BID SCHEDULE - CONSTRUCTION

Brown WRE Restoration
Henderson County, IL

Item	Description	Specification	Quantity	Units	Unit Price	Cost
1	Mobilization and Demobilization	8	1	Job		
2	Earthfill	23	1010	Cy		
3	Seeding, Sprigging and Mulching	6	1	Job		

TOTAL QUOTE AMOUNT: $_____

CONTRACTOR NAME:_____

CONTRACTOR POINT OF CONTACT NAME, EMAIL, AND PHONE NUMBER:

_____

SAM UEI # _____

ONE AWARD FOR THE AGGREGATE OF ALL ITEMS WILL BE MADE UNDER THIS SOLICITATION. BIDDERS MUST BID ON ALL ITEMS IN THE SCHEDULE TO BE CONSIDERED FOR AWARD.

Brown WRE

HENDERSON COUNTY, ILLINOIS

INDEX OF CONSTRUCTION SPECIFICATIONS

NUMBER	NAME
8	Mobilization & Demobilization
23	Earthfill
11	Removal of Water
6	Seeding, Sprigging and Mulching

Construction Specification 8 — Mobilization and Demobilization

Title 210 – Engineering
Part 642 – Specifications for Construction Contracts
Subpart B – National Construction Specifications
June 2024

A. Scope

1. The work consists of the mobilization and demobilization of the contractor's forces and equipment necessary for performing the work required under the contract. It does not include mobilization and demobilization for specific items of work for which payment is provided elsewhere in the contract. Mobilization will not be considered as work in fulfilling the contract requirements for commencement of work.

B. Equipment and Material

1. Mobilization includes all activities and associated costs for transportation of contractor's personnel, equipment, and operating supplies to the site; establishment of offices, buildings, and other necessary general facilities for the contractor's operations at the site; premiums paid for performance and payment bonds including coinsurance and reinsurance agreements as applicable; and other items specified in Section D of this specification.
2. Demobilization includes all activities and costs for transportation of personnel, equipment, and supplies not required or included in the contract from the site, including the disassembly, removal, and site cleanup of offices, buildings, and other facilities assembled on the site specifically for this contract.
3. This work includes mobilization and demobilization required by the contract at the time of award. If additional mobilization and demobilization activities and costs are required during the performance of the contract as a result of changed, deleted, or added items of work for which the contractor is entitled to an adjustment in contract price, compensation for such costs will be included in the price adjustment for the item or items of work changed or added.

C. Payment

1. Payment will be made as the work proceeds after presentation of paid invoices or documentation of direct costs by the contractor showing specific mobilization and demobilization costs and supporting evidence of the charges of suppliers, subcontractors, and others. When the total of such payments is less than the lump-sum contract price, the balance remaining will be included in the final contract payment. Payment of the lump sum contract price for mobilization and demobilization will constitute full compensation for completion of the work.

2. Payment will not be made under this item for the purchase costs of materials having a residual value, the purchase costs of materials to be incorporated in the project, or the purchase costs of operating supplies.

D. Items of Work and Construction Details

1. This item shall consist of the mobilization and demobilization of the contractor's forces and equipment as well as all permitting, bonding and insurance requirements necessary to perform the work required under this contract.
2. Access to the site shall be as shown on the drawings. After construction, routes will be returned to preconstruction condition or better.
3. All earthmoving equipment utilized for the work shall meet the requirements of OSHA, Paragraph 1926.602. In addition, roll-over protection and safety belts shall be installed, maintained, and utilized regardless of the equipment age or struck capacity. This includes earthmoving equipment as mentioned in Part 1926, Subpart 0, Sections 1926.602 and
Subpart W, Sections 1000, 1001, and 1002, to include skid-steer and self propelled
compactor equipment.
4. The contractor shall perform the work in such a manner as to control erosion and minimize the production of sediments, disturbed ground, and other pollutants to the water
and air during construction operations.
5. The contractor should take all precautions necessary to protect existing utilities, including proper notification of the Illinois one-call system. Payment for Bid Item 1 - Mobilization
and Demobilization shall be lump sum. As specified in Section 3, payment shall
constitute full compensation for all labor, equipment, materials, tools and other items
necessary to complete the work.
6. Payment for Bid Item 1 - Mobilization and Demobilization shall be lump sum. As specified in Section 3, payment shall constitute full compensation for all labor,
equipment, materials, tools and other items necessary to complete the work.

Construction Specification 23 — Earthfill

Title 210 – Engineering
Part 642 – Specifications for Construction Contracts
Subpart B – National Construction Specifications
June 2024

A. Scope

1. The work consists of the construction of earth embankments, other earthfills, and earth backfills required by the drawings and specifications.
2. Earthfill is composed of natural earth materials that can be placed and compacted by construction equipment operated conventionally.
3. Earth backfill is composed of natural earth material placed and compacted in confined spaces or adjacent to structures (including pipes) by hand tamping, manually directed power tampers or vibrating plates, or their equivalent.

B. Material

1. All fill material must be obtained from required excavations and designated borrow areas. The selection, blending, routing, and disposition of material in the various fills must be subject to approval by the engineer.
2. Fill materials must contain no frozen soil, sod, brush, roots, or other perishable material. Rock particles larger than the maximum size specified for each type of fill must be removed prior to compaction of the fill.
3. The types of material used in the various fills must be as listed and described in the specifications and drawings.

C. Foundation preparation

1. Foundations for earthfill must be stripped to remove vegetation and other unsuitable material or must be excavated as specified.
2. Except as otherwise specified, earth foundation surfaces must be graded to remove surface irregularities and must be scarified parallel to the axis of the fill or otherwise acceptably scored and loosened to a minimum depth of 2 inches. The moisture content of the loosened material must be controlled as specified for the earthfill and the surface material of the foundation must be compacted and bonded with the first layer of earthfill as specified for subsequent layers of earthfill.
3. Earth abutment surfaces must be free of loose, uncompacted earth in excess of 2 inches in depth normal to the slope and must be at such a moisture content that the earthfill can be compacted against them to produce a good bond between the fill and the abutments.
4. Rock foundation and abutment surfaces must be cleared of all loose material by hand or other effective means and must be free of standing water when fill is

placed upon them. Occasional rock outcrops in earth foundations for earthfill, except in dams and other structures designed to restrain the movement of water, must not require special treatment if they do not interfere with compaction of the foundation and initial layers of the fill or the bond between the foundation and the fill.

5. Foundation and abutment surfaces must be no steeper than one horizontal to one vertical unless otherwise specified. Test pits or other cavities must be filled with compacted earthfill conforming to the specifications for the earthfill to be placed upon the foundation.

D. Placement

1. Earthfill must not be placed until the required excavation and foundation preparation have been completed and the foundation has been inspected and approved by the engineer. Earthfill must not be placed upon a frozen surface nor have snow, ice, or frozen material incorporated in the earthfill matrix.
2. Earthfill must be placed in approximately horizontal layers. The thickness of each layer before compaction must not exceed the maximum thickness specified in section J or shown on the drawings. Materials placed by dumping in piles or windrows must be spread uniformly without exceeding the specified thickness before being compacted.
3. Hand-compacted earth backfill must be placed in layers whose thickness before compaction does not exceed the maximum thickness specified for layers of earth backfill compacted by manually directed power tampers.
4. Place earth backfill in a manner that prevents damage to the structures and allows the structures to assume the loads from the earth backfill gradually and uniformly. The height of the earth backfill adjacent to a structure must be increased at approximately the same rate on all sides of the structure.
5. Meet the following additional requirements for earthfill and earth backfill in dams, levees, and other structures designed to restrain the movement of water.
    a. The distribution of materials throughout each zone must be essentially uniform and the earthfill free from lenses, pockets, streaks, or layers of material differing substantially in texture, moisture content, or gradation from the surrounding material. Zone earthfills must be constructed concurrently unless otherwise specified.
    b. Scarified the surface of each layer parallel to the axis of the fill to at minimum a depth of 2 inches before the next layer is placed.
    c. The top surface of embankments must be maintained approximately level during construction with two exceptions: a crown or cross-slope of about 2 percent must be maintained to ensure effective drainage, or as otherwise specified for drainfill or sectional zones.
    d. Construct dam embankments in continuous layers from abutment to abutment except where openings to facilitate construction or to allow the passage of streamflow during construction are specifically authorized in the contract.

e. Embankments built at different levels as described under paragraphs c or d above must be constructed so that the slope of the bonding surfaces between embankments in place and embankments to be placed is not steeper than 3 feet horizontal to 1 foot vertical. The bonding surface of the embankment in place must be stripped of all material not meeting the requirements of this specification and must be scarified, moistened, and recompacted when the new earthfill is placed against it. This ensures a good bond with the new earthfill and obtains the specified moisture content and density at the contact of the in-place and new earthfills.

E. Control of moisture content

1. During placement and compaction of earthfill and earth backfill, the moisture content of the material being placed must be maintained within the specified range.
2. The application of water to the earthfill material must be accomplished at the borrow areas insofar as practicable. Water may be applied by sprinkling the material after placement on the earthfill, if necessary. Obtain a uniform moisture distribution by disking.
3. Material that is too wet when deposited on the earthfill must either be removed or dried to the specified moisture content prior to compaction.
4. If the top surface of the preceding layer of compacted earthfill or a foundation or abutment surface in the contact zone with the earthfill becomes too dry to permit suitable bond, it must either be removed or scarified and moistened by sprinkling to an acceptable moisture content before placement of the next layer of earthfill.

F. Compaction

1. Earthfill. Earthfill must be compacted according to the following requirements for the class of compaction specified:
   a. Class A compaction. Compact each layer of earthfill as necessary to provide the density of the earthfill matrix not less than the minimum density specified in Section J or identified on the drawings. The earthfill matrix is defined as the portion of the earthfill material finer than the maximum particle size allowed in the reference compaction test method specified (ASTM D698 or ASTM D1557).
   b. Class B compaction. Compact each layer of earthfill to a mass density not less than the minimum density specified.
   c. Class C compaction. Compact each layer of earthfill by the specified number of passes of the type and weight of roller or other equipment specified or by an equivalent approved method. Each pass must consist of at least one passage of the roller wheel or drum over the entire surface of the layer.
2. Earth backfill. Compact earth backfill adjacent to structures to a density equivalent to that of the surrounding in-place earth material or adjacent required earthfill or earth backfill. Compaction must be accomplished by hand tamping or manually directed power tampers, plate vibrators, walk-behind, miniature, or self-

propelled rollers. Unless otherwise specified, heavy equipment, including backhoe-mounted power tampers or vibrating compactors, and manually directed vibrating rollers must not be operated within 3 feet of any structure. Towed or self-propelled vibrating rollers must not be operated within 5 feet of any structure. Compaction by means of drop weights operating from a crane or hoist is not permitted.

3. Heavy Equipment. The passage of heavy equipment will not be allowed:
   a. Over cast-in-place conduits within 14 days after placement of the concrete
   b. Over cradled or bedded precast conduits within 7 days after placement of the concrete cradle or bedding
   c. Over any type of conduit until the backfill has been placed above the top surface of the structure to a height equal to one-half the clear span width of the structure or pipe or 3 feet, whichever is greater, except as may be specified in Section J.
4. Compacting adjacent to structures. Compacting of earth backfill adjacent to structures must not be started until the concrete has attained the strength specified in Section J for this purpose. The strength is determined by compression testing of test cylinders cast by the contractor's quality control personnel for this purpose and cured at the worksite in the manner specified in ASTM C31 for determining when a structure may be put into service.
5. Placement Interval Against Concrete. When the required strength of the concrete is not specified as described above, compaction of earth backfill adjacent to structures must not be started until the following time intervals shown in figure 23-1 have elapsed after placement of the concrete.

Figure 23-1 Time interval before placing backfill

Structure	Time interval (days)
Vertical or near-vertical walls with earth loading on one side only	14
Walls backfilled on both sides simultaneously	7
Conduits and spillway risers, cast-in-place (with inside forms in place)	7
Conduits and spillway risers, cast-in-place (inside forms removed)	14
Conduits, pre-cast, cradled	2
Conduits, pre-cast, bedded	1
Cantilever outlet bents (backfilled both sides simultaneously)	3

G. Reworking or removal and replacement of defective earthfill

1. Earthfill placed at densities lower than the specified minimum density or at moisture contents outside the specified acceptable range of moisture content, or otherwise not conforming to the requirements of the specifications must be reworked to meet the requirements or removed and replaced by acceptable earthfill. The replacement earthfill and the foundation, abutment, and earthfill surfaces upon which it is placed must conform to all requirements of this

specification for foundation preparation, approval, placement, moisture control, and compaction.

H. Testing

1. During the course of the work, the contractor must perform quality control tests, as applicable, to identify earthfill and earth backfill materials; determine the reference maximum density and optimum moisture content; and document that the moisture content of material at the time of compaction and the density of earthfill and earth backfill in place conform to the requirements of this specification.
2. Determining Reference Maximum Density and Optimum Moisture Content. For Class A compaction, the reference maximum density and optimum moisture content must be determined in accordance with the compaction test and method specified on the drawings or in section J.
3. Documenting Specification Conformance. In-place densities of earthfill and earth backfill requiring Class A compaction must be measured in accordance with ASTM D1556, D2167, D2937, D6938, or D8167. Moisture contents of earthfill and earth backfill at the time of compaction must be measured in accordance with ASTM D2216, D4643, or D6938. Values of moisture content determined by ASTM D2216 are considered the true value of the soil moisture. Values of moisture content determined by ASTM D4643 or D6938 must be verified by comparison to values obtained by ASTM D2216. Values of in-place density and moisture content determined by these tests must be compared to the minimum density and moisture content range specified on the drawings or in Section J.
4. Correction for Oversize Particles. If the materials to be used for earthfill or earth backfill contain more than 5 percent by dry weight of oversize rock particles (particles larger than those allowed in the specified compaction test and method), corrections for oversize particles must be made using the appropriate procedures explained in ASTM D4718.

I. Measurement and payment

1. Unit Price Methods. For items of work for which specific unit prices are established in the contract, the volume of each type and compaction class of earthfill and earth backfill within the specified zone boundaries and pay limits is measured and computed to the nearest cubic yard by the method of average cross-sectional end areas. Unless otherwise specified in Section J, no deduction in volume is made for embedded items such as, but not limited to, conduits, inlet structures, outlet structures, embankment drains, sand diaphragm and outlet, and their appurtenances.
2. Pay Limits. The pay limits must be as defined below, with the further provision that earthfill required to fill voids resulting from over excavation of the foundation, outside the specified lines and grades, will be included in the measurement for payment only under the following conditions:

a. Where such over excavation to remove unsuitable material is directed by the engineer
b. Where the unsuitable condition is not a result of the contractor's improper construction operations as determined by the engineer.

3. Beyond Specified Lines and Grades. Earthfill beyond the specified lines and grades to backfill excavation required for compliance with OSHA requirements will be considered subsidiary to the earthfill bid items.
4. Method 1. The pay limits must be as designated on the drawings.
5. Method 2. The pay limits must be the measured surface of the foundation when approved for placement of the earthfill and the specified neat lines of the earthfill surface.
6. Method 3. The pay limits must be the measured surface of the foundation when approved for placement of the earthfill and the measured surface of the completed earthfill.
7. Method 4. The pay limits must be the specified pay limits for excavation and the specified neat lines of the earthfill surface.
8. Method 5. The pay limits must be the specified pay limits for excavation and the measured surface of the completed earthfill.
9. Method 6. Payment for each type and compaction class of earthfill and earth backfill is made at the contract unit price for that type and compaction class of earthfill. Such payment will constitute full compensation for all labor, material, equipment, and other items necessary and incidental to the performance of the work.
10. Method 7. Payment for each type and compaction class of earthfill and earth backfill is made at the contract unit price for that type and compaction class of earthfill. Such payment will constitute full compensation for all labor, material, equipment, and other items necessary and incidental to the performance of the work except furnishing, transporting, and applying water to the foundation and earthfill material. Water applied to the foundation and earthfill material is measured and payment made as specified in Construction Specification 10.
11. All methods. The following provisions apply to all methods of measurement and payment. Compensation for any item of work described in the contract but not listed in the bid schedule is included in the payment for the item of work to which it is made subsidiary. Such items and the items to which they are made subsidiary are identified in Section J of this specification.

J. Items of work and construction details

A. Bid Item 3 – Earthfill, Class C

1. This item shall consist of placing the earthfill as shown on the plans.
2. In Section 2, Materials, Excavated material from the borrow areas shall be used as earthfill. Stripped material shall be placed on top of earthfill, no more than 6 inches thick. Stripped material plus the earthfill SHALL NOT exceed the height of the specified constructed elevation and grade.
3. In Section 3, Foundation Preparation, all areas to receive earthfill shall be stripped 6 inches deep prior to earthfill placement.
4. In Section 4, Placement, The earthfill shall be placed in 6 inch lifts and traversed by no less than two passes of the equipment.
5. In Section 5, Control of Moisture Content, minimum moisture content shall be such that when kneaded in the hand, the fill material will form a ball which does not readily separate. The maximum moisture content is when conditions are too wet for efficient use of compaction equipment.
6. In Section 6 Compaction, Class C compaction shall apply and consist of at least 2 passes of earth moving equipment.
7. In Section 9, Measurement and Payment, Method 6 shall apply. Removal of Water and Water for Construction is a subsidiary item.

Construction Specification 11 — Removal of Water

Tile 210 – Engineering
Part 642 – Specifications for Construction Contracts
Subpart B – National Construction Specifications
June 2024

A. Scope

1. The work consists of the removal of surface water and ground water as necessary to perform the construction required by the contract in accordance with the specifications. It must include: (1) constructing, installing, building, and maintaining all necessary temporary water containment facilities, channels, and diversions; (2) furnishing, installing, and operating all necessary pumps, piping, and other facilities and equipment; and (3) removing all such temporary works and equipment after their intended function is no longer required.

B. Diverting Surface Water

1. The contractor must install, maintain, and operate all cofferdams, channels, flumes, sumps, and all other temporary diversion and protective works needed to divert streamflow and other surface water through or around the construction site. Control of surface water must be continuous during the period that damage to construction work could occur. Unless otherwise specified or approved, the diversion outlet must be into the same drainageway that the water would have reached before being diverted.
2. The contractor must furnish the contracting officer, in writing, a proposed plan for diverting surface water before beginning any construction activities for which a diversion is required, unless waived in Section H of this specification. Acceptance of this plan or the waiving of the plan requirement will not relieve the contractor of the responsibilities related to this activity during the process of completing the work as specified.

C. Dewatering the Construction Site

1. Foundations, cutoff trenches, and all other parts of the construction site must be dewatered and kept free of standing water and muddy conditions as necessary for the proper execution of the work. The contractor must furnish, install, operate, and maintain all drains, sumps, pumps, casings, well points, and all other equipment required to properly dewater the site as specified. Dewatering systems that cause a loss of soil fines from the foundation areas will not be permitted.
2. The contractor must furnish the contracting officer, in writing, a proposed plan for dewatering before commencing with any construction activity for which dewatering may be required unless waived in Section H of this specification.

Acceptance of this plan or the waiving of the plan requirement will not relieve the contractor of the responsibilities for completing the specified work.

D. Dewatering Borrow Areas

1. The contractor must maintain all borrow areas free of surface water or otherwise provide for timely and effective removal of surface and subsurface water that accumulates within the borrow area unless waived in Section H of this specification. Process borrow material as necessary to achieve proper and uniform moisture content at the time of placement.
2. If pumping to dewater borrow areas is included as a bid item of work in the bid schedule, equip each pump discharge pipe with a water meter. The meter must be such that the measured quantity of water is accurate within 3 percent of the true quantity. The contractor must provide necessary support to perform accuracy tests of the water meter when requested by the contracting officer.

E. Erosion and Pollution Control

1. Removal of water from the construction site, including the borrow areas, must be accomplished so that erosion and the transporting of sediment and other pollutants are minimized. Dewatering activities must be accomplished in a manner that the water table water quality is not altered. Pollution control activities must not conflict with the requirements of Construction Specification 5, Pollution Control, if it is a part of this contract.

F. Removal of Temporary Works

1. When temporary works are no longer needed, the contractor must remove and return the area to a condition similar to that which existed before construction. Areas where temporary works were located must be graded for sightly appearance and proper functioning and access to the installed works of improvement and may not obstruct natural surface waterflows. The contractor must exercise extreme care during the removal stages to minimize the loss of soil sediment and debris that was trapped during construction.
2. Pipes, casings, and any other material used to dewater the site must be removed from temporary wells. Fill the wells to ground level with clean gravel or other suitable material approved by the contracting officer. The contractor must exercise extreme care to prevent pollution of the ground water by these actions.

G. Measurement and Payment

1. Method 1.
   a. Items of work listed in the bid schedule for removal of water, diverting surface water, and dewatering construction sites and borrow areas are paid for at the contract lump-sum prices. Such payment will constitute full compensation for all labor, equipment, tools, and all other items necessary and incidental to the completion of the work.
2. Method 2.

a. Items of work listed in the bid schedule for removal of water, diverting surface water, dewatering construction sites, and dewatering borrow areas are paid for at the contract lump-sum prices. Such payment will constitute full compensation for furnishing, installing, operating, and maintaining the necessary trenches, drains, sumps, pumps, piping, and for all labor, equipment, tools, and all other items necessary and incidental to the completion of the work. The exception is that additional payment for pumping to dewater borrow areas and the removal of water will be made as described in the following paragraph.

b. If pumping to dewater borrow areas is a contract bid item, payment is made at the contract unit price, which must be the price per 1,000 gallons shown in the bid schedule. Such payment will constitute full compensation for pumping only. Compensation for equipment, preparation, and other costs associated with pumping is included in the lump-sum payment for removal of water or the lump-sum payment for dewatering the borrow areas. Payment is made only for pumping that is necessary to dewater borrow areas that cannot be effectively drained by gravity or that must have the water table lowered to be usable as a suitable borrow source. Pumping for other purposes will not be included for payment under this item.

3. All Methods. The following provisions apply to all methods of measurement and payment. Compensation for any item of work described in the contract but not listed in the bid schedule is included in the payment for the contract line item to which it is made subsidiary. Such items and the items to which they are made subsidiary are identified in Section H of this specification.

H. Items of Work and Construction Details

Removal of water is subsidiary to the earthfill. This item will consist of removal of standing water as needed in order to properly construct the ditch plug according to the earthfill standards and specifications. This may include but is not limited to: temporary excavation and earthwork to collect or divert water, utilization of pumps to remove excess water from working areas, removal of temporary excavation and earthwork after installation of ditch plug is complete.

Construction Specification 6 — Seeding, Sprigging, and Mulching

Title 210 - Engineering
Part 642 – Specifications for Construction Contracts
Subpart B – National Construction Specifications
June 2024

A. Scope

1. The work consists of preparing the area for treatment; furnishing and placing seed, sprigs, mulch, fertilizer, inoculant, lime, and other soil amendments; and anchoring mulch in designated areas as specified.
2. The following BioPreferred® product categories are applicable to this specification:
   a. Mulch and compost materials
   b. Erosion control materials
   c. Fertilizers
   d. Agricultural spray adjuvants

B. Material

1. Seed.
   a. All seed must conform to the current rules and regulations of the state where it is being used and must be from the latest crop available. It must meet or exceed the standard for purity and germination listed in Section G.
   b. Seed must be labeled in accordance with the state laws and the U.S. Department of Agriculture rules and regulations under the Federal Seed Act in effect on the date of invitations for bids. Bag tag figures are evidence of purity and germination. No seed will be accepted with a test date of more than 9 months before the delivery date to the site.
   c. Seed that has become wet, moldy, or otherwise damaged in transit or storage will not be accepted. The percent of noxious weed seed allowable must be as defined in the current state laws relating to agricultural seeds. Each type of seed must be delivered in separate sealed containers and fully tagged unless an exception is granted in writing by the contracting officer.
2. Fertilizer. Unless otherwise specified, the fertilizer must be a commercial-grade fertilizer. It must meet the standard for grade and quality specified by state law. Where fertilizer is furnished from bulk storage, the contractor must furnish a supplier's certification of analysis and weight. When required by the contract, a representative sample of the fertilizer must be furnished to the contracting officer for chemical analysis.

3. Inoculants. The inoculant for treating legume seeds must be a pure culture of nitrogen-fixing bacteria prepared specifically for the species and must not be used later than the date indicated on the container or as otherwise specified. A mixing medium, as recommended by the manufacturer, must be used to bond the inoculant to the seed. Two times the amount of the inoculant recommended by the manufacturer must be used (unless seed is applied using a hydraulic seeder; then four times the amount must be used). Seed must be sown within 24 hours of treatment and must not remain in the hydraulic seeder longer than 4 hours.
4. Lime and Other Soil Amendments. Lime must consist of standard ground agriculture limestone or approved equivalent. Standard ground agriculture limestone is defined as ground limestone meeting current requirements of the state's Department of Agriculture. Other soil amendments must meet quality criteria and application requirements specified in Section G.
5. Mulch Tackifiers. Asphalt emulsion tackifiers must conform to the requirements of ASTM D977, Specification for Emulsified Asphalt. The emulsified asphalt may be rapid setting, medium setting, or slow setting. Non-asphaltic tackifiers required because of environmental considerations must be as specified in Section G.
6. Straw Mulch Material. Straw mulch must consist of wheat, barley, oat or rye straw, hay, grass cut from native grasses, or other plants as specified in Section G. The mulch material must be air-dried reasonably light in color and must not be musty, moldy, caked, or otherwise of low quality. The use of mulch that contains noxious weeds is not permitted. The contractor must provide a method satisfactory to the contracting officer for determining weight of mulch furnished.
7. Other Mulch Materials. Mulching materials, such as wood cellulose fiber mulch, mulch tackifiers, synthetic fiber mulch, netting, and mesh may be required for specialized locations and conditions. These materials, when specified, must be accompanied by the manufacturer's recommendations for methods of application.

C. Seeding Mixtures, Sod, Sprigs, and Dates of Planting

1. The application rate per acre for seed mixtures, sprigs, or sod and the date of seeding or planting must be as shown on the plans or as specified in Section G.

D. Seedbed Preparation and Treatment

1. Dress areas to be treated to a smooth, firm surface. On sites where equipment can operate on slopes safely, adequately loosen and smooth the seedbed (4 to 6 inches deep). Depending on soil and moisture conditions, disking, cultipacking, or both, may be necessary to properly prepare a seedbed. Where equipment cannot operate safely, prepare the seedbed by methods like scarifying, providing a roughened soil surface by hand so that broadcast seed will remain in place.
2. If seeding is to be accomplished immediately following construction operations, seedbed preparation may not be required except on a compacted, polished, or freshly cut soil surface.

3. Rocks larger than 6 inches in diameter, trash, weeds, and other debris that will interfere with seeding or maintenance operations must be removed or disposed of as specified in Section G.
4. Discontinue seedbed preparation when soil moisture conditions are not suitable for the preparation of a satisfactory seedbed as determined by the responsible engineer.

E. Seeding, Sprigging, Fertilizing, Mulching, and Stabilizing

1. Perform all seeding or sprigging operations in such a manner that the seed or sprigs are applied in the specified quantities uniformly in the designated areas. The method and rate of seed application must be as specified in Section G. Unless otherwise specified, seeding or sprigging must be accomplished within 2 days after final grading is completed and approved.
2. Apply fertilizer, lime, and other soil amendments as specified in Section G. When specified, the fertilizer and soil amendments must be thoroughly incorporated into the soil immediately following surface application.
3. The rate, amount, and kind of mulching or mesh must be as specified in Section G. Apply mulches uniformly to the designated areas. They must be applied to areas seeded not later than 2 working days after seeding has been performed. Stabilize straw mulch material within 24 hours of application using a mulch crimper or equivalent anchoring tool or by a suitable tackifier. When the mulch crimper or equivalent anchoring tool is used, it must have straight blades and be the type manufactured expressly for and capable of firmly punching the mulch into the soil. Where the equipment can be safely operated, it must be operated on the contour. Use hand methods where equipment cannot safely operate to perform the work required.
4. Apply the tackifier uniformly over the mulch material at the specified rate or inject it into the mulch material as it is being applied. Stabilizing materials like mesh or netting must be applied smoothly but loosely on the designated areas. The edges of these materials must be buried or securely anchored using spikes or staples as specified in Section G.
5. The contractor must maintain the mesh or netting areas until all work under the contract has been completed and accepted. Maintenance must consist of the repair of areas damaged by water erosion, wind, fire, or other causes. Such areas must be repaired to reestablish the intended condition and to the design lines and grades required by the contract. The areas must be re-fertilized, reseeded, and re-mulched before the new application of the mesh or netting.

F. Measurement and Payment

1. Method 1. For items of work for which specific unit prices are established in the contract, each area treated is measured as specified in Section G and area is calculated to the nearest 0.1 acre. Payment for treatment is made at the contract unit price for the designated treatment, which will constitute full compensation for completion of the work.

a. When specified as an item of work, mesh or netting is measured to the nearest square yard of surface area covered and accepted. Payment is made at the contract unit price and will constitute full compensation for completion of the work.

2. Method 2. For items of work for which specific lump-sum prices are established in the contract, the quantity of work will not be measured for payment. Payment for this item is made at the contract lump-sum price for the item and will constitute full compensation for the completion of the work.

3. Method 3. For items of work for which lump-sum prices are established in the contract, payment is made as the work proceeds. Progress payments will be determined as specified in Section G. Payment of the lump-sum contract price will constitute full compensation for completion of the work.

4. All Methods. The following provisions apply to all methods of measurement and payment. Compensation for any item of work described in the contract but not listed in the bid schedule is included in the payment for the item of work to which it is made subsidiary. Such items and the items to which they are made subsidiary are identified in Section G.

G. Items of Work and Construction Details

Items of work to be performed in conformance with this specification and construction details are:

A. Bid Item 3 - Seeding and Mulching

1. This item consists of furnishing all labor, equipment, materials, for placing fertilizer, preparing the seedbed, seeding, and mulching all reconstructed levees and structure sites as specified on the plans and drawings.
2. Time of Seeding
   Seeding shall be completed during one of the following time periods:
   PERMANENT SEEDING DATES:
   Late Spring – June 5th DORMANT SEEDING DATES:
   November 15 – Freeze Up

Temporary Seeding shall be used if permanent seeding cannot be used due to seeding date restriction.

Fertilizer

The following minimum amounts of fertilizer are required per acre on all areas to be seeded:

Permanent Seeding:

Nitrogen (N) - 120 pounds/acre of actual Nitrogen
Phosphorous (P) - 120 pounds/acre of P205
Potassium (K) - 120 pounds/acre of K20

Temporary Seeding:

Nitrogen (N) - 60 pounds/acre of actual Nitrogen
Phosphorous (P) - 60 pounds/acre of P205
Potassium (K) - 60 pounds/acre of K20

3. Seed
Seed shall have the equivalent of a minimum of 80% pure live seed. When the percentage of purity multiplied by the percentage of germination gives a percentage of pure live seed less than stated above, the rate of seeding will be increased proportionally.

Calculate as follows:

$$PLS = \frac{\% \text{ germination} \times \% \text{ purity}}{100}$$

PLS = Pure Live Seed - To determine PLS of a lot of seed, multiply the percent germination times percent purity. To determine total seed needed, divide lb. PLS required by percent PLS.

Permanent Seeding mixture and rate per acre are as follows:

Redtop	8 lbs. PLS Per acre

Temporary Seeding mixture and rate per acre are as follows:

Cereal Rye	20 lbs. PLS Per acre

4. Sowing the Seed
Seeding will be carried out using either of the following classes:

Class 1 - The seed will be drilled approximately ¼ to ½ inch deep and cultipacked or rolled once over with a corrugated roller on all areas where equipment can be operated safely. Seeding operations will be across the slope.

Class 2 - The seed will be broadcast and covered with a roller of cultipacker, or acultipacker seeder shall be used.

Class 3 - The seed will be seeded with a hydraulic seeder using no less than 1,000 gallons of water per acre. The water shall contain the proper quantity of seed to meet the specified seeding rate per acre. Immediately after seeding, all areas where equipment can be operated safely shall be rolled across the slope with a suitable roller of cultipacker.
On other areas too steep or otherwise inaccessible to equipment, the seed shall be covered with a light harrow or other suitable equipment.

5. The mulch shall consist of bright small grain straw free of noxious weed seed and uniformly applied at a rate of two tons air dry material per acre. This is equivalent to an application rate of 90 lb/1000 sq. ft.

6. Straw mulch shall be anchored by Class A as specified.
Class A - Straight Serrated Disk - The mulch shall be anchored with an anchoring tool that has serrated straight disks that punches mulch into the ground at a depth of approximately 2 inches. The operation shall be performed perpendicular to the direction of the slope.

7. In Section 6, Measurement and Payment, Method 2 shall apply.

David Brown WRE

LOCATED IN HENDERSON COUNTY, IL

IN COOPERATION WITH

NATURAL RESOURCES CONSERVATION SERVICE

AN AGENCY OF THE

UNITED STATES DEPARTMENT OF AGRICULTURE

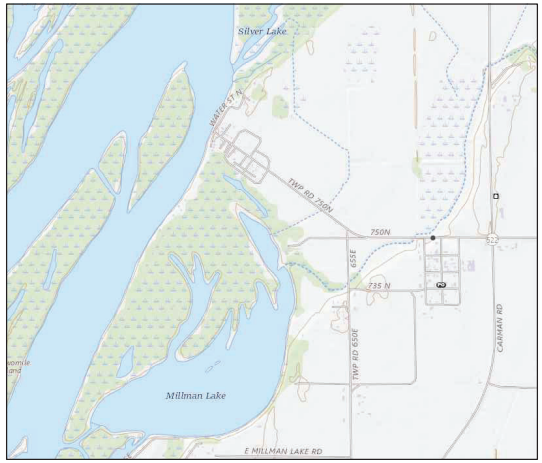
SHEET INDEX

1. Title Sheet
2. Plan View–Ortho
3. Plan View
4. Profiles
5. Cross Sections
6. Seeding

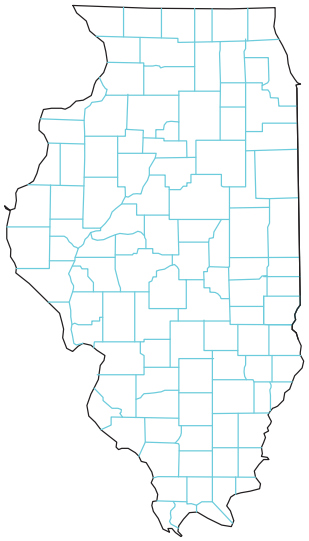
CAUTION

The engineer preparing these plans shall not be responsible for,or liable for, unauthorized changes to, or uses of, these plans. All changes to the plans shall be in writing, and shall be approved by the preparer of these plans.

VICINITY MAP



Sec 23 T9N R11W



PROJECT LOCATION

NOTE: CONTRACTOR MUST PROVIDE NRCS WITH DIG NUMBER(S) PRIOR TO BEGINNING ANY WORK.

TABLE OF QUANTITIES

Item Number	Components	Units	Quantity
1	Seeding	AC	0.4
2	Earthfill	cy	1010

NRCS Engineering Job Class VI

		Date
Designed	Katie Rebbe	7/14/2021
Drawn	KJR	7/14/2021
Checked	Austin Ramirez	5/27/26
Approved	Digitally signed by DAVID WEBBER	

DAVID BROWN ACEP – WRE

COVER SHEET

Henderson County, Illinois

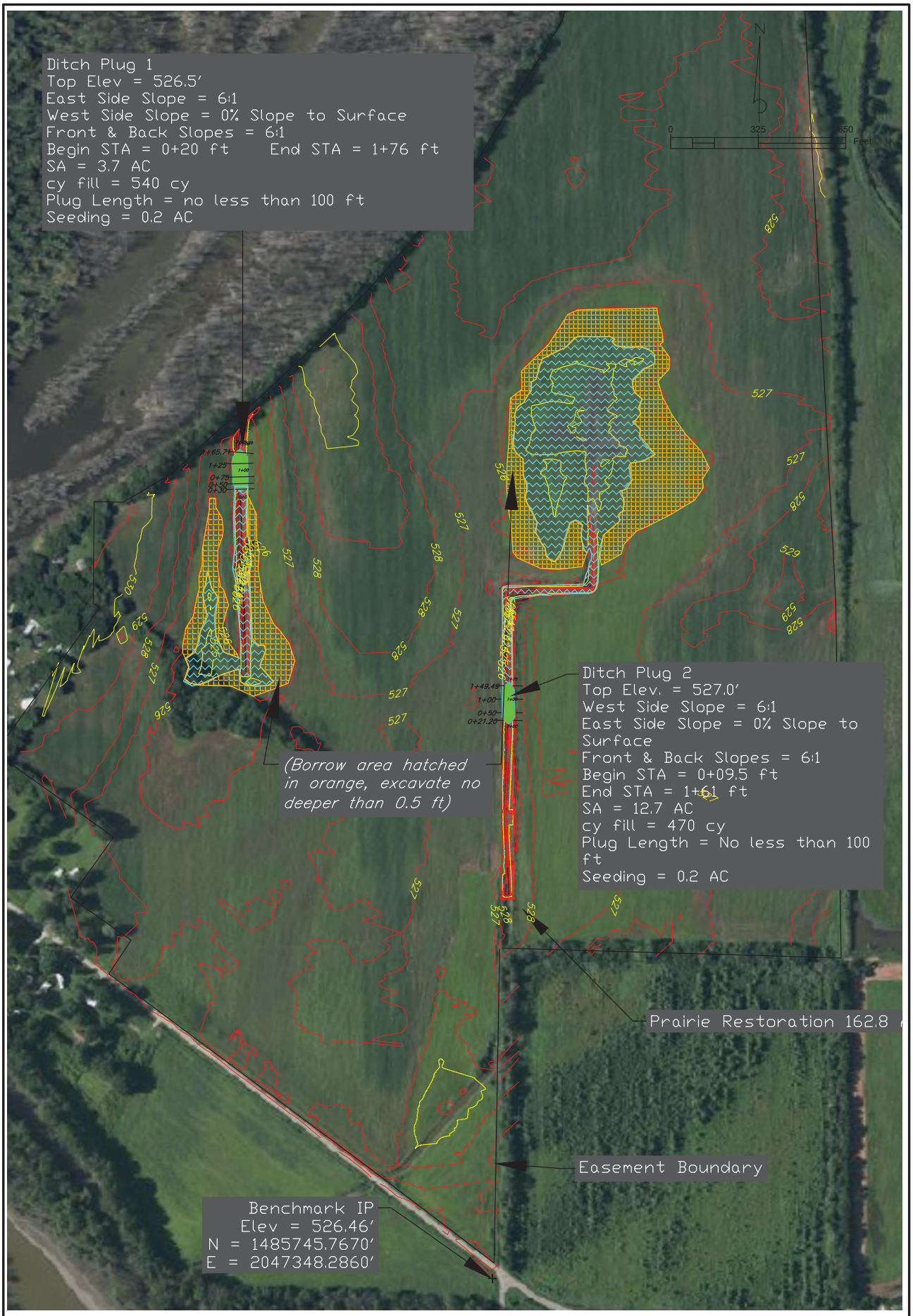
United States Department of Agriculture

Natural Resources Conservation Service

File No. David_Brown WRE.dwg

Drawing No.

Sheet of



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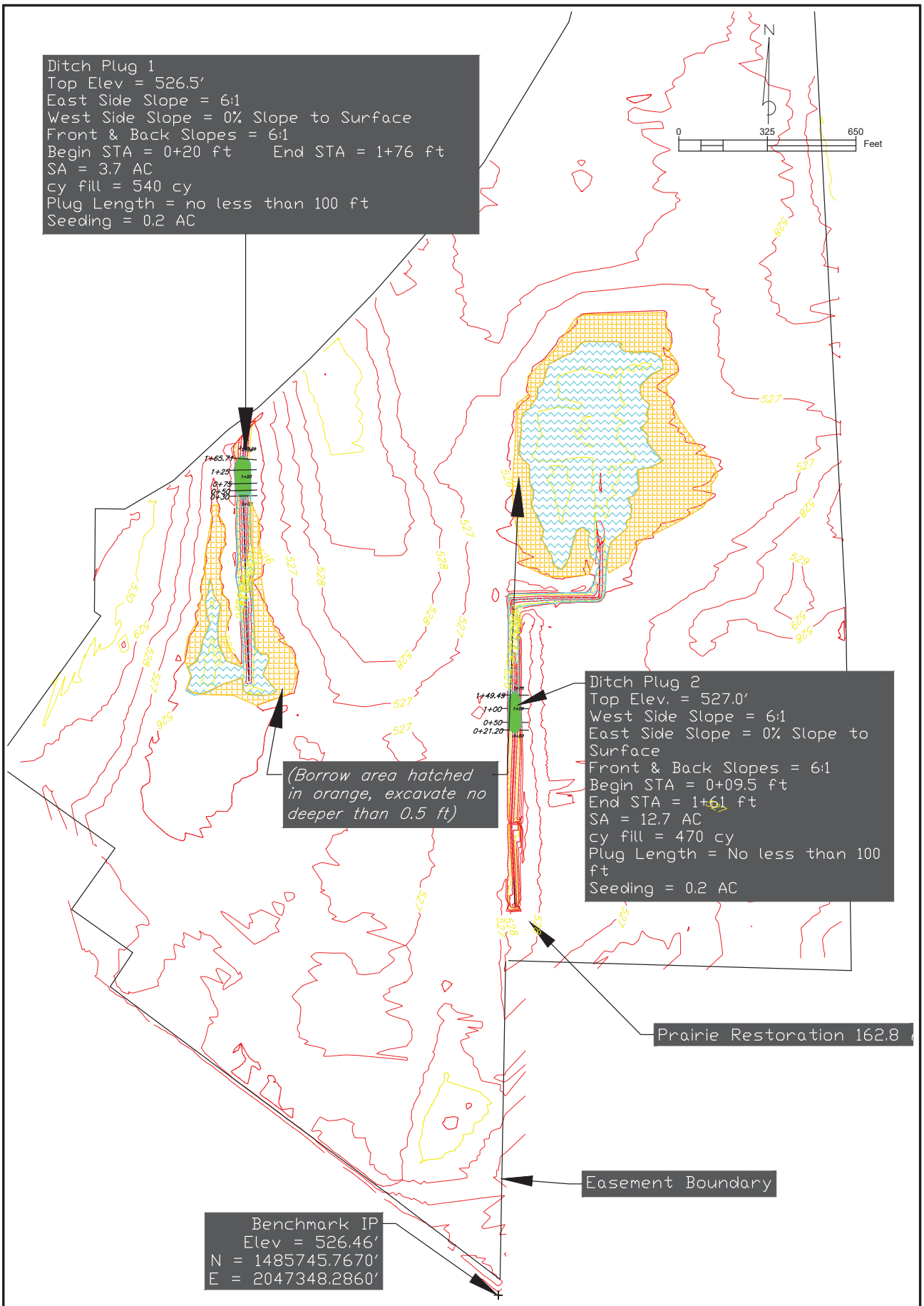
File No. David Brown WRE.dwg

USDA United States Department of Agriculture
Natural Resources Conservation Service

DAVID BROWN
ACEP – WRE
PLAN MAP
Henderson County, Illinois

		Date
Designed	Katie Rebbe	7/14/2021
Drawn	KJR	7/14/2021
Checked	Austin Ramirez	5/27/26
Approved		



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USDA United States Department of Agriculture
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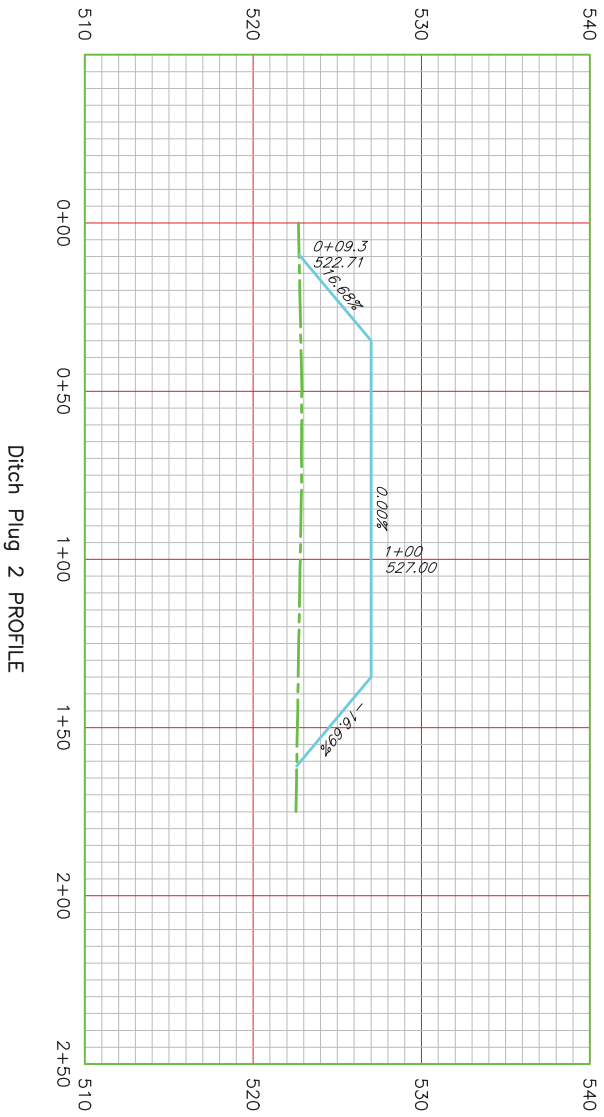
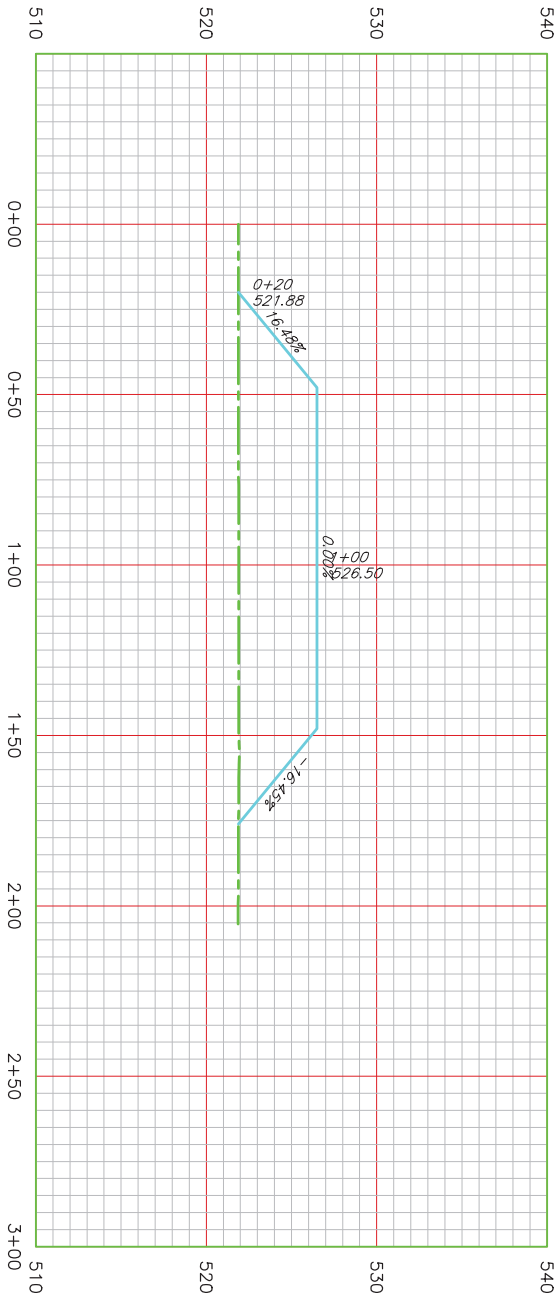
DAVID BROWN
ACEP – WRE
PLAN MAP
Henderson County, Illinois

		Date
Designed	Katie Rebbe	7/14/2021
Drawn	KJR	7/14/2021
Checked	Austin Ramirez	5/27/2[illegible]
Approved		



Ditch Plug 2 PROFILE



Ditch Plug 1 PROFILE

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Brown WRE, Henderson County, IL

Ditch Plug 1 Cross Sections

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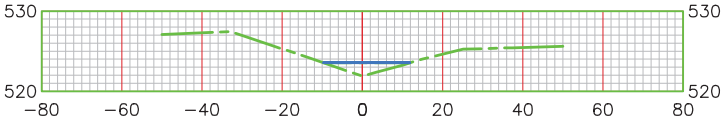

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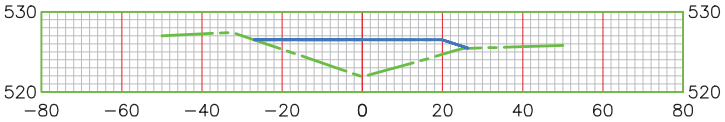

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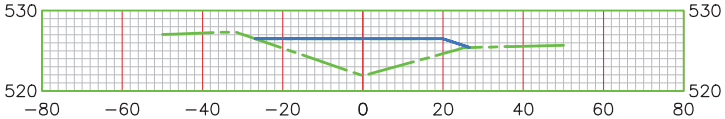

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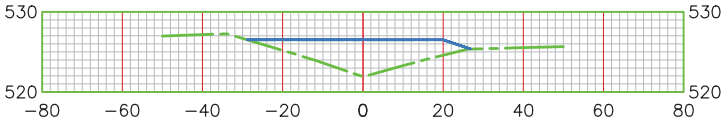

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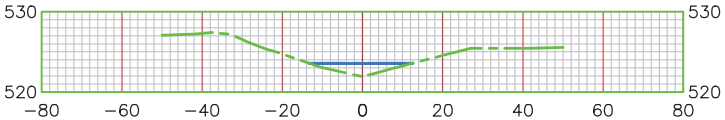

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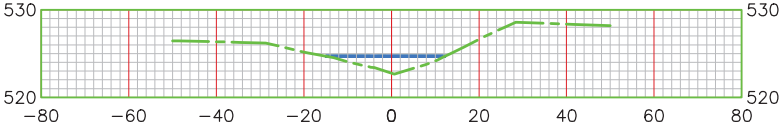

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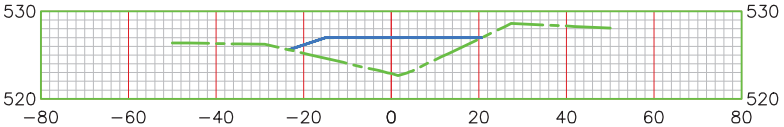

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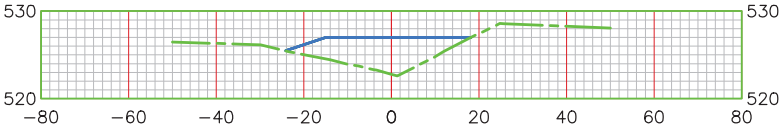

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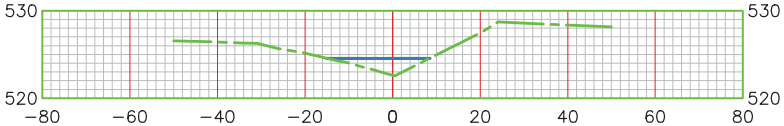

		Date
Designed	Katie	7/14/2021
Drawn	KJR	7/14/2021
Checked	Austin Ramsey	5/27/26
Approved		

DAVID BROWN
ACEP – WRE
Cross Sections

Henderson County, Illinois

United States Department of Agriculture
Natural Resources Conservation Service

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Drawing No.

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