Innovative Revegetation Construction Site Revegetation QC Visits

Project: Eastern Plains

Site Visit Date: 5/16/2014

Process	Control Items	Yes (1)/No(0)	Verification Point (V)	Specification	Remarks
Contract					152 acres disturbed and 0.5 acre wetlands disturbed
Seed	Seed type selected applicable to site environment	UNK		NR	Selection rationale should be documented by CDOT or Contractor
	Seed type and amount of PLS required stated	1	V	212.02	
	Type and application rate of mulch specified	1	V	213.01	2 tons/ acre
	CDOT formula used to calculate pounds PLS	0		212.02	
	Fertilizer and conditioner type and application rate specified	1	V	212.06	
	Seed application rates identified	1		212.06	
	Native seed to ecozone selected	UNK	V	NR	
Reclamation Planning	Stormwater Management Plan contain seed mixture information	Y		SWMP	
	Contractor develops detailed Revegetation Plan	0	V	NR	
	Contractor and CDOT discuss revegetation at Pre-Construction Meeting	0	V	NR	
	Contractor and CDOT Landscape Architect/WQCM meet on site prior to seeding	0	V	NR	Conservation with CDOT and inspection team; landscaper not part of talk
	Percent Vegetative Cover Evaluation performed before any ground disturbance	0	V	SWMP	Could not find data in files
Top Soil Management	Stored top soil free of subsoil, refuse, stumps, woody roots, rocks, noxious weeds	0		207.02	No real top soil; put into piles or berms along frontage road
	Wetland topsoil identified in plans for excavation	NA		207.02	
	Wetland topsoil excavated to maximum depth of 12 inches and placed within specified area	NA			Relocation site approved by Project Engineer before excavation
	Depth of topsoil determined for removal, stockpiling and revegetation	0		NR	
	Roadway topsoil salvaged before hauling, excavating and fill operations	0	V	207.03	No depth requirement in spec
	Excavated roadway topsoil stored in designated locations	0	V	207.03	
	Stockpiled salvaged topsoil (roadway and wetland) measured in cubic yards	0		207.04	
	Herbicides not used on top soil	NA		217.03	Unless approved by PE; no top soil salvaged
	Chemical testing of salvaged soils performed	0	V	NR	Assess proper fertilizer and organic amendments
	Adjustments made to fertilizer and soil amendments based upon chemical data	0	V	NR	

Seed Evaluation					
	Containers labeled with following information	0		212.02	Seed tags
	Supplier name/address	1		212.02	Seed tags
	Seed name/lot number	1		212.02	Seed tags
	Seed net weight/origin/percent weed content	1		212.02	Seed tags
	Percentage purity and germination	1		212.02	Seed tags
	Pounds of pure live seed for each species	1		212.02	Seed tags
	Total pounds of pure live seed	1		212.02	Seed tags
	Seed samples taken and tested for viability	0	V	NR	Data not available; sample collected by Team
Soil Preparation	Slopes flatter than 2:1 tilled 4 inches deep with even and loose seed bed	1	V	212.06	Scarification may also be needed
	Slopes are free of miscellaneous materials such as rocks, concrete, debris or other materials that can affect plant revegetation	1		212.06	
	Fertilizer worked into top 4 inches of soil	0	V	212.06	Soil amendments and fertilizer added on some but not all areas
	Organic amendments uniform over soil surface and incorporated into top 6 inches of soil	0	V	212.06	
Soil Conditioning/Fertilizer	Fertilizer containers unopened with guaranteed analysis	0		212.02	Data not available
	Soil conditioner compost, biological nutrient, culture or humic acid based material	1		212.02	Changed from biosol to sustane 8-2-4/humates due to financial reasons
	Compost data provided to Project Engineer and consistent with specification requirements	0		212.02	Data not available
	Soil conditioning and fertilizer application rates specified by Contractor	1		212.03	SWMP
	Fertilizer and conditioner applied before seeding	1		212.06	
Seeding	CDOT WQCM or Landscaping representative present during seeding operations	1		NR	Field inspectors; level of training unknown
	Selected seed species are planted	1		NR	
	Seeding Season within seasonal windows established by specification	1		212.03	
	Seed, soil conditioner and fertilizer not applied during inclement weather	1		212.03	
	Seeding occurs within 24 hours of tilling or scarification	1		212.06	
	Slope less that 2:1 seeded via mechanical drills with packer wheels or chain	NA		212.06	
	Mechanical drills with depth of at least 1/4 inch	0		212.06	Not documented
	Mechanical drill spacing not greater than 7 inches	0		212.06	Strips greater that 7 inches between rows or skipped additional seeded necessary; not documented
	Broadcast or hydraulic type seeding (if used) uses twice the seeding rate specified in contract	NA		212.06	

	Broadcast seeding raked in or covered with soil to depth at least 1/4 inch; only on small or non-accessible equipment areas	NA		212.06	
	Seed drill machinery calibrated to a least 1/4 inch or according to CDOT Landscaping representative	0			Not documented
Mulching	Mulch certified as weed free	1		213.02	Mulch bales contain weed free information
	Project Engineer has inspected and approved of mulch bales	0		213.02	Contractor provides weed free transit certification documentation
	Straw or hay used for mulch is not decomposed	1		213.02	
	Wood cellulose fiber and mulch tackifier meets specifications	NA			
	No bare soil showing after application	0		213.03	
	Areas mulched and crimped within four hours after seeding	1		213.03	
	Areas tacked immediate after or simultaneously upon completion of mulching and crimping	1		213.03	
	Wood chip mulch at 4 inch depth	NA		213.03	
	Spray On Mulch blanket requires product representative during mixing and application	1		213.03	
	Spray on mulch applied at 2600 pound per acre with no cure time	0		213.03	No documentation
Revegetation Monitoring	Revegetation Monitoring Performed by CDOT WQCM or Landscape representative at least quarterly	0		NR	SWMP calls for daily inspections by ECS for bare soils ; no review of seeded areas success rate
	Seeded areas covered with mulch	1		NR	
	Test areas indicated plant germination and growth	0		NR	
	Revegetation areas inspected routinely	0		NR	
	Year One vegetative cover determination	0		NR	
	Determine need for corrective action	0		NR	
	Year Two vegetative cover determination	0		NR	
	Regional WQCM and Landscaping Coordination and Evaluation	0		NR	
	Final Percent Vegetative Cover Analysis	NA		SWMP	Construction not completed
	Deactivate CDPHE Stormwater Permit	NA		SWMP	Construction not completed

Soil Data

Salvage Sample	Depth	pH	EC	Saturation%	Sol. CA	Sol Mg	Sol Na	SAR	NO3-N	NH4-N	Inorg N	Mehlich 3 P	Ex K	Ex Ca	Ex Mg	Ex Na	SO4-S	OM	Sand	Silt	Clay	Texture
	inches	SU	dS/m	%	meq/L				mg/kg					meq/100g			mg/kg	%				
Uniform	0-6	6.6	0.17	30	0.55	0.3	0.4	0.6	2.9	2.0	4.9	34	213	4.4	1.4	0.0	15	1.3	76	16	8	Sandy Loam
Imported	Sur	7.6	1.55	28	7.9	3.2	4.3	1.9	26.3	2.5	28.8	48	181	17.4	2.8	0.4	40	0.4	68	15	17	Sandy Loam
No Salvage	0-18	7.7	0.37	30	2.5	0.9	0.3	0.2	3.2	2.6	5.8	59	192	6.0	1.2	0.0	10	0.9	81	11	8	Loamy Sand
Top Soil	Pile	7.4	0.42	29	1.75	1.2	0.6	0.5	14	3.5	17.5	110	140	3.5	1.3	0.0	16	1	84	10	6	Loamy Sand

Fertilizer Recommendations			
	N	P2O5	K2O
Salvage Technique	lb/acre		
Uniform	30	0	0
Imported	0	0	0
No Salvage	30	0	0
Topsoil	0	0	0

Seed Viability

Species	Actual			Seed tag	Percent
	Germination	Dormant	Hard	Germination	Change
Oats	94%	0%	0%	98%	-4%
Little Bluestem	39%	10%	0%	95%	-48%
Thickspike Wheatgrass	95%	0%	0%	95%	0%
Prairie Sandreed	46%	0%	0%	94%	-51%
Prairie Junegrass	88%	0%	0%	84%	5%
Western Wheatgrass	92%	2%	0%	85%	11%
Prairie Coneflower	79%	3%	0%	98%	-16%
Blanketflower	82%	2%	0%	81%	4%
Sand Dropseed	4%	60%	0%	91%	-30%
Sideoats Grama	89%	4%	0%	95%	-2%
Blue Flax	63%	0%	0%	50%	26%
Purple Prairie Clover	25%	0%	64%	98%	-9%
Blue Grama	78%	0%	0%	93%	-16%

Seed Mix

Seed Species	#/acre	Seed Tag	SWMP
Western wheatgrass	4	x	x
Sideoats grama	2	x	x
Blue grama	1.2	x	x
Little bluestem	1.5	x	x
Junegrass	0.1	x	x
Thickspike wheatgrass	3	x	x
Prairie sandreed	3	x	x
Sand dropseed	0.1	x	x
Oats	3	x	x
Prairie coneflower	0.3	x	x
Purple prairie clover	0.5	x	x
Gaillardia	1	x	x
Blue flax	0.5	x	x
Total	20.2		

x = present

Conditioner

Type	Application Amount	
	#/acre	
Organic Based Conditioner	800 lbs/acre	90% fungal; 10% potassium magnesia 6-1-3
Biosol, Sustane, GrowPower		
Humate	600 lbs/acre	
Compost		