632.1 DESCRIPTION

This revegetation Work consists of preparing the soil, seeding, mulching, crimping, and the application of tackifier to areas stripped of vegetation during construction operations and are required to be revegetated. For additional information refer to the US Clean Water Act as outlined in the Environmental Protection Agency (EPA) National Pollutant Discharge Elimination System (NPDES) Storm Water Pollution Prevention Plan (SWPPP). Construction staking and digital submittals are included in the scope of the revegetation Work. The Department and Subcontractor shall each have at least one (1) Section 632, "REVEGETATION" TTCP-certified person on the Project at all times.

The Contractor shall provide submittals as per Table 632.3.4:1, "Operations Sequence for Classes of Seeding," for all Materials to the Project Manager at a minimum of ten (10) working Days before revegetation Work commences. Submittals shall conform to the Specifications and the revegetation Plan, and shall be on the Approved Products List. After submittals have been approved as per procedures identified in Section 632.3.3, "Pre-Seeding Conference;" the Contractor may substitute products on the Approved Products List with prior approval as per the same process. Rock Mulch Material submitta shall be required and meet the Specification but does not need to be on the Approved Product List. Submittal shall be a full five (5) gallon bucket sample provided to the Project Manager for sieve analysis.

All bulk Materials delivered to the Project shall be accompanied by a certified weigh master ticket for Materials utilized per Project as per Section 109.1, Measurement of Quantity." Split loads of fertilizer, seed, straw, tackifier, and bonded fiber matrix allowed with proper weigh master ticket and Contractor affidavit. Split loads shall not be

All packaged Materials delivered to the Project shall be wrapped or otherwise securely protected from weather which might affect their integrity. Materials in weather-damaged packaging shall be rejected for use on the Project.

Certification for bulk Materials shall comply with Section 106.4, Certificates of Compliance." Notify Project Inspectors when bulk Materials are delivered so loads may be inspected and verified.

The Contractor shall ensure that straw bales stored on the Project shall not exceed 20% moisture content.

632.2.1 Temporary Soil Stabilant/Tackifiers for Class A Seeding

Temporary soil stabilant and tackifier shall be considered the same and the terms used interchangeably. Tackifiers shall have a blue or green dye lasting a minimum of 36 hours to aid in application and inspection, and be bio-degradable. When used as part of seeding operations it shall be applied at a rate of 200 pounds per acre.

Tackifiers shall be plant-derived and bio-degradable and be composed of either guar, psyllium (Plantago ovata), or starch. Guar. Guar is a plant based product derived from the ground endosperm of the guar plant, treated with dispersant agents for easy

Psyllium. Psyllium is composed of the finely ground muciloid coating of Plantago ovata seeds that is applied as a dry powder or in a wet slurry to the surface of the soil. It dries to form a firm but re-wettable membrane that binds soil particles together but permits germination and growth of seed. Psyllium requires twelve (12) to eighteen (18) hours drying time.

Starch. Starch is non-ionic, cold-water soluble (pre-gelatinized) granular cornstarch. The Material is mixed with water. Approximate drying time is nine (9) to twelve (12) hours. 632.2.2 Seed for Class A and C Seeding

The Project seed list shall conform to the NMDOT Revegetation Zone and Seed List Maps at the NMDOT website or at the following link: <a href="https://arcg.is/2peB6Cc">https://arcg.is/2peB6Cc</a>. The list used shall be the year the Project was let. The Contract shall specify varieties of noxious weed-free seed in accordance

Seed submittal shall be a list from a seed producer showing the common name, botanical name, pure live seed, total poundage source locality (county and state), and NMDOT Project control number as per the revegetation/erosion control Plan All seed suppliers must be on the current Approved Products List and provide documentation that their regulating state agency

belongs to the Association of Official Seed Certifying Agencies (AOSCA) Seed mixtures shall be pre-mixed and bagged certifying the mixture quantity and percentage as noted in the Contract.

Substitutions for unavailable seeds shall be performed by adding the quantity of the unavailable seed to the quantity of the next seed species listed within that subcategory of the seed list. Before substitutions can be made the Contractor must provide proof of unavailability in letter form from three (3) seed suppliers listed on the NMDOT Approved Products List that the seed is not available All seed delivered to the Project shall be stored in a container protected from rodents and moisture and not subject to

temperatures higher than 90°I 632.2.2.1 Seed Labeling

The Contractor shall seal and label each bag in accordance with the Federal Seed Act (7 U.S.C. § 1551 et seq.) and NMDA seed labeling requirements (NMSA 1978, § 76-10-13). The Contractor shall provide the following information on each bag tag for each species:

 Variety (specify if certified Kind of seed;

with New Mexico Seed Law (NMSA 1978, § 76-10-11 et seq.).

- Lot number;
- Purity; Germination;
- Percentage crop seed, percentage inert, percentage noxious weeds, in accordance with New Mexico Seed Law (NMSA 1978, § 76-10-11. et seq);
- Origin; Test date; and
- Weight (in pounds) of this species or percentage of total lot.

The Contractor shall provide seed analysis results that are not older than twelve (12) months prior to use. Seed suppliers shall provide one (1)-acre seed bags.

The Contractor shall provide to the Project Manager documentation of seed origin and pure live seed content from a certified testing Laboratory. Seed must arrive in the original sealed containers from the Supplier and the Revegetation Contractor must provide all tags and certifications to the Project Manager. Certification must be provided that the seed has been stored in appropriat conditions in the twelve (12) months before arriving at the Project. Each seed tag shall be affixed to the bag and have the project

control number clearly identified. The certified seed Supplier shall maintain records of seed tag control numbers for a period of three

632.2.3 Fertilizer for Class A and C Seeding

Fertilizer shall be organic, slow release with an N-P-K (nitrogen, phosphorous, potassium) analysis of either 3-6-3 or 3-7-2 and blended with endo-mycorhizza and humates. Application rate shall be 1,000 lbs. per acre. Humates must comprise a minimum of 15% by weight. Endo-mycorrhiza must be arbuscular with a minimum propagule of 1.33 propagules per gram. The Contractor shall provide fertilizer (specified type and formulation) and supplier's certification in accordance with the Contract. Each bag or tote of fertilizer shall have a visible, sealed, and un-altered analysis tag from the manufacturer that must be approved by

an authorized Section 632, Revegetation" certified Inspector prior to application of the Material. The tag must include the manufacturer's information, the N-P-K analysis of the product, and the weight of the bag or tote. NMDOT reserves the right to inspect any bill of

ladings or packing slips from the supplier to verify quantity of Material on site. 632.2.4 Hydro-Mulch - Bonded Fiber Matrix (BFM) for Class C Seeding

Hydro-mulch shall be Bonded Fiber Matrix (BFM), BFM is a hydraulically-applied blanket that controls soil erosion and accelerates seed germination. BFM is a three (3)-dimensional composite of wood or paper fibers bonded by polymer tackifier that provides high performance erosion prevention on slopes. Dye and tackifier shall be included in the BFM formulation. BFM shall be applied at a rate of 2,000 lbs per acre. As a hydraulic erosio control product (HECP) as defined by the Erosion Control Technology Council, the BFM or its equivalent shall be Type 3 or higher i

functional longevity as defined in Table 1 of the 2014 Standard Specifications for Hydraulic Erosion Control Products (HECPs) Part

632.2.5 Rock Mulch for Class C Seeding

Rock Mulch shall be between one (1) inch and no greater than 1 ½ inches in size. Rock shall have a minimum of two (2) Fractured Faces. Rock which is black in color will not be Acceptable. Pumice rock is not Acceptable. 632.2.6 Composted Mulch for Class A Seeding

The Contractor shall furnish and place composted mulch as shown on the revegetation Plan and in accordance with the criteria s described below. Composted mulch provider must be registered with or permitted by the New Mexico Environment Department Solid Waste Bureau and must be in compliance with 20 NMAC 9.1.

Composted mulch is defined as the product of a controlled aerobic thermophilic biological decomposition process that meets the quality requirements in Table 632.2.6:1, "Requirements of Compost Mulch." Raw Materials used in producing composted mulch may include green waste, animal manure, animal bedding, paper waste, food waste, biosolids or other non-toxic organic matter, but shall not include animal mortalities. Table 632.2.6:1

Material	Measure	Method	Criterion
	Moisture Content*	Evaporative loss at 105°C	Between 35 % and 60
	Carbon/Nitrogen Ratio*	Nitrogen by AOAC 993.13, Carbon by ASTM D5373	Between 15:1 and 20:
All Composted Mulches	Particle Size	Sieve	40% minimum to 100% maximum of Material may pass % inch scree 100% of pieces smalle than 4 inches in lengti and 2 inches in diametr
	Electrical Conductivity*	1:5 slurry (mass basis)	<10 mmho/cm
	pH*	1:5 slurry (mass basis)	pH 5.0 – pH 8.0
	Organic Matter*	Loss on ignition at 550°C	25% - 100% of dry weight
,	Maturity	Germination test in 50:50 (volume basis) mixture of % inch screened composted mulch and twicerinsed nursery sand.	Minimum 50% germination to second set of leaves for marigold seeds
	Stability	By temperature and moisture content	Maximum core temperature of 110°F after 48 hours in 5 foo tall conical pile, with moisture adjusted to between 40% and 60%
	Debris	By volume	Less than one percen (1%) inorganic debris, including but not limite to, glass, plastic, stone and metal.
Composted Mulches with	Trace Metals*	HNO <sub>3</sub> digestion	Complies with Table 3 40CFR503.13
Wastewater Biosolids	Fecal Coliforms*	MPN with A-1 broth	<1000 MPN/dry gram

## 632.2.6.1 Acceptance

Compost mulch suppliers on the Approved Products List are approved for Project use. The NMDOT Landscape Architect shall review lab analysis and submittals from the compost producers every 180 Days and confirm their listing on the Approved Products List.

Before delivering composted mulch, provider shall furnish documentation that includes the following: 1. The raw Materials, by percentage of volume, used in the production of the delivered

2. Daily temperature records for at least 20% of the piles or batches used to produce the delivered composted mulch, illustrating attainment of at least 130°F for at least seven (7) consecutive Days,

3. A Laboratory analysis for criteria shown in Table 632.2.6:1, "Requirements of

4. An affidavit, signed by a corporate officer, confirming that the composted mulch meets each requirement shown in Table 632.2.6:1, "Requirements of Compost

## 632.2.6.2 Straw Mulch for Class A Seeding

The Contractor shall not use rotten or moldy straw. All straw mulch must be barley straw and is to be free of noxious weeds as certified by an industry-recognized forage certification authority. Certification twine must appear on all certified straw bales. The color of the certified twine for straw bales shall be listed on the certification submittal for identification purposes. The date on the straw certification provided to NMDOT may not be older than one (1) year from the date of purchase. Before Acceptance the Contractor shall provide to the Project Manager weigh tickets signed by a certified weighmaster as per Section 109.1, "Measurement of Quantity," which confirms that the amount of bulk Materials delivered to the Project equals tonnage required for the Project per the determined acreage.

632.3 CONSTRUCTION REQUIREMENTS

632.3.1 Equipment

All Equipment shall be inspected by the Contractor to confirm Equipment is in good working order prior to commencing Work

To avoid the spread of noxious weeds, all revegetation Equipment (including but not limited to trucks, trailers, tractors, hydroseeders, drill seeders, straw blasters, and disks) shall be pressure-washed to remove all visible mud, soil, and debris prior to entering the Project imits within the state right of way. If Equipment leaves the Project for any reason it shall be

re-inspected when returned to the job site. Disking attachments shall have a minimum six (6) foot carriage with front and rear discs. Crimping Equipment shall have a

minimum eight (8) foot wide carriage.

Skid steer attachments may only be used on confined areas for seeding operations. Skid steers shall not be used for spreading compost unless in a confined area.

Drill seeding Equipment shall be inspected so that drill seed drop tubes are not torn or clogged. All seed loaded into Equipment shall be verified by an Inspector to confirm correct application rates. An Inspector must verify that the auger in the seed bin is rotating and that seed is dropping through drop tubes.

The drill seeder must be inspected daily to prevent loss of seed or to prevent over- seeding. Calibration is necessary to contro rate and depth of seed distribution. Calibration procedure and demonstration shall be as per manufacturer's Specifications. The drill seeder shall be calibrated once per Project unless it is replaced on the Project. Drill seeders shall only be modified by manufacturer recommendation and documentation of the modification must be available

The inspection shall ensure that the Equipment has the following:

1. Double disc openers with 'A' frames; Depth bands;

4. Packer wheels or drag chains

Drop tubes;

5. Rate control attachments; 6. Seed boxers with covers and agitators for trashy seed; and Keyway holding auger to shaft.

632.3.1.2 Hydro-Seeder

The hydro-seeder cannons, hoses and agitators shall be in good working condition. The hydro-seeder shall be capable of applying Materials up to distances of 200 ft.

632.3.2 Materials and Sampling

Inspector must be present when Materials are to be loaded into Equipment or distributed on the areas to be seeded. Contractor shall provide all containers and bags to the Project

A one (1) quart sealed zip lock bag of seed Material labeled with the Material identification and the Project control number is to be provided to the NMDOT Landscape Architect for examination and testing. The Department may reject Materials not in accordance with the Contract.

632.3.3 Pre-Seeding Conference

A mandatory pre-seeding conference called by the Project Manager shall be held on the Project before revegetation Work begins. Attending will be the NMDOT Project Manager or representative, the NMDOT Landscape Architect or certified seeding Inspector, the General Contractor, and the Revegetation Contractor

The purpose of the meeting is to inspect the Project, and off-site vards, pits, and borrow roads for confirmation of their revegetation requirements. The Project Manager shall have at the pre-seeding meeting documentation of all pits, Contractor yards, etc. approved for use on the Project. Per Section 632.3.12, "Seeding Operations for Class A and Class C Seeding," test strip location shall be verified following the Pre-seeding Conference. Construction staking must be completed and quantities must be verified by the Project Manager before test strip commences.

Submittals must be provided to the Project Manager and Landscape Architect ten (10) Days prior to the proposed start of revegetation Work. Any revegetation Work done prior to this inspection shall be rejected. All areas to be revegetated shall be measured and confirmed for each class of seeding in accordance with Section 801 "Construction Staking by the Contractor." The Project Manager and the Contractor shall field verify and agree on the acreage for

each Class of seeding, including Modified Class A, before any Materials are ordered or delivered to the Pro Construction staking shall also identify all areas which have less than four (4) inches of soil cover and qualify for Modified Class A seeding.

The Prime Contractor shall provide minutes of this meeting for review and approval by the Project Manager and Landscape Architect or representative.

There will be no change in Materials or the scope of revegetation Work after the Contractor begins seeding operations. For revegetation Work areas to be considered ready for revegetation they shall be accessible, free of Equipment, and no further construction processes occurring which would interfere with seeding operations. No further revegetation Work or Equipment access shall occur on areas which have been revegetated.

The Prime Contractor shall maintain a minimum twelve (12) foot wide Equipment access to all revegetated areas for use by revegetation Subcontractor until revegetation Work is complete.

632.3.3.1 Weather Limitations

Revegetation Work shall not be performed when the ground is frozen or when temperatures are below 32°F. No revegetation Work shall be performed when wind speed exceeds fifteen (15) miles per hour as measured with a wind meter by the Inspector.

The Contractor shall provide the various classes and the Material and operations for each class in accordance with Table 632.3.4:1, "Operations Sequence for Classes of Seeding

Operation	Α	Mod A	C
Disk seed bed to four (4)"	x	Х	_
Apply fertilizer by broadcast, then disk to four (4)"	х	х	-
Apply one (1) inch compost mulch, disk to four (4)"	х	Х	-
Drill seed	Х	Х	_
Straw crimp; apply tackifier, dye	х		-
Track slopes with ridges horizontal and parallel to bottom of	х		×
Hand rake or chain harrow surface horizontally			>
Hydro apply seed, fertilizer, dye, tackifier		Х	×
Scarify seeded areas horizontally to slope		Х	×
Hydro mulch; apply tackifier, dye			×
Rock Mulch		Х	>

-- = not required 632.3.5 Modified Class A Seeding for Narrow Areas or Areas Inaccessible to Drill Seeding Equipment

Any Project areas with slopes less than 3:1 requiring revegetation which are less than eight (8) ft wide, or are inaccessible to drill seeding Equipment, or are too rocky to disk to a four (4) inch depth, shall use the following procedure and payment is to be The Contractor shall disk soil to a four (4) inch depth with one (1) inch of incorporated compost mulch and fertilize as per Class

A treatment. A skid steer with attachments may be used. If the seed bed is too rocky to disk to four (4) inches, the Contractor shall omit compost mulch and chain harrow or hand rake the entire area and proceed with Steps 1 and 2 below. A hydro-seeder shall then be used to apply the seed, dye, tackifier, and hydro mulch in two (2) steps as described below.

Step 1. The Contractor shall apply seed and dye to the newly disked soil, rake or chain harrow so seed is covered with soil. Step 2. The Contractor shall apply an approved bonded fiber mulch with tackifier applied in two (2) coats from opposing

Seed in these areas shall be applied at twice the specified rates and no extra payment shall be made therefore. 632.3.6 Revegetation of Areas Outside the Project Limits

Revegetation of all disturbed off-site locations will be in accordance with Section 104.7, "Final Cleanup," and the appropriate class of seeding will be used for the terrain. Section 632, 'Revegetation," procedures will be followed for all public lands and private lands that are required to be revegetated unless other seed lists and procedures are required in a resource agency permit. All revegetation Work done for permitted Contractor located activities shall be done at the Contractor's expense.

The Contractor must provide as part of submittals a letter of intent from landowners for off-site locations to be used as per Section 104.7, "Final Cleanup." The letter of intent must acknowledge the landowner's right to have revegetation performed as per our Specifications and if that revegetation right is waived the owner acknowledges that neither the Contractor nor NMDOT shall be responsible for any claims. including but not limited to fugitive dust, noxious weeds, and siltation of waterways, related to the owners decision to forgo evegetation. When revegetation Work is being performed on private land, a right of access permit for

inspection of the revegetation Work for that private land must be provided by the Contractor to Project Management and shall be

The Contractor shall provide documentation of the treatment used and notify Project Manager when the revegetation Work is

Table 632.3.6:1 Schedule of Materials for Class A Seeding CLASS A REVEGETATION MATERIALS PER ACRE STRAW FERTILIZER MULCH 2 tons 1000 lbs. 134 cubic yards Per revegetation zone list Schedule of Materials for Class A Modified Seeding CLASS A MODIFIED REVEGETATION MATERIALS PER ACRE HYDRO MULCH WITH TACKIFIER

2,000 lbs 1000 lbs. 134 cubic yards Per revegetation zone list X2 Schedule of Materials for Class C Seeding CLASS C REVEGETATION MATERIALS PER ACRE HYDRO MULCH WITH FERTILIZER TACKIFIER MULCH Per revegetation zone list 2.000 lbs. 300 tons 1,000 lbs.

632.3.7 Materials Certifications

The Contractor shall provide all certifications for required Material to the Project Manager before the Project begins.

632.3.8 Seedbed Preparation for Class A Seeding

The Contractor shall till the seedbed with a disk, harrow, or chiseling tools to at least four (4) inches deep. Uproot competitive vegetation during seedbed preparation, and uniformly

work the soil to a surface free of clods, large stones, or other Deleterious Material that would interfere with seeding Equipment. The Contractor shall ensure Inspector approves area that was disked before compost is added to the soil.

The Contractor shall add one (1) inch of compost mulch as specified by disc, harrow, or chisel to a depth of four (4) inches. The same day as and preceding tilling compost mulch into the seedbed water shall be added to the compost mulch at a rate of

2,500 gallons per each 134 cubic yards. This is to aid in the incorporation of the mulch into the seedbed. All compost mulch must be incorporate into the seedbed before adding fertilizer and commencing drill seeding. The Contractor shall add fertilizer by broadcast and disc, harrow, or chisel to a depth of four (4) inches.

The Contractor shall till across the slope, along the contour. The Contractor shall not till

the seedbed if the moisture content of the soil is outside the limits recommended by the seed Supplier for planting, or the ground is in a non-tillable condition. The Contractor shall not prepare more seedbed area on which the entire seeding operation can be applied before the surface crusts or loses seed and fertilizer to erosion. If erosion or crusting occurs, perform seedbed preparation again

After seed bed preparation and before drill seeding commences all rocks larger than four (4) inches in diameter shall be removed from the seed bed and no payment shall be made

632.3.9 Tracking and Scarification for Class C Seeding

Areas designated as Class C treatment shall be track-walked as per Table 632.3.4:1, 'Operations Sequence for Classes of Seeding" with tracks parallel to the toe of slope to compact and score the slopes within seven (7) working Days prior to the commencement of Class C operations.

Slopes which have eroded or otherwise degraded in the seven (7) working Day period before seeding may need to be re-graded before revegetation. Competitive vegetation shall be uprooted before hydro-seeding so that seed has good adherence to the surface and soil cover

Following tracking slopes shall be scarified by hand raking or chain harrowing horizontally and parallel to the bottom of the slope.

Following tracking of the slopes all rocks larger than four (4) inches in diameter shall be removed from the hydro-seed bed and no payment shall be made therefor

632.3.10 Fertilizer for Class A and Class C Seeding

Fertilizer bags shall be examined before use to confirm correct analysis and content. Notify Project Inspector when bags are to be loaded into machines and all bags shall be collected and counted confirming correct amounts used.

The Contractor shall apply the fertilizer uniformly to the prepared seedbed. Class A sha be broadcast and Class C shall be hydro-applied. The Contractor shall apply mix fertilizer in the hydro-seeder for a minimum of ten (10) minutes before applying.

The Contractor shall wet down compost mulch so that wind loss is kept to a minimum. Stockpiles shall be less than six (6) ft tall and oriented perpendicularly to the prevailing winds to prevent wind loss.

The compost mulch moisture content shall be indicated on the delivery ticket at the time of delivery and shall be within the 35 -

Regardless of the compost mulch moisture content, the Project Manager may require further wetting of compost mulch at delivery to prevent loss through wind. No extra payment shall be made therefore

The certified Inspector shall verify the load is full before unloading to confirm the Material is up to the front of the trailer. Indications of a short load are gaps at the front of the truck overloading at the back of the truck, and slip staining of the Material from the original loading line

632.3.12 Seeding Operations for Class A and Class C Seeding The Contractor shall uniformly apply the seed mix at a rate in accordance with the Contract. The Contractor shall not drive

vehicles or other Equipment on seeded areas. The Contractor is responsible for protecting revegetation Work until Acceptance. A test strip of each class of seeding shall be provided by Contractor before commencing general seeding. Each test strip shall measure no less than one (1) acre in a configuration which works for the Equipment and the site, shall be at a location of the Contractor's choosing

within the Project, and shall be done as per Specifications with a certified Inspector and the Landscape Architect or representative present. Equipment calibration and a test strip are not required for Projects less than one (1) acre in size. The test strip is to verify Equipment functionality, proper adjustment, application rate, and the Contractor's ability to

Upon Acceptance of the test plot the Contractor may proceed with seeding operations. If the test strip is not Accepted, the Contractor shall establish a new one (1) acre strip location and re-verify. The Contractor shall not proceed to full seeding operation until an Acceptable test strip has been produced. Payment will only be made for Accepted test

strips and shall be made under appropriate class of seeding. The Contractor shall coordinate with the Project Manager prior to starting seeding operations to ensure than an Inspector is present at all times. No revegetation Work shall be performed without the presence of a certified Inspect Once seed is installed on a given Project area all operations to complete that class of seeding for that area must be completed

If rainfall or some other factor prevents the Contractor from seeding to the specified depth on prepared surfaces, the Contractor shall prepare the seedbed and apply seed again, at no idditional cost to the Department.

Class C areas are to be seeded at twice the standard rate and no extra payment is to be made therefore. The Contractor shall not perform seeding operations when wind velocity exceeds fifteen (15) mph. Disking may still be performed with winds exceeding 15 mph

632.3.13 Drill Seeding for Class A Seeding The Contractor shall plant seed 1/2 inch deep unless otherwise specified in the Contract. The Contractor shall ensure that the distance between the drilled furrows is no more than eight (8) inches. If the furrow openers on

the drill exceed eight (8) inches, the Contractor shall re-drill the area and no extra payment shall be made therefore.

632.3.14 Hydro-Seeding for Class C Seeding Seed shall be applied in a slurry with fertilizer and dye. All Materials loaded into Equipment shall be verified by NMDOT Project Inspectors to confirm correct application rates. The Contractor shall mix all Materials for a minimum of ten (10) minutes before

632.3.15 Hydro-Mulching for Class C Seeding

Hydro-mulching shall be applied in two (2) sweeps from opposing directions to ensure coverage is complete. The BFM must contain a tackifier when applied. A dye capable of lasting 36 hours shall be included in slurry so that Project Inspectors can confirm coverage. Mulch must be applied the same Day as the seed to protect seed. All Materials loaded into Equipment shall be verified by NMDOT Project Inspectors to confirm correct application rates. The Contractor shall mix all Materials for a minimum of ten (10

The Contractor shall provide the Project Manager a laminated color reference card from the BFM manufacturer showing a close-up reference photograph of their product installed at

632.3.16 Straw Mulching for Class A Seeding

The Contractor shall anchor straw mulch using a crimper with flat serrated discs at least one (1) inch thick with dull edges, spaced no more than nine (9) inches apart. The Contractor shall ensure that the disc diameter is large enough to prevent the frame of the Equipment from dragging in mulch

The Contractor shall ensure that straw mulch crimping is at least two (2) inches deep and do not cover it with excessive amounts of soil. The Contractor shall perform mulch anchoring across the slope where practical, with no more than two (2) passes of the anchoring equipment. Straw shall be evenly distributed over entire bedding area with no bare areas showing or areas with straw deeper than

The Contractor shall ensure that the rate of application of straw mulch is at least two (2)

tons of air-dry straw per acre. The Inspector shall verify the total tons per acre of straw The Contractor shall ensure that straw mulch has at least 50% of fibers exceeding ten (10) inches long on the ground after

The Contractor shall spread straw mulch following drill seeding with a mechanical mulch spreader or by hand. If spreading by hand, the Contractor shall tear apart the bales of mulch and fluff it before spreading. The Contractor shall anchor straw following crimping with an approved tackifier with green dye at a rate of 200 lbs. per acre.

When crimping the straw is impractical due to rocky areas it may be spread and not crimped. Tackifier will be applied as per

Specification. This method shall be approved by the Project Manager for rocky areas only. meter with an eight (8) inch minimum length probe for the duration of the Project. An Inspector must be present and record this test. e moisture meter shall remain the property of the Contractor following Project completion and the testing shall be considered Incidental to the Project. Each bale must be tested to confirm that the bale interior moisture content is no greater than 20%. Any bales with moisture above this level shall be rejected and removed from the Project. Higher levels of moisture may indicate the presence of mold and the risk of spontaneous combustion.

The finished rock mulch surface must be smooth and uniform maintaining the original flow lines, slope gradients, and contours of the job. Rock mulch must be applied in a fashion not to tear up or damage the hydromulch when being placed. Methods and means of rock mulch installation are not specified and may vary as per access. Damaged hydro-mulch shall be replaced and no extra payment made therefore.

632.3.18 Class C Slopes with over 50' of Slope Length Class C slopes in excess of 50' of slope length (measured along the slope face from toe to crest) shall have the following

Class G rip-rap shall be used for the lower portion of the slope from the toe upwards to he point where there will not be more than 50' of slope length covered with 3/4 inch to one (1 inch rock mulch described in 632.2.5, "Rock Mulch for Class C Seeding," and Table 632.3.4:1

Operations Sequence for Classes of Seeding." The rip rap shall be placed over the hydro- seeded and mulched surface in a way that does not damage the applied mulch treatment, shall be installed from the toe of the slope upwards and shall be one (1) layer of

632.4 METHOD OF MEASUREMENT

The Contractor shall digitally provide for approval of a to-scale printable revegetation Plan as part of the submittals before the mandatory pre-seeding meeting. The Plan shall identify each area by station, numerical order, Project left, Project right, and is to indicate the class of seeding as per Table 632.3.4:1, 'Operations Sequence for Classes of Seeding." Quantities shall match those produced by construction staking and shall include all off-site areas.

cover and qualify for Modified Class A treatment as er Section 632.3.5, "Modified Class A Seeding for Narrow Areas or Areas Inaccessible to Drill Seeding Equipment." An accompanying table to the Plan shall be submitted showing the amount of each Material apportioned for each area on the Project and the acreage of that sub-area. Included

The Contractor shall identify on the Plan all areas identified by Construction Staking which have less than four (4) inches of soil

in the Plan shall be all off-Project areas requiring revegetation as enumerated in Section 632.5, "Basis of Payment."

632.5 BASIS OF PAYMENT

Pay Item

Class A Seeding Class C Seeding

632.5.1 Revegetation Work Included in Payment

Pay Unit

The following revegetation Work items shall be considered as included in payment for the main items and shall not be measured or paid for separately:

 Tackifier for straw mulch; 2. All compost mulch, fertilizer Materials, and water added at tilling;

Moisture probe for straw bales; Weed removal and disposal prior to seed operations;

Revegetation Plan; 7. Right of access permit to be provided by Contractor for inspection of off-site

locations located on private property; Multiple mobilizations to meet NPDES requirements; and Construction staking.

PPLICATIO

Minimum Length: 12"

Width: 2" to 4"

impressions.

Depth: ½" to 2"

/ertical tracking is a temporary soil stabilization technique for bare. incompacted soil on a slope which uses tracked machinery to create epressions parallel to slope contours on the face of sloped surfaces.

/ertical tracking is required on projects where soil disturbing activities on slopes are planned as a temporary erosion control practice. Vertical tracking temporarily stabilizes the soil by:

Reducing runoff velocity Providing sediment trapping Compacting soil on slopes Helping the establishment of vegetation Increasing rainfall infiltration

Cost effective Reduces erosion due to wind and water Temporarily stabilizes soil

<u>Disadvantages</u> Effectiveness is only temporary Tracking can be washed away by heavy rain Usage limited by the soil type May be required to have other sediment and soil stabilizing controls

**DESIGN CRITERIA** Equipment with track undercarriage capable of Entire face of sloped area should have vertical producing linear soil impressions should have the following measurements: 6. Number of passes on the surface should be limited to

Depths of the bare, uncompacted soil and slope of 8. Track impressions must be perpendicular to the the surface should be considered. direction of runoff. Continuous linear track impressions should occur where the minimum 12" length impressions are Vertical tracking must be used as a temporary perpendicular to the slope or direction of water erosion control measure for all project the disturb soil on any slope, unless otherwise approved.

DESCRIPTION

avoid compaction of the soil.

7. Indicate on the plans where vertical tracking will be

Vertical Tracking

There should be no more than 12" between track



servation of existing vegetation and planned protection existing trees, shrubs, and ground cover. This regetation provides erosion and sediment control, natural abitat protection, water resource protection, natural ofiltration, and aesthetics for the project area.

Concrete Saw-

cutting Water

Wood Barricade Orange Construction Fence

Chain-link Fence APPLICATION reservation of existing vegetation is applicable to any project with natural vegetation. Preservation of existing vegetation is the most effective way to protect the construction site and surrounding area from erosion and sediment

runoff. In addition, it is a standard TPWD water quality BMP for aquatic species protection. Advantages

Vegetation Preservation

 Can limit the area available for construction Naturally prevents erosion Controls sediment loss Can be difficult and/or expensive to preserve Requires less resources for final stabilization vegetation sites with diverse topography

Inexpensive erosion control

construction perimeter fence.

occur later.

DESIGN CRITERIA

- Requires detailed site planning and phasing Areas where existing vegetation will be preserved must be clearly identified on the site plans - Preserved areas must be clearly marked onsite prior to

5 - Typical areas that are designated for preservation are slopes, forested areas, and natural water features. 6 - Trenching and tunneling should occur as far away from tree trunks as feasible for the project.

Limited by projects that do not include existing

clearing and grubbing activities, typically marked off with 6 - Construction materials, equipment storage, and parking areas should be located where they will not cause damage to preserved vegetation 4 - Wherever possible, existing vegetation should be preserved where no construction activity is planned or will 7 - Preserve vegetation in blocks or large sections at the construction site.

Disadvantages

vegetation in their site design

Table 4.1 Requirements for Materials and Wastes Material or Waste Requirements Sanitary facilities shall be provided on the site, and their location shall be shown Sanitary Facilities on the ESC Plan. The facilities shall be regularly serviced at the frequency recommended by the supplier for the number of people using the facility. Show the location of trash and debris storage on the ESC Plan. Store all trash and debris in covered bins or other enclosures. Trash and debris shall be Trash and Debris removed from the site at regular intervals. Containers shall not be allowed to The amount of chemicals and hazardous materials stored on-site shall be minimized and limited to the materials necessary for the current phase of construction. Chemicals and hazardous materials shall be stored in their original, manufacturer's containers inside of a shelter that prevents contact with rainfall and runoff. Hazardous material storage shall be in accordance with all Chemicals and Federal, state and local laws and regulations. Storage locations shall have Hazardous Materials | appropriate placards and secondary containment equivalent to 110% of the largest container in storage. If an earthen pit or berm is used for secondary containment, it shall be lined with plastic. Containers shall be kept closed except when materials are added or removed. Materials shall be dispensed using drip pans or within a lined, bermed area or using other spill/overflow protection On-site fuel tanks shall be provided with a secondary enclosure equivalent to 110% of the tank's volume. If the enclosure is an earthen pit or berm, the area Fuel Tanks shall be lined with plastic. Show the location of fuel tanks and their secondary containment on the iSWM Construction Plan. An area shall be designated on the ESCPlan for concrete wash-out. A pit or bermed area, lined with plastic, or an equivalent containment measure shall be Concrete Wash-out provided for concrete wash-out water. The containment shall be a minimum of 6 CF for every 10 CY of concrete placed plus a one foot freeboard. The discharge of wash-out water to drainage ways or storm drain infrastructure shall be prohibited. Hyper-chlorinated water shall not be discharged to the environment unless the chlorine concentration is reduced to 4 ppm or less by chemically treating to dechlorinate or by on-site retention until natural attenuation occurs. Natural Hyper-chlorinated attenuation may be aided by aeration. Water with measurable chlorine concentration of less than 4 ppm is prohibited from being discharged directly to Water from Water Line Disinfection surface water. It shall be discharged onto vegetation or through a conveyance system for further attenuation of the chlorine before it reaches surface water. Alternatively, permission from the sanitary sewer operator may be obtained to discharge directly to the sanitary sewer. Vehicle and equipment washing is prohibited on the site unless a lined basin is Vehicle/Equipment provided to capture 100% of the wash water. The wash water may be allowed Wash Water to evaporate or hauled-off for disposal. Lime or other chemical stabilizers shall be limited to the amount that can be mixed and compacted by the end of each working day. Stabilizers shall be applied at rates that result in no runoff. Stabilization shall not occur immediately Soil Stabilizers before and during rainfall events. Soil stabilizers stored on-site shall be considered a hazardous material and shall meet all the requirements for chemicals and hazardous materials.

Slurry from concrete cutting shall be vacuumed or otherwise recovered and not

be allowed to discharge from the site. If the pavement to be cut is near a storm

drain inlet, the inlet shall be protected by sandbags or equivalent temporary

measures to prevent the slurry from entering the inlet.



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