ProAg Engineering, Inc.

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23 January 2026

Ms. Theresa Stiner
IDNR
502 E. 9th Street
Des Moines, IA 50319

RE: WINR-Center, Woodbine Site
Proposed Compost Facility
Harrison County, Iowa
ProAg Project No. 21-055

Ms. Stiner:

Please accept our reply to your comments dated January 16, 2026, on the WINR-Center organic compost facility.

Administrative and General Information

- Financial Assurance
  Letter of Credit No. 1155 was issued on January 15, 2026 by Arbor Bank to Natural Fertilizer Products, Inc. for the exclusive purpose of meeting financial assurance requirements for the closure of Woodbine INRS Facility. This information was also sent by email on January 20, 2026, from Nathan Ohms of Arbor Bank.
  Enclosure 1
  Letter from Owner/Operator
  Irrevocable Letter of Credit No. 1155

- Driveway Easement
  No driveway easement is required for the site. Access to the site will be on south side of the property by means of a widened driveway access at the existing driveway access location off 220th Street.
  The existing concrete drive labeled on Sheet 2 of the engineering drawings served as the feed lane for the feedlot. All construction activity and operation drive lanes will be located with Parcel 140001027010000 owned by Natural Fertilizer Products, Inc. The property lines, grade lines, and operational extents have been revised on Sheet 2, and the property lines shown should be considered approximate as no pins were set during the survey of this parcel.

- Site Legal Entitlement
  The WINR-Center is DBA for Natural Fertilizer Products, Inc. Abe Sandquist is the President and CEO of Natural Fertilizer Products, Inc.

Operational Plan

- Static Piles
  Advanced Composting Technologies (ACT) has been engaged to provide expert consultation on the forced aeration system in the covered static piles. The covered areas are now proposed as a reinforced concrete working surface with 2-ft x 2-ft recessed trench will house air flow pipes. ACT is my forced air Engineer and contractor. They have air flow pipes in stalled in 2x2 trenches in the concrete. The air handlers will be installed outside and be controlled automatically.
- Runoff Use for Moisture
  The following section from Section F Site Operation Plan has been edited to reflect the requirement to restart the 5-day pathogen reduction period when runoff water is added to the pile:

MONITORING

Monitoring activities will be carried out in compliance with IAC 567-105. This refers to the monitoring methods performed while the product is on site, prior to mixing and during active and curing phases. Each pile or windrow will be monitored independently and detailed records maintained for each pile or windrow. Temperature readings will be at a minimum of twice a week to confirm temperature cycles. When the windrow temperature decreases passed the predetermined temperature, it is recommended to turn the windrow to speed the composting process. The temperature of the compost must be raised to 40°C or higher and maintained for 5-days. During that 5-day period, the compost must exceed 55°C for one continuous 4-hour period. Each pile or windrow should complete no less than three temperature cycles. Temperature readings should be taken daily or as needed to confirm temperature cycles.

Moisture readings, observed with gravimetric moisture analysis, are taken prior to mixing each compost recipe to ensure proper C:N ratio and aeration efficiency. Moisture readings are taken at the same time as temperature readings to maintain a moisture level between 50-60% during active phase and 40-50% during curing phase. If moisture levels are too high, additional bulking agent or co-compost should be added to the compost when turning. If moisture levels are too low, liquid from the stormwater runoff basin may be added. If any of the runoff water is added to the active compost windrows, the 5-day pathogen reduction period shall be restarted. During winter months, the composting process may slow by 50%, but operations will continue as planned.

Windrows should not be turned early because of the potential for objectionable odors. If the operation later adds aerated or in-vessel piles, these methods of composting do not require turning. The operator should take note of wind direction and other weather patterns that could carry odors to any nearby residences....

- Feedstock Clarification
  The following is a summary with description of the organic waste feedstocks:
  - Waste feeds and grain, Cargill (Blair, NE) – solid feedstock
  - Feedlot manure, Harrison County feedlots – solid feedstock
  - Yard Waste, Harrison County – solid feedstock
  - Bone Residue, Gelita (Sioux City, IA) – semi-solid feedstock that contains significant moisture but holds its shape when piled and does not freely drain or flow freely like a liquid under normal conditions. Because of the moisture content of the bone residue (ossein), dust generation is not a concern.

  Note, no liquid feedstocks are proposed at this time.

Engineering Review

- Stormwater Calculations
  See attached HydroCAD calculations. The stormwater conveyance system is designed to route the 25-yr, 24-hour storm through the perforated riser intakes and convey the 100-yr storm through auxiliary spillways so that all runoff is collected in the runoff basin. The site will not discharge.
  Enclosure 2
  HydroCAD calculations
- Hoop Building Design
  The hoop structures will serve as covers for the static piles. The trusses will be mounted to precast concrete, typical of the temporary structure design for fabric covered "hoop" structures. A typical detail has been added, but no vendor has been selected at this time. When selected, the structure will be specified to meet the Iowa state building code, Risk Category I, with wind and snow loads for Harrison County. See updated engineering drawings.
  Enclosure 3
  Revised engineering drawings
- Liquids Pit
  No liquid feedstocks are proposed with this application. However, a watertight reception pit is now included in the design details. See revised construction drawings.
  Enclosure 3

Revised engineering drawings

- Basin Construction
  The use of the compacted clay liner in the runoff basin provides the impervious barrier for the earthen structure when it is continuous and acts as both a horizontal and vertical seepage barrier. The liner performs the same seepage-control function as a core trench, which is more common of embankment structure that need to cut off under-seepage through the structure or prevent internal piping.
  Construction of the runoff basin shall begin by removing the top six inches of soil over all areas of the proposed basin and dikes. All vegetative cover shall be removed. The basin bottom and all undisturbed inner dikes shall be over-excavated a minimum of twelve inches. Then the undisturbed soils shall be disced to a minimum depth of six inches. After discing, the material shall be recompacted as specified for compacted fill material in six-inch lifts to a minimum of 95% Standard Proctor density. The final twelve inches of the top of dike and outer slopes are to be topsoil to achieve perennial vegetative cover. Basin slopes are to be 3:1 slope. See construction design plans.
  Upon the completion of construction, samples of the compacted clay liner shall be collected from the bottom and sideslopes of the basin and tested to ensure compliance with the required permeability coefficient. The samples shall be representative of the liner. In the event of a failed test, three additional re-tests will be conducted in the area of the test that failed. If these re-tests meet requirements, then the original test will be disregarded. If any of the re-tests also do not pass, then additional tests will be done to determine the area of the liner that does not meet requirements. After determining this area, the liner should be re-compacted or removed and re-installed. After testing is completed, any penetrations will be repaired by backfilling with soil liner material, granular or powdered bentonite, or a mixture of soil and bentonite. The material used for repair will be replaced in approximately two inch lifts and tamped into place until the penetration is filled.
  Enclosure 3
  Revised engineering drawings
- Operating Surface
  The Web Soil Survey soils map shows primarily the Monona soil series in the vicinity of the proposed operating surface. A sample of the subsoil was collected and pretested. The material on site will meet the seepage requirement when compacted to 95% Standard Proctor.
  Construction of the compacted clay work surface shall begin by removing the top six inches of soil over all the designed work surface area. All vegetative cover shall be removed. The work area shall be over-excavated a minimum of twelve inches. Then the undisturbed soils shall be disced to a minimum depth of six inches. After discing, the material shall be recompacted as specified for compacted fill material in six-inch lifts to a minimum of 95% Standard Proctor density.
  Upon the completion of construction, samples of the compacted clay liner shall be collected from the work surface and tested to ensure compliance with the required permeability coefficient. The samples shall be representative of the liner. In the event of a failed test, three additional re-tests will be conducted in the area of the test that failed. If these re-tests meet requirements, then the original test will be disregarded. If any of the re-tests also do not pass, then additional tests will be done to determine the area of the liner that does not meet requirements. After determining this area, the liner should be re-compacted or removed and re-installed.
  Enclosure 3
  Revised engineering drawings

We trust the above information is adequate for your review. Should you have any additional questions comments, we look forward to addressing them.

Respectfully submitted,

Justin D. Sprague, P.E.
ProAg Engineering, Inc.

Enclosures
cc: Abe Sandquist, WINR-Center

NATURAL
FERTILIZER
414 Walker St
Woodbine, IA 51579

LETTER FROM OWNER/OPERATOR REFERRING TO EXECUTED LETTER OF CREDIT

January 20, 2026

Iowa Department of Natural Resources
Planning, Permitting & Engineering Services
6200 Park Ave Ste 200
Des Moines, IA 50321

Dear Sir or Madam:

This letter shall serve as notice, pursuant to IAC 567 Chapter 113.14(6)"c", that Natural Fertilizer Products Inc. is providing financial assurance by Letter of Credit No. 1155 established on January 15, 2026 for Woodbine WINR Facility in an amount of five hundred ninety-nine thousand and one hundred forty-one dollars ($599,141.00) lawful money of the United States. These funds are restricted for closure and/or post closure care of the Woodbine WINR Facility located at 3173 220th St. Woodbine IA.

The name and address of the lending institution is as follows:
Institution Arbor Bank
Address 301 Oakland Ave, PO Box 68 City, State Oakland, IA 51560
Phone 712-482-6431

A copy of the executed Letter of Credit has been enclosed with this correspondence and a copy has been retained in our office.

If you have any questions regarding this letter or the executed Letter of Credit, please contact Abe Sandquist 712-592-1905.

Sincerely,

Abe Sandquist
President/Owner

Enclosure

Cell 712.592.1905 Office 712.647.2810 Fax 712.647.2834

Docusign Envelope ID: 917E0D8B-436C-4378-9744-5B81747601F7

MUNICIPAL SOLID WASTE SANITARY LANDFILL
IRREVOCABLE LETTER OF CREDIT

Letter of Credit No.: 1155 Date: January 15, 2026

This Irrevocable Letter of Credit is being provided to Borrower, Natural Fertilizer Products Inc. by Lender, Arbor Bank for the exclusive purpose of meeting financial assurance requirements required by the Iowa Department of Natural Resources (DNR), as set forth in IAC 567 Chapter 113.14 for closure of Woodbine WINRS Facility located at 3173 220th St. Woodbine IA.

Pursuant to IAC 567 Chapter 105.14(5)"d" Arbor Bank hereby certifies to DNR that, as the issuing institution, has the authority to issue Letters of Credit and that their operations are regulated and examined by a Federal or State Agency. The Letter of Credit in this matter is issued for a sum of up to an aggregate amount not to exceed five hundred ninety-nine thousand one hundred forty-one dollars ($599,141.00) lawful money of the United States.

This irrevocable Letter of Credit is effective as of January 15, 2026 and shall expire on January 15, 2027. However, the said expiration date shall be automatically extended for a period of at least one year from the original expiration date or thereafter from any extended expiration date, unless at least 120 days prior to such date, Arbor Bank notifies Natural Fertilizer Products Inc and DNR in writing, by certified mail, that the Arbor Bank elects not to renew the Letter of Credit for such additional period.

Within 60 days of receipt of such notification, as evidence by the signed return receipt Natural Fertilizer Products Inc shall provide DNR adequate proof of alternative financial assurance in accordance with IAC 567 Chapter 105.14. If Natural Fertilizer Products Inc does not extend the expiration date or establish alternative financial assurance within 60 days after receipt of an expiration or submit a cancellation notice by Arbor Bank, the issuer of the Letter of Credit shall deposit a sum equal to the full available to be drawn under the Letter of Credit into the closure account established by the Borrower. The provision of funds by the issuer of the Letter of Credit shall be considered an issuance of a loan to the Borrower, and the terms of that loan shall be governed by this Letter of Credit or subsequent agreement with Arbor Bank. The Lender and Borrow acknowledge that each will be bound by the further requirements of IAC 567 Chapter 113.14 in the event that proof of alternate financial assurance is not provided.

In the event that either Lender or Borrower is purchased by another entity, the subsequent entity shall assume all responsibilities under this Letter of Credit. Neither party shall take any action which may prevent it from fulfilling its responsibilities under this Letter of Credit, including, but not limited to, altering its business practices to render incapable of making payments or provide guarantees as provided for herein.

We undertake to promptly honor your sight draft(s) drawn on us, indicating our Credit No. 1155 for all or part of this Credit if presented to our office on or before the expiry date or any automatically extended expiry date. The DNR may draw on this Letter of Credit in full or in part.

Except as expressly stated herein, this undertaking is not subject to any agreement, condition or qualification. The obligation of [Bank Name] under this Letter of Credit is the individual obligation of [Bank Name] and is in no way contingent upon reimbursement with respect thereto.

In witness thereof, the Lender and Borrower have executed this Letter of Credit under their respective hands and seals, this 15 day of January , 2026 .

The persons whose signatures appear below hereby certify that they are authorized to execute this Letter of Credit on behalf of the Borrower and Lender.

Borrower

Signature: Signed by Abraham Leroy Sandquist

Name: Abraham Leroy Sandquist Title: President

Signature: _____

Name: _____ Title: _____

Lender

Signature: Signed by Kevin Goshorn

Name: Kevin Goshorn Title: Market President

Signature: _____

Name: _____ Title: _____

Docusign Envelope ID: 917E0D8B-436C-4378-9744-5B81747601F7

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IRREVOCABLE LETTER OF CREDIT

Borrower: Natural Fertilizer Products Inc.
414 Walker Street
Woodbine, IA 51579

Lender: ARBOR BANK
OAKLAND
301 OAKLAND AVE
P.O. BOX 68
OAKLAND, IA 51560

Beneficiary: Iowa Department of Natural Resources
6200 Park Ave Ste 200
Des Moines, IA 50321

NO.: 1155

EXPIRATION DATE. This letter of credit shall expire upon the earlier of the close of business on 01-15-2027 and all drafts and accompanying statements or documents must be presented to Lender on or before that time, or the day that Lender honors a draw under which the full amount of this Letter of Credit has been drawn (the "Expiration Date").

AMOUNT OF CREDIT. Lender hereby establishes at the request and for the account of Borrower, an Irrevocable Letter of Credit in favor of Beneficiary for a sum of Five Hundred Ninety-nine Thousand One Hundred Forty-one & 00/100 Dollars ($599,141.00) (the "Letter of Credit"). These funds shall be made available to Beneficiary upon Lender's receipt from Beneficiary of sight drafts drawn on Lender at Lender's address indicated above (or other such address that Lender may provide Beneficiary in writing) during regular business hours and accompanied by the signed written statements or documents indicated below.

WARNING TO BENEFICIARY: PLEASE EXAMINE THIS LETTER OF CREDIT AT ONCE. IF YOU FEEL UNABLE TO MEET ANY OF ITS REQUIREMENTS, EITHER SINGLY OR TOGETHER, YOU SHOULD CONTACT BORROWER IMMEDIATELY TO SEE IF THE LETTER OF CREDIT CAN BE AMENDED. OTHERWISE, YOU WILL RISK LOSING PAYMENT UNDER THIS LETTER OF CREDIT FOR FAILURE TO COMPLY STRICTLY WITH ITS TERMS AS WRITTEN.

DRAFT TERMS AND CONDITIONS. Lender shall honor drafts submitted by Beneficiary under the following terms and conditions:

Upon Lender's honor of such drafts, Lender shall be fully discharged of Lender's obligations under this Letter of Credit and shall not be obligated to make any further payments under this Letter of Credit once the full amount of credit available under this Letter of Credit has been drawn.

Beneficiary shall have no recourse against Lender for any amount paid under this Letter of Credit once Lender has honored any draft or other document which complies strictly with this Letter of Credit, and which on its face appears otherwise in order but which is signed, issued, or presented by a party or under the name of a party purporting to act for Beneficiary, purporting to claim through Beneficiary, or posing as Beneficiary without Beneficiary's authorization. By paying an amount demanded in accordance with this Letter of Credit, Lender makes no representation as to the correctness of the amount demanded and Lender shall not be liable to Beneficiary, or any other person, for any amount paid or disbursed for any reason whatsoever, including, without limitation, any nonapplication or misapplication by Beneficiary of the proceeds of such payment. By presenting upon Lender or a confirming bank, Beneficiary certifies that Beneficiary has not and will not present upon the other, unless and until Beneficiary meets with dishonor. Beneficiary promises to return to Lender any funds received by Beneficiary in excess of the Letter of Credit's maximum drawing amount.

USE RESTRICTIONS. All drafts must be marked "DRAWN UNDER ARBOR BANK IRREVOCABLE LETTER OF CREDIT NO. 1155 DATED 01-14-2026," and the amount of each draft shall be marked on the draft. Only Beneficiary or Beneficiary's transferee may complete a draft and accompanying statements or documents required by this Letter of Credit and make a draw under this Letter of Credit. This original Letter of Credit must accompany any draft drawn hereunder.

Partial draws are permitted under this Letter of Credit. Lender's honor of a partial draw shall correspondingly reduce the amount of credit available under this Letter of Credit. Following a partial draw, Lender shall return this original Letter of Credit to Beneficiary with the partial draw noted hereon; in the alternative, and in its sole discretion, Lender may issue a substitute Letter of Credit to Beneficiary in the amount shown above, less any partial draw(s).

PERMITTED TRANSFEREES. This Letter of Credit may be transferred by Beneficiary upon prior written notice to Lender of the transfer. The transferee shall be deemed the new Beneficiary of this Letter of Credit and the documents of the transferee, including drafts required under this Letter of Credit, will be processed by Lender (or any intermediary) without the original Beneficiary's intervention and without any further obligation of Lender to the original Beneficiary.

TRANSFEREES REQUIRED DOCUMENTS. When the presenter is a permitted transferee under the "Permitted Transferees" paragraph above (the "Permitted Transferee"), the documents required for a draw shall include all documents required elsewhere in this Letter of Credit, except that such documents may be in the name of and executed by either the original Beneficiary or the presenter permitted by the "Permitted Transferees" paragraph above.

COMPLIANCE BURDEN. Lender is not responsible for any impossibility or other difficulty in achieving strict compliance with the requirements of this Letter of Credit precisely as written. Beneficiary understands and acknowledges: (i) that unless and until the present wording of this Letter of Credit is amended with Lender's prior written consent, the burden of complying strictly with such wording remains solely upon Beneficiary, and (ii) that Lender is relying upon the lack of such amendment as constituting Beneficiary's initial and continued approval of such wording.

NON-SEVERABILITY. If any aspect of this Letter of Credit is ever declared unenforceable for any reason by any court or governmental body having jurisdiction, Lender's entire engagement under this Letter of Credit shall be deemed null and void ab initio, and both Lender and Beneficiary shall be restored to the position each would have occupied with all rights available as though this Letter of Credit had never occurred. This non-severability provision shall override all other provisions in this Letter of Credit, no matter where such provision appears within this Letter of Credit.

GOVERNING LAW. This Agreement will be governed by federal law applicable to Lender and, to the extent not preempted by federal law, the laws of the State of Nebraska without regard to its conflicts of law provisions, and except to the extent such laws are inconsistent with the 2007 Revision of the Uniform Customs and Practice for Documentary Credits of the International Chamber of Commerce, ICC Publication No. 600. This Agreement has been accepted by Lender in the State of Nebraska.

EXPIRATION. Lender hereby agrees with Beneficiary that drafts drawn under and in compliance with the terms of this Letter of Credit will be duly honored if presented to Lender on or before the Expiration Date unless otherwise provided for above.

Dated: January 15, 2026

LENDER:

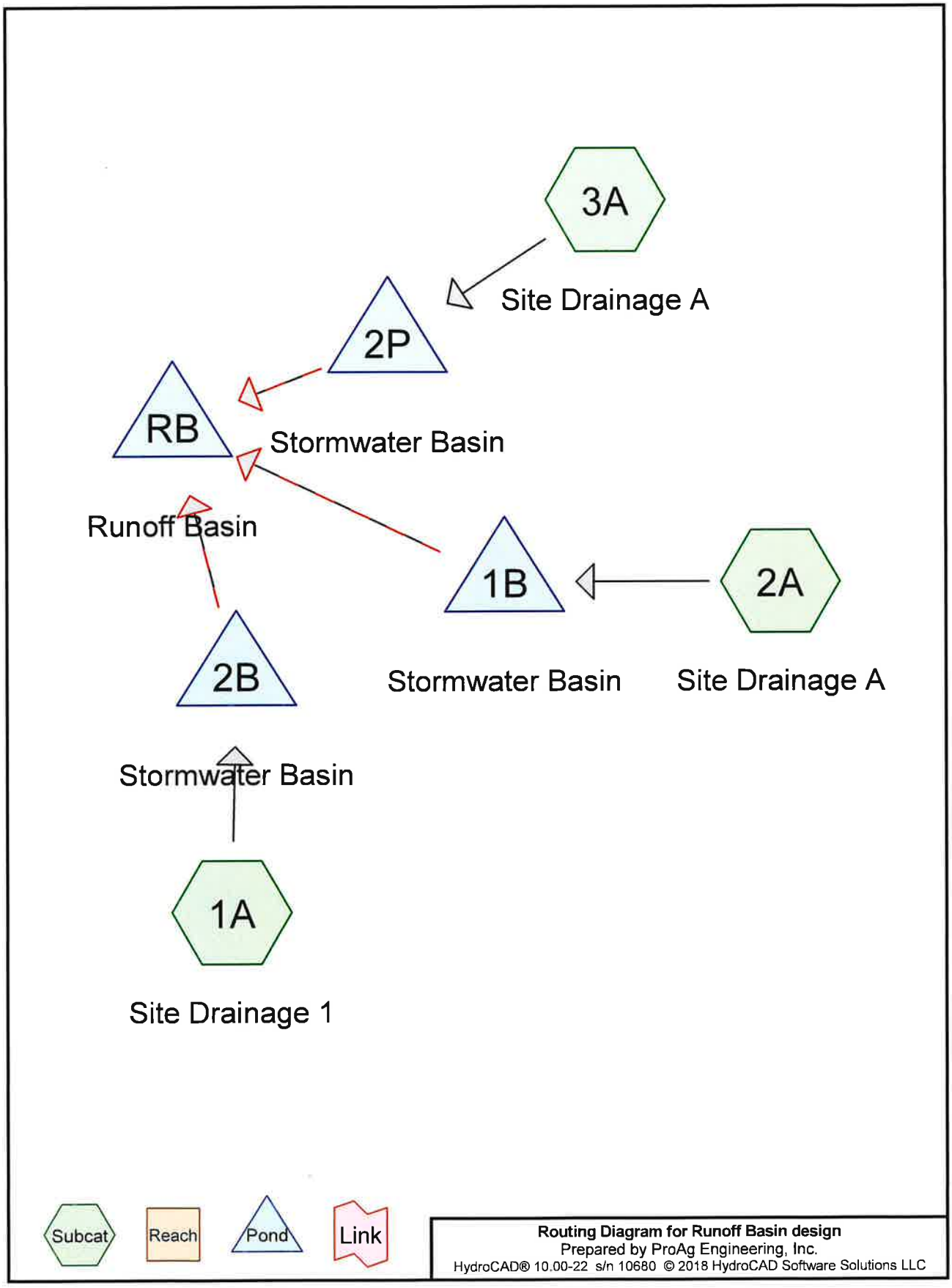
ARBOR BANK

By: Signed by: Kevin Goshorn 1/15/2026
Kevin Goshorn, Market President

ENDORSEMENT OF DRAFTS DRAWN:

Date	Negotiated By	Amount In Words	Amount In Figures

LaserPro, Ver 25.2.20.003 Copr. Finastra USA Corporation 1997, 2026. All Rights Reserved - NE C:\CFI8XX\CFI\LPL\C43LOC.FC TR-25786 PR-9


3A
Site Drainage A
2P
RB
Stormwater Basin
Runoff Basin
1B
2A
2B
Stormwater Basin
Site Drainage A
Stormwater Basin
1A
Site Drainage 1
Subcat
Reach
Pond
Link
Routing Diagram for Runoff Basin design
Prepared by ProAg Engineering, Inc.
HydroCAD® 10.00-22 s/n 10680 © 2018 HydroCAD Software Solutions LLC

Summary for Subcatchment 1A: Site Drainage 1

Runoff = 18.67 cfs @ 11.97 hrs, Volume= 0.986 af, Depth= 4.17"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 25-Year Rainfall=5.30"

	Area (ac)	CN	Description
*	2.840	90	Compost pad
	2.840		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.5	552	0.0450	1.41		**Lag/CN Method,**

Summary for Subcatchment 2A: Site Drainage A

Runoff = 11.82 cfs @ 12.01 hrs, Volume= 0.698 af, Depth= 4.17"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 25-Year Rainfall=5.30"

	Area (ac)	CN	Description
*	2.010	90	Compost pad
	2.010		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.4	902	0.0390	1.45		**Lag/CN Method,**

Summary for Subcatchment 3A: Site Drainage A

Runoff = 4.52 cfs @ 11.98 hrs, Volume= 0.266 af, Depth> 5.06"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 25-Year Rainfall=5.30"

	Area (ac)	CN	Description
*	0.630	98	MIxing pad
	0.630		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0	902	0.0390	2.14		**Lag/CN Method,**

Summary for Pond 1B: Stormwater Basin

Inflow Area = 2.010 ac, 0.00% Impervious, Inflow Depth = 4.17" for 25-Year event
Inflow = 11.82 cfs @ 12.01 hrs, Volume= 0.698 af
Outflow = 2.44 cfs @ 12.27 hrs, Volume= 0.698 af, Atten= 79%, Lag= 15.4 min
Primary = 2.44 cfs @ 12.27 hrs, Volume= 0.698 af
Secondary = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 1,231.73' @ 12.27 hrs Surf.Area= 6,976 sf Storage= 11,423 cf
Flood Elev= 962.00' Surf.Area= 0 sf Storage= 0 cf

Plug-Flow detention time= 54.8 min calculated for 0.698 af (100% of inflow)
Center-of-Mass det. time= 54.3 min (843.9 - 789.6)

Volume	Invert	Avail.Storage	Storage Description
#1	1,228.00'	35,337 cf	**Custom Stage Data (Prismatic)** Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,228.00	182	0	0
1,229.00	1,323	753	753
1,230.00	2,843	2,083	2,836
1,231.00	5,054	3,949	6,784
1,232.00	7,695	6,375	13,159
1,233.00	11,136	9,416	22,574
1,234.00	14,390	12,763	35,337

Device	Routing	Invert	Outlet Devices
#1	Primary	1,228.00'	**8.0" Round Pipe** L= 160.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 1,228.00' / 1,223.20' S= 0.0300 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.35 sf
#2	Device 1	1,228.00'	**12" Slotted Riser** Head (feet) 0.00 1.00 2.00 3.00 4.00 5.00 6.00 Disch. (cfs) 0.000 0.350 0.990 1.820 2.800 3.910 5.140
#3	Secondary	1,232.00'	**12.0' long x 30.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=2.44 cfs @ 12.27 hrs HW=1,231.73' TW=1,206.66' (Dynamic Tailwater)
↑—**1=Pipe** (Inlet Controls 2.44 cfs @ 7.00 fps)
↑—**2=12" Slotted Riser** (Passes 2.44 cfs of 2.53 cfs potential flow)

Secondary OutFlow Max=0.00 cfs @ 1.00 hrs HW=1,228.00' TW=1,206.00' (Dynamic Tailwater)
↑—**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 2B: Stormwater Basin

Inflow Area = 2.840 ac, 0.00% Impervious, Inflow Depth = 4.17" for 25-Year event
Inflow = 18.67 cfs @ 11.97 hrs, Volume= 0.986 af
Outflow = 2.01 cfs @ 12.37 hrs, Volume= 0.986 af, Atten= 89%, Lag= 23.7 min
Primary = 2.01 cfs @ 12.37 hrs, Volume= 0.986 af
Secondary = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 1,233.20' @ 12.37 hrs Surf.Area= 13,320 sf Storage= 20,171 cf
Flood Elev= 962.00' Surf.Area= 0 sf Storage= 0 cf

Plug-Flow detention time= 133.3 min calculated for 0.985 af (100% of inflow)
Center-of-Mass det. time= 133.7 min (919.7 - 786.0)

Volume	Invert	Avail.Storage	Storage Description
#1	1,230.00'	52,725 cf	**Custom Stage Data (Prismatic)** Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,230.00	900	0	0
1,231.00	3,143	2,022	2,022
1,232.00	7,531	5,337	7,359
1,233.00	12,221	9,876	17,235
1,234.00	17,851	15,036	32,271
1,235.00	23,057	20,454	52,725

Device	Routing	Invert	Outlet Devices
#1	Primary	1,230.00'	**8.0" Round Pipe** L= 150.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 1,230.00' / 1,225.50' S= 0.0300 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.35 sf
#2	Device 1	1,230.00'	**12" Slotted Riser** Head (feet) 0.00 1.00 2.00 3.00 4.00 5.00 6.00 Disch. (cfs) 0.000 0.350 0.990 1.820 2.800 3.910 5.140
#3	Secondary	1,234.00'	**12.0' long x 12.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64

Primary OutFlow Max=2.01 cfs @ 12.37 hrs HW=1,233.20' TW=1,206.72' (Dynamic Tailwater)
↑—**1=Pipe** (Passes 2.01 cfs of 2.24 cfs potential flow)
↑—**2=12" Slotted Riser** (Custom Controls 2.01 cfs)

Secondary OutFlow Max=0.00 cfs @ 1.00 hrs HW=1,230.00' TW=1,206.00' (Dynamic Tailwater)
↑—**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 2P: Stormwater Basin

Inflow Area = 0.630 ac,100.00% Impervious, Inflow Depth > 5.06" for 25-Year event
Inflow = 4.52 cfs @ 11.98 hrs, Volume= 0.266 af
Outflow = 3.50 cfs @ 12.04 hrs, Volume= 0.266 af, Atten= 23%, Lag= 3.8 min
Primary = 0.48 cfs @ 12.04 hrs, Volume= 0.184 af
Secondary = 3.02 cfs @ 12.04 hrs, Volume= 0.082 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 1,235.21' @ 12.04 hrs Surf.Area= 3,943 sf Storage= 2,468 cf
Flood Elev= 962.00' Surf.Area= 0 sf Storage= 0 cf

Plug-Flow detention time= 37.0 min calculated for 0.266 af (100% of inflow)
Center-of-Mass det. time= 36.4 min (780.3 - 743.9)

Volume	Invert	Avail.Storage	Storage Description
#1	1,234.00'	8,101 cf	**Custom Stage Data (Prismatic)** Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,234.00	281	0	0
1,235.00	1,721	1,001	1,001
1,236.00	12,478	7,100	8,101

Device	Routing	Invert	Outlet Devices
#1	Primary	1,234.00'	**8.0" Round Pipe** L= 136.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 1,234.00' / 1,229.92' S= 0.0300 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.35 sf
#2	Device 1	1,234.00'	**12" Slotted Riser** Head (feet) 0.00 1.00 2.00 3.00 4.00 5.00 6.00 Disch. (cfs) 0.000 0.350 0.990 1.820 2.800 3.910 5.140
#3	Secondary	1,235.00'	**12.0' long x 30.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=0.48 cfs @ 12.04 hrs HW=1,235.20' TW=1,206.48' (Dynamic Tailwater)
↑—**1=Pipe** (Passes 0.48 cfs of 1.24 cfs potential flow)
↑—**2=12" Slotted Riser** (Custom Controls 0.48 cfs)

Secondary OutFlow Max=2.96 cfs @ 12.04 hrs HW=1,235.20' TW=1,206.48' (Dynamic Tailwater)
↑—**3=Broad-Crested Rectangular Weir** (Weir Controls 2.96 cfs @ 1.21 fps)

Summary for Pond RB: Runoff Basin

Inflow Area = 5.480 ac, 11.50% Impervious, Inflow Depth = 4.27" for 25-Year event
Inflow = 7.50 cfs @ 12.06 hrs, Volume= 1.949 af
Outflow = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs

Peak Elev= 1,208.78' @ 48.00 hrs Surf.Area= 0 sf Storage= 84,901 cf
Flood Elev= 962.00' Surf.Area= 0 sf Storage= 0 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1	1,206.00'	396,801 cf	**Custom Stage Data** Listed below

Elevation (feet)	Cum.Store (cubic-feet)
1,206.00	0
1,219.00	396,801

Summary for Subcatchment 1A: Site Drainage 1

Runoff = 23.93 cfs @ 11.97 hrs, Volume= 1.285 af, Depth= 5.43"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-Year Rainfall=6.60"

	Area (ac)	CN	Description
*	2.840	90	Compost pad
	2.840		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.5	552	0.0450	1.41		**Lag/CN Method,**

Summary for Subcatchment 2A: Site Drainage A

Runoff = 15.17 cfs @ 12.01 hrs, Volume= 0.910 af, Depth= 5.43"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-Year Rainfall=6.60"

	Area (ac)	CN	Description
*	2.010	90	Compost pad
	2.010		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.4	902	0.0390	1.45		**Lag/CN Method,**

Summary for Subcatchment 3A: Site Drainage A

Runoff = 5.64 cfs @ 11.98 hrs, Volume= 0.334 af, Depth> 6.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-Year Rainfall=6.60"

	Area (ac)	CN	Description
*	0.630	98	MIxing pad
	0.630		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0	902	0.0390	2.14		**Lag/CN Method,**

Summary for Pond 1B: Stormwater Basin

Inflow Area = 2.010 ac, 0.00% Impervious, Inflow Depth = 5.43" for 100-Year event
Inflow = 15.17 cfs @ 12.01 hrs, Volume= 0.910 af
Outflow = 4.59 cfs @ 12.21 hrs, Volume= 0.910 af, Atten= 70%, Lag= 11.9 min
Primary = 2.59 cfs @ 12.21 hrs, Volume= 0.872 af
Secondary = 1.99 cfs @ 12.21 hrs, Volume= 0.037 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 1,232.16' @ 12.21 hrs Surf.Area= 8,234 sf Storage= 14,634 cf
Flood Elev= 962.00' Surf.Area= 0 sf Storage= 0 cf

Plug-Flow detention time= 56.8 min calculated for 0.910 af (100% of inflow)
Center-of-Mass det. time= 56.2 min (838.7 - 782.4)

Volume	Invert	Avail.Storage	Storage Description
#1	1,228.00'	35,337 cf	**Custom Stage Data (Prismatic)** Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,228.00	182	0	0
1,229.00	1,323	753	753
1,230.00	2,843	2,083	2,836
1,231.00	5,054	3,949	6,784
1,232.00	7,695	6,375	13,159
1,233.00	11,136	9,416	22,574
1,234.00	14,390	12,763	35,337

Device	Routing	Invert	Outlet Devices
#1	Primary	1,228.00'	**8.0" Round Pipe** L= 160.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 1,228.00' / 1,223.20' S= 0.0300 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.35 sf
#2	Device 1	1,228.00'	**12" Slotted Riser** Head (feet) 0.00 1.00 2.00 3.00 4.00 5.00 6.00 Disch. (cfs) 0.000 0.350 0.990 1.820 2.800 3.910 5.140
#3	Secondary	1,232.00'	**12.0' long x 30.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=2.59 cfs @ 12.21 hrs HW=1,232.15' TW=1,206.84' (Dynamic Tailwater)
↑—**1=Pipe** (Inlet Controls 2.59 cfs @ 7.43 fps)
↑—**2=12" Slotted Riser** (Passes 2.59 cfs of 2.97 cfs potential flow)

Secondary OutFlow Max=1.94 cfs @ 12.21 hrs HW=1,232.15' TW=1,206.84' (Dynamic Tailwater)
↑—**3=Broad-Crested Rectangular Weir** (Weir Controls 1.94 cfs @ 1.05 fps)

Summary for Pond 2B: Stormwater Basin

Inflow Area = 2.840 ac, 0.00% Impervious, Inflow Depth = 5.43" for 100-Year event
Inflow = 23.93 cfs @ 11.97 hrs, Volume= 1.285 af
Outflow = 2.41 cfs @ 12.40 hrs, Volume= 1.285 af, Atten= 90%, Lag= 25.8 min
Primary = 2.41 cfs @ 12.40 hrs, Volume= 1.285 af
Secondary = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 1,233.63' @ 12.40 hrs Surf.Area= 15,747 sf Storage= 26,651 cf
Flood Elev= 962.00' Surf.Area= 0 sf Storage= 0 cf

Plug-Flow detention time= 144.0 min calculated for 1.285 af (100% of inflow)
Center-of-Mass det. time= 143.5 min (922.3 - 778.8)

Volume	Invert	Avail.Storage	Storage Description
#1	1,230.00'	52,725 cf	**Custom Stage Data (Prismatic)** Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,230.00	900	0	0
1,231.00	3,143	2,022	2,022
1,232.00	7,531	5,337	7,359
1,233.00	12,221	9,876	17,235
1,234.00	17,851	15,036	32,271
1,235.00	23,057	20,454	52,725

Device	Routing	Invert	Outlet Devices
#1	Primary	1,230.00'	**8.0" Round Pipe** L= 150.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 1,230.00' / 1,225.50' S= 0.0300 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.35 sf
#2	Device 1	1,230.00'	**12" Slotted Riser** Head (feet) 0.00 1.00 2.00 3.00 4.00 5.00 6.00 Disch. (cfs) 0.000 0.350 0.990 1.820 2.800 3.910 5.140
#3	Secondary	1,234.00'	**12.0' long x 12.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64

Primary OutFlow Max=2.41 cfs @ 12.40 hrs HW=1,233.63' TW=1,207.02' (Dynamic Tailwater)
↑—**1=Pipe** (Inlet Controls 2.41 cfs @ 6.90 fps)
↑—**2=12" Slotted Riser** (Passes 2.41 cfs of 2.43 cfs potential flow)

Secondary OutFlow Max=0.00 cfs @ 1.00 hrs HW=1,230.00' TW=1,206.00' (Dynamic Tailwater)
↑—**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 2P: Stormwater Basin

Inflow Area = 0.630 ac,100.00% Impervious, Inflow Depth > 6.36" for 100-Year event
Inflow = 5.64 cfs @ 11.98 hrs, Volume= 0.334 af
Outflow = 4.54 cfs @ 12.03 hrs, Volume= 0.334 af, Atten= 19%, Lag= 3.4 min
Primary = 0.51 cfs @ 12.03 hrs, Volume= 0.218 af
Secondary = 4.03 cfs @ 12.03 hrs, Volume= 0.116 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 1,235.25' @ 12.03 hrs Surf.Area= 4,415 sf Storage= 2,779 cf
Flood Elev= 962.00' Surf.Area= 0 sf Storage= 0 cf

Plug-Flow detention time= 34.9 min calculated for 0.334 af (100% of inflow)
Center-of-Mass det. time= 34.4 min (775.0 - 740.7)

Volume	Invert	Avail.Storage	Storage Description
#1	1,234.00'	8,101 cf	**Custom Stage Data (Prismatic)** Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,234.00	281	0	0
1,235.00	1,721	1,001	1,001
1,236.00	12,478	7,100	8,101

Device	Routing	Invert	Outlet Devices
#1	Primary	1,234.00'	**8.0" Round Pipe** L= 136.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 1,234.00' / 1,229.92' S= 0.0300 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.35 sf
#2	Device 1	1,234.00'	**12" Slotted Riser** Head (feet) 0.00 1.00 2.00 3.00 4.00 5.00 6.00 Disch. (cfs) 0.000 0.350 0.990 1.820 2.800 3.910 5.140
#3	Secondary	1,235.00'	**12.0' long x 30.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=0.51 cfs @ 12.03 hrs HW=1,235.25' TW=1,206.65' (Dynamic Tailwater)
↑—**1=Pipe** (Passes 0.51 cfs of 1.27 cfs potential flow)
↑—**2=12" Slotted Riser** (Custom Controls 0.51 cfs)

Secondary OutFlow Max=3.94 cfs @ 12.03 hrs HW=1,235.25' TW=1,206.65' (Dynamic Tailwater)
↑—**3=Broad-Crested Rectangular Weir** (Weir Controls 3.94 cfs @ 1.33 fps)

Summary for Pond RB: Runoff Basin

Inflow Area = 5.480 ac, 11.50% Impervious, Inflow Depth = 5.54" for 100-Year event
Inflow = 9.34 cfs @ 12.16 hrs, Volume= 2.529 af
Outflow = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs

Peak Elev= 1,209.61' @ 48.00 hrs Surf.Area= 0 sf Storage= 110,145 cf
Flood Elev= 962.00' Surf.Area= 0 sf Storage= 0 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1	1,206.00'	396,801 cf	**Custom Stage Data** Listed below

Elevation (feet)	Cum.Store (cubic-feet)
1,206.00	0
1,219.00	396,801

TABLE OF CONTENTS

THIS DESIGN OF THE COMPOST FACILITY COMPLIES WITH THE CONSTRUCTION DESIGN STANDARDS OF CHAPTER 105, AS REQUIRED IN 567 IAC.

LICENSED PROFESSIONAL ENGINEER
JUSTIN D. SPRAGUE
23486
IOWA

I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa.

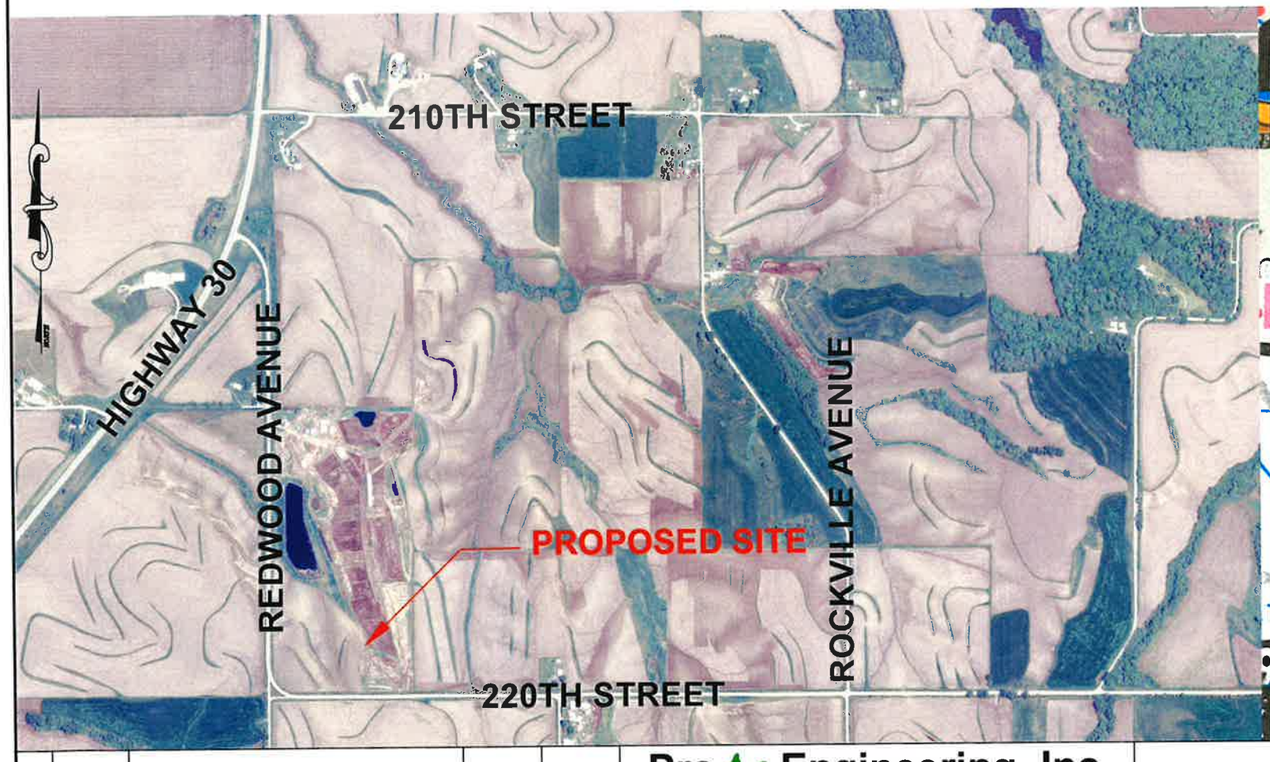
Date 23Jan26

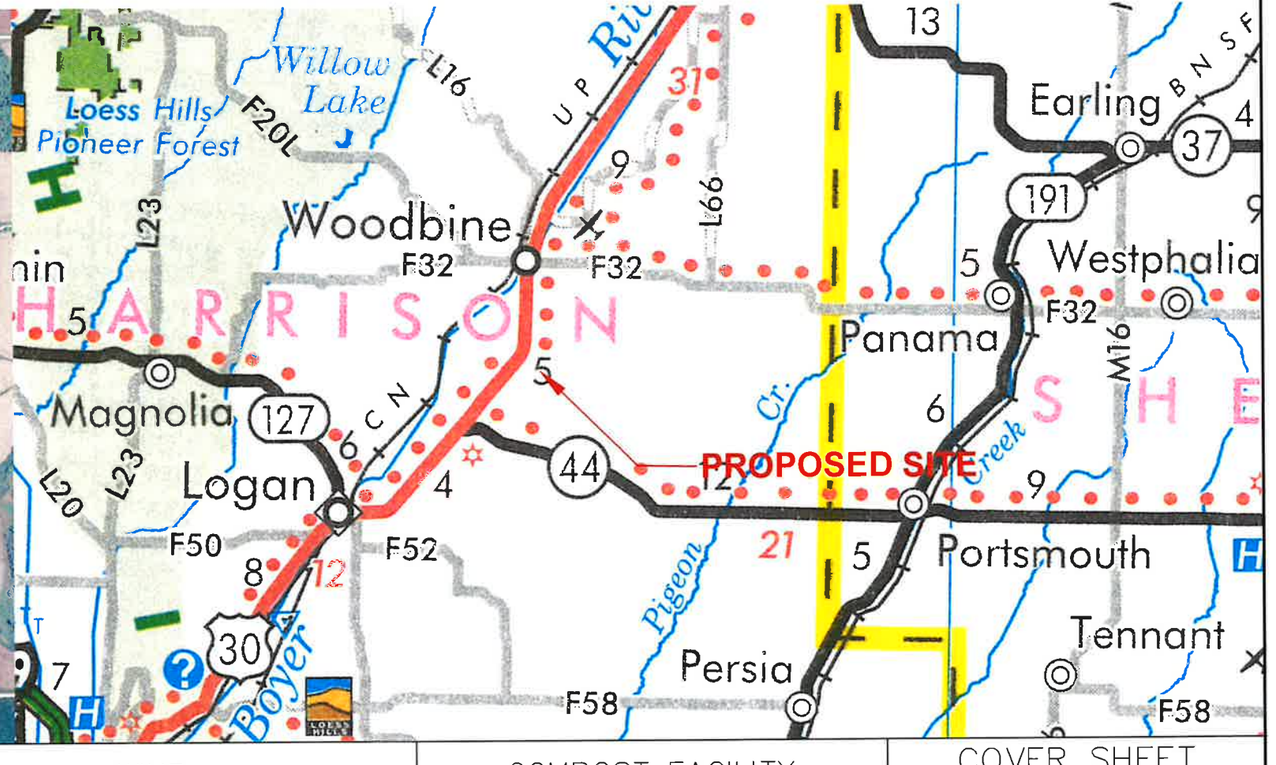
Justin D. Sprague, P.E.
23486
My license renewal date is December 31, 2027

Pages or sheets covered by this seal:
Sh 1-8

CLIENT REVIEW (to be signed at Preconstruction Meeting):
I have reviewed and approve the design and construction drawings.

Date





REV	DATE	DESCRIPTION	DRN BY	CHK BY
0	1/23/26	ISSUED FOR PERMIT	TMW	JDS

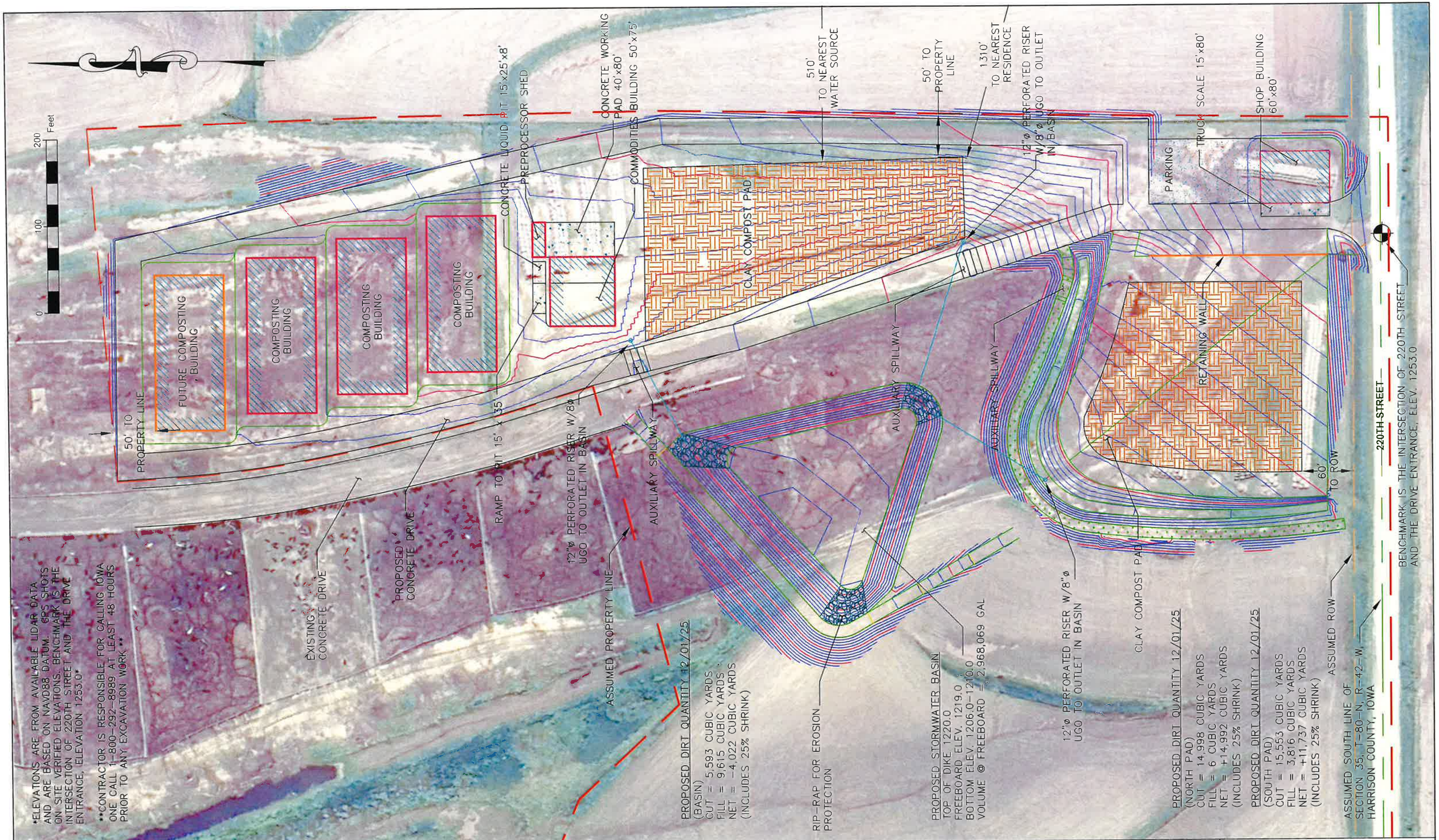
ProAg Engineering, Inc.
77402 U.S. Highway 71, P.O. Box 181
Jackson, MN 56143
(507) 849–7200

WINR
220TH STREET
WOODBINE, IOWA 51579

COMPOST FACILITY
SE 1/4, SECTION 35, T–80–N, R–42–W
HARRISON COUNTY, IOWA

COVER SHEET

PROJECT NO.	SHEET NO.
21–055	1 OF 8



*ELEVATIONS ARE FROM AVAILABLE LIDAR DATA AND ARE BASED ON NAVD88 DATUM. GPS SHOTS ON SITE VERIFIED ELEVATIONS. BENCHMARK IS THE INTERSECTION OF 220TH STREET AND THE DRIVE ENTRANCE, ELEVATION 1253.0'

**CONTRACTOR IS RESPONSIBLE FOR CALLING IOWA ONE CALL 1-800-292-8989 AT LEAST 48 HOURS PRIOR TO ANY EXCAVATION WORK **

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220TH STREET
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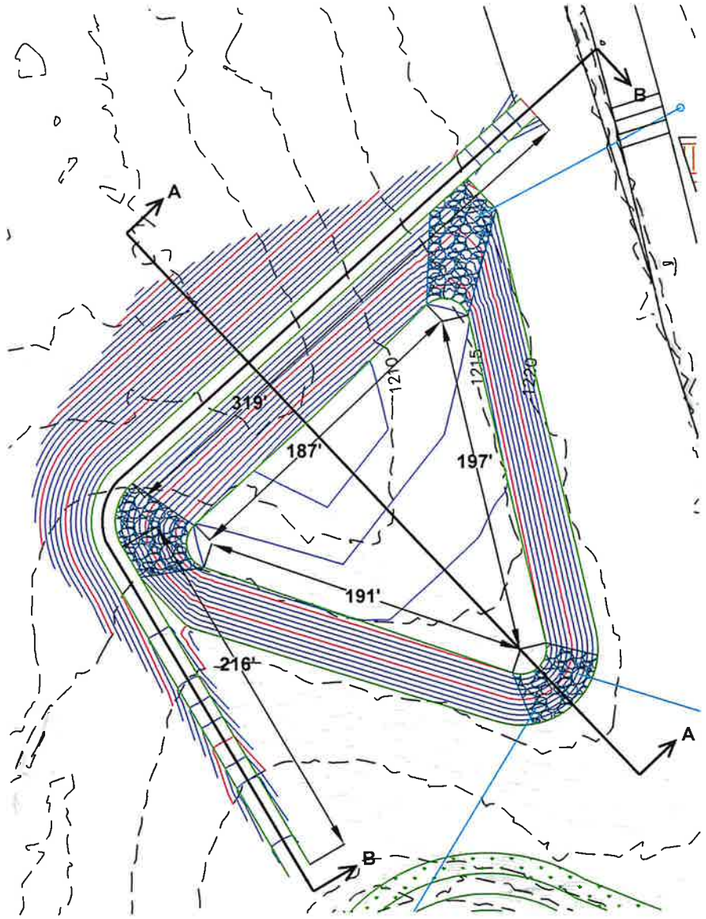
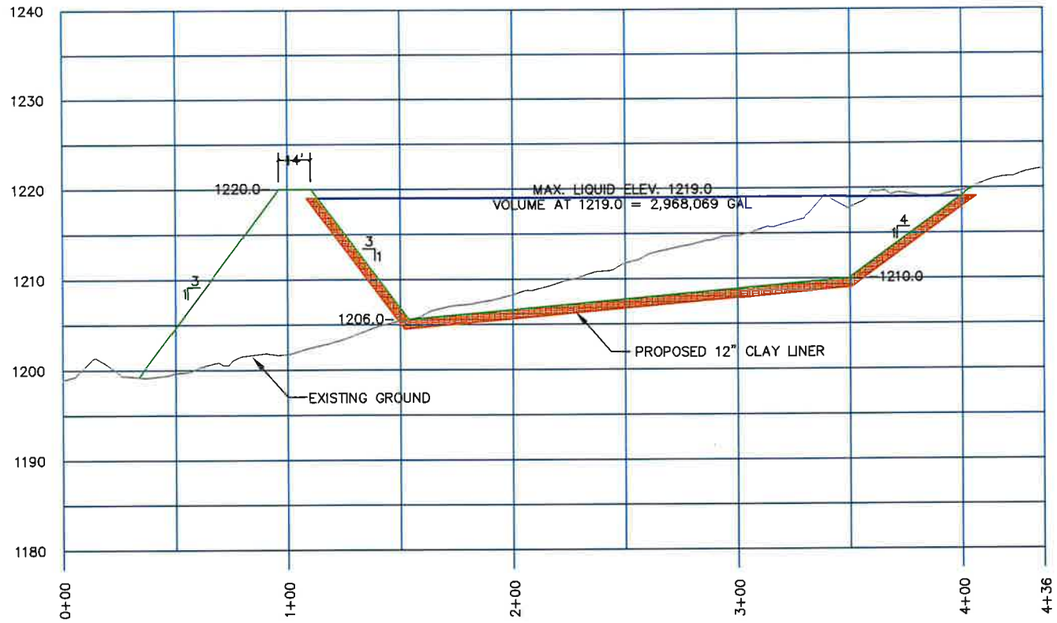
COMPOST FACILITY
SE 1/4, SECTION 35, T-80-N, R-42-W
HARRISON COUNTY, IOWA

SITE PLAN

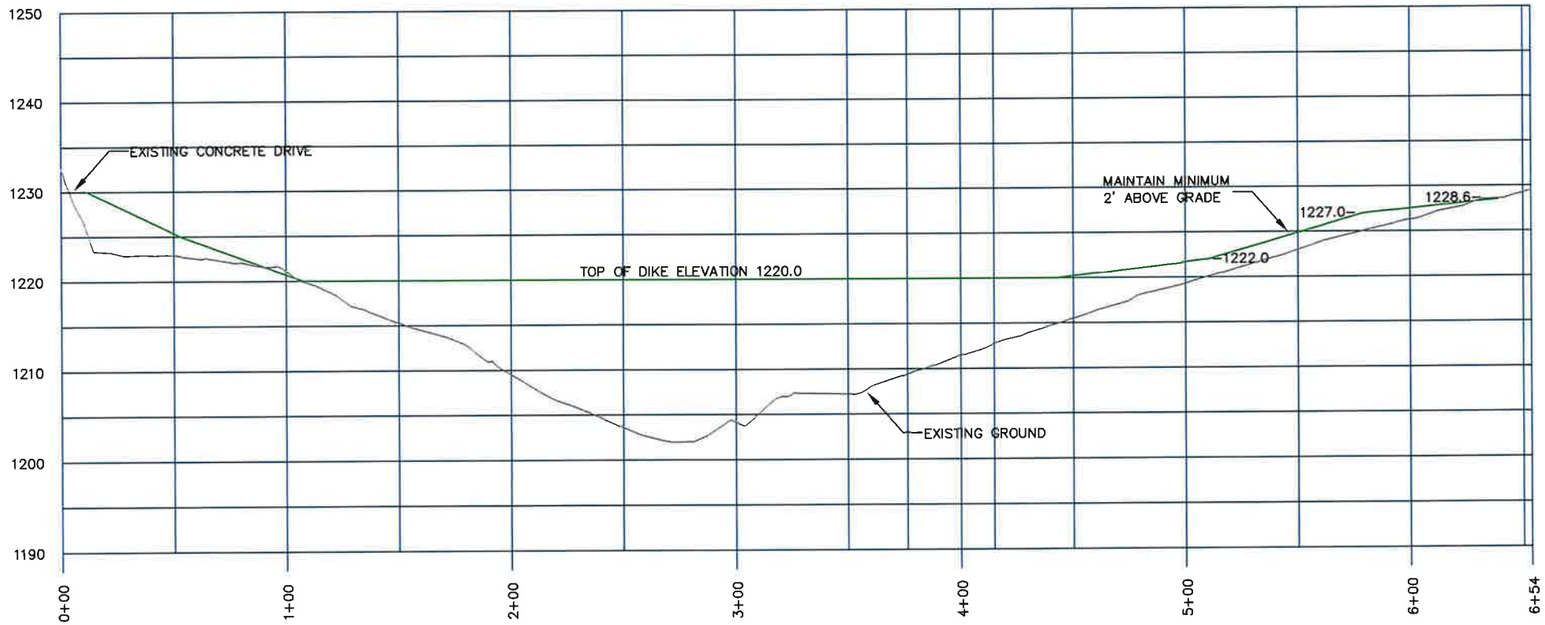
PROJECT NO.	SHEET NO.
21-055	2 OF 8



BASIN LAYOUT



CROSS SECTION A-A
(NOT TO SCALE)



CROSS SECTION B-B
(NOT TO SCALE)

REV	DATE	DESCRIPTION	DRN BY	CHK BY
0	1/23/26	ISSUED FOR PERMIT	TMW	JDS

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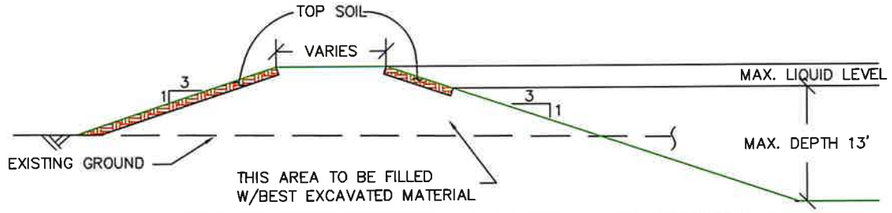
COMPOST FACILITY
SE 1/4, SECTION 35, T-80-N, R-42-W
HARRISON COUNTY, IOWA

CROSS SECTIONS

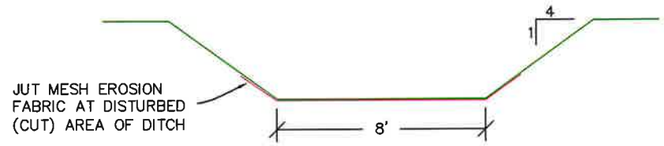
PROJECT NO.	SHEET NO.
21-055	3 OF 8



1. REMOVE TOP SIX (6) INCHES OF SOIL OVER AREAS THAT PROPOSED BASIN AND DIKES WILL BE BUILT, REMOVE ALL VEGETATION.
2. OVER EXCAVATE A MINIMUM OF 12" IN BASIN BOTTOM AND ON UNDISTURBED INNER DIKES.
3. AFTER BASIN IS OVER EXCAVATED, DISC UNDISTURBED SOIL TO A MINIMUM DEPTH OF 6".
4. RECOMPACT DISKED MATERIAL AS SPECIFIED FOR COMPACTED FILL MATERIAL AND BEGIN PLACING AND COMPACTING THE 12" THICK LINER WITH BEST AVAILABLE MATERIAL
5. COMPACT DIKES AND LINER IN 6" LIFTS TO 95% STANDARD PROCTOR DENSITY.
6. USE BEST EXCAVATED MATERIAL FOR INNER DIKES AND LINER.
7. FINAL 12" OF OUTER AND TOP INNERSLOPES OF DIKE TO BE TOPSOIL.
8. BASIN SIDE SLOPE – 3:1 INTERIOR, 3:1 EXTERIOR

DIKE CONSTRUCTION DETAIL

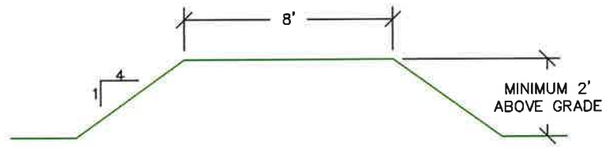
(NOT TO SCALE)



DIVERSION DITCH DETAIL

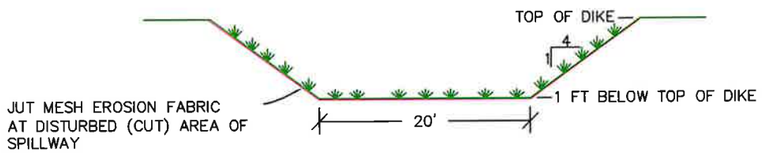
(NOT TO SCALE)

NOTES:
1. STRIP TOPSOIL
2. CONSTRUCT DIVERSION DITCH (MINIMUM 2' DEEP)
3. REPLACE TOPSOIL
4. SEED DISTURBED AREAS WITH RURAL SEED MIXTURE
5. INSTALL SILT FENCE OR BALE CHECKS EVERY 300' IN NEW DITCH



DIVERSION DIKE DETAIL

(NOT TO SCALE)



AUXILIARY SPILLWAY DETAIL

(NOT TO SCALE)

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0	1/23/26	ISSUED FOR PERMIT	TMW	JDS

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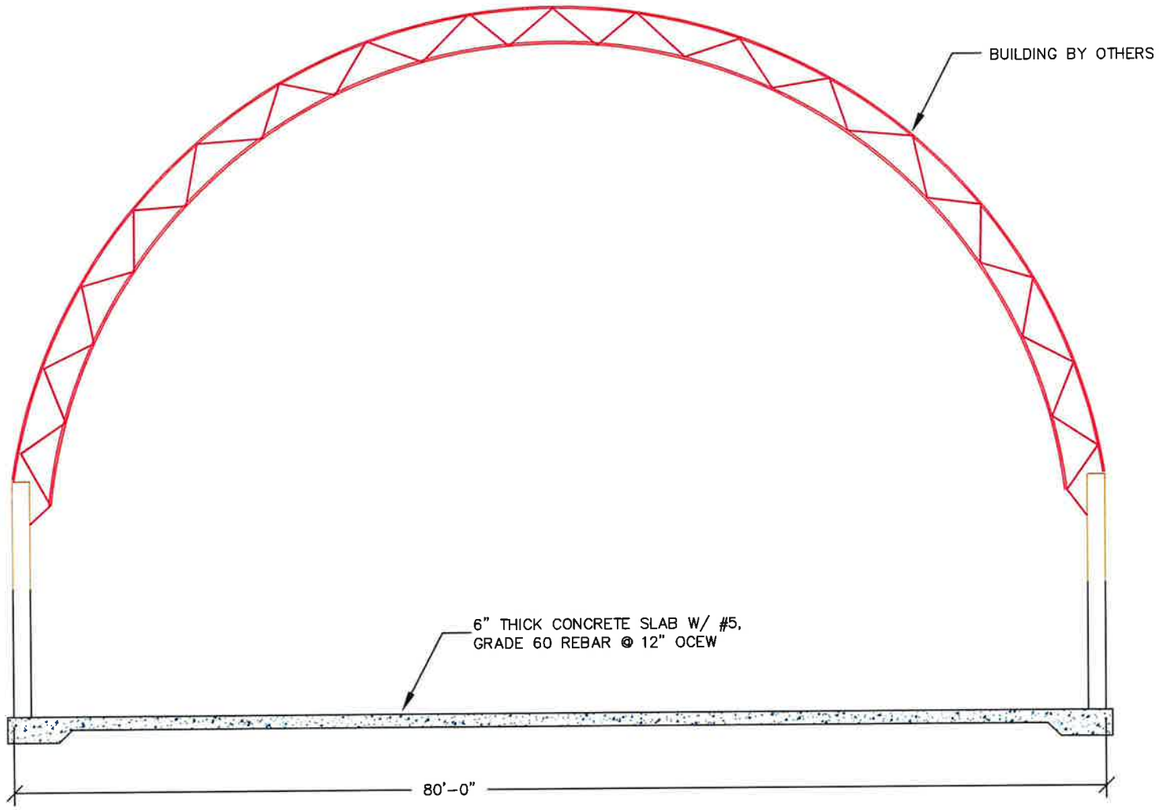
COMPOST FACILITY
SE 1/4, SECTION 35, T-80-N, R-42-W
HARRISON COUNTY, IOWA

DETAILS

PROJECT NO.	SHEET NO.
21-055	4 OF 8



COMPOSTING BUILDING CROSS SECTION
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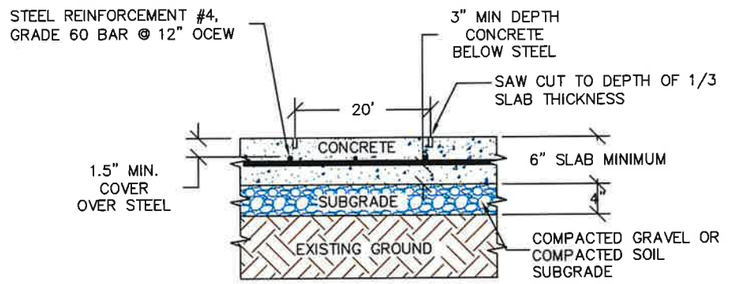

TYPICAL CONCRETE FLATWORK
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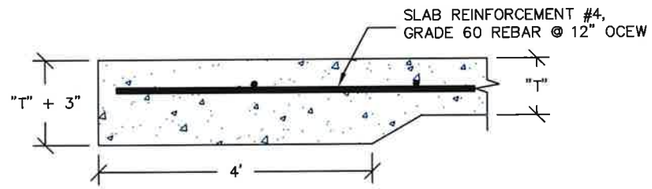

THICKENED EDGE FLATWORK
(NOT TO SCALE)

REV	DATE	DESCRIPTION	DRN BY	CHK BY
0	1/23/26	ISSUED FOR PERMIT	TMW	JDS

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COMPOST FACILITY
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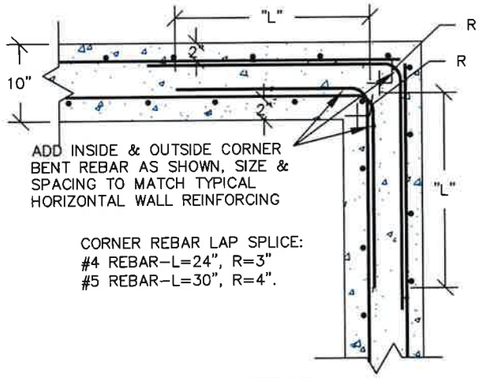
DETAILS

PROJECT NO.	SHEET NO.
21-055	5 OF 8



OUTSIDE CORNER DETAIL
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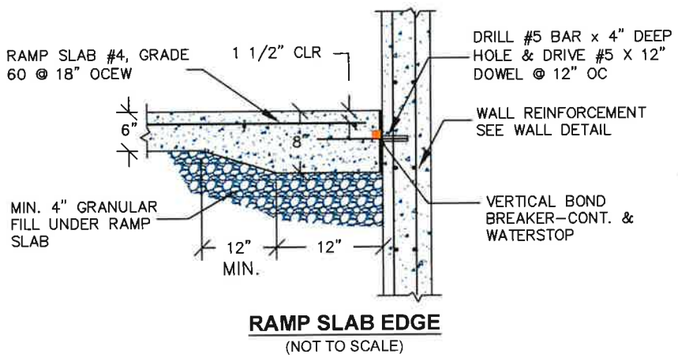

RAMP SLAB EDGE
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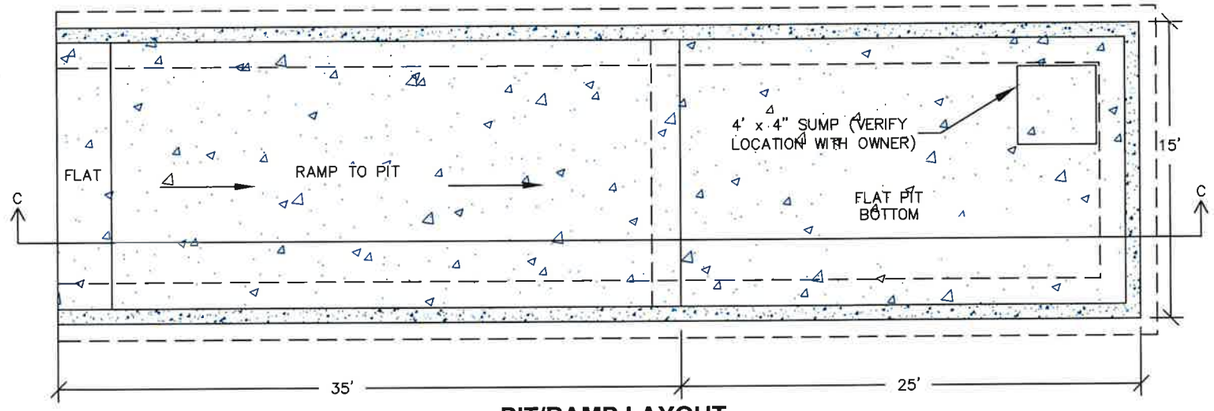

PIT/RAMP LAYOUT
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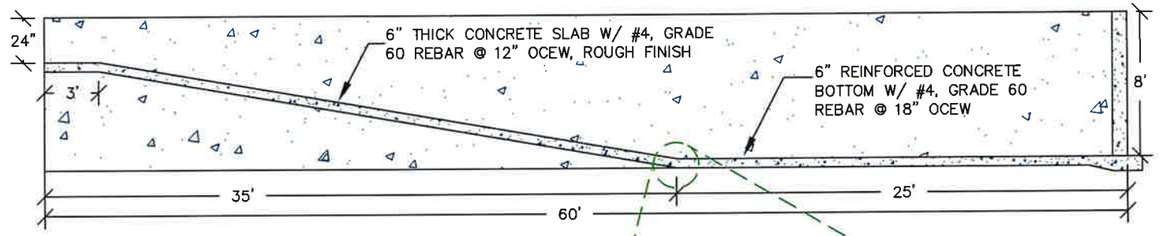

PIT/RAMP CROSS SECTION C-C
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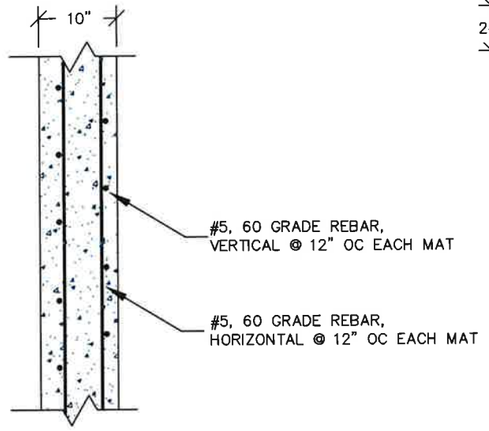
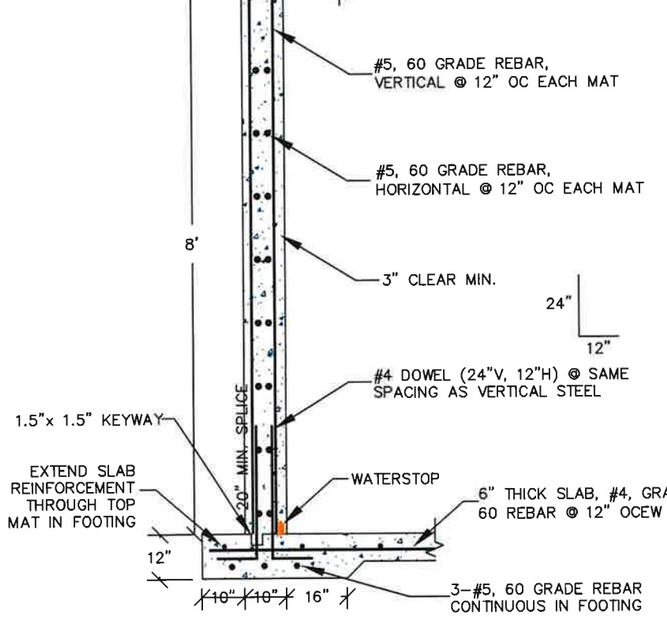
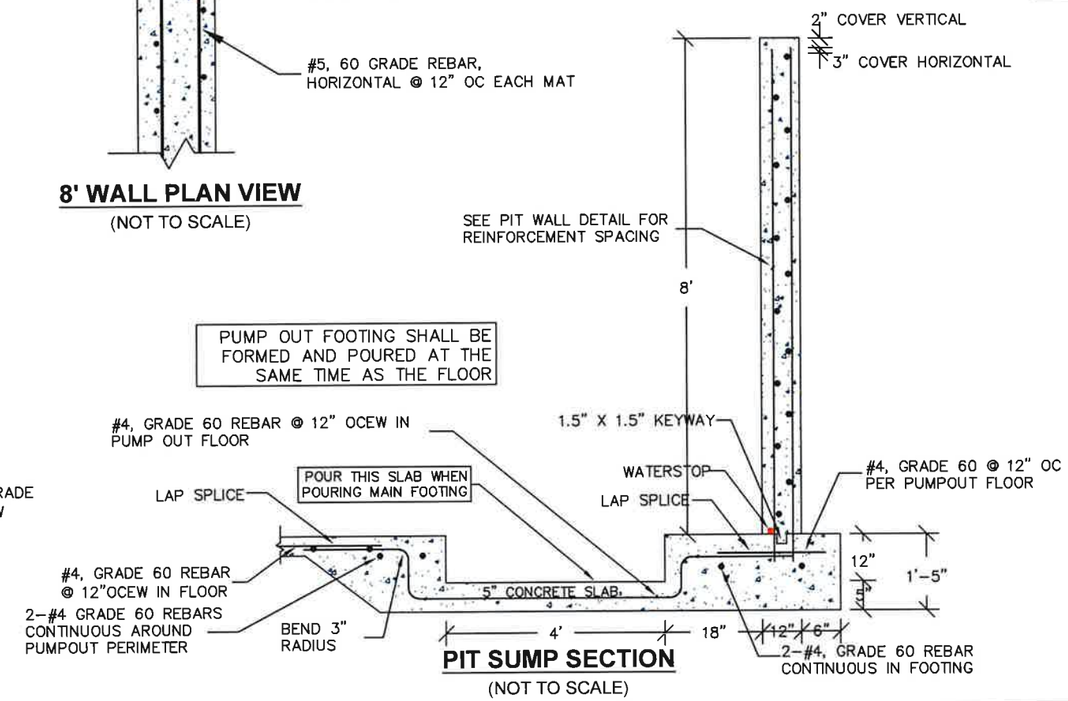


8' WALL PLAN VIEW
(NOT TO SCALE)



8' WALL DETAIL
(NOT TO SCALE)



PIT SUMP SECTION
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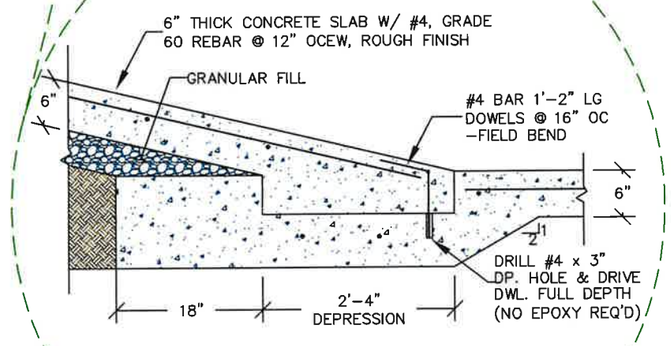

RAMP FLOOR INTERSECTION
(NOT TO SCALE)

REV	DATE	DESCRIPTION	DRN BY	CHK BY
0	1/23/26	ISSUED FOR PERMIT	TMW	JDS

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SE 1/4, SECTION 35, T–80–N, R–42–W
HARRISON COUNTY, IOWA

DETAILS

PROJECT NO.	SHEET NO.
21–055	6 OF 8

CONCRETE & STRUCTURAL NOTES:

A. GENERAL
1.) NOTES AND DETAILS ON THE STRUCTURAL DRAWINGS TAKE PRECEDENCE OVER THESE STRUCTURAL NOTES.
2.) THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS, ELEVATIONS, AND SITE CONDITIONS PRIOR TO STARTING WORK. THE ENGINEER SHALL BE NOTIFIED OF ANY DISCREPENCIES.
3.) IN NO CASE SHALL DIMENSIONS BE SCALED FROM PLANS, SECTIONS, OR DETAILS ON THE STRUCTURAL DRAWINGS.
4.) DESIGN CHANGES MUST BE APPROVED IN WRITING BY BOTH THE OWNER AND ENGINEER BEFORE PROCEEDING WITH THE WORK. SOME DESIGN CHANGES MAY ALSO REQUIRE IDNR, COUNTY AND/OR NRCS APPROVAL.
5.) ANCHOR BOLTS SHALL BE SET AS SPECIFIED BY BUILDING CONTRACTOR.
6.) ALL MATERIALS AND WORKMANSHIP SHALL CONFORM TO THE REQUIREMENTS OF THE FOLLOWING CODES:
   a. UNIFORM BUILDING CODE (UBC)
   b. IOWA STATE BUILDING CODE
   c. AMERICAN CONCRETE INSTITUTE (ACI)
   d. CONCRETE REINFORCING STEEL INSTITUTE (CRSI) MANUAL OF STANDARD PRACTICE

B. DRAIN TILE
1.) BEFORE ANY PIT CONSTRUCTION, TRENCH AND INSTALL DRAIN AROUND THE PROPOSED PIT, THE DRAIN TILE FLOW LINE MUST BE A MINIMUM OF 12" BELOW THE TOP.
2.) THE DRAIN TILE SHALL BE HEAVY DUTY PERFORATED POLYETHYLENE TUBING 4"ø TILE WITH PEA ROCK COVER OR 4"ø TILE W/ FABRIC SLEEVE AND SAND/GRAVEL COVER.
3.) CONNECT THE DRAIN TILE TO AN EXISTING FARM TILE IF AVAILABLE; DISCHARGE TO SURFACE DRAINAGE; OR DRAIN TO A SUMP AND PUMP TO SURFACE.

C. TEMPORARY BRACING AND BACKFILL
1.) PROVIDE TEMPORARY LATERAL SUPPORT FOR ALL WALLS WHERE GRADE VARIES ON THE TWO SIDES UNTIL THE PERMANENT STRUCTURAL SUPPORT SYSTEM IS IN PLACE.
2.) BACKFILL ONLY AFTER THE FLOOR SLATS OR SOLID FLOOR HAS BEEN INSTALLED.
3.) DO NOT BACKFILL AGAINST WALL UNTIL SLATS ARE INSTALLED AND GROUTED.
4.) CONCRETE IN ALL WALLS SHALL BE ALLOWED TO CURE FOR A MINIMUM OF 7 DAYS BEFORE BACKFILL IS PLACED AGAINST WALLS. EXERCISE CAUTION WHEN BACKFILLING TO BRING UP THE LEVEL UNIFORMLY ON ALL SIDES OF TANKS AND PITS.

D. FOOTINGS, FOUNDATIONS & SUBGRADE
1.) SOIL BEARING DESIGN VALUE;.....3000 PSF ON VIRGIN SOIL OR COMPACTED FILL FOR FOOTINGS.
2.) PROTECT FOUNDATION EXCAVATIONS FROM FROST. DO NOT PLACE CONCRETE ON FROZEN GROUND.
3.) EXISTING DISTURBED SUBGRADE SHALL BE RECOMPACTED TO 95 % OF STANDARD PROCTOR DENSITY.
4.) ALL FILL UNDER FOOTINGS AND SLAB SHALL BE COMPACTED TO A DRY DENSITY OF AT LEAST 95 % OF MAXIMUM DRY DENSITY AS DETERMINED BY AASHTO T-180.
5.) SAND FILL AS REQUIRED FOR LEVELING SUBGRADES SHALL BE PROVIDED AT ALL SLAB ON GRADE AREAS.

E. REINFORCED CONCRETE
1.) ALL CONCRETE AND REINFORCING WORK SHALL CONFORM TO AMERICAN CONCRETE INSTITUTE'S" STANDARD BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE", (ACI 318)
2.) CONCRETE WORK SHALL CONFORM TO ALL THE REQUIREMENTS OF ACI 301.
3.) CONCRETE SHALL HAVE A MINIMUM 28-DAY COMPRESSIVE STRENGTH OF f'C=4000 PSI FLOOR, 4000 PSI WALLS
4.) WATER CEMENT RATIO SHALL BE 0.45 MAXIMUM
5.) CEMENT SHALL CONFORM TO ASTM C150, TYPE 1.
6.) COARSE AGGREGATE SHALL BE 1".
7.) READY-MIX CONCRETE SHALL BE MIXED & DELIVERED IN ACCORDANCE WITH ASTM C94.
8.) SLUMP SHALL BE MAXIMUM OF 5"
9.) AIR CONTENT SHALL BE 5% TO 7%
10.) CONCRETE TO BE CURED WITH SONOBORN CURE AND SEAL OR EQUAL.
11.) ADMIXTURES MAY BE USED WITH PRIOR APPROVAL OF THE ENGINEER FOR THE PURPOSE OF INCREASING THE WORKABILITY BUT NOT TO REDUCE THE SPECIFIED MINIMUM CEMENT CONTENT. CALCIUM CHLORIDE SHALL NOT BE USED.
12.) FLOORS SHALL BE 5" THK. WITH #4, GRADE 60 REBAR @ 18" OCEW.
13.) IF CONSTRUCTION JOINTS NECESSARY, COORDINATE LOCATION WITH ENGINEER.
14.) CONSTRUCTION JOINTS ARE NOT PERMITTED IN THE END WALLS OR WITHIN 3 FT. OF A PUMPOUT. THE PUMPOUT FLOOR AND FOOTING MUST BE FORMED AND POURED WITH THE PIT FLOOR. THE PUMPOUT WALLS MUST BE FORMED AND POURED WITH THE PIT WALLS.
15.) REINFORCING STEEL SHALL BE PLACED IN THE CENTER OF CONCRETE PLACEMENT UNLESS NOTED OTHERWISE. STEEL MUST BE SUPPORTED WITH APPROPRIATE CHAIRS OR CONCRETE BLOCKS.

F. STEEL
1.) F'Y = GRADE 60 (60,000 PSI) DEFORMED STEEL.
2.) REINFORCING SHALL BE CONTINUOUS AND LAP A MINIMUM OF 40 BAR DIAMETER UNLESS NOTED OTHERWISE. WELDED WIRE FABRIC SHALL BE LAPPED A MINIMUM OF EIGHT INCHES.
3.) MINIMUM BENDING RADIUS SHALL BE 6 BAR DIAMETERS.
4.) MINIMUM BEND AROUND CORNERS FOR #4 BARS - 24", FOR #5 BARS - 30".
5.) ALL CONCRETE IS REINFORCED UNLESS SPECIFICALLY CALLED OUT AS "NOT REINFORCED". REINFORCE ALL CONCRETE NOT OTHERWISE SHOWN WITH THE SAME STEEL AS IN SIMILAR SECTIONS OR AREAS.
6.) THE FOLLOWING MINIMUM CONCRETE COVER SHALL BE PROVIDED FOR FOR REINFORCEMENT UNLESS OTHERWISE NOTED:
   WHERE CAST AGAINST EARTH ..... 3 INCHES
   WALLS AND SLABS (EXPOSED TO EARTH OR WEATHER)..... 2 INCHES
   OTHER..... 2 INCHES

G. TOLERANCES & QUALITY CONTROL
1.) COLUMN FINISH ELEVATIONS SHALL BE + OR - 1/4" FROM DESIGN ELEVATION.
2.) WALL ALIGNMENT (HORIZONTAL) SHALL DEVIATE NO MORE THAN 1/4" IN 10 FT. NO MORE THAN 3/4" OVER THE FULL LENGTH OF WALL.
3.) WALL BEARING LEDGE ELEVATIONS SHALL BE + OR - 1/4"FROM DESIGN ELEVATION IN 10 FT. AND NO MORE THAN 1/2" OVER THE FULL LENGTH OF WALL.
4.) OVERALL FOUNDATION LENGTH & WIDTH DIMENSIONS AND DIAGONAL DIMENSIONS SHOULD BE WITHIN 1/2" OF PLAN DIMENSIONS.
5.) HONEYCOMB AND SHRINKAGE CRACKS WIDER THAN THE THICKNESS OF A PLASTIC CREDIT CARD SHALL BE FILLED WITHIN 48 HOURS WITH CEMENT GROUT SLURRY MOPPED INTO THE CRACKS. DO THE GROUTING OF FLOOR CRACKS BEFORE DIRT AND EQUIPMENT ARE BROUGHT ON THE FLOOR.

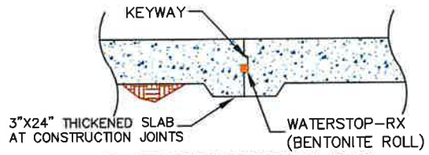
H. ELECTRICAL GROUND
1.) INSTALL REINFORCING BARS AS PER ELECTRICAL CODE GROUND AT A MINIMUM LOCATIONS AS PER ELECTRIC CODE NOTIFY THE LOCAL ELECTRICAL INSPECTOR FOR INSPECTION PRIOR TO PLACING CONCRETE.

I. COLD WEATHER CONCRETING
1.) WHEN, FOR MORE THAN 3 CONSECUTIVE DAYS, THE MEAN DAILY TEMPERATURE DROPS BELOW 40° F., THE CONTRACTOR SHALL PLACE AND PROTECT THE CONCRETE IN ACCORDANCE WITH ACI 306.

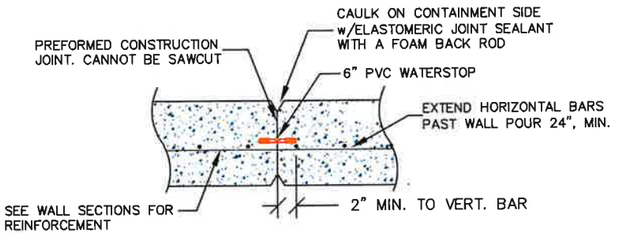
J. HOT WEATHER CONCRETING
1.) WHEN IT IS LIKELY THAT TEMPERATURE BETWEEN 75° F AND 100°F WILL BE APPROACHED OR EXCEEDED; THAT LOW RELATIVE HUMIDITY IS PRESENT; OR WIND VELOCITY WILL EXCEED 10 MPH, THE CONTRACTOR SHALL PLACE & PROTECT THE CONCRETE IN ACCORDANCE WITH CHAPTERS 4 & 5 OF ACI 305.

K. WATERSTOPS & SEALANTS
1.) WATERSTOP TO BE RIBBED PVC, OR BENTONITE ROLL, AT CONTRACTORS OPTION.
2.) 3/8"x3/4" BENTONITE/BUTYL RUBBER EQUAL TO WATERSTOP-RX BY AMERICAN COLLIED COMPANY WATERSTOPS SHALL BE PLACED IN ALL CONSTRUCTION JOINTS ON THE FLOOR AND IN THE WALLS. LOCATION AND NUMBER OF CONSTRUCTION JOINTS ARE TO BE DETERMINED BY THE CONTRACTOR. WATERSTOPS SHALL BE SUITABLE FOR USE WITH MANURE.
3.) MAKE PVC WATERSTOP SPLICES WITH SPLICING IRON.
4.) SEALANT TO BE ELASTOMETRIC POLYURETHANE OR BITUMINOUS ASPHALT BASED.

CONSTRUCTION JOINTS



CONSTRUCTION JOINT DETAIL (SLAB)
(NOT TO SCALE)



CONSTRUCTION JOINT DETAIL (WALL)
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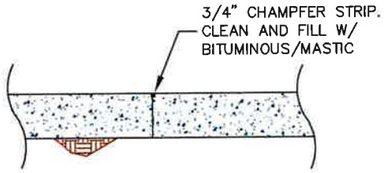
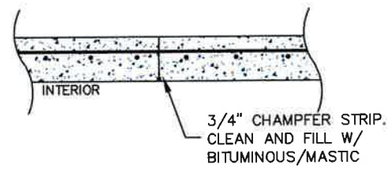


CONTRACTION JOINT DETAIL (SLAB)
(NOT TO SCALE)

*REINFORCING CONTINUOUS THROUGH ALL JOINTS



CONTRACTION JOINT DETAIL (WALL)
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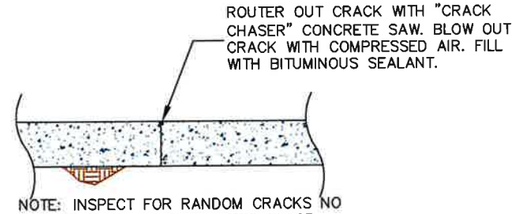

RANDOM CRACK REPAIR FOR CONCRETE PIT FLOOR
(NOT TO SCALE)

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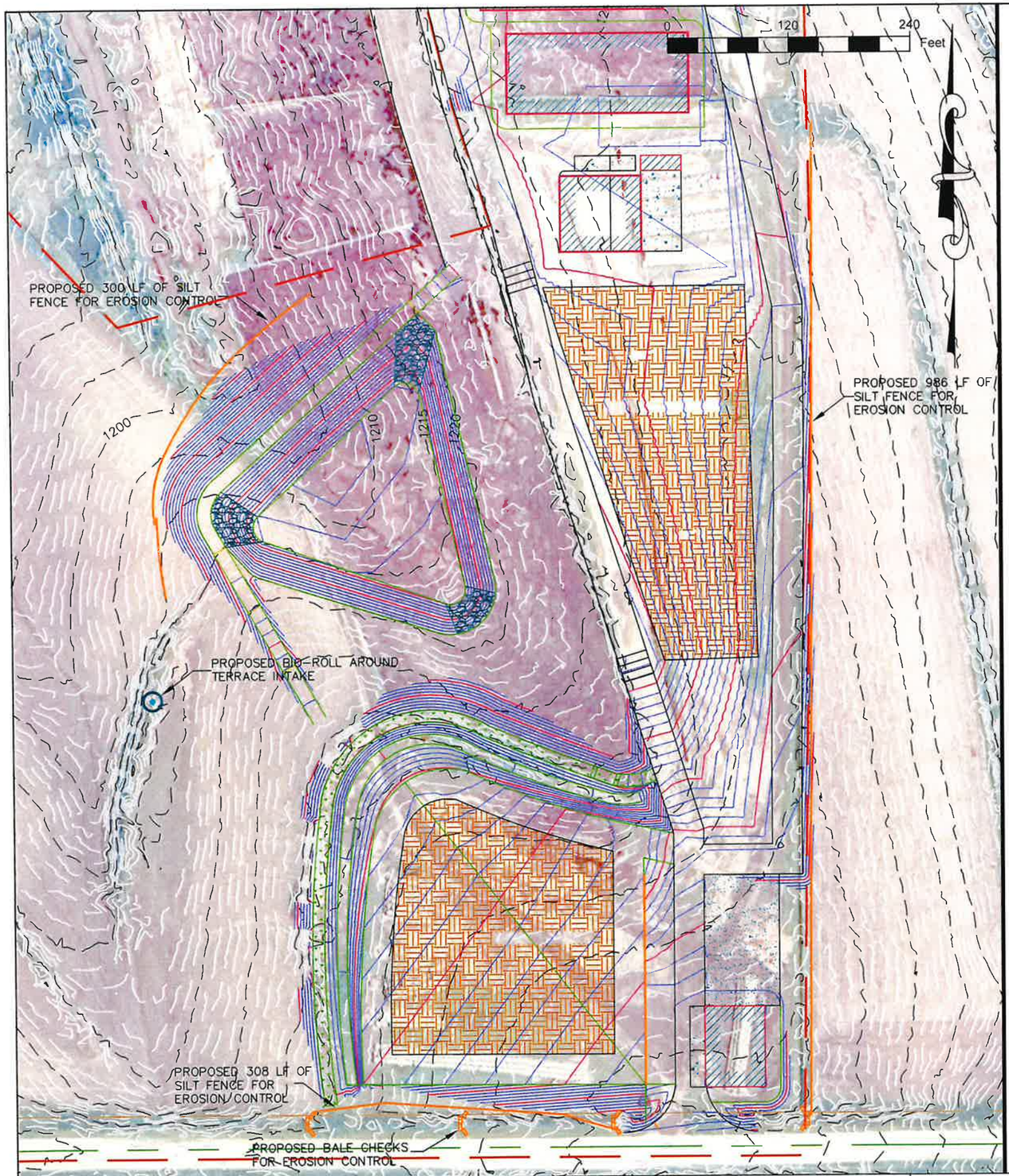
HARRISON COUNTY, IOWA

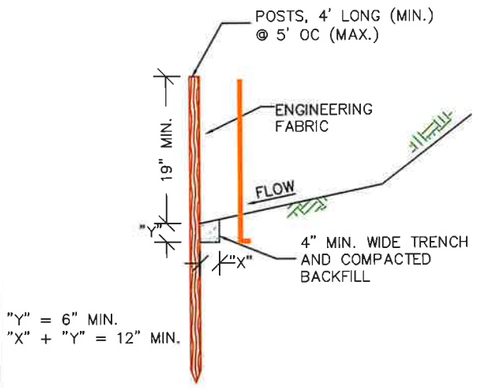
DETAILS

PROJECT NO.	SHEET NO.
21-055	7 OF 8



*NOTE: EROSION CONTROLS TO REMAIN UNTIL VEGETATION HAS BEEN ESTABLISHED

NOTES:
1. THE MINIMUM LONGITUDINAL SPLICE OVERLAP SHALL BE 2' WITH A POST AT EACH END
2. SECURE FABRIC TO POSTS



SILT FENCE DETAIL
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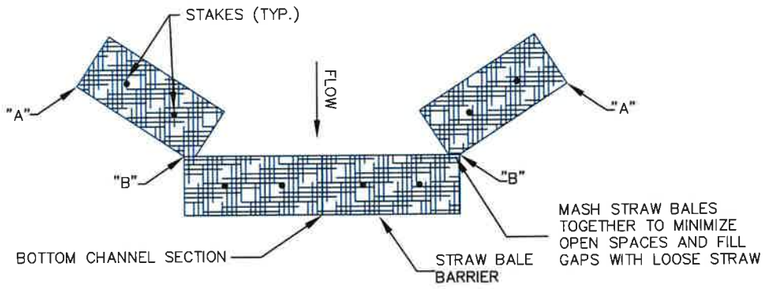

STRAW BALE DITCH CHECK DETAIL
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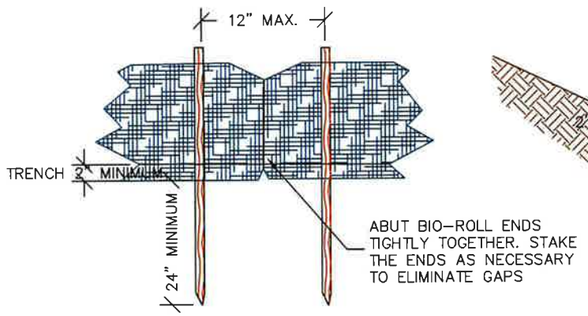

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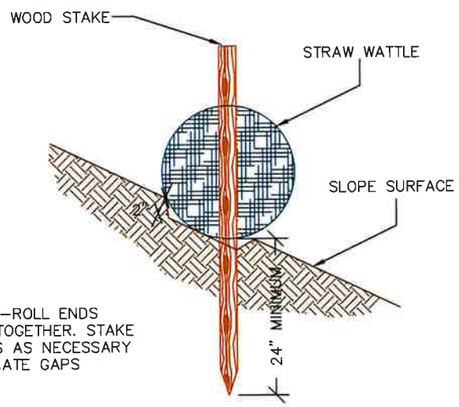

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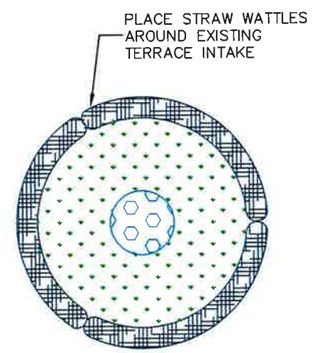

WATTLES AT INTAKE
(NOT TO SCALE)

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EROSION PLAN

PROJECT NO.	SHEET NO.
21-055	8 OF 8