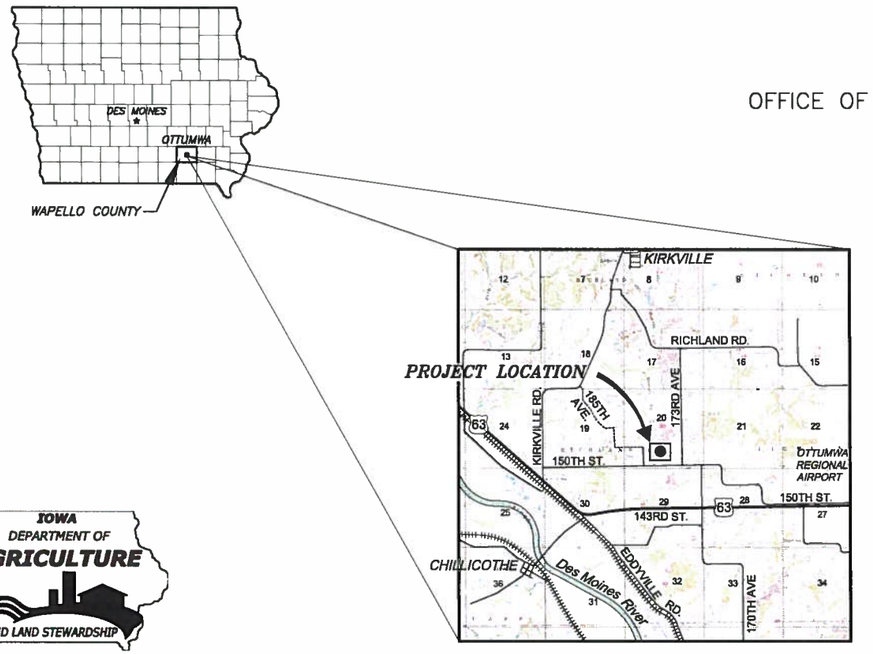
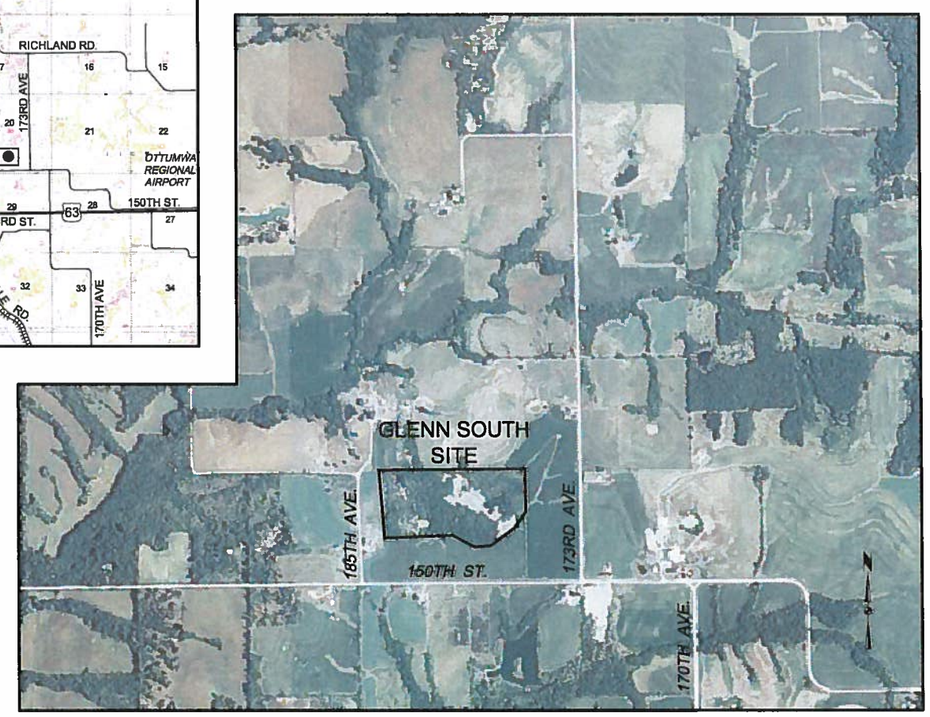
GLENN SOUTH (IA-230)
AML RECLAMATION PROJECT

DIVISION OF SOIL CONSERVATION
IOWA DEPARTMENT OF AGRICULTURE AND LAND STEWARDSHIP

SECTION 20, TOWNSHIP 73N, RANGE 14W
WAPELLO COUNTY, IOWA

FUNDED BY:
U.S. DEPARTMENT OF THE INTERIOR
OFFICE OF SURFACE MINING RECLAMATION AND ENFORCEMENT
GRANT NO: S12AF20039





LOCATION MAP

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IOWA DEPARTMENT OF AGRICULTURE AND LAND STEWARDSHIP

PREPARED FOR:
IOWA DEPARTMENT OF AGRICULTURE & LAND STEWARDSHIP
DIVISION OF SOIL CONSERVATION
HENRY A. WALLACE BUILDING
502 E. 9TH STREET
DES MOINES, IOWA 50319
(515) 281–4246

PREPARED BY:
FRENCH–RENEKER–ASSOCIATES, INC.
1501 S. MAIN STREET
FAIRFIELD, IOWA 52556
(641)–472–5145

PROJECT ENGINEER:
KENT O. RICE, PE
FRENCH–RENEKER–ASSOCIATES, INC.
(641)–472–5145

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KENT O. RICE LICENSED 10697 IOWA PROFESSIONAL ENGINEER

CERTIFICATION OF ENGINEER

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.

Kent O. Rice, PE

Kent O. Rice 1-30-13
Signature Date

License Number 10697
My license renewal date is December 31, 2014
Pages or Sheets covered by this seal: All

09–010

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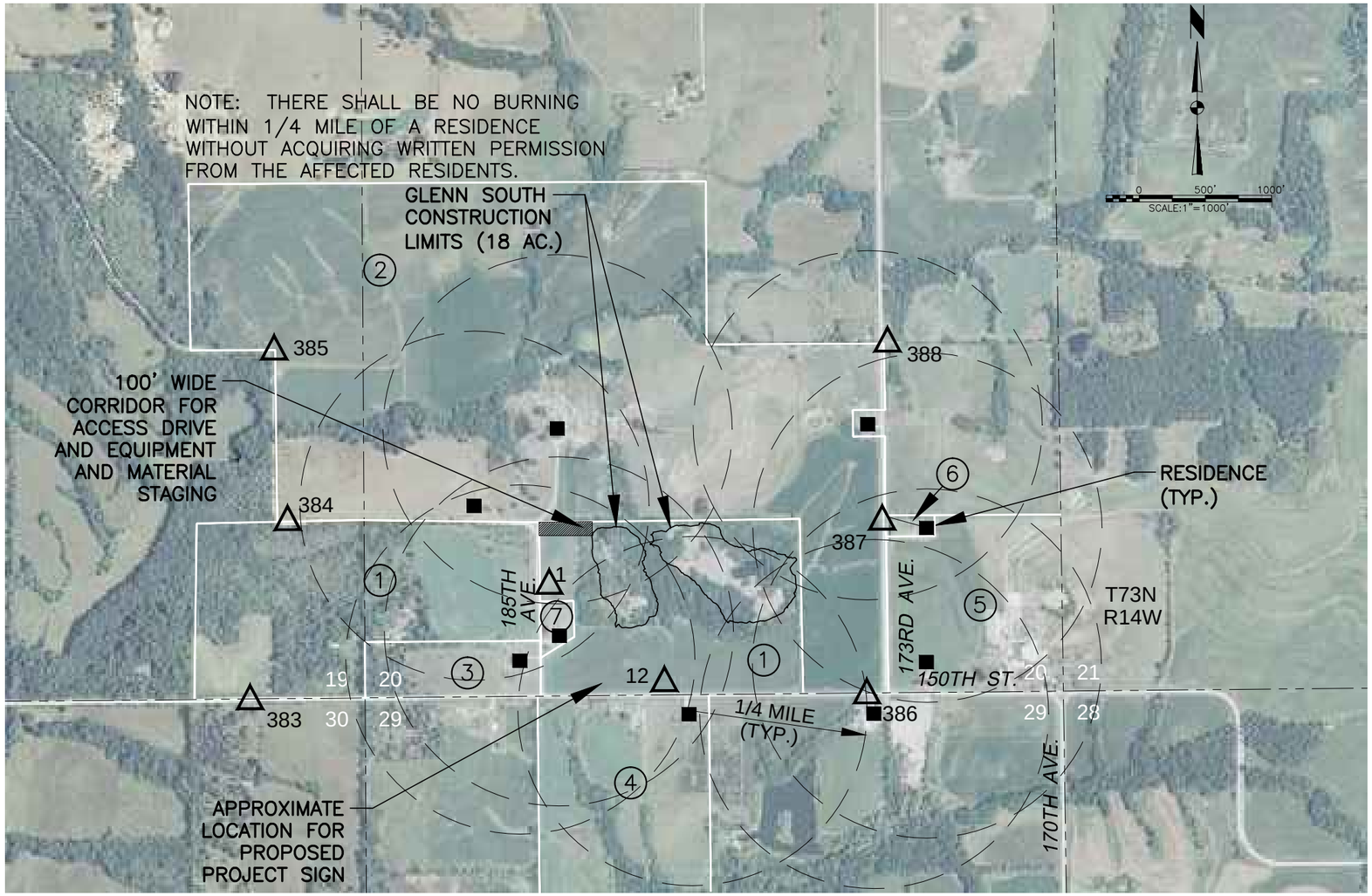
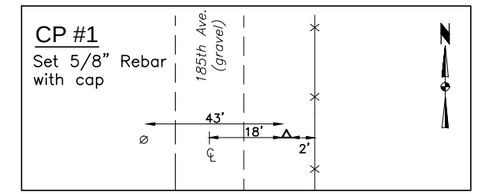
GLENN SOUTH RECLAMATION AREA PROPERTY OWNERSHIP

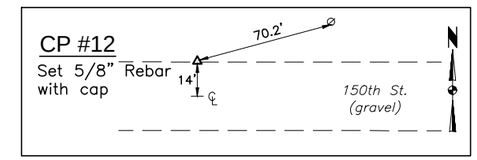
1. Joan Simpson
2. Larry Glenn
3. Jim and Jean Demmon
4. David Carnes
5. Edward Klodt
6. Rich Barre
7. Ron Hager

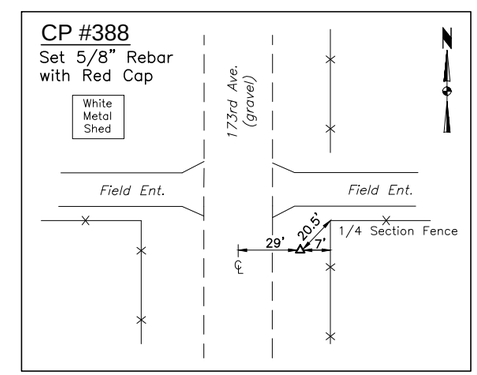
CONTROL PT. NO.	EASTING X	NORTHING Y	MONUMENT ELEV.
1	2275362.40	404763.40	789.86
12	2276432.06	403944.97	735.56
383	2273275.99	403842.92	743.41
384	2273449.18	405244.97	709.98
385	2273350.69	406499.86	688.01
386	2277945.79	403982.17	746.67
387	2277967.69	405237.84	777.00
388	2277998.20	406562.44	750.04

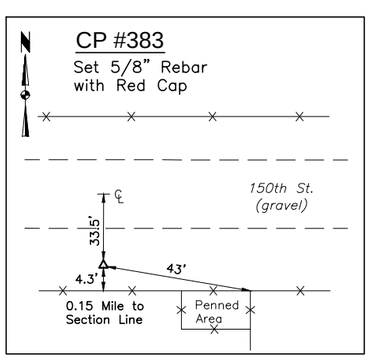
NAD27 Iowa South US Feet NGVD 29

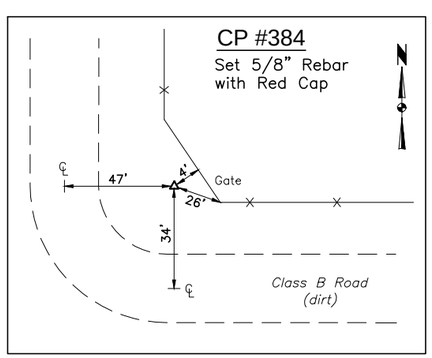


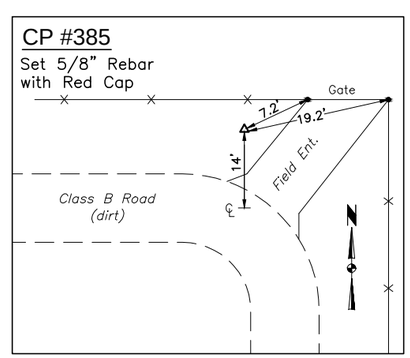


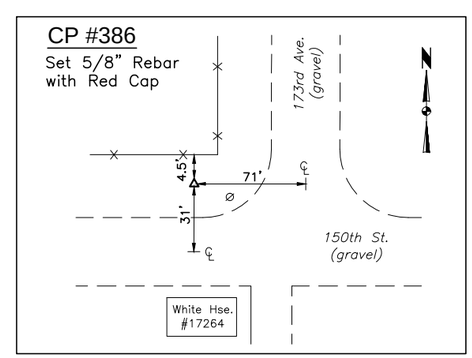


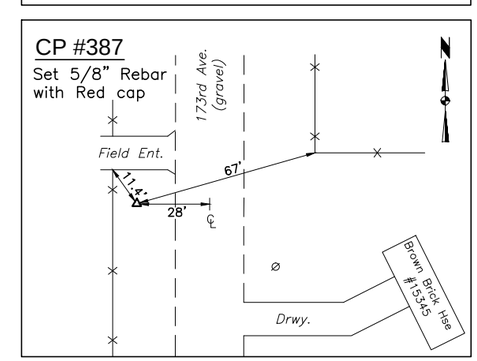












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Engineers & Surveyors
Fairfield, Iowa

CONTROL POINTS

GLENN SOUTH AML RECLAMATION PROJECT
WAPELLO COUNTY, IOWA
2013

DATE 01/30/13
PROJECT NO. 09-010
DRAWING NAME CONTROL PTS.
SHEET 2 OF 24

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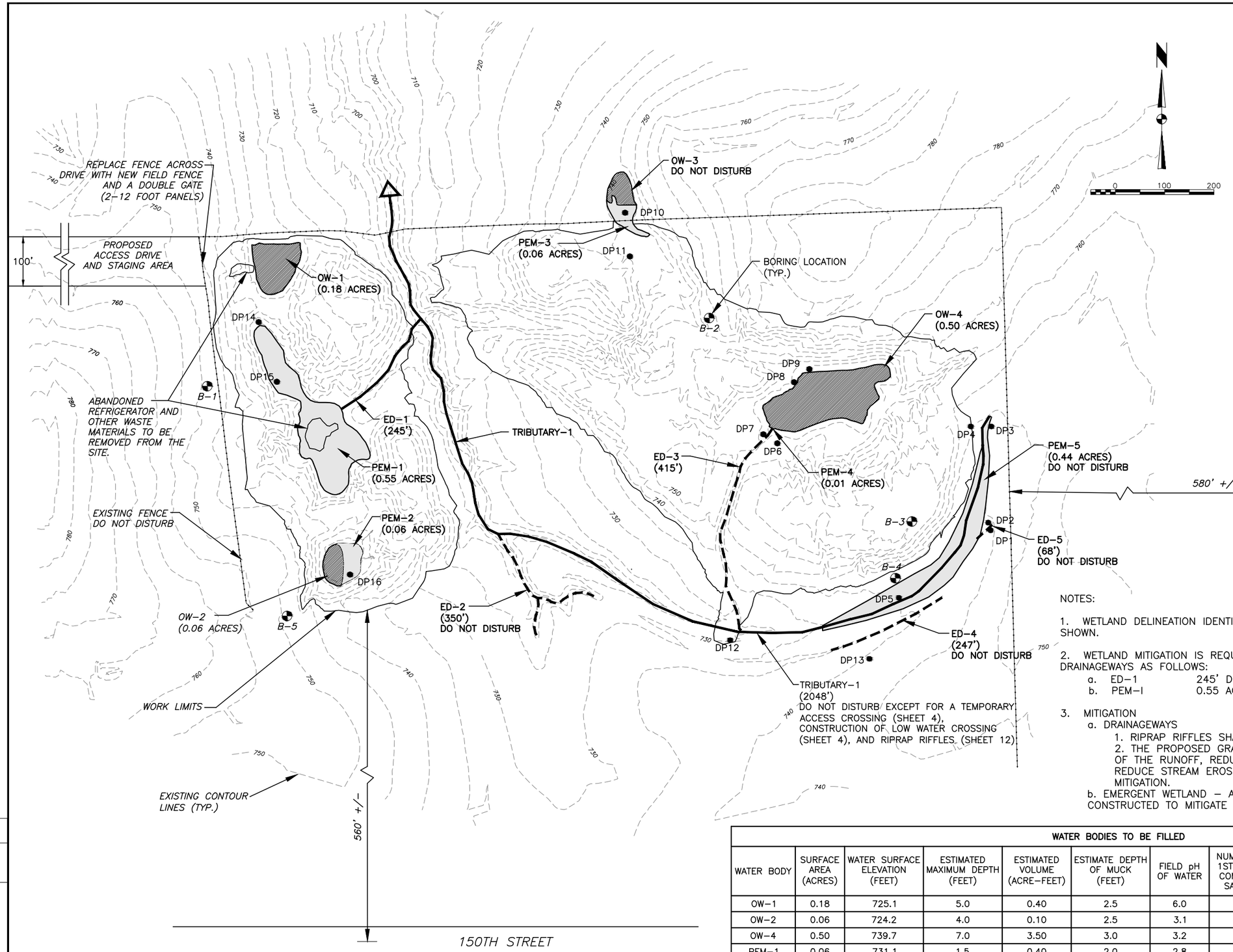

LEGEND

- PALUSTRINE EMERGENT (PEM) WETLANDS DELINEATED IN FIELD
- OPEN WATER (OW) AREAS DELINEATED IN FIELD
- REGULATED TRIBUTARY (USACOE DESIGNATED)
- EPHEMERAL DRAINAGEWAY (ED)
- DP12 LOCATION AND NUMBER OF WETLAND DELINEATION DATA POINT

NOTES:

1. WETLAND DELINEATION IDENTIFIED EXISTING WETLANDS AND DRAINAGEWAYS AS SHOWN.

2. WETLAND MITIGATION IS REQUIRED FOR SOME OF THE EXISTING WETLANDS, AND DRAINAGEWAYS AS FOLLOWS:
   a. ED–1 245' DISTURBED
   b. PEM–I 0.55 ACRES

3. MITIGATION
   a. DRAINAGEWAYS
      1. RIPRAP RIFFLES SHALL BE PLACED AS STREAM MITIGATION (SHEET 9)
      2. THE PROPOSED GRADING AND SEEDING WILL IMPROVE WATER QUALITY OF THE RUNOFF, REDUCE THE RATE AND VOLUME OF RUNOFF, AND REDUCE STREAM EROSION. EACH OF THESE ITEMS PROVIDES STREAM MITIGATION.
   b. EMERGENT WETLAND – A 0.97 ACRE EMERGENT WETLAND WILL BE CONSTRUCTED TO MITIGATE PEM–1

WATER BODIES TO BE FILLED

WATER BODY	SURFACE AREA (ACRES)	WATER SURFACE ELEVATION (FEET)	ESTIMATED MAXIMUM DEPTH (FEET)	ESTIMATED VOLUME (ACRE–FEET)	ESTIMATE DEPTH OF MUCK (FEET)	FIELD pH OF WATER	NUMBER OF 1ST ROUND COMPOSITE SAMPLES	TOTAL ACIDITY (CaCO3) (MG/L)	ESTIMATED TONS OF LIME (CaCO3) FOR STABILIZATION	NUMBER OF 2ND ROUND COMPOSITE SAMPLES
OW–1	0.18	725.1	5.0	0.40	2.5	6.0	1	N/A	2	1
OW–2	0.06	724.2	4.0	0.10	2.5	3.1	1	N/A	2	1
OW–4	0.50	739.7	7.0	3.50	3.0	3.2	1	130	55	1
PEM–1	0.06	731.1	1.5	0.40	2.0	2.8	1	N/A	7	1
PEM–2	0.06	724.2	2.0	0.10	1.0	2.9	NONE	N/A	2	NONE
PEM–3	0.06	739.0	1.0	0.05	1.0	3.1	NONE	N/A	1	NONE
PEM–4	0.01	739.7	1.0	0.01	1.0	3.0	NONE	N/A	1	NONE

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FRENCH–RENEKER–ASSOCIATES, INC.
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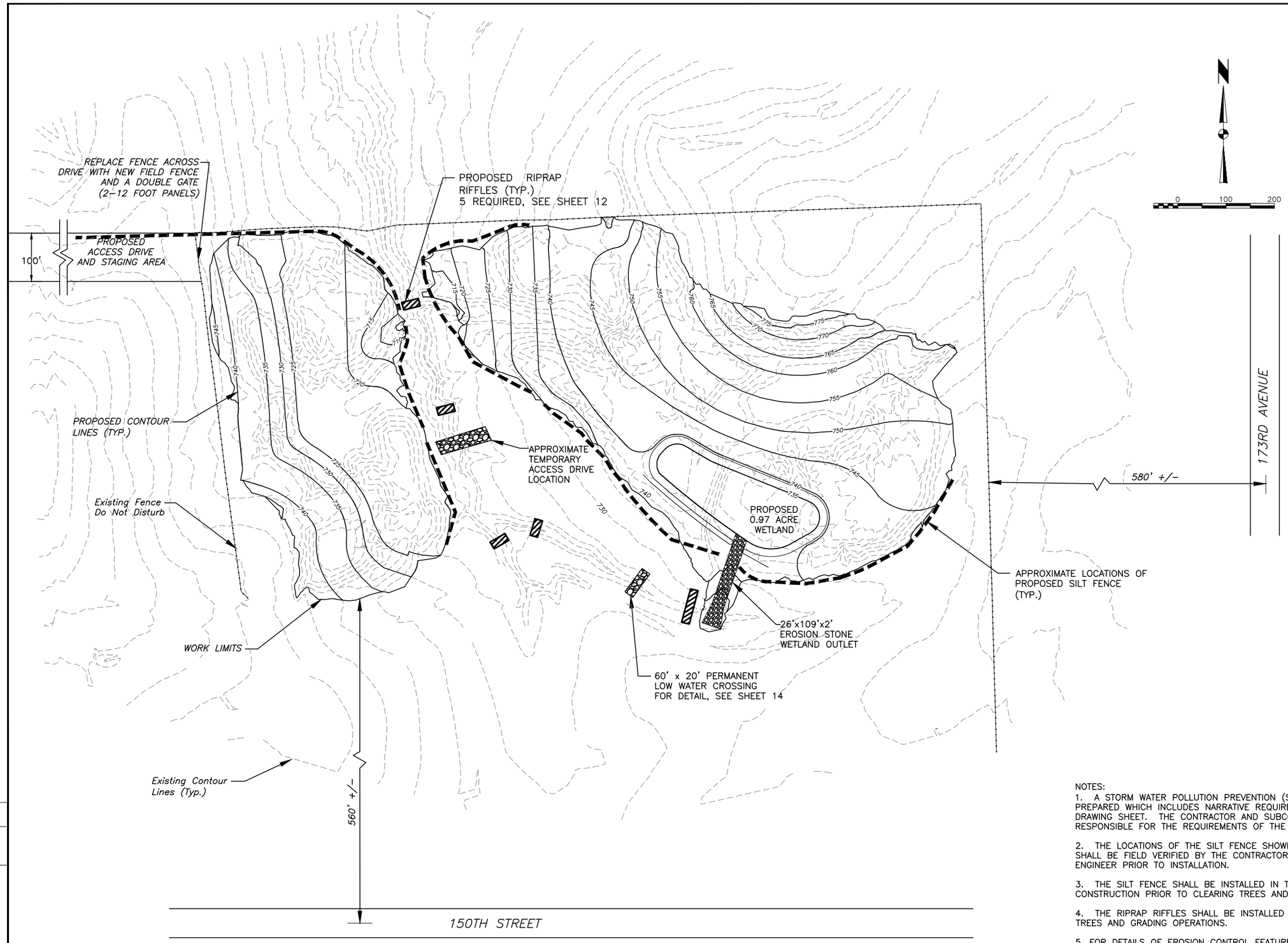
Fairfield, Iowa

EXISTING CONDITIONS

GLENN SOUTH AML RECLAMATION PROJECT 2013
WAPELLO COUNTY, IOWA

DATE 01/30/13
PROJECT NO. 09–010
DRAWING NAME EXISTING
SHEET 3 OF 24



NOTES:

1. A STORM WATER POLLUTION PREVENTION (SWPPP) HAS BEEN PREPARED WHICH INCLUDES NARRATIVE REQUIREMENTS AND THIS DRAWING SHEET. THE CONTRACTOR AND SUBCONTRACTOR SHALL BE RESPONSIBLE FOR THE REQUIREMENTS OF THE SWPPP.

2. THE LOCATIONS OF THE SILT FENCE SHOWN ON THIS DRAWING SHALL BE FIELD VERIFIED BY THE CONTRACTOR AND PROJECT ENGINEER PRIOR TO INSTALLATION.

3. THE SILT FENCE SHALL BE INSTALLED IN THE INITIAL STEPS OF CONSTRUCTION PRIOR TO CLEARING TREES AND GRADING OPERATIONS.

4. THE RIPRAP RIFFLES SHALL BE INSTALLED PRIOR TO CLEARING TREES AND GRADING OPERATIONS.

5. FOR DETAILS OF EROSION CONTROL FEATURES UPON COMPLETION OF THE GRADING, SEE SHEETS 10 AND 11.

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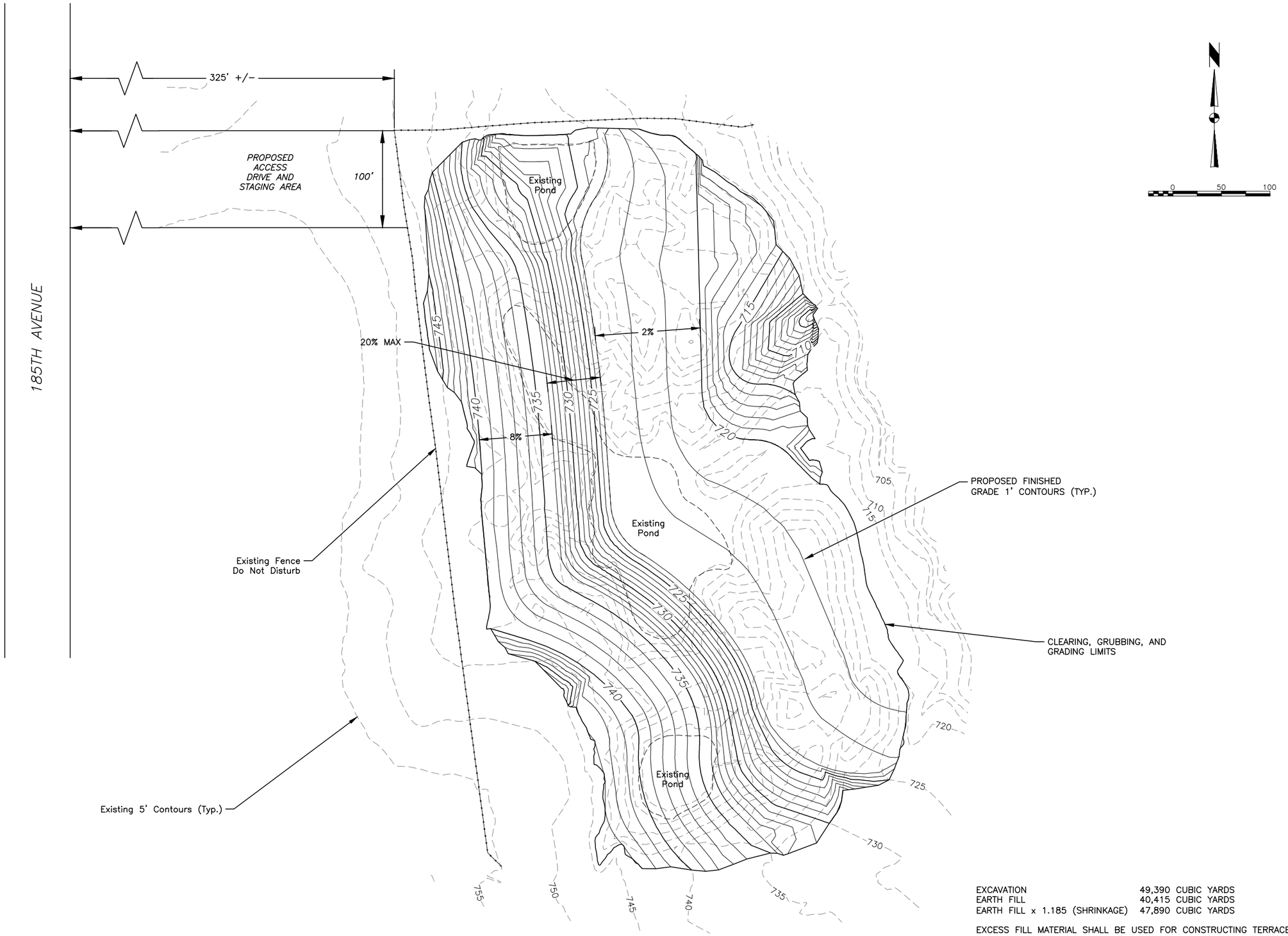
Pairfield, Iowa

STORM WATER POLLUTION PREVENTION PLAN

GLENN SOUTH AML RECLAMATION PROJECT
WAPELLO COUNTY, IOWA
2013

DATE 01/30/13
PROJECT NO. 09-010
DRAWING NAME SWPPP
SHEET 4 OF 24



EXCAVATION	49,390 CUBIC YARDS
EARTH FILL	40,415 CUBIC YARDS
EARTH FILL x 1.185 (SHRINKAGE)	47,890 CUBIC YARDS

EXCESS FILL MATERIAL SHALL BE USED FOR CONSTRUCTING TERRACES

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PLOTTED: 11/21/12 HAT

MARK	REVISION DESCRIPTION	DATE	BY
1			
2			
3			

FRENCH-RENEKER-ASSOCIATES, INC.
Engineers & Surveyors
Fairfield, Iowa

GRADING PLAN
WEST SIDE

GLENN SOUTH AML RECLAMATION PROJECT 2013
WAPELLO COUNTY, IOWA

DATE 01/30/13
PROJECT NO. 09-010
DRAWING NAME GRADING A
SHEET 5 OF 24

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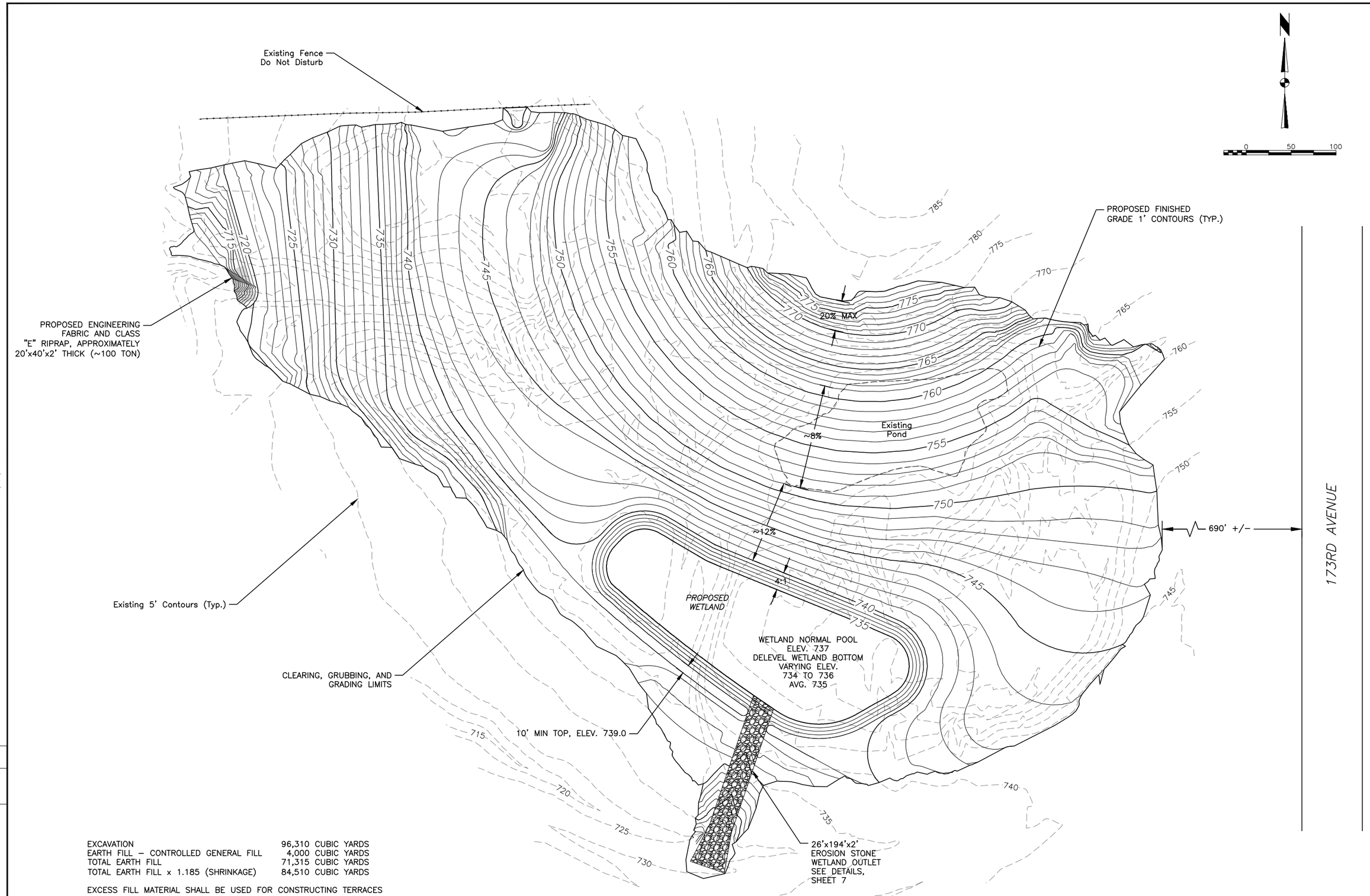

EXCAVATION	96,310 CUBIC YARDS
EARTH FILL – CONTROLLED GENERAL FILL	4,000 CUBIC YARDS
TOTAL EARTH FILL	71,315 CUBIC YARDS
TOTAL EARTH FILL x 1.185 (SHRINKAGE)	84,510 CUBIC YARDS

EXCESS FILL MATERIAL SHALL BE USED FOR CONSTRUCTING TERRACES

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PLOTTED: 11/21/12 HAT

MARK	REVISION DESCRIPTION	DATE	BY
1			
2			
3			

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Fairfield, Iowa

GRADING PLAN EAST SIDE

GLENN SOUTH AML RECLAMATION PROJECT 2013
WAPELLO COUNTY, IOWA

DATE 01/30/13
PROJECT NO. 09-010
DRAWING NAME GRADING B
SHEET 6 OF 24

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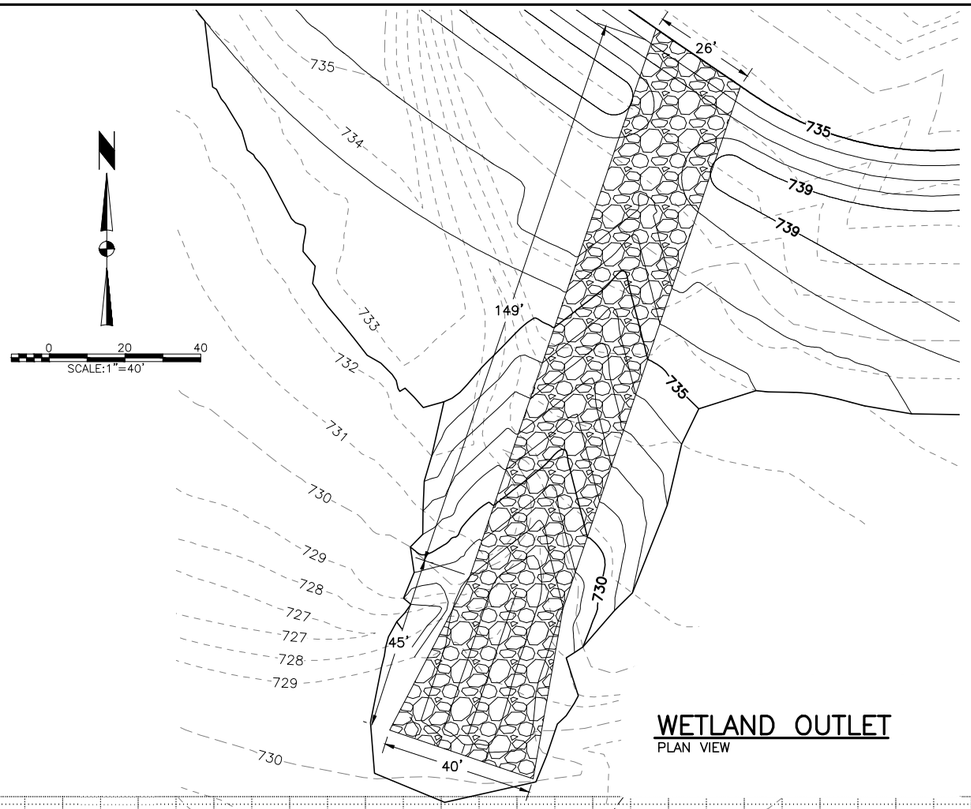
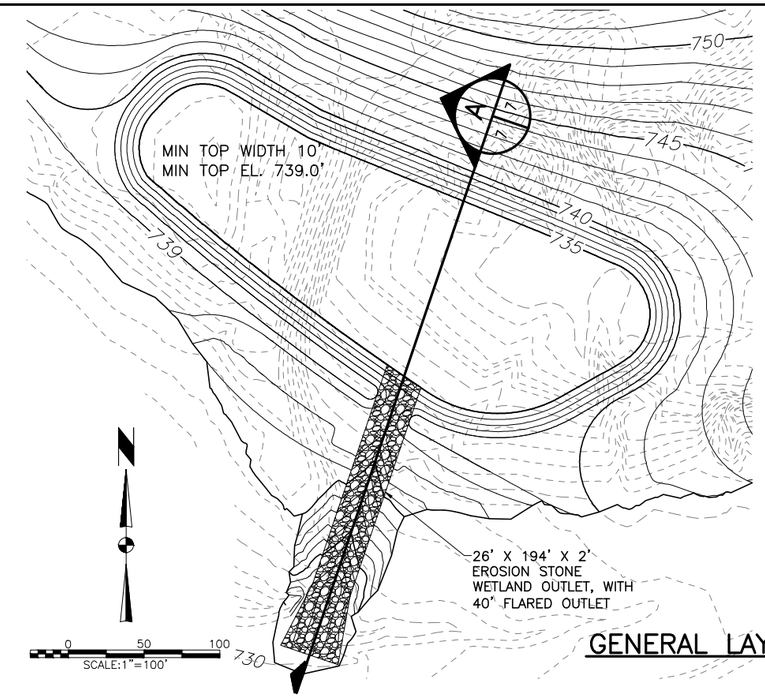
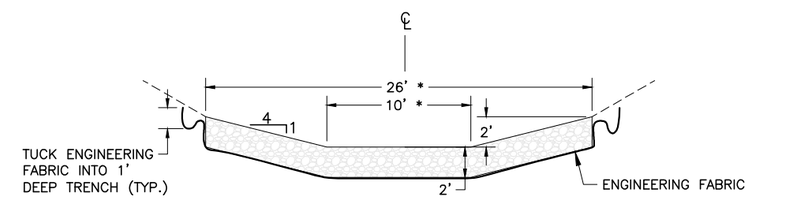


WETLAND OUTLET
PLAN VIEW



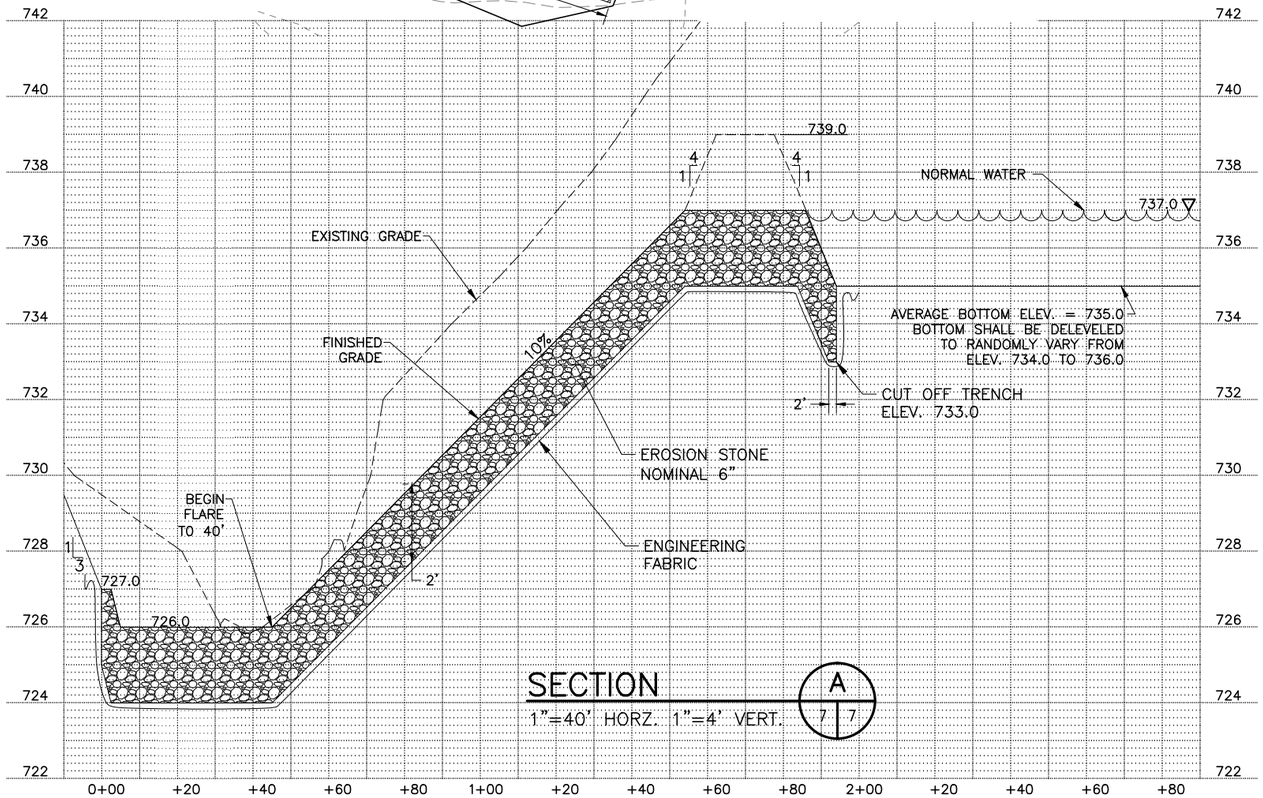
GENERAL LAYOUT



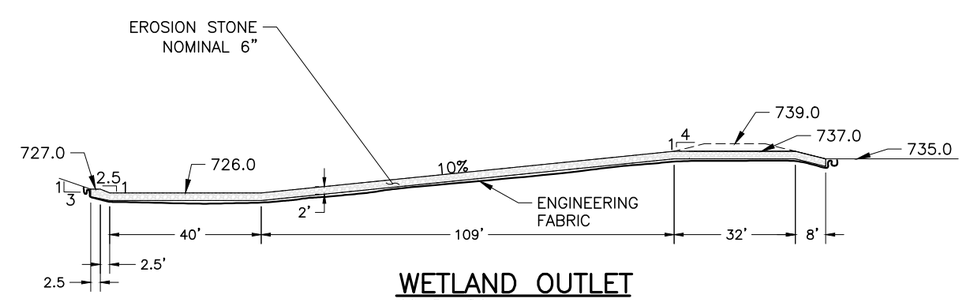
OUTLET SHALL BE TRAPEZOIDAL

WETLAND OUTLET
SCALE: N.T.S.

* FLARE TOP WIDTH TO 40' AND BOTTOM WIDTH TO 24' IN DOWNSTREAM 45' OF THE WETLAND OUTLET.



SECTION A
1"=40' HORZ. 1"=4' VERT.



WETLAND OUTLET
SCALE: N.T.S.

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FRENCH-RENEKER-ASSOCIATES, INC.
Engineers & Surveyors
Fairfield, Iowa

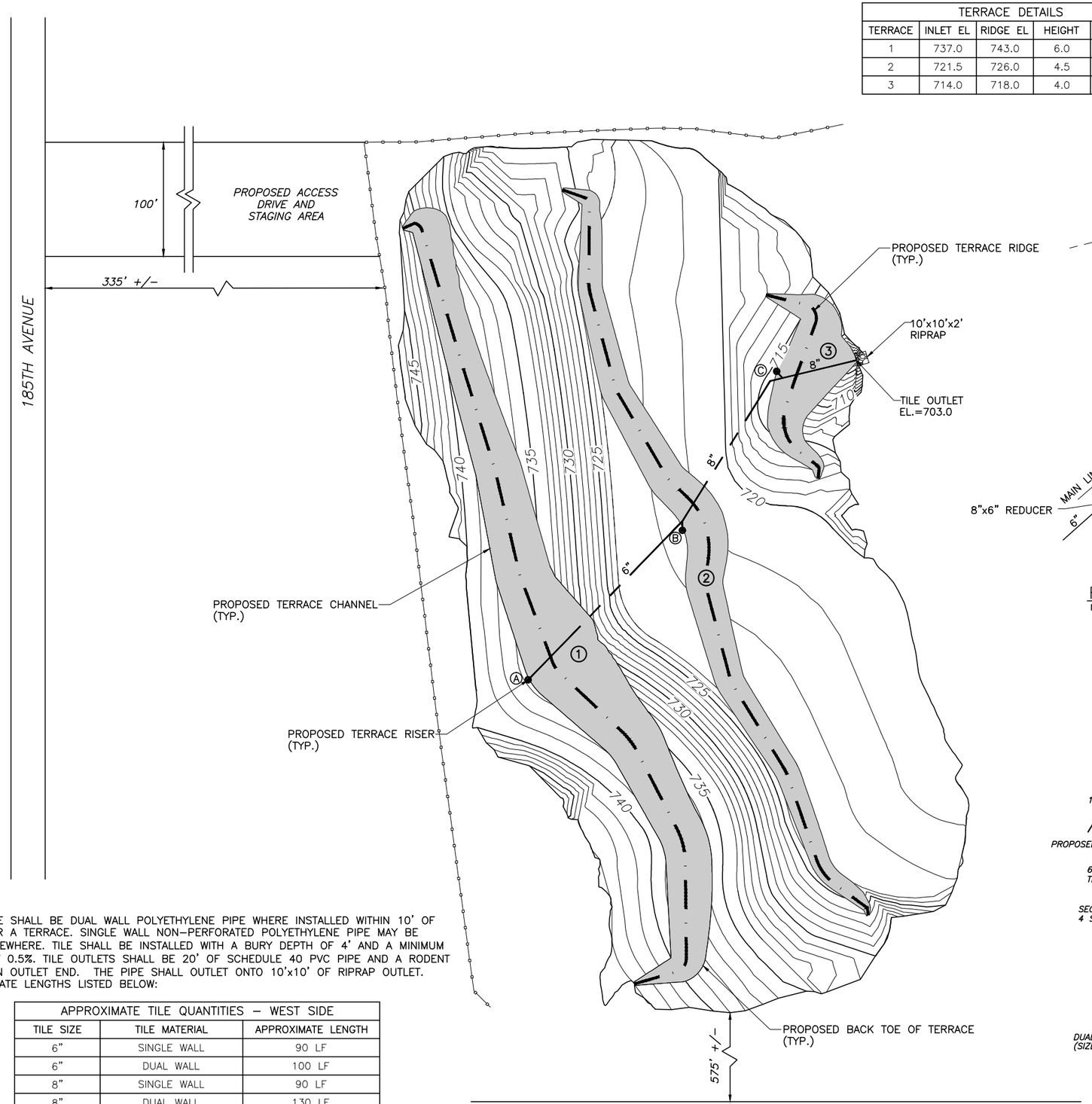
WETLAND PLAN

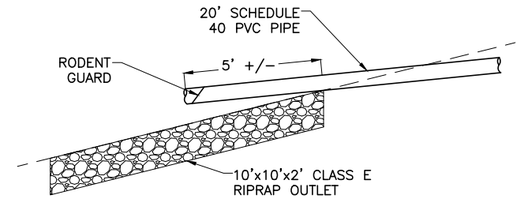
GLENN SOUTH AML RECLAMATION PROJECT 2013
WAPELLO COUNTY, IOWA

DATE 01/30/13
PROJECT NO. 09-010
DRAWING NAME WET PLAN
SHEET 7 OF 24

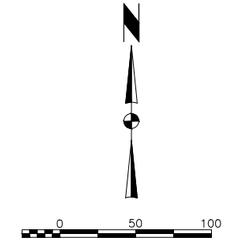
TERRACE DETAILS				
TERRACE	INLET EL	RIDGE EL	HEIGHT	LENGTH
1	737.0	743.0	6.0	770 LF
2	721.5	726.0	4.5	720 LF
3	714.0	718.0	4.0	210 LF

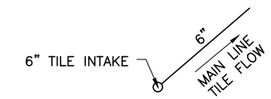
RISER DETAILS			
INLET	INLET EL	INLET SIZE	TILE SIZE
A	737.0	6" DIAMETER	6"
B	721.5	6" DIAMETER	6"
C	714.0	6" DIAMETER	6"





TILE OUTLET
NTS





RISER "A"
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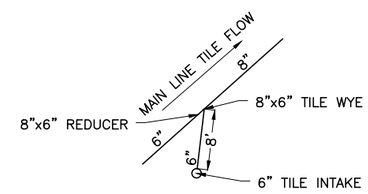

RISER "B"
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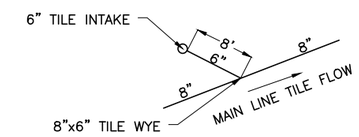
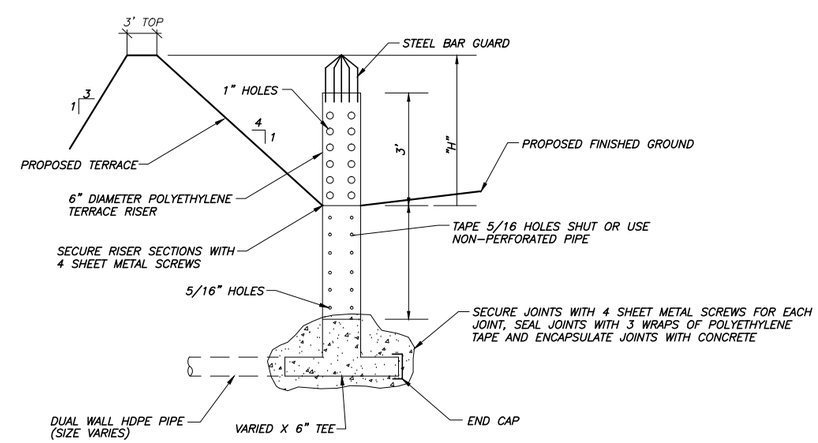


RISER "C"
NTS



NOTE: SURROUND EACH TERRACE INLET STRUCTURE WITH SILT FENCE

TERRACE RISER
NTS

NOTE: TILE SHALL BE DUAL WALL POLYETHYLENE PIPE WHERE INSTALLED WITHIN 10' OF OR UNDER A TERRACE. SINGLE WALL NON-PERFORATED POLYETHYLENE PIPE MAY BE USED ELSEWHERE. TILE SHALL BE INSTALLED WITH A BURY DEPTH OF 4' AND A MINIMUM SLOPE OF 0.5%. TILE OUTLETS SHALL BE 20' OF SCHEDULE 40 PVC PIPE AND A RODENT GUARD ON OUTLET END. THE PIPE SHALL OUTLET ONTO 10'x10' OF RIPRAP OUTLET. APPROXIMATE LENGTHS LISTED BELOW:

APPROXIMATE TILE QUANTITIES – WEST SIDE		
TILE SIZE	TILE MATERIAL	APPROXIMATE LENGTH
6"	SINGLE WALL	90 LF
6"	DUAL WALL	100 LF
8"	SINGLE WALL	90 LF
8"	DUAL WALL	130 LF
8"	SCHD 40 PVC	20 LF

MARK	REVISION DESCRIPTION	DATE	BY
1			
2			
3			

FILE PATH\NAME: G:\090101DL\DRAWINGS\8-10-10\EGPT020612\PLANS\08 TERRACES.dwg
PLOTTED: 5-21-12 HAT

FRENCH-RENEKER-ASSOCIATES, INC.
Engineers & Surveyors
Fairfield, Iowa

TERRACES PLAN
WEST SIDE

GLENN SOUTH AML RECLAMATION PROJECT
2013
WAPELLO COUNTY, IOWA

DATE 01/30/13
PROJECT NO. 09-010
DRAWING NAME TERRACE
SHEET 8 OF 24

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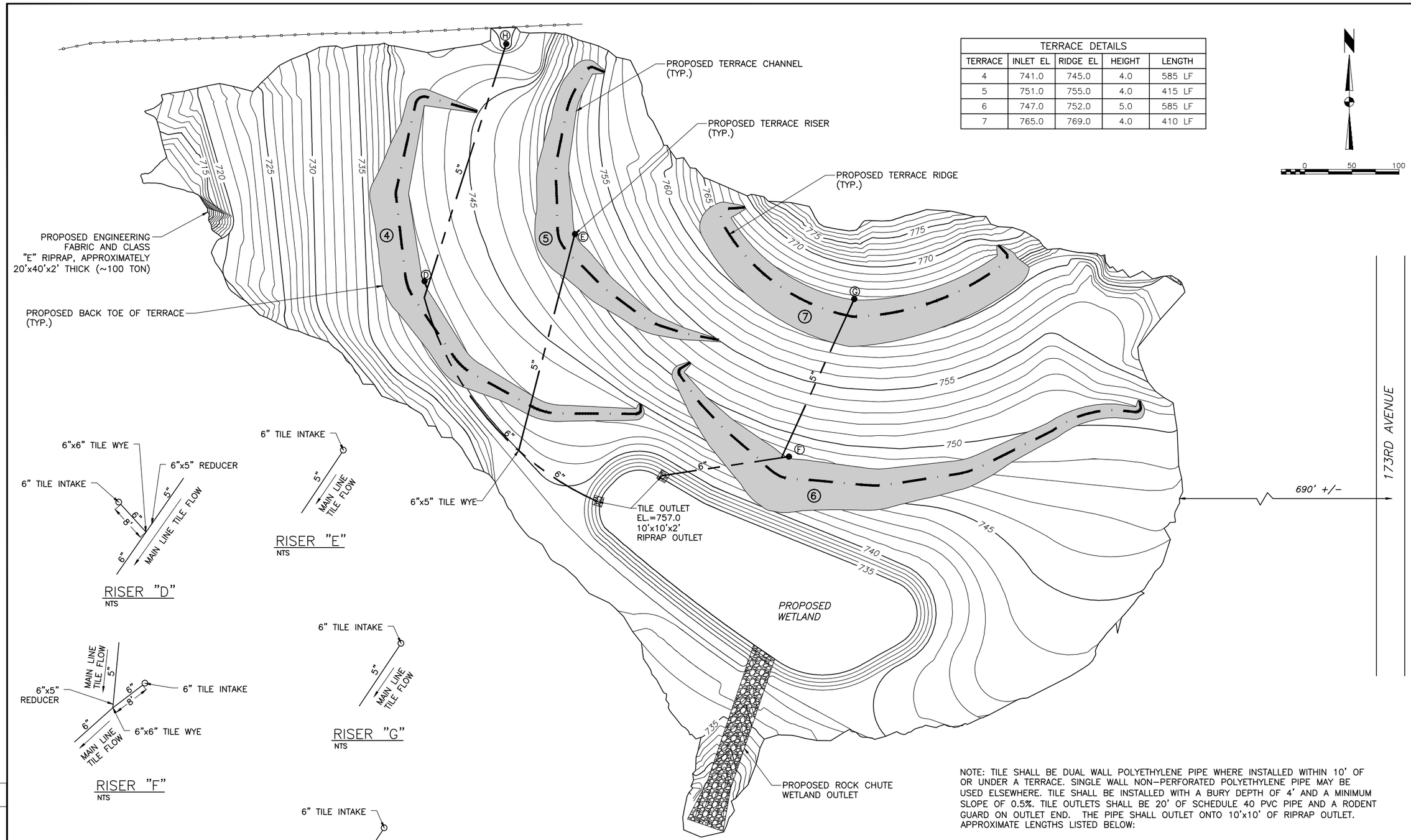


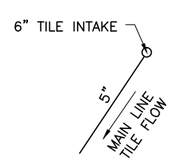
TERRACE DETAILS				
TERRACE	INLET EL	RIDGE EL	HEIGHT	LENGTH
4	741.0	745.0	4.0	585 LF
5	751.0	755.0	4.0	415 LF
6	747.0	752.0	5.0	585 LF
7	765.0	769.0	4.0	410 LF

RISER "D"
NTS

RISER "E"
NTS

RISER "F"
NTS

RISER "G"
NTS



RISER "H"
NTS

RISER DETAILS			
INLET	INLET EL	INLET SIZE	TILE SIZE
D	741.0	6" DIAMETER	6"
E	751.0	6" DIAMETER	5"
F	747.0	6" DIAMETER	6"
G	765.0	6" DIAMETER	5"
H	739.0	6" DIAMETER	5"

SEE SHEET 8 FOR DETAILS OF RIPRAP TILE OUTLETS AND TERRACE RISERS

NOTE: TILE SHALL BE DUAL WALL POLYETHYLENE PIPE WHERE INSTALLED WITHIN 10' OF OR UNDER A TERRACE. SINGLE WALL NON-PERFORATED POLYETHYLENE PIPE MAY BE USED ELSEWHERE. TILE SHALL BE INSTALLED WITH A BURY DEPTH OF 4' AND A MINIMUM SLOPE OF 0.5%. TILE OUTLETS SHALL BE 20' OF SCHEDULE 40 PVC PIPE AND A RODENT GUARD ON OUTLET END. THE PIPE SHALL OUTLET ONTO 10'x10' OF RIPRAP OUTLET. APPROXIMATE LENGTHS LISTED BELOW:

APPROXIMATE TILE QUANTITIES – EAST SIDE		
TILE SIZE	TILE MATERIAL	APPROXIMATE LENGTH
5"	SINGLE WALL	550 LF
5"	DUAL WALL	160 LF
6"	SINGLE WALL	230 LF
6"	DUAL WALL	230 LF
6"	SCHD 40 PVC	40 LF

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1			
2			
3			
4			

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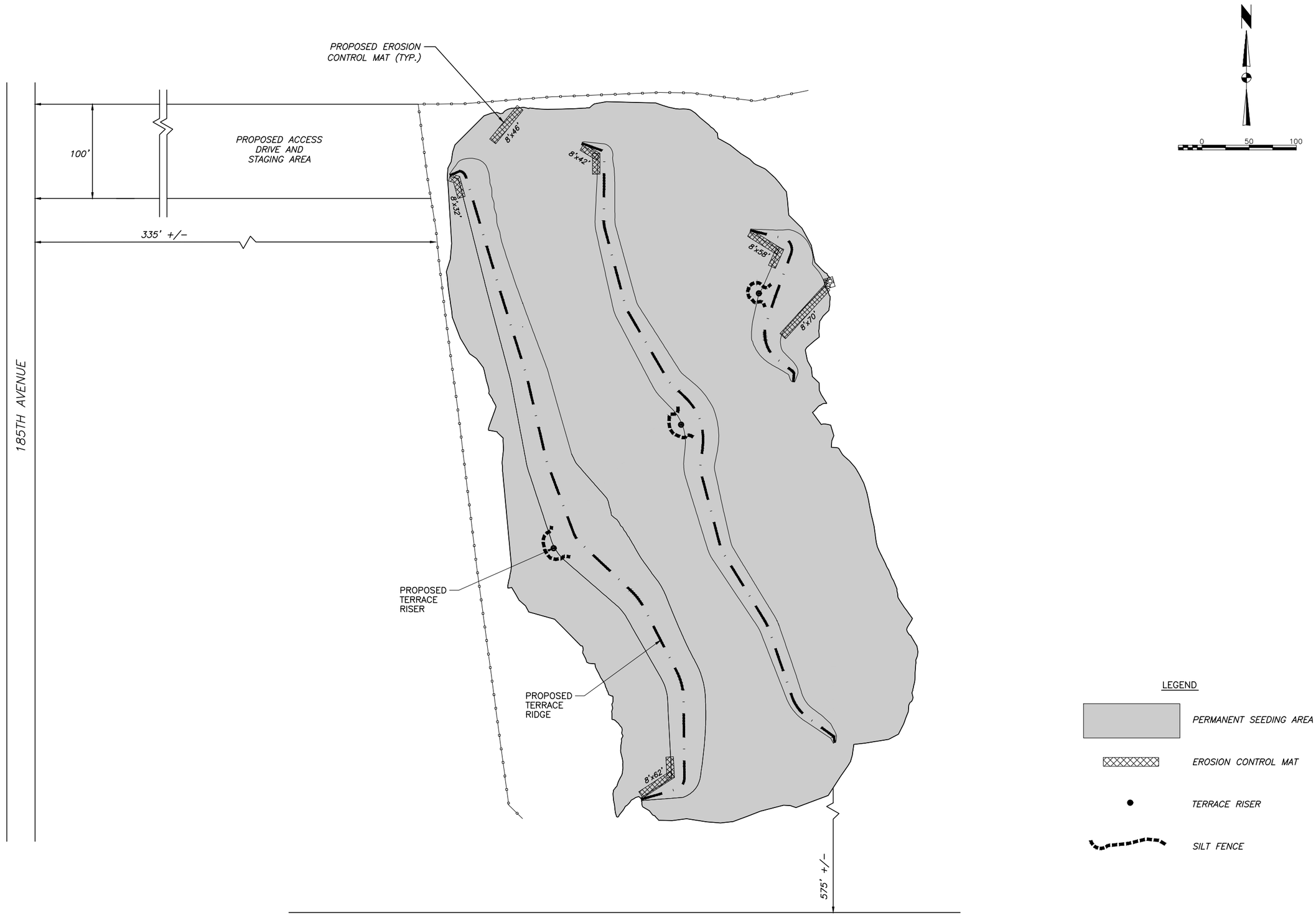
Fairfield, Iowa

TERRACES PLAN EAST SIDE

GLENN SOUTH AML RECLAMATION PROJECT
WAPELLO COUNTY, IOWA
2013

DATE 01/30/13
PROJECT NO. 09-010
DRAWING NAME TERRACE
SHEET 9 OF 24



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SEEDING PLAN
WEST SIDE

GLENN SOUTH AML RECLAMATION PROJECT
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2013

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PROJECT NO. 09-010
DRAWING NAME Seed&Tile
SHEET 10 OF 24

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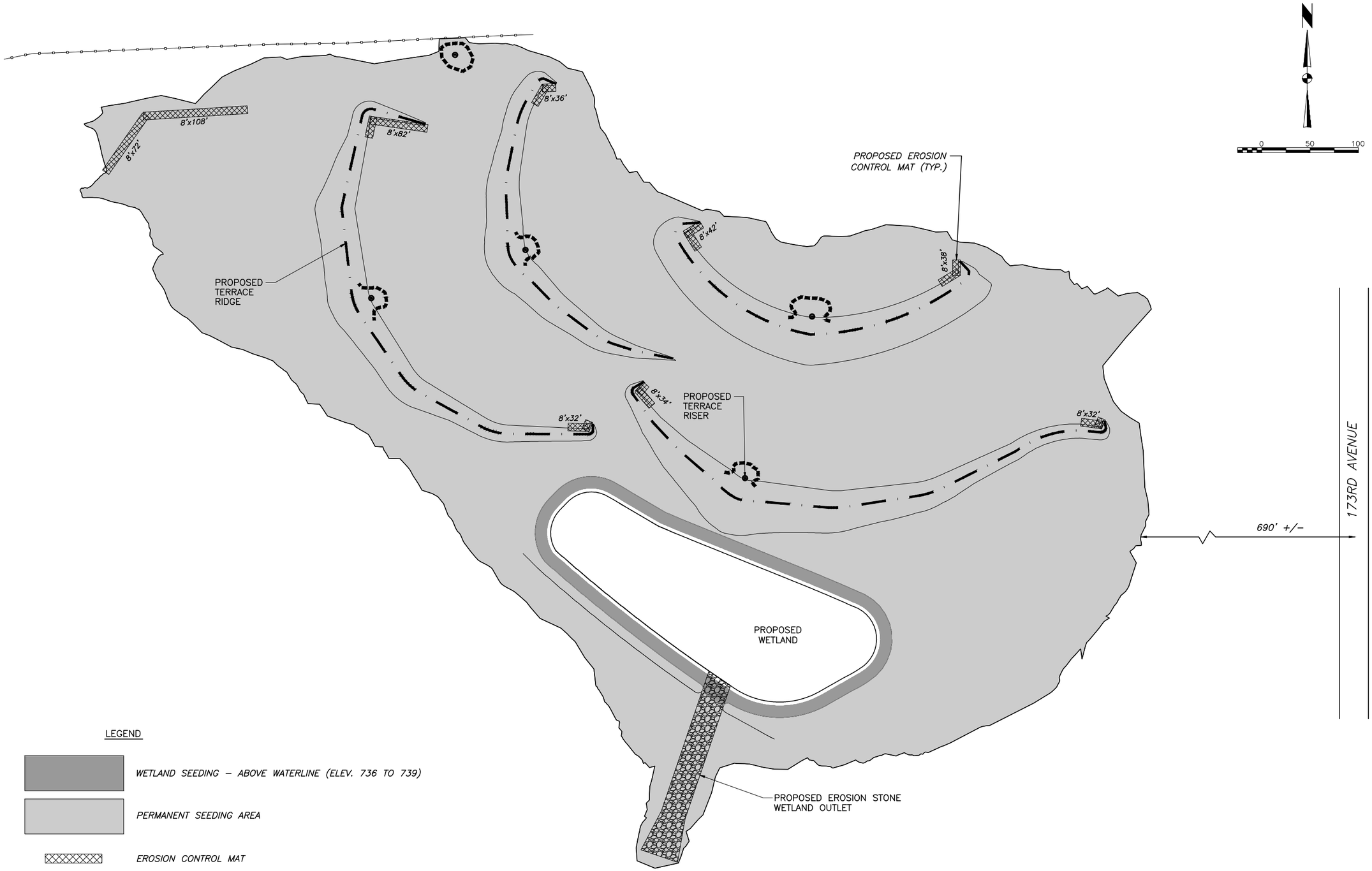

LEGEND

- WETLAND SEEDING – ABOVE WATERLINE (ELEV. 736 TO 739)
- PERMANENT SEEDING AREA
- EROSION CONTROL MAT
- TERRACE RISER
- SILT FENCE

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SEEDING PLAN
EAST SIDE

GLENN SOUTH AML RECLAMATION PROJECT
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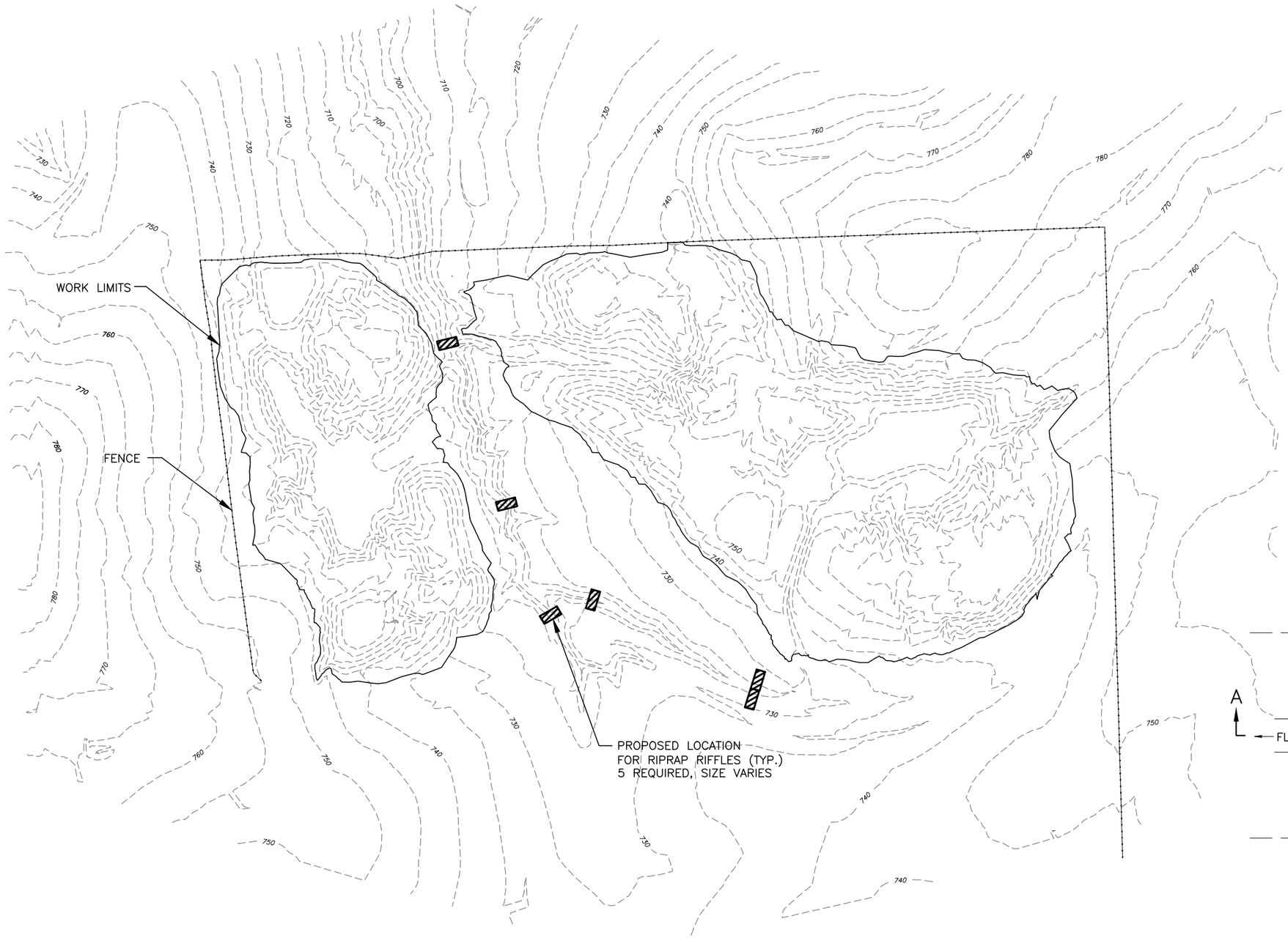
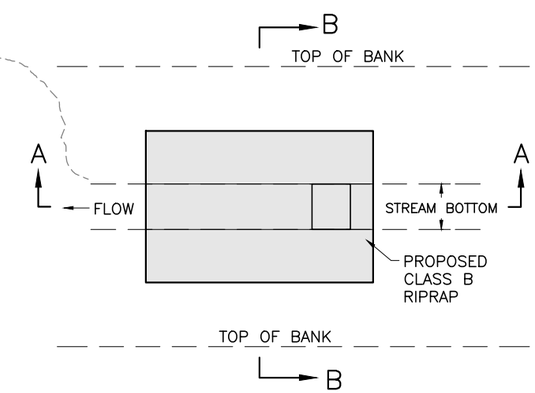
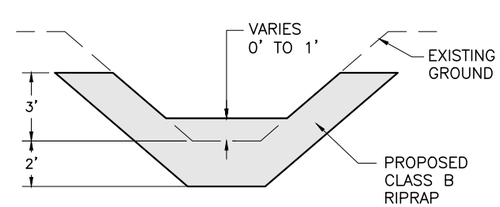
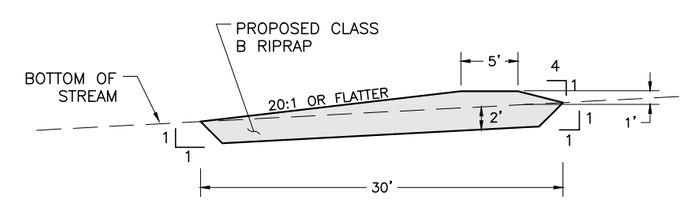




PLAN VIEW
SCALE: N.T.S.



SECTION B–B
SCALE: N.T.S.



SECTION A–A
SCALE: N.T.S.

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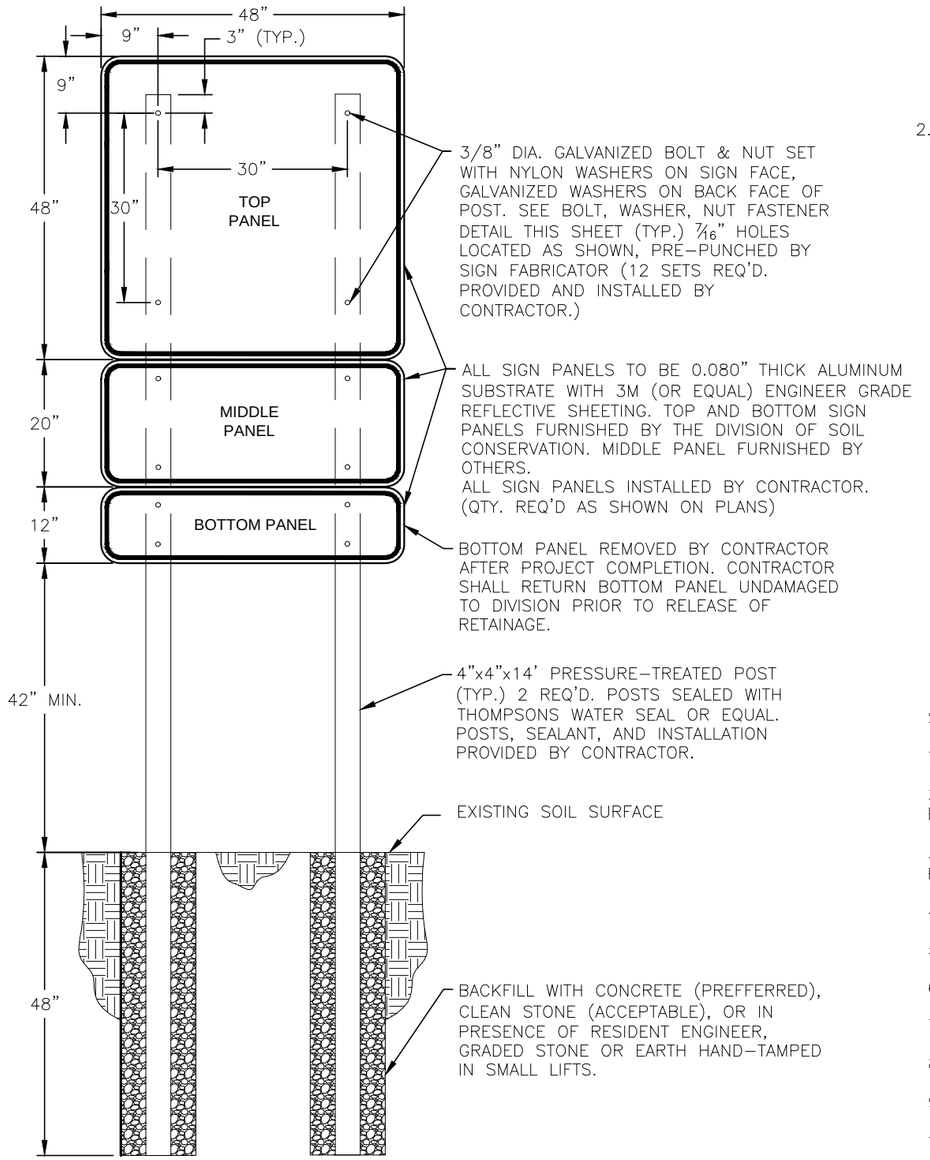
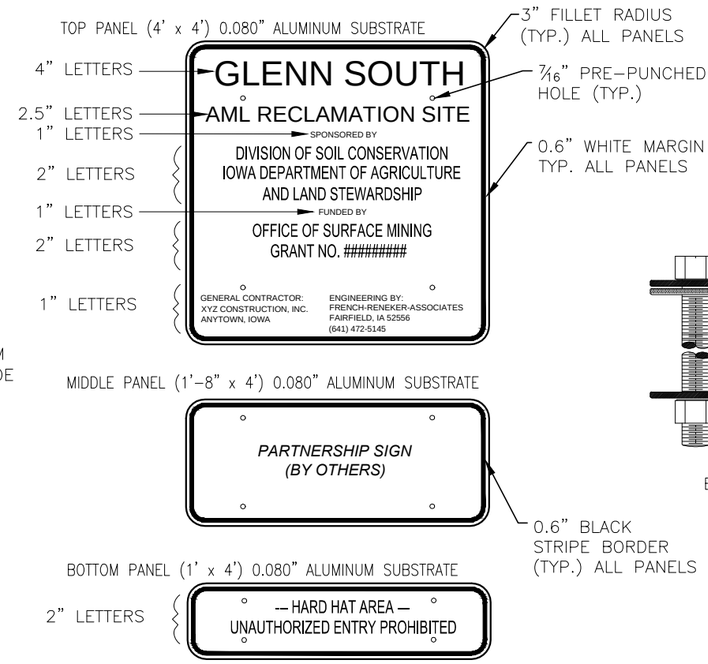
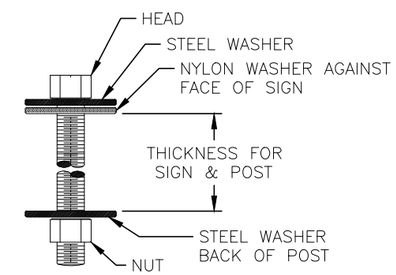
DETAILS
RIPRAP RIFFLES

GLENN SOUTH AML RECLAMATION PROJECT 2013
WAPELLO COUNTY, IOWA

DATE 01/30/13
PROJECT NO. 09–010
DRAWING NAME RIPRAP
SHEET 12 OF 24







BOLT, WASHER, NUT FASTENER DETAIL
NOT TO SCALE

SIGNAGE NOTES:

1. LETTERING AND SIGN FABRICATION SHALL BE PERFORMED BY A PROFESSIONAL SIGN MAKER.

2. SIGN PANELS SHALL BE COVERED WITH WHITE, 3M ENGINEER GRADE PRISMATIC REFLECTIVE SHEETING SERIES 3430, OR EQUAL, MEETING ASTM D4956 TYPE I. SHEETING SHALL BE APPLIED PER MANUFACTURER'S RECOMMENDATIONS.

3. LETTERING SHALL BE BLACK. INK FOR LETTERING SHALL BE 3M SERIES 880N OR EQUAL APPLIED PER MANUFACTURER'S RECOMMENDATIONS.

4. LETTERING AND LINE SPACING SHALL BE ADJUSTED TO AVOID INTERFERENCE WITH PRE-PUNCHED HOLES.

5. LETTERING AND SHEETING MUST HAVE A MINIMUM 5-YEAR PERFORMANCE WARRANTY AGAINST PEELING AND CRACKING.

6. ALL EXPOSED WOOD SHALL BE SEALED WITH THOMPSONS WATER SEAL OR EQUAL MEETING ASTM D-4446-08.

7. ALL HARDWARE SHALL BE GALVANIZED OR RUST RESISTANT.

8. NYLON AND STEEL WASHERS SHALL BE USED AS SHOWN ON THE BOLT, WASHER, NUT FASTENER DETAIL ABOVE.

9. CLEAR UTILITIES WITH IOWA ONE-CALL (800) 292-8989 BEFORE EXCAVATING FOR POSTS.

10. SECURE ENGINEERS APPROVAL FOR SIGN LOCATION BEFORE INSTALLATION.

11. COSTS FOR POSTS, HARDWARE, WOOD SEALANT AND SIGN INSTALLATION SHALL BE INCIDENTAL TO MOBILIZATION.

12. ONE (1) PROJECT SIGN IS REQUIRED, LOCATED AS SHOWN ON PLANS

SIGN DETAIL
NTS

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Fairfield, Iowa

SIGN

GLENN SOUTH AML RECLAMATION PROJECT 2013
WAPELLO COUNTY, IOWA

DATE 01/30/13
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DRAWING NAME Sign
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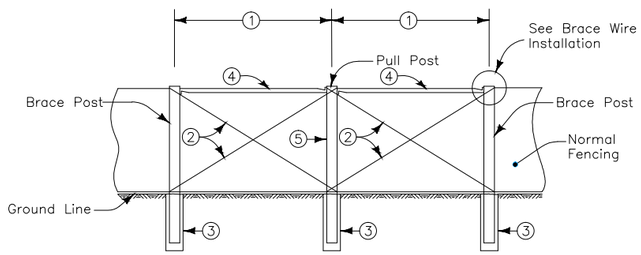
PP = Pull Post CP = Corner Post AP = Angle Post
BP = Brace Post EP = End Post GP = Gate Post

BRACE PANEL LAYOUT



PULL POST ⑥

PANEL LAYOUT

Double wrap barbed wire and tie off at end posts, corner posts, and line brace posts. Single wrap woven wire and tie off. Restart fence to be continued, in like manner.

Fence wire fabric may be placed on either the road side or the field side of posts, depending on local conditions; i.e., on curves, the wire should be placed on the side which would result in the least amount of tension on the staples. This will also apply where wind, drift, or other conditions would exert unusual pressure against the wire.

① Brace Panel.

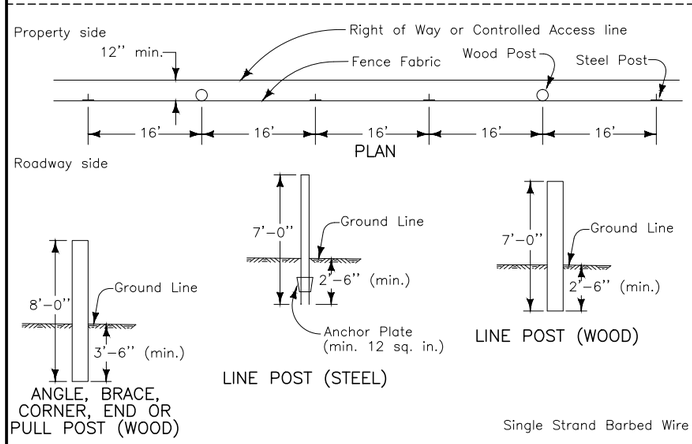
② Brace Wire: 4 strands of No. 9 wire.

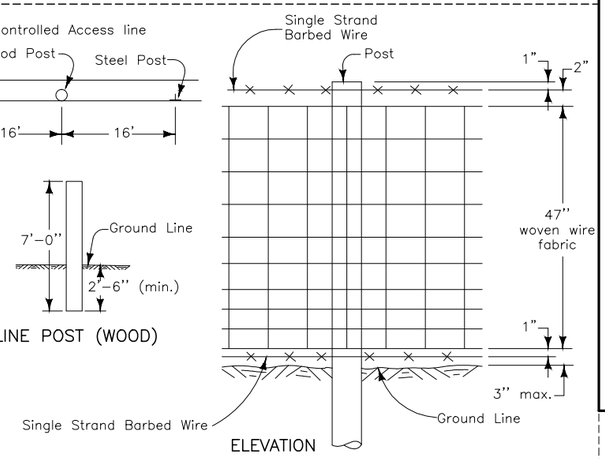
③ Details indicate placement of granular material for certain posts. The Contractor has the option to drive posts if method demonstrated is satisfactory to the Engineer. Granular material will not be required for driven posts.

④ Metal brace 8 feet long.

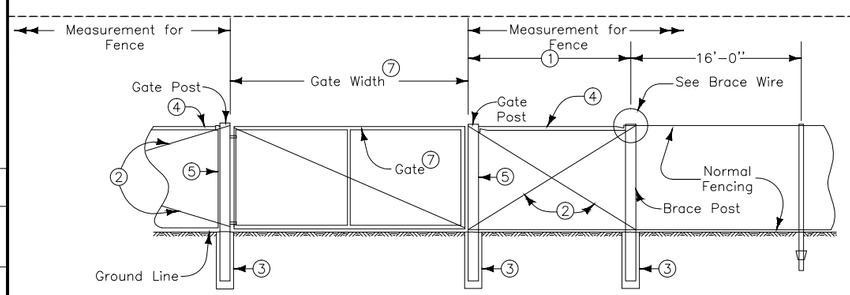
⑤ Wrap wire fabric around post.

⑥ Pull Post Assembly is required when the distance between pull posts is greater than 960 feet in straight lines of fence.



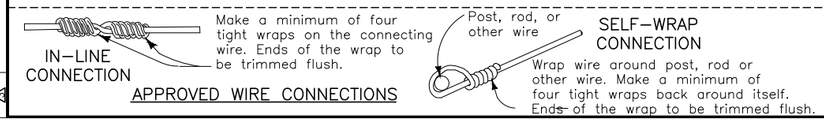


FIELD FENCE

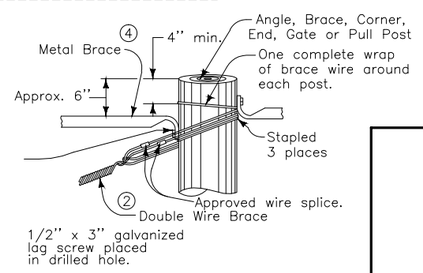


FIELD FENCE GATE

⑦ Install a 24 foot double gate. Double gate is required for widths more than 16 feet. Exact details of gate design are subject to the approval of the Engineer. Install as recommended by the manufacturer.



APPROVED WIRE CONNECTIONS



BRACE WIRE INSTALLATION ⑲
(Brace wire wrapped the same at the bottom of post.)

WIRE ASSEMBLY

FIELD FENCE

Provide necessary excavation at locations where silt conditions require shaping of a ditch to provide a proper type of area for installation of wood excelsior mat for special ditch control.

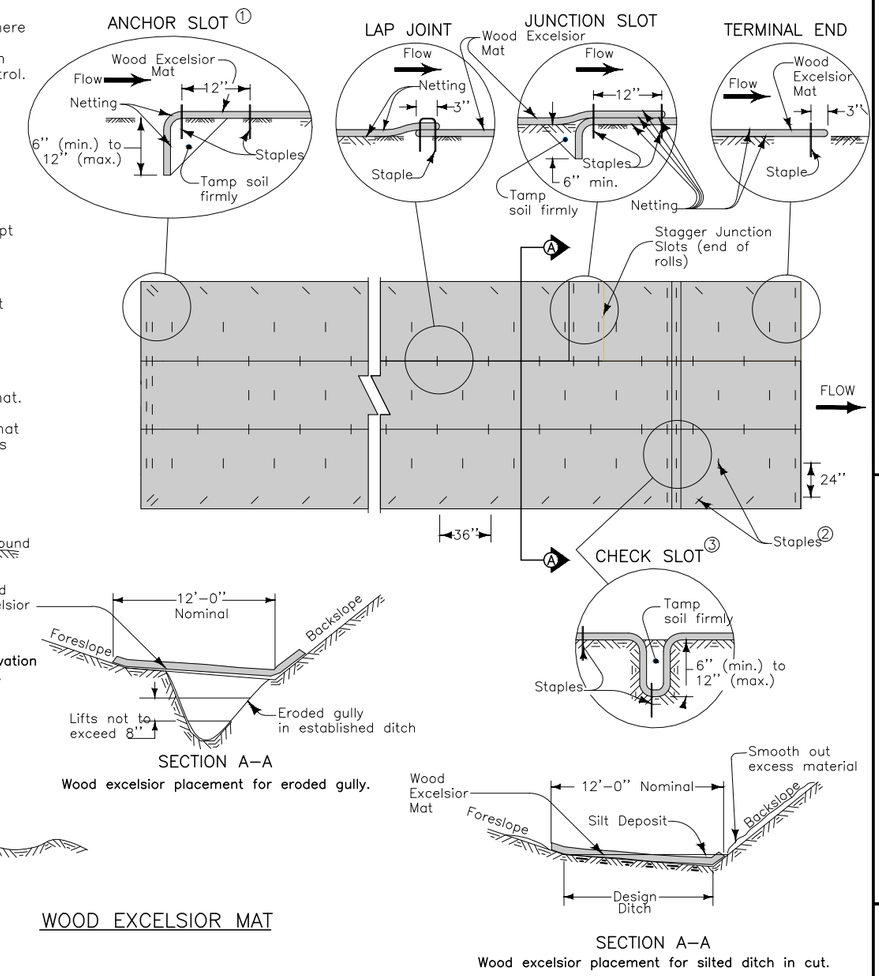
Ensure ground surface adjacent to any channels is shaped to facilitate natural drainage into the protected area.

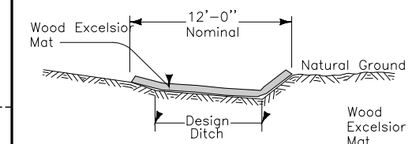
Use all excavated material to fill low areas, gullies, backslope scours, and otherwise facilitate the free flow of surface water into the channel as directed by the Engineer. Alignment should be smooth and avoid abrupt changes.

① Install anchor slot at the beginning (upstream end) of all wood excelsior mat installations.

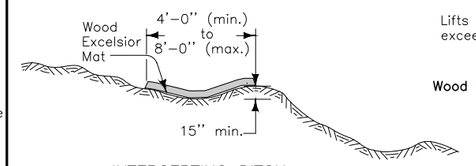
② Place staples alternately in rows approximately 24 inches apart. Approximately 30 staples required per square (100 sq. ft.) of wood excelsior mat.

③ Space Check Slots in ditch channel so that one occurs within each 50 feet on slopes of more than 4%.





SECTION A–A
Wood excelsior placement where excavation is required for proper installation.



INTERCEPTING DITCH

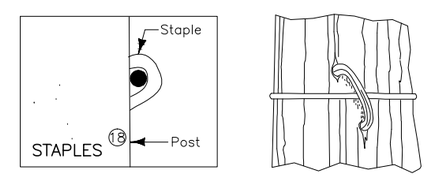
SECTION A–A
Wood excelsior placement for eroded gully.

SECTION A–A
Wood excelsior placement for silted ditch in cut.

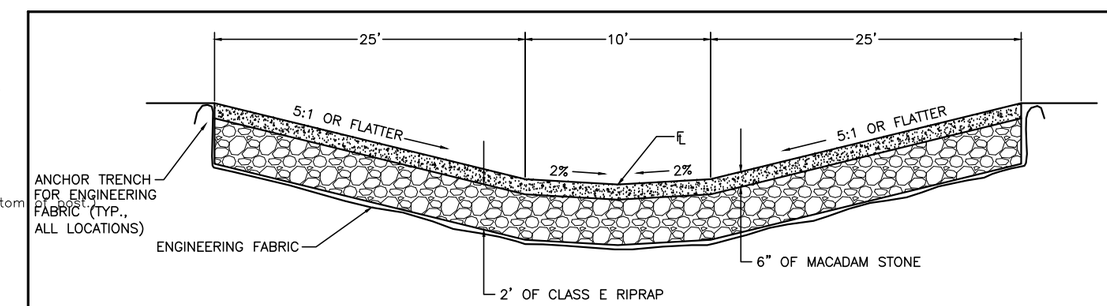
WOOD EXCELSIOR MAT

⑱ Set staples cross–wise to the grain. Drive staples tight at pull posts. Drive all other staples firm, but loose enough to allow lateral movement of the wire.

⑲ Twist the two brace wires together to produce proper tension in the brace assembly.



STAPLES ⑱



PERMANENT LOW WATER CROSSING
PROFILE ALONG CENTERLINE

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