

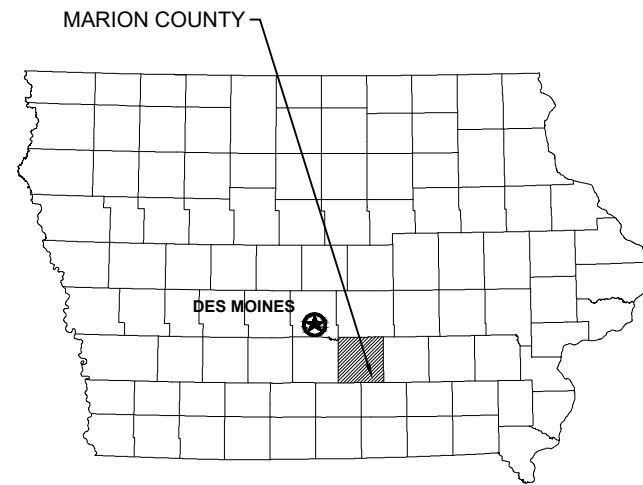
FEES-IN-LAW (IA-036) AML REPAIR PROJECT

SECTION 22, TOWNSHIP 74N, RANGE 18W, MARION COUNTY

IOWA DEPARTMENT OF AGRICULTURE AND LAND STEWARDSHIP
DIVISION OF SOIL CONSERVATION AND WATER QUALITY

GRANT NUMBER: S25AF00144

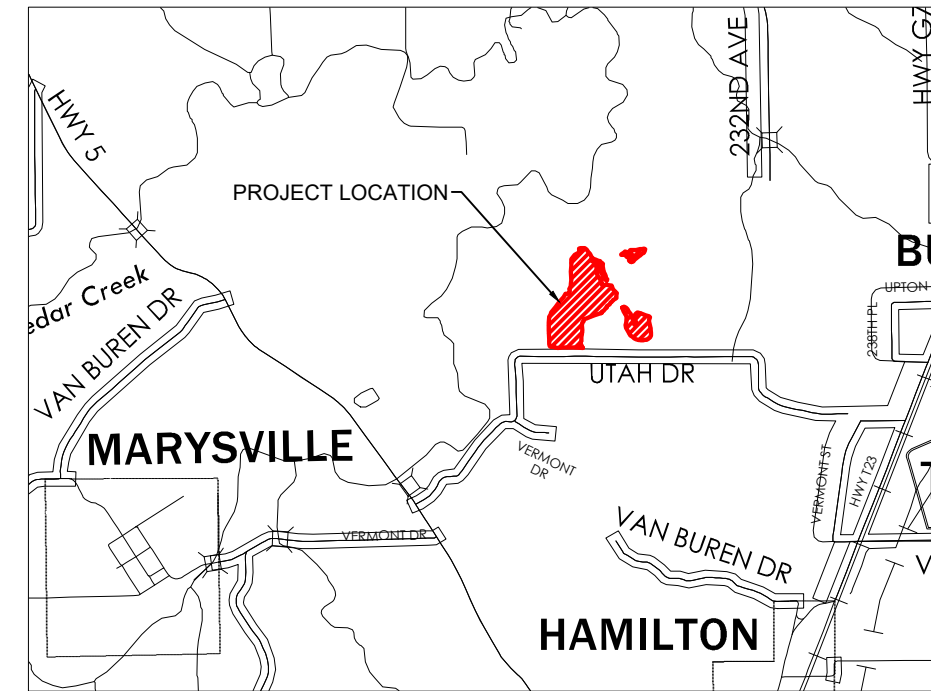
FUNDED BY:
U.S. DEPARTMENT OF THE INTERIOR
OFFICE OF SURFACE MINING RECLAMATION AND ENFORCEMENT



STATE OF IOWA



MARION COUNTY



LOCAL VICINITY



PREPARED FOR:
DIVISION OF SOIL CONSERVATION AND WATER QUALITY
IOWA DEPARTMENT OF AGRICULTURE & LAND STEWARDSHIP
HOOVER STATE OFFICE BUILDING
1305 E. WALNUT STREET, FIFTH FLOOR
DES MOINES, IOWA 50319
(515) 281-5321

ENGINEER:
SHIVE-HATTERY, INC.
4125 WESTOWN PARKWAY, SUITE 100
WEST DES MOINES, IOWA 50266
PHONE - (515) 223-8104

INDEX OF SHEETS:

- | | |
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| 1 | COVER SHEET |
| 2 | PROJECT NOTES, QUANTITIES, AND LEGEND |
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CIVIL ENGINEER



I HEREBY CERTIFY THAT THIS ENGINEERING DOCUMENT DESCRIBED BELOW 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: *Michael Otten* Date: 4/6/2026

Printed or typed name: MICHAEL M. OTTEN
License Number: 28012
My License Renewal Date is: DECEMBER 31, 2026

PAGES, SHEETS OR DIVISIONS COVERED BY THIS SEAL:
ALL SHEETS

S-H PROJECT NUMBER: 2250015090

ISSUED: 4/6/2026
REVISED: ---
CHKD. BY: LTM

DESIGN BY: MMO
DRAWN BY: DRS

IOWA DEPARTMENT OF AGRICULTURE AND LAND STEWARDSHIP
DIVISION OF SOIL CONSERVATION AND WATER QUALITY
HOOVER STATE OFFICE BUILDING
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(515) 281-5321

FEES-IN-LAW AML REPAIR PROJECT
COVER SHEET

SHIVEHATTERY
ARCHITECTURE+ENGINEERING
4125 Westown Parkway, Suite 100 | West Des Moines, Iowa 50266
515.223.8104 | Fax: 515.223.0622 | shive-hattery.com
Iowa | Illinois | Missouri | Illinois Firm Number: 194-000214

GENERAL NOTES:

1. WORK WHICH DOES NOT CONFORM TO THE REQUIREMENTS OF THE CONTRACT WILL BE CONSIDERED UNACCEPTABLE. UNACCEPTABLE WORK, WHETHER THE RESULT OF POOR WORKMANSHIP, USE OF DEFECTIVE MATERIALS, DAMAGE THROUGH CARELESSNESS OR ANY OTHER CAUSE, FOUND TO EXIST PRIOR TO THE FINAL ACCEPTANCE OF THE WORK, SHALL BE REMOVED AND REPLACED IN AN ACCEPTABLE MANNER, AS REQUIRED BY THE OWNER AT THE CONTRACTOR'S EXPENSE.
2. ENGINEER WILL PROVIDE ALL SURVEY LAYOUT AND CONTROL REQUIRED TO COMPLETE ALL WORK.
3. WORK DONE CONTRARY TO THE INSTRUCTIONS OF THE OWNERS REPRESENTATIVE, WORK DONE BEYOND THE LINES SHOWN ON THE PLANS OR ANY EXTRA WORK DONE WITHOUT AUTHORITY WILL NOT BE PAID FOR.
4. CONTOURS SHOWN ARE BASED ON THE AS-BUILT DRONE SURVEY COMPLETED AT THE COMPLETION OF CONSTRUCTION IN 2021.
5. THE CONTRACTOR SHALL KEEP ALL ROADS OPEN TO THROUGH TRAFFIC AT ALL TIMES.
6. NO WORK SHALL BE PERFORMED BEYOND THE PROJECT BOUNDARY WITHOUT PRIOR AUTHORIZATION FROM THE DIVISION.
7. SOME CONTOUR LINES MAY NOT BE SHOWN FOR CLARITY.
8. SUBMIT MANUFACTURER'S CERTIFICATION AND MATERIAL DATA FOR ALL MATERIALS DELIVERED TO THE PROJECT SITE AS REQUESTED BY THE OWNERS REPRESENTATIVE.
9. THE FOLLOWING STANDARD ROAD PLANS OF THE IOWA DEPARTMENT OF TRANSPORTATION ARE INCLUDED BY REFERENCE: EC-204 EROSION CONTROL DETAILS FOR SEDIMENT CONTROL DEVICES
10. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL DEPARTMENT OF NATURAL RESOURCES (DNR) NPDES PERMIT AND STORM WATER POLLUTION PREVENTION PLAN (SWPPP) REQUIREMENTS AND REQUIRED CONTAINMENT STRUCTURES. THE DIVISION HAS OBTAINED A DNR GENERAL PERMIT #2 FOR THE PROJECT AND A TEMPLATE SWPPP HAS BEEN PREPARED BY THE ENGINEER. THE DIVISION WILL PERFORM SWPPP INSPECTIONS, MAINTAIN, AND UPDATE THE SWPPP AS REQUIRED TO MEET ALL LOCAL, STATE, AND FEDERAL REQUIREMENTS. REFER TO THE SWPPP AND SWPPP DRAWINGS FOR ADDITIONAL INFORMATION.
11. REFERENCE TO PARTICULAR PRODUCTS, TRADENAMES, OR MANUFACTURERS ARE INTENDED FOR CLARITY ONLY AND DOES NOT REPRESENT EXCLUSION OR ENDORSEMENT BY THE DIVISION OR THE STATE OF IOWA. EQUIVALENT PRODUCTS OR MATERIALS MAY BE SUITABLE, SUBJECT TO APPROVAL OF THE ENGINEER OR DIVISION.
12. REFERENCES TO "DIVISION" SHALL MEAN "DIVISION OF SOIL CONSERVATION & WATER QUALITY"
13. ALL IMPROVEMENTS SHOWN ON THESE PLANS SHALL COMPLY WITH THE GENERAL CONDITIONS, STANDARDS, AND SPECIFICATIONS SET FORTH IN PROJECT DOCUMENTS. SPECIFICATIONS OR STANDARDS INCORPORATED BY REFERENCE SHALL ALSO BE FOLLOWED.
14. OWNERSHIP: THIS DOCUMENT, AND THE IDEAS AND DESIGN CONTAINED IN THIS DOCUMENT, ARE AN INSTRUMENT OF PROFESSIONAL SERVICE, AND MAY NOT BE USED, IN WHOLE OR IN PART, FOR ANY OTHER PROJECT WITHOUT THE WRITTEN CONSENT OF THE DIVISION.
15. CONTRACTOR SHALL PROVIDE AT LEAST 48 HOURS NOTICE TO THE ENGINEER AND/OR DIVISION PRIOR TO COMMENCING CONSTRUCTION.

UTILITY NOTES:

1. THE LOCATIONS OF UTILITY MAINS, STRUCTURES AND SERVICE CONNECTIONS SHOWN IN THESE PLANS ARE APPROXIMATE ONLY AND WERE OBTAINED FROM RECORDS MADE AVAILABLE TO SHIVE-HATTERY, INC. THERE MAY BE OTHER EXISTING UTILITY MAINS, STRUCTURES AND SERVICE CONNECTIONS NOT KNOWN TO SHIVE-HATTERY, INC. AND NOT SHOWN ON THIS DRAWING. THE VERIFICATION OF EXISTENCE OF, AND THE DETERMINATION OF THE EXACT LOCATION OF, UTILITY MAINS, STRUCTURES AND SERVICE CONNECTIONS SHALL BE THE RESPONSIBILITY OF THE CONSTRUCTION CONTRACTOR(S).
2. IOWA CODE 480, UNDERGROUND FACILITIES INFORMATION, REQUIRES VERBAL NOTICE TO IOWA ONE-CALL 1-800-292-8989, NOT LESS THAN 48 HOURS BEFORE EXCAVATING, EXCLUDING WEEKENDS AND HOLIDAYS. THE CONTRACTOR IS RESPONSIBLE FOR CONTACTING IOWA ONE-CALL.
3. THE MEANS OF THE WORK AND THE SAFETY OF THE CONTRACTOR'S EMPLOYEES ARE SOLELY THE RESPONSIBILITY OF THE CONTRACTOR.
4. ALL OPEN UTILITY TRENCH EXCAVATIONS SHALL BE PROTECTED.
5. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO PROTECT ALL EXISTING PUBLIC AND/OR PRIVATE UTILITIES AND PUBLIC ROADWAYS, INCLUDING ANY NOT SHOWN ON THESE DRAWINGS. THE CONTRACTOR SHALL VERIFY ALL EXISTING UTILITIES PRIOR TO CONSTRUCTION AND NOTIFY THE ENGINEER IF ANY CONFLICTS WITH THE DRAWINGS OCCUR. ANY DAMAGE TO EXISTING UTILITIES AND/OR PUBLIC ROADWAYS CAUSED BY CONTRACTOR TRENCHING SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE.

PROJECT CONSTRUCTION NOTES:

1. REPLACE ANY PROPERTY MONUMENTS REMOVED OR DESTROYED BY CONSTRUCTION. MONUMENTS SHALL BE REPLACED IN ACCORDANCE WITH THE REQUIREMENTS SET FORTH IN THE IOWA CODE AND SHALL BE SET BY A LAND SURVEYOR LICENSED TO PRACTICE IN THE STATE OF IOWA. THIS WORK SHALL BE CONSIDERED INCIDENTAL TO THE PROJECT AND COMPLETED AT NO ADDITIONAL COST TO THE DIVISION.
2. ANY WORK REQUIRED TO COMPLETE THE SCOPE OF THIS PROJECT BUT NOT SPECIFICALLY CALLED OUT, SHALL BE CONSIDERED INCIDENTAL TO THE PROJECT. NO ADDITIONAL COMPENSATION SHALL BE ALLOWED FOR THE COMPLETION OF THIS WORK.
3. ALL DEBRIS AND TRASH ENCOUNTERED DURING CONSTRUCTION WITHIN THE PROJECT BOUNDARY, OR DIRECTED BY THE ENGINEER, SHALL BE PROPERLY DISPOSED OF ACCORDING TO THE PROJECT REQUIREMENTS.
4. CONTRACTOR IS RESPONSIBLE FOR ALL CONSTRUCTION DE-WATERING THAT IS REQUIRED, EXCLUDING IMPOUNDMENT DISCHARGE, AT NO ADDITIONAL COST TO THE DIVISION.
5. REPAIR OR REPLACE DAMAGE TO EXISTING FACILITIES (TILE, UTILITIES, FENCES, ETC.) DESIGNATED TO REMAIN, AT NO ADDITIONAL EXPENSE TO THE DIVISION. ALL AREAS DISTURBED BY CONSTRUCTION, INCLUDING STAGING AREAS AND HAUL ROUTES, ARE TO BE REWORKED TO THEIR EXISTING CONDITIONS AND SEEDED AT NO ADDITIONAL COST TO THE DIVISION IF OUTSIDE OF PROJECT BOUNDARY AND NOT APPROVED BY ENGINEER.
6. CONTRACTOR SHALL PROTECT ALL TREES THAT ARE NOT DESIGNATED TO BE REMOVED OR ARE OUTSIDE OF PROJECT BOUNDARY. CONTRACTOR SHALL NOT PARK OR TRAVEL WITH ANY VEHICLE UNDER THE DRIP LINE OF A TREE TO REMAIN.
7. NO PONDING OF WATER WILL BE ACCEPTED. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO IDENTIFY ANY AREAS OF EXISTING OR PROPOSED GROUND THAT HAVE POTENTIAL TO POND WATER AND MAKE ANY ADJUSTMENTS NECESSARY TO ENSURE THAT WATER WILL POSITIVELY DRAIN. ADJUST GRADES AT PROJECT BOUNDARY TO ALLOW SMOOTH TRANSITION FROM PROPOSED GRADES TO EXISTING GRADES.
8. ALL WORK WITHIN THE PUBLIC RIGHT OF WAY SHALL BE COORDINATED WITH THE GOVERNING AUTHORITY AND SHALL BE DONE IN ACCORDANCE WITH THEIR STANDARDS.
9. NO TREES SHALL BE CLEARED AS A RESULT OF CONSTRUCTION ACTIVITIES FROM THIS PROJECT.
10. CONTRACTORS WILL BE REQUIRED TO COMPLETE THE DETAILED GRADING SHOWN ON THE PLANS WITHIN THE SPECIFIED GRADING TOLERANCES.
11. LIME SLUDGE SALVAGED FROM WATER TREATMENT PLANTS OR OTHER INDUSTRIAL OPERATIONS SHALL NOT BE USED FOR AGRICULTURAL LIME.
12. ALTERNATIVES TO CONVENTIONAL MULCH MATERIAL LIKE WOOD CHIPS OR COMPOSTED ORGANIC MATERIALS SHALL NOT BE UTILIZED ON THIS SITE.

BID QUANTITIES:

#	ITEM DESCRIPTION	SPEC. SECTION	QUANTITY	UNITS
1	MOBILIZATION	02100	1	LS
2	WATTLES - INSTALLATION	02120	3,980	LF
3	WATTLES - REMOVAL	02120	3,980	LF
4	STABILIZED CONSTRUCTION ENTRANCE - GRANULAR SURFACING	02120	40	TON
5	CLASS 'E' RIPRAP	02120	171	TON
6	STONE FILTER (3" MACADAM STONE)	02120	40	TON
7	EARTHWORK, GRADING	02200	1	LS
8	AGRICULTURAL LIME	02400	931	TON
9	MULCH, SUBGRADE (5 TONS/ACRE)	02400	45.0	ACRE
10	SUBGRADE PREPARATION	02400	45.0	ACRE
11	SEEDBED PREPARATION	02700	45.8	ACRE
12	NITROGEN, N, SEEDING (50 LBS/ACRE)	02700	2,290	LBS
13	PHOSPHORUS, P, SEEDING (100 LBS/ACRE)	02700	4,580	LBS
14	POTASSIUM, K, SEEDING (160 LBS/ACRE)	02700	7,328	LBS
15	PERMANENT SEEDING, UPLAND MIX	02700	45.8	ACRE
16	MULCH, SEEDING (2 TONS/ACRE)	02700	45.8	ACRE

LEGEND:

- 7.37 --- EXISTING CONTOUR MINOR
- 7.37 --- EXISTING CONTOUR MAJOR
- PROJECT BOUNDARY
- EXISTING TERRACE RIDGELINE
- EXISTING DRAINAGE DITCH OR STREAM
- EXISTING RIP RAP
- PROPOSED RIP RAP
- EXISTING STORM PIPE
- EXISTING INTAKE
- POWER POLE
- PROPERTY LINE (APPROX)
- SILT FENCE
- EXISTING POND/WETLAND



GLOSSARY OF COMMON ABBREVIATIONS:

1. PG = PROPOSED GRADE
2. EG = EXISTING GRADE
3. FG = FORM GRADE ELEVATION; THE LOWEST INLET OPENING ELEVATION FOR A RISER OR STRUCTURE TO RECEIVE WATER FROM A POND OR CHANNEL
4. IE = INVERT ELEVATION
5. HDPE = DUAL-WALL CORRUGATED HIGH DENSITY POLYETHYLENE CONDUIT (I.E. ADS N12 OR APPROVED EQUIVALENT)
6. PPHP = POLYPROPYLENE HIGH PERFORMANCE CORRUGATED DUAL-WALL PIPE (I.E. ADS HP STORM OR APPROVED EQUIVALENT)
7. RIM = ELEVATION OF A STRUCTURE LID
8. LF = LINEAL FEET
9. FL = FLOWLINE
10. HP = HIGH POINT ELEVATION, TYPICALLY IN A TERRACE FLOWLINE
11. CL = CENTERLINE
12. PC = POINT OF CURVATURE, TRANSITION FROM A STRAIGHT LINE TO A CURVE
13. PT = POINT OF TANGENCY, TRANSITION FROM A CURVE TO A STRAIGHT LINE
14. PI = POINT OF INTERSECTION OR BEND POINT ON A LINE
15. EX. = "EXISTING" I.E. "EXISTING CMP CULVERT"
16. PR = PLASTIC RISER
17. CR = CONCRETE RISER
18. DL = DAYLIGHT
19. ASC = ANTI-SEEP COLLAR

NOTE: THE LEGEND OF SYMBOLS, LINETYPES, AND LIST OF ABBREVIATIONS SHOWN ABOVE ARE GENERIC. NOT ALL SYMBOLS, LINETYPES, OR ABBREVIATIONS LISTED APPEAR ON THE ACCOMPANYING DRAWINGS FOR THIS PROJECT. SYMBOLS, LINETYPES, OR ABBREVIATIONS NOT LISTED HERE ARE SPECIFICALLY CALLED OUT WHERE NECESSARY.

S-H PROJECT NUMBER: 2250015090

REVISED: ---

ISSUED: 4/6/2026

CHKD. BY: LTM

DRS

DRAWN BY:

MMO

DESIGN BY:

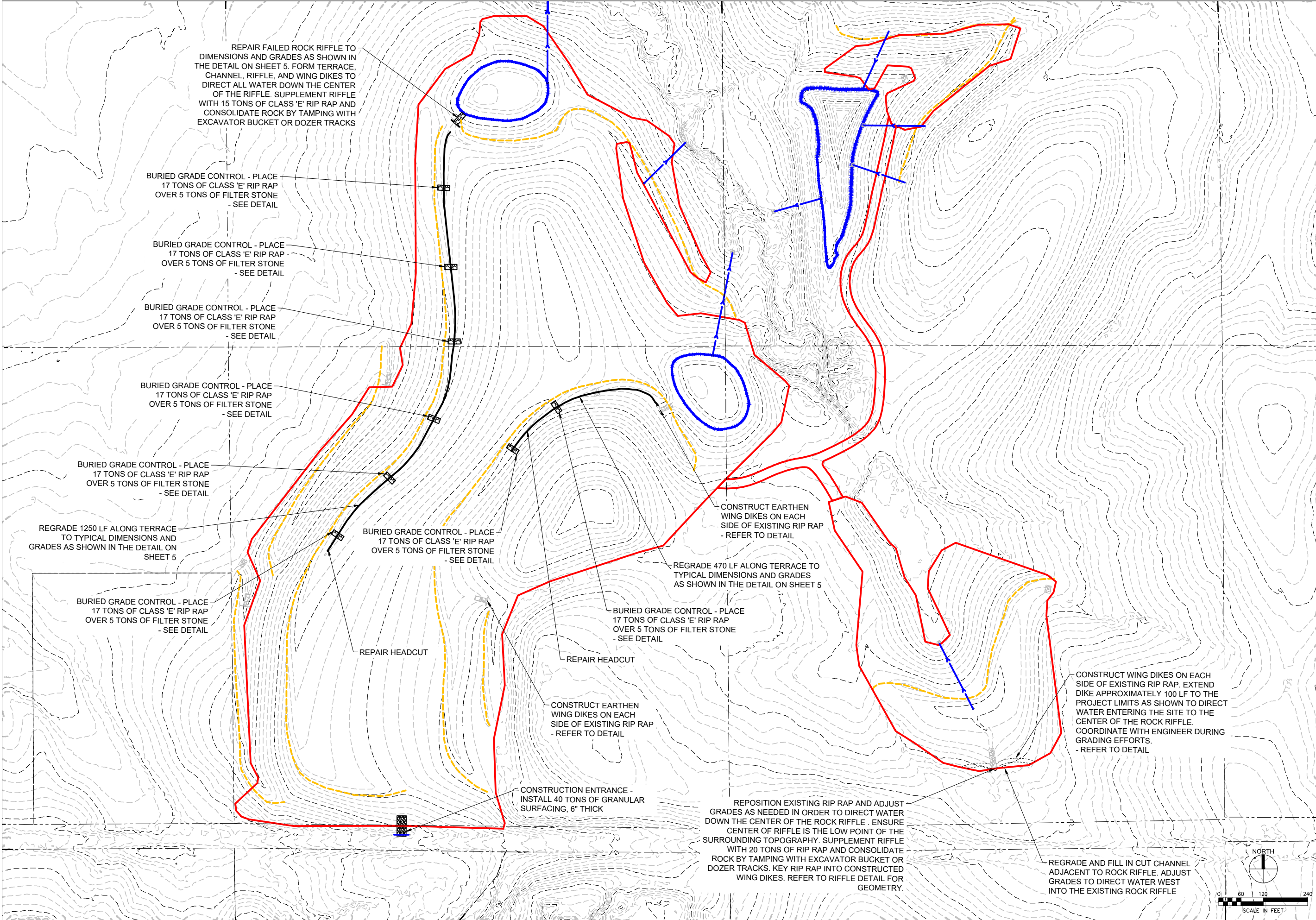
IOWA DEPARTMENT OF AGRICULTURE AND LAND STEWARDSHIP
DIVISION OF SOIL CONSERVATION AND WATER QUALITY
HOOVER STATE OFFICE BUILDING
1305 E WALNUT STREET, DES MOINES, IOWA 50319
(515) 281-5321



FEES-IN-LAW AML
REPAIR PROJECT

PROJECT NOTES,
QUANTITIES, AND LEGEND

SHIVEHATTERY
ARCHITECTURE+ENGINEERING
405 Westown Parkway, Suite 100 | West Des Moines, Iowa 50266
515.223.0104 | fax: 515.223.0622 | shivehattery.com
Iowa | Illinois | Missouri | Illinois Firm Number: 184-000214



REPAIR FAILED ROCK RIFFLE TO DIMENSIONS AND GRADES AS SHOWN IN THE DETAIL ON SHEET 5. FORM TERRACE, CHANNEL, RIFFLE, AND WING DIKES TO DIRECT ALL WATER DOWN THE CENTER OF THE RIFFLE. SUPPLEMENT RIFFLE WITH 15 TONS OF CLASS 'E' RIP RAP AND CONSOLIDATE ROCK BY TAMPING WITH EXCAVATOR BUCKET OR DOZER TRACKS

BURIED GRADE CONTROL - PLACE 17 TONS OF CLASS 'E' RIP RAP OVER 5 TONS OF FILTER STONE - SEE DETAIL

BURIED GRADE CONTROL - PLACE 17 TONS OF CLASS 'E' RIP RAP OVER 5 TONS OF FILTER STONE - SEE DETAIL

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BURIED GRADE CONTROL - PLACE 17 TONS OF CLASS 'E' RIP RAP OVER 5 TONS OF FILTER STONE - SEE DETAIL

REGRADE 1250 LF ALONG TERRACE TO TYPICAL DIMENSIONS AND GRADES AS SHOWN IN THE DETAIL ON SHEET 5

BURIED GRADE CONTROL - PLACE 17 TONS OF CLASS 'E' RIP RAP OVER 5 TONS OF FILTER STONE - SEE DETAIL

BURIED GRADE CONTROL - PLACE 17 TONS OF CLASS 'E' RIP RAP OVER 5 TONS OF FILTER STONE - SEE DETAIL

CONSTRUCT EARTHEN WING DIKES ON EACH SIDE OF EXISTING RIP RAP - REFER TO DETAIL

REGRADE 470 LF ALONG TERRACE TO TYPICAL DIMENSIONS AND GRADES AS SHOWN IN THE DETAIL ON SHEET 5

BURIED GRADE CONTROL - PLACE 17 TONS OF CLASS 'E' RIP RAP OVER 5 TONS OF FILTER STONE - SEE DETAIL

REPAIR HEADCUT

REPAIR HEADCUT

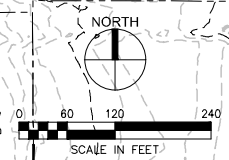
CONSTRUCT EARTHEN WING DIKES ON EACH SIDE OF EXISTING RIP RAP - REFER TO DETAIL

CONSTRUCTION ENTRANCE - INSTALL 40 TONS OF GRANULAR SURFACING, 6" THICK

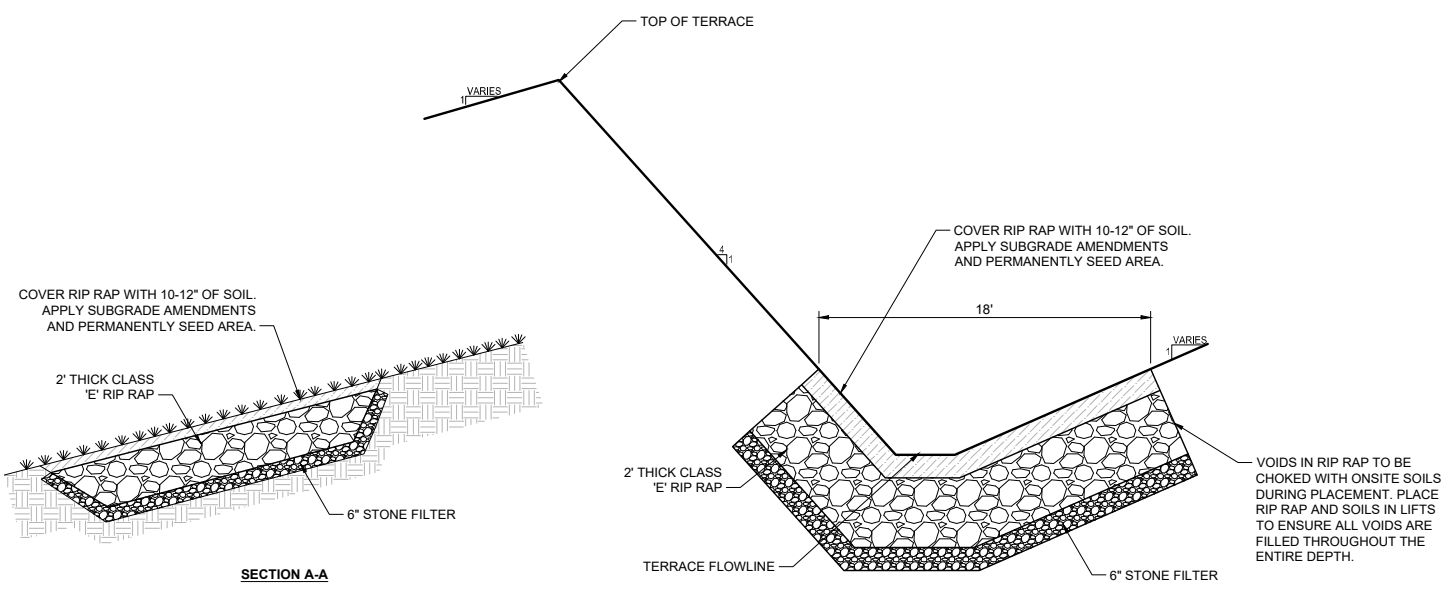
REPOSITION EXISTING RIP RAP AND ADJUST GRADES AS NEEDED IN ORDER TO DIRECT WATER DOWN THE CENTER OF THE ROCK RIFFLE. ENSURE CENTER OF RIFFLE IS THE LOW POINT OF THE SURROUNDING TOPOGRAPHY. SUPPLEMENT RIFFLE WITH 20 TONS OF RIP RAP AND CONSOLIDATE ROCK BY TAMPING WITH EXCAVATOR BUCKET OR DOZER TRACKS. KEY RIP RAP INTO CONSTRUCTED WING DIKES. REFER TO RIFFLE DETAIL FOR GEOMETRY.

CONSTRUCT WING DIKES ON EACH SIDE OF EXISTING RIP RAP. EXTEND DIKE APPROXIMATELY 100 LF TO THE PROJECT LIMITS AS SHOWN TO DIRECT WATER ENTERING THE SITE TO THE CENTER OF THE ROCK RIFFLE. COORDINATE WITH ENGINEER DURING GRADING EFFORTS. - REFER TO DETAIL

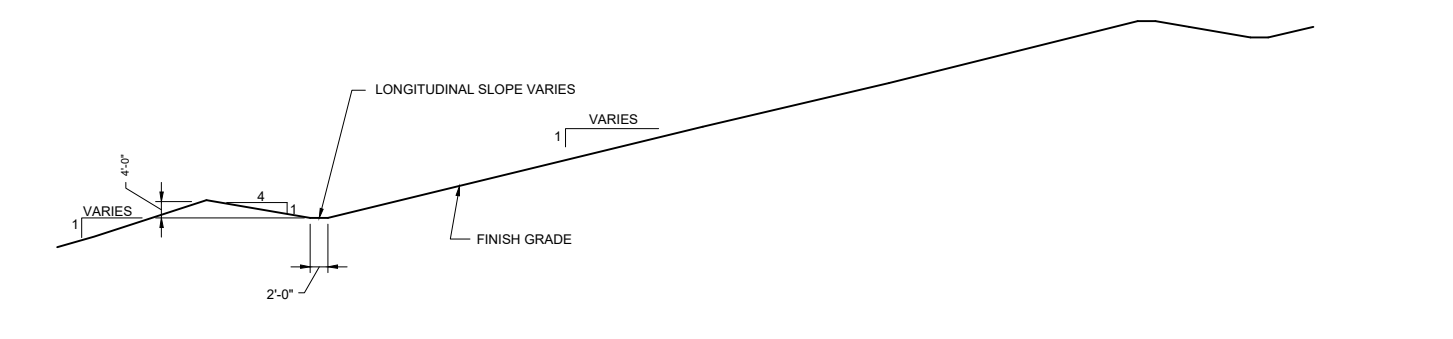
REGRADE AND FILL IN CUT CHANNEL ADJACENT TO ROCK RIFFLE. ADJUST GRADES TO DIRECT WATER WEST INTO THE EXISTING ROCK RIFFLE



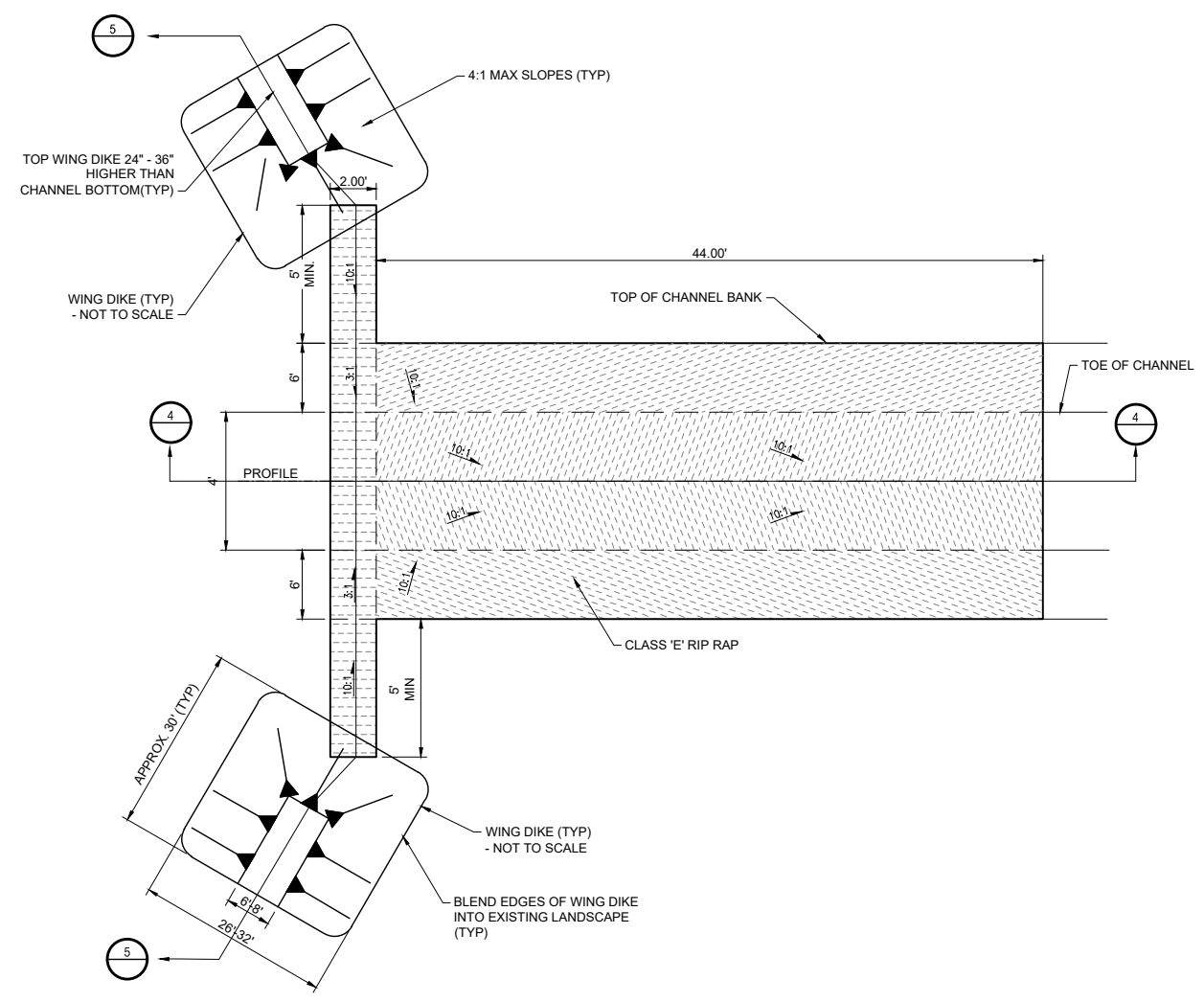
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SHEET 4 OF 8			SHIVEHATTERY ARCHITECTURE+ENGINEERING 4125 Western Parkway, Suite 100 West Des Moines, Iowa 50266 515.223.8104 fax: 515.223.0822 shivehattery.com Iowa Illinois Missouri Illinois Firm Number: 184-000214		



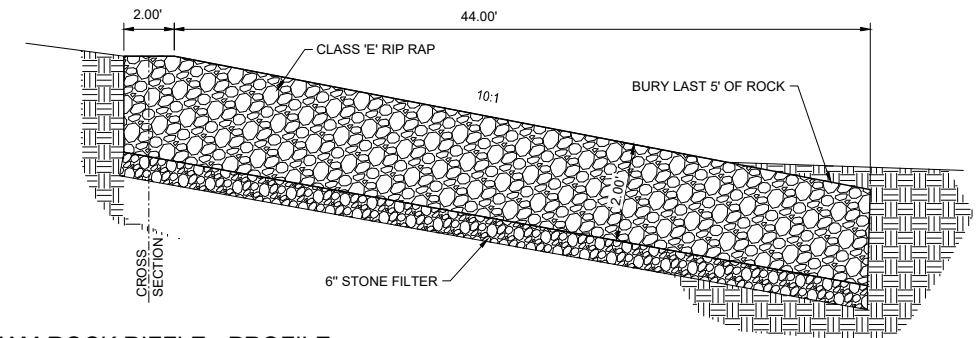
1 BURIED GRADE CONTROL
NTS



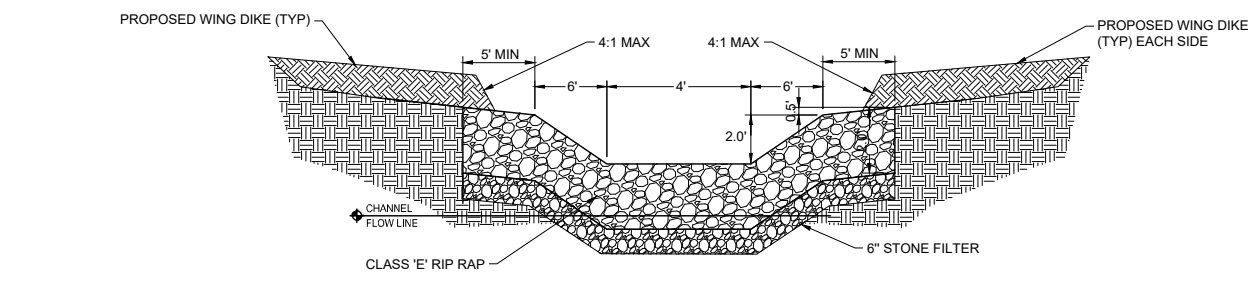
2 TERRACE - 4' HEIGHT
NTS



3 46' STREAM ROCK RIFFLE - PLAN
NTS



4 46' STREAM ROCK RIFFLE - PROFILE
NTS



5 46' STREAM ROCK RIFFLE - CROSS SECTION
NTS

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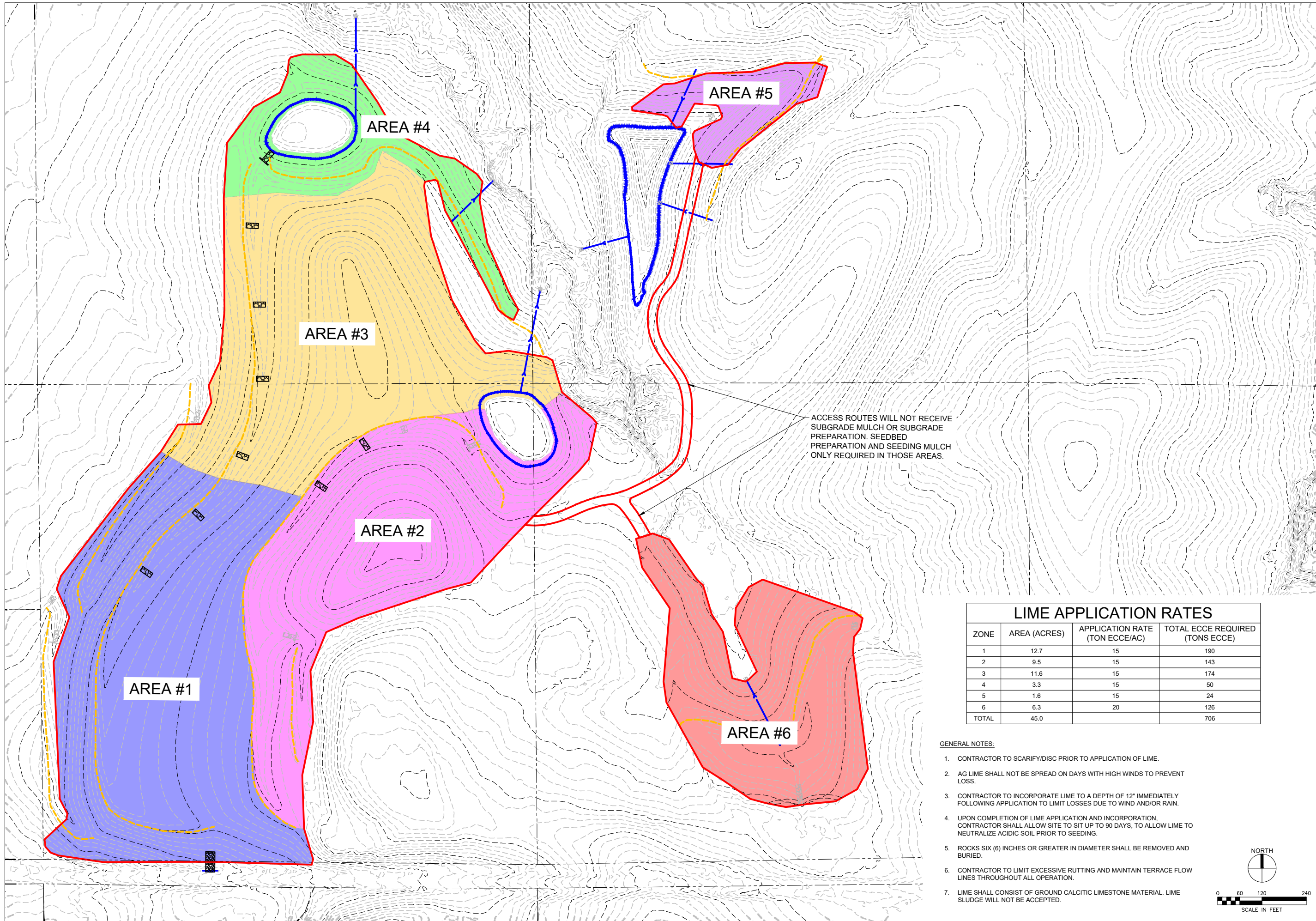
DRAWN BY:

MMO
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DESIGN BY:

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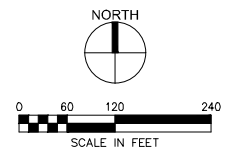





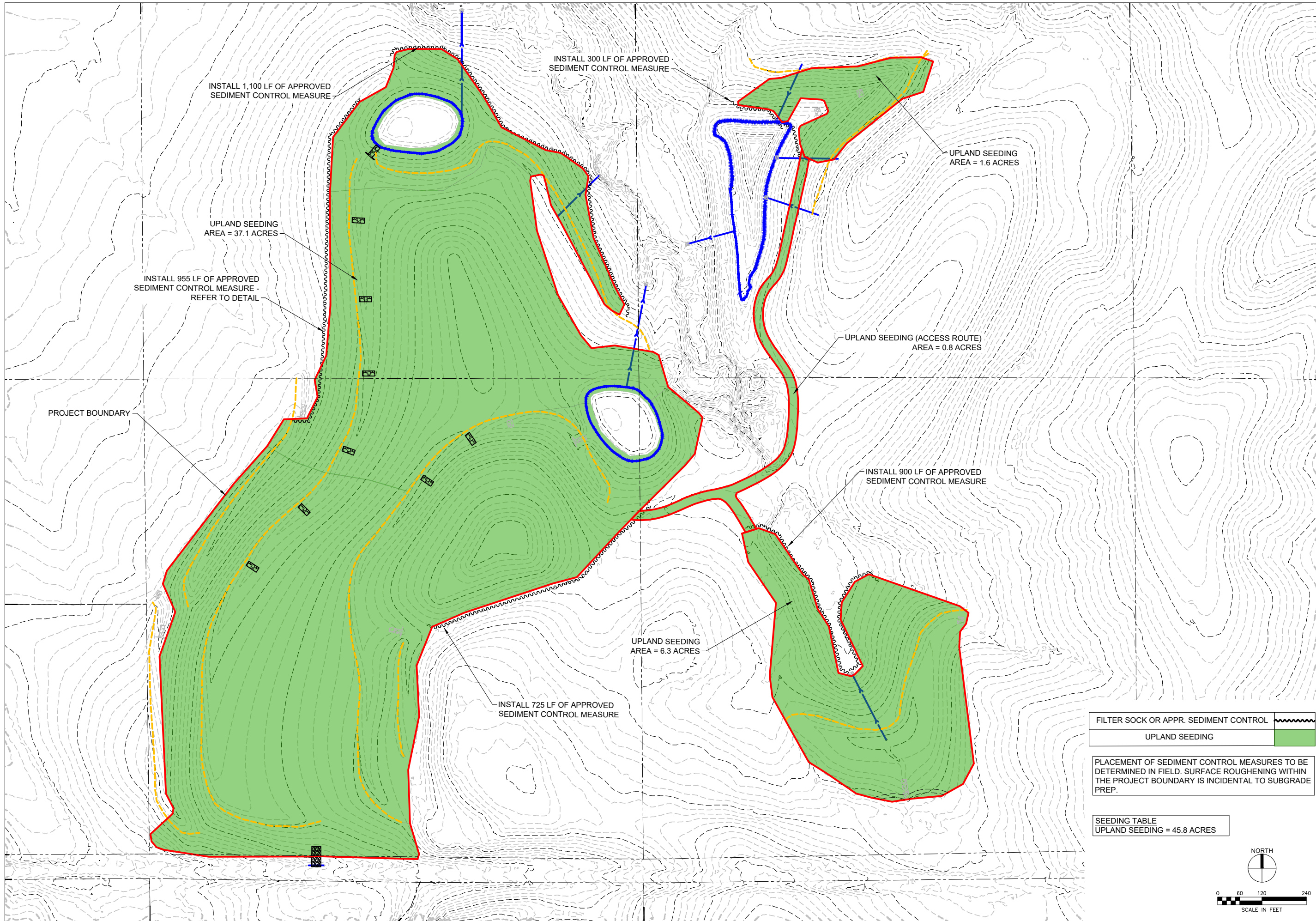
LIME APPLICATION RATES			
ZONE	AREA (ACRES)	APPLICATION RATE (TON ECCE/AC)	TOTAL ECCE REQUIRED (TONS ECCE)
1	12.7	15	190
2	9.5	15	143
3	11.6	15	174
4	3.3	15	50
5	1.6	15	24
6	6.3	20	126
TOTAL	45.0		706

GENERAL NOTES:

1. CONTRACTOR TO SCARIFY/DISC PRIOR TO APPLICATION OF LIME.
2. AG LIME SHALL NOT BE SPREAD ON DAYS WITH HIGH WINDS TO PREVENT LOSS.
3. CONTRACTOR TO INCORPORATE LIME TO A DEPTH OF 12" IMMEDIATELY FOLLOWING APPLICATION TO LIMIT LOSSES DUE TO WIND AND/OR RAIN.
4. UPON COMPLETION OF LIME APPLICATION AND INCORPORATION, CONTRACTOR SHALL ALLOW SITE TO SIT UP TO 90 DAYS, TO ALLOW LIME TO NEUTRALIZE ACIDIC SOIL PRIOR TO SEEDING.
5. ROCKS SIX (6) INCHES OR GREATER IN DIAMETER SHALL BE REMOVED AND BURIED.
6. CONTRACTOR TO LIMIT EXCESSIVE RUTTING AND MAINTAIN TERRACE FLOW LINES THROUGHOUT ALL OPERATION.
7. LIME SHALL CONSIST OF GROUND CALCITIC LIMESTONE MATERIAL. LIME SLUDGE WILL NOT BE ACCEPTED.



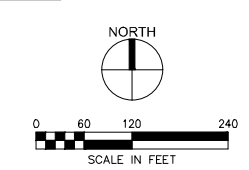
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SUBGRADE SOIL AMENDMENT PLAN					
SHEET 6 OF 8			SHIVEHATTERY ARCHITECTURE+ENGINEERING 4125 Westown Parkway, Suite 100 West Des Moines, Iowa 50266 515.223.8104 fax: 515.223.0822 shivehattery.com Iowa Illinois Missouri Illinois Firm Number: 164-000214		



FILTER SOCK OR APPR. SEDIMENT CONTROL	
UPLAND SEEDING	

PLACEMENT OF SEDIMENT CONTROL MEASURES TO BE DETERMINED IN FIELD. SURFACE ROUGHENING WITHIN THE PROJECT BOUNDARY IS INCIDENTAL TO SUBGRADE PREP.

SEEDING TABLE
UPLAND SEEDING = 45.8 ACRES



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SWPPP & SEEDING PLAN					
SHEET					
7 OF 8			4125 Western Parkway, Suite 100 West Des Moines, Iowa 50266 515.223.8104 fax: 515.223.0822 shivehattery.com Iowa Illinois Missouri Illinois Firm Number: 164-000214		

STORM WATER POLLUTION PREVENTION PLAN (SWPPP)

REFER TO: CONTENTS OF THE POLLUTION PREVENTION PLAN IN PART IV. D. OF IOWA NPDES GENERAL PERMIT NO. 2 -- EFFECTIVE MARCH 1, 2023 THROUGH FEBRUARY 29, 2028.

1. SITE DESCRIPTION

A. DESCRIBE NATURE OF CONSTRUCTION ACTIVITY:

- THE PRIOR PROJECT CONSISTED OF RECLAIMING ABANDONED MINE LANDS THAT WERE DISTURBED FROM PAST COAL MINING ACTIVITIES. THE MAIN OBJECTIVE OF THE AML RECLAMATION WAS TO MITIGATE PRIORITY FEATURES THAT PRESENT A DANGER TO THE HEALTH AND SAFETY OF THE GENERAL PUBLIC. THE GOAL OF THIS PROJECT IS TO RESEED AND MAKE MINOR REPAIRS TO THE RECLAIMED SITE.
- THE MAJOR PHASES OF THE PROJECT ARE TEMPORARY EROSION CONTROL; ROUGH GRADING; LIME TREATMENT OF SURFACE SOILS, FERTILIZING, MULCHING, PERMANENT SEEDING INCLUDING INSTALLATION OF PERMANENT EROSION CONTROL PRACTICES LIKE (RIP RAP GRADE CONTROL STRUCTURES).
- END USE OF SITE IS: WILDLIFE HABITAT AND/OR RECREATIONAL USE
- THE ESTIMATED PROJECT TIMELINE IS: MARCH 2026 TO OCTOBER 2026

B. ESTIMATE THE TOTAL AREA OF THE SITE AND THE AREA EXPECTED TO BE DISTURBED BY EXCAVATION, GRADING OR OTHER ACTIVITIES:

- 45.8 ACRES DISTURBED BY MINOR GRADING, SUBGRADE PREPARATION, AND SEEDING EFFORTS.

C. ESTIMATE THE SOIL RUNOFF COEFFICIENT OF THE SITE AFTER CONSTRUCTION IS COMPLETED, AND DESCRIBE THE WATER QUALITY OF ANY EXISTING DISCHARGE FROM THE SITE.

- THE RATIONAL RUNOFF COEFFICIENT FOLLOWING THE ESTABLISHMENT OF FINAL VEGETATION IS ESTIMATED TO BE ABOUT 0.4 TO 0.5. THIS IS ROUGHLY EQUIVALENT TO AN SCS CURVE NUMBER OF 70 WHICH IS TYPICAL FOR PASTURE-GRASS VEGETATION.
- THE WATER QUALITY BEING DISCHARGED FROM THE SITE, AT PRESENT, IS IMPAIRED WITH ACIDIC PH AND HIGH DISSOLVED IRON CONCENTRATIONS WHICH ARE DERIVED FROM THE WATER'S CONTACT WITH BARE MINE SPOIL MATERIAL ON THE SITE. THIS POOR WATER QUALITY IS OFTEN INDICATED BY RUST-COLORED PRECIPITANT IN THE RECEIVING WATERS.

D. PROVIDE A SITE MAP SATISFYING REQUIREMENTS DESCRIBED IN PART IV. D.1.A.D.:

- SEE BMP PLAN SHEET 7 FOR CONTROLS THAT WILL BE IMPLEMENTED. FOR CONTROLS DURING AND IMMEDIATELY FOLLOWING GRADING.

E. PROVIDE NAME OF THE RECEIVING WATER(S) AND THE ULTIMATE RECEIVING WATERS(S).

- THE RECEIVING WATER IS AN UNNAMED TRIBUTARY AND OVERLAND FLOW TO CEDAR CREEK.

2. CONTROLS -- A.(1) STABILIZATION PRACTICES:

DESCRIBE TEMPORARY & PERMANENT STABILIZATION PRACTICES WITH SEQUENCE FOR IMPLEMENTATION.

1. UNLESS PRECLUDED BY SNOW COVER OR FROZEN SITE CONDITIONS, AREAS TO BE GRADED AND LEFT UNDISTURBED FOR 14 OR MORE CALENDAR DAYS WILL BE ROUGH DISKED ON THE CONTOUR TO INCREASE SURFACE ROUGHNESS. ROUGH DISKING WILL BE USED EXCLUSIVELY PRIOR TO SEEDING THE FINAL VEGETATION. ROUGH DISKING IS USUALLY CONCURRENT WITH INCORPORATION OF AG LIME AND MULCH FOR THE WORK OF SUBGRADE PREPARATION.
2. ONCE ALL GRADING IS COMPLETE, AND THE SOIL PH ADJUSTMENT IS ACCOMPLISHED, A PERMANENT SEEDING MIX CONSISTING OF WARM AND COOL SEASON GRASSES WILL BE PLANTED WITH AN APPROPRIATE COVER CROP OF OATS, WINTER WHEAT.
3. APPROXIMATELY 2 TONS OF STRAW MULCH PER ACRE WILL BE SPREAD ACROSS THE SEEDED SOIL AND TUCKED IN WITH A TUCKING MACHINE TO PROVIDE PROTECTION FROM RAIN DROPLET IMPACT WHILE THE SEEDING BECOMES ESTABLISHED.
4. THE SEEDING TYPICALLY GERMINATES WITHIN 14 DAYS & LATER PROVIDES AT LEAST 70% VEGETATIVE COVER.

A.(2) STRUCTURAL PRACTICES DESCRIBE EROSION AND SEDIMENT CONTROL PRACTICES THAT WILL USED ON THE SITE:

EROSION CONTROL PRACTICES

1. ROUGH DISKING AS DESCRIBED IN "STABILIZING PRACTICES" ABOVE WILL BE USED AS NECESSARY TO REDUCE SURFACE RUNOFF VELOCITIES AND INCREASE INFILTRATION.
2. TERRACES WILL BE USED TO REDUCE SLOPE LENGTHS AND DETAIN/RETAIN STORM WATER RUNOFF. TERRACES WILL BE DRAINED WITH PERFORATED PLASTIC RISERS AND CONCRETE OPEN-SIDED INTAKES.
3. AT TILE DRAINAGE OUTLETS RIPRAP AND LOG APRON POOLS WILL BE USED TO ABSORB ENERGY OF FLOWING STORM DRAINAGE.

A.(2) STRUCTURAL PRACTICES CONT'D:

DESCRIBE EROSION AND SEDIMENT CONTROL PRACTICES THAT WILL USED ON THE SITE:

SEDIMENT CONTROL PRACTICES:

1. STRAW WATTLES OR FILTER SOCK OR SHALLOW DITCHES ACTING AS SEDIMENT TRAPS WILL BE USED ALONG THE PERIMETERS OF THE AS NECESSARY TO PREVENT MIGRATION OF SEDIMENT INTO THOSE WATERS OUTSIDE THE PROJECT BOUNDARY. PROPOSED WATERBODIES WITHIN THE PROJECT BOUNDARY MAY INCLUDE STORAGE VOLUME BELOW THE NORMAL POOL ELEVATION FOR SOME ACCUMULATED SEDIMENT.
2. SILT FENCE DITCH CHECKS, FABRIC CHECKS, FILTER SOCK CHECKS OR SHALLOW TRENCHES WILL BE INSTALLED IN DRAINAGE WAYS AS NECESSARY TO TRAP SEDIMENT TRANSPORTED FROM THE SITE'S SLOPES DURING CONSTRUCTION. IN CONCENTRATED DRAINAGES RIP RAP WILL BE INCLUDED TO SLOW FLOW VELOCITIES AND TRAP TRANSPORTED SEDIMENTS.

A.(2)(a). DESCRIBE PRACTICES WHICH PROVIDE AT LEAST 3600 CUBIC FEET OF STORAGE PER [DISTURBED] ACRE FOR COMMON DRAINAGE LOCATIONS SERVING MORE THAN TEN (10) ACRES OF DISTURBED AREA:

THE GRADING LIMITS FOR THE FEES-IN-LAW AML SITE CONTAINS 45.8 ACRES OF DISTURBED AREA IN WHOLE. EXISTING WETLAND BASINS ON SITE WILL PROVIDE SEDIMENT STORAGE FOR DISTURBED AREAS.

A.(2)(b). DESCRIBE PRACTICES WHICH ARE USED TO RETAIN SEDIMENT ON SITE FOR COMMON DRAINAGE LOCATIONS SERVING TEN (10) OR FEWER ACRES OF DISTURBED AREA:

DRAINAGE LOCATIONS SERVING 10 OR FEWER ACRES WILL BE PROTECTED FROM SEDIMENTATION BY SILT FENCES OR STRAW WATTLES, FABRIC CHECKS, RIP RAP CHECKS OR SMALL SEDIMENT CATCHMENTS TO ARREST OR SEDIMENT MOVEMENT FROM THE SITE.

A.(2)(c). SURFACE WATER WITHDRAWAL, SURFACE WATER BUFFERS, STORM WATER DISCHARGE INTO VEGETATED AREAS, & TOPSOIL PRESERVATION:

i. DESCRIBE OUTLETS THAT WITHDRAW WATER FROM SURFACE OF BASINS:

PERFORATED PLASTIC HICKENBOTTOM (OR EQUAL) INTAKES ARE USED TO DRAIN DRY DETENTION BASINS AND TERRACES. CONCRETE CIRCULAR STRUCTURES WITH OPEN RIM INLETS ARE USED TO WITHDRAW WATER FROM CONSTRUCTED WETLANDS.

ii. DESCRIBE NATURAL BUFFERS AROUND SURFACE WATERS:

TO THE EXTENT PRACTICABLE A BUFFER OF VARYING WIDTH CONSISTING OF TREES AND UNDERSTORY VEGETATION WAS LEFT UNDISTURBED BETWEEN THE PROJECT BOUNDARY AND THE NEAREST STREAM CHANNEL.

iii. REDIRECTION OF STORM WATER DISCHARGES TO AND THROUGH VEGETATED AREAS FOR INCREASED SEDIMENT REMOVAL AND OPPORTUNITY FOR INFILTRATION TO THE SOIL.

WHERE PRACTICABLE OFFSITE AND ONSITE RUNOFF FLOWS ARE DIRECTED INTO TERRACES, DETENTION BASINS OR CONSTRUCTED WETLANDS.

iv. TOPSOIL PRESERVATION:

THE SITE IS AN ABANDONED COAL MINE RECLAMATION PROJECT; NO TOPSOIL EXISTS PRIOR TO RECLAMATION-RELATED CONSTRUCTION ACTIVITIES. THEREFORE, THE TOPSOIL PRESERVATION REQUIREMENT WILL NOT BE MET. THE SITE CONSISTS OF MINE SPOIL MATERIAL CLASSIFIED AS MINE PITS AND DUMPS - SOIL TYPE 502 ON USDA SOIL SURVEY MAPS. AFTER FINAL GRADE IS ACHIEVED, AGRICULTURAL LIME WILL BE APPLIED AT A RATE TO BE DETERMINED BY SOIL TESTS. THE AGRICULTURAL LIME, ALONG WITH 5 TONS OF MULCH WILL BE INCORPORATED INTO THE UPPER ONE (1) FOOT OF THE MINE SPOIL TO PRODUCE A GROWING MEDIUM AS OUTLINED IN PROJECT SPECIFICATION 02400. AFTER A PERIOD OF TIME TO ALLOW FOR NEUTRALIZATION AND MULCH DECOMPOSITION, THE SITE WILL BE PREPARED FOR SEEDING. AGRICULTURAL LIME, FERTILIZER, SEED AND CRIMPED MULCH WILL BE APPLIED AS OUTLINED IN PROJECT SPECIFICATION 02700.

B.(1). DESCRIBE POST-CONSTRUCTION PRACTICES THAT WILL ATTENUATE PEAK RUNOFF FLOWS AND REDUCE SUSPENDED SOLIDS IN WATER FLOWS:

PROPOSED WETLAND WATER BODIES ARE ANTICIPATED TO ATTENUATE PEAK RUNOFF FLOWS AND PROVIDE OPPORTUNITY FOR SETTLEMENT OF SUSPENDED SOLID PRIOR TO RUNOFF EXITING THE PROJECT BOUNDARIES. SEE PLAN SHEETS.

B.(2). DESCRIBE TYPE AND LOCATION OF VELOCITY DISSIPATION DEVICES:

RIP RAP GRADE CONTROL STRUCTURES ARE DESIGNED TO BE PLACED AT AREAS OF EXISTING EROSION TO ABSORB ENERGY AND REDUCE THE VELOCITY OF FLOW THROUGH TERRACES.

C.(1). WASTE DISPOSAL -- DESCRIBE HOW BUILDING MATERIALS WASTE WILL BE ADDRESSED ON THE SITE:

THIS PROJECT IS PRIMARILY A GRADING AND DRAINAGE PROJECT. BUILDING MATERIALS WASTES INCLUDE, BUT ARE NOT NECESSARILY LIMITED TO, CARDBOARD PACKAGING, PIECES OF WOOD, PLASTIC SHRINK WRAP, STEEL BANDS USED FOR PACKAGING, PIECES OF UNUSED PLASTIC PIPE OR FITTINGS, AND PORTLAND CEMENT CONCRETE WASHOUT RESIDUE. ALL CONSTRUCTION WASTES WILL BE DISPOSED OFFSITE.

C.(2). TRACKING OF SEDIMENTS -- DESCRIBE HOW VEHICLE TRACKING OF SEDIMENTS TO OFFSITE AREAS WILL BE MINIMIZED:

- a. TRACKING OF SEDIMENTS OFFSITE WILL BE REDUCED BY AVOIDING VEHICLE TRAVEL ACROSS THE SITE SURFACE SOILS WHEN THEY ARE WET.
- b. A GRAVELED ENTRANCE WILL BE INSTALLED USING 3" NOMINAL MACADAM STONE. THE INSTALLATION WILL FUNCTION TO AID IN CLEANING OFF THE TIRES OF VEHICLES LEAVING THE SITE.
- c. IF "a" CANNOT BE ACCOMPLISHED, AND "b" PROVES INEFFECTIVE, THEN MUD FROM VEHICLE TIRES WILL BE MANUALLY CLEANED OFF, TO THE EXTENT PRACTICABLE, BEFORE THE VEHICLE LEAVES THE SITE.

C.(3). COMPLIANCE WITH STATE OR LOCAL SANITARY WASTE DISPOSAL REGULATIONS:

POLLUTION FROM HUMAN SANITARY WASTE WILL BE PREVENTED WITH THE USE OF A PORTABLE TOILET INSTALLED ON THE SITE. THE PORTABLE TOILET WILL BE SUPPLIED AND MAINTAINED BY THE CONTRACTOR. ON TIMELY INTERVALS, HUMAN SANITARY WASTE FROM THE PORTABLE TOILET WILL BE COLLECTED AND DISPOSED OFFSITE BY A QUALIFIED PROFESSIONAL SERVICES COMPANY RETAINED BY THE CONTRACTOR. PORTABLE TOILET FACILITIES MUST BE ANCHORED TO THE SOIL SURFACE TO RESIST OVERTURNING BY WIND OR VANDALISM.

3. MAINTENANCE -- DESCRIBE MAINTENANCE AND PROTECTIVE MEASURES TO KEEP CONTROLS AND PRACTICES IN WORKING ORDER:

TO THE EXTENT PRACTICABLE, THE EFFORTS WILL BE MADE TO AVOID TRAFFIC OVER OR DAMAGE TO INSTALLED PRACTICES AND CONTROLS. IF DAMAGED, REPAIRS OR REPLACEMENTS TO BMP'S WILL BE MADE AS SOON AS POSSIBLE OR WITHIN SEVEN (7) DAYS FOLLOWING INSPECTION.

4. INSPECTIONS, REVISIONS & REPAIRS -- NOTE SPECIAL CONSIDERATIONS OR PROCEDURES, IF ANY, FOR ROUTINE WEEKLY INSPECTIONS:

PER CONTRACT DOCUMENTS, IDALS-DSCWQ IN PARTNERSHIP WITH PATHFINDERS RC&D WILL PERFORM AND DOCUMENT ALL WEEKLY INSPECTIONS FOR THIS SWPPP IN ACCORDANCE WITH PART IV.D.4.C. ELECTRONIC COPIES OF WEEKLY INSPECTIONS REPORTS WILL BE AVAILABLE UPON REQUEST. REQUIRED REVISIONS OR REPAIRS WILL BE MADE WITHIN SEVEN (7) DAYS FOLLOWING INSPECTION.

5. NON-STORMWATER DISCHARGES -- DESCRIBE PRACTICES TO PREVENT NON-STORMWATER POLLUTION:

LESS THAN 1000 GALLONS OF DIESEL FUEL AND/OR LUBRICATING OILS ARE EXPECTED TO BE ON SITE AT ANY ONE TIME. THEREFORE, RISK OF GROSS POLLUTION TO RECEIVING WATERS IS MINIMAL. IF FUEL OR OIL SPILLS OCCUR, LIQUID POLLUTANTS WILL BE CONTAINED USING SMALL BERMS MADE FROM SITE SOILS TO PREVENT TRAVEL OF POLLUTANTS TO RECEIVING WATERS. SUFFICIENT TIME WILL BE GIVEN FOR THE POLLUTANTS IN IT TO VOLATILIZE IN THE CONTAMINATED SOIL AND/OR CONTAMINATED SOIL WILL BE DISPOSED OFF-SITE.

6. ADDITIONAL REQUIREMENTS FOR STORM WATER DISCHARGE FROM INDUSTRIAL ACTIVITIES OTHER THAN CONSTRUCTION:

THERE ARE NO ADDITIONAL REQUIREMENTS BECAUSE THIS SWPPP IS FOR A "CONSTRUCTION ONLY" SITE WHERE THERE IS NO INDUSTRIAL SOURCE, OTHER THAN CONSTRUCTION, THAT IS GENERATING THE DISCHARGE.

7. IMPLEMENTATION OF CONTROLS:

THE GENERAL CONTRACTOR IDENTIFIED ON THE CONTRACT, WILL BE ULTIMATELY RESPONSIBLE FOR ALL ASPECTS OF THE PROJECT. THESE INCLUDE GRADING, PIPE INSTALLATION, AND INSTALLATION OF BMPS. AN EROSION CONTROL OR SEEDING SUBCONTRACTOR MAY BE RESPONSIBLE IN SOME SITUATIONS.

S-H PROJECT NUMBER: 2250015090

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FEES-IN-LAW AML
REPAIR PROJECT

SWPPP NOTES

SHEET

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