HAMILTON Co.

REVETMENT

NHSN-020-4(57)--2R-40

LETTING DATE
07-21-2020

IOWA DOT

Highway Division

PLANS OF PROPOSED IMPROVEMENT ON THE

PRIMARY ROAD SYSTEM

HAMILTON COUNTY

REVETMENT

U.S. 20(EB) S. ditch, on W. side of N. flowing tributary to Brewers Creek, approx. 1.8 mi. W. of the E. Jct. IA 17.

SCALES: As Noted

Refer to the Proposal Form for list of applicable specifications.

Value Engineering Saves. Refer to Article 1105.14 of the Specifications.

IOWA ONE CALL
1-800-292-8989
www.iowaonecall.com
811 Know what's below. Call before you dig.

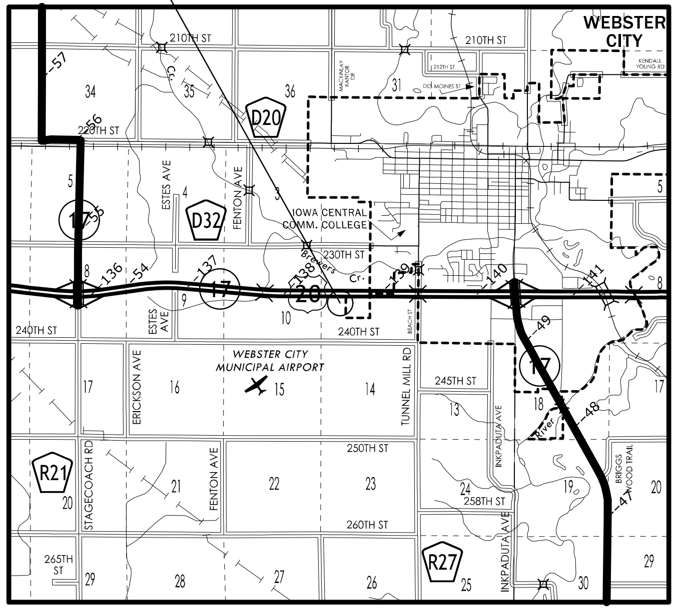
REVISIONS

	TOTAL
	3
PROJECT IDENTIFICATION NUMBER	
20-40-020-010	
PROJECT NUMBER	
NHSN-020-4(57)--2R-40	
R.O.W. PROJECT NUMBER	

INDEX OF SHEETS

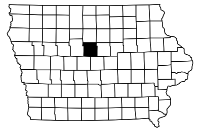
No.	DESCRIPTION
A Sheets	**Title Sheets**
A.1	Title Sheet
A.1	Location Map Sheet
A.2	Site Map
A.3 - 4	Field Exam Check List (FE Plan Only)
A.5 - 7	Concept (FE Plan Only)
C Sheets	**Quantities and General Information**
~~C.1~~	~~Project Description~~
~~C.1~~	~~Estimated Project Quantities~~
~~C.1~~	~~Estimate Reference Information~~
~~C.1~~	~~Standard Road Plans~~
~~C.1~~	~~Index of Tabulations~~
~~C.1~~	~~General Notes~~
~~C.1~~	~~Tabulations (beg. with tab. of incidentals if needed)~~
J Sheets	**Traffic Control and Staging Sheets**
~~J.1~~	~~Traffic Control Plan~~

PROJECT LOCATION
±Sta 216+80
REF.LOC.SIGN ±138.60 (US 20)



SEE SHEET A.2
FOR SITE MAP

D2 PLAN – Date: 03/05/2020



LOCATION MAP SCALE
0 0.1 0.2 0.3
Miles

DESIGN DATA RURAL

2017 AADT 10,000 V.P.D.
20-- AADT -- V.P.D.
20-- DHV -- V.P.H.
TRUCKS 20.8 %
Total Design ESALs --

INDEX OF SEALS		
SHEET NO.	NAME	TYPE
A.1	Tony J. Gustafson	Primary Signature Block

ROADWAY DESIGN

Tony J. Gustafson 12851

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 Tony J. Gustafson Date

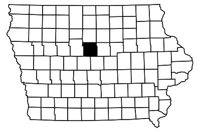
Printed or Typed Name

My license renewal date is December 31, 2021

Pages or sheets covered by this seal: A.1, C.1 and J.1

Hamilton Co. (57)

Pipe removals, shaping, revetment, fencing, incidental erosion control



FILE NO. | ENGLISH | DESIGN TEAM **T.Gustafson \ A.Smyth \ B.North** | **HAMILTON** COUNTY | PROJECT NUMBER **NHSN-020-4(57)--2R-40** | SHEET NUMBER **A.2**

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CLEAR ZONE DISTANCES (in feet from edge of traveled way)

Design Speed (mph)	Design ADT	Fill Slopes (fs)			Cut Slopes (cs)		
		fs ≥ 6:1	4:1 ≤ fs < 6:1	fs < 4:1	cs < 4:1	4:1 ≤ cs < 6:1	cs ≥ 6:1
40mph or less	ADT < 750	7-10	7-10	---**	7-10	7-10	7-10
	750 ≤ ADT < 1500	10-12	12-14	---**	10-12	10-12	10-12
	1500 ≤ ADT < 6000	12-14	14-16	---**	12-14	12-14	12-14
	ADT ≥ 6000	14-16	16-18	---**	14-16	14-16	14-16
45-50 mph	ADT < 750	10-12	12-14	---**	8-10	8-10	10-12
	750 ≤ ADT < 1500	14-16	16-20	---**	10-12	12-14	14-16
	1500 ≤ ADT < 6000	16-18	20-26	---**	12-14	14-16	16-18
	ADT ≥ 6000	20-22	24-28	---**	14-16	18-20	20-22
_55 mph	ADT < 750	12-14	14-18	---**	8-10	10-12	10-12
	750 ≤ ADT < 1500	16-18	20-24	---**	10-12	14-16	16-18
	1500 ≤ ADT < 6000	20-22	24-30	---**	14-16	16-18	20-22
	ADT ≥ 6000	22-24	26-32 *	---**	16-18	20-22	22-24
_60 mph	ADT < 750	16-18	20-24	---**	10-12	12-14	14-16
	750 ≤ ADT < 1500	20-24	26-32 *	---**	12-14	16-18	20-22
	1500 ≤ ADT < 6000	26-30	32-40 *	---**	14-18	18-22	24-26
	ADT ≥ 6000	30-32 *	36-44 *	---**	20-22	24-26	26-28
65-70 mph	ADT < 750	18-20	20-26	---**	10-12	14-16	14-16
	750 ≤ ADT < 1500	24-26	28-36 *	---**	12-16	18-20	20-22
	1500 ≤ ADT < 6000	28-32 *	34-42 *	---**	16-20	22-24	26-28
	ADT ≥ 6000	30-34 *	38-46 *	---**	22-24	26-30	28-30

*Where a site specific investigation indicates a high probability of continuing accidents, or such occurrences are indicated by accident history, the designer may provide clear zone distances greater than 30 feet as indicated. Clear zones may be limited to 30 feet for practicality and to provide a consistent roadway template if previous experience with similar projects or designs indicates satisfactory performance.

these slopes. Recovery of high-speed vehicles that encroach beyond the edge of the shoulder may be expected to occur beyond the toe of slope. Determination of the width of the recovery area at the toe of slope should take into consideration right-of-way availability, environmental concerns, economic factors, safety needs, and accident histories. Also, the distance between the edge of the travel lane and the beginning of the 3:1 slope should influence the recovery area provided at the toe of slope.

OTHER ITEMS

1. Contractor borrow material > or [✓ <] 10,000 CY (Y) (N) [✓ (N/A)] Waste Project
2. FDP to be PCC (Y) (N) [✓ (N/A)]
3. Patching to be doweled (Y) (N) [✓ (N/A)]
4. District to determine subdrain locations (Y) (N) [✓ (N/A)]
5. Pollution Prevention Plan needed (Y) [✓ (N)]
6. Field Offices (Y) [✓ (N)]
7. Construction Survey (see #28 adjacent) (Y) [✓ (N)] (N/A)
8. Survey by Design Office [✓ (Y)] (N) (N/A) Done
9. Any special construction times required (night time?) (Y) [✓ (N)]
10. Any RWIS or Auto. Traffic Recorder sites within the project limits? (Y) [✓ (N)]
11. Any Pedestrian Ramp issues? (Y) [✓ (N)]

FIELD EXAM CHECKLIST + NEEDED INFORMATION

English

1. Duration of Project? 3 Days
2. Posted Speed Limit(s) and if different during construction.
3. Any sight distance a problems?
4. Patching quantities, who provides, any need to extend project limits (Full / Partial Depth, Surf. electronically tabulated).
5. Strengthening and leveling areas (Sta-Sta).
6. Survey of culvert extensions (for RCB extensions 100' each side of RCB and 100' Lt. and Rt. of centerline at 25' intervals and provide 20-scale drawing).
7. Survey of safety dikes (100' each side of proposed dike and to 100' from centerline of roadway).
8. Survey and 20-scale of proposed right-turn lanes (from centerline of sideroad back 400' and to 75' from centerline of roadway. Cross section every 50').
9. Survey of horizontal curves (at least three locations within full super. Edges and centerline).
10. Embankment and pipe quantities for sideslopes (National Highway System (NHS) routes only). Items to be tabbed by location.
11. Any known utilities potentially needing relocated (Temp. or Permanently)?
12. Names and addresses of affected utility companies.
13. Locations of entrances to be reshaped.
14. Any existing drainage issues?
15. Any suspected wetland or envirnmental impacts?
16. Condition of existing culverts needed, obtained by whom?
17. Any existing subdrain locations?
18. Names of affected special events.
19. Locations of mailboxes to be relocated to a minimum of 8' from pavement edge.
20. Survey trees within the roadside recovery area (trees within ____ft from edge of roadway are to be removed. Those outside ____ft will be reviewed from survey data).
21. Disposition of Exist. Bridge Approaches (UAC or Resurface them).
22. Number and location of EF joints.
23. Disposition of bridge handrail and guardrail and posts.
24. Inventory of Existing Guardrail.
25. Longitudinal joint repair locations.
26. Listing of adjustment of fixtures.
27. Clearing and Grubbing quantities - by unit or area?
28. If this is a resurf. proj., is Dist. Survey able to preserve Section Corners & points (if no then add these items under Construction Survey).
29. Discuss tab. 108-25: 511 Travel Restriction; (vert. clearance restrictions or updates including use of temp. signals, horiz. clearance restrictions, No Travel Restriction Expected).

N/A

SEE NEXT PAGE FOR FIELD EXAM NOTES

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FIELD EXAM NOTES

FILE NO.	ENGLISH	DESIGN TEAM **T.Gustafson \ A.Smyth \ B.North**	**HAMILTON** COUNTY	PROJECT NUMBER **NHSN-020-4(57)--2R-40**	SHEET NUMBER **A.4**	

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IOWA DOT
GETTING YOU THERE

FINAL PROJECT CONCEPT STATEMENT

US 20 Eastbound 1.8 mi W of E Jct IA 17 (Reference Location 138.6)

Hamilton County
NHSN-020-4(57)--2R-40
PIN: 20-40-020-010

Highway Division
District 1 Office

Allison Smyth, P.E.
515-239-1039

February 27, 2020

I. STUDY AREA

A concept field review was held on February 13, 2020. Present were Tony Gustafson and Allison Smyth from the District 1 office and Bob Ellis from Iowa Falls maintenance.

1. Existing Conditions

The eastbound lanes of Highway 20 were built in 1979. Three 36-inch corrugated metal pipe letdown structures were also built at that time from Station 216+80 to 220+03 in the eastbound outside ditch. In 2014, the letdown structure at Station 220+03 was removed and replaced with riprap, which is still in serviceable condition. Williams maintenance reported to the District 1 office that the two remaining pipes have rusted and fallen apart.

2. Proposed Concept

It is proposed to remove the existing corrugated metal pipes at 216+80 and 218+80. The pipe at 216+80 will be replaced with wood excelsior mat and the pipe at 218+80 will be removed and replaced with engineering fabric and riprap.

An existing fence that ends just to the east of the second pipe will be removed until it is clear of the new riprap area, and a new end post will be added.

3. Justification

Replacement with more corrugated metal pipes would likely have similar results as the existing pipes did, so it was decided to pursue the riprap as a more permanent solution.

4. Cost Estimate and Proposed Funding Sources

The cost of the proposed improvements is estimated at $16,900. Actual costs of the improvements may vary as detailed plans are prepared, and costs shown represent current dollars as of the report date. The project will use NR funding.

5. Proposed Schedule

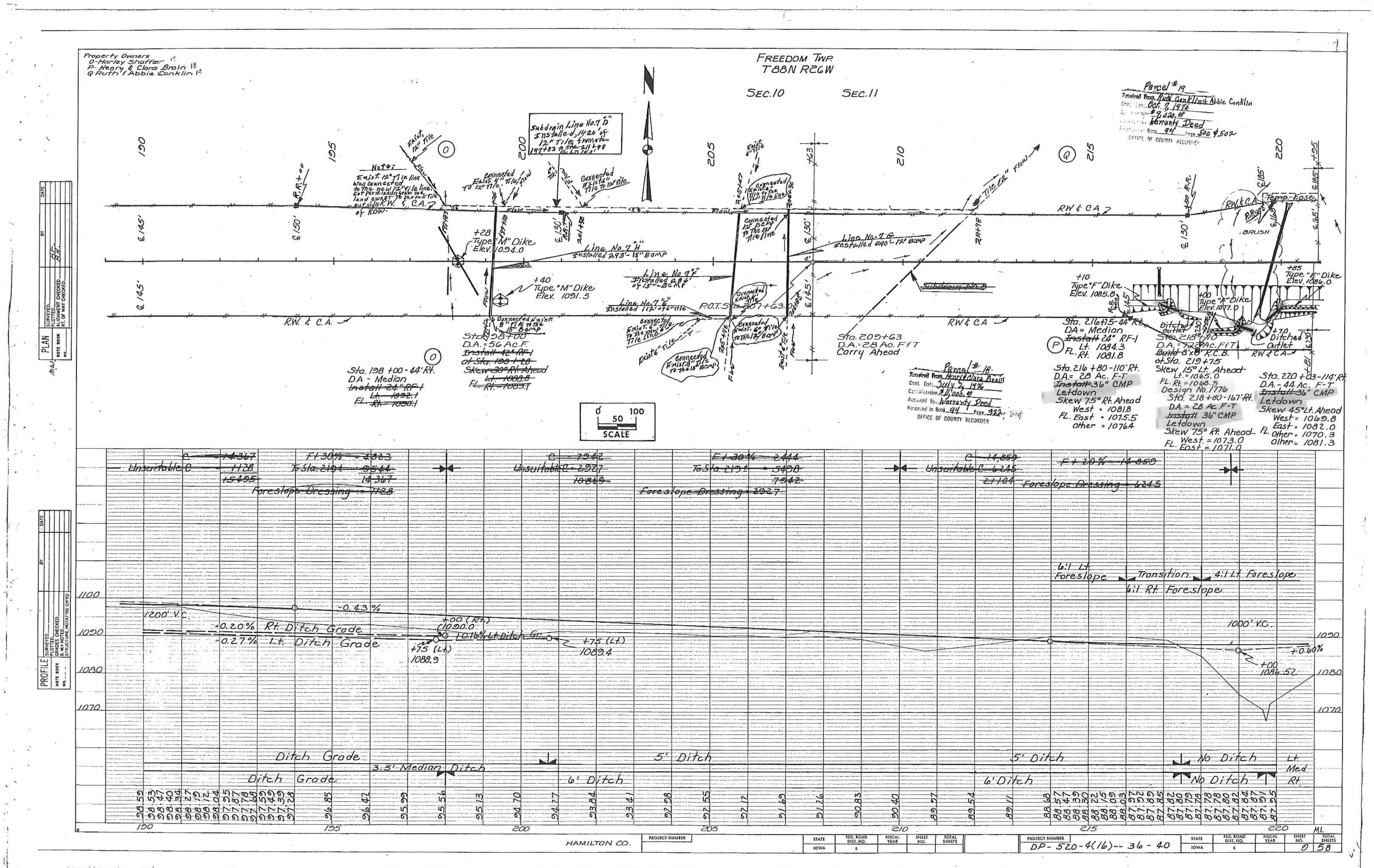
D02 Design Field Exam	04/03/2020
D09 Final Miscellaneous Plans	05/05/2020
L04 Letting	07/21/2020

6. Cost Estimate

Removal of Existing Pipes (36” x 84’)	$ 5,000
Class 10 Channel Excavation (60 CY)	$ 1,000
Engineering Fabric (48 SY)	$ 1,000
Class E Revetment (45 TON)	$ 3,000
Special Ditch Control, Wood Excelsior Mat (8 SQ)	$ 500
Erosion Control/Seeding (1 AC)	$ 2,000
Fence Removal	500
Subtotal-	**$ 13,000**
Mobilization (5%)	$ 650
Traffic Control (5%)	$ 650
Contingency (20%)	$ 2,600
Total-	**$ 16,900**

ALS

Cc: C. Purcell
S. J. Megivern
M. A. Swenson
K. Brink
J. W. Laaser-Webb
E. C. Wright
N. M. Miller
B. E. Azeltine
S. J. Gent
J. Selmer
D. R. Claman
F. Todey
J. Bartholomew
D. L. Maifield
E. D. Gansen
W. W. Musgrove
J. Garton
L. Starbuck
B. Ellis
M. J. Kennerly
J. S. Nelson
R. A. Younie
D. L. Newell
W. A. Sorenson
M. E. Ross
C. C. Poole
B. D. Hofer
S. Anderson
K. K. Patel
C. Brakke
E. Engle
N. Cuva
J. Vortherms
H. Beach
M. Ortiz-Pagan
M. Solberg
J. Lavine
K. D. Nicholson
B. Walls
D. R. Tebben
K. Olson
D. E. Sprengeler
A. A. Welch
M. J. Sankey
T. D. Crouch
P. C. Keen
S. Godbold
T. Hanson
M. Hobbs
D. A. Popp
S. Nielsen
M. Nop
V. Brewer
T. J. Gustafson
A. Smyth



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