Innovative Revegetation Construction Site Revegetation QC Visits

Project: South Urban Metro Area

Site Visit Date: 11/6/2014 & 2/18/2014

Process	Control Items	Yes (1)/No(0)	Verification Point (V)	Specification	Remarks
Contract					First visit during RECAT
Seed	Seed type selected applicable to site environment	1		NR	
	Seed type and amount of PLS required stated	1	V	212.02	Via SWMP
	Type and application rate of mulch specified	1	V	213.01	Via SWMP
	CDOT formula used to calculate pounds PLS	0		212.02	
	Fertilizer and conditioner type and application rate specified	0	V	212.06	Not followed consistency; unilateral decisions being made by contractor
	Seed application rates identified	1		212.06	Via SWMP
	Native seed to ecozone selected	1	V	NR	
Reclamation Planning	Stormwater Management Plan contain seed mixture information	1		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	
	Percent Vegetative Cover Evaluation performed before any ground disturbance	UNK	V	SWMP	No documentation reviewed
Top Soil Management	Stored top soil free of subsoil, refuse, stumps, woody roots, rocks, noxious weeds	1		207.02	
	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		207.02	
	Depth of topsoil determined for removal, stockpiling and revegetation	0		NR	
	Roadway topsoil salvaged before hauling, excavating and fill operations	1	V	207.03	
	Excavated roadway topsoil stored in designated locations	1	V	207.03	
	Stockpiled salvaged topsoil (roadway and wetland) measured in cubic yards	0		207.04	
	Herbicides not used on top soil	1		217.03	
	Chemical testing of salvaged soils performed	0	V	NR	
	Adjustments made to fertilizer and soil amendments based upon chemical data	0	V	NR	

Seed Evaluation					
	Containers labeled with following information	UNK		212.02	
	Supplier name/address	UNK		212.02	
	Seed name/lot number	UNK		212.02	
	Seed net weight/origin/percent weed content	UNK		212.02	
	Percentage purity and germination	UNK		212.02	
	Pounds of pure live seed for each species	UNK		212.02	
	Total pounds of pure live seed	UNK		212.02	
	Seed samples taken and tested for viability	UNK	V	NR	Sample collected by Team
Soil Preparation	Slopes flatter than 2:1 tilled 4 inches deep with even and loose seed bed	0	V	212.06	Very inconsistent
	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	Very inconsistent
	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	
	Soil conditioner compost, biological nutrient, culture or humic acid based material	0		212.02	Very inconsistent
	Compost data provided to Project Engineer and consistent with specification requirements	0		212.02	No documentation reviewed
	Soil conditioning and fertilizer application rates specified by Contractor	0		212.03	Not in SWMP
	Fertilizer and conditioner applied before seeding	0		212.06	Very inconsistent
Seeding	CDOT WQCM or Landscaping representative present during seeding operations	0		NR	
	Selected seed species are planted	0		NR	
	Seeding Season within seasonal windows established by specification	0		212.03	Outside window
	Seed, soil conditioner and fertilizer not applied during inclement weather	1		212.03	
	Seeding occurs within 24 hours of tilling or scarification	UNK		212.06	
	Slope less that 2:1 seeded via mechanical drills with packer wheels or chain	1		212.06	
	Mechanical drills with depth of at least 1/4 inch	0		212.06	No documentation
	Mechanical drill spacing not greater than 7 inches	0		212.06	No documentation
	Broadcast or hydraulic type seeding (if used) uses twice the seeding rate specified in contract	UNK		212.06	No documentation

	Broadcast seeding raked in or covered with soil to depth at least 1/4 inch; only on small or non-accessible equipment areas	UNK		212.06	
	Seed drill machinery calibrated to a least 1/4 inch or according to CDOT Landscaping representative	0		212.06	No documentation
Mulching	Mulch certified as weed free	1		213.02	
	Project Engineer has inspected and approved of mulch bales	0		213.02	
	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	NA		213.03	
	Areas mulched and crimped within four hours after seeding	0		213.03	Very poor mulching; wind has blow much of mulch off site in many areas
	Areas tacked immediate after or simultaneously upon completion of mulching and crimping			213.03	
	Wood chip mulch at 4 inch depth	NA		213.03	
	Spray On Mulch blanket requires product representative during mixing and application	NA		213.03	
	Spray on mulch applied at 2600 pound per acre with no cure time	NA		213.03	
Revegetation Monitoring	Revegetation Monitoring Performed by CDOT WQCM or Landscape representative at least quarterly	0		NR	
	Seeded areas covered with mulch	0		NR	
	Test areas indicated plant germination and growth	0		NR	
	Revegetation areas inspected routinely	0		NR	
	Year One vegetative cover determination	NA		NR	
	Determine need for corrective action	NA		NR	
	Year Two vegetative cover determination	NA		NR	
	Regional WQCM and Landscaping Coordination and Evaluation	0		NR	
	Final Percent Vegetative Cover Analysis	NA		SWMP	
	Deactivate CDPHE Stormwater Permit	NA		SWMP	

Salvage Technique	Depth	pH	EC	Saturation	Sol. Ca	Sol. Mg	Sol. Na	SAR	NO3-N	NH4-N	Inorg N	Olsen - P	Bray P-1	Exch. K	Exch. Ca	Exch. Mg	Exch. Na	SO4-S	OM	Sand	Silt	Clay	Texture
	inches	S.U.	dS/m	%	meq/L			--	mg/kg						meq/100 g			mg/kg	%				--
Uniform	0-6	6.8	0.19	31	0.70	0.33	0.35	0.5	1.8	7.3	9.1	1.0	1.2	127	4.65	1.01	0.03	7	1.7	72	16	12	Sandy Loam
Field	0-14	6.7	0.24	31	1.05	0.50	0.30	0.3	3.6	7.1	10.7	2.0	1.3	114	4.47	0.94	0.02	8	1.6	68	22	10	Sandy Loam
NRCS	0-16	6.4	0.34	37	1.45	0.40	0.48	0.5	2.6	6.6	9.2	1.1	0.8	91	4.81	1.02	0.04	2	1.6	68	22	10	Sandy Loam
No Salvage	0-18	6.9	0.30	33	1.60	0.67	0.43	0.4	2.6	6.9	9.5	1.3	0.4	71	4.45	0.93	0.03	8	1.2	72	18	10	Sandy Loam
Topsoil	Pile	6.2	0.20	36	0.80	0.33	0.39	0.5	5.3	4.9	10.2	1.8	1.5	54	4.35	0.94	0.04	5	0.8	76	12	12	Sandy Loam

Fertilizer Recommendations			
	N	P2O5	K2O
Salvage Technique	lb/acre		
Uniform	30	60	20
Field	20	60	30
NRCS	30	60	40
No Salvage	30	60	40
Topsoil	20	60	50

Seed Viability

Species	Actual		Seed Tag	Percent
	Germination	Dormant	Germination	Change
BLANKETFLOWER	88%	0%	80%	10%
LITTLE BLUESTEM	48%	13%	94%	-35%
GALLETA	81%	8%	95%	-6%
JUNEGRASS	78%	0%	92%	-15%
BLUE GRAMA	49%	18%	85%	-21%
SIDEOATS GRAMA	57%	2%	94%	-37%
GREEN NEEDLEGRASS	18%	77%	93%	2%
PRAIRIE CONEFLOWER	81%	0%	82%	-1%
INLAND SALTGRASS	3%	85%	97%	-9%
OATS	15%	0%	95%	-84%
WESTERN WHEATGRASS	84%	3%	85%	2%
SWITCHGRASS	91%	3%	97%	-3%

Seed Mix

Seed Species=-SWMP	#/acre	Seed Tag	Viability
Blue Grama	2	x	x
Western Wheatgrass	6	x	x
Sideoats Grama	3	x	x
Little Bluestem	4	x	x
Green Needlegrass	3	x	x
Switchgrass	4	x	x
Junegrass	0.2	x	x
Galletta	5	x	x
Sand Dropseed	0.1	x	
Coneflower	0.5	x	x
Blanketflower	1	x	
Oats	3	x	x
Total	31.8		

x = present

Conditioner

Type	Application Amount
	#/acre
Organic Based Conditioner	800
Biosol, Sustane, GrowPower	
Humate	600
Compost	65