SUPPLEMENTAL CONSTRUCTION SPECIFICATIONS

SUPPLEMENTAL CONSTRUCTION SPECIFICATIONS
KLOOTWYK AML RECLAMATION PROJECT

EXPLANATION

A. The purpose of this Section of the Specifications is to provide supplemental information which is required to complete the Standard Construction Specifications and to set forth supplementary requirements, modifications and/or deletions which are required to make the whole of the Construction Specifications project specific.

B. References to Section, Paragraph and Sub-paragraph numbers used in these Supplemental Construction Specifications are intended to coincide with reference numbers for corresponding Sections, Paragraphs and Sub-paragraphs in the Standard Construction Specifications.

C. Where there is any variance between the Standard Construction Specifications and these Supplemental Construction Specifications, the Supplemental Construction Specifications shall take precedence.

D. Where any section of the Standard Construction Specifications is modified or any Paragraph, Sub-paragraph or Clause thereof is changed or deleted by these Supplemental Construction Specifications, the unaltered provisions of that Section, Paragraph, Sub-paragraph or Clause in the Standard Construction Specifications shall remain in effect. Unless these Supplemental Construction Specifications make specific reference to the modification or deletion of a Paragraph, Sub-paragraph or Clause in the Standard Construction Specifications, no changes are intended and paragraphs contained in these Supplemental Construction Specifications are intended only to supplement, amplify, or clarify said Standard Construction Specifications.

E. The following set of standard specifications, updated July/August 2025, has been used for this project:

02000 SUBSURFACE INVESTIGATION
02010 FIELD ENGINEERING
02100 MOBILIZATION, SITE CLEARING & PREPARATION
02110 IMPOUNDMENTS
02120 SEDIMENT AND EROSION CONTROL
02200 EARTHWORK, ROUGH GRADING
02220 EARTHWORK, DAMS
02300 DRAINAGE SYSTEMS, GENERAL
02400 SUBGRADE PREPARATION, WITHOUT COVER MATERIAL
02500 FENCING
02700 PERMANENT SEEDING

DOCUMENT N - GENERAL CONDITIONS

1-04 ENGINEER

Kelby Wilkison, P.E., Trihydro Corporation, 1252 Commerce Drive, Laramie, Wyoming 82070.
Tel: (307) 745-7474

SECTION 02000 – SUBSURFACE INVESTIGATION

No supplemental specification is required for this section. The Standard Specification (July 2025 edition) is adequate and remains unmodified for this project. Geotechnical and hydrological reports used in design are available as per the Standard Specification.

SECTION 02010 – FIELD ENGINEERING

1.2 QUALITY ASSURANCE

E. (New Paragraph) Surveys at the project site used by the Engineer in preparing the Plans and Specifications are available for review through the Engineer.

F. (New Paragraph) GPS machine control is highly recommended for this project but not expressly required.

3.2 DIMENSIONS AND ELEVATIONS

B. (New Paragraph) Horizontal measurements are in U.S. Survey feet and are based upon the NAD 83 Iowa State Plane Coordinate system, South Zone.

C. (New Paragraph) Elevation measurements are based upon the NAVD 1988 and are in U.S. Survey feet.

D. (New paragraph) Existing topography shown on this drawing was developed from Lidar information for Marion County, Iowa, which is publicly available through Iowa Geodata at https://geodata.iowa.gov/ .

E. (New paragraph) Additional topographical information was collected by conventional surveying methods and incorporated into the LiDAR.

3.3 POSITION, GRADIENT, AND ALIGNMENT

F. (New Paragraph) Should there exist significant differences between the LiDAR elevations shown on the drawings and those reported by the surveying equipment, the Contractor shall direct the surveyor to calibrate the survey instruments to the LiDAR elevations shown on the drawings.

3.6 STAKE OUTS

C. (New Paragraph) The construction staking requirements stipulated in Paragraph "A" is further clarified as follows: required construction staking shall include the following with applicable elevation information for proper construction:

1. Project boundary and access route

2. Terraces, risers, intake structures, and Wetland Pools

SECTION 02100 – MOBILIZATION, SITE CLEARING & PREPARATION

1.2 QUALITY ASSURANCE

D. (Added Language) Additional guidelines and information regarding the endangered Indiana Bat and Northern Long-Eared Bat can be found at the following links:
http://www.fws.gov/midwest/endangered/mammals/inba/
https://www.fws.gov/species/northern-long-eared-bat-myotis-septentrionalis

1.3 JOB CONDITIONS

A. (Added Language) The Contractor shall complete utility locates (One Call) prior to commencing construction to verify utilities and utility locations.

B. (Added Language) Following the Pre-Construction Conference, a brief walk-through of the project limits by the Contractor, Engineer, Division, Construction Observer, and Landowner shall take place to discuss and identify trees to remain undisturbed. If any trees are identified, they shall be marked at

that time. Refer to ISU Extension Publication provided in Paragraph 1.2.C for tree protection during construction.

3.1 SITE ACCESS

A.

1. (Added Language) Designated access roads shown on the Plans and used by the Contractor shall be maintained to allow reasonable access for four-wheel drive vehicles. Secondary access or haul roads not indicated on the Plans shall be approved by the Engineer and reclaimed after use in accordance with Section 02400 and 02700. Contractor shall repair any damage to access or haul roads at no cost to the Division. Access road and haul road construction and maintenance shall be considered subsidiary to Mobilization/Demobilization.

2. (Added Language) All traffic control devices and operations dealing with public traffic and roadways shall be in accordance with applicable Iowa laws and the latest edition of the Manual on Uniform Traffic Control Devices for Streets and Highways (MUTCD). Traffic control devices shall be installed prior to initiating grading activities.

3. (Added Language) The Contractor shall be responsible for the safe movement of mobile equipment.

4. (Added Language) The Contractor shall be responsible to reimburse the landowner for livestock or other property injured or damaged by Contractor's traffic on access roads.

5. (Added Language) All landowner(s) gates shall remain closed during the work

B.

1. (Added Language) If an existing entrance within the Right-Of-Way must be widened to facilitate access, approval from the Mahaska County Secondary Roads department must be obtained prior to performing the improvements.

2. (Added Language) Stone surfacing placed in specific locations along the access route, to improve site accessibility, may be approved by Division for payment. If so approved, Macadam Stone shall be placed as directed by Division or Engineer and be payable at the bid unit price for Macadam Stone. A minimum eight-ounce (8 oz) non-woven filter fabric shall be installed under the stone at no additional cost to the Division. Any costs for stone surfacing placed by Contractor without prior Division approval shall be at Contractor’s expense.

3. (Added Language) The cost for placement of the stabilized construction entrance is considered incidental to the bid unit price for macadam stone. The macadam stone placed at the stabilized construction entrance shall be underlain by a minimum eight-ounce (8 oz) non-woven filter fabric at no additional cost to Division. See plan drawings for dimensions of the stabilized entrance.

3.4 OFFICE AND LAY-DOWN AREA

A.

1. (Revised) Contractor’s Field Office is not required except that sanitary facilities shall be provided.

2. (Added Language) The Contractor shall ensure that his representative on site has an operating cellular phone capable of direct communication with Engineer and Division.

3.6 EXISTING FENCES

A.

1. (Revised) Existing fences within the project limits are in poor condition and shall not be protected unless otherwise directed. Fences shown for removal shall be removed and disposed of by the Contractor. No salvaging of fencing materials is required.

2. (Added Language) New fence installation for this project will consist only of posts set at 10-foot intervals, as specified in Section 02500 – Fencing.

3.7 CLEARING AND GRUBBING

F. (New Paragraph) Contractor shall remove wetland vegetation along existing channels and stockpile on site. Upon completion of the final grading, the Contractor shall spread the wetland vegetation from the stockpile in the constructed wetland area and along the constructed stream channels.

3.8 DEBRIS REMOVAL AND DISPOSAL

A. (Added Language) Metal refuse shall not be buried on the site. To the extent practicable, Contractor is encouraged to salvage scrap metal at a metal recycling facility.

1. (Revised) Cleared and grubbed material, rubbish, scrap metal, tires, and other waste encountered within the project limits shall be collected, stockpiled, and disposed of at a Division-approved offsite facility unless otherwise directed. Onsite burial of waste shall not be permitted without written approval from the Division and Engineer.

2. (Added Language) Special items such as tires, appliances, and other unusual debris shall be sorted and piled separately at a location approved by the Engineer. Collection, sorting, and stockpiling shall be considered incidental to “Clearing and Site Preparation.”

3. (Added Language) The cost for removal, transport, and disposal of tires, appliances, or other unusual debris at an approved facility shall be negotiated with the Contractor. Costs must be supported by disposal tickets or invoices from the facility.

C. Burying

4. Trees, stumps, brush, and the ashes from the burning of landscape waste may be buried within the project limits provided the requirements below are followed.

   b. (Added Language) Uncut tree trunks placed in the muck of dewatered ponds shall be placed in such a way to minimize voids and allow proper compaction. Root balls shall be removed or alternated end for end in the stack, and limbs greater than eight (8) inches in diameter shall be removed prior to placement. Limbs smaller than eight (8) inches in diameter shall be broken or crushed into the stack to obtain desired results.

3.11 MEASUREMENT AND PAYMENT

   c. (Added Language) For special items like tires, the contractor shall collect and sort tires into a pile at a convenient, approved location onsite. The work of collecting, sorting, and stacking the tires shall be incidental to “Clearing and Site Preparation”. The cost for the actual removal, transport, and disposal of the tires at an approved facility shall be negotiated with the Contractor. The agreed cost for tire disposal may include reasonable handling and freight costs. The agreed cost of tire disposal must be identified on an invoice from the Contractor, and it must be supported by tickets or invoices from the disposal facility.

Payment for disposal of other special items, if encountered, will be handled in a similar fashion.

d. (Added Language) Removal and disposal of existing fences within the project limits, where directed, shall be incidental to "Clearing and Site Preparation." No salvaging of fencing materials is required. New fence posts at 10-foot spacing will be measured and paid for under Section 02500 – Fencing.

SECTION 02110 – IMPOUNDMENTS

1.1 DESCRIPTION

A. *(Revised)* Scope: Work under this section includes neutralization (treatment) of acidic water, dewatering, and subsequent backfilling of existing water-filled pits and impoundments on site, in accordance with environmental permit requirements. This includes furnishing all labor, materials (including chemical neutralizing agents), and equipment to treat low-pH water, perform water quality testing, and discharge the water safely. It also includes constructing minor outlet or discharge structures as shown on the Plans (such as temporary outlet pipes or channels) and any temporary containment berms needed during treatment. Once water is removed, the Contractor will complete any required sludge management and then fill and re-grade the impoundments as part of earthwork.

B. *(Added Language)* Temporary Containment: If needed to contain water during treatment (for example, to prevent overflow of a pond while adding caustic), the Contractor shall construct temporary containment dikes using on-site material. These berms may be placed in existing spillway gaps or low edges of pits to raise the water level temporarily. After use, remove or incorporate these berms into the final grading. This work is incidental to the impoundment discharge; no separate payment.

1.5 JOB CONDITIONS

(No changes to standard permit references; all NPDES permit conditions for water discharge must be followed.)

- *(Added Language)* Neutralization & Dewatering Plan: Prior to commencing any treatment or dewatering of pit water, the Contractor must prepare and submit a detailed Neutralization and Discharge Plan to the Engineer and Division for approval (see Submittals). No impounded water shall be discharged without an approved plan.

- *(Added Language)* Water Characterization: Water samples collected during design indicate that several pits on site contain strongly acidic water (pH as low as ~3.0), while others are more neutral or alkaline. The Contractor shall anticipate that chemical neutralization will be required for those pits with low pH (generally pH < 6.0) before discharge. Pits with higher pH water may not require additives but still must be tested and meet pH and other criteria before release. All discharges must comply with NPDES water quality limits (pH between 6.5 and 9.0, and any specified limits on iron, suspended solids, etc.).

1.6 SUBMITTALS

A. (Added Language) Neutralization and Discharge Plan: The Contractor shall submit a Neutralization and Discharge Plan for approval at least 14 days before planned dewatering of any pit. This plan shall detail the proposed procedures and materials for treating the water and discharging it. At a minimum, include:

(1) the chemical to be used for neutralization (which shall be 20–25% liquid caustic soda, unless an alternative is approved), safe handling and storage measures for it on site, and estimated quantities;

(2) methods for applying and mixing the chemical into the water (e.g., pumping circulation, aspirating with the pump, use of an agricultural spray bar, etc.);

(3) procedures for field testing water pH (and any other required parameters like alkalinity or iron) during treatment, including frequency of testing and equipment (calibrated pH meter, litmus, etc.);

(4) the intended discharge route for each pit (e.g., through a specific breach or into a specific channel section), with measures to prevent erosion or scour (such as pumping at controlled rates, using an energy dissipator or riprap apron);

(5) contingency actions if initial treatment is insufficient (additional dosing steps); and

(6) handling of any residual sludge or precipitate. The plan must ensure compliance with NPDES permit conditions for the discharge. The Contractor shall not proceed with pit water discharge until the plan is reviewed and approved by the Engineer/Division.

3.4 WATER SAMPLING AND TESTING (ALL IMPOUNDED WATER BODIES)

A. (Added Language) Initial Water Testing: Before treating or pumping any impounded water, the Contractor shall collect a representative sample from each water-filled pit or impoundment and perform field measurements of pH. At least one sample from each major pit requiring discharge shall also be analyzed (field or lab) for acidity (or alkalinity) to quantify the amount of neutralization needed. The Engineer will provide any available baseline water chemistry data from design investigations; however, the Contractor is responsible for verifying conditions at the time of construction. These initial tests will form the basis for the Contractor's neutralization approach (as detailed in the submitted plan).

B. (Added Language) Field Monitoring: During the neutralization process, the Contractor shall continuously or periodically monitor the pH of the water being treated. A calibrated handheld pH meter shall be used (test strips are not sufficient for precise control). Water temperature and clarity (turbidity) should also be observed. Monitoring records (time, pH readings, amount of chemical added) shall be maintained and provided to the Engineer upon request.

3.5 NEUTRALIZATION AND DEWATERING PLANNING MEETING

B. (Revised) Pre-Treatment Meeting: Before beginning any actual treatment of pit water, the Contractor shall hold an on-site meeting with the Engineer and Division to review the Neutralization and Discharge Plan. At this meeting, the Contractor's key personnel responsible for water treatment shall be present to discuss the sequence and safety measures. The group will verify that all necessary equipment (such as pumps, hoses, sprayers, generators, boats if needed for mixing, personal protective equipment for handling caustic, etc.) is ready and that emergency neutralization of spills (e.g., with dilute acid or water) is planned. Only after the Engineer is satisfied that the Contractor is prepared, will authorization be given to proceed with adding chemicals to the water. Any adjustments to the plan identified during this meeting shall be documented and followed by the Contractor.

3.6 WATER TREATMENT

A. *(Added Language)* Neutralizing Agent: The standard neutralizing agent for acidic water on this project is Liquid Caustic Soda (20–25% NaOH solution). The Contractor shall apply caustic soda into the pit water in a manner that achieves thorough mixing. Options include injecting through pump intakes, spraying over the surface, or agitating with excavation equipment. The goal is a uniform distribution of the chemical throughout the pond's volume. Treatment shall continue (in stages) until the water's pH is within the target range of 6.5 to 9.0 and meets any other NPDES effluent requirements (such as maximum iron concentration and total suspended solids (TSS) limits). Lime (calcium oxide or hydroxide) treatment is not anticipated for this project unless caustic soda proves ineffective or impractical; any substitution would require Engineer approval.

B. *(Added Language)* Multiple-Stage Treatment: The Contractor should add neutralizing agent in increments, allowing time between doses for the chemical reaction to stabilize (typically several hours) before re-testing pH. Do not "overshoot" the pH – adding chemicals slowly and testing often is required to avoid raising the pH above permit limits. If an overdose occurs and pH exceeds 9.0, the Contractor must notify the Engineer and

may need to add dilution water or CO_2 (with Engineer approval) to buffer the water back into range.

C. *(Added Language)* Reference Data: For the Contractor's information, water sampling conducted on July 18, 2023 yielded the following characteristics of the pit waters on site (prior to any treatment):

PIT ID	SAMPLE ID	SURFACE AREA (AC.)	pH (7/18/23)
WB1	SW-3	0.72	10.4
WB2	SW-4	0.20	10.0
WB3	SW-5	0.29	7.8
WB4	SW-6	0.43	8.1
WB5	SW-7	0.17	7.1
WB6	SW-8	0.39	3.4
WB7	SW-9	1.31	9.6
WB8	SW-10	0.11	6.7
WB9	SW-11	1.14	3.0
WB10	SW-12	3.35	4.5
WB11	SW-13	0.04	2.9
WB12	SW-14	0.39	10.2

("Max Muck Thickness" refers to soft sediment at the bottom of the pit. "Volume" is the water volume estimated at time of sampling.)

From the above data, Pits WB6, WB9, WB10, and WB11 are clearly acidic (pH in the 2.9–4.5 range) and will require caustic soda treatment. Others (e.g., WB1, WB2, WB3, WB4, WB5, WB12) had neutral to alkaline pH at the time of sampling and may not require chemical treatment, but they must still be verified at time of discharge. WB10 is the largest impoundment (approx. 3.35 acres surface) and will be partially backfilled per design – meaning a portion may remain as a permanent water body. The discharge from WB10 still must be treated to acceptable pH before and during backfilling. The Contractor should use the above estimates to plan chemical needs, but actual treatment shall be based on real-time measurements as described.

D. *(Added Language)* Bidding Assumption: For bidding purposes, assume each pit that requires neutralization will need at least one round of treatment and testing. The Contractor shall include the cost of pH testing and minor adjustments in the bid for impoundment work. The bid schedule provides a unit price item for caustic soda (by the gallon) to account for the variability in the amount needed.

3.7 DISCHARGE OF IMPOUNDMENTS

A. *(Revised)* Dewatering Process: After acceptable water quality is achieved in a pit (or if a pit was determined not to need treatment), the Contractor shall discharge or pump out the water in a controlled manner. Whenever possible, utilize the existing low point or breach in the pit highwall as the outlet to minimize additional excavation. If pumping is required (likely for higher pits with no natural outlet or to speed up dewatering), the pump intake should be suspended near mid-depth to avoid sucking bottom sediment. Discharge hoses or channels must outlet to a stable area – preferably the designed channels or riprap outlet locations shown on plans. The flow rate should be controlled to prevent flooding or erosion downstream. If necessary, the Contractor shall construct a temporary stilling basin or use an energy dissipation device (such as a splash pool lined with rock or a perforated discharge nozzle) at the outlet to slow the water velocity.

- *(Added Language)* Water Clarity and Treatment During Pumping: The Contractor shall monitor the clarity of the water during pumping. If significant sediment is being drawn out (visible turbidity spike), the Contractor shall throttle back the flow or briefly stop pumping to allow sediment to settle. Pumping shall also be halted if pH readings of the effluent drift outside 6.5–9.0. In such case, the Contractor must recirculate and retreat the water until pH is back in range. Essentially, the Contractor is responsible for ensuring that at all times during discharge, the effluent meets permit limits.

B. (Added Language) Sediment/Sludge Management: Many pits contain a layer of "muck" or fine sediment at the bottom (see table above). After water drawdown, this sediment will be exposed. The Contractor is not required to

remove and haul off this sediment; it can be blended into the surrounding spoil during backfilling. However, if the sediment is highly fluid, the Contractor should allow time for it to drain or dry out (or mix in dry material) before burying it, to avoid excessive settlement. Any obviously contaminated sediment (e.g., bright orange iron precipitate or oily residue) should be buried deep within the fill (minimum 5 feet of cover) or in a location directed by the Engineer.

C. (Added Language) Sequence Considerations: Pits WB9 and WB10 are large and may require significant time to treat and discharge. The Contractor may work on treating one pit while grading others. However, care should be taken to not fill in a pit that still contains untreated water or sludge that could contaminate runoff. The recommended sequence is to treat and discharge all water from a pit, then immediately follow with backfilling that pit with spoil. Multiple pits may be handled in parallel if resources allow, but the Contractor must remain vigilant in monitoring each.

D. (Added Language) Minor Impoundments: Several smaller water bodies (WB1–WB5, WB8, WB12) have relatively low volumes and are planned to be backfilled and regraded. These can often be breached with a small channel or pumped out in a day. The Contractor shall still ensure any discharge from these meets pH and erosion control requirements, but the effort is expected to be modest compared to the larger pits. Include these in the neutralization plan (if any treatment needed) and handle them similarly.

(All water discharge operations are subject to the observation and approval of the Engineer or Construction Observer. The Contractor shall keep a log of treatment volumes and discharge dates for inclusion in the SWPPP records.)

3.11 MEASUREMENT AND PAYMENT

A. (Revised) Impoundment Discharge: If a bid item “Impoundment Discharge and Treatment” (Lump Sum) is provided, it will cover all work related to planning, treating, and discharging all pit water on the site (excluding the cost of the neutralizing chemical itself). This lump sum shall include development of the Neutralization Plan, water quality testing, neutralization labor and equipment, pumping and dewatering, temporary containment or outlet works, and management of residuals. If no separate item is listed, then all such work is incidental to the Earthwork grading items.

B. *(Added Language)* Caustic Soda (20–25% Liquid): Caustic soda solution used for neutralization will be measured by the Gallon actually used on site and will be paid at the contract unit price per gallon. This payment covers furnishing the chemical, transportation, storage, handling, and application into the water (including any equipment like pumps or sprayers used specifically for applying the chemical). The Contractor must provide delivery tickets or logs to verify the quantity of caustic soda used. Any unused chemical at the end of the project is to be removed by the Contractor (and will not be paid).

C. *(Added Language)* Incidentals: No separate payment will be made for field testing equipment (pH meters, etc.), minor consumables for neutralization (like baking soda for spills, or indicator solutions), or for extra labor time spent in monitoring treatment. These costs shall be included in the bid prices for the work (either the lump sum for discharge or overhead in general). Similarly, any pumping, hosing, or temporary earthwork required for water discharge is considered subsidiary to the impoundment work (no separate pay).

(In summary, the Contractor will be paid for neutralization by gallon of caustic soda used, and the general effort of water handling either by a lump sum item or included in earthwork. The Contractor bears the risk that more or less chemical may be needed than estimated. The provided unit price should reflect all associated costs of using that chemical.)

SECTION 02120 – SEDIMENT AND EROSION CONTROL

1.1 DESCRIPTION

- *(New Paragraph)* In addition to the Standard Specification, ensure all requirements of the Storm Water Pollution Prevention Plan (SWPPP) are followed. The Contractor must implement and maintain erosion and sediment control Best Management Practices (BMPs) to prevent sediment from leaving the project limits or

reaching any off-site watercourses. If field conditions or weather events necessitate additional measures beyond those shown in the Plans, the Contractor shall notify the Division and Engineer and install appropriate additional BMPs as directed (at no additional cost if minor).

2.1 MATERIALS

F. Wattles (Straw Rolls):

3. *(Revised)* Wooden stakes for securing straw wattles shall be nominal 1 inch by 2 inch (minimum cross-section), by 24 inches long (minimum). Metal posts or rebar are not allowed for wattles to avoid safety hazards and permit ease of cutting at removal.
4. *(New Paragraph)* Wattles used on this project shall be approximately 12 inches in diameter (nominal). Typical 9-inch wattles are not sufficient; oversize wattles provide better sediment impoundment capacity.

I. Sediment Basin Outlet Structures:

1. *(Revised)* A manufactured riser and pipe outlet structure will not be constructed for temporary sediment basins on this project. Instead, the proposed Wetland 2 (and Wetland 1 to some extent) will function as temporary sediment catchments during construction. The permanent rock outlet weir of Wetland 2, as detailed in the plans, will serve to filter sediment. No separate fabricated basin outlet is required.

   (Additional note: The large existing pond WFP-1 is being eliminated; interim sediment control for that drainage is handled via pumping and stabilization in the new channel, so no standard basin needed. Other small basins are integrated into design features.)

3.3 INSTALLATION OF SEDIMENT AND EROSION CONTROL MEASURES

E. Temporary Earth Diversion Structures:

4. *(New Paragraph)* Where called for on the SWPPP Plan (e.g. upslope of highwall areas during grading), the Contractor shall construct temporary diversion berms with parallel ditches to intercept runoff and divert it around disturbed areas. The diversion may be constructed by grading a shallow swale and casting up a berm on the downslope side using on-site soil. No compaction of these temporary berms is required, but they should be track-walked to stabilize. Diversion ditches shall be graded to drain at a mild slope to a stable outlet (such as an undisturbed vegetated area or a rock outlet). Remove temporary diversions during final grading. (Earthwork for these is incidental to grading.)

M. Sediment Basin (Wetland) Maintenance:

1. *(Added Language)* During construction, monitor sediment accumulation in the Wetland 2 area (which serves as a temporary sediment basin). If excessive sediment is observed building up such that the wetland's functionality or capacity is compromised, the Contractor shall, as directed by the Engineer, remove and dispose of the sediment. Removed sediment may be placed in a nearby spoil area or used as fill on site, provided it is not saturated. The Contractor shall also clear any clogged rock outlets or channels of sediment and restore the rock as needed. All such maintenance is incidental to the erosion control work.

N. Stabilized Construction Entrance:

1. *(Added Language)* A stabilized construction entrance shall be installed at the main project access point to prevent tracking of mud onto public roads. This entrance shall consist of a pad of Macadam Stone (IDOT 3-inch nominal, or similar) at least 6 inches thick, placed over a geotextile separator (minimum 8 oz/sy non-woven). The dimensions of the entrance pad shall be at least 50 feet long

(unless space is constrained) by 15 feet wide or as shown on plans. The cost of all stone and geotextile for this entrance is to be covered under the bid item for Macadam Stone, and placement is considered incidental to that item (no separate payment for geotextile). Maintenance, such as adding stone if the pad becomes inundated with sediment, is the Contractor's responsibility. Upon completion, any excess stone from the entrance may be reused on site (e.g. as riprap) or shall be removed.

O. Excavator Bucket Sediment Trench:

1. *(New Paragraph)* In drainage swales where standard silt fence or wattles are not practical (for example, at the outlet of WFP-1 during pumping), the Contractor shall construct an "excavator bucket trench" across the flow path. This entails digging a shallow trench (approximately one bucket-width wide and 2 feet deep) perpendicular to flow, with the spoil placed as a berm on the downstream side. The trench will act as a small sediment trap, and the berm as a check dam. The Contractor shall periodically clean out accumulated sediment from the trench to maintain capacity. The location and number of such trenches will be determined in the field by the Engineer as needed. A typical use is below pump discharge points or at the outlet of temporary diversions. Payment for excavator-dug sediment trenches, if required as a separate bid item, will be by linear foot; otherwise it is incidental to the dewatering or earthwork as applicable.

   (All other erosion control measures such as silt fence, filter fabric, seeding, etc., shall be installed per the Standard Specifications and as shown on the SWPPP drawings.)

4. MEASUREMENT AND PAYMENT

A. Wattles – Installation

(Added Language) Measured by the Linear Foot of wattle installed, complete in place, including trenching, staking, and maintenance. Removal, if required, is incidental unless a separate bid item is provided.

B. Temporary Earth Diversion

(Added Language) Measured by the Linear Foot of diversion constructed to the approved typical section and to the lines and grades shown on the Plans. Maintenance and removal/restoration are incidental unless a separate bid item is provided.

C. Tied Concrete Block Mat

(Added Language) Measured by the Square Foot in place. All incidental work necessary for installation shown on the Plans is subsidiary to TCBM.

D. Stabilized Construction Entrance

(Added Language) Measured by the Ton of stone placed. Placement, shaping, and maintenance are incidental to SCE. Unless otherwise directed by the Engineer or Division, removal is not a separate pay item.

E. Excavator Bucket Sediment Trench

(New Paragraph) If included as a bid item, measured by the Linear Foot constructed and maintained, complete in place. If not listed as a bid item, trenches shall be considered incidental.

F. Summary – Proposal Bid Items Under This SECTION

(Revised) The following bid items apply to work under this SECTION:

1. *Wattles – Installation (LF)*
2. *Temporary Earth Diversion (LF)*
3. *Tied Concrete Block Mat (SF)*
4. *Stabilized Construction Entrance (Ton)*
5. *Excavator Bucket Sediment Trench (LF)*

SECTION 02200 – EARTHWORK, ROUGH GRADING

1.2 QUALITY ASSURANCE

E. (New Paragraph) GPS Machine Mounted Grade Control Equipment

A. The Contractor's attention is specifically called to the recommendation for the Contractor to provide GPS Machine Mounted Grade Control Equipment for finishing of the final design surface. The reclamation plan incorporates natural landform grading and traditional terrace techniques, which precludes the use of uniform slopes, and is difficult to represent with traditional grade control staking.

B. If GPS Machine Mounted Grade Control Equipment is used, the Contractor should provide competent, task-trained personnel to operate and maintain the GPS equipment. If used, the Contractor shall supply the GPS equipment ready to use including all base stations, radios, repeaters, receivers, and machine mount units necessary to perform the work.

C. If GPS Machine Mounted Grade Control Equipment is used, the Engineer will provide survey control points to the Contractor, and will provide Digital Terrain Model (DTM) files in an electronic format compatible with the Contractor‘s GPS equipment.

1.3 JOB CONDITIONS

C. Earthwork Balance

1. (Added Language) The Shrinkage Factor for the proposed grading is assumed to be **10%** for mass balance. The Contractor is responsible for managing cut and fill operations to avoid a large surplus or deficit of material. The Engineer will provide guidance if adjustments are needed (for instance, if material does not shrink as assumed, terrace or spoil pile heights may be trimmed accordingly). Terraces are designed with a slight overbuild (see Section 02220) to account for settlement. No material is to be removed from the site; any excess shall be spread within the grading limits as directed.

D. Original Ground Lines

1. Existing topography shown on the Plans was developed using publicly available LiDAR data for Marion County and supplemented with topographic and bathymetric survey data in select areas.

1.6 SITE DISTURBANCES

B. (Added Language) The project area and project access routes do not overlap with CRP land.

3.8 EXCAVATION

A. (Clarification) All excavation is unclassified (common excavation of spoil, coal refuse, old highwalls, etc.). Materials to be excavated include soil, rock fragments, coal debris, etc., and shall be excavated to the lines and grades shown. There is no separate Rock Excavation item; any hard rock encountered is considered incidental

to the excavation bid item. The Contractor has inspected the site and is deemed satisfied with the character of materials to be moved. Blasting is not permitted due to proximity of structures.

B. (Added Language) The Contractor should attempt to salvage any pockets of decent soil encountered during excavation (e.g., layers of topsoil or loess atop highwalls) for later use in final cover or seedbed preparation. Such material, if free of toxic spoil, can be stockpiled for spreading on graded areas before seeding. Coordinate with Engineer to identify suitable salvageable soil. (This work is incidental to excavation; there is no topsoil pay item.)

C. (Clarification) Oversized materials: Boulders >18 inches or other large debris encountered shall be relocated and buried as described in Standard Spec (at least 3 feet below finished grade), typically within deep fill areas. If exceptionally large boulders are encountered that standard equipment cannot move, notify Engineer for decision – likely such objects will be left in place and covered, or broken mechanically. No extra payment for rock.

F. (Reiteration) Excavation sides and slopes must be maintained safely at all times in accordance with OSHA standards for trenching and excavation. The Contractor is solely responsible for slope stability and excavation safety. No separate payment for excavation support or benching if needed for safety.

G. (Added Language) Highwall Excavation: The Contractor shall take particular care when excavating into the base of existing highwalls or spoil piles. Remove material in lifts and do not undercut. If a highwall shows signs of potential collapse, build a safety berm and consult the Engineer. The aim is to blend highwalls to 3H:1V or flatter; any remaining cliff sections that cannot be safely cut should be reported. (All highwall excavation is incidental to overall excavation quantities.)

H. (Added Language) Contaminated Material: If any unusual material is encountered (e.g. waste, barrels, oil sheen), stop and notify Engineer. Such material will be evaluated and handled per Division direction. (Not expected; none known on site.)

3.9 FILL PLACEMENT AND COMPACTION

A. (Revised) Fill shall be placed in twelve (12) inch or less loose thickness if compacted with rubber tire equipment and nine (9) inches or less loose thickness for tracked equipment.

H. (New Paragraph) Deep fill zones: zones requiring placement of fill deeper than fifteen feet (15') shall require extra time to allow for settlement of the soil. Once each increment of 15' of fill is achieved at least thirty (30) days shall be allowed to elapse before performing additional fill operations in that zone. The waiting period may be reduced to no less than fifteen (15) days provided Contractor documents with detailed daily survey measurements that the majority of the settlement has occurred within the first 15-day waiting period. Establishment of benchmark locations for survey measurement shall be subject to Engineer's approval

3.10 FILL INITIATION IN PONDS AND WET AREAS

B. (Added Language) The Contractor shall select and employ one or a combination of the above techniques to ensure that fill placement over wet ground is done safely and effectively. The chosen method must minimize trapping large voids of water or slurry. Under no circumstances shall the Contractor simply dump spoil into a water-filled pit without these precautions, as that could create an unstable "raft" of material. The Engineer or Construction Observer will monitor fill operations in these areas closely and may require one method or another if the Contractor's approach is not achieving a stable result. All effort to stabilize wet areas is considered incidental to the bulk earthwork.

C. (Added Language) Observation of Stability: During and after filling former impoundments, the Contractor shall watch for signs of instability (localized slumping, cracks at the edges, etc.). If such

signs appear, stop placing fill in that area and consult with the Engineer. Additional surcharging (extra temporary fill) or different equipment paths might be necessary. The Contractor remains responsible for correcting any gross instability or excessive later settlement in fill placed, at no extra cost.

D. (By end of construction, all former pit and wetland areas should be filled and graded to design elevations, with no visible remaining ponds unless designed as such, e.g., Wetland 1–4. The final graded surface should be smooth and firm prior to seeding.)

SECTION 02220 – EARTHWORK, DAMS

1.2 QUALITY ASSURANCE

E. (Revised) The services of a Geotechnical Engineer are not anticipated for this contract. If those services become necessary, the Division will reimburse Contractor the actual extra costs of those services that are verified with invoices from the approved Geotechnical Engineering firm selected by Contractor. Costs for meals and lodging incurred by the Geotechnical firm will not be reimbursable.

3.2 ELEVATIONS AND LINES

E. (New Paragraph) Where required, ridges of terraces shall be overbuilt as indicated on the Plans to accommodate anticipated future settlement. The overbuilt ridge of the terrace shall taper from its mid-point to zero (0) inches at both toes of slope.

3.5 SUBGRADE PREPARATION

C. (New Paragraph) Prior to backfilling, the approved subgrade shall be scarified with suitable equipment to facilitate a bond with the backfill.

3.13 TESTING

A. (Revised) No field or laboratory tests pursuant to this SECTION are anticipated for this project.

B. (Revised) No proctor tests pursuant to this SECTION are anticipated.

C. (Revised) No in-place density tests pursuant to this SECTION are anticipated. Compaction shall be evaluated by visual means. For purposes of this section, soil shall be considered compacted when the tamping-type roller is fully supported. Water shall be added, or wetter soil shall be incorporated if the soil is too dry to be compacted. If soil is too wet for compaction, incorporate suitable dry soil.

3.14 MEASUREMENT AND PAYMENT

C. (Added Language) Controlled General Fill, Earth Dam: The unit price for this item shall include all special handling, equipment, materials, and labor required to properly place approved material for constructing any structures.

SECTION 02300 – DRAINAGE SYSTEMS, GENERAL

2.3 OUTLETS FOR TILING OR PIPE

D. (Revised) Non-perforated DWPE may not be substituted for PVC Schedule 40 for this project.

2.17 GRANULAR BEDDING (NEW SECTION)

A. Granular bedding shall consist of well-graded durable aggregate placed in the thicknesses shown on the Plans. All material comprising the granular bedding shall be composed of durable particles reasonably free of sharp or angular particles capable of puncturing adjacent materials..

B. The aggregate shall have a gradation that conforms to the Iowa Department of Transportation specifications for pipe bedding material, Gradation No. 3. Refer to IDOT Section 4118.

Sieve Designation	Gradation No. 3 Percent Passing
1 ½"	100% passing
1"	95-100% passing
½ "	25-60% passing
Less than No. 4	0-10% passing

3.5 TERRACES

A. (Revised) After placement and approval of controlled general fill areas, terraces shall be installed during and as a part of rough grading. The earthwork volume to construct the terraces is included in the overall excavation earthwork balance for the project. Refer also to Supplemental Specification SECTION 02200, 1.3.B.1. Terraces shall be constructed with overbuild allowances as shown on Sheet 12 of the Plans to account for settlement.

3.6 TILING AND PIPE

A. Tiling

6. (Revised) Granular backfill around pipe: where specified on the Plans, construct a backfill envelope around the pipe using 1″ clean angular crushed stone (Class 1 granular backfill). The envelope shall conform to the minimum trench width specified in the Plans. The length of the granular backfill zone shown on the Plans shall be considered the minimum length. The granular backfill shall be consolidated under the pipe haunches, and it shall be compacted with suitable tamping or vibratory equipment. The entire pipe envelope with the granular backfill shall be encased within filter stone as shown on the Plans. The cost of the granular backfill and filter stone is incidental to the cost of the pipe.

11. (New Paragraph) Tiles discharging on-site shall have an outlet pool as shown in Detail 1 on Sheet 12 of the Plans. Outlet pools shall be constructed with riprap apron dimensions per the Plans.

3.7 RISERS AND OPEN SIDED INTAKES

A. (New Paragraph) Existing Risers

1. Where indicated on the plans, excavate and remove existing riser(s) to the full depth including the elbow or tee.

2. Follow and expose all connected pipes or tiling for a minimum distance of ten (10) lineal feet horizontally beyond finished grades or a minimum three (3) feet below finished grades. If so directed by Engineer, expose additional length of pipe at no additional cost to Division.

3. Cut and remove pipe or tiling so exposed. All removed pipe material shall be disposed offsite.

4. Backfill pipe opening(s) that remain(s) with a mixture of high-quality sodium bentonite and suitable site soil at a minimum ratio of 1 part granular bentonite to 5 parts soil. Pack bentonite-soil mixture into the pipe opening with hand tools.

5. Once pipe opening is closed backfill and compact remaining excavation to finished grade with suitable site soil while applying at least one-half pound (0.5 Lb.) granular bentonite per one (1) inch of soil thickness. Each lift of soil shall not exceed six (6) inches and it shall be thoroughly mixed with the bentonite. See also Table 3 of NRCS Code 520 in the Appendix to these specifications.

B. (Added Language) New Risers – Concrete and Hickenbottom Options

1. New risers shall be constructed of reinforced concrete in accordance with Sheet 10 details, unless otherwise approved by Engineer.

2. Terrace risers shall have the top three (3) feet perforated with sufficient openings 1″ to 1¼″ diameter to provide capacity equal to or greater than Hickenbottom risers. Contractor shall demonstrate equivalency using published Hickenbottom flow charts (https://hickenbottominlets.com/flow/).

3. All new risers shall be fitted with a Yellow Standard Bar Guard by AgriDrain, or Engineer-approved equal, securely fastened per manufacturer recommendations.

C. (Added Language) Open-Sided Area Intakes

1. Open-sided intakes shall conform to IDOT SW-513 standard intake detail (Sheet 11), installed per IDOT practice unless otherwise modified by the Plans.

3.9 ROCK LETDOWNS, CHANNELS, AND WETLAND OUTLETS

A. Rock letdowns, channels, and wetland outlets shall be constructed to the line, grade, and dimensions shown on Sheet 13 of the Plans.

B. All rock letdowns and outlets shall be underlain by a filter stone bedding zone consisting of clean, durable aggregate (Class 1 or approved equal) per plan dimensions. Bedding stone shall replace filter fabric beneath these structures.

C. Concrete or pipe outlets into wetlands shall include a riprap apron with dimensions and stone size as shown on the Plans.

D. Measurement and Payment: All work associated with rock letdowns, wetland outlets, and outlet aprons — including excavation, subgrade preparation, granular bedding/filter stone, and placement — shall be incidental to the bid items for Riprap or Erosion Stone, as designated on the Plans. No separate payment will be made for these structures.

3.11 GRANULAR BEDDING (REPLACED - NEW SECTION)

E. Granular bedding material shall be placed in one or more lifts on compacted subgrade. The subgrade shall be prepared and compacted as specified in Section 02220 EARTHWORK, DAMS, Items 3.5 *Subgrade Preparation* and 3.9 *Controlled General Fill Placement*.

F. The top surface of the granular bedding shall be raked or otherwise spread to provide a uniform bedding plane for the overlying filter fabric and/or riprap.

G. All filter fabric and granular bedding shall be in-place and approved by the Engineer prior to riprap or erosion stone placement.

3.13 MEASUREMENT AND PAYMENT (RENUMBERED AND REVISED)

A. (Revised) Terrace: The cost for rough terrace construction and compaction shall be considered incidental to and included in the unit price for Excavation as referenced in SECTION 02200. The unit price for terraces in this SECTION shall include material, equipment, and work required to finish grading the terraces in conformance with details and dimensions shown on the plans. Finish grading the terraces includes overbuilding the terrace where specified. The length shall be measured along the centerline of the terrace. The maximum payable length for installed terraces shall be the bid plan quantity.

E. *Pipes*: The existing 4-feet by 4-feet wooden box culvert under 320th Street is scheduled to be replaced to allow free flow as a result of this project. The wooden box culvert will be replaced by the Marion County Secondary Road Department with no cost to this project.

K. (Replaced – New Paragraph) *Granular Bedding:* The unit price shall include all materials and work required for installation of the granular bedding in conformance with these Construction Specifications and the Plans, including excavation, removal and disposal of excavated material, and furnishing and placing of the stone. Measurement for payment shall be based on the tonnage of granular bedding actually installed as determined from weight tickets, rounded to the nearest one-tenth (0.1) ton. Only material placed in accordance with the Plans and these Specifications shall be measured and paid.

M. *(Renumbered and Revised) Summary:* Proposal Bid Items applicable to work covered by this SECTION are as follows:

Description	Unit
Terraces	Lineal Foot
Riser – Terrace	Each
Open Sided Intakes	Each
Tiling - (size)	Lineal Foot
Pipes – (size)	Lineal Foot-Each
Outlet Pipe – (size)	Each
~~Filter Fabric~~	~~Square Feet~~
Riprap	Ton
Erosion Stone	Ton
~~Grout~~	~~Cubic Yard~~
Granular Bedding (New)	Ton
Finished Grading, Channels (New)	Lineal Foot

SECTION 02400 – SUBGRADE PREPARATION, WITHOUT COVER MATERIAL

1.4 SUBMITTALS

D. (New Paragraph) Contractor shall schedule and coordinate all construction activities requiring observation and testing with Engineer and the Division.

2.2 MULCH

E. (New Paragraph) Woodchips produced from the shredding of trees removed during clearing may be used in lieu of mulch materials specified in paragraph A, B, and C of this part if the following conditions are met subject to approval of the Engineer and Division.

1. Woodchips shall be processed so that individual particles are reduced to a sufficiently small size (typically passing a one-half inch [1/2”] screen) to decompose in the soil within a sixty (60)-day to ninety (90)-day period. Particle size shall be subject to visual inspection by Engineer. Engineer reserves the right to require additional processing if particle sizes are too large.

2. Addition of nitrogen fertilizer during subgrade preparation may be required to facilitate decomposition of the woodchips.

3. Subject to approval of Engineer, Contractor shall provide appropriate means and methods to verify that a sufficient amount of woodchips are applied to the site pursuant to 3.3 B. 3, 3.3 E. 3, and 3.4 A. 2, of this SECTION.

F. (New Paragraph) Compost derived from processed woodchips, food waste, and other acceptable organic waste may be used in lieu of mulch materials specified in paragraph A, B, and C of this part if the following conditions are met subject to approval of the Engineer and Division.

1. Compost material shall be aged at least 12 months and sourced from an approved supplier.

2. Compost shall have been screened through a one-half-inch screen.

3. Contractor shall provide moisture information with weight tickets to verify that a sufficient amount of compost is applied to the site pursuant to 3.3 B. 3, 3.3 E. 3, and 3.4 A. 2, of this SECTION.

3.3 WETLAND AREAS

G. (New Paragraph) Final Grading of Wetland Bottoms

1. Following undercut, replacement, and incorporation of agricultural lime and mulch, strike off or blade wetland bottoms with tracked equipment to leave a smoothed, firm surface prior to introducing water into the wetland area.

2. Cost for final grading of wetland bottoms is incidental to the bid unit price for Wetland Undercut & Replacement.

3. Contractor shall provide moisture information with weight tickets to verify that a sufficient amount of compost is applied to the site pursuant to 3.3 B. 3, 3.3 E. 3, and 3.4 A. 2, of this SECTION.

H. (New Paragraph) Removal of Accumulated Water and Sediment in Wetland Bottoms

1. If water and sediment has been allowed to accumulate in the bottoms of wetland areas prior undercut, replacement, and final grading operations, the water and sediment shall be removed to facilitate the required work.

2. Methods used to remove accumulated water include pumping and diversionary channels. Other methods shall be subject to approval by Engineer or Construction Observer.

3. Accumulated sediment shall be removed with appropriate equipment using methods approved by the Engineer or Construction Observer.

4. Costs for the removal of water and sediment shall be considered incidental the project.

3.4 LIME-MULCH APPLICATION (REVISED)

B. Application Rates

1. Contractor shall apply lime at a rate of 40 tons ECCE/acre for bidding purposes. Actual application rate will vary depending on the recommendation of the soil tests.

3.6 MEASUREMENT AND PAYMENT (RENUMBERED AND REVISED)

E. (New Paragraph) Deep Ripping: Contractors unit price for deep ripping shall constitute full payment equipment, and labor to provide deep ripping in the zones identified on the plans. Payment for the deep ripping area will be based upon the areas as shown on the plans rounded to the nearest tenth (0.1) acre. Any approved field adjustments made will be measured jointly by Contractor and Engineer.

F. (Renumbered and Revised) *Summary*: Proposal bid items applicable to work covered by this SECTION are as follows:

Description	Unit
Agricultural Lime, Subgrade	Ton (ECCE)
Mulch, Subgrade	Acre
Wetland Fertilizer	Pound
Wetland Undercut and Replacement	Acre

SECTION 02500 – FENCING

1.1 DESCRIPTION

A. (Revised) The work under this SECTION shall consist only of furnishing and installing fence posts at the spacing shown on the Plans. No wire, braces, or gates are required unless otherwise directed by the Engineer or Division.

2.1 MATERIALS

A. (Added Language) Fence posts shall conform to the requirements of the 2025 Standard Specification SECTION 02500 – FENCING for wood posts, including size, treatment, and quality.

3.2 INSTALLATION

A. (Added Language) Fence posts shall be set at intervals of ten (10) feet, or as otherwise shown on the Plans.

B. (Added Language) Posts shall be installed in accordance with 2025 Standard Specification SECTION 02500 requirements for setting depth, plumb, and backfill.

3.11 MEASUREMENT AND PAYMENT

A. (Revised) Fencing for this project will be measured and paid by the post installed.

B. (Added Language) The unit price for posts shall be full compensation for furnishing, hauling, and installing posts complete in place, including excavation, backfilling, and compaction around each post.

C. (Added Language) No additional payment will be made for wire, braces, gates, or other components not shown on the Plans or specifically directed by the Engineer or Division.

SECTION 02700 – PERMANENT SEEDING

2.4 SEED

C. Seed Mixture

1. The upland seed mixture for the reclaimed mine area, within the project limits, shall be as shown on Table 02700-1. Seed the appropriate cover crop species with the upland seed mixture dependent upon the season in which the seed mix is sown. Choose one (1) cover crop option from Table 02700-3 in consultation with Engineer and Division.

2. The pasture seed mixture may alternatively be substituted with the red clover option shown on Table 02700-2. Choose one (1) cover crop option from Table 02700-3 in consultation with Engineer and Division.

3. The clover seed mixture shall be as shown on Table 02700-4. This mix shall be applied in the deep ripping areas called out as clover seed areas as shown on the Plans. Choose one (1) cover crop option from Table 02700-3 in consultation with Engineer and Division.

4. The wetland fringe seed mixture shall be as shown on Table 02700-5. This mix shall be applied in the specific area around the wetlands shown on the Plans. To the extent practicable, the wetland mix shall be sown so that the specified bandwidth of the seeded area straddles the contour at the normal pool elevation. Lower wetland pool elevation if necessary prior to seeding the wetland fringe mix. Seeding the wetland fringe mix may require substantial work with small power equipment and/or hand tools.

5. The following seed mixes shall be used as shown on the Plans and approved by the Engineer and the Division.

1. **Table 02700-1. Pasture Seeding Mix**

Common Name	Scientific Name	Seed Rate (PLS/ac)
Alfalfa	Medicago sativa	4.0
Alsike clover	Trifolium hybridum	2.5
Big bluestem	Andropogon gerardi	6.5
Birdsfoot trefoil	Lotus corniculatus	5.5
Illinois bundleflower	Desmanthus illinoienis	4.0
Indian grass	Sorghastrum nutans	7.0
Little bluestem	Schizachyrium scoparium	5.5
Orchard grass	Dactylis glomerata	6.5
Red top	Agrostis gigantea	4.0
Smooth brome	Bromus inermis	5.5
Timothy	Phleum pratense	2.5
Virginia wild rye	Elymus virginicus	5.5
Total		59.0

2. **Table 02700-2. Pasture Seeding Mix with Red Clover Substitution**

Common Name	Scientific Name	Seed Rate (PLS/ac)
Red Clover	Trifolium pratense	2.0
Alsike clover	Trifolium hybridum	2.5
Big bluestem	Andropogon gerardi	6.5
Birdsfoot trefoil	Lotus corniculatus	5.5
Illinois bundleflower	Desmanthus illinoienis	4.0

Indian grass	Sorghastrum nutans	7.0
Little bluestem	Schizachyrium scoparium	5.5
Orchard grass	Dactylis glomerata	6.5
Red top	Agrostis gigantea	4.0
Smooth brome	Bromus inermis	5.5
Timothy	Phleum pratense	2.5
Virginia wild rye	Elymus virginicus	5.5
Total		59.0

Table 02700-3. Cover Crop Seed Mix Options – Select one (1) in consultation with Engineer and Division.

Spring Cover (April 1 – May 30)		
Oats	*Avena sativa*	32

Dormant Cover (November 15 – Freeze Up)		
Winter wheat	*Triticum aestivum*	45

Dual-Season		
Oats + Winter Wheat	(each of above)	16 (Oats) + 30 (Wheat)

Table 02700-4. Clover Seed Mix

Common Name	Scientific Name	Seed Rate (PLS/ac)
Red Clover	*Trifolium pratense L.*	2.00
Alsike Clover	*Trifolium hybridum*	4.00
Perennial rye	*Lolium perenne*	10.00
Total		16.00

Table 02700-5. Wetland Fringe Seed Mix

Common Name	Scientific Name	Seed Rate (PLS/ac)
Virginia wildrye	*Elymus virginicus*	10.60
Fowl mannagrass	*Glyceria striata*	0.70
Bluejoint grass	*Calamagrostis canadensis*	0.70
Prairie cordgrass	*Spartina pectinate*	4.00
Fox sedge	*Carex vulpinoidea*	0.03
Bebb's sedge	*Carex bebbii*	0.04
Spikerush	*Eleocharis palustris*	0.05
Rice cutgrass	*Leersia oryzoides*	0.04
Shortawn foxtail	*Alopercurus aequalis*	10.60
Cup plant	*Silphium prefoliatum*	0.70
Total		27.46

3.4 LIMING AND FERTILIZING

C. For bidding purposes, assume the application rate of "Agricultural Lime, Seeding" is ten (10) tons ECCE per acre.

D. For bidding purposes, assume the following application rates:

Fertilizer	Rate (lbs/ac)
Nitrogen (N)	40
Phosphorous (P)	100
Potassium (K)	160

3.10 MEASUREMENT AND PAYMENT

C. (Revised) *Seeding:* The unit prices for Upland and Wetland Fringe Seeding shall also include all costs associated with cover crop seeding.

E. (Revised) *Summary*: Proposal bid items applicable to work covered by this SECTION are as follows:

Description	Unit
Agricultural Lime, Seeding	Ton (ECCE)
Nitrogen (N)	Pound
Phosphorus (P)	Pound
Potassium (K)	Pound
Upland Seeding	Acre
Pasture Seeding	Acre
Pasture Seeding - Red Clover Substitution	Acre
Clover Seed Mix	Acres
Mulch, Seeding	Acre
Wetland Fringe Seeding	Acre

END OF SUPPLEMENTAL SPECIFICATION