE ELEVATIONS PER THE PLAN.
- CONSTRUCTION SEQUENCE VARIES DEPENDING ON IN-SITU SOIL TYPE. SEE TABLE 1 FOR PROPER SEQUENCE FOR LOOSENING SUBSOILS AND ADDING SOIL AMENDMENTS.
- LOOSEN SOIL IN A MANNER THAT AVOIDS RECOMPACTION OF THE SOIL BY CONSTRUCTION TRAFFIC.
- AFTER SOIL LOOSENING AND ADDITION OF SOIL AMENDMENTS THE SURFACE OF THE SWALE WILL BE ROUGH.
- IF POSSIBLE, STABILIZE ALL UPSTREAM TRIBUTARY AREAS BEFORE COMPLETING FINISH GRADING OF SWALES. THIS WILL MINIMIZE THE DEPOSITION OF SEDIMENT IN THE FINISHED SWALE.
- IN THE EVENT THAT SEDIMENT IS INTRODUCED INTO THE BMP DURING OR IMMEDIATELY FOLLOWING EXCAVATION, THIS MATERIAL WILL NEED TO BE REMOVED FROM THE SWALE PRIOR TO INITIATING THE NEXT STEP IN THE CONSTRUCTION PROCESS. THIS IS ESPECIALLY IMPORTANT IF THE SWALE HAS BEEN DESIGNED TO INFILTRATE STORMWATER: SEDIMENT THAT HAS BEEN WASHED INTO THE SWALE DURING THE EXCAVATION PROCESS CAN SEAL THE PERMEABLE MATERIAL, SIGNIFICANTLY REDUCING THE INFILTRATION CAPACITY OF THE SOILS.
- FINISH GRADE THE SWALE USING METHODS THAT AVOID RECOMPACTION OF LOOSENED SOIL. ACCEPTABLE METHODS INCLUDE HAND RAKING, SMOOTHING WITH A BACKHOE BUCKET FROM OUTSIDE THE LIMITS OF THE SWALE, AND/OR PULLING A DRAG BEHIND LOW GROUND PRESSURE EQUIPMENT LIKE AN ATV.
- SOW SEED AND PLACE EROSION CONTROL BLANKET AFTER FINISH GRADING AND BEFORE THE FIRST RAINFALL EVENT (WITHIN 24 HOURS IS PREFERRED). DEPOSITION OF SEDIMENT ON TOP OF THE EROSION CONTROL BLANKET MAY KILL SEED AND BECOME A SOURCE OF SEDIMENT WASHING OFF SITE. SEDIMENT ON TOP OF THE EROSION CONTROL BLANKET SHALL BE REMOVED TO A DEPTH LESS THAN ONE INCH.
- IF STEP 6 IS NOT COMPLETED BEFORE THE FIRST RAINFALL EVENT, REPAIR RESULTING EROSION AND REMOVE ALL ACCUMULATED SEDIMENT FROM THE SWALE BEFORE SOWING SEED AND PLACING EROSION CONTROL BLANKET. EROSION REPAIR AND SEDIMENT REMOVAL SHALL BE COMPLETED WITHOUT COMPACTING THE SOIL (SEE STEP 5).

**TYPICAL CONSTRUCTION SEQUENCING-DRY SWALES (SEE SHEET 2):**

- EXCAVATE CHANNEL TO SUBGRADE ELEVATIONS PER THE PLAN.
- CONSTRUCT CHECK DAMS AT THE LOCATIONS AND TO THE ELVATIONS SHOWN ON THE PLANS.
- CONSTRUCTION SEQUENCE VARIES DEPENDING ON IN-SITU SOIL TYPE. SEE TABLE 1 FOR PROPER SEQUENCE FOR LOOSENING SUBSOILS AND ADDING SOIL AMENDMENTS.
- LOOSEN SOIL IN A MANNER THAT AVOIDS RECOMPACTION OF THE SOIL BY CONSTRUCTION TRAFFIC. DO NOT LOOSEN SOILS UNDER CHECK DAMS.
- INSTALL UNDERDRAIN (IF SPECIFIED) AFTER LOOSENING SUBGRADE SOILS. CAREFULLY COVER UNDERDRAIN WITH SAND TO AVOID COMPACTION AND DAMAGE TO THE PIPE. MARK THE LOCATION OF UNDERDRAIN AS NECESSARY TO AVOID DAMAGING THE PIPE DURING SUBSEQUENT CONSTRUCTION ACTIVITIES.
- STABILIZE ALL UPSTREAM TRIBUTARY AREAS BEFORE COMPLETING FINISH GRADING OF SWALES. THIS WILL MINIMIZE THE DEPOSITION OF SEDIMENT IN THE FINISHED SWALE.
- FINISH GRADE THE SWALE USING METHODS THAT AVOID RECOMPACTION OF LOOSENED SOIL. ACCEPTABLE METHODS INCLUDE HAND RAKING, SMOOTHING WITH A BACKHOE BUCKET FROM OUTSIDE THE LIMITS OF THE SWALE, AND/OR PULLING A DRAG BEHIND LOW GROUND PRESSURE EQUIPMENT LIKE AN ATV.
- SOW SEED AND PLACE EROSION CONTROL BLANKET AFTER FINISH GRADING AND BEFORE THE FIRST RAINFALL EVENT (WITHIN 24 HOURS IS PREFERRED). DEPOSITION OF SEDIMENT ON TOP OF THE EROSION CONTROL BLANKET MAY KILL SEED AND BECOME A SOURCE OF SEDIMENT WASHING OFF SITE. SEDIMENT ON TOP OF THE EROSION CONTROL BLANKET SHALL BE REMOVED TO A DEPTH LESS THAN ONE INCH.
- IF STEP 6 IS NOT COMPLETED BEFORE THE FIRST RAINFALL EVENT, REPAIR RESULTING EROSION AND REMOVE ALL ACCUMULATED SEDIMENT FROM THE SWALE BEFORE SOWING SEED AND PLACING EROSION CONTROL BLANKET. EROSION REPAIR AND SEDIMENT REMOVAL SHALL BE COMPLETED WITHOUT COMPACTING THE SOIL (SEE STEP 5).

NOT FOR CONSTRUCTION PURPOSES

|  |             |          |  |                  |            |                   |  |
|--|-------------|----------|--|------------------|------------|-------------------|--|
|  |             |          |  |                  |            |                   |  |
| Date   | Designed By | Drawn By | I hereby certify that this plan was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota |                  |            |                   |  |
|  |             |          | Print Name: _____  | Sign Name: _____ | Date _____ | License No. _____ |  |
| TYPICAL GRASS CHANNEL SECTIONS AND DESIGN MATRIX |             |          |  |                  |            |                   |  |
| Sheet No. 1 of 2 Sheets                          |             |          |  |                  |            |                   |  |