103-3
08-01-08

PROPOSED SUBGRADE TREATMENT

(For Additional Details see Soils Survey Sheet No. Q.2 to Q.6 .)

No.	Location: Begin Station	Location: End Station	Description: Side	Description: Depth (FT)	Description: Width (FT)	Type: Material	Type: Shrink %	Quantity: CY	Quantity: TON	Polymer Grid SY	Available From: Quantity CY	Available From: Location or Station to Station	Remarks
1	305+00.0	359+50.0	BOTH	2.0	44.0	SELECT CLAY	10.00%	19,539.3				Borrow A	IA 86
2	359+50.0	361+80.0	BOTH	2.0	Var.	SELECT CLAY	10.00%	1,575.4				Borrow A	IA 86
3	361+80.0	367+50.0	BOTH	2.0	47.0	SELECT CLAY	10.00%	2,182.9				Borrow A	IA 86
4	367+50.0	370+50.0	BOTH	2.0	43.0	SELECT CLAY	10.00%	1,051.1				Borrow A	IA 86
5	1329+46.0	1339+65.0	BOTH	2.0	30.0	SELECT CLAY	10.00%	2,490.9				Borrow A	old IA 86
6	6351+50.0	6359+55.0	BOTH	2.0	36.0	SELECT CLAY	10.00%	2,361.3				Borrow A	100th St
						Total		29,200.0					

107-31
04-19-11

PLOWING AND SHAPING

Refer to Standard Road Plan EW-101

Station to Station		D (FT)	Remarks
305+00	313+00	5.0	

103-7
08-01-08

SHRINKAGE DATA

Material	%	Remarks
Topsoil	40%	
Class 10	30%	
Select used for treatment	10%	
Boulders		80 CY

103-6
04-19-11

EMBANKMENT WITH MOISTURE CONTROL

Moisture content shall be within the limits of minus _2_ and plus _2_ percentage points of Optimum Moisture Content for maximum density within the area described and listed below.

Moisture Control is required for all Class 10 fill placed in all locations and depths. Stability berms placed outside the normal foreslope template and topsoil will not require Moisture Control.

Moisture Control is also required on all select subgrade treatments.

Proposed Subgrade Treatment:
Quantity: 26,545CY includes no shrink

104-9
04-17-12

LONGITUDINAL SUBDRAIN SHOULDER AND BACKSLOPE

(1) Refer to RL-13, EW-203, or EW-204. Refer to Soils Sheets * Not a bid item

Line No.	Road or Lane Ident.	Station to Station		Side	Depth D (IN)	Longitudinal Subdrain (RF-19C) Shoulder Size (IN)	Shoulder Length (FT)	Backslope Size (IN)	Backslope Length (FT)	Bridge Berm (1) Size (IN)	Bridge Berm Type	Bridge Berm Length (FT)	Subdrain Outlet RF-19C, RF-19E, or RF-19F Station	Size (IN)	Standard Road Plan and Type	Porous* Backfill (CY)	Class "A"* Crushed Stone (CY)	Remarks
1	IA 86 NBL	305+00.0	306+97.0	Rt	36.0	4.0	237.0						305+00.0	6.0	RF-19E	18.3	0.2	
													306+97.0	6.0	RF-19E		0.2	
2	IA 86 NBL	307+03.0	312+00.0	Rt	36.0	4.0	537.0						307+03.0	6.0	RF-19E	41.4		
													312+00.0	6.0	RF-19E		0.2	
3	IA 86 NBL	312+00.0	316+00.0	Rt	36.0	4.0	440.0						312+00.0	6.0	RF-19E	34.0		
													316+00.0	6.0	RF-19E		0.2	
4	IA 86 NBL	316+00.0	318+32.0	Rt	36.0	4.0	272.0						316+00.0	6.0	RF-19E	21.0		
													318+32.0	6.0	RF-19E		0.2	
5	IA 86 NBL	318+38.0	321+00.0	Rt	36.0	4.0	302.0						318+38.0	6.0	RF-19E	23.3		
													321+00.0	6.0	RF-19E		0.2	
6	IA 86 NBL	321+00.0	326+00.0	Rt	36.0	4.0	540.0						321+00.0	6.0	RF-19E	41.7		
													326+00.0	6.0	RF-19E		0.2	
7	IA 86 NBL	326+00.0	330+00.0	Rt	36.0	4.0	440.0						326+00.0	6.0	RF-19E	34.0		
													330+00.0	6.0	RF-19E		0.2	
8	IA 86 NBL	330+00.0	335+00.0	Rt	36.0	4.0	540.0						330+00.0	6.0	RF-19E	41.7		
													335+00.0	6.0	RF-19E		0.2	
9	IA 86 NBL	335+00.0	340+00.0	Rt	36.0	4.0	540.0						335+00.0	6.0	RF-19E	41.7		
													340+00.0	6.0	RF-19E		0.2	
10	IA 86 NBL	340+00.0	344+00.0	Rt	36.0	4.0	440.0						340+00.0	6.0	RF-19E	34.0		
													344+00.0	6.0	RF-19E		0.2	
11	IA 86 NBL	361+25.0	366+00.0	Rt	36.0	4.0	515.0						361+25.0	6.0	RF-19E	39.7		
													366+00.0	6.0	RF-19E		0.2	
12	IA 86 NBL	366+00.0	370+50.0	Rt	36.0	4.0	490.0						366+00.0	6.0	RF-19E	37.8		
													370+50.0	6.0	RF-19E		0.2	
13	IA 86 SBL	305+00.0	306+97.0	Lt	42.0	4.0	237.0						305+00.0	6.0	RF-19E	21.9		
													306+97.0	6.0	RF-19E		0.2	
14	IA 86 SBL	307+03.0	311+00.0	Lt	42.0	4.0	437.0						307+03.0	6.0	RF-19E	40.5		
													311+00.0	6.0	RF-19E		0.2	
15	IA 86 SBL	328+00.0	333+00.0	Lt	36.0	4.0	540.0						328+00.0	6.0	RF-19E	41.7		
													333+00.0	6.0	RF-19E		0.2	
16	IA 86 SBL	333+00.0	338+00.0	Lt	36.0	4.0	540.0						333+00.0	6.0	RF-19E	41.7		
													338+00.0	6.0	RF-19E		0.2	
17	IA 86 SBL	338+00.0	343+00.0	Lt	36.0	4.0	540.0						338+00.0	6.0	RF-19E	41.7		
													343+00.0	6.0	RF-19E		0.2	
18	IA 86 SBL	343+00.0	348+00.0	Lt	36.0	4.0	540.0						343+00.0	6.0	RF-19E	41.7		

GEOTECHNICAL DESIGN

LICENSED PROFESSIONAL ENGINEER
Robert L. Stanley
08468
IOWA

I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa.

Signature Date

Printed or Typed Name
My license renewal date is December 31, 2012

Pages or sheets covered by this seal: CS.1-2, Q.1-7, R.1-2, Z.1-6