Reminder: The standard notes in this file contain various colors of text. The light orange colored text indicates text that may or may not need to be modified. **The yellow highlighted text indicates informational text which needs to be deleted before plans are distributed for review.** Columns in tables that are not used should be deleted. If possible, do not split notes between sheets. If notes are split between sheets, provide the title on the next sheet and add “(CONTINUED)” to the end of the title. **After plan notes are ready for review, change all text (except web links) to a black colored font.**

# SECTION D ESTIMATE OF QUANTITIES

DOT Plan Preparers will create the following estimate of quantities utilizing the Contract Estimating System (CES).

|  |  |  |  |
| --- | --- | --- | --- |
| **BID ITEM****NUMBER** | **ITEM** | **QUANTITY** | **UNIT** |
| 110E1690 | Remove Sediment |  | CuYd |
| 110E1693 | Remove Erosion Control Wattle |  | Ft |
| 110E1695 | Remove Sediment Filter Bag |  | Ft |
| 110E1697 | Remove Triangular Silt Barrier |  | Ft |
| 110E1700 | Remove Silt Fence |  | Ft |
| 110E1703 | Remove Interceptor Ditch |  | Ft |
| 120E4200 | Cut Interceptor Ditch |  | Ft |
| 120E6300 | Water for Vegetation |  | MGal |
| 230E0010 | Placing Topsoil |  | CuYd |
| 230E0050 | Topsoil Amendment |  | Lb |
| 230E0100 | Remove and Replace Topsoil |  | LS |
| 730E0100 | Cover Crop Seeding |  | Bu |
| 730E0200 | Type A Permanent Seed Mixture |  | Lb |
| 730E0202 | Type B Permanent Seed Mixture |  | Lb |
| 730E0204 | Type C Permanent Seed Mixture |  | Lb |
| 730E0206 | Type D Permanent Seed Mixture |  | Lb |
| 730E0208 | Type E Permanent Seed Mixture |  | Lb |
| 730E0210 | Type F Permanent Seed Mixture |  | Lb |
| 730E0212 | Type G Permanent Seed Mixture |  | Lb |
| 730E0251 | Special Permanent Seed Mixture 1 |  | Lb |
| 730E0252 | Special Permanent Seed Mixture 2 |  | Lb |
| 730E0253 | Special Permanent Seed Mixture 3 |  | Lb |
| 730E1200 | Hydroseeding |  | SqYd |
| 731E0100 | Fertilizing |  | Lb |
| 731E0200 | Fertilizing |  | Ton |
| 732E0100 | Mulching |  | Ton |
| 732E0200 | Fiber Mulching |  | Ton |
| 732E0250 | Fiber Mulching |  | Lb |
| 732E0300 | Bonded Fiber Matrix |  | Ton |
| 732E0350 | Bonded Fiber Matrix |  | Lb |
| 732E0500 | Fiber Reinforced Matrix |  | Ton |
| 732E0550 | Fiber Reinforced Matrix |  | Lb |
| 733E0100 | Sodding |  | SqYd |
| 734E0042 | Soil Stabilizer |  | SqYd |
| 734E0044 | Soil Stabilizer |  | Acre |
| 734E0101 | Type 1 Erosion Control Blanket |  | SqYd |
| 734E0102 | Type 2 Erosion Control Blanket |  | SqYd |
| 734E0103 | Type 3 Erosion Control Blanket |  | SqYd |
| 734E0104 | Type 4 Erosion Control Blanket |  | SqYd |
| 734E0131 | Type 1 Turf Reinforcement Mat |  | SqYd |
| 734E0132 | Type 2 Turf Reinforcement Mat |  | SqYd |
| 734E0133 | Type 3 Turf Reinforcement Mat |  | SqYd |
| 734E0140 | Erosion Bale |  | Each |
| 734E0150 | 6” Diameter Erosion Control Wattle |  | Ft |
| 734E0151 | 9” Diameter Erosion Control Wattle |  | Ft |
| 734E0154 | 12” Diameter Erosion Control Wattle |  | Ft |
| 734E0160 | 20” Diameter Erosion Control Wattle |  | Ft |
| 734E0165 | Remove and Reset Erosion Control Wattle |  | Ft |
| 734E0170 | Temporary Sediment Barrier |  | Ft |
| 734E0180 | Sediment Filter Bag |  | Ft |
| 734E0325 | Surface Roughening |  | Acre |
| 734E0400 | Rock Check Dam |  | CuYd |
| 734E0425 | Triangular Silt Barrier |  | Ft |
| 734E0450 | Temporary Water Barrier |  | Ft |
| 734E0510 | Shaping for Erosion Control Blanket |  | Ft |
| 734E0600 | Hydraulic Straw Mulch |  | Lb |
| 734E0602 | Low Flow Silt Fence |  | Ft |
| 734E0604 | High Flow Silt Fence |  | Ft |
| 734E0610 | Mucking Silt Fence |  | CuYd |
| 734E0620 | Repair Silt Fence |  | Ft |
| 734E0630 | Floating Silt Curtain |  | Ft |
| 734E0640 | Silt Trap |  | CuYd |
| 734E0680 | Flocculent Housing Unit |  | Each |
| 734E0683 | 500K Gallon Treatment Flocculent Bag |  | Each |
| 734E0845 | Sediment Control at Inlet with Frame and Grate |  | Each |
| 734E0847 | Sediment Control at Type S Reinforced Concrete Drop Inlet |  | Ft |
| 734E0862 | 12” Temporary Slope Drain |  | Ft |
| 734E0868 | 18” Temporary Slope Drain |  | Ft |
| 734E0871 | 21” Temporary Slope Drain |  | Ft |
| 734E0874 | 24” Temporary Slope Drain |  | Ft |
| 734E0880 | 30” Temporary Slope Drain |  | Ft |
| 734E0960 | Channel Liner |  | SqFt |
| 734E0972 | Transition Mat |  | SqYd |
| 734E0980 | Channel Liner |  | Ft |
| 734E4100 | Sediment Basin Skimmer |  | Each |
| 734E5000 | Dewatering |  | Hour |
| 734E5010 | Sweeping |  | Hour |
| 900E1320 | Construction Entrance |  | Each |
| 900E5147 | Articulated Concrete Mattress |  | SqYd |

# PLACING TOPSOIL

The thickness will be approximately 4 inches within the right-of-way and 6 inches on temporary easements. The topsoil thickness for the option borrow pits will be as stated on the option borrow pit sheets.

The estimated amount of topsoil to be placed is as follows:

|  |  |  |
| --- | --- | --- |
|  |  | Topsoil |
| Station to | Station | (CuYd) |
| xx+xx | xx+xx | xx |
| xx+xx | xxx+xx | xx |
|  | Subtotal: | 0 |
|  |  |  |
|  | Option Borrow Pit No. 1 | xx |
|  | Option Borrow Pit No. 2 | xx |
|  | Subtotal: | 0 |
|  |  |  |
|  | Total: | 0 |

# CONTRACTOR FURNISHED TOPSOIL

It is anticipated that a larger volume of topsoil will be needed for the new grade than can be salvaged from the existing grade. The Contractor will be

required to furnish and place 4 inches of topsoil on roadway inslopes and areas as determined by the Engineer during construction.

# Use the following paragraph only when Turf Grass Seed Mixtures will be used.

Contractor furnished topsoil will be free from clay lumps, stones, coarse gravel, or similar objects larger than 3/4 inch in diameter. Brush, stumps, roots, wood, objectionable weeds, liter, or any other material which may be harmful to plant growth will not be allowed. Organic material will be decomposed.

Use the following paragraph when all other Grass Seed Mixtures will be used.

Contractor furnished topsoil will be free from stones, coarse gravel, or similar objects larger than 3/4 inch in diameter. Brush, stumps, roots, wood, objectionable weeds, liter, or any other material which may be harmful to plant growth will not be allowed. Organic material will be decomposed.

All costs to furnish and place the Contractor furnished topsoil will be incidental to the contract unit price per cubic yard for “Contractor Furnished Topsoil”.

The following note will be used for resurfacing projects.

# REMOVE AND REPLACE TOPSOIL

Use the following paragraph for Categorical Exclusion 1 (CE1) projects. To determine if a project is classified as CE1, go into C2C, Find a Project and type in PCN, View Project, and click Misc tab and read the Environmental Information. A CE1 classification may also have a (c) or (d) after CE1.

Prior to beginning resurfacing operations, guardrail installation, and edge drain installation, a 4” depth of topsoil will be removed or bladed down the respective inslope and left in a windrow a maximum of 10’ from the edge of the existing shoulder. Following completion of construction, topsoil will be spread evenly over the disturbed areas.

Use the following paragraph for two-lane resurfacing projects.

Prior to beginning resurfacing operations, a 4” depth of topsoil will be bladed down the respective inslope and left in a windrow 16’+/- from the subgrade shoulder. Following completion of resurfacing operations, topsoil will be bladed back up the inslope to the point indicated on the typical section.

OR

Use the following paragraph for four-lane resurfacing projects.

Prior to beginning resurfacing operations, a 4” depth of topsoil will be bladed down the respective inslope and left in a windrow 11’+/- from the subgrade shoulder on the median side and 16’+/- from the subgrade shoulder on the outside shoulder. Following completion of resurfacing operations, topsoil will be bladed back up the inslope to the point indicated on the typical section.

The following note may need to be included, depending on the project.

Topsoil will also be salvaged and stockpiled prior to constructing the following: ramp gore areas, culvert extension/resets, x median crossover(s), x ramp detour(s), x on ramp acceleration lane extension(s), and (x) guardrail embankment area(s). Limits of this work, depth of salvage, and stockpile location will be directed by the Engineer. Following completion of construction, topsoil will be spread evenly over the disturbed areas.

The estimated amount of topsoil to be removed and replaced is xx CuYd.

All costs associated with removing and replacing the topsoil along areas to be resurfaced will be incidental to the contract lump sum price for “Remove and Replace Topsoil”.

# TOPSOIL AMENDMENT

This note and a corresponding bid item should be used as an alternate to Contractor Furnished Topsoil on steep slopes and grades where placing Contractor Furnished Topsoil may be difficult. This product is hydraulically applied.

Topsoil amendment will be applied at the rate of 4,000 pounds per acre.

Topsoil amendment will be done at the areas noted in the Table of Topsoil Amendment.

All costs for furnishing and applying the topsoil amendment including hauling, materials, equipment, labor, and incidentals necessary will be paid for at the contract unit price per pound for “Topsoil Amendment”.

The topsoil amendment will be from the list below or an approved equal:

|  |  |
| --- | --- |
| Product | Manufacturer |
| Biotic Earth BFM, FRM & HGM,Biotic Earth Black HGM,or Biotic Earth HGM | VerdyolRiverton, Manitoba CanadaPhone: 1-866-280-7327[www.bioticearth.com](http://www.bioticearth.com/) |
| ProGanics Biotic Soil Media | Profile Products LLCBuffalo Grove, ILPhone: 1-800-508-8681[www.profileproducts.com](http://www.profileproducts.com/) |
| HydroStraw All in 1 | HydroStraw, LLCManteno, ILPhone: 1-800-545-1755[www.hydrostraw.com](http://www.hydrostraw.com/) |
|  |  |

# TABLE OF TOPSOIL AMENDMENT

|  |  |  |  |
| --- | --- | --- | --- |
| Station |  | Location | Quantity(Lb) |
| xx+xx to xx+xx L/R |  | Inslope/Backslope/Ditch | xx |
| xx+xx to xx+xx L/R |  | X | xx |
|  |  | Additional Quantity: | xx |
|  |  |  |  |
|  |  | Total:  | 0 |

# MYCORRHIZAL INOCULUM

Add the following note to every project that includes permanent seeding or sodding.

Mycorrhizal inoculum will consist of mycorrhizal fungi spores and mycorrhizal fungi-infected root fragments in a solid carrier. The carrier may include organic materials, calcinated clay, or other materials consistent with application and good plant growth. The supplier will provide certification of the fungal species claimed and the live propagule count. The inoculum will include a minimum 25% the fungal species *Rhizophagus intraradices*. The remaining 75% may include other endomycorrhizal fungal species.

Add the following paragraph when seeding with Type A, B, C, E, F, G, or other native grass seed mixture.

All seed will be inoculated by the seed supplier with a minimum of 100,000 live propagules of mycorrhizal fungi per acre. All costs of inoculating the seed will be incidental to the contract unit price per pound for the corresponding permanent seed mixture.

Add the following paragraph when seeding with Type D Permanent Seed Mixture or other urban turf seed mixture.

All seed will be inoculated by the seed supplier with a minimum of 20,000 live propagules of mycorrhizal fungi per 1,000 square feet. All costs of inoculating the seed will be incidental to the contract unit price per pound for the corresponding permanent seed mixture.

Add the following paragraph to projects that include sodding.

Prior to placing sod, apply a minimum of 25,000 live propagules of inoculum per 1,000 square feet on bare soil. All costs of inoculating for the sod will be incidental to the contract unit price per square yard for “Sodding”.

The mycorrhizal inoculum will be as shown below or an approved equal:

|  |  |
| --- | --- |
| Product | Manufacturer |
| MycoApply | Mycorrhizal Applications, Inc.Grants Pass, ORPhone: 1-866-476-7800[www.mycorrhizae.com](http://www.mycorrhizae.com/) |
| AM 120 Multi Species Blend | Reforestation Technologies Int.Gilroy, CAPhone: 1-800-784-4769[www.reforest.com](https://www.reforest.com/) |
| LALRISE Prime and Max WP | Lallemand Specialties Inc.Milwaukee, WIPhone: 1-844-590-7781[www.lallemandplantcare.com](https://www.lallemandplantcare.com/en/usa/) |
|  |  |

# FERTILIZING

Using all-natural slow release fertilizer:

Use on grading projects, erosion and slide repairs, and other projects where 1 or more acres are disturbed. The biggest gains in vegetative establishment from the use of this fertilizer will be in western South Dakota. Use this fertilizer on urban grading projects seeded with Type D Permanent Seed Mixture. Consider using this fertilizer in eastern South Dakota on projects with steep grades and on projects in areas that have a history of erosion problems. Applying any type of fertilizer on ADA projects, guardrail improvement projects, and other projects where multiple small areas are disturbed is not cost-effective and should be avoided.

The following plan note is for an all-natural slow release fertilizer. This fertilizer may be used on native grass seed mixes (Types A-C, E-G) and is the preferred type of fertilizer for all other grass seed mixtures and sod because it doesn’t pollute water, burn seedlings, or cause weed proliferation due to its slow-release nature. Application rates vary and it is recommended that the western half of South Dakota receive 1,500 pounds per acre (or 2,000 pounds per acre on sites with steep slopes and grades) and that agricultural-grade soils typical to eastern portions of South Dakota receive 1,000 pounds per acre (or 1,500 pounds per acre on sites with steep slopes and grades).

The Contractor will apply an all-natural slow release fertilizer prior to seeding or placing sod. The all-natural fertilizer will have a minimum guaranteed analysis of 4-4-4 and be USDA Certified BioBased. It should provide a minimum of 4% (N) nitrogen with a minimum water insoluble nitrogen (WIN) fraction of 2.07%, a minimum of 4% (P2O5) available phosphate, a minimum of 4% (K2O) soluble potash, and a maximum carbon to nitrogen ratio (C:N ratio) of 5:1. The all-natural fertilizer will be free of weed-seed and pathogens accomplished through thermophilic composting, and not mechanical or chemical sterilization, to assure presence of beneficial soil microbiology. The fertilizer will have a near neutral pH, a low salt index, a low biological oxygen demand, contain organic humic and fulvic acids, and have high aerobic organism counts. The fertilizer will also be stable, free of bad odors, and be unattractive as a food source for animals. It should also be in a granular form that is easily spread.

The fertilizer will be applied at a rate of 1,500 pounds per acre in accordance with the manufacturer’s recommended method of application.

The all-natural slow release fertilizer will be as shown below or an approved equal:

|  |  |
| --- | --- |
| Product | Manufacturer |
| Sustane | Sustane Corporate HeadquartersCannon Falls, MinnesotaPhone: 1-800-352-9245[www.sustane.com](http://www.sustane.com/) |
| Perfect Blend | Perfect Blend, LLCBellevue, WAPhone: 1-866-456-8890[www.perfect-blend.com](http://www.perfect-blend.com/) |
| Nature Safe | Nature Safe FertilizersIrving, TX Phone: 1-605-759-5622[www.naturesafe.com](http://www.naturesafe.com) |

OR

Use the following at urban areas on Type D Permanent Seed Mixture.

The application rate is 34 pounds per 1,000 square feet.

OR

Use the following at areas to be sodded.

The application rate is 9 pounds per 1,000 square feet.

Synthetic fertilizer notes are listed below. Native grasses do not respond well to these fertilizers. This type of fertilizer tends to encourage the growth of weeds that compete with grass. Use the following note when a seed mix with native grasses is provided in the plans and the all-natural slow release fertilizer is not used.

Application of fertilizer will not be required on this project.

OR

The designer may choose to use the synthetic fertilizer notes listed below if they are using Type D Permanent Seed Mixture or Sodding and have chosen not to use the all-natural slow release fertilizer. When using the notes below, the all-natural slow release fertilizer notes must be deleted.

The following synthetic fertilizer plan note may be used when Permanent Seed Mixture D is used.

A commercial fertilizer with a minimum guaranteed analysis of 13-13-13,

18-46-0, 11-52-0, or an approved alternate fertilizer sold for use as a lawn starter fertilizer will be applied to all areas designated for permanent seeding. The application rate of fertilizer will be 100 pounds per acre.

The following sentence will replace the last sentence in the plan note above when there is less than one acre of seeding on a project.

The application rate of fertilizer will be 3 pounds per 1,000 square feet.

OR

Sod will do well if it is fertilized with a starter fertilizer such as 11-52-0. The phosphorus in this fertilizer will help establish roots. Fertilizer should be incorporated so it doesn’t burn the roots. The following synthetic fertilizer plan note may be used when sod is to be placed.

A commercial fertilizer with a minimum guaranteed analysis of 11-52-0 or an approved alternate fertilizer will be applied to areas designated for sodding

immediately before the sod is placed and incorporated into the soil to a depth of 2”. The application rate of fertilizer will be 3 pounds per 1,000 square feet.

# PERMANENT SEEDING

The areas to be seeded consist of all newly graded areas within the project limits except for the top of roadways, temporary easements under cultivation,

and areas designated to be sod.

OR

The areas to be seeded consist of all newly graded areas within the project limits except for the top of roadways and temporary easements under cultivation.

Lawn and turf seed, such as the Type D Permanent Seed Mixture, will be tested within 12 months prior to planting, exclusive of the calendar month in which the test was completed.

The following seed mixtures are the standard seed mixtures used by SDDOT.

The Type F and Type G Permanent Seed Mixtures are recommended over the Type A and Type B Permanent Seed Mixtures as the Type F and Type G establish vegetative cover faster with the use of oats and wheat.

Use the bid item that relates to the seed mixture provided in the plans. Delete the following seed mixtures that are not needed on the project.

Canada wildrye, oats, spring wheat, and winter wheat have been included in some of the seed mixtures as a companion crop (sometimes called “nurse crop”) to provide quick cover and seedling protection.

The grass varieties in Type A, B, C, E, F, and G Permanent Seed Mixtures are varieties recommended for South Dakota by the Natural Resources Conservation Service (NRCS) in their Range Technical Note 4, Perennial Vegetation Establishment Guide, October, 2013.

The following seed mixture is used typically west of the Missouri River.

Type A Permanent Seed Mixture will consist of the following:

|  |  |  |
| --- | --- | --- |
| Grass Species | Variety | Pure Live Seed (PLS) (Pounds/Acre) |
| Western Wheatgrass | Arriba, Flintlock, Rodan, Rosana, Walsh | 7 |
| Green Needlegrass | Lodorm, AC Mallard Ecovar | 4 |
| Sideoats Grama | Butte, Pierre | 3 |
| Blue Grama | Bad River | 2 |
| Canada Wildrye | Mandan | 2 |
|  | Total: | 18 |

The following seed mixture is used typically east of the Missouri River.

Type B Permanent Seed Mixture will consist of the following:

|  |  |  |
| --- | --- | --- |
| Grass Species | Variety | Pure Live Seed (PLS) (Pounds/Acre) |
| Western Wheatgrass | Arriba, Flintlock, Rodan, Rosana, Walsh | 7 |
| Switchgrass | Dacotah, Forestburg,Nebraska 28, Pathfinder, Summer, Sunburst, Trailblazer | 3 |
| Indiangrass | Holt, Tomahawk, Chief,Nebraska 54 | 3 |
| Big Bluestem | Bison, Bonilla, Champ, Sunnyview, Rountree, Bonanza | 3 |
| Canada Wildrye | Mandan | 2 |
|  | Total: | 18 |

The following seed mixture is used for projects with less than 5 acres of disturbed ground.

Type C Permanent Seed Mixture will consist of the following:

|  |  |  |
| --- | --- | --- |
| Grass Species | Variety | Pure Live Seed (PLS) (Pounds/Acre) |
| Western Wheatgrass | Arriba, Flintlock, Rodan, Rosana, Walsh | 16 |
| Canada Wildrye | Mandan | 2 |
|  | Total: | 18 |

The following turfgrass seed mixture was chosen for seeding boulevards on urban projects. There are many species and varieties of turfgrass to choose from depending on the location of the project and site conditions. In many cases a Special Seed Mixture may work better than the Type D Permanent Seed Mixture. A good resource for putting together a turfgrass seed mixture is the Extension Turf/Lawn Specialist at South Dakota State University.

Type D Permanent Seed Mixture will consist of the following:

|  |  |  |
| --- | --- | --- |
| Grass Species | Variety | Pure Live Seed (PLS) (Pounds/1000 SqFt) |
| Kentucky Bluegrass | Avalanche, Appalachian, Wildhorse, Blue Bonnet, Action | 1.4 |
| Perennial Ryegrass | Turf Type Varieties | 1.4 |
| Creeping Red Fescue | Epic, Boreal, Chantilly | 1.4 |
| Chewings Fescue | Ambrose, K2, Zodiac, Shadow III | 1.4 |
| Alkali Grass | Fults, Fults II, Quill, Salty | 1.4 |
|  | Total: | 7 |

The Type E Permanent Seed Mixture is an example of a wildflower seed mixture that has been used in the Black Hills area where there is United States Forest Service, National Park Service, or SD Dept. of Game, Fish, and Parks lands adjacent to SDDOT highways. Wildflowers could be planted where they would be visible from the highway and on areas that would not be mowed or sprayed with herbicides. Wildflowers tend to grow naturally on areas where conditions are favorable.

Examples of other wildflowers native to the Black Hills that could be used in a wildflower seed mixture are:

Upright Prairie Coneflower (*Ratibida columnifera*)

Wild Bergamot (*Monarda fistulosa*)

Blanket Flower (*Gaillardia aristata*)

Purple Prairie Clover (*Dalea purpurea*)

White Prairie Clover (*Dalea candida*)

Type E Permanent Seed Mixture will consist of the following:

|  |  |  |
| --- | --- | --- |
| Grass Species | Variety | Pure Live Seed (PLS) (Pounds/Acre) |
| Western Wheatgrass | Arriba, Flintlock, Rodan, Rosana, Walsh | 7 |
| Green Needlegrass | Lodorm, AC Mallard Ecovar | 4 |
| Sideoats Grama | Butte, Pierre | 3 |
| Blue Grama | Bad River | 2 |
| Canada Wildrye | Mandan | 2 |
| Wildflowers |  |
| Dotted Gayfeather (*Liatris punctata*) | 0.5 |
| Black-eyed Susan (*Rudbeckia hirta*) | 0.5 |
| Blue Flax (*Linum lewisii*) | 0.5 |
| Pale Purple Coneflower (*Echinacea angustifolia*) | 0.5 |
|  | Total: | 20 |

The following seed mixture can be used as a substitute for Type A Permanent Seed Mixture on projects west of the Missouri River where there are steep grades, long backslopes, or erosive soils. Ten pounds of oats, spring wheat, or winter wheat are substituted for two pounds of Canada wildrye for quick cover. Canada wildrye is sufficient quick cover for typical projects. Keep in mind that including the oats, spring wheat, or winter wheat will provide competition for the permanent grasses.

Type F Permanent Seed Mixture will consist of the following:

|  |  |  |
| --- | --- | --- |
| Grass Species | Variety | Pure Live Seed (PLS) (Pounds/Acre) |
| Western Wheatgrass | Arriba, Flintlock, Rodan, Rosana, Walsh | 7 |
| Green Needlegrass | Lodorm, AC Mallard Ecovar | 4 |
| Sideoats Grama | Butte, Pierre | 3 |
| Blue Grama | Bad River | 2 |
| Oats or Spring Wheat: April through May;Winter Wheat: August through November |  | 10 |
|  | Total: | 26 |

The following seed mixture can be used as a substitute for Type B Permanent Seed Mixture on projects east of the Missouri River where there are steep grades, long backslopes, or erosive soils. Ten pounds of oats, spring wheat, or winter wheat are substituted for two pounds of Canada wildrye for quick cover. Canada wildrye is sufficient quick cover for typical projects. Keep in mind that including the oats, spring wheat, or winter wheat will provide competition for the permanent grasses.

Type G Permanent Seed Mixture will consist of the following:

|  |  |  |
| --- | --- | --- |
| Grass Species | Variety | Pure Live Seed (PLS) (Pounds/Acre) |
| Western Wheatgrass | Arriba, Flintlock, Rodan, Rosana, Walsh | 7 |
| Switchgrass | Dacotah, Forestburg, Nebraska 28, Pathfinder, Summer, Sunburst, Trailblazer | 3 |
| Indiangrass | Holt, Tomahawk, Chief, Nebraska 54 | 3 |
| Big Bluestem | Bison, Bonilla, Champ, Sunnyview, Rountree, Bonanza | 3 |
| Oats or Spring Wheat: April through May;Winter Wheat: August through November |  | 10 |
|  | Total: | 26 |

Permanent Seed Mixtures Type A, B, C, and D were chosen for permanent seeding typical projects. Some projects will require a special permanent seed mixture because of the type of project, location of the project, type of soil, steepness of slopes, special request from adjacent landowners, etc. A good resource for putting together a special permanent seed mixture is the NRCS (Natural Resources Conservation Service).

The following table format should be used for special permanent seed mixtures. If there is more than 1 special permanent seed mixture, another seed mixture table should be added and consecutively numbered.

Special Permanent Seed Mixture 1 will consist of the following:

|  |  |  |
| --- | --- | --- |
| Grass Species | Variety | Pure Live Seed (PLS) (Pounds/Acre) |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  | Total: |  |

Special Permanent Seed Mixture 2 will consist of the following:

|  |  |  |
| --- | --- | --- |
| Grass Species | Variety | Pure Live Seed (PLS) (Pounds/Acre) |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  | Total: |  |

# SODDING

Sod will be placed behind curb and gutter sections in residential areas at locations specified in the plans and at locations determined by the Engineer during construction.

An estimated 18 Gallons of water per square yard of sod was used to compute the quantity for the bid item “Water for Vegetation”. All costs involved for watering the sod will be incidental to the contract unit price per MGal for “Water for Vegetation”.

# WATER FOR VEGETATION

Use this note when there is seeding on an urban or suburban project as necessary and as determined by the Landscape Architect. Water for vegetation may also be used to help establish vegetation in non-irrigated boulevards and medians near storm sewer inlets.

Water for vegetation consists of applying water to seeded areas to enhance germination and/or root growth. When watering, use the following guidelines:

Immediately after seeding:

* Keep the topsoil moist but not excessively wet until the seed has germinated.
* Water a minimum of 3 days a week for 2 weeks preferably watering 2 or 3 times a day in small quantities.
* Use fine spray and low pressure to avoid topsoil wash and to prevent uncovering buried seeds.

After emergence:

* Topsoil will be kept thoroughly moistened by sprinkling, as necessary, for 6 weeks. After the 6-week period, an inspection will be made to determine if grass is established enough to suspend watering. Continue watering until grass has been thoroughly established.
* Never apply water at a rate faster than the topsoil can absorb.
* Water during early morning hours or early evening hours.
* Do not water when rain is forecasted for the area.
* If rainfall occurs, suspend watering according to rainfall amount.

An estimated xx Gallons of water per square yard of seeding area was used to compute the quantity for the bid item “Water for Vegetation”.

All costs for furnishing and applying the water including hauling, materials, equipment, labor, and incidentals necessary will be paid for at the contract unit price per MGal for “Water for Vegetation”.

# COVER CROP SEEDING

Use this note when additional cover crop seeding is added to the project for a temporary erosion control measure. Use an additional 25% of the total estimated quantity for temporary erosion control.

Cover crop seeding may be used on this project as a temporary erosion control measure. The actual limits and use of cover crop seeding will be determined by the Engineer during construction.

# EROSION CONTROL

This note and the corresponding “Erosion Control” lump sum bid item should be used on small projects (usually a couple acres or less) or where there are multiple small sites to be seeded and it is difficult to measure those areas. This would include many ADA projects. Place after the paragraphs below, the PERMANENT SEEDING, DRILLS, SEED INOCULANT, and FERTILIZING notes as well as the note for the chosen method(s) of mulching such as: HYDRAULIC STRAW MULCH, FIBER REINFORCED MATRIX, SOIL STABILIZER, or MULCHING GRASS HAY/STRAW. Change each item’s heading to a bold upper and lowercase heading (Arial, size 10, color is black/automatic, NOT underlined) and remove the payment information from each of these notes. Soil stabilizer and hydraulic straw mulch is preferred over fiber mulching for urban projects by the certification personnel because it is difficult for them to certify fiber mulch under the lump sum bid item since it is on the Approved Products List.

The estimated area requiring erosion control is x square feet. All costs for the erosion control work for furnishing, placing, and maintaining erosion control including equipment, labor, seeding, fertilizing, and mulching will be incidental to the contract lump sum price for “Erosion Control”.

The limits of erosion control work will be determined by the Engineer during construction.

Place Erosion Control Items here.

# SURFACE ROUGHENING

Surface roughening will be done after topsoil placement and before permanent seeding, fertilizing, and mulching applications. Refer to Standard Plate 734.25 for details.

# TABLE OF SURFACE ROUGHENING

|  |  |  |
| --- | --- | --- |
| Station | Location | Area(Acre) |
| xx+xx to xx+xx L/R | Inslope/Backslope/Ditch | xx.x |
| xx+xx to xx+xx L/R | X | xx.x |
|  | Additional Quantity: | xx.x |
|  |  |  |
|  | Total: | xx |

# MULCHING (GRASS HAY OR STRAW)

An additional xx tons of Grass Hay or Straw Mulch has been added to the Estimate of Quantities for temporary erosion control on areas determined by the Engineer during construction.

If the Contractor uses a no-till drill, mulch may be applied prior to seeding and the mulch can then be punched into the soil by the no-till drill. If the Contractor uses this process, the no-till drill seeding will be completed immediately following the mulch application and the mulch will be punched into the soil at a 3-inch depth.

# TABLE OF MULCHING (GRASS HAY OR STRAW)

|  |  |  |
| --- | --- | --- |
| Station | Location | Quantity(Ton) |
| xx+xx to xx+xx L/R | Inslope/Backslope/Ditch | xx |
| xx+xx to xx+xx L/R | X | xx |
|  | Additional Quantity: | xx |
|  |  |  |
|  | Total Quantity for Temporary Stabilization: | xx |
|  | Total Quantity for Permanent Stabilization: | xx |

# HYDRAULIC STRAW MULCH

This note and corresponding bid item should be used as an alternative to Fiber Mulching. It may also be used as an alternate to Mulching (Grass Hay or Straw) when there is a known shortage of grass hay or straw mulch because of drought conditions (most likely to occur west river).

Use the appropriate application rate as it varies depending on degree of slope. The application rate is similar for both products. Adjust the rate in accordance with the Manufacturer’s recommendation.

Hydraulic straw mulch will be applied to the areas noted in the table. Hydraulic straw mulch will not be placed in channels. Hydraulic straw mulch will be applied after hydroseeding and before water for vegetation. Areas

designated for hydraulic straw mulch application do not require a grass hay or straw mulch application. The application rate is 3,000 pounds per acre.

All costs for furnishing and applying the hydraulic straw mulch including the manufacturer recommended soil stabilizer or tackifier, hauling, materials, equipment, labor, and incidentals necessary will be paid for at the contract unit price per pound for “Hydraulic Straw Mulch”.

An additional quantity of Hydraulic Straw Mulch has been added to the Estimate of Quantities for erosion control on areas determined by the Engineer during construction.

The hydraulic straw mulch will be from the list below or an approved equal:

|  |  |
| --- | --- |
| Product | Manufacturer |
| HydroStraw,HydroStraw Fiber Plus, HydroStraw Guar Plus,HydroStraw BFM,HydroStraw High Efficiency Cellulose Fiber Plus, HydroStraw High Efficiency Original, or HydroStraw High Efficiency Plus | HydroStraw, LLCRockford, WAPhone: 1-800-545-1755[http://www.hydrostraw.com](http://hydrostraw.com/) |
| HydroGold | VerdyolRiverton, Manitoba CanadaPhone: 1-866-280-7327[www.bioticearth.com](http://www.bioticearth.com/) |

# TABLE OF HYDRAULIC STRAW MULCH

|  |  |  |
| --- | --- | --- |
| Station | Location | Quantity(Lb) |
| xx+xx to xx+xx L/R | Inslope/Backslope/Ditch | xx.x |
| xx+xx to xx+xx L/R | X | xx.x |
|  | Additional Quantity: | xx.x |
|  |  |  |
|  | Total: | xx |

# FIBER MULCHING

Fiber mulch will be applied in a separate operation following permanent seeding.

The fiber mulch products in the approved products list contain tackifier premixed at a rate of 3% by weight. The designer may choose to add additional tackifier to the fiber mulch mix to increase performance and erosion control by increasing the bonding of the wood fibers to each other and to the soil.

An additional 2% by weight of tackifier will be added to the fiber mulch product selected from the approved product list. If the product selected has guar gum tackifier included, then the additional 2% of tackifier will be guar gum. If the product selected has synthetic tackifier included, then the additional 2% of tackifier will be synthetic.

The designer may choose to vary the application rate of fiber mulch typically from 2000 pounds per acre to 3000 pounds per acre based on slope and soil conditions. Use the following paragraph only if the rate is other than 2000 pounds per acre.

Fiber mulch will be applied at the rate of 3,000 pounds per acre.

The Contractor will allow the fiber mulch to cure a minimum of 18 hours prior to watering or any storm event to ensure proper cohesion between the soil and fiber particles.

All costs for the additional tackifier added to the fiber mulch including labor, equipment, and materials will be incidental to the contract unit price per pound or ton for “Fiber Mulching”.

The fiber mulch provided will be from the approved product list. The approved product list for fiber mulch may be viewed at the following internet site:

<http://apps.sd.gov/HC60ApprovedProducts/main.aspx>

# TABLE OF FIBER MULCHING

Use the appropriate unit for your project in the table below and corresponding bid item. Bid items are available with units of either “Ton” or “Lb”.

|  |  |  |
| --- | --- | --- |
| Station | Location | Quantity(Ton or Lb) |
| xx+xx to xx+xx L/R | Inslope/Backslope/Ditch | xx.x |
| xx+xx to xx+xx L/R | X | xx.x |
|  | Additional Quantity: | xx.x |
|  |  |  |
|  | Total: | xx |

# BONDED FIBER MATRIX

Bonded fiber matrix will be hydraulically applied to the areas listed in the table and any other areas deemed necessary by the Engineer.

The Contractor will use a bonded fiber matrix from the approved products list, or an approved equal. The approved product list for bonded fiber matrix may be viewed at the following internet site:

<http://apps.sd.gov/HC60ApprovedProducts/main.aspx>

# TABLE OF BONDED FIBER MATRIX

|  |  |  |
| --- | --- | --- |
| Station | Location | Quantity(Ton or Lb) |
| xx+xx to xx+xx L/R | Inslope/Backslope/Ditch | xx.x |
| xx+xx to xx+xx L/R | X | xx.x |
|  | Additional Quantity: | xx.x |
|  |  |  |
|  | Total: | xx |

# FIBER REINFORCED MATRIX

Use the appropriate application rate as it varies depending on degree of slope. The application rate is similar for both products. Adjust the rate in accordance with the Manufacturer’s recommendation.

Fiber reinforced matrix will be applied in a separate operation following permanent seeding at locations noted in the table and at locations determined by the Engineer during construction. The application rate is 3,000 pounds per acre.

An additional quantity of Fiber Reinforced Matrix has been added to the Estimate of Quantities for erosion control on areas determined by the Engineer during construction.

The contractor will use a Fiber Reinforced Matrix from the approved products list, or an approved equal. The approved product list for Fiber Reinforced Matrix may be viewed at the following internet site.

<http://apps.sd.gov/HC60ApprovedProducts/main.aspx>

# TABLE OF FIBER REINFORCED MATRIX

|  |  |  |  |
| --- | --- | --- | --- |
| Station | Location | Area(Acre) | Quantity(Lb or Ton) |
| xx+xx to xx+xx L/R | Inslope/Backslope | X | xx |
| xx+xx to xx+xx L/R | X | X | xx |
|  | Additional Quantity: | xx |
|  |  |  |  |
|  |  | Total: | xx |

###### SOIL STABILIZER

Use the appropriate unit for your project in the table and corresponding bid item. Bid items are available with units of either “Acre” or “SqYd”.

If soil stabilizer limits are shown in the plans use the following paragraph and include the Table of Soil Stabilizer.

Soil stabilizer will be applied on the areas listed in the table and any other areas deemed necessary by the Engineer. The soil stabilizer limits will be adjusted as necessary by the Engineer during construction.

OR

If soil stabilizer limits are NOT shown in the plans use the following paragraph and do not include the Table of Soil Stabilizer.

An estimated quantity of xx acres of soil stabilizer has been included in the Estimate of Quantities. The soil stabilizer will be applied on permanently seeded areas and areas deemed necessary by the Engineer.

The Contractor will apply soil stabilizer in accordance with the manufacturer’s application instructions and at the rate specified in the list of approved soil stabilizers.

Wood fiber mulch that contains a green dye will be mixed with the soil stabilizer to be used as a tracer when the soil stabilizer is applied

hydraulically. Wood fiber mulch will be added at a rate of 300 pounds per acre to all of the approved soil stabilizers listed in the table except for the Pam-12 Plus product. The wood fiber mulch will be a 100% wood fiber product and does not need to contain a tackifier.

All costs for furnishing and applying the soil stabilizer including wood fiber mulch, hauling, materials, equipment, labor, and incidentals necessary will be paid for at the contract unit price per Acre for “Soil Stabilizer”.

The soil stabilizer will be from the list below or an approved equal:

|  |  |
| --- | --- |
| Product | Manufacturer |
| StarTak 600Applied at a rate of 150 Lb/Acre | Chemstar Products CompanyMinneapolis, MN Phone: 1-800-328-5037[www.chemstar.com](http://www.chemstar.com) |
| Pam-12 PlusApplied at a rate of:SlopeNone to 4:1 1000 Lb/Acre4:1 to 3:1 1000 to 2000 Lb/Acre3:1 to 2:1 2000 to 3000 Lb/Acre | ENCAP, LLCGreen Bay, WIPhone: 1-920-406-5050<https://encappro.com/> |
| M-BinderApplied at a rate of 150 Lb/Acre | Ecology ControlsCarpinteria, CAPhone: 1-805-684-0436[www.ssseeds.com](http://www.ssseeds.com/) |
| FiberRXApplied at a rate of:SlopeNone to 4:1 50 Lb/Acre3:1 60 Lb/Acre2:1 70 Lb/Acre1:1 or steeper 80 Lb/Acre | HydroStraw, LLCManteno, ILPhone: 1-800-545-1755[http://www.hydrostraw.com](http://hydrostraw.com/) |
| EnviropamApplied at a rate of 9 Lb/Acre | Innovative Turf Solutions, LLCLebanon, OHPhone: 1-513-317-8311[www.innovativeturfsolutions.com](http://www.innovativeturfsolutions.com/index.html) |
| HydraTack, Tack Plus,Tack-P, or Tack-P PlusApplied at a rate of 30 Lb/Acre | Innovative Turf Solutions, LLCLebanon, OHPhone: 1-513-317-8311[www.innovativeturfsolutions.com](http://www.innovativeturfsolutions.com/index.html) |
| Fl-1045 Hydrobond orFl-1046 HydrobondApplied at a rate of 15 Lb/Acre | JRM Chemical, Inc.Cleveland, OHPhone: 1-216-475-8488[www.soilmoist.com](http://www.soilmoist.com/) |
| HF5000 TackApplied at a rate of 60 Lb/Acre | Rantec CorporationRanchester, WYPhone: 1-307-655-9565[www.ranteccorp.com](http://www.ranteccorp.com) |
| R-TackApplied at a rate of 150 Lb/Acre | Rantec CorporationRanchester, WYPhone: 1-307-655-9565[www.ranteccorp.com](http://www.ranteccorp.com) |
|  |  |
| SpecTacApplied at a rate of:SlopeNone 30 to 80 Lb/Acre4:1 50 to 100 Lb/Acre3:1 80 to 120 Lb/Acre2:1 100 to 170 Lb/Acre | Rantec CorporationRanchester, WYPhone: 1-307-655-9565[www.ranteccorp.com](http://www.ranteccorp.com) |
| Super TackApplied at a rate of 60 Lb/Acre | Rantec CorporationRanchester, WYPhone: 1-307-655-9565[www.ranteccorp.com](http://www.ranteccorp.com) |
| EarthGuard SFMApplied at a rate of 60 LB/Acre(approx. 6 Gallons/Acre) | Terra Novo Inc.Bakersfield, CAPhone: 1-888-843-1029[www.terranovo.com](http://www.terranovo.com/) |
| EDGEHydraulically applied at a rate of:Slope≤4:1 1,500 Lb/Acre3:1 1,800 Lb/Acre2:1 2,000 Lb/Acre≥1:1 3,000 Lb/AcreDry applied at a rate of:Slope≤4:1 3,000 Lb/Acre3:1 3,500 Lb/Acre≥2:1 4,500 Lb/Acre | LSC Environmental Products, LLCApalachin, NYPhone: 1-800-800-7671[www.lscenv.com](https://www.lscenv.com/) |

# TABLE OF SOIL STABILIZER

|  |  |  |
| --- | --- | --- |
| Station | Location | Quantity(Acre) |
| xx+xx to xx+xx L/R | Inslope/Backslope/Ditch | xx.x |
| xx+xx to xx+xx L/R | X | xx.x |
|  | Additional Quantity: | xx.x |
|  |  |  |
|  | Total: | xx |

# EROSION BALES

Erosion bales for restraining the flow of water and sediment will be placed at the locations noted in the table and at locations determined by the Engineer during construction. Refer to Standard Plate 734.02 for details.

A quantity of xx Erosion Bales has been included in the Estimate of Quantities for temporary sediment control in highway ditch channels and as an alternative to low flow or high flow silt fence at wetland areas adjacent to the highway.

# TABLE OF EROSION BALES

|  |  |  |
| --- | --- | --- |
| Station | Location | Quantity(Each) |
| xx+xx to xx+xx L/R | X | xx |
| xx+xx to xx+xx L/R | X | xx |
|  |  |  |
|  | Total: | xx |

###### TEMPORARY SEDIMENT BARRIER

The Temporary Sediment Barrier provided will be from the approved product list. The approved product list for low flow silt fence may be viewed at the following internet site:

<http://apps.sd.gov/HC60ApprovedProducts/main.aspx>

Temporary sediment barriers will be installed at locations noted in the table and at locations determined by the Engineer during construction.

Installation of the temporary sediment barrier will be in accordance with the manufacturer’s installation instructions. It is the Contractor’s responsibility to select product(s) best suited as perimeter control, slope interrupters, and ditch checks based on site conditions.

All costs for furnishing, installing, and maintaining the temporary sediment barrier including hauling, materials, equipment, labor, and incidentals

necessary will be paid for at the contract unit price per foot for “Temporary Sediment Barrier”.

An additional quantity of Temporary Sediment Barrier has been added to the Estimate of Quantities for other areas requiring sediment control.

# TABLE OF TEMPORARY SEDIMENT BARRIER

|  |  |  |
| --- | --- | --- |
| Station | Location | Quantity(Ft) |
| xx+xx to xx+xx L/R | X | xx |
| xx+xx to xx+xx L/R | X | xx |
|  | Additional Quantity: | xx |
|  |  |  |
|  | Total: | xx |

###### EROSION CONTROL WATTLE

The estimated quantity of “Remove Sediment” at erosion control wattle installations will be computed by taking 0.25’ width X 0.25’ height X the total length of all erosion control wattles and converted to cubic yards. A short version is “Remove Sediment” CuYd = 0.0023 X the total length of all erosion control wattles.

Erosion control wattles for restraining the flow of runoff and sediment will be installed at locations noted in the table and at locations determined by the Engineer during construction. Refer to Standard Plate 734.06 for details.

The Contractor will provide certification that the erosion control wattles do not contain noxious weed seeds.

The following paragraph will be used on projects when the designer decides that erosion control wattles can remain on the project to decompose.

Erosion control wattles will remain on the project to decompose.

The following paragraph will be used on projects when the designer decides that erosion control wattles should be removed from the project after vegetation has been established or removed when determined by the Engineer during construction. The bid item “Remove Erosion Control Wattle” needs to be included in the Estimate of Quantities.

Erosion control wattles will remain on the project until vegetation has been established and then they will be removed in accordance with the Engineer.

The following paragraph will be used on projects when the designer decides that some of the erosion control wattles should be removed from the project after vegetation has been established and other erosion control wattles are to remain on the project to decompose.

The bid item “Remove Erosion Control Wattle” needs to be included in the Estimate of Quantities. The estimated quantity of “Remove Erosion Control Wattle” will be computed by taking 25% of the total length of erosion control wattles.

An estimated quantity of erosion control wattles will remain on the project until vegetation has been established. It is estimated that some of the erosion control wattles will remain on the project to decompose.

An additional quantity of 12” Diameter Erosion Control Wattles has been added to the Estimate of Quantities for temporary erosion and sediment control in highway ditch channels and as an alternative to low flow or high flow silt fence at wetland areas adjacent to the highway.

The erosion control wattle provided will be from the approved product list. The approved product list for erosion control wattle may be viewed at the following internet site:

<http://apps.sd.gov/HC60ApprovedProducts/main.aspx>

# TABLE OF EROSION CONTROL WATTLE

|  |  |  |  |
| --- | --- | --- | --- |
| Station | Location | Diameter(Inch) | Quantity(Ft) |
| xx+xx to xx+xx L/R | X | X | xx |
| xx+xx to xx+xx L/R | X | X | xx |
|  | Additional Quantity: | X | xx |
|  |  |  |  |
|  |  | Total: | xx |

###### REMOVE AND RESET EROSION CONTROL WATTLE

The estimated quantity of “Remove and Reset Erosion Control Wattle” will be computed by taking 25% of the total length of all erosion control wattles.

# LOW FLOW SILT FENCE

The low flow silt fence fabric provided will be from the approved product list. The approved product list for low flow silt fence may be viewed at the following internet site:

<http://apps.sd.gov/HC60ApprovedProducts/main.aspx>

Low flow silt fence will be placed at the locations noted in the table and at locations that will minimize siltation of adjacent streams, lakes, dams, or drainage areas as determined by the Engineer during construction. Refer to Standard Plate 734.04 for details.

An additional quantity of Low Flow Silt Fence has been added to the Estimate of Quantities for temporary sediment control.

# TABLE OF LOW FLOW SILT FENCE

|  |  |  |
| --- | --- | --- |
| Station | Location | Quantity(Ft) |
| xx+xx to xx+xx L/R | X | xx |
| xx+xx to xx+xx L/R | X | xx |
|  | Additional Quantity: | xx |
|  |  |  |
|  | Total:  | xx |

# HIGH FLOW SILT FENCE

The high flow silt fence fabric provided will be from the approved product list. The approved product list for high flow silt fence may be viewed at the following internet site:

<http://apps.sd.gov/HC60ApprovedProducts/main.aspx>

High flow silt fence will be placed at the locations noted in the table and at locations that will minimize siltation of adjacent streams, lakes, dams, or drainage areas as determined by the Engineer during construction. Refer to Standard Plate 734.05 for details.

An additional quantity of high flow silt fence has been added to the Estimate of Quantities for temporary sediment control.

Add High Flow Silt Fence quantity from “TABLE OF INTERIM SEDIMENT CONTROL AT INLETS … AFTER SURFACING REMOVAL AND BEFORE PLACEMENT OF SURFACING.” to TABLE OF HIGH FLOW SILT FENCE.

# TABLE OF HIGH FLOW SILT FENCE

|  |  |  |
| --- | --- | --- |
| Station | Location | Quantity(Ft) |
| xx+xx to xx+xx L/R | X | xx |
| xx+xx to xx+xx L/R | X | xx |
|  | Quantity from Interim Sediment Control at Inlets: | xx |
|  | Additional Quantity: | xx |
|  |  |  |
|  | Total:  | xx |

# REPAIR SILT FENCE

The estimated quantity of “Repair Silt Fence” will be computed by taking 25% of the total length of all silt fence.

# MUCKING SILT FENCE

The estimated quantity of “Mucking Silt Fence” will be computed by taking 25% of the quantity of 0.5 X 15’ width X 1’ high X length of all silt fence and converted to cubic yards. A short version is “Mucking Silt Fence” CuYd = 0.0694 X the total length of all silt fence.

# REMOVE SILT FENCE

The estimated quantity of “Remove Silt Fence” will be computed by taking 25% of the total length of all silt fence.

###### FLOATING SILT CURTAIN

This note and corresponding bid item will not be included when it is part of the normal temporary works as specified in section 423 of the standard specifications. If the Contractor elects to use floating silt curtain in combination with the Temporary Diversion Channel for Fish Passage (standard plate 734.30), then the cost of the silt curtain

would be incidental to the bid item “Temporary Channel for Fish Passage”.

Floating silt curtains will be installed at locations noted in the table and at locations determined by the Engineer during construction.

The Contractor will determine the water depth and other waterway characteristics such as stream flow velocity and seek technical advice from the manufacturer before ordering the floating silt curtain so that the floating silt curtain installed is the correct type for the individual sites.

The Contractor will install the floating silt curtain in accordance with the manufacturer’s installation instructions or as directed by the Engineer.

The Contractor will maintain the floating silt curtains for the duration of the project to ensure continuous protection of the waterway.

A list of known manufacturers of floating silt curtain is shown below for informational purpose. Contractors may also use Engineer approved floating silt curtain from manufacturers that are not included in the list.

|  |  |
| --- | --- |
| ABASCO, LLCHumble, TXPhone: 1-281-466-1500[www.abasco.net](http://www.abasco.net) | Aer-Flo, Inc.Bradenton, FLPhone: 1-800-823-7356[www.aerflo.com](http://www.aerflo.com/) |
| ACME EnvironmentalTulsa, OKPhone: 1-855-563-2666[www.acmeboom.com](http://www.acmeboom.com) | ENVIRO-USA, LLCCap Canaveral, FLPhone: 1-321-222-9551[www.enviro-usa.com](http://www.enviro-usa.com) |
| Elastec/American Marine, Inc.Carmi, ILPhone: 1-618-382-2525[www.turbiditycurtains.com](http://www.turbiditycurtains.com) | Geo-Synthetics, LLC (GSI)Waukesha, WIPhone: 1-800-444-5523[www.geosynthetics.com](http://www.geosynthetics.com) |
| Parker Systems, Inc.Chesapeake, VAPhone: 1-866-472-7537[www.parkersystemsinc.com](http://www.parkersystemsinc.com) |  |

# TABLE OF FLOATING SILT CURTAIN

|  |  |  |
| --- | --- | --- |
| Station | Location | Quantity(Ft) |
| xx+xx to xx+xx L/R | X | xx |
| xx+xx to xx+xx L/R | X | xx |
|  |  |  |
|  | Total: | xx |

# TEMPORARY WATER BARRIER

This note and the “Temporary Water Barrier” bid item are included in the plans **only** when there are specific requirements for construction in a dry condition that would **not** be considered typical to construction, or normal temporary works as specified in section 423 of the standard specifications. This note and corresponding bid item will not be included when standard plate 734.30 is used. Payment of temporary water barrier at fish passage sites is incidental to the “Temporary Channel for Fish Passage” bid item.

Temporary water barriers will be placed in a manner that creates the least amount of disturbance. Temporary water barriers are placed to keep the work area dry and separate from the water body. Contaminated water within the work area collected by the water barriers will be removed and treated in conformance with the Dewatering and Sediment Collecting notes and detail drawings in the plans.

All costs for furnishing, installing, maintaining, and removal of the temporary water barrier including hauling, materials, equipment, labor, and incidentals necessary will be paid for at the contract unit price per foot for “Temporary Water Barrier”.

Properly designed sheet pile is an acceptable alternate temporary water barrier as approved by the Engineer.

The temporary water barrier will be from the list below or an approved equal:

|  |  |
| --- | --- |
| Product | Manufacturer |
| Environmental Barricades | Environmental Barricades Inc.Eagle Creek, ORPhone: 1-800-656-1296 |
| Portadam | Portadam, Inc.Williamstown, NJPhone: 1-856-740-0606[www.portadam.com](http://www.portadam.com/) |
| Aquadam | Water Structures UnlimitedCarlotta, CAPhone: 1-800-682-9283[www.aquadam.com](http://www.aquadam.com/) |
| Typar Geocell | Fiberweb Inc.Old Hickory, TNPhone: 1-800-541-5519[www.typargeosynthetics.com](http://www.typargeosynthetics.com/products/geocells/) |

# SEDIMENT BASIN SKIMMER

This note and corresponding bid item are provided as an option to drain sediment basins. Skimmers drain the basins from the top where the cleanest water is located. They are sized according to volume and how quickly the basin needs to be drained. Refer to the product website for help with sizing the device.

A skimmer will be provided for the sediment basin.

The estimated size of the skimmer is 5”; however, the sediment basin skimmer, drain pipe, and connectors will be appropriately sized in accordance with the manufacturer’s instructions.

All costs for furnishing and installing the skimmer and the drain pipe it connects to including materials, labor, and incidentals necessary will be included in the contract unit price per each for “Sediment Basin Skimmer”.

The skimmer will be as shown below or an approved equal:

|  |  |
| --- | --- |
| Product | Manufacturer |
| Faircloth Skimmer | J.W. Faircloth and Son Inc.Hillsborough, NCPhone: 1-919-732-1244[www.fairclothskimmer.com](http://www.fairclothskimmer.com/) |

###### TRIANGULAR SILT BARRIER

The designer should choose the most appropriate product for each situation. GeoRidge, GeoRidge Bio, and Ditch Guard differ from Triangular Silt Dike in that they do not dam up water but filter and slow water to cause sedimentation. GeoRidge Bio is biodegradable over an 18 to 24 month period. Both GeoRidge products should be installed over erosion control blanket or turf reinforcement mat; therefore, they may be better suited for a final stabilization measure rather than a temporary measure. Ditch Guard and Triangular Silt Dike do not require an installation of erosion control blanket or turf reinforcement mat; therefore, they may be better suited for temporary sediment control prior to final stabilization. Ditch Guard and GeoRidge products are less likely to be undercut than the Triangular Silt Dike and may be better suited for concentrated flows while Triangular Silt Dike may work better as perimeter protection.

The estimated quantity of “Remove Sediment” at triangular silt barrier installations will be computed by taking 0.25’ width X 0.25’ height X the total length of all triangular silt barriers and converted to cubic yards. A short version is “Remove Sediment” CuYd = 0.0023 X the total length of all triangular silt barriers.

The estimated quantity of “Remove Triangular Silt Barrier” will be computed by taking 25% of the total length of all triangular silt barriers.

Triangular silt barriers for restraining the flow of water and sediment will be placed at the locations noted in the Table of Triangular Silt Barrier and at locations determined by the Engineer during construction. Installation of each product will be as recommended by the manufacturer and in accordance with the table shown below:

|  |
| --- |
| Ditch Installation |
| Grade(%) | Spacing(Ft) |
| 2 | 150 |
| 3 | 100 |
| 4 | 75 |
| 5 | 50 |

Triangular silt barriers will be removed when vegetation is established. Some or all of the triangular silt barriers may be left on the project until vegetation is established.

An additional quantity of Triangular Silt Barrier has been added to the Estimate of Quantities for temporary sediment control in highway ditch channels and as an alternative to low flow or high flow silt fence at wetland areas adjacent to the highway.

Sediment removal, disposal, or necessary shaping will be as directed by the Engineer. All costs for removing accumulated sediment, disposal of sediment, and necessary shaping will be incidental to the contract unit price per cubic yard for “Remove Sediment”.

All costs for furnishing and installing the triangular silt barrier including labor, equipment, and materials will be incidental to the contract unit price per foot for “Triangular Silt Barrier”.

All costs for removing the triangular silt barrier from the project including labor, equipment, and materials will be incidental to the contract unit price per foot for “Remove Triangular Silt Barrier”.

The triangular silt barrier provided will be from the list shown below or an approved equal:

|  |  |
| --- | --- |
| Product | Manufacturer |
| Triangular Silt Dike | Triangular Silt Dike Co., Inc.Luther, OKPhone: 1-405-277-7015[www.tri-siltdike.com](http://www.tri-siltdike.com) |
| GeoRidge or GeoRidge Bio | NilexCentennial, COPhone: 1-303-766-2000[www.nilex.com](http://www.nilex.com/) |
| Ditch Guard | ERTEC Environmental Systems LLCAlameda, CAPhone: 1-866-521-0724[www.ertecsystems.com](http://www.ertecsystems.com/) |

# TABLE OF TRIANGULAR SILT BARRIER

|  |  |  |
| --- | --- | --- |
| Station | Location | Quantity(Ft) |
| xx+xx to xx+xx L/R | X | xx |
| xx+xx to xx+xx L/R | X | xx |
|  | Additional Quantity: | xx |
|  |  |  |
|  | Total:  | xx |

###### EROSION CONTROL BLANKET

Erosion control blanket will be installed 16 feet wide at the locations noted in the table and at locations determined by the Engineer during construction.

The erosion control blanket provided will be from the approved product list. The approved product list for erosion control blanket may be viewed at the following internet site:

<http://apps.sd.gov/HC60ApprovedProducts/main.aspx>

An additional quantity of Type x Erosion Control Blanket has been added to the Estimate of Quantities for temporary erosion control.

# TABLE OF EROSION CONTROL BLANKET

|  |  |  |  |
| --- | --- | --- | --- |
| Station | Location | Type | Quantity(SqYd) |
| xx+xx to xx+xx L/R | Inslope | x | xx |
| xx+xx to xx+xx L/R | Backslope | x | xx |
| xx+xx to xx+xx L/R | Ditch | x | xx |
|  | Additional Quantity: | x | xx |
|  |  |  |
|  | Total Type 1 Erosion Control Blanket: | xx |
|  | Total Type 2 Erosion Control Blanket: | xx |
|  | Total Type 3 Erosion Control Blanket: | xx |
|  | Total Type 4 Erosion Control Blanket: | xx |

# SHAPING FOR EROSION CONTROL BLANKET

The ditches will be shaped for the erosion control blanket as specified on Standard Plate 734.01.

The quantity for Shaping for Erosion Control Blankets will be computed by converting the Sq yards to Sq Feet and then Dividing the Square Foot Quantity by the width of the Blanket. This will leave with the linear foot of the blanket length.

# TURF REINFORCEMENT MAT

Turf Reinforcement Mat will be installed at locations shown in the table at the widths specified, and at locations determined by the Engineer during construction. The Contractor will use a turf reinforcement mat from the approved products list. The approved product list for turf reinforcement mat may be viewed at the following internet site:

<http://apps.sd.gov/HC60ApprovedProducts/main.aspx>

Turf Reinforcement Mat will be installed in accordance with the manufacturer’s installation instructions.

# TABLE OF TURF REINFORCEMENT MAT

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Station | Location | Width(Ft) | Type | Quantity(SqYd) |
| xx+xx to xx+xx L/R | X | X | X | xx |
| xx+xx to xx+xx L/R | X | X | X | xx |
|  |  |
| Total Type 1 Turf Reinforcement Mat: | xx |
| Total Type 2 Turf Reinforcement Mat: | xx |
| Total Type 3 Turf Reinforcement Mat: | xx |

# TRANSITION MAT

This note and a corresponding bid item should be used as an alternative to gabions in urbanized areas.

Transition mat will be installed at locations noted in the table and at locations determined by the Engineer during construction.

Installation of the transition mat will be in accordance with the manufacturer’s installation instructions.

Turf reinforcement mat, sod, or geotextile installed under the transition mat will be paid for separately at the contract unit price for the respective contract items.

All costs for furnishing and installing the transition mat including hauling, materials, equipment, labor, and incidentals necessary will be paid for at the contract unit price per square yard for “Transition Mat”.

The transition mat will be as shown below or an approved equal:

|  |  |
| --- | --- |
| Product | Manufacturer |
| ScourStop | Landmark Earth SolutionsAnkeny, IAPhone: 1-877-99-SCOUR[www.scourstop.com](http://www.scourstop.com/) |
| GeoRunner | Presto GeosystemsAppleton, WIPhone: 1-800-548-3424[www.prestogeo.com](http://www.prestogeo.com/) |

# TABLE OF TRANSITION MAT

|  |  |  |
| --- | --- | --- |
| Station | Location | Quantity(SqYd) |
| xx+xx to xx+xx L/R | X | xx |
| xx+xx to xx+xx L/R | X | xx |
|  |  |  |
|  | Total:  | xx |

# CHANNEL LINER

This note and corresponding bid item should be used when a concrete-lined drainage channel is being replaced or where water will prevent the successful vegetation of drainage ditches. Examples of areas where this product may be used include bridge berms to direct drainage from the bridge to the nearest drainage pipe and between drainage pipes where water is always present. Channel liners may also be used similar to the Transition Mat except that they shouldn’t be used in areas where they may be driven over. This item may also be used to temporarily divert water. Channel liners come in two shapes: semi-circular and trapezoidal. Semi-circular comes in 24” depth and trapezoidal comes in 12” depth and 24” depth. Determine which size and shape will work best using the information provided on the manufacturer’s site.

Channel liner will be installed at locations noted in the table and at locations determined by the Engineer during construction.

Channel liner will be installed as recommended by the manufacturer.

All costs for furnishing and installing the channel liner including hauling, materials, equipment, labor, and incidentals necessary will be paid for at the contract unit price per foot for “Channel Liner”.

The channel liner will be as shown below or an approved equal:

|  |  |
| --- | --- |
| Product | Manufacturer |
| Smart Ditch | Penda CorporationPortage, WIPhone: 1-866-576-2783[www.smartditch.com](http://www.smartditch.com) |

# TABLE OF CHANNEL LINER

|  |  |  |
| --- | --- | --- |
| Station | Location | Quantity(SqYd) |
| xx+xx to xx+xx L/R | X | xx |
| xx+xx to xx+xx L/R | X | xx |
|  |  |  |
|  | Total:  | xx |

# ARTICULATED CONCRETE MATTRESS

Articulated concrete mattresses are typically used for shoreline protection, stream and river bank stabilization, permanent channel protection, and scour protection at bridges and box culverts.

Articulated concrete mattress will be installed at locations noted in the table and at locations determined by the Engineer during construction.

Installation of the articulated concrete mattress will be in accordance with the manufacturer’s installation instructions.

All costs for furnishing and installing the articulated concrete mattress including hauling, materials, equipment, labor, and incidentals necessary will

be paid for at the contract unit price per square yard for “Articulated Concrete Mattress”.

The articulated concrete mattress will be as shown below or an approved equal:

|  |  |
| --- | --- |
| Product | Manufacturer |
| Articulated Concrete Block Mattress | Forterra, IncRapid City, SDPhone: 1-605-737-5208[http://www.forterrabp.com](https://forterrabp.com/) |

# TABLE OF ARTICULATED CONCRETE MATTRESS

|  |  |  |
| --- | --- | --- |
| Station | Location | Quantity(SqYd) |
| xx+xx to xx+xx L/R | X | xx |
| xx+xx to xx+xx L/R | X | xx |
|  |  |  |
|  | Total:  | xx |

# TYPE B DRAINAGE FABRIC

This plan note should be used in conjunction with Articulated Concrete Mattress, or on projects that include placement of riprap on bridge berms, as a temporary BMP.

If Type B Drainage is used in conjunction with Articulated Concrete Mattress, the bid item quantity will match the quantity for Articulated Concrete Mattress (SqYd). When Type B Drainage Fabric is to be installed directly underneath Articulated Concrete Mattress in the plans, use the following note:

Type B Drainage Fabric will be installed at all locations where Articulated Concrete Mattress is to be installed. Type B Drainage Fabric will be installed directly under the Articulated Concrete Mattress.

All costs associated with installing Type B Drainage Fabric including equipment, labor, and materials will be incidental to the contract unit price per SqYd for “Type B Drainage Fabric.”

OR

If Type B Drainage Fabric is being installed as a temporary BMP to be used at bridge replacement sites (check Section E Structure Notes to verify Type B Drainage Fabric is included in the Estimate of Quantities), use the following note:

During construction, Type B Drainage Fabric may be installed for temporary erosion control at the bridge replacement sites at locations determined by the Engineer During Construction.

The Type B Drainage Fabric will be held in place with sandbags or other weights determined by the Engineer during construction until riprap is placed.

All costs associated with installing Type B Drainage Fabric as a temporary erosion control measure including equipment, labor, and materials will be incidental to the contract unit price per SqYd for “Type B Drainage Fabric” that is listed in the Section E Estimate of Quantities.

###### TEMPORARY SLOPE DRAIN

Temporary slope drains will be installed at locations noted in the table and at locations determined by the Engineer during construction. Refer to Standard Plate 734.16 for details.

# TABLE OF TEMPORARY SLOPE DRAIN

|  |  |  |  |
| --- | --- | --- | --- |
| Station | Location | Diameter(Inch) | Quantity(Ft) |
| xx+xx to xx+xx L/R | X |  | xx |
| xx+xx to xx+xx L/R | X |  | xx |
|  |  |  |  |
|  |  | Total 12” Temporary Slope Drain: | xx |
|  |  | Total 18” Temporary Slope Drain: | xx |
|  |  | Total 21” Temporary Slope Drain: | xx |
|  |  | Total 24” Temporary Slope Drain: | xx |
|  |   | Total 30” Temporary Slope Drain: | xx |

# CUT INTERCEPTOR DITCH

The Contractor will cut interceptor ditches at the locations noted in the table and at locations determined by the Engineer during construction. Refer to Standard Plate 734.15 for details.

# TABLE OF CUT INTERCEPTOR DITCH

|  |  |  |
| --- | --- | --- |
| Station | Location | Quantity(Ft) |
| xx+xx to xx+xx L/R | X | xx |
| xx+xx to xx+xx L/R | X | xx |
|  |  |  |
|  | Total: | xx |

# ROCK CHECK DAM

The Landscape Architect will coordinate with the Project Designer and the Hydraulics Office if necessary, to determine appropriate rock size and spacing for rock check dams.

The rock for the rock check dam will be 4”-8” and angular. The rock check dam will be constructed to the limits shown on Standard Plate 734.03. All costs for constructing the rock check dam including labor, equipment, excavation, and rock will be incidental to the contract unit price per cubic yard for “Rock Check Dam”.

# I

# NTERIM SEDIMENT CONTROL AT INLETS, MANHOLES, AND JUNCTION BOXES AFTER SURFACING REMOVAL AND BEFORE PLACEMENT OF SURFACING

This plan note should be used when there is grading adjacent to inlets, manholes, and junction boxes. A detail sheet should accompany the plan notes to show how the sediment is controlled at the inlets, manholes, and junction boxes.

The estimated quantity of “Remove Sediment” at inlets, manholes, and junction boxes after surfacing removal and before placement of surfacing will be estimated at 0.25 cubic yards per inlet.

Refer to Standard Plate 734.05 for details of installation of high flow silt fence at drop inlets, manholes, and junction boxes.

The high flow silt fence fabric provided will be from the approved product list. The approved product list for high flow silt fence may be viewed at the following internet site:

<http://apps.sd.gov/HC60ApprovedProducts/main.aspx>

In addition, the Contractor will do the following for this installation:

* A space of at least 1’ will be provided between the silt fence installation and the inlet. This space will be filled completely with a 2” depth of aggregate, 2” minus or smaller.
* The top elevation of the silt fence will be such that a 12” horizontal flap of silt fence will remain at the bottom.
* The base of the silt fence will conform to the natural ground profile but does not need to be trenched in at the bottom.
* The extra 12” of the silt fence material may be cut so that the material will lay flat upon the subgrade.
* Sediment filter bags will be placed on the 12” flap around the perimeter of the silt fence installation. The sediment filter bags will overlap 6” at the ends and be placed tightly together.
* The sediment filter bags will be filled with clean aggregate 2” minus or smaller.

The Sediment Filter Bag will be as shown below or an approved equal:

|  |  |
| --- | --- |
| Product |  Manufacturer |
| Snake Bag | Sacramento Bag Manufacturing Co.Sacramento, CAPhone: 1-800-287-2247[www.sacbag.com](http://www.dandyproducts.com/) |
|  |  |
| Rock Log | SRW ProductsPrinceton, MNPhone: 1-763-260-7822[www.srwproducts.com](http://www.srwproducts.com) |

All costs for furnishing and installing the sediment filter bags will be incidental to the contract unit price per foot for “Sediment Filter Bag.”

All costs for removing the sediment filter bags will be incidental to the contract unit price per foot for “Remove Sediment Filter Bag”.

Payment for high flow silt fence will be as stated in Section 734.5 of the Specifications.

All costs for furnishing, installing, and removing the 2” depth of aggregate will be incidental to other erosion and sediment control contract items.

All costs for removing and disposing of sediment collected by the sediment control device will be incidental to the contract unit price per cubic yard for “Remove Sediment”.

The removed sediment will be placed at a location away from the drop inlet where the sediment will not be washed back into the drop inlet or other storm sewer system.

The Contractor and Engineer will inspect and maintain the sediment control device once every week and within 24 hours after every rainfall event greater than 1/2”.

# TABLE OF INTERIM SEDIMENT CONTROL AT INLETS, MANHOLES, AND JUNCTION BOXES AFTER SURFACING REMOVAL AND BEFORE PLACEMENT OF SURFACING

|  |  |  |  |
| --- | --- | --- | --- |
| Station | High FlowSilt FenceQuantity(Ft) | SedimentFilter BagQuantity(Ft) | RemoveSedimentQuantity(CuYd) |
| xx+xx L/R | xx | xx | xx |
| xx+xx L/R | xx | xx | xx |
|  |  |  | X |
| Totals: | xx | xx | xx |

# SEDIMENT CONTROL AT INLETS WITH FRAMES AND GRATES

This plan note should be used where sediment collection/control is necessary on project types such as: grading, resurfacing, chip seals,

joint repair, sidewalk replacement, sidewalk repair, and others as necessary.

This type of sediment control device should be used where there is pavement in the vicinity of the drop inlets and storm water or sediment could possibly enter the frame and grate. Sediment Control at Inlet with Frame and Grate will be installed prior to working in the vicinity of the drop inlets.

The Contractor will be responsible for maintaining and repairing the sediment control devices for the duration of the project for which sediment control measures are required. Maintenance will be scheduled to prevent storm water from backing up into the driving lane.

“Sediment Control at Inlet with Frame and Grate” will be paid for one time at each location, regardless of the number of times the sediment control devices are installed, inspected, cleaned, removed, repaired, or replaced. All costs associated with furnishing, installing, inspecting, maintaining, cleaning, sediment removal, and repairing Sediment Control at Inlet with Frame and Grate will be incidental to the contract unit price per each for “Sediment Control at Inlet with Frame and Grate”.

Sediment collection devices will be:

 A commercial made sediment collection device from the “Sediment Control at Inlet with Frame and Grate” list or an approved equal. The device will be

 installed in reinforced concrete drop inlets in accordance with the manufacturer’s recommendations.

The following light orange text may be added to allow Standard Plate 734.10 for projects where ALL locations meet the following conditions:

* The project is small and/or short-term.
* There is little or no soil disturbance surrounding the inlet.
* The average precipitation for the area is less than 2.5” for the month(s) of construction.

(For average monthly precipitation refer to:

<http://climate.sdstate.edu/archives/data/pptnormals.shtm>)

OR

 A sediment control device as shown on Standard Plate 734.10. Filter fabric used for constructing the sediment control at inlets with frames and grates will be the same type of fabric that is used in high flow silt fence from the approved product list. The approved product list may be viewed at the following internet site:

<http://sddot.com/business/certification/products/Default.aspx>

|  |
| --- |
| Sediment Control at Inlet with Frame and Grate Approved List: |
| Product |  Manufacturer |
| InfraSafe Debris Collection Device with filter sock | Royal Environmental Systems, Inc.Stacy, MNPhone: 1-800-817-3240[www.royalenterprises.net](http://www.essbrothers.com) |
| Dandy Curb Sack and Dandy Curb Bag for curb inlets.Dandy Bag, Dandy Sack, and Dandy Pop for median drains. | Dandy Products Inc.Powell, OHPhone: 1-800-591-2284[www.dandyproducts.com](http://www.dandyproducts.com) |
| Silt Trapper | Storm Water SolutionsLakeville, MNPhone: 1-952-461-4376[www.silttrapper.com](http://www.essbrothers.com) |
| DIP Basket | Skyview Construction Co., LLCSummit, SDPhone: 1-605-520-0555 |
| FLEXSTORM Inlet Filters | Inlet and Pipe Protection, Inc.Naperville, ILPhone: 1-866-287-8655[www.inletfilters.com](http://www.inletfilters.com/) |
| GR-8 GuardorCombo Guard | ERTEC Environmental Systems LLCAlameda, CAPhone: 1-866-521-0724[www.ertecsystems.com](http://www.ertecsystems.com/) |
| BX Inlet Sediment Boxes | BX Civil and ConstructionDell Rapids, SDPhone: 1-605-428-5483[http://www.bx-cc.com](http://bx-cc.com/) |
| EZ-Flo and EZ-Catch | Flo-Water, LLCWest Des Moines, IAPhone: 1-515-577-6763[www.flo-water.net](http://www.flo-water.net/) |

# TABLE OF SEDIMENT CONTROL AT INLETS WITH FRAMES AND GRATES

|  |  |
| --- | --- |
| Station | Quantity(Each) |
| xx+xx L/R | xx |
| xx+xx L/R | xx |
|  |  |
|  | xx |

# SEDIMENT CONTROL AT TYPE S REINFORCED CONCRETE DROP INLETS

The sediment control device provided will be from the list shown below. Refer to Standard Plate 734.11 for details.

|  |  |
| --- | --- |
| Product | Manufacturer |
| Dandy Curb | Dandy Products Inc.Powell, OHPhone: 1-800-591-2284[www.dandyproducts.com](http://www.dandyproducts.com) |
| Gutterbuddy | ACF EnvironmentalRichmond, VAPhone: 1-800-448-3636[www.acfenvironmental.com](http://www.acfenvironmental.com/) |
| Curb Inlet Guard | ECTEC Environmental Systems LLCAlameda, CAPhone: 1-866-521-0724[www.ertecsystems.com](http://www.ertecsystems.com/) |
| EZ-ClipGuard | Flo-Water, LLCWest Des Moines, IAPhone: 1-515-577-6763[www.flo-water.net](http://www.flo-water.net/) |
| TSL E-Sock | Three Sons LandscapingRapid City, SDPhone: 1-605-391-1903 |
| 12” Silt Sock | Aspen Ridge Lawn and Landscaping,LLCRapid City, SDPhone: 1-605-716-4080<https://aspenridgelandscaping.com/> |
| GeoCurve | GeoSolutions, Inc.Austin, TXPhone: 1-512-330-0796[www.geosolutionsinc.com](http://www.geosolutionsinc.com/) |
| Smart Curb Filter | NoFlood, Inc.Fort Myers, FLPhone: 1-239-776-1671<http://www.noflood.com> |

# TABLE OF SEDIMENT CONTROL AT TYPE S REINFORCED CONCRETE DROP INLETS

|  |  |  |
| --- | --- | --- |
| Station | Clear Opening Width (Ft) | Quantity\*(Ft) |
| xx+xx L/R | 5 | 7 |
| xx+xx L/R | 10 | 12 |
| xx+xx L/R | 5 | 7 |
| xx+xx L/R |  |  |
|  |  |  |
|  | Total: | xx |

\* Quantity shown is the minimum length required and will be the basis of payment.

# DEWATERING AND SEDIMENT COLLECTING

The plans should include the OPTIONS FOR DEWATERING AND SEDIMENT COLLECTING detail sheet. The detail sheet can be obtained from the Landscape Architects in the Office of Road Design.

Include the sentence below and modify as necessary when the Dewatering Lump Sum Bid Item is to be used. Typical uses for this bid item includes Urban underground work such as Storm Sewer construction or other Urban underground utilities, as well as unique situations when it is recommended or requested. The Dewatering Lump Sum Bid Item is not to be used for construction of Box Culverts or structure work, since the Dewatering is covered under “Temporary Works.”

Dewatering and Sediment Collection is expected to be necessary on this project due to underground construction of storm sewers and other underground utilities. Dewatering and Sediment Collection is expected to be needed at xx+xx L/R.

The Contactor has the option to treat sediment laden water trapped within the project limits or the Contractor may elect to transport sediment laden water off the project. Refer to the OPTIONS FOR DEWATERING AND SEDIMENT COLLECTING detail sheet for more information.

Water transported off the project limits will not be disposed of in an area where it can enter a waterway. The disposal site must be approved by the Engineer.

Include the following note when the Dewatering Lump Sum Bid Item is not included in the Estimate of Quantities.

Separate payment will not be made for any Dewatering and Sediment Collection efforts. All costs involved with necessary Dewatering and Sediment Collection efforts will be incidental to other contract items

# STREET SWEEPING

Vehicle tracking of sediment from the construction site will be minimized. Street sweeping will be used if erosion and sediment control best management practices are not adequate to prevent sediment from being tracked onto the street.

The Contractor will use a pickup broom having integral self-contained storage to clean the roadway. The pickup broom used will be a minimum of 6 feet wide and have working gutter brooms.

At a minimum, sweeping will be required:

1. Prior to opening any segment or roadway to traffic.
2. Following pavement grooving operations and prior to the application of the pavement marking tape.
3. When sawing operations are underway in the inside driving lanes, the outside driving lanes and gutter may need to be swept to control dust.

All costs for cleaning the roadway with a pickup broom will be incidental to the contract unit price per hour for “Sweeping”.

# CONSTRUCTION ENTRANCE

This plan note and the SDDOT Construction Entrance plan note and detail should be included in the plans when there is a potential for mud tracking onto paved roadways during any construction operations.

The Contractor will install a Construction Entrance at locations where there is a potential for mud tracking and sediment flow from the construction site and work area onto a paved public roadway.

It is the Contractor’s option to use the SDDOT Construction Entrance (See SDDOT Construction Entrance notes and details), a product from the list provided in these notes, or other products or processes as approved by the Engineer during construction.

If the Contractor elects to use one of the products listed in the table, then the Contractor will install the construction entrance product in accordance with the manufacturer’s installation instructions or as directed by the Engineer.

The Contractor will maintain the construction entrance such that mud tracking and sediment flow will not enter the roadway or adjacent drainage areas. The construction entrance will be routinely inspected, and the Contractor will repair or replace material as deemed necessary by the Engineer.

All costs for furnishing, installing, maintaining, and removal of the construction entrance including equipment, labor, materials, and incidentals will be included in the contract unit price per each for “Construction Entrance”.

The following table is a list of known construction entrance products available for use:

|  |  |
| --- | --- |
| Product | Manufacturer |
| Grizzly Rumble Grate(10’ width and 24’ length required) | Trackout Control, LLCTempe, AZPhone: 1-800-761-0056[www.trackoutcontrol.com](http://www.trackoutcontrol.com/) |
| Pro Grid(12’ width and 24’ length including combination of grids and ramps required) | Pro-Tec Equipment, Inc.Charlotte, MIPhone: 1-800-292-1225[www.pro-tecequipment.com](http://www.pro-tecequipment.com/) |
| Tracking Pad(12’ width and 24’ length(2 – 12’x12’ pads)and 2 – 4’x4’ turning flares) | Tracking Pads LLCCommerce City, COPhone: 1-303-501-5640[www.trackingpads.com](http://www.trackingpads.com/) |
| FODS Trackout Control Mat(12’ width and 5 matsto get a 35’ length) | FODS, LLCDenver, COPhone: 1-844-200-3637[http://www.getfods.com](http://getfods.com/) |
| DuraDeck and MegaDeck HDAn adequate quantity is needed to prevent tires from becoming muddy (does not remove mud) | Signature Systems Group, LLCFlower Mound, TXPhone: 1-800-931-7301<https://www.signature-systems.com/> |
|  |  |
| Track-Out Control Mat(10’ width and 24’ length required) | RubberForm Recycled Products, LLCLockport, NYPhone: 1-716-478-0408[www.rubberform.com](https://rubberform.com/) |

# SDDOT CONSTRUCTION ENTRANCE

This plan note and the related detail will be included in the plans when the Construction Entrance note is provided in the plans. The detail sheet can be obtained from the Landscape Architects in the Office of Road Design.

If the SDDOT Construction Entrance is utilized, then the Contractor will install the SDDOT Construction Entrance in accordance with these notes and the detail drawings.

Pit run material will be obtained from a granular source and will conform to the following gradation:

|  |  |
| --- | --- |
| Sieve Size | Percent Passing |
| 6” | 100% |
| #4 | 0-60% |
| #200 | 0-20% |

The pit run material will be compacted to the satisfaction of the Engineer.

The aggregate for the granular material will conform to the following gradation requirements:

|  |  |
| --- | --- |
| Sieve Size | Percent Passing |
| 3” | 100% |
| 2 ½” | 90-100% |
| 1 ½” | 25-60% |
| ¾” | 0-10% |
| ½” | 0-5% |

The granular material will be placed in 6” maximum lifts.

It is anticipated that the granular material will need to be periodically removed and replaced as it becomes inundated with mud and sediment.

The Reinforcement Fabric (MSE) will be in conformance with Section 831 of the Specifications. The Reinforcement Fabric (MSE) will be on the Approved

Products List for this material or will be certified by the supplier to meet this specification prior to installation.

The Reinforcement Fabric (MSE) should be kept as taut as possible prior to placing.

Equipment will not be allowed on the Reinforcement Fabric (MSE) until the first lift of granular material is in place.

All seams in the Reinforcement Fabric (MSE) will be overlapped at least 2’ and shingled.

# CONCRETE WASHOUT AREA

A concrete washout area will be installed on the project site at a location approved by the Engineer if concrete trucks deliver concrete to the site. No washout area is necessary if all concrete trucks will wash out at approved site constructed by the concrete supplier.

# TREE REPLACEMENT

See Section A Commitment R: Tree Replacement for details of requirements for tree replacement on Rural and Urban projects.

Even though the Environmental Commitment is called “Tree Replacement”, shrubs and other plants may also need to be replaced. Correspondence received by the SDDOT Environmental Office from natural resource agencies will have specific requirements.

The designer should contact the SDDOT Environmental Office for details on the specific requirements for each project if the

correspondence from natural resource agencies needs further explanation.

The title and contents of this plan note may need to be modified to include shrubs and plants as necessary. See Section H standard notes in regards to GENERAL PLANTING NOTES.

The designer may have to do a site visit to obtain additional information necessary to do a design.

Trees will be planted at a 20’ spacing between trees and in a random pattern to mimic nature.

Planting locations for each individual tree will be identified prior to planting and approved by the Engineer.

All trees will be purchased from county Conservation Districts, a Landscape Nursery, or other approved source. Trees furnished will be of the same genus, species, cultivar, and height as specified in the plans. Each tree will have an identification label.

After being planted, each tree will receive 10 gallons of water to thoroughly saturate the backfill soil as this provides settlement and filling of voids in the backfill. As soon as the initial planting is completed, the Engineer will visually inspect the trees for health, vigor, and condition, and will at that time accept or reject them.

The designer may specify tree shelters such as the wire tree shelter described or may specify manufactured tree shelters that are made of materials such as polyethylene. Some typical heights of manufactured tree shelters are 3’, 4’, 5’, and 6’. A 5’ shelter would be

typical for protection from deer. The manufactured tree shelter could be used for tree or shrub seedlings. The intent of the tree shelters is to protect the trees from rabbits and deer, etc. The following 2 paragraphs are examples of plan notes that could be used:

Tree shelters will be installed at each tree and will be constructed 3 feet in diameter and 5 feet high with 14-gauge, 2-inch x 4 inch mesh welded wire or other wire fencing material as approved by the Engineer during construction. Each welded wire tree shelter will be staked using two steel posts and the tree shelter will be attached to the steel posts.

or

The Contractor will use manufactured tree shelters as approved by the Engineer during construction. Degradable tree shelters are preferred. The height of the tree shelters will be 5 feet in an effort to protect the trees from deer. The manufactured tree shelters will be installed according to the manufacturer’s installation instructions.

Wood chip mulch will be applied at the base of each tree at a 4 inch depth and in a 3 foot diameter for weed suppression. The wood chip mulch will be pulled back from the base of the tree trunk 2 inches to expose the trunk.

The Contractor will provide a one-year warranty for all trees. After one year from initial planting, the Engineer will make an inspection and dead, unhealthy, or otherwise not acceptable plants will be replaced by the Contractor at no additional cost to the State.

All costs for furnishing, handling, storing, and planting the trees including the materials, equipment, labor, preparation of the ground, initial watering,

cleanup of the planted areas, tree shelters, wood chip mulch, and the warranty will be incidental to the contract unit price per each for the corresponding “4’ to 6’ Tree, Furnish and Plant” contract item.

# TABLE OF TREE REPLACEMENT

The designer should select trees and shrubs based on a site visit.

See Standard Bid Items for tree and shrubs sizes or heights.

The title of the table may need to be modified if shrubs and/or plants are included in the table.

Examples of typical trees and shrubs to use on rural projects (i.e. creek locations) for tree and shrub replacement are:

|  |  |  |  |
| --- | --- | --- | --- |
| Common Name | Botanical Name | Height | Quantity |
| Sandbar/Coyote/Narrowleaf Willow  | *Salix exigua*  | x’ to x’ | xx |
| Cottonwood Tree | *Populus deltoides* | x’ to x’ | xx |
| American Plum | *Prunus americana* | x’ to x’ | xx |
| Bur Oak | *Quercus macrocarpa* | x’ to x’ | xx |
| Golden Currant | *Ribes aureum* | x’ to x’ | xx |
| Buffaloberry | *Sheperdia canadensis* | x’ to x’ | xx |
| Eastern Red Cedar | *Juniperus virginiana* | x’ to x’ | xx |

If this is an urban project, refer to the city’s Landscape Ordinance for information on tree planting requirements.

|  |  |  |  |
| --- | --- | --- | --- |
| Common Name | Botanical Name | Height | Quantity |
|  |  | x’ to x’ | xx |
|  |  | x’ to x’ | xx |
|  |  | x’ to x’ | xx |
|  |  | x’ to x’ | xx |
|  |  | x’ to x’ | xx |

# VEGETATED BUFFER STRIPS

Vegetated Buffer Strips are sections of existing undisturbed vegetation adjacent to disturbed areas and are meant to convey sheet flow runoff from disturbed areas, resulting in the removal of sediment and other pollutants as the runoff passes through vegetation and infiltration occurs.

Vegetated Buffer Strips should be utilized along existing floodplains, wetlands, channels, and other natural waters, whenever possible. They are also useful at any areas where runoff may leave the site. Vegetated Buffer Strips should be a minimum of 15’ wide and perpendicular to flow. Vegetated Buffer Strips will be installed at locations determined by the Engineer during construction.

Separate payment will not be made for Vegetated Buffer Strips.

# STORMWATER POLLUTION PREVENTION PLAN CHECKLIST

*(The numbers left of the title headings are* ***reference numbers*** *to the GENERAL PERMIT FOR STORM WATER DISCHARGES ASSOCIATED WITH CONSTRUCTION ACTIVITIES (Stormwater Permit))*

**5.3 (2): STAFF TRAINING/SWPPP IMPLEMENTATION**

To promote stormwater management awareness specific for this project, the Contractor’s Erosion Control Supervisor should provide correspondence of how the SWPPP will be implemented. The Contractor’s Erosion Control Supervisor is responsible for providing this information at the preconstruction meeting, and subsequently completing an attendance log, which should identify site-specific implementation of the SWPPP and the names of the personnel who attended the preconstruction meeting. Documentation of the preconstruction meeting will be filed with the SWPPP documents.

5.3 (3): DESCRIPTION OF CONSTRUCTION ACTIVITIES

* + **5.3 (3a): Project Limits** (See Title Sheet)
	+ **5.3 (3a): Project Description** (See Title Sheet)
	+ **5.3 (4): Site Map(s)** (See Title Sheet and Plans)
	+ **Major Soil Disturbing Activities** (check all that apply)
		- [ ] Clearing and grubbing
		- [ ] Excavation/borrow
		- [ ] Grading and shaping
		- [ ] Filling
		- [ ] Other (describe):
	+ **5.3 (3b): Total Project Area**
	+ **5.3 (3b): Total Area to be Disturbed**
	+ **5.3 (3c): Maximum Area Disturbed at One Time**
	+ **5.3 (3d): Existing Vegetative Cover (%)**
	+ **5.3 (3d): Description of Vegetative Cover**
	+ **5.3 (3e): Soil Properties:** AASHTO Soil or USDA-NRCS Soil Series Classification
	+ **5.3 (3f): Name of Receiving Water Body/Bodies**
	+ **5.3 (3g): Location of Construction Support Activity Areas**

# 5.3 (3h): ORDER OF CONSTRUCTION ACTIVITIES

* + **Special sequencing requirements (**see sheet).

**The Contractor will enter the Estimated Start Date.**

|  |  |
| --- | --- |
| **Description** | **Estimated****Start Date** |
| Install stabilized construction entrance(s). |  |
| Install perimeter protection where runoff may exit site. |  |
| Install perimeter protection around stockpiles. |  |
| Install channel and ditch bottom protection. |  |
| Clearing and grubbing. |  |
| Remove and stockpile topsoil. |  |
| Stabilize disturbed areas. |  |
| Install utilities, storm sewers, curb and gutter. |  |
| Install inlet and culvert protection after completing storm drainage and other utility installations. |  |
| Final grading. |  |
| Final paving. |  |
| Removal of protection devices. |  |
| Reseed areas disturbed by removal activities. |  |

# 5.3 (5): DESCRIPTION AND MAINTENANCE OF CONTROL MEASURES

All controls will be maintained in good working order. Necessary repairs will be initiated within 24 hours of the site inspection report. Include the technical reasoning for selecting each control. (check all that apply)

**Perimeter Controls (See Detail Plan Sheets)**

| **Description** | **Estimated****Start Date** |
| --- | --- |
| [ ]  Natural Buffers (within 50 ft of Waters of State) |  |
| [ ]  Silt Fence |  |
| [ ]  Erosion Control Wattles |  |
| [ ]  Temporary Berm / Windrow |  |
| [ ]  Floating Silt Curtain |  |
| [ ]  Stabilized Construction Entrances |  |
| [ ]  Entrance/Exit Equipment Tire Wash |  |
| [ ]  Other:       |  |

**Structural Erosion and Sediment Controls**

|  |  |
| --- | --- |
| **Description** | **Estimated****Start Date** |
| [ ]  Silt Fence |  |
| [ ]  Temporary Berm/Windrow |  |
| [ ]  Erosion Control Wattles |  |
| [ ]  Temporary Sediment Barriers |  |
| [ ]  Erosion Bales |  |
| [ ]  Temporary Slope Drain |  |
| [ ]  Turf Reinforcement Mat |  |
| [ ]  Riprap |  |
| [ ]  Gabions |  |
| [ ]  Rock Check Dams |  |
| [ ]  Sediment Traps/Basins |  |
| [ ]  Culvert Inlet Protection |  |
| [ ]  Transition Mats |  |
| [ ]  Median/Area Drain Inlet Protection |  |
| [ ]  Curb Inlet Protection |  |
| [ ]  Interceptor Ditch |  |
| [ ]  Concrete Washout Facility |  |
| [ ]  Work Platform |  |
| [ ]  Temporary Water Barrier |  |
| [ ]  Temporary Water Crossing |  |
| [ ]  Permanent Stormwater Ponds |  |
| [ ]  Permanent Open Vegetated Swales |  |
| [ ]  Natural Depressions to allow for Infiltration  |  |
| [ ]  Sequential Systems that combine several practices |  |
| [ ]  Other:       |  |

**Dust Controls**

| **Description** | **Estimated****Start Date** |
| --- | --- |
| [ ]  Tarps & Wind impervious fabrics |  |
| [ ]  Watering |  |
| [ ]  Stockpile location/orientation |  |
| [ ]  Dust Control Chlorides |  |
| [ ] Other |  |

**Dewatering BMPs**

| **Description** | **Estimated****Start Date** |
| --- | --- |
| [ ]  Sediment Basins  |  |
| [ ]  Dewatering bags |  |
| [ ]  Weir tanks |  |
| [ ]  Temporary Diversion Channel |  |
| [ ]  Other:       |  |

**Stabilization Practices (See Detail Plan Sheets)**

(Stabilization measures will begin the following work day whenever earth disturbing activity on any portion of the site has temporarily or permanently ceased. Temporary stabilization will be completed as soon as practicable but no later than 14 days after initiating soil stabilization activities(**3.18**))

| **Description** | **Estimated****Start Date** |
| --- | --- |
| [ ] Vegetation Buffer Strips |  |
| [ ]  Temporary Seeding (Cover Crop Seeding) |  |
| [ ]  Permanent Seeding |  |
| [ ]  Sodding |  |
| [ ]  Planting (Woody Vegetation for Soil Stabilization) |  |
| [ ]  Mulching (Grass Hay or Straw) |  |
| [ ]  Fiber Mulching (Wood Fiber Mulch) |  |
| [ ]  Soil Stabilizer |  |
| [ ]  Bonded Fiber Matrix |  |
| [ ]  Fiber Reinforced Matrix |  |
| [ ]  Erosion Control Blankets |  |
| [ ]  Surface Roughening (e.g. tracking) |  |
| [ ]  Other:        |  |

**Wetland Avoidance**

Will construction and/or erosion and sediment controls impinge on regulated wetlands? Yes [ ]  No [ ]  If yes, the structural and erosion and sediment controls have been included in the total project wetland impacts and have been included in the 404 permit process with the USACE.

# 5.3 (6): PROCEDURES FOR INSPECTIONS

* + - Inspections will be conducted at least once every 7 days.
		- All controls will be maintained in good working order. Necessary repairs will be initiated within 24 hours of the site inspection report.
		- Silt fence will be inspected for depth of sediment and for tears to ensure the fabric is securely attached to the posts and that the posts are well anchored. Sediment buildup will be removed from the silt fence when it reaches 1/3 of the height of the silt fence.
		- Sediment basins and traps will be checked. Sediment will be removed when depth reaches approximately 50 percent of the structure’s capacity, and at the conclusion of the construction.
		- Check dams will be inspected for stability. Sediment will be removed when depth reaches ½ the height of the dam.
		- All seeded areas will be checked for bare spots, washouts, and vigorous growth free of significant weed infestations.
		- Inspection and maintenance reports will be prepared on form DOT 298 for each site inspection, this form will also be used to document changes to the SWPPP. A copy of the completed inspection form will be filed with the SWPPP documents.
		- The SDDOT Project Engineer and Contractor’s Erosion Control Supervisor are responsible for inspections. Maintenance and repair activities are the responsibility of the Contractor. The SDDOT Project Engineer will complete the inspection and maintenance reports and distribute copies per the distribution instructions on DOT 298.

# 5.3 (7): POST CONSTRUCTION STORMWATER MANAGEMENT

Stormwater management will be handled by temporary controls outlined in “DESCRIPTION AND MAINTENANCE OF CONTROL MEASURES” above, and any permanent controls needed to meet permanent stormwater management needs in the post construction period will be shown in the plans and noted as permanent.

**5.3 (8):** **POLLUTION PREVENTION PROCEDURES**

**5.3 (8a):** **Spill Prevention and Response Procedures**

* + **Material Management**
		- Housekeeping
			* Only needed products will be stored on-site by the Contractor.
			* Except for bulk materials the contractor will store all materials under cover and/or in appropriate containers.
			* Products must be stored in original containers and labeled.
			* Material mixing will be conducted in accordance with the manufacturer’s recommendations.
			* When possible, all products will be completely used before properly disposing of the container off-site.
			* The manufacturer’s directions for disposal of materials and containers will be followed.
			* The Contractor’s site superintendent will inspect materials storage areas regularly to ensure proper use and disposal.
			* Dust generated will be controlled in an environmentally safe manner.
		- Hazardous Materials
			* Products will be kept in original containers unless the container is not resealable and provide secondary containment as applicable.
			* Original labels and material safety data sheets will be retained in a safe place to relay important product information.
			* If surplus product must be disposed of, manufacturer’s label directions for disposal will be followed.
			* Maintenance and repair of all equipment and vehicles involving oil changes, hydraulic system drain down, de-greasing operations, fuel tank drain down and removal, and other activities which may result in the accidental release of contaminants will be conducted on an impervious surface and under cover during wet weather to prevent the release of contaminants onto the ground.
			* Wheel wash water will be collected and allowed to settle out suspended solids prior to discharge. Wheel wash water will not be discharged directly into any stormwater system or stormwater treatment system.
			* Potential pH-modifying materials such as: bulk cement, cement kiln dust, fly ash, new concrete washings, concrete pumping, residuals from concrete saw cutting (either wet or dry), and mixer washout waters will be collected on site and managed to prevent contamination of stormwater runoff.
	+ **Spill Control Practices**

In addition to the previous housekeeping and management practices, the following practices will be followed for spill prevention and cleanup if needed.

* + - For all hazardous materials stored on site, the manufacturer’s recommended methods for spill cleanup will be clearly posted. Site personnel will be made aware of the procedures and the locations of the information and cleanup supplies.
		- Appropriate cleanup materials and equipment will be maintained by the Contractor in the materials storage area on-site. As appropriate, equipment and materials may include items such as brooms, dust pans, mops, rags, gloves, goggles, kitty litter, sand, sawdust, and plastic and metal trash containers specifically for cleanup purposes.
		- All spills will be cleaned immediately after discovery and the materials disposed of properly.
		- The spill area will be kept well ventilated and personnel will wear appropriate protective clothing to prevent injury from contact with a hazardous substance.
		- After a spill a report will be prepared describing the spill, what caused it, and the cleanup measures taken. The spill prevention plan will be adjusted to include measures to prevent this type of spill from reoccurring, as well as clean up instructions in the event of reoccurrences.
		- The Contractor’s site superintendent, responsible for day-to-day operations, will be the spill prevention and cleanup coordinator.
	+ **Spill Response**

The primary objective in responding to a spill is to quickly contain the material(s) and prevent or minimize migration into stormwater runoff and conveyance systems. If the release has impacted on-site stormwater, it is critical to contain the released materials on-site and prevent their release into receiving waters. If a spill of pollutants threatens stormwater or surface water at the site, the spill response procedures outlined below must be implemented in a timely manner to prevent the release of pollutants.

* + - The Contractor’s site superintendent will be notified immediately when a spill or the threat of a spill is observed. The superintendent will assess the situation and determine the appropriate response.
		- If spills represent an imminent threat of escaping erosion and sediment controls and entering receiving waters, personnel will be directed to respond immediately to contain the release and notify the superintendent after the situation has been stabilized.
		- Spill kits containing appropriate materials and equipment for spill response and cleanup will be maintained by the Contractor at the site.
		- If oil sheen is observed on surface water (e.g. settling ponds, detention ponds, swales), action will be taken immediately to remove the material causing the sheen. The Contractor will use appropriate materials to contain and absorb the spill. The source of the oil sheen will also be identified and removed or repaired as necessary to prevent further releases.
		- If a spill occurs the superintendent or the superintendent’s designee will be responsible for completing the spill reporting form and for reporting the spill to SDDANR.
		- Personnel with primary responsibility for spill response and cleanup will receive training by the Contractor’s site superintendent or designee. The training must include identifying the location of the spill kits and other spill response equipment and the use of spill response materials.
		- Spill response equipment will be inspected and maintained as necessary to replace any materials used in spill response activities.

**5.3 (8b): WASTE MANAGEMENT PROCEDURES**

* **Waste Disposal**
* All liquid waste materials will be collected and stored in approved sealed containers. All trash and construction debris from the site will be deposited in the approved containers. Containers will be serviced as necessary, and the trash will be hauled to an approved disposal site or licensed landfill. All onsite personnel will be instructed in the proper procedures for waste disposal and notices stating proper practices will be posted. The Contractor is responsible for ensuring waste disposal procedures are followed.
* **Hazardous Waste**
* All hazardous waste materials will be disposed of in a manner specified by local or state regulations or by the manufacturer. Site personnel will be instructed in these practices, and the Contractor will be responsible for seeing that these practices are followed.
* **Sanitary Waste**
* Portable sanitary facilities will be provided on all construction sites. Sanitary waste will be collected from the portable units which must be secured to prevent tipping and serviced in a timely manner by a licensed waste management Contractor or as required by any local regulations.

**5.3 (9): CONSTRUCTION SITE POLLUTANTS**

The following materials or substances are expected to be present on the site during the construction period. These materials will be handled as noted under the heading “POLLUTION PREVENTION PROCEDURES” (check all that apply).

* + **[ ]** Concrete and Portland Cement
	+ [ ]  Detergents
	+ [ ]  Paints
	+ [ ]  Metals
	+ [ ]  Bituminous Materials
	+ [ ]  Petroleum Based Products
	+ [ ]  Diesel Exhaust Fluid
	+ [ ]  Cleaning Solvents
	+ [ ]  Wood
	+ [ ]  Cure
	+ [ ]  Texture
	+ [ ]  Chemical Fertilizers
	+ [ ]  Other:

**Product Specific Practices**

* + - **Petroleum Products**

All on-site vehicles will be monitored for leaks and receive regular preventive maintenance to reduce the chance of leakage. Petroleum products will be stored in tightly sealed containers which are clearly labeled.

* + - **Fertilizers**

Fertilizers will be applied only in the amounts specified by the SDDOT. Once applied, fertilizers will be worked into the soil to limit the exposure to stormwater. Fertilizers will be stored in an enclosed area. The contents of partially used fertilizer bags will be transferred to sealable containers to avoid spills.

* + - **Paints**

All containers will be tightly sealed and stored when not required for use. The excess will be disposed of according to the manufacturer’s instructions and any applicable state and local regulations.

* + - **Concrete Trucks**

Contractors will provide designated truck washout facilities on the site. These areas must be self-contained and not connected to any stormwater outlet of the site. Upon completion of construction, the area at the washout facility will be properly stabilized.

**5.3 (10): NON-STORMWATER DISCHARGES**

The following non-stormwater discharges are anticipated during the course of this project (check all that apply).

* + **[ ]** Discharges from water line flushing.
	+ [ ]  Pavement wash-water, where no spills or leaks of toxic or hazardous materials have occurred.
	+ [ ]  Uncontaminated ground water associated with dewatering activities.

**5.3 (11): INFEASIBILITY DOCUMENTATION**

If it is determined to be infeasible to comply with any of the requirements of the Stormwater Permit, the infeasibility determination must be thoroughly documented in the SWPPP.

**7.0: SPILL NOTIFICATION**

In the event of a spill, the Contractor’s site superintendent will make the appropriate notification(s), consistent with the following procedures:

* + A release or spill of a regulated substance (includes petroleum and petroleum products) must be reported to SDDANR immediately **if any one of the following** conditions exists:
		- * The release or spill threatens or is able to threaten waters of the state (surface water or ground water)
			* The release or spill causes an immediate danger to human health or safety
			* The release or spill exceeds 25 gallons
			* The release or spill causes a sheen on surface water
			* The release or spill of any substance that exceeds the ground water quality standards of ARSD Chapter 74:54:01
			* The release or spill of any substance that exceeds the surface water quality standards of ARSD Chapter 74:51:01
			* The release or spill of any substance that harms or threatens to harm wildlife or aquatic life
			* The release or spill is required to be reported according to Superfund Amendments and Reauthorization Act (SARA) Title III List of Lists, Consolidated List of Chemicals Subject to Reporting Under the Emergency Planning and Community Right to Know Act, US Environmental Protection Agency.
	+ To report a release or spill, call SDDANR at 605-773-3296 during regular office hours (8 a.m. to 5 p.m. Central Standard Time). To report the release after hours, on weekends or holidays, call South Dakota Emergency Management at 605-773-3231. Reporting the release to SDDANR does not meet any obligation for reporting to other state, local, or federal agencies. Therefore, you must also contact local authorities to determine the local reporting requirements for releases. A written report of the unauthorized release of any regulated substance, including quantity discharged, and the location of the discharge will be sent to SDDANR within 14 days of the discharge.

# 5.4: SWPPP CERTIFICATIONS

* + **Certification of Compliance with Federal, State, and Local**

**Regulations**

The Storm Water Pollution Prevention Plan (SWPPP) for this project reflects the requirements of all local municipal jurisdictions for storm water management and sediment and erosion control as established by ordinance, as well as other state and federal requirements for sediment and erosion control plans, permits, notices or documentation as appropriate.

* + **South Dakota Department of Transportation**

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.



Authorized Signature (See the General Permit, Section 7.4 (1))

* + **Prime Contractor**

This section is to be executed by the General Contractor after the award of the contract. This section may be executed any time there is a change in the Prime Contractor of the project.

I certify under penalty of law that this document and all attachments will be revised or maintained under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Authorized Signature

# CONTACT INFORMATION

The following personnel are duly authorized representatives and have signatory authority for modifications made to the SWPPP:

* + **Contractor Information**:
		- Prime Contractor Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
		- Contractor Contact Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
		- Address: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
		- \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
		- City: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_State: \_\_\_\_\_\_\_\_\_Zip: \_\_\_\_\_\_\_\_\_
		- Office Phone: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Field: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
		- Cell Phone: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Fax: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ **Erosion Control Supervisor**
		- Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
		- Address: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
		- \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
		- City: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_State: \_\_\_\_\_\_\_\_\_Zip: \_\_\_\_\_\_\_\_\_
		- Office Phone: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Field: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
		- Cell Phone: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Fax: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ **SDDOT Project Engineer**
		- Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Business Address: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Job Office Location: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ - City: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_State: \_\_\_\_\_\_\_\_\_Zip: \_\_\_\_\_\_\_\_\_
		- Office Phone: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Field: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
		- Cell Phone: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Fax: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ **SDDANR Contact Spill Reporting**
		- Business Hours Monday-Friday (605) 773-3296
		- Nights and Weekends (605) 773-3231
	+ **SDDANR Contact for Hazardous Materials.**
		- (605) 773-3153
	+ **National Response Center Hotline**
		- (800) 424-8802.
	+ **SDDANR Stormwater Contact Information**
		- SDDANR Stormwater (800) 737-8676
		- Surface Water Quality Program (605) 773-3351

# 5.5: REQUIRED SWPPP MODIFICATIONS

* **5.5 (1): Conditions Requiring SWPPP Modification**

The SWPPP must be modified, including the site map(s), in response to any of the following conditions:

* When a new operator responsible for implementation of any part the SWPPP begins work on the site.
* When changes to the construction plans, sediment and erosion control measures, or any best management practices on site that are no longer accurately reflected in the SWPPP. This includes changes made in response to corrective actions triggered by inspections.
* To reflect areas on the site map where operational control has been transferred (including the date of the transfer) or has been covered under a new permit since initiating coverage under this general permit.
* If inspections by site staff, local officials, SDDANR, or U.S. EPA determine that SWPPP modifications are necessary for compliance with the Stormwater Permit.
* To reflect any revisions to applicable federal, state, or local requirements that affect the control measures implemented at the site.
* If approved by the Secretary, to reflect any changes in chemical water treatment systems or controls, including the use of a different water treatment chemical, age rates, different areas, or methods of application.
* **5.5 (2): Deadlines for SWPPP Modification**

Any required revisions to the SWPPP must be completed within 7 calendar days following any of the items listed above.

* **5.5 (3): Documentation of Modifications to the Plan**

All SWPPP modification records are required to be maintained showing the dates of when the modification occurred. The records must include the name of the person authorizing each change and a brief summary of all changes.

* **5.5 (4): Certification Requirements**

All modifications made to the SWPPP must be signed and certified as required in Section 7.4.

* **5.5 (5): Required Notice to Other Operators**

If there are multiple operators at the site, the Contractor’s Erosion Control Supervisor must notify each operator that may be impacted by the change to the SWPPP within 24 hours.

When modifications as described above occur, the SWPPP will be modified to provide appropriate protection to disturbed areas, all storm water structures, and adjacent waters. The SDDOT Project Engineer will modify the SWPPP using the DOT 298 form and drawings on the plan will be modified to reflect the needed changes. Copies of the DOT 298 forms and the SWPPP will be retained on site in a designated place for review throughout the course of the project. A copy of the DOT 298 form will be given to the Contractor Erosion Control Supervisor and a copy will be emailed to the SDDOT Environmental Section in accordance with the DOT 298 Form.