

# Conceptual Design and Financial Analysis Report

---

City of Ames Resource and Recycling Center  
(R3C)

*Ames, Iowa*  
June 20, 2025

## Table of Contents

1	Introduction .....	3
2	Basis of Conceptual Design .....	3
2.1	Roads & Stormwater.....	3
2.2	Storage Areas.....	4
2.3	Buildings.....	4
2.4	Household Hazardous Materials .....	5
2.5	Office Area – Within the Transfer Building .....	5
2.6	Tipping Floor – Transfer Building .....	6
2.7	Scalehouse.....	7
2.8	Recycling Center Canopy .....	7
3	Financial Analysis .....	9
3.1	Assumptions.....	10
3.1.1	Waste Tonnage and Tipping Fee Assumptions.....	10
3.1.2	Revenue Assumptions .....	11
3.1.3	Cost Assumptions.....	12
3.1.4	Reserve Fund Assumptions .....	14
3.2	Rate Model Methodology.....	15
3.3	Results .....	15

## Figures

Figure 1: Reserve Fund Balance, \$ millions .....	15
Figure 2: Net Revenue Requirement Calculation .....	15
Figure 3: MSW Tipping Fee Projections (\$/ton).....	16

## Tables

Table 1: City of Ames’ Waste Tonnage by Source in 2024.....	10
Table 2: 2020 Census Population and Population Growth Rate .....	11
Table 3: City of Ames Waste Management Facility Cost Centers.....	13

## **Appendices**

Appendix A

Appendix B

Appendix C

Conceptual Layouts

Calculations

Engineer Cost Estimate

# 1 Introduction

Enclosed please find a technical report regarding the size and space requirements of the Ames Resource Recovery and Recycling Center (R3C). This memorandum summarizes the spacing needs and assumptions to be used in the development of the conceptual design for the R3C: roads, buildings, waste drop-off areas, and recycling area. A financial analysis follows the basis of conceptual design and covers the assumptions, methodology and results used to estimate the appropriate tipping fee required for the R3C center.

The conceptual design is subject to change during the detailed design phase of this project based on additional needs identified, or site spacing requirements with grading. The intent of this document is to support a detailed financial model and act as a decision-making tool through bidding and construction of the R3C. Financials may change with receipt of bids and should be re-evaluated once bids are received.

## 2 Basis of Conceptual Design

HDR met with the City of Ames on May 15, 2025 to kick off this project and discuss the Freel Drive property. Following this meeting, HDR has developed a site layout to incorporate the City's comments and accommodate the needs of operations. Several follow-up calls and teams meetings has resulted in the conceptual design attached to this document. The parameters utilized are detailed in the sections below and the attached calculations.

### 2.1 Roads & Stormwater

Base road assumptions:

- Loading Docks & roads to the loading docks must accommodate up to a WB-67 (53' trailer, largest in the AASHTO Green Book).
- Minimum number of loading docks: one (1).
- Minimum number of roll-offs: three (3) in transfer building
- Single Lane roads to be a minimum of 12-ft wide (wider at turns to account for turning radii)
- Two-way roads to be a minimum of 24-ft wide (wider at turns to account for turning radii).
- Maximum road grade: 6%.
- Entrance/exit driveway will not require a turn lane.
- Access control: Site is anticipated to include perimeter fencing, and several areas where a gate or chain is utilized to control access:
  - Equipment storage area
  - Scales (gate arms or lights)
  - South parking lot exit (bus only)
  - South entrance (operations/fueling only)

Base stormwater assumptions:

- Stormwater storage needed will be approximately 3.1-acre feet (per City of Ames correspondence)
- About 1.5-acres of storage is identified on the conceptual layout. With an average depth of 2'-3', with a foot of freeboard and/or active storage, it is anticipated that adequate stormwater storage can be achieved. Small additional areas have been reserved on the perimeter of the site for conveyance during detailed design.
- The site is relatively flat, however if stormwater discharge is required to be conveyed to the west (towards the road), project may require storm sewer with a lift station.
- Yard waste area is assumed to be segregated from the site stormwater and connected to city sewer. If permitting allows, stormwater infrastructure will be used for this instead.

## 2.2 Storage Areas

Base Assumptions:

- Equipment storage area may include transfer trailers
- Yard Waste storage area will not include active composting windrows based on spacing requirements and current tonnage received as yard waste. Figure 1 below shows this general concept, a static pile will be utilized instead, where yard waste will be stored until hauled to a composting operation, or until material is chipped and utilized elsewhere.

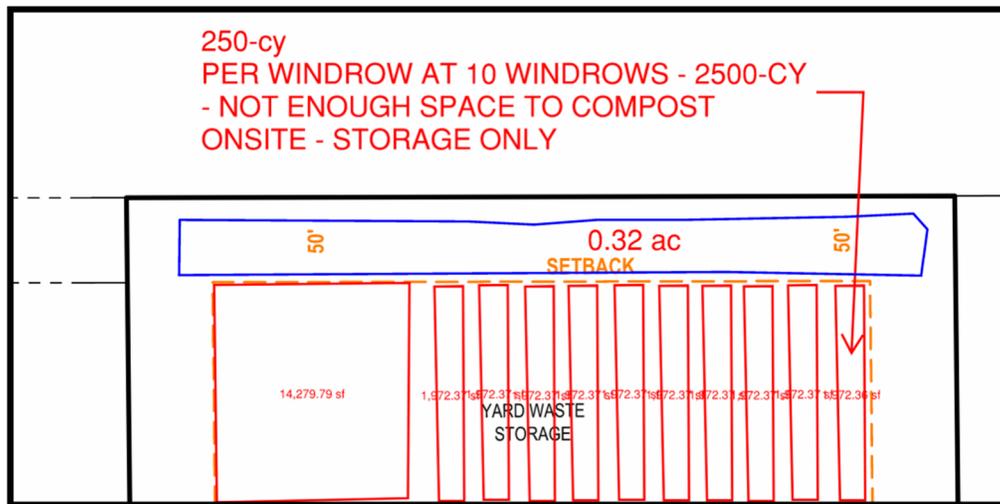


Figure 1: Yard waste area – Suitable for static pile, not large enough for typical compost windrows (more intensive operation would be needed)

- Fueling area will be accessible from the equipment storage area and may be used by other departments
- Additional glass, metals, and/or tire storage may be located between the roll-off bays as shown on the conceptual layout.

## 2.3 Buildings

Base Assumptions:

- No septic fields will be used – building will connect to sanitary sewer.

- Buildings will be pre-engineered metal buildings.
- Assume setbacks will apply from the property boundary for buildings. This site layout operates conservative interpretations of zoning setbacks (as shown on the drawings), that will be finalized during permitting of this project.
- See engineer's cost estimate for more information on cost assumptions.

## 2.4 Household Hazardous Materials

The HHM is currently operated from a small portable building. This approach is planned for the foreseeable future. Discussions with staff indicate that an additional portable building could be added, or a new building could be constructed in the future if needed for household hazardous materials. For this design, the existing small portable unit is relocated and used, while maintaining room to the north for future expansion.

## 2.5 Office Area – Within the Transfer Building

There are five offices required with this project. In this area, architectural minimums will apply for this type of building (i.e. architect may recommend specific dimensions for hallways or doors to standardize the design) – these are not the focus of this report, as they will have minor effects on the overall layout. Minimums are laid out below:

- Offices: 5-offices needed.
- Other rooms: Education room/conference room, breakroom, restrooms, utility room, server room.
- Parking Spaces: min. 10-parking spaces needed.
  - 1 per office (5)
  - 2 for Transfer
  - 3 visitor spaces

Spatial minimums are as follows (note concept drawing shows some spaces larger than this):

- Hallways: 4-ft width
- Offices: 10'x12'
- Operations Room: 10'x10'
- Breakroom: 12'x20'
  - This is currently slightly 'oversized' to account for potential storage area.
  - Consider cabinet/counter and storage closet combination. Discuss potential for lockers.
- Bathrooms with showers: 20'x12' total available
- Education/Conference room: 30'x40' – also oversized for potential storage area
- Maintenance area: 30'x40'

The office drawings have these minimums incorporated and are generally showing a 1-2 foot buffer above minimum dimensions to account for wall thicknesses and potential utility needs. Once the building design progresses, minimums will be checked to verify new interferences are not compromising the intended use of these areas. While offices themselves will incorporate

desks with drawers, shelves, and other storage to meet individual (and varying) needs of occupants, the building will incorporate storage solutions as well.

The wall between the transfer and the office area offers several opportunities to be explored (largely after this phase of the project and within the detailed design):

- 2-doors into the Transfer area
- Potential for viewing windows for education and break room
- Incorporation of storage walls
- Recognition/Award wall
- Educational placards 'history of waste and recycling in the City of Ames'

Storage walls offer significant storage that can vary from shelves to closet style storage area. Potential storage needs include the following:

- Educational materials
- Safety equipment
- Cleaning and maintenance supplies
- Office supplies/printer
- Coat closet

## 2.6 Tipping Floor – Transfer Building

The tipping floor and transfer area have many spatial requirements, which are represented on the conceptual drawings. These are briefly summarized below:

- Drop-off lane for commercial and residential traffic
- Tunnel for transfer trailers, with two trailer pits
- Roll-off container pits and access
- Loading dock with access to maintenance area
- Unshredded storage
- Shredded material storage
- Recycling (single stream) storage
  - Potential area for future baler: because space is at a premium within the transfer building, a recycling baler is earmarked for future expansion. Installation would require a 'lean-to' style expansion on the south side of the transfer building to house the baler. Cost estimates for the future baler are attached to this report for reference.

The loading pit, shredder, magnet, and two eddy current separators are included in the conceptual drawing and shown with approximate sizes and separation requirements. These may vary with detailed design, however, the space required is not anticipated to change significantly.

Sizing calculations are attached to this report detailing estimated tipping floor space for emergency use. While concrete blocks may allow for some storage on the tipping floor, it does

affect maneuverability of the space, and is generally not recommended for operations. Overall, the conceptual layout aims to maximize floorspace to the extent possible, but it is recognized that this area is space limited based on the overall site layout and project budget requirements.

## 2.7 Scalehouse

The scalehouse has relatively minimal space needs, and is estimated at about 8'x30' in size. It is anticipated that a formal layout will include a restroom and potential for one or two attendants, with windows for both inbound and outbound scales. The following minimum requirements were used for the conceptual layout:

- Window access to both inbound and outbound scale
- One bathroom
- One to two parking spots.
- Bypass lanes on both inbound and outbound
- Turning radius from transfer trailer trucks via Autodesk Civil 3D Autoturn

The scalehouse is an area of potential 'phased installation' with some opportunity for delayed costs if the City desires. The first opportunity is to install only the inbound scale, and install the outbound scale at a later date, as needed. In this case, the scalehouse, pavement, and inbound scale, to the extent possible, would be installed to facilitate the potential for a future outbound scale.

The second potential for phased installation is with the scalehouse itself. While it is highly desirable to have the scalehouse 'match' the facility, if costs do not allow for it, office trailers are very commonly used for scalehouses with only minor customization. At this point in time HDR is proceeding with the assumption that neither of these options will be needed, but it is worth noting that neither affects spacing in a significant way.

## 2.8 Recycling Center Canopy

Based on site data, it is anticipated that the current haul boxes will meet the site needs for the foreseeable future -however, it was noted that increased traffic is expected to this drop-off site with the new facility, and while the tons of recycled material may not be a large percentage of the material handled, it could make up a large percentage of the site traffic over time. This area is dictated more by traffic flow and space requirements in front of and around containers more than the volumes from the historic site data. Based on anticipated materials, space requirements are as follows:

1. Mixed Paper: 22'x8'
2. 2x Glass recycling box: 6'x4'
3. Tires: 20'x26.5'
4. Metals: 6'x4.5'
5. Oil, waste container: 6'x3'



Figure 2: Current Ames Recycling Center. Source: [City of Ames Recycling and Disposal](#)

6. Appliances: 16'x26.5'
7. Food Waste Diversion: 6'x3'
8. Clothing and Shoes 4'x4'
9. Cardboard: 22'x8'
10. Plastic: 22'x8'

To better accommodate the facility's recycling needs, an additional area—separate from the main canopy—will be designated specifically for recyclable materials that benefit from indoor storage and require a fee from the customer to recycle. This dedicated area will be within the transfer building. The following items will be collected within the transfer building:

1. Batteries
2. Fluorescent Lighting
3. TVs and Monitors

A critical aspect of the recycling center is its expandability. This area is currently shown with the ability to expand (with or without canopy extension as needed) directly south. Another aspect of this layout will be some avoidance of creating permanent 'bays' where spaces are locked in. Concrete blocks may be used to differentiate areas but allow for areas to expand or contract for specific materials if needed.

### 3 Financial Analysis

The financial analysis includes examining the City's current financial condition and added expenditures from the new R3C facility expected to start operation in 2028. A Rate Model that incorporates future capital costs, maintenance costs, operating costs, and revenues is used to identify the appropriate tipping fees for the new facility to be self-sufficient, while providing working capital. All capital and operating costs are adjusted by a cost allocation factor of 90 percent to capture the MSW portion of expenditures, with the exception of maintenance and replacement costs of existing equipment (full inclusion); hauling and disposal costs of MSW (full inclusion); hauling and disposal costs of single-stream recycling (excluded from MSW rate analysis). The remaining 10 percent of costs are assumed to be borne by the single-stream recycling service, which will be priced to be cost-neutral.

The key findings of this analysis include the following:

- Factoring in the MSW cost adjustment factor, the capital cost of the new waste management facility, which was estimated at \$10.8 million. It is assumed to be financed through a 20-year debt at a 5-percent interest rate, resulting in a \$870,000 installment per year. Capital costs for the initial purchase of additional fleet equipment were estimated at \$2.1 million, which is financed over a 10-year period with an annual debt service payment of \$273,000. Replacements for the new fleet required is also assumed to be financed with debt service.
- The analysis builds in prudent reserve funds to cover at least 20 percent of operating expenses to ensure there is adequate funding in the system.
- Over the 20-year analysis period, the net revenue requirement is \$73.1 million in 2026 dollars.
- The municipal solid waste (MSW) tipping fee needs to increase from \$75 per ton to \$95 per ton in 2027 to cover capital costs and operating expenditures, assuming an annual increase in tipping fees of 2.75 percent.

### 3.1 Assumptions

Assumptions used in the model include information provided by the City, HDR and calculated values from historical financial and operations data. The model uses the City’s existing expenditures, revenues, waste tonnages, and sales of recoverable materials and other services, which were modified in anticipation of the service changes from the new facility as a basis to evaluate an annual net cash flow. The estimated future revenue and costs were used to calculate the net present value (NPV) of cash flows for the City, using a nominal discount rate of 5 percent, based on the City’s cost of debt. Discounting converts revenue and costs from future years to 2026-dollar terms to account for the time value of money. The Study determines the tipping fee necessary for the Municipal Solid Waste stream to break even, after factoring the City’s expenditures and other revenues earned. The analysis spans over the 20-year study period beginning in 2028, the opening year of the City’s new waste management facility.

#### 3.1.1 Waste Tonnage and Tipping Fee Assumptions

With the construction of the new waste campus, in addition to the Municipal Solid Waste (MSW) currently handled by the resource recovery facility, the extra capacity of the campus can capture both additional MSW that was previously diverted and some light Construction & Demolition (C&D) tonnages. The current tipping fees are set at \$75 per ton for MSW, and the model currently assumes C&D tipping fees will be set at \$120 in 2027. Both fees are expected to increase annually by 2.75 percent throughout the 20-year study period.

Waste tonnages collected at the City’s waste management facility are projected using the 2024 fiscal year data provided by the City, which are shown in 2024 terms in Table 1.

**Table 1: City of Ames’ Waste Tonnage by Source in 2024**

Variable	Unit	Value	Source
Tonnage (2024)	tons	65,152	Calculated
Non-Scale Refuse (Car Line)	tons	1,457	Arnold O. Chantland Resource Recovery System Annual Report 2024.
Commercial Haulers/Contractors/Govt	tons	37,882	Arnold O. Chantland Resource Recovery System Annual Report 2024.
Iowa State University	tons	2,909	Arnold O. Chantland Resource Recovery System Annual Report 2024.
Directly to Landfill	tons	11,404	Arnold O. Chantland Resource Recovery System Annual Report 2024.
Previously Diverted Commercial Waste	tons	7,000	City of Ames
Construction and Demolition	tons	4,500	City of Ames
Tonnage (2024)	tons	65,152	Calculated

Except for ISU tonnage growth, which have assumed population growth rate of zero, tonnage growth rates are assumed to coincide with population growth. A weighted population growth rate based on non-ISU population growth was calculated based on the assumptions shown in Table 2.

**Table 2: 2020 Census Population and Population Growth Rate**

Variable	Unit	Value	Source
Population (2020 Census)			
Ames	persons	56,427	Arnold O. Chantland Resource Recovery System Annual Report 2024. Based on the 2020 U.S. Census.
ISU	persons	10,000	
Story County	persons	8,965	
Nevada	persons	6,925	
Huxley	persons	4,244	
Story City	persons	3,352	
Slater	persons	1,543	
Roland	persons	1,362	
Gilbert	persons	1,211	
Maxwell	persons	859	
Cambridge	persons	827	
Zearing	persons	528	
McCallsburg	persons	353	
Kelley	persons	304	
Population Growth Rate (Ames 2020-2039)	%/year	1.5%	City of Ames
Population Growth Rate (Ames 2040-2050)	%/year	0.19%	Assume Ames Long Term Growth Rate Equal to Iowa Population Growth Rate
Population Growth Rate (ISU 2020-2039)	%/year	0.0%	Placeholder
Population Growth Rate (ISU 2040-2050)	%/year	0.0%	Placeholder
Population Growth Rate (Rest of Iowa 2020-2050)	%/period	6.0%	IowaDOT State Transportation Plan: Iowa in Motion 2025, Chp 2.
Population Growth Rate (Rest of Iowa 2020-2039)	%/year	0.19%	Calculated
Population Growth Rate (Rest of Iowa 2040-2050)	%/year	0.19%	Calculated

Resultantly, all non-ISU tonnages are assumed to grow at a rate of 1.08 percent up to 2039, and 0.19 percent from 2040 onwards.

The capacity of the new campus is assumed to be 78,715 tons. With the current tonnage projections, there will be no diversion of waste, as the facility is sized to capture all incoming waste during the study period.

### 3.1.2 Revenue Assumptions

The model forecasts the City’s future revenues based on historical trial balances from the 2024 fiscal year, which are then extrapolated to future years using escalation rates by revenue type. Revenues are broadly categorized into tipping fee and non-tipping fee revenue. Tipping fees revenues includes Municipal Solid Waste (MSW) stream and Construction and Demolition (C&D) waste stream.

Non-tipping fee revenues includes the following:

- per-capita revenue
- public fees from the city for operating the waste management facility
- service agreement revenue from the Iowa State University (ISU)
- service agreement revenues from other contracts
- sales revenue from recovered materials

Per-capita revenue is fixed at \$10.50 per capita and is applied to the population of Iowa excluding the ISU residents throughout the 20-year study period. As population figures for each locale are revised every census year, the population projection used in the calculation of the census is only revised every year ending with the digit 1.

Public fees and service agreement revenues from non-ISU contracts are extrapolated based on the 2024 fiscal year data, adjusted for the population growth. In addition to the population escalation, beginning in 2027, the model applies a one-time increase in the MSW tipping fee to the ISU service agreement revenue, reflecting a contract revision following the opening of the waste campus. As the tipping fee increase occurs a year before the facility opening, incremental revenues increases are captured for the year 2027 to account for the impacts of the rate increase to the net revenue requirement.

The model considers three revenue sources from sales of recovered materials. The model assumes that the campus can recover 2.5 percent of metals from processing existing MSW, 96 percent of which are ferrous metals sold at \$71 per ton<sup>1</sup>, while the remaining 4 percent are non-ferrous metals sold at \$1,360 per ton<sup>2</sup>. Additional recycling programs can be inputted in the “Additional Recycling Growth (Other Recycling Programs)” section of the *Inputs.General* sheet, where the start year, tonnage, net revenue, and respective growth rates can be used to estimate additional revenues from resource recovery.

Further, a provision to enter additional revenues streams can be found at the end of the *Calculations.Revenue* sheet, where projected revenues for each year in the study period can be specified.

### 3.1.3 Cost Assumptions

The model forecasts the City’s future costs based on historical trial balances from the 2024 fiscal year (FY24), which was then extrapolated to future years using applicable escalation rates. As per engineering estimates, the new R3C facility is not expected to incur additional labor costs. All capital and operating costs are adjusted by a cost allocation factor of 90 percent to capture the MSW portion of expenditures, with the exception of maintenance and

---

<sup>1</sup> Based on the average of front end (\$72/ton) and processed (\$70/ton) ferrous metals pricing provided by the City of Ames, as of May 2025. While pricing is subject to change from fluctuations in the secondary metal market, we have assumed that pricing remains constant in the analysis.

<sup>2</sup> Based on CIMCO pricing for copper, brass, and aluminum mix pulled out with the Eddy Current Separator (ECS), provided by the City of Ames as of May 2025. While pricing is subject to change from fluctuations in the secondary metal market, we have assumed that pricing remains constant in the analysis.

replacement costs of existing equipment (full inclusion); hauling and disposal costs of MSW (full inclusion); hauling and disposal costs of single-stream recycling (excluded from MSW rate analysis).

Additional details on the above costs, along with payment terms, timing and escalation can be found in the corresponding sections below.

**3.1.3.1 OPERATING COSTS**

Cost centers are identified for the City’s operating costs in the model as listed below in Table 3. The analysis assumes an annual inflation rate of 3.5 percent for employee compensation (Personal Services as part of the Process Operations cost center) and 2.0 percent for other operating costs.

**Table 3: City of Ames Waste Management Facility Cost Centers**

Cost Centers	
Process Operations	Recycling Program
Hazardous Materials Disposal	Reject Disposal
Food Waste Diversion	Yard Waste Management
Glass Reduction Program	Landfill

The 2024 fiscal year trial balance data are used to forecast all future operating costs, except for tipping fees for rejected waste at Carrol County’s landfill, and transportation costs for rejected waste disposal. These costs are estimated using data provided by the City and information from online sources.

Any waste rejected by the SSR facility redirected to Carrol County’s waste facility at a tipping fee of \$34.6 per ton of waste. This fee is expected to increase at a 2% annual escalation rate, beginning in 2028. Transportation costs for the recovered and rejected waste are also estimated based on a per-mile vehicle operating cost and annual vehicle miles traveled. The vehicle operating cost is estimated at \$1.07 per mile based on the U.S. DOT 2025 Benefit Cost Analysis guidance<sup>3</sup>, along with fuel economy and fuel price data provided by the City. Annual vehicle miles traveled are tracked separately for rejected waste and recovered waste, calculated based on waste tonnage, truck capacity, and roundtrip travel distances. Roundtrip distance is provided by the city and is estimated at 146 miles for the Carroll County landfill. Truck capacity is estimate at 25 tons per truck for rejected waste.

**3.1.3.2 CAPITAL COSTS**

The model incorporates three main sources of capital costs: planned capital spending on the new waste management facility and the scheduled fleet replacements for the City’s trucks and trailers.

Accounting for the MSW adjustment factor, the capital investment of the new facility is estimated at \$10.8 million, which will be financed through a 20-year debt at a 5% interest rate. Beginning in 2028, the City will make annual debt service payments of \$0.9 million toward the MSW

<sup>3</sup> [Benefit Cost Analysis Guidance 2025 Update II \(Final\).pdf](#)

portion of the loan. Additionally, the model accounts for land purchases and preventive maintenance cost for the new facility, with an annual inflation rate of 2.0 percent. Land purchases are split into two contracts. The MSW portion of the land contract for 306/312/318 Freel Drive is purchased by cash amounting to \$243,000 in 2026. The purchase of 220/400 Freel Drive has a principal of \$585,000 is assumed to be financed with the same terms and interest rates as the facility, amounting to annual installments of \$47,000 over a 20-year period.

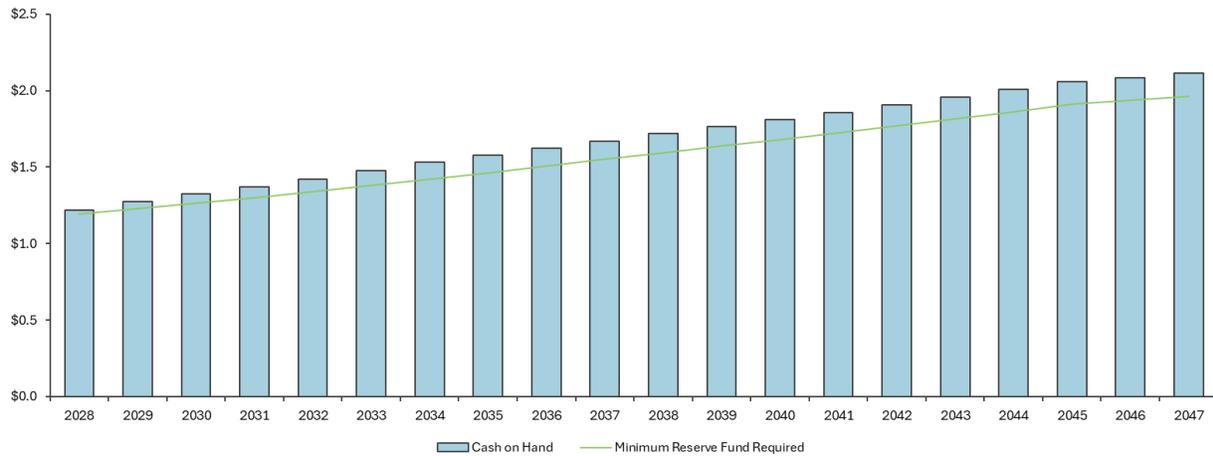
Additional transfer trucks and trailers are required at the time of opening for the R3C facility, which are financed using debt, with a 10-year lifecycle for each set or replacements. Initially, the City is projected to take a debt totaling \$2.1 million for the MSW portion of the additional fleet purchase upon the opening of the facility, amounting to annual installments of \$273,000 between 2028 and 2037. After each lifecycle (10 years), equipment costs are updated at the end of every lifecycle during renewal, at an assumed annual inflation rate of 3 percent, resulting in annual installments of \$367,000 between 2038 to 2047 in the study for the next set of additional transfer trucks and trailers.

As a sensitivity to the current analysis, there is a provision to allow for escrow payments to be made in lieu of financing for equipment replacements through a toggle. In this option, it can be specified whether equipment purchases used outside of study period are analyzed or not. These can all be found under the “Equipment Costs” section of the *Inputs.General* sheet. .

### **3.1.4 Reserve Fund Assumptions**

The analysis examines the impact of maintaining adequate capital reserves in the City’s prudent reserve fund. According to the City’s projections, the reserve fund is expected to have a starting balance of \$1.1 million at the end of the 2026 fiscal year. The fund is designed to maintain a minimum balance requirement of 20% of the City’s three-year rolling average operating expenses. Annual contributions are set at 20% of the minimum balance requirement, allowing the fund to reach its target level within five years. Figure 1 shows the projected reserve fund balance over the study period. The reserve fund balance exceeds the minimum requirement from the facility opening year (2028) and remains above it for the remainder of the study period.

**Figure 1: Reserve Fund Balance, \$ millions**



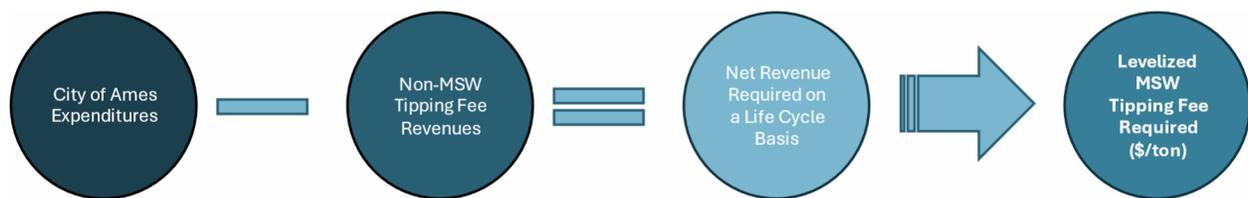
### 3.2 Rate Model Methodology

The Study evaluates the tipping fees needed to meet anticipated costs over the 20-year study period, based on historical expenses and revenues, calculated net revenue requirement, and current tipping fees.

The process involves constructing the net revenue requirement, which captures the total expenditures (costs + contributions to reserve fund) less non-tipping fee revenues. The resulting value is the total amount that needs to be covered by tipping fees. The model then calculates the tipping fee that meets the net revenue requirement.

Figure 2 below provides an illustration of the process.

**Figure 2: Net Revenue Requirement Calculation**



The model takes the net revenue requirement and using the growth rates applied for the waste tonnage and the tipping fees escalation rate, calculates a tipping fee to achieve financial breakeven in the study period.

### 3.3 Results

The model projects that over the 20-year study period, the City’s total expenditures will amount to \$103.9 million in 2026 dollars, while the total revenues, excluding the MSW tipping fee revenue, reach \$30.9 million. This results in a net revenue requirement of \$73.1 million, meaning the City must generate this amount through the MSW tipping fees revenue to break even with the expenditures.

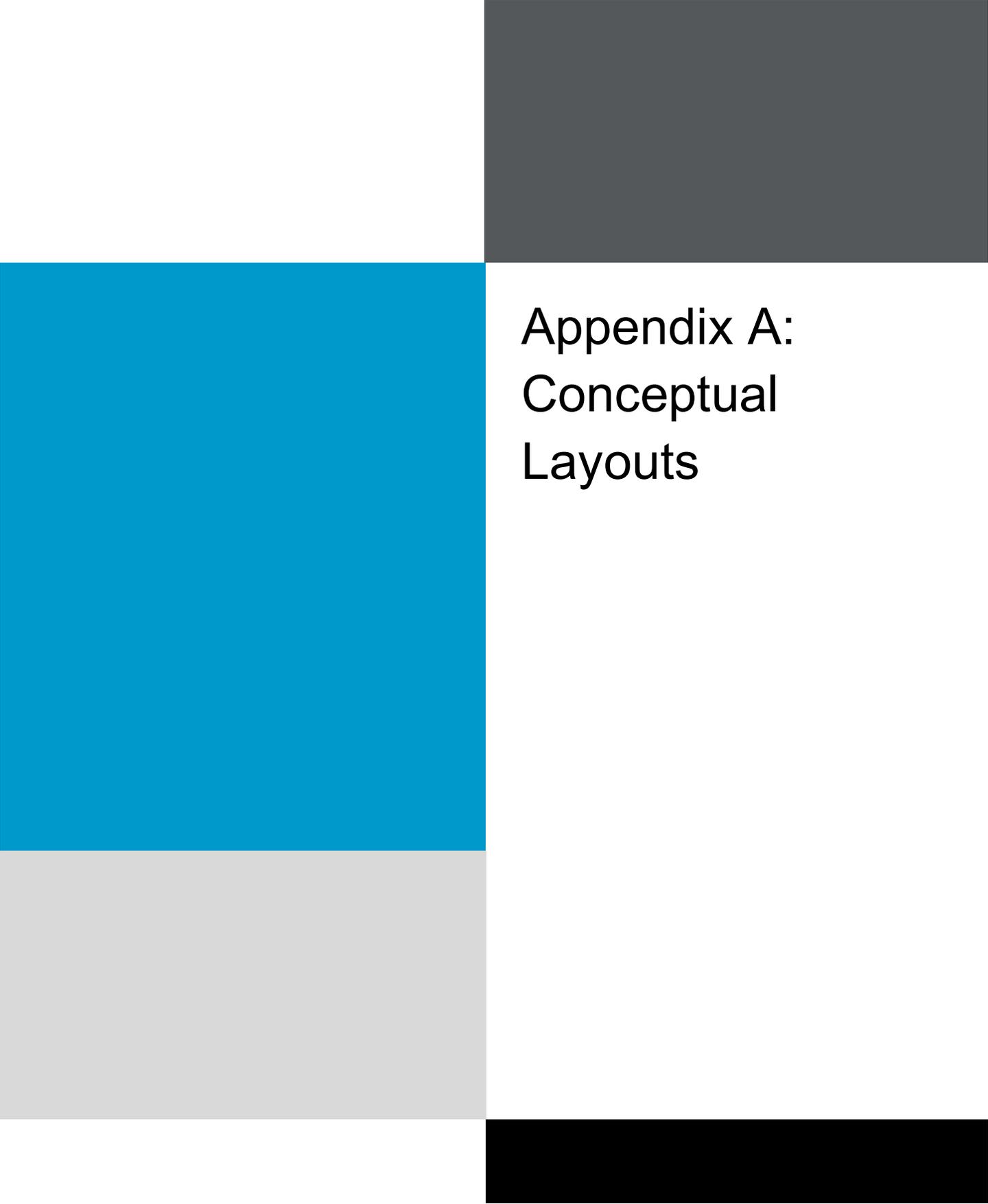
Based on the net revenue requirement and the waste tonnage projections, the model calculates the break-even tipping fee for the City’s MSW stream at \$95.11 per ton in 2027. Figure 3 illustrates the projections of MSW tipping fee over the study period. The tipping fee is designed to increase 2.75 percent annually. Following the escalation schedule, the tipping fee reaches as high as \$164 per ton in 2047.

The change in MSW tipping fee is mainly derived from the additional debt service payments incurred for facility construction, which increase the net revenue requirement by \$10.3 million in discounted 2026 dollars, or a 14 percent increase in tip fees. In addition, the debt and escrow payments associated with the purchase of additional trucks and trailers for the R3C facility increased the net revenue requirement by approximately \$3.7 million (5 percent), contributing to a further increase in tip fees. The majority of the remaining increase in tip fees is driven by salary escalation and general inflation.

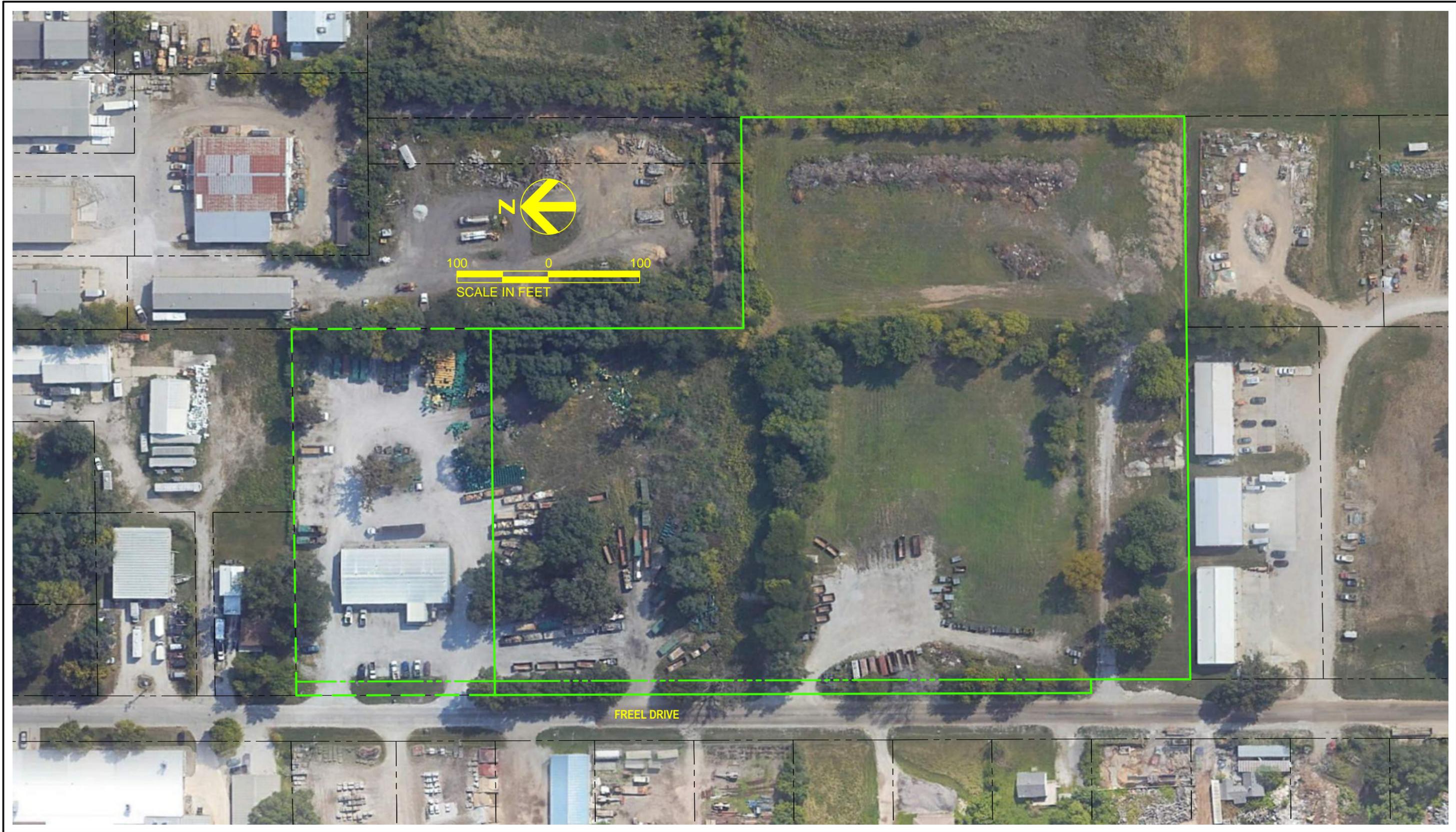
**Figure 3: MSW Tipping Fee Projections (\$/ton)**



The analysis relies in whole or in part, on data and information provided by the Client and third parties, which information has not been independently verified by HDR and which HDR has assumed to be accurate, complete, reliable, and current. Therefore, while HDR has utilized its best efforts in preparing this file, HDR does not warrant or guarantee the conclusions set forth in this report which are dependent or based upon data, information or statements supplied by third parties or the client. Ongoing rate analyses are highly recommended to determine appropriate and equitable strategies for future rate adjustments. In addition, rates should be re-evaluated for long term viability on a yearly basis.

The page features several large, solid-colored rectangular blocks. A dark gray block is at the top right. A large blue block is on the left side, extending from the top to the middle of the page. A light gray block is at the bottom left, extending from the middle of the page to the bottom. A black block is at the bottom right, extending from the middle of the page to the bottom. The text 'Appendix A: Conceptual Layouts' is positioned to the right of the blue block.

# Appendix A: Conceptual Layouts



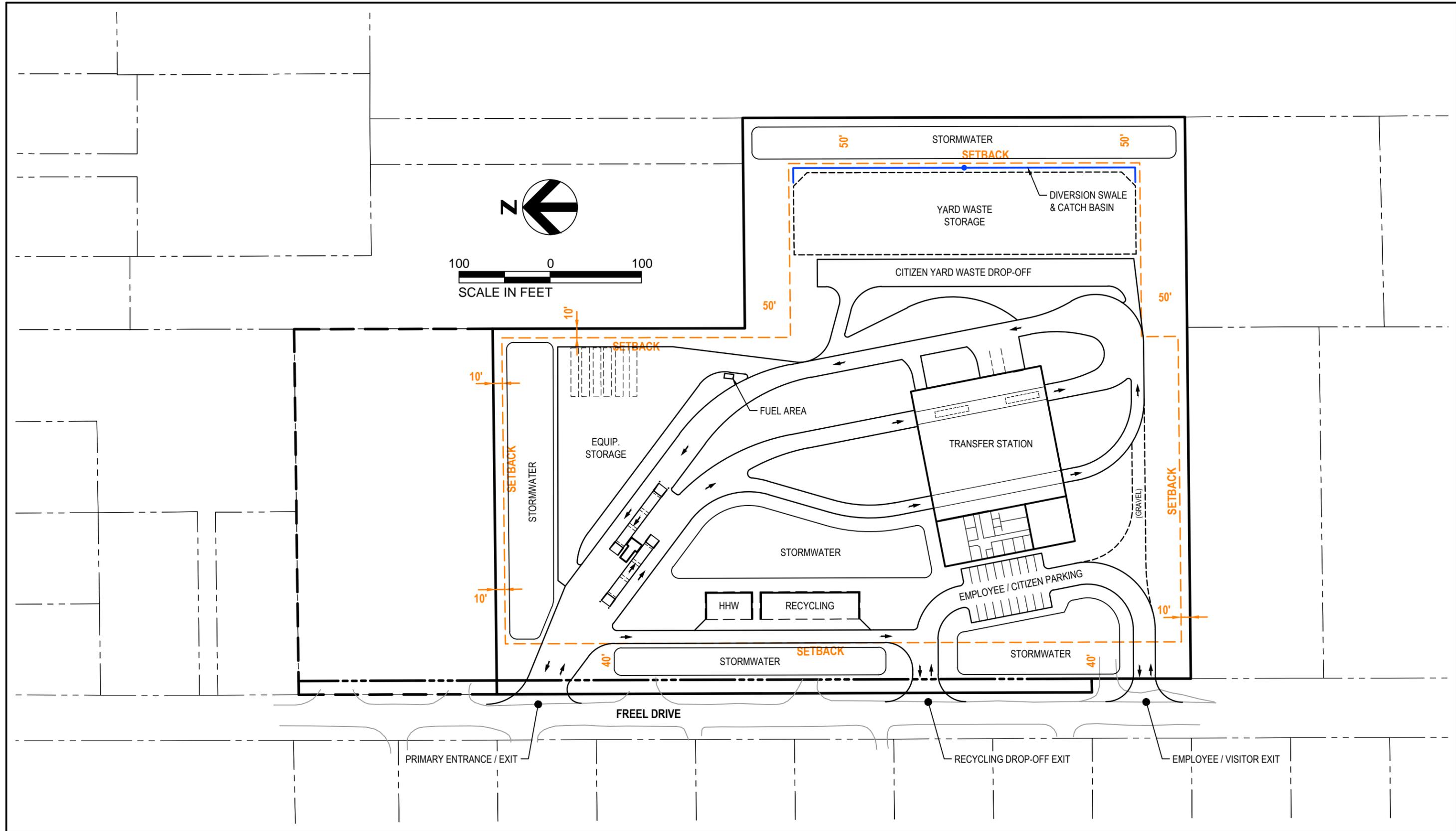
**CITY OF AMES FREEL DRIVE RESOURCE  
RECOVERY AND RECYCLING CAMPUS**

SITE PROPERTY

DATE  
MAY 2025

FIGURE  
0

C:\pwworking\central01\45143745\Concept Site Layout\_05.dwg, Site Layout, 6/16/2025 1:24:26 PM, MBICKFORD



DIMENSIONS ARE APPROXIMATE  
CONCEPTUAL DESIGN  
NOT FOR CONSTRUCTION



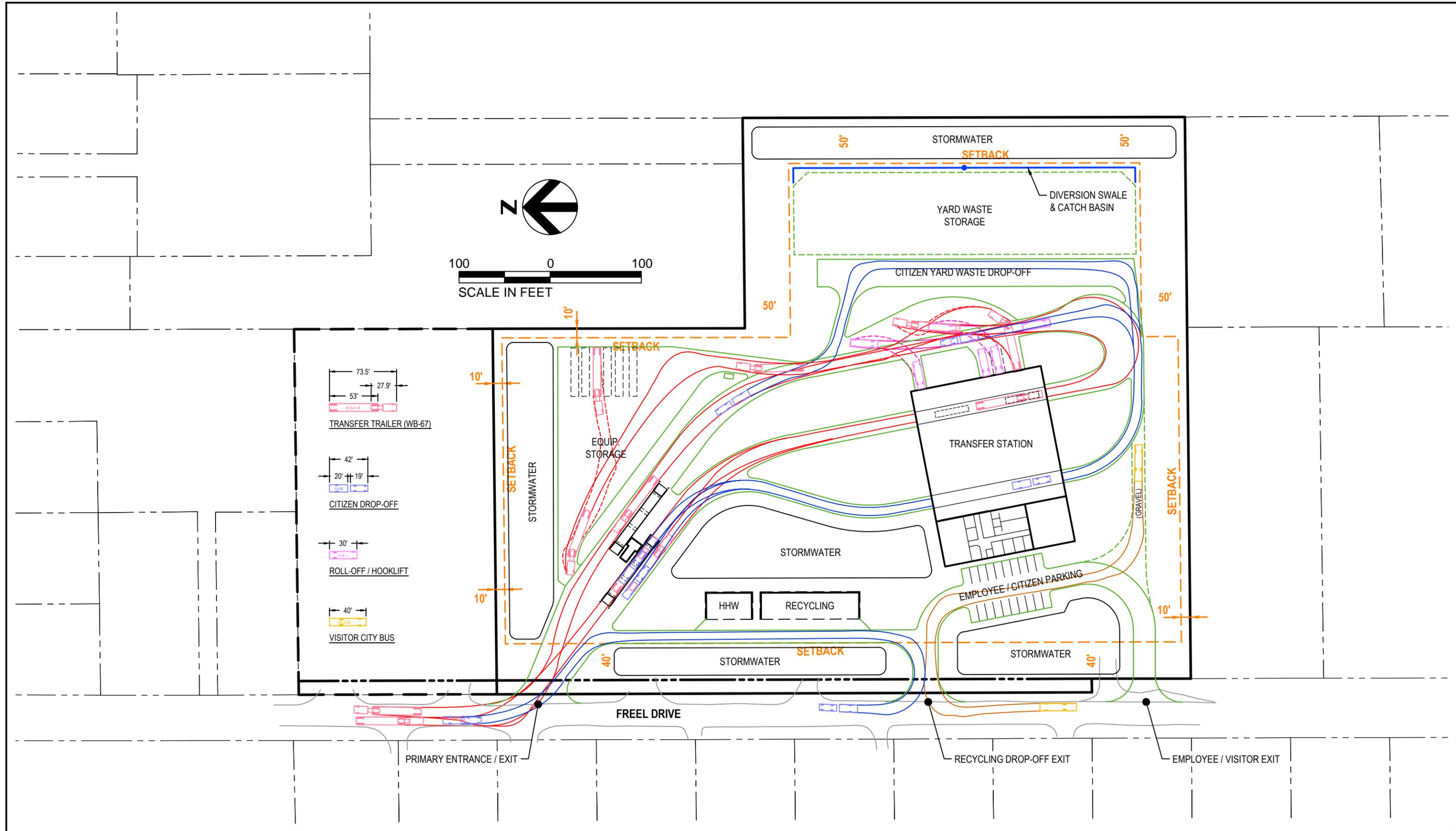
**CITY OF AMES FREEL DRIVE RESOURCE  
RECOVERY AND RECYCLING CAMPUS**

CONCEPTUAL SITE LAYOUT

DATE  
JUNE 2025

FIGURE

C:\pwworking\central01\45143745\Concept Site Layout\_05.dwg, Vehicle Movements, 6/16/2025 1:26:38 PM, MBICKFORD



DIMENSIONS ARE APPROXIMATE  
CONCEPTUAL DESIGN  
NOT FOR CONSTRUCTION

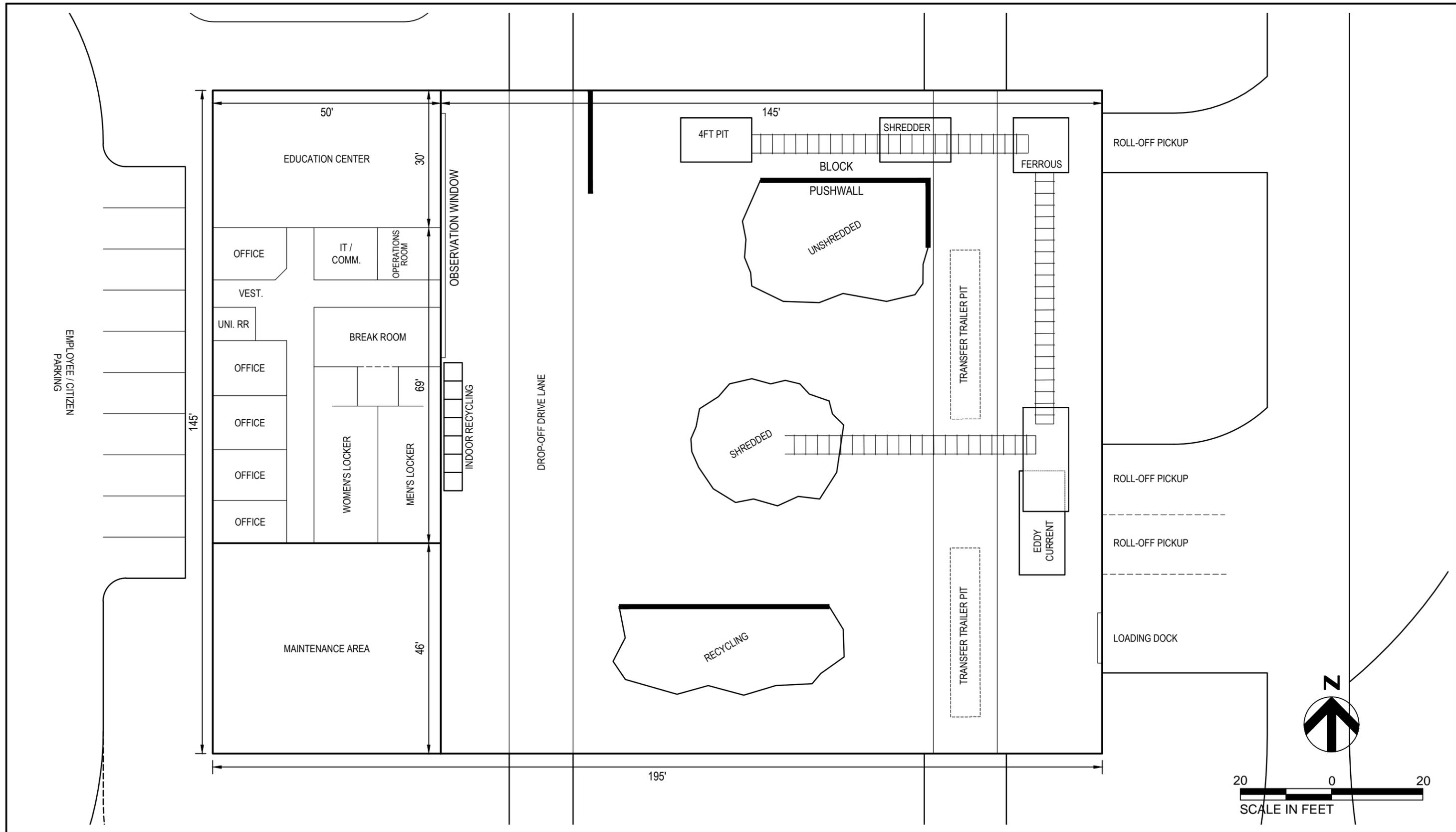


**CITY OF AMES FREEL DRIVE RESOURCE  
RECOVERY AND RECYCLING CAMPUS**

SITE LAYOUT AND VEHICLE MOVEMENTS

DATE  
JUNE 2025

FIGURE  
2



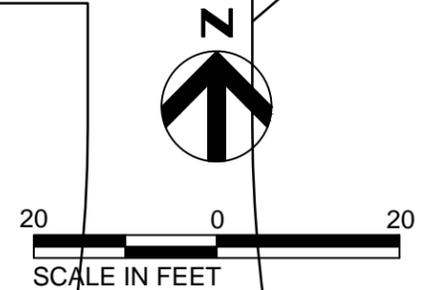
DIMENSIONS ARE APPROXIMATE  
CONCEPTUAL DESIGN  
NOT FOR CONSTRUCTION

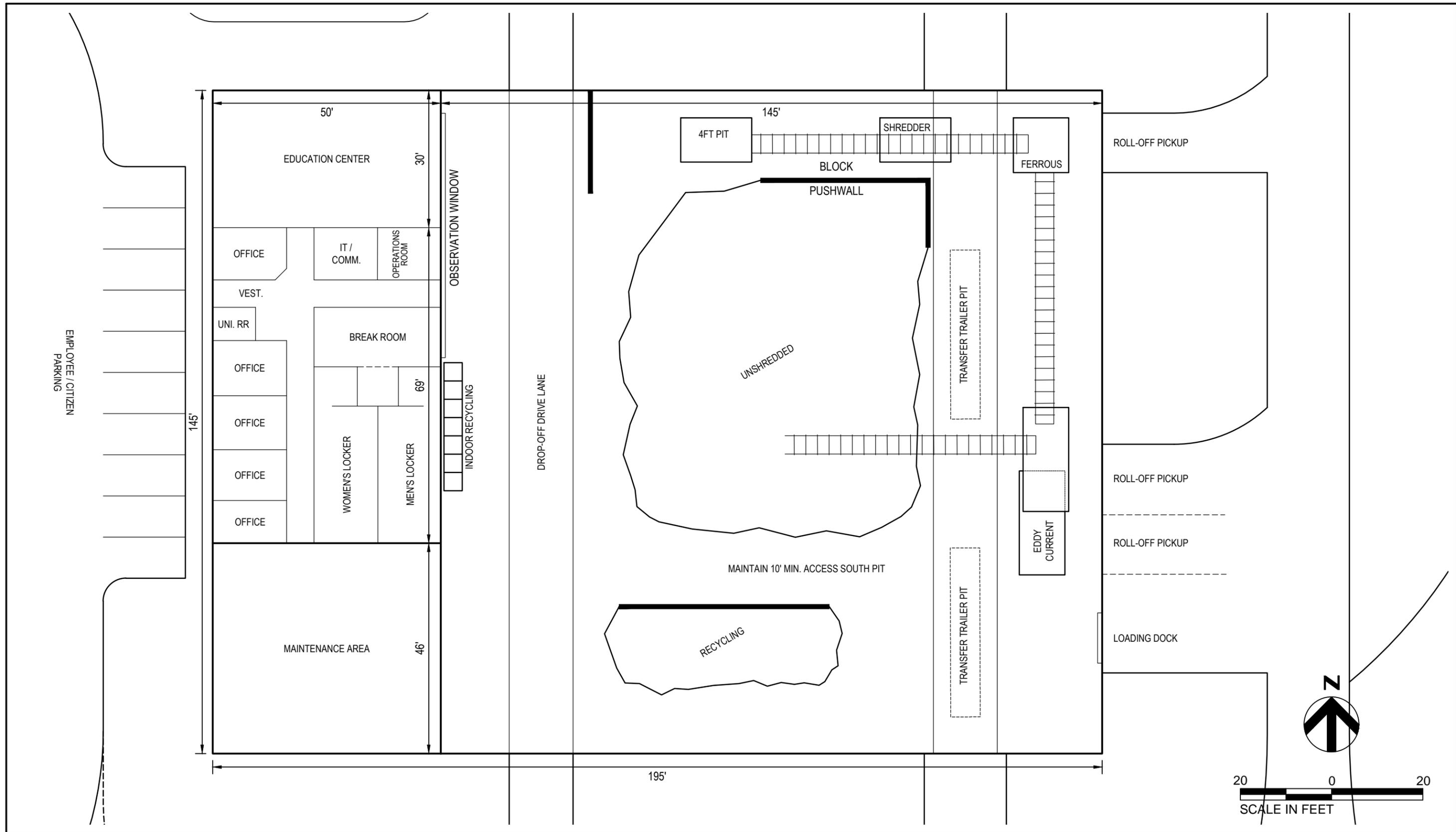


**CITY OF AMES FREEL DRIVE RESOURCE  
RECOVERY AND RECYCLING CAMPUS**

CONCEPTUAL TRANSFER STATION LAYOUT

DATE  
MAY 2025  
FIGURE  
3A





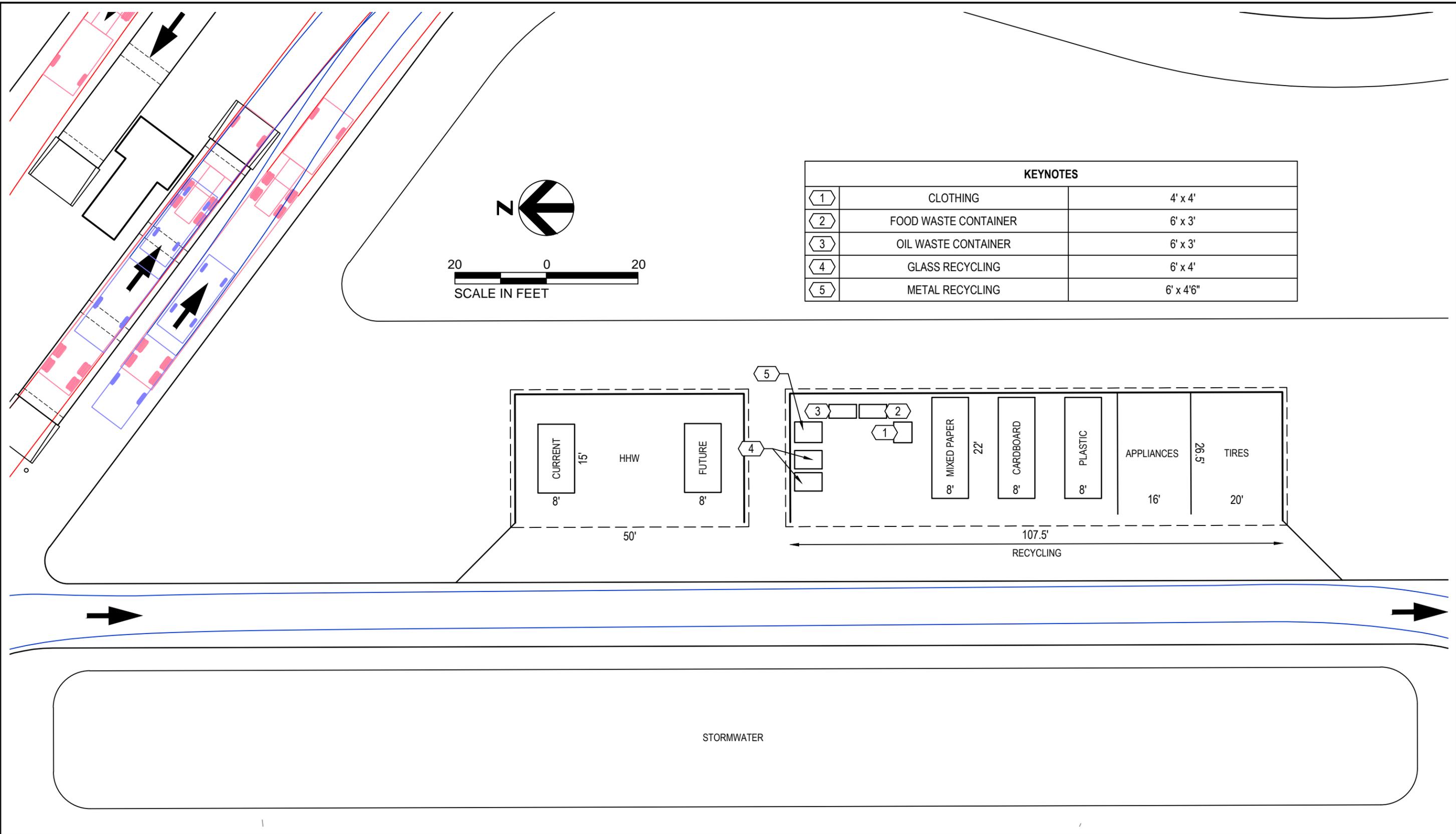
DIMENSIONS ARE APPROXIMATE  
CONCEPTUAL DESIGN  
NOT FOR CONSTRUCTION



**CITY OF AMES FREEL DRIVE RESOURCE  
RECOVERY AND RECYCLING CAMPUS**

CONCEPTUAL TRANSFER STATION LAYOUT

DATE  
MAY 2025  
FIGURE  
3B



KEYNOTES		
①	CLOTHING	4' x 4'
②	FOOD WASTE CONTAINER	6' x 3'
③	OIL WASTE CONTAINER	6' x 3'
④	GLASS RECYCLING	6' x 4'
⑤	METAL RECYCLING	6' x 4'6"

DIMENSIONS ARE APPROXIMATE  
 CONCEPTUAL DESIGN  
 NOT FOR CONSTRUCTION



**CITY OF AMES FREEL DRIVE RESOURCE  
 RECOVERY AND RECYCLING CAMPUS**

CONCEPTUAL SITE LAYOUT

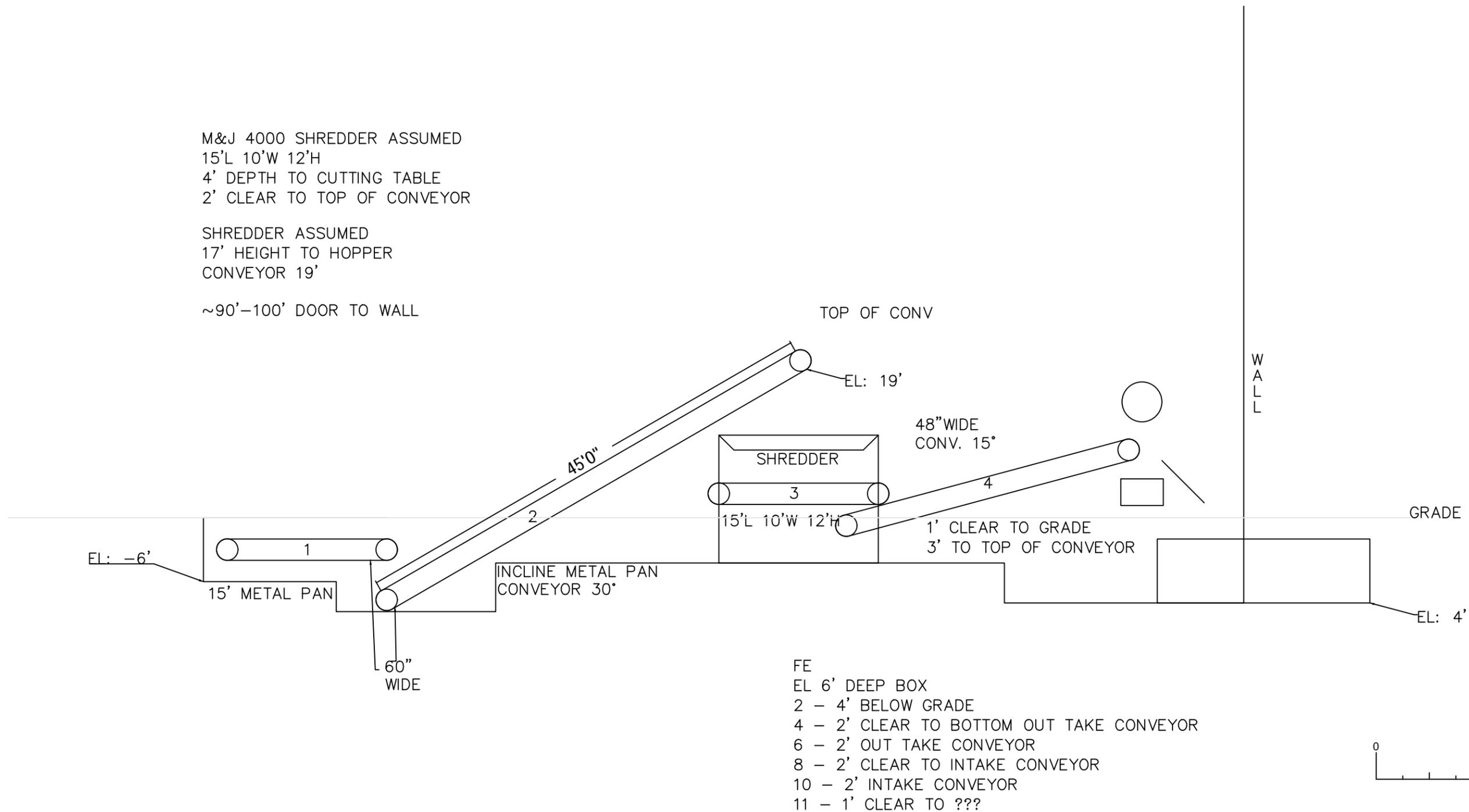
DATE  
 JUN 2025  
 FIGURE  
 4

C:\Users\CNEVILLE\Desktop\MRF CAD\MRF Sketch Digitization - Shredder.dwg, Shredder Layout, 6/13/2025 11:53:16 AM, CNEVILLE

M&J 4000 SHREDDER ASSUMED  
15'L 10'W 12'H  
4' DEPTH TO CUTTING TABLE  
2' CLEAR TO TOP OF CONVEYOR

SHREDDER ASSUMED  
17' HEIGHT TO HOPPER  
CONVEYOR 19'

~90'-100' DOOR TO WALL



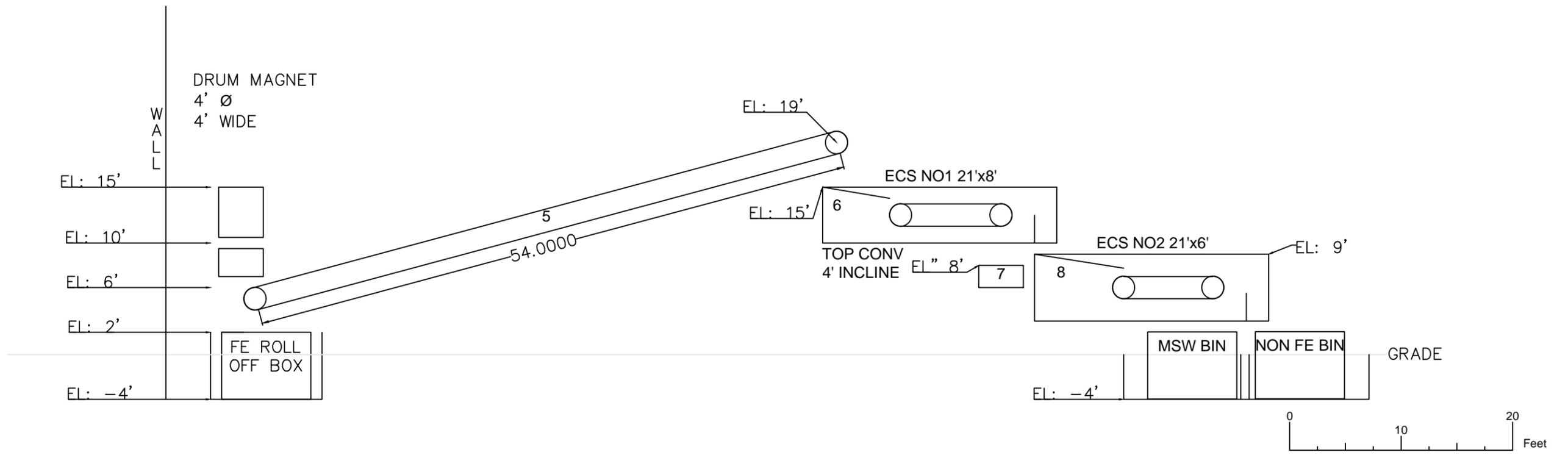
DIMENSIONS ARE APPROXIMATE  
CONCEPTUAL DESIGN  
NOT FOR CONSTRUCTION



CITY OF AMES FREEL DRIVE RESOURCE  
RECOVERY AND RECYCLING CAMPUS

CONCEPTUAL SHREDDER LAYOUT

DATE  
JUNE 2025  
FIGURE  
1



DIMENSIONS ARE APPROXIMATE  
CONCEPTUAL DESIGN  
NOT FOR CONSTRUCTION

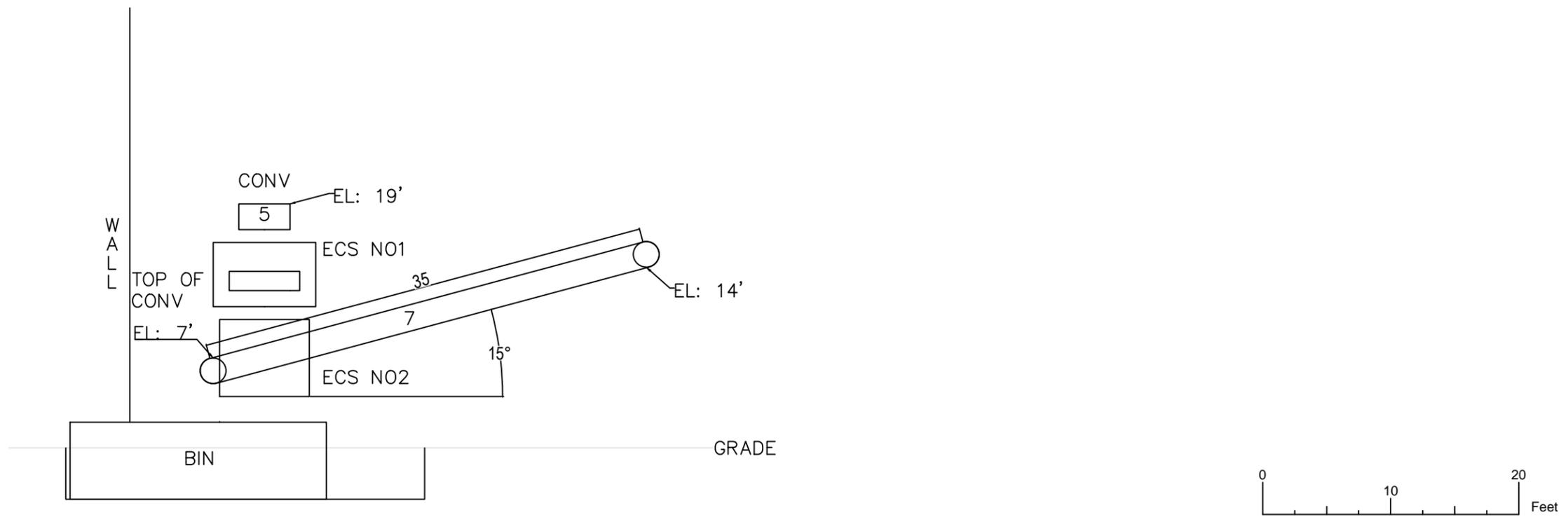


CITY OF AMES FREEL DRIVE RESOURCE  
RECOVERY AND RECYCLING CAMPUS

CONCEPTUAL DRUM MAGNET LAYOUT

DATE  
JUNE 2025

FIGURE  
2



DIMENSIONS ARE APPROXIMATE  
CONCEPTUAL DESIGN  
NOT FOR CONSTRUCTION

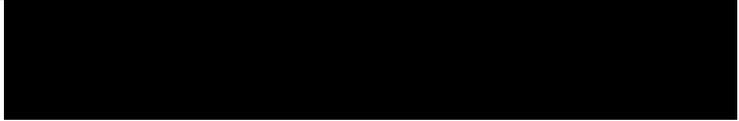
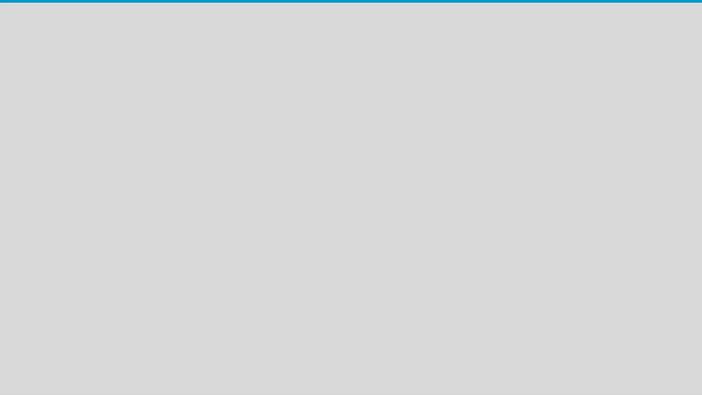


**CITY OF AMES FREEL DRIVE RESOURCE  
RECOVERY AND RECYCLING CAMPUS**

CONCEPTUAL CONVEYOR TO BIN LAYOUT

DATE  
JUNE 2025

FIGURE  
3



# Appendix B: Calculations



**Objective:** Determine spacing requirements based on historic data.

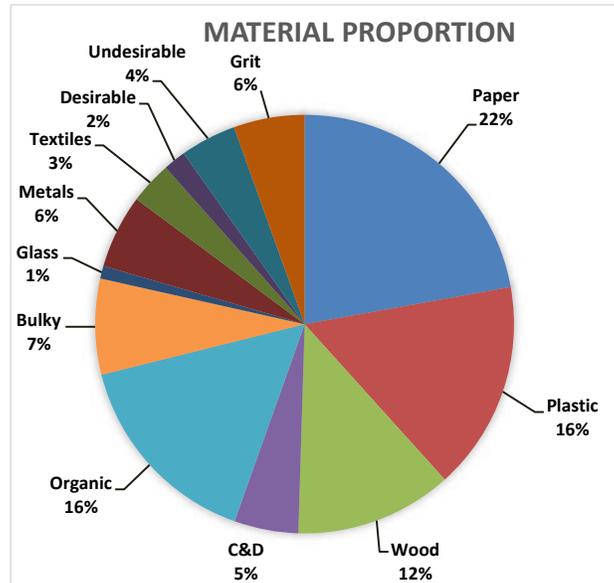
**References:** Data provided was a waste sort conducted in June 2016 collected at the Resource Recovery and Recycling Campus in Ames, Iowa

**Assumptions:** Project life may exceed 20-yrs, but sizing for a timeframe greater than that is not recommended due to unforeseen technologies, market trends, etc.

58,444 tons of waste are received by the resource recovery center every year.

**Calculations:** Amalgamate data from Request for Proposal NO. 2025-143

MATERIAL PROPORTION	
Paper	22.16%
Plastic	16.17%
Wood	12.16%
C&D	4.94%
Organic	15.67%
Bulky	7.40%
Glass	0.99%
Metals	5.69%
Textiles	3.28%
Desirable	1.73%
Undesirable	4.34%
Grit	5.48%
<b>Total</b>	<b>100.01%</b>





**Objective:** Determine spacing requirements based on historic data.

**References:** [Ames, IA Population by Year by Neilsberg Research](#)  
[Optimized Ames Plan 2040](#)

**Assumptions** Project life may exceed 20-yrs, but sizing for a timeframe greater than that is not recommended due to unforeseen technologies, market trends, etc.

**Calculations:**

Population over time - justification of 1.5%

Year	Population	Year on Year Change	Change in Percent
2001	50,703	-180	-0.35%
2002	51,999	1,296	2.56%
2003	52,147	148	0.28%
2004	52,663	516	0.99%
2005	52,651	-12	-0.02%
2006	54,086	1,435	2.73%
2007	55,647	1,561	2.89%
2008	56,183	536	0.96%
2009	57,271	1,088	1.94%
2010	59,103	1,832	3.20%
2011	60,456	1,353	2.29%
2012	61,456	1,000	1.65%
2013	63,091	1,635	2.66%
2014	64,830	1,739	2.76%
2015	65,753	923	1.42%
2016	65,988	235	0.36%
2017	66,338	350	0.53%
2018	65,994	-344	-0.52%
2019	66,505	511	0.77%
2020	66,487	-18	-0.03%
2021	67,024	537	0.81%
2022	65,582	-1,442	-2.15%
2023	65,686	104	0.16%
<b>Average:</b>			<b>1.13%</b>

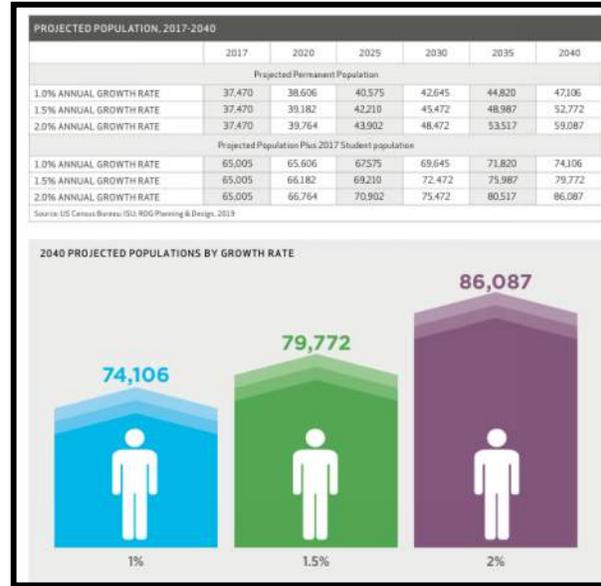


Figure: Conditions and Trends: Demographic and Economic

$$FV = PV \times (1 + r)^n$$

PV	58,444	tons of waste
r	1.50%	% Population Growth
n	20	years
FV	78,716	tons of waste

**Conclusions:** Over the past two decades, the City of Ames has experienced a steady average annual population growth rate of 1.13%. Building on this historical trend, the City has adopted a conservative yet forward-thinking estimate of 1.5% annual growth to project population and corresponding service demands through the year 2045.



**Objective:** Determine spacing requirements based on historic data.

**References:**

[How Much Weight Can A Garbage Truck Carry? - ENCOMPASS RL](#)

**Assumptions** Project life may exceed 20-yr, but sizing for a timeframe greater than that is not recommended due to unforeseen technologies, market trends, etc.  
 The facility is open 6-days a week

**Calculations:**

Determine yearly estimates, Vehicles per Hour

Total Working Days	
Working days per week	5
Total working days in a year	260

Average loading capacity of vehicle	
Garbage Truck Capacity	10 tons of waste
Transfer Trailer Capacity	25 tons of waste

The Ames Resource Recovery Plant is open from 7 AM to 3:30 PM Mon-Fri and 8 AM to 12 PM Sat. Meaning there are a total of 46.5 working hours in a week. However transfer trailers and garbage trucks operate primarily Mon-Fri. Meaning they have a total of 42.5 working hours. This is based off the assumption the new facility will maintain the same hours as the current one.

Waste per year (in 2045)	78,716	tons of waste
Garbage trucks per year	7,872	vehicles/year
Transfer Trailers per year	3,149	vehicles/year
Vehicles per Year (in 2045)	11,020	vehicles/year
Total Vehicles per day (in 2045)	42.4	vehicles/day
Vehicles per hour (in 2045)	5.0	vehicles/hour

**Conclusion:** Based on the 20-year projection model and assuming a 1.5% annual growth rate, the facility will receive approximately 78,716 tons of waste annually by 2045. This projected increase in waste volume translates to an estimated 42.4 vehicles per day (garbage trucks and transfer trailers) or roughly 5.0 vehicles per hour. In practical terms, the facility can anticipate the arrival of a vehicle approximately every 12 minutes. It should be noted this calculation assumes all waste will be delivered by truck, and in practice, a percentage of waste will arrive by residential vehicle, therefore increasing vehicle count. Traffic surges are also expected. The transfer station will allow for one to two vehicles to tip at once. Given the 5.0 vehicles/hour vehicles should be able to come in and out of the transfer station.



**Objective:** Determine spacing requirements based on historic data.

**References:** Concept Site Layout\_05-Building Layout

**Assumptions:** Project life may exceed 20-yrs, but sizing for a timeframe greater than that is not recommended due to unforeseen technologies, market trends, etc.  
 There are 260 working days in a year.

**Calculations:**

Tipping Floor Unshredded

Total Waste Received per year	78,716 tons	
Tons/day	303 tons/day	
Area	4,676 SF	
Density	450 lbs./cy	
Average Height	12 ft	
Volume	56,112 ft <sup>3</sup>	
Volume in CY	2,078 CY	
Weight	935,200 lbs.	
Weight	468 tons	
Days until max load	1.54 days	

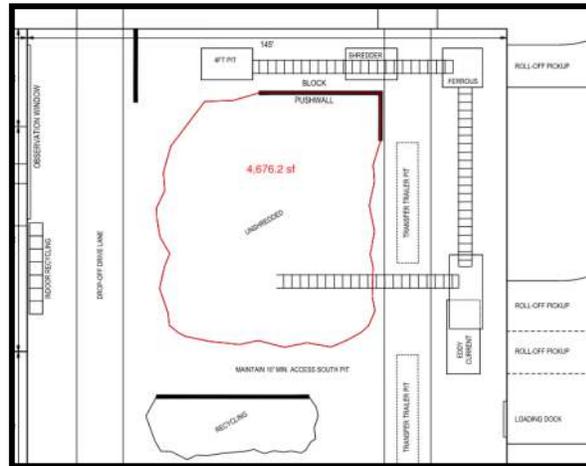
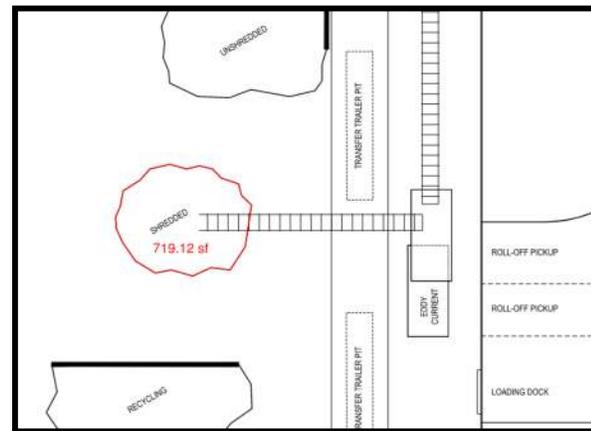


Figure: Unshredded Emergency Tipping Floor

Tipping Floor Shredded

Total Waste Received per year	78,716 tons	
Percent Metal Recovered	4.50%	%
Tons/day	289 tons/day	
Area	719 SF	
Density	350 lbs./cy	
Average Height	12 ft	
Volume	8,628 ft <sup>3</sup>	
Volume in CY	320 CY	
Weight	111,844 lbs.	
Weight	56 tons	
Days until max load	0.19 days	



**Conclusions:** During large storm events larger volumes of waste are expected meaning the tipping floor would combine into a larger unshredded area of approximately 4,676 SF. This would allow a larger storage area to aid in processing this large volume of waste. The tipping floor would reach its maximum load after about 1.54 days. In case of emergency loader will load to south pit. However, it is still not recommended that the facility allow the tipping floor to reach this condition. For normal conditions the shredded tipping floor exceeds its area in approximately 0.19 days.



**Objective:** Determine spacing requirements based on historic data.

**References:** Annual Report 2024 Resource Recovery System

**Assumptions:** Project life may exceed 20-yrs, but sizing for a timeframe greater than that is not recommended due to unforeseen technologies, market trends, etc.

**Calculations:**

Illustrate change in VPD based on yard waste

During the year the Ames Resource Recovery and Recycling Campus offers 4 days for residents to drop off yard waste free of charge. Typical 3 of these days occur towards the end of fall, and the fourth day occurs in spring. For the purpose of these calculations it will be assumed the new facility will maintain the same conditions.

Total Expected Yard Waste per year by 2045		
PV	1,350	tons
r	1.5	%
n	20	years
FV	1818	tons

Total Expected Vehicles by 2045		
PV	600	VPD
r	1.5	%
n	20	years
FV	808	VPD
Total Commercial VPD	42.4	VPD
Average VPD	850	VPD
Average VPH	106.3	VPH
Average VPM	1.77	VPM

CITY OF AMES, IOWA RESOURCE RECOVERY SYSTEM System Summary Calendar Year 2024					
	2020/21	2021/22	2022/23	2024 CY	2025 CY
Service Accomplishments:	Actual	Actual	Actual	Actual	Projected
Tons of refuse available	51,223	52,561	52,377	53,698	53,000
Tons of refuse diverted to Boone landfill	11,053	8,221	7,438	11,404	10,000
Tons of refuse processed	40,040	43,096	43,847	42,583	43,000
Tons of RDF to Electric Utility	23,598	27,979	28,622	26,095	25,000
Tons of glass recycled	256	250	261	269	270
Tons of metal recycled	1,307	1,459	1,414	1,343	1,250
Pounds of HHM* collected	28,716	28,454	23,019	27,313	32,000
ISU tons into plant	2,241	2,935	2,909	2,909	3,000
Pounds diverted from landfill to Rummage RAM-Page	0	92,126	154,843	132,782	150,000
Pounds of Organics Diverted	27,306	87,050	76,840	90,200	100,000
Average # of vehicles/free yard waste day	624	641	460	675	600

Figure: System Summary Calendar

It was assumed that every vehicle is carrying a similar amount of yard waste.

**Conclusions:** During the Spring no-charge day it is expected the facility will receive a bulk of it's anticipated yard waste. This will impact the number of vehicles per day to an average of about 850 VPD, or about 106.3 vehicles per hour. Meaning the facility can expect a 1.77 vehicles every minute. Due to the high volume of vehicles the facility may add more no-charge days in the future.



**Objective:** Determine the amount of time required for transfer trailers commute from Ames to Carroll.

**References:** [Google Maps](#)

**Assumptions** Project life may exceed 20-yr, but sizing for a timeframe greater than that is not recommended due to unforeseen technologies, market trends, etc.

**Calculations:**

Expected Waste to Landfill (2045)		
Tons per Year	78,716	tons/year
Tons per working day	303	tons/day

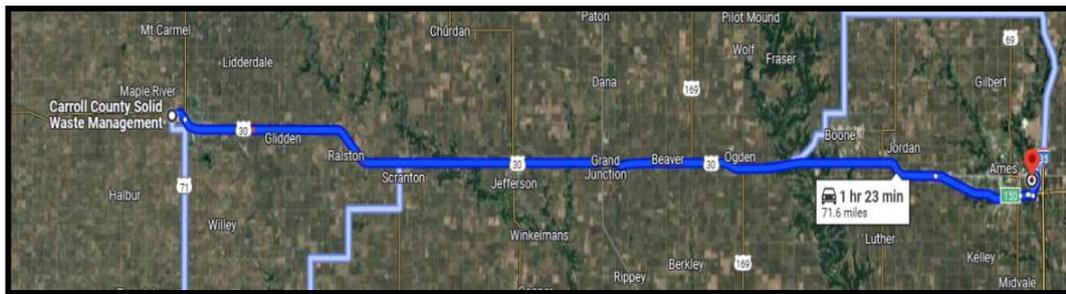


Figure: Drive time from site to Carroll County Solid Waste Management

Walking Floor Trailers	
Capacity	25 Tons
Trips per day	12 Trips/day

Transfer Trailers Operating	6.0	Vehicles
Total Trips per day	2.0	Trips/day
Total Time per roundtrip	3.1	Hours
Operation time	6.2	Operation time/day

Transfer Trailers Operating	4.0	Vehicles
Total Trips per day	3.0	Trips/day
Total Time per roundtrip	3.1	Hours
Operation time	9.3	Operation time/day

It was estimated that loading and unloading in Ames and Carroll would each require approximately ten minutes, resulting in an additional 20 minutes added to the total roundtrip duration. Furthermore, transfer trailers are anticipated to carry anywhere from 20-25 tons of waste per trip.

**Conclusion:** To effectively manage the disposal of 303 tons of waste per day at the Carroll County Landfill, four to six transfer trailers will be utilized. This results in a total operational time of approximately 6.2 to 9.3 hours per day. It is important to note that the number of transfer trailers in operation may vary seasonally, depending on fluctuations in the volume of waste received.



**Objective:** Determine staff available for driving transfer trailers.

**References:** City of Ames Organizational Chart

**Assumptions** Project life may exceed 20-yr, but sizing for a timeframe greater than that is not recommended due to unforeseen technologies, market trends, etc.

Approximate transfer location and conceptual layout is used without major changes.

**Calculations:**

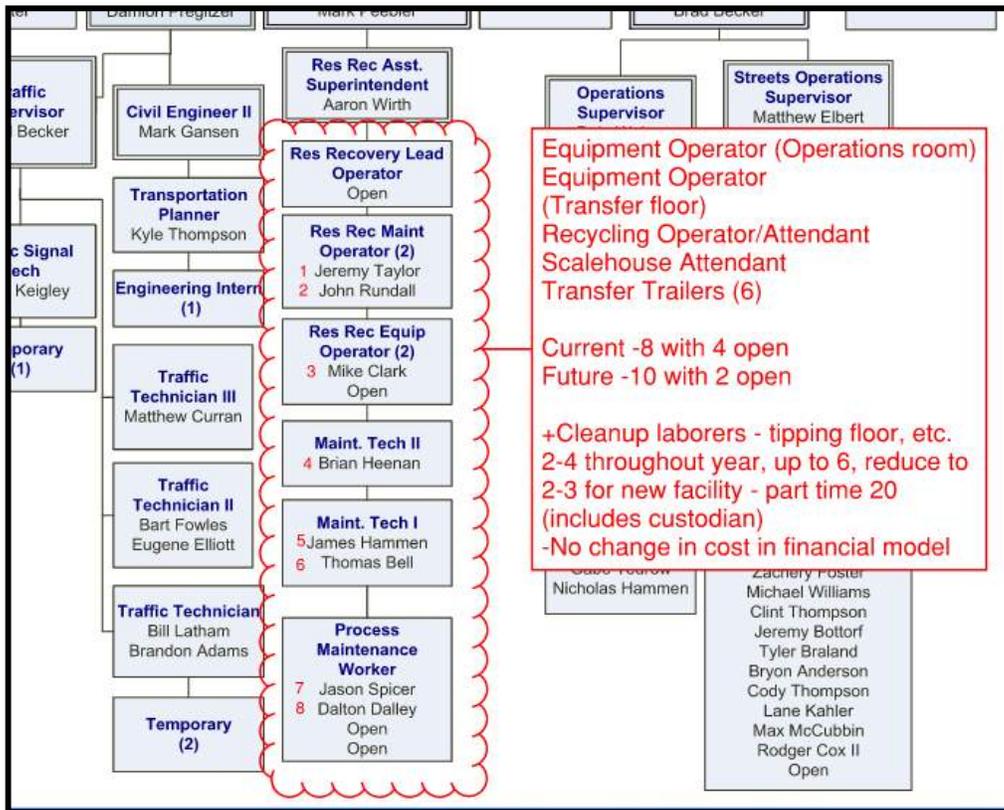
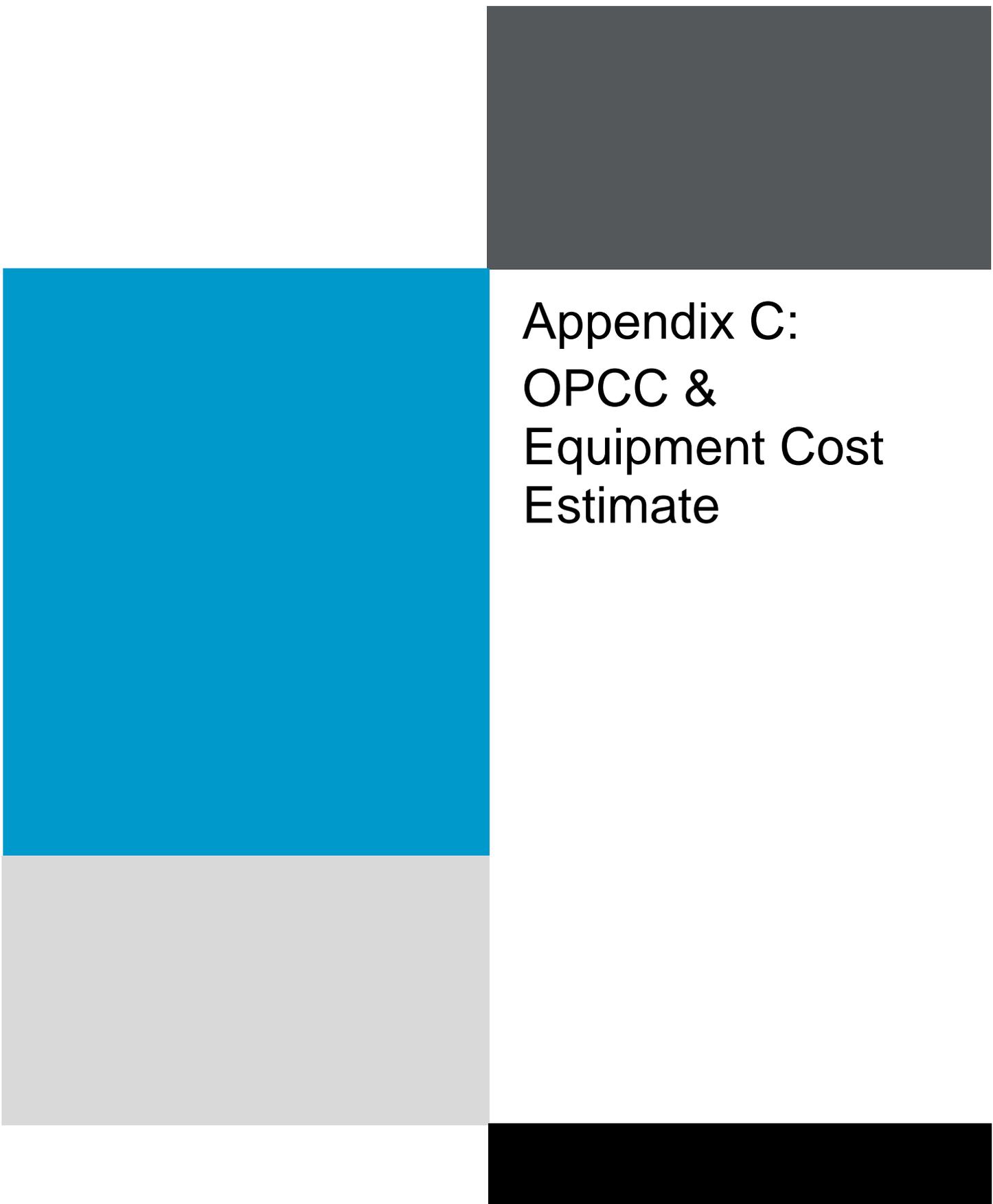


Figure: City of Ames Staff Organizational Chart

**Conclusion** Currently, the Resource Recovery and Recycling Campus operates efficiently with 12 staff members, meeting present-day operational needs. This staffing level aligns with the current waste processing rate and is anticipated to facilitate smooth facility operations.



Appendix C:  
OPCC &  
Equipment Cost  
Estimate

Project:	AMES R3C FACILITY
Estimator:	Katie Kinley, Greg Gesell
Reviewer:	Garrett Williams
Date:	6.20.25
Estimate Basis:	R3C Conceptual Layout - DRAFT
Costs:	2025 \$
Location:	Ames, Iowa

**R3C FACILITY  
OPINION OF CAPITAL COSTS ESTIMATE SUMMARY - DRAFT**

**Comments & Background:**

0. Property Purchase	<b>\$0 Not included here -see financial model</b>
I. SITEWORK - CLEARING AND GRUBBING	\$64,000 Includes clearing and grubbing, and fencing removal.
II. SITEWORK - NEW CONSTRUCTION	\$2,456,000 Includes placement of structural fill, roads, pavement, and ancillary installations.
III. TRANSFER BUILDING	\$3,341,000 Includes significant concrete work, transfer pit, and pits
III.a. Equipment - Shredder, Magnet, & Eddy Current Separator, does not include baler	<b>\$1,185,000</b> *Based on potential to reuse some equip. from site.
IV. OFFICE BUILDING & RECYCLING AREA	\$1,253,000 Office and HHW are one building, with the recycling area canopy separated for fire safety code. Based on recent scale pricing & concurrent construction with
V. SCALE HOUSE AND SCALES	<u>\$720,000</u> 3C.
<b>SUBTOTAL ITEMS I - V</b>	<b>\$9,019,000</b>
DESIGN/ENGINEERING (8%)	\$721,520
PERMITTING (2%)	\$50,000
SURVEYING AND SOILS REPORT	Assumes already completed/included in construction
CONSTRUCTION INSPECTION (5%)	\$0 cost/executed separately
CONSTRUCTION INSPECTION (5%)	\$450,950
CONTINGENCY (20%)	Contingency adds to the estimate based on uncertainty/draft design. <u>\$1,804,000</u>
<b>TOTAL CAPITAL COST</b>	<b>\$12,045,470</b>

**ASSUMPTIONS**

1. No sales tax is included. Assumed facility is tax exempt.
2. Costs rounded to nearest thousand. Does not include financing costs.

---

Project:	AMES R3C FACILITY
Estimator:	Katie Kinley, Greg Gesell
Reviewer:	Garrett Williams
Date:	6.20.25
Estimate Basis:	R3C Conceptual Layout - DRAFT
Costs:	2025 \$
Location:	Ames, Iowa

---

3. Costs are included for scales, scoreboards and digital displays as well as fixed equipment.
4. High level estimated costs are included for furniture, furnishings or miscellaneous movable equipment.
5. Assumed project to be competitively bid under one general contract.
6. Assumed construction to be during normal working hours.
7. The construction costs are used for budgeting and planning purposes only and shall not be used as an actual bid as given by a contractor to build the project.

Project:	AMES R3C FACILITY
Estimator:	Katie Kinley, Greg Gesell
Reviewer:	Garrett Williams
Date:	6.20.25
Estimate Basis:	R3C Conceptual Layout - DRAFT
Costs:	2025 \$
Location:	Ames, Iowa

**I. SITEWORK - CLEARING AND GRUBBING**

Item	Quantity	Units	Unit Price	Item Cost	Total	Comments & Background:
Clear and grub site	11	Acres	\$2,000	\$22,000		Est. based on recent construction events. Minimal clearing needed.
Topsoil/veg strip/relocation	10,600	CY	\$4	\$42,400		Conservative estimate of 1-ft over half of the construction area.
Subtotal I					\$64,400	

**II. SITEWORK - NEW CONSTRUCTION**

Item	Quantity	Units	Unit Price	Item Cost	Total	Comments & Background:
Bulk Excavation - soil borrow estimate	10,600	CY	\$5	\$53,000		Conceptual estimate - 1-ft over half of construction area
Place & compact fill (2)	23,500	CY	\$10	\$235,000		Assume 3-ft across transfer floor
Rough/fine grading at all buildings, paving, etc.	120,000	SF	\$2	\$240,000		
Roadways - 9" concrete w/ 6" aggregate base	10,000	SY	\$100	\$1,000,000		Est. Road areas 80k-sf and yard waste area 10k-sf.
Roadways - 9" concrete w/ 6" aggregate base	3,333	SY	\$100	\$333,330		Est. Equip Area
Safety beam guard rail/hand rails	300	LF	\$40	\$12,000		
Site Erosion Control						
Turf reinforcement mat	3,400	SY	\$8	\$27,200		Engineer estimated quantity.
Silt fence	4,000	LF	\$5	\$20,000		Engineer estimated quantity.
Sanitary sewer lines, lift stations, manholes, etc.	1	LS	\$150,000	\$150,000		Engineer estimated pricing from similar projects.
Water supply and site fire lines/hydrants (4)	1	LS	\$60,000	\$60,000		Engineer estimated pricing from similar projects.
Storm sewer piping, drains, manholes, rock	1	LS	\$25,000	\$25,000		Engineer estimated pricing from similar projects.
Natural Gas System (4)	1	LS	\$30,000	\$30,000		Engineer estimated pricing from similar projects.
Electrical (2) - Service to Site/Buildings	1	LS	\$60,000	\$60,000		Engineer estimated pricing from similar projects.
6' Chain link fence	2,500	LF	\$30	\$75,000		Measured at 50-ft setback
50' automatic chain link sliding gate & operators	2	EA	\$20,000	\$40,000		Quantity from current design.
Misc. - bollards, sidewalks, paving painting.	1	LS	\$20,000	\$20,000		Engineer estimated pricing from similar projects.
Signage	1	LS	\$5,000	\$5,000		Engineer estimated pricing from similar projects.
Grass seeding and fertilizer	5	Acre	\$7,000	\$35,000		Engineer estimated pricing from similar projects.
Screening and landscaping	1	LS	\$50,000	\$25,000		Based on screening requirements per ordinance.
Final site clean-up	1	LS	\$10,000	\$10,000		Engineer estimated pricing from similar projects.
Subtotal II					\$2,455,530	

Project:	AMES R3C FACILITY
Estimator:	Katie Kinley, Greg Gesell
Reviewer:	Garrett Williams
Date:	6.20.25
Estimate Basis:	R3C Conceptual Layout - DRAFT
Costs:	2025 \$
Location:	Ames, Iowa

Notes:

- (1) No demolition anticipated beyond fencing.
- (2) General Earthwork includes moving soil, backfill, embankment, etc. Quantities include 25% for compaction, assumes onsite soils.
- (3) Roadway unit price includes curbs, gutters, etc., where required
- (4) Utilities unit price includes excavation, bedding material, piping installed, backfill, etc. - assumes adequate utility service adjacent to site.

**III. TRANSFER BUILDING**

Item	Quantity	Units	Unit Price	Item Cost	Total	Comments & Background:
metal wall / roof panels	23,500	SF	\$75	\$1,762,500		Based on simplified building design for PEMB.
Furniture - equip storage, tech, tables, cabinets	23,500	SF	\$5	\$117,500		Based on maintenance shop needs
Excavation and backfill - foundations	300	CY	\$18	\$5,400		Engineer estimated pricing from similar projects.
Concrete:						
9" slab on grade - lower level	1,932	SF	\$12	\$23,180		Quantity from current design.
10" slab on grade - upper level	21,568	SF	\$15	\$323,520		Quantity from current design.
Concrete footings	200	CY	\$350	\$70,000		Quantity from current design.
Waste containment walls	20	cy	\$800	\$16,000		Includes one block push wall as shown on drawings.
Exterior overhead coiling steel doors: 13' x 14'	7	ea	\$6,000	\$42,000		Quantity from current design.
Building - Mechanical:						
Fans, drains, controls, etc.	23,500	SF	\$11	\$258,500		Engineer estimated pricing from similar projects.
Trench drain	60	LF	\$200	\$12,000		Engineer estimated pricing from similar projects.
Water misting system	0	LS	\$50,000	\$0		Not included in this project.
Dry-pipe sprinkler system	23,500	S.F.	\$15	\$352,500		Engineer estimated pricing from similar projects.
Building-Electrical:						
Power, lighting, etc.	23,500	SF	\$12	\$282,000		Engineer estimated pricing from similar projects. Pricing may vary with final design based on final components.
600 amp MCC panel	1	ea	\$17,000	\$17,000		Engineer estimated pricing from similar projects.
250 amp electrical panel	1	ea	\$3,700	\$3,700		Engineer estimated pricing from similar projects.
30 KVA dry-type transformer	1	ea	\$5,000	\$5,000		Engineer estimated pricing from similar projects.
Misc. and embedment steel	1	ea	\$50,000	\$50,000		Engineer estimated pricing from similar projects.
Steel embeded floor channels - upper level	0	ea	\$3,100	\$0		Not included in this project.
<b>Subtotal III</b>					<b>\$3,340,800</b>	<b>\$142</b>

Project:	AMES R3C FACILITY
Estimator:	Katie Kinley, Greg Gesell
Reviewer:	Garrett Williams
Date:	6.20.25
Estimate Basis:	R3C Conceptual Layout - DRAFT
Costs:	2025 \$
Location:	Ames, Iowa

Notes:

*per square foot*

- (1) Metal building includes structural steel, column free building (long span), 24 ft. eave height, and 20 yr. warranty on roofing.
- (2) Assumes stable soil with load bearing capacity. Slab floor is reinforced concrete.
- (3) 12" concrete containment walls along sides w/ steel metal deflector sheets.
- (4) Building mechanical includes drains, plumbing, air handling, etc.
- (5) Electrical includes lighting, wiring, exhaust fans, power, etc.

**IV. OFFICE BUILDING & RECYCLING AREA**

Item	Quantity	Units	Unit Price	Item Cost	Total	Comments & Background:
metal wall / roof panels	5,000	SF	\$65	\$325,000		Based on simplified building design for PEMB.
Furniture - Estimate	5,000	SF	\$20	\$100,000		Based on office furniture, education center furniture
Excavation and backfill - foundations	75	CY	\$350	\$26,250		Engineer estimated pricing from similar projects.
Concrete:						
6" concrete slab on grade	5,000	SF	\$8	\$40,000		Engineer estimated pricing from similar projects.
Concrete footings	50	CY	\$350	\$17,500		Engineer estimated pricing from similar projects.
Building - Mechanical:						
Fans, drains, controls, etc.	5,000	SF	\$40	\$200,000		Engineer estimated pricing from similar projects.
Dry-pipe sprinkler system	5,000	SF	\$15	\$75,000		Engineer estimated pricing from similar projects.
Electrical - Office (3)	3,500	SF	\$40	\$140,000		Engineer estimated pricing from similar projects.
100 amp electrical panel	1	ea	\$2,000	\$2,000		Engineer estimated pricing from similar projects.
Exterior/interior hollow metal doors	15	ea	\$800	\$12,000		Quantity from current design.
Interior building finishes (4)	3,500	S.F.	\$30	\$105,000		Quantity from current design.
Loading Docks	1	ea	\$10,000	\$10,000		Engineer estimate for equipment costs.
Recycling Center Canopy	1	ea	\$200,000	\$200,000		Engineer estimated pricing from similar projects.

Subtotal III

\$1,252,750

\$211

Notes:

*per square foot*

- (1) Assumes stable soil with load bearing capacity. Slab floor is 6" non-industrial reinforced concrete.
- (2) Heating, ventilation, air conditioning, and plumbing, drains, toilets, etc.
- (3) Electrical includes lighting, wiring, power, communications, etc.
- (4) Includes wall, floor and ceiling finishes. Does not include furniture, office equipment, cabinetry, curtains or supplies.
- (5) Does not include a second floor or mezzanine

Project:	AMES R3C FACILITY
Estimator:	Katie Kinley, Greg Gesell
Reviewer:	Garrett Williams
Date:	6.20.25
Estimate Basis:	R3C Conceptual Layout - DRAFT
Costs:	2025 \$
Location:	Ames, Iowa

**V. SCALE HOUSE AND SCALES**

Item	Quantity	Units	Unit Price	Item Cost	Total	Comments & Background:
Building	325	SF	\$300	\$97,500		Engineer estimated pricing from similar projects.
Furniture - Estimate	325	SF	\$20	\$6,500		
HVAC & Plumbing (3)	325	SF	\$60	\$19,500		Engineer estimated pricing from similar projects.
Electrical (4)	325	SF	\$12	\$3,900		Engineer estimated pricing from similar projects.
100 amp electrical panel	1	ea	\$2,000	\$2,000		Engineer estimated pricing from similar projects.
Interior building finishes (5)	325	SF	\$30	\$9,750		Engineer estimated pricing from similar projects.
Concrete footings & grade beams at scales	2	ea	\$50,000	\$100,000		Engineer estimated pricing from similar projects.
12" slab on grade at scale and approach	2	ea	\$20,200	\$40,400		Engineer estimated pricing from similar projects.
Motor Truck Scales (10' x 70')	2	ea	\$200,000	\$400,000		Engineer estimated pricing from similar projects.
Digital scoreboards	2	ea	\$10,000	\$20,000		Pricing can vary pending specifications.
Guard rails at scales	2	ea	\$5,000	\$10,000		
Misc. Building and Scale Protection, e.g. bollard,	1	LS	\$10,000	\$10,000		

Subtotal V	\$719,550	\$860
------------	-----------	-------

Notes: *per square foot*

- (1) No truck driver, facility, or administration activities areas are included.
- (2) Assumes stable soil with load bearing capacity.
- (3) Heating, ventilation, air conditioning, and plumbing, drains, toilets, etc.
- (4) Electrical includes lighting, wiring, power, communications, etc.
- (5) Includes wall, floor and ceiling finishes. Does not include furniture, office equipment, cabinetry, curtains or supplies.

<b>Subtotal I through V (without equipment)</b>	<b>\$7,833,030</b>	
---	--------------------	--

Equipment cost summary

**Ames  
Resource Recovery and Recycling Campus**

Metals Processing Equipment Cost Summary

Item		Cost	Notes
Conveyors	Lump Sum	\$1,473,000	Shredder infeed and discharge, magnet infeed feeders, shredded waste transfer conveyors
Shredder		\$1,300,000	M&J P250 shredder 50+ tph
Magnet		\$140,560	Eriez P Rex permanent drum magnet
ECS 1		\$278,990	Eriez w/ feeder and controls 50 tph
ECS 2		\$237,449	Eriez w/ controls
Gantry Crane		\$25,000	Plug number - still waiting for a quote
Equipment Total		\$3,454,999	
Construction		\$ 1,730,000	
Indirect Costs		\$ 520,000	
Contingency		\$ 700,000	
<b>TOTAL</b>		<b>\$6,405,000</b>	

Note - estimate is information and for new equipment. Refurbishing current equipment is included in the cost estimate for this project.

**Recyclables Baler System**

Item		Cost	Notes
Conveyor		\$150,000	15' feed section, assumed \$10k shipping
Baler		\$450,000	Sierra REB1, Assumed \$25k shipping
Equipment Total		\$600,000	
Construction		\$ 300,000	
Indirect Costs		\$ 90,000	
Contingency		\$ 120,000	
<b>TOTAL</b>		<b>\$1,110,000</b>	

**FOR FUTURE  
INSTALL - NOT  
INCLUDED IN  
PROJECT**

# Conveyors

Conveyor List  
CTEC 09009

Conveyor	Description	Size L' x W"	Elevation Top of Belt			Price	
			Tail	Head	HP		
1	Horizontal Metal Pan infeed	15' x 60"	-2	-2	15	\$ 187,000	1 and 2 could be
2	30 Deg Incline Metal Pan to Shredder	50' x 60"	-5	19	25	\$ 362,000	single conveyor
3	Horizontal Shredder Discharge Belt	17' x 48"	6	6	10	\$ 116,000	High impact Stainless Steel head
4	15 Deg Incline Belt picking trough to Mag	30' x 48"	3	10	15	\$ 185,000	section Magnetic Head
5	15 Deg Incline Belt to ECS No. 1	54' x 48"	6	19	20	\$ 249,000	Pulley
6	Vib. Feeder to ECS No. 1	4' x 72"	15	15	5	\$ 78,000	
7	15 Deg max. Incline MSW to Storage	40' x 48"	7	16	15	\$ 225,000	Head may be canted or suspected from roof
8	Vib. Feeder to ECS No. 2	4' x 48"	8	8	5	\$ 71,000	
						\$ 1,473,000	

All dimensions and elevations are approximate.

Need a walkway along all elevated conveyors

Need estimate for supports

Budgetary pricing could be for the full set of conveyors



Date: May 27, 2025  
**Quote No.: DG11215**

**Quote To:**  
**Greg Gesell**

**Quote Expiration: 15 days**  
**Delivery: 10 weeks after receipt of Signed Drawings**  
**Terms: TBD**  
**Shipping: estimate \$8,000 to \$9,000.00**  
**Quote Type: Budgetary**

Greg Gesell Belt Conveyors Budgetary quote

Item	Description	Qty	Unit Price	Net Price
1.	<i>48" wide 20'-0" long inclined 35* troughing Belt conveyor with inclined 18 degrees. 12" high skirt board 6ft long through impact and material train. Last 6ft. of Conveyor to Head pulley 304SS construction. Includes 36" walkway full length of conveyor. Conveyor designed to process 30TPH of MSW with a PCF of 10lbs/ft3. Max particle size 8".</i>	2	\$73,831.00	\$147,662.00

**Components:**

- 10HP Sumitomo Brand Helical Bevel Buddy Box with Backstop 56RPM output for 250FPM belt speed.
- 10HP Baldor Brand Inverter Duty Super E motor T.E.F.C 480V/3PH/60H
- 48" wide 3ply 3/16" x 1/16" covers
- Stainless Steel Martin Brand Mine Duty Head Pulley 16" Diameter x 51" Face with 1/2" HB Lagging 3 15/16" TLB
- 3 15/16" Dodge Brand Type E Pillow Block Roller Bearings 4 bolt.
- Head Shaft 3 15/16" diameter C-1045 TGP Carbon Steel
- Martin Brand Mine Duty Tail Pulley 14" Diameter x 51" Self-cleaning Wing type 3 7/16" TLB
- 3 7/16" Dodge Brand Type E Pillow Block Roller Bearings
- Tail Shaft 3 7/16" diameter C-1045 TGP Carbon Steel

- 
- Martin Brand HD400 Take up 12" travel
  - (4) Martin Brand CEMA C5 35 degree **Rubber impact** Troughing idlers 1'-0" spacing Load zone
  - Martin Brand CEMA C5 **35 degree** Troughing idlers 2'-0" spacing under skirtboard 3ft spacing rest of conveyor.
  - Martin Brand CEMA C5 **20 degree** Troughing idlers Leading in and out of pulleys
  - Martin Brand CEMA C5 Return idlers 10ft. spacing
  - Safety Pull Cord switches walkway side of conveyor full length Conveyor Component brand RS model
  - Zero speed switch mounted to tail shaft Whirligig universal shaft sensor mount & fully guarded Target
  - **Primary Belt Wiper Flexco Brand MMP with Urethane wiper**
  - **Urethane Skirt board 6" high x ½" thick Full length both sides of conveyor**
  - **Includes OSHA Tail Guard box**
  - **Includes Stainless steel side guards full length of conveyor walkway side**

#### **Conveyor Frame Construction:**

- C12 x 20.7 Channel Frame Conveyor
- W4x13 I-Beam Cross frame support
- 1/4" Thick x 12" high Carbon Steel skirt board backer plate 8ft. of conveyor both sides
- Carbon Steel Angle skirt board supports every 4ft. both sides of conveyor
- 36" wide serrated bar grating walkway one side.
- Handrails outboard side of walkway. Sched 80 pipe uprights sched 40 pipe horizontals Painted OSHA safety yellow
- All Carbon steel will be Hot Dipped galvanized Finish
- Estimated Galvanized Support Bents
- Equipment manual 3 hard copies and 1 electronic copy
- All hardware to assemble conveyors.
- Tail pulley Guard painted OSHA safety yellow

#### **Not included:**

- **Mechanical installation by others**
- **Electrical installation by others**
- **PE Stamp or Permits**

---

#### **NOTES**

1. **One (1) Day of Start-up and commissioning by DG Marshall has NOT been included in the Price. Start up and or training assistance after is available at \$1,200.00 per day per person plus travel and expenses.**
  2. **All training and start up assistance pricing is based on eight (8) hour days, Monday through Friday. All travel and expenses will be charged at cost plus 5%.**
-

- 
3. All training and start up assistance over eight (8) hours per day and on Saturday will be charged at one and one-half times the per day rate. Any time on Sunday or holidays will be charged at two times the per day rate.
  4. (2) Hard copy and (1) electronic copy Operating and Maintenance Manuals are included in the total Price. DGM standard
  5. Assembly is limited to standard and normal shipping limitations between factory and jobsite.
  6. Practical and normal protection of equipment will be provided. No boxing or crating or special containers of any type have been included.
  7. All conveyor components and manufactured items will be furnished with the manufacturer's paint system or as specified within the proposal (see hot dipped galvanized coating).
  8. We have not included mounting or pre-wiring of any electrical component
  9. All Pricing is based upon no special tests being required other than normal rotation, alignment and clearance testing done during shop assembly of various pieces and or subassemblies of equipment.
  10. The Owner Purchaser shall provide all information, drawings, records, utility locations, documentation, work points and specifications existent concerning this work, as may be necessary to DGM to allow engineering to proceed.
  11. Project start date is based upon all required information being available to DGM to allow engineering to proceed.
  12. Field verification of dimensions has not been included as part of this proposal.
  13. Warranty does not included field labor for removal / replacement of defective parts.
  14. All data furnished with this proposal pertaining to equipment is preliminary and subject to finalization by DGM's engineering department.
  15. Spare parts have been omitted from this quote. DGM will supply if granted the time to generate.
  16. All Conveyors sections will be shipped in 20ft. lengths or as a complete assembly when practical. Marshall Associates will provide all mounting hardware except for Anchor bolts. All fasteners will be Grade 8 or equal.
- 

**Terms and Conditions**

**Acceptance:** Any order accepted by DG Marshall Associates, Inc., (Seller) for the purchase of goods shall be subject only to these Terms and Conditions. There are no understandings or agreements other than as set forth herein. No additions, deletions or modifications of these terms or any other matter set forth on the face hereof, proposed by Buyer in its printed forms or otherwise, shall bind Seller unless accepted in writing, regardless of whether such other terms would materially alter the terms hereof.

**Prices and Payments:** Unless otherwise provided in writing, all prices are for goods with Seller's standard specifications, finish and color. Prices are F.O.B. Seller's plant and are subject to change without notice at any time prior to Seller's acceptance of Buyer's order. Unless specifically provided, prices do not include any applicable sales, use, transfer or excise taxes or other similar taxes, tariffs or custom duties, for which Buyer may be responsible.

**Terms:** Unless otherwise expressly agreed to in writing, Seller's terms for on-line purchases are those shown at time of checkout. Failure to comply with terms of payment may result in extra costs and delivery delays. Buyer shall be responsible to pay all of Seller's costs and reasonable attorney's fees to enforce the terms of this agreement.

**Delivery:** Estimated shipping time means the approximate time at which Seller anticipates shipping the goods and is calculated from the date of order acknowledgement. Seller is not responsible for delays or nonperformance resulting from acts of God or occurrences outside of Seller's control, such as but not limited to, strikes, abnormal manufacturing conditions, fire, flood, accident, riot, war and invasion, or government priorities. In no event shall Seller be liable for incidental, consequential or special damages arising out of a delay or failure to deliver. All shipments hereunder shall be by truck, freight collect, or by UPS/FEDEX, unless otherwise agreed to in writing. Weight, if given, is the net shipping weight or Seller's best estimate thereof. Claims for damage in shipment should be made immediately to the subject carrier. Claims for shortage of quantity or improper manufacture should be made with Seller within five (5) business days after receipt. Risk of loss or damage during shipment shall be borne by the Buyer, whether or not freight is prepaid by Seller. Any claim of buyer for loss or damage during shipment shall only be made against the carrier.

**Installation:** Unless otherwise expressly specified on the face hereof, all costs of installation of the goods shall be borne by the Buyer. Some goods, such as stands, are shipped unassembled and require assembly. Estimated assembly times are available upon request.

**Cancellation:** Orders placed for goods are not subject to cancellation or modification, in whole or in part, after Seller's acceptance, except with Seller's express written consent, and upon payment of a cancellation charge covering all costs incurred by Seller to the time of cancellation. If Buyer cancels order without Seller's express written consent, Buyer agrees to pay all costs incurred by Seller and to compensate Seller for any loss of profits that it may suffer.

**Return:** Standard products may be returned, freight pre-paid, for credit, subject to a restocking charge of \$100.00 or 25% of purchase price, whichever is greater. Such returns must be made within 30 days of shipment. Products are not returnable without Seller's prior written approval and associated Return Material Authorization (RMA) number.

**Limited Warranty:** Seller warrants the product against defects and workmanship for a period of one (1) year, commencing on the date of original purchase and will, at its option, repair or replace for the original purchaser, free of charge, F.O.B. Seller, any part found to be defective in material or workmanship. This limited warranty shall only apply if the product has been operated, maintained and assembled in accordance with the Technical & Assembly Instruction Manual and/or other instructions or specifications furnished with the product, and has not been subject to misuse, abuse, neglect, accident, improper maintenance, alteration, vandalism, theft, fire, water or damage because of other peril or natural disaster. Seller shall have no liability hereunder for claims made under this warranty which are not in writing and which have not been delivered to Seller within 30 days after termination of warranty. If the product proves to be defective, Seller will bear the costs of materials for repair or replacement during the above specified warranty period. Seller shall have the option to replace any defective part(s) with new part(s) or with serviceable used parts that are equivalent to new parts in performance. Seller shall have the option to replace any defective product(s) with functionally equivalent product(s). All claims for warranty service on a Seller approved claim will give buyer the name and location of the service provider to which you may ship or deliver, at buyer's expense, the defective product. Seller will not accept products returned directly to the factory unless prior written permission has been extended by Seller. This limited warranty does not provide coverage on component parts that carry a separate manufacturer's warranty or damage caused by said component parts. Please refer to the applicable manufacturer's warranty on these items. SELLER DOES NOT MAKE ANY WARRANTIES WITH RESPECT TO ANY PRODUCT, EITHER EXPRESS OR IMPLIED, INCLUDING IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. NO EXPRESS WARRANTY OR GUARANTY, WHETHER WRITTEN OR ORAL, EXCEPT AS MENTIONED HEREIN, GIVEN BY ANY PERSON OR ENTITY, WITH RESPECT TO ANY PRODUCT SHALL BIND SELLER. THE PROVISIONS AS SET FORTH IN THIS LIMITED WARRANTY PROVIDE THE SOLE AND EXCLUSIVE REMEDY FOR THE ORIGINAL PURCHASER. SELLER SHALL NOT BE LIABLE FOR SPECIAL, INCIDENTAL OR CONSEQUENTIAL LOSS, DAMAGE OR EXPENSE INCLUDING, WITHOUT LIMITATION, EXPENSES INCURRED FOR SUBSTITUTE OR REPLACEMENT PRODUCTS, FOR TRANSPORTATION OR FOR RELATED EXPENSES, UNLESS THE SAME IS APPROVED IN WRITING BY SELLER, OR FOR RENTAL EXPENSES TO TEMPORARILY REPLACE A WARRANTED PRODUCT. IN NO EVENT SHALL RECOVERY OF ANY KIND BE GREATER THAN THE AMOUNT OF THE PURCHASE PRICE OF THE PRODUCT SOLD. BUYER ASSUMES THE RISK AND LIABILITY FOR LOSS, DAMAGE, OR INJURY TO YOU AND YOUR PROPERTY AND/OR TO OTHERS AND THEIR PROPERTY ARISING OUT OF USE OR MISUSE OR INABILITY TO USE THE PRODUCT. THIS LIMITED WARRANTY SHALL NOT EXTEND TO ANYONE OTHER THAN THE ORIGINAL PURCHASER.

**Inspection:** If an inspection is required by Buyer or a third party, all costs will be to Buyer's account. Seller will not be responsible for late shipments due to inspection of the goods.

**Limitation of Actions:** Any action for a breach of contract arising against the Seller must be commenced within one (1) year after the cause of action has occurred.

**Rights and Remedies, Waiver:** The rights and remedies herein shall be in addition to any other rights and remedies available to Seller at law and in equity. Sellers's failure or delay in exercise of any rights or remedies shall not operate as a waiver of those rights or remedies.

**Governing Law:** The rights and obligations of the parties hereto and the construction and effect of any contract formed pursuant hereto shall be governed by the laws of the State of Massachusetts.

**Indemnification – Safe Operation:** Buyer shall comply with and require its employees to comply with directions set forth in all instructions furnished by Seller. Buyer shall use and require its employees to use reasonable care and all appropriate safety equipment in the operation and maintenance of the goods. If any injury or damage is caused, in whole or in part, by Buyer's failure to comply with applicable federal, state or local safety requirements, Seller shall have no obligations to Buyer and Buyer shall indemnify and hold Seller harmless against any claims, loss or expense for injury or damage arising from the use of the goods. Seller specifically disclaims any and all liability arising out of the operation of the goods other than the warranty liabilities to the original Buyer.

Marshall Associates appreciates the opportunity to quote this project. If you have any questions or I can be of further assistance please do not hesitate to contact me 508-943-2394.

Sincerely,  
John Marshall  
DG Marshall Associates Inc.

**Shredder**

## Gesell, Gregory H.

---

**From:** Rick Brown <rick.brown@mjrecycling.com>  
**Sent:** Monday, June 9, 2025 9:53 AM  
**To:** Gesell, Gregory H.  
**Subject:** Re: M&J Shredders  
**Attachments:** 2.1.xx M&J\_P250e\_US-Imperial\_Web.pdf

**CAUTION: [EXTERNAL] This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.**

Hi Greg,

The edrive systems we have developed are marketed to show incredible energy savings.

The direct drive and recapture of energy result in energy savings of 25-50% compared to electric or hydraulic power.

We offer the pre-shredder with two motor sizes.

Two 150 hp motors for the P250-220 and two 215 hp motors for the P250-320.

We would need to match the power requirements to the application.

I've attached a spec sheet for your review.

Best regards,

**Rick Brown**

Distribution Sales Manager

+1 857 276 7998

**M&J Recycling**

2015 Ayrley Town Boulevard

Suite 202

Charlotte, NC 28273-4068 | USA

Read more at [mjrecycling.com](http://mjrecycling.com)





This e-mail and any files attached are intended solely for the use of the addressee. They may contain privileged or confidential information. If you are not the intended recipient, you are hereby notified that any use, disclosure, copying or distribution of this e-mail or its contents is strictly prohibited. If you receive this message in error, please notify the sender immediately and delete the message and any attachments from your system. M&J Recycling processes personal data in accordance with applicable data privacy laws. For more information please see our [Data Privacy Policy](#).

---

**From:** Gesell, Gregory H. <Gregory.Gesell@hdrinc.com>  
**Sent:** 06 June 2025 7:05 PM  
**To:** Rick Brown <rick.brown@mjrecycling.com>  
**Subject:** RE: M&J Shredders

Rick,

I trust you are doing well.

To bring you up to speed on the my German project, we submitted a report as part of the budgeting approval process some time back. We got some comments back on the report which seemed to me to be remarkably fast. They still have a long process though.

They had one comment regarding the power demand for the facility and in particular the equipment since that will make up a large part of that demand. Could you please provide a best guess for the maximum demand for each of the shredders assuming they go with two units in series?

I recognize at this point it can and should only be an estimate and will be dialed in later during design but the team wants to check whether the assume transformers are appropriately sized so I am requesting the power demand for all the equipment. It could be a range if that makes it easier to estimate and either by component or an overall estimate. I am guessing consumption will be around 200 – 250 Hp for each shredder. Is that in the range?

Thanks,

**Greg Gesell, PE**  
*Mechanical Engineer*

**HDR**  
1917 S 67<sup>th</sup> Street  
Omaha, NE 68106-2973

D402 399 4978 M 402 301 3302  
ggesell@hdrinc.com  
hdrinc.com/follow-us

---

**From:** Rick Brown <rick.brown@mjrecycling.com>  
**Sent:** Wednesday, April 30, 2025 11:58 AM

To: Gesell, Gregory H. <Gregory.Gesell@hdrinc.com>

Subject: Re: M&J Shredders

**CAUTION: [EXTERNAL] This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.**

Hey Greg, Sorry for the delayed reply.

Easter break.

Would the unit be fixed and not on tracks? I need it attached to the building.

Yes, we offer it as a stationary system. The e-drive is only available as a stationary system.

Would the unit have the “quick” change out of the cutting table and knives? The operators of the plant will not be completing major maintenance on it or hardfacing. I think what will happen is as the cutting table and knives need work, they would be pulled out by a contractor who would either maintain on site or take to his shop to work on it then return. So I would need the quick removal and a spare cutting table and knives.

Yes, the cutting table is designed to be swapped in 4-8 hours for exactly your application, where swapping a table and hard facing off site is the better solution.

Would going to the 4” nominal in one step mean that the tons processed or hours of operation between major maintenance would be lower? I guess I really am asking how long between overhauls would you expect. I recognize that is a loaded question – this is MSW but will have some metal in it and bullet proof glass that they will try to remove upfront but may miss from time to time.

This is where we need to balance volume reduction and reduction ratios.

What's the priority? One pass shred with lower production or higher production with two shredders (primary and then secondary)

Also I would need to be able to clear out something that is not processible reasonably easily so some way to access and remove the item.

Yes, open table design and the ability to run one shaft to clear the blockage.

I have not had time to look but will try to tomorrow – can I find a P250 eDrive on your website?

At this point we are just working to project approval. We need a budgetary cost for the system – high level, in the ballpark (\$1M, \$2M \$5M). The concept has to get approval to make it a funded project. Then they will likely get preliminary engineering with conceptual drawings when the plans and costs can be refined and then final plans so the installation likely won't be until 2030 – 2035. If we don't get over the first hurdle though the process starts over.

If the project is in 2030, I would budget \$1.3M for a stand-alone P250. Add appropriate price increases.

Best regards,

**Rick Brown**

Distribution Sales Manager

+1 857 276 7998

**M&J Recycling**

2015 Ayrley Town Boulevard

Suite 202

Charlotte, NC 28273-4068 | USA

Read more at

[mjrecycling.com](http://mjrecycling.com)



This e-mail and any files attached are intended solely for the use of the addressee. They may contain privileged or confidential information. If you are not the intended recipient, you are hereby notified that any use, disclosure, copying or distribution of this e-mail or its contents is strictly prohibited. If you receive this message in error, please notify the sender immediately and delete the message and any attachments from your system. M&J Recycling processes personal data in accordance with applicable data privacy laws. For more information please see our [Data Privacy Policy](#).

---

**From:** Gesell, Gregory H.

**Sent:** Monday, April 14, 2025 9:10 PM

**To:** Rick Brown

**Cc:** Brad King

**Subject:** RE: M&J Shredders

Rick,

Thanks for the quick response. Your recommendation sounds reasonable to me. Using just one shredder will take a little more convincing of a few people until they realize tow shredders just means either one could breakdown and shut down operation. Questions -

Would the unit be fixed and not on tracks? I need it attached to the building.

Would the unit have the “quick” change out of the cutting table and knives? The operators of the plant will not be completing major maintenance on it or hardfacing. I think what will happen is as the cutting table and knives need work, they would be pulled out by a contractor who would either maintain on site or take to his shop to work on it then return. So I would need the quick removal and a spare cutting table and knives.

Would going to the 4” nominal in one step mean that the tons processed or hours of operation between major maintenance would be lower? I guess I really am asking how long between overhauls would you expect. I recognize that is a loaded question – this is MSW but will have some metal in it and bullet proof glass that they will try to remove upfront but may miss from time to time.

Also I would need to be able to clear out something that is not processible reasonably easily so some way to access and remove the item.

I have not had time to look but will try to tomorrow – can I find a P250 eDrive on your website?

At this point we are just working to project approval. We need a budgetary cost for the system – high level, in the ballpark (\$1M, \$2M \$5M). The concept has to get approval to make it a funded project. Then they will likely get preliminary engineering with conceptual drawings when the plans and costs can be refined and then final plans so the installation likely won’t be until 2030 – 2035. If we don’t get over the first hurdle though the process starts over.

Thanks,

**Greg Gesell, PE**  
*Mechanical Engineer*

**HDR**  
1917 S 67<sup>th</sup> Street  
Omaha, NE 68106-2973

D402 399 4978 M 402 301 3302  
ggesell@hdrinc.com  
[hdrinc.com/follow-us](https://hdrinc.com/follow-us)

---

**From:** Rick Brown <rick.brown@mjrecycling.com>  
**Sent:** Monday, April 14, 2025 5:00 PM  
**To:** Gesell, Gregory H. <Gregory.Gesell@hdrinc.com>  
**Cc:** Brad King <brad.king@sunmachineryco.com>  
**Subject:** RE: M&J Shredders

You don't often get email from rick.brown@mjrecycling.com. [Learn why this is important](#)

**CAUTION: [EXTERNAL] This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.**

Hi Greg, No worries.

With the data you provided below,

At an 8"-12" minus finished grain size.

A K210 H05 will be 17-22 tph.

A P250 hydraulic drive will 20-30 tph

A P250 edrive (electric direct drive) will 30-40 tph.

The eDrive is incredibly energy efficient and has a lower operating cost than the P250 hydro. They have the same size cutting table.

The K210 would work. The P250's tph is in the lower range, close to 19 tph, instead of potentially maxing out the K210.

The best setup would be a P250 edrive with a 12-knife that would achieve the 4" minus in one pass.

We have an older 4000M (P250 predecessor) with a 12-knife setup processing precisely what you want to do in southern Germany.

I can send you some data sheets and dimensions if that works for you.

Best regards,

**Rick Brown**

Distribution Sales Manager

+1 857 276 7998 office

+1 484 772 0727 cell

## **M&J Recycling**

2015 Ayrslay Town Boulevard

Suite 202

Charlotte, NC 28273-4068 | USA

Read more at [mjrecycling.com](http://mjrecycling.com)



This e-mail and any files attached are intended solely for the use of the addressee. They may contain privileged or confidential information. If you are not the intended recipient, you are hereby notified that any use, disclosure, copying or distribution of this e-mail or its contents is strictly prohibited. If you receive this message in error, please notify the sender immediately and delete the message and any attachments from your system. M&J Recycling processes personal data in accordance with applicable data privacy laws. For more information please see our [Data Privacy Policy](#).

---

**From:** Gesell, Gregory H. <Gregory.Gesell@hdrinc.com>

**Sent:** Monday, April 14, 2025 04:45 PM

**To:** Rick Brown <rick.brown@mjrecycling.com>

**Cc:** Brad King <brad.king@sunmachineryco.com>

**Subject:** RE: M&J Shredders

Rick,

I appreciate the help. I am stressing at this time we are just looking for a budgetary basis so the initial approval process for the project can advance to a preliminary engineering phase. A model number and sketch or catalog cut would be great but is not as important.

Thanks,

**Greg Gesell, PE**  
*Mechanical Engineer*

**HDR**

1917 S 67<sup>th</sup> Street  
Omaha, NE 68106-2973

D402 399 4978 M 402 301 3302  
[ggesell@hdrinc.com](mailto:ggesell@hdrinc.com)  
[hdrinc.com/follow-us](http://hdrinc.com/follow-us)

---

**From:** Brad King <[brad.king@sunmachineryco.com](mailto:brad.king@sunmachineryco.com)>  
**Sent:** Monday, April 14, 2025 1:56 PM  
**To:** rick.brown <[rick.brown@mjrecycling.com](mailto:rick.brown@mjrecycling.com)>  
**Cc:** Gesell, Gregory H. <[Gregory.Gesell@hdrinc.com](mailto:Gregory.Gesell@hdrinc.com)>  
**Subject:** FW: M&J Shredders

**CAUTION: [EXTERNAL] This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.**

Rick  
This is the customer I was talking to you about Friday

Gregory  
Rick is with M&J he will be assisting you

Thanks

**Brad King - President**

206 Two Notch Rd  
Lexington, SC 29073  
O-803-359-1000 x123  
M-803-309-3810

[brad.king@sunmachineryco.com](mailto:brad.king@sunmachineryco.com)

**SUN MACHINERY**

---

**From:** Gesell, Gregory H. <[Gregory.Gesell@hdrinc.com](mailto:Gregory.Gesell@hdrinc.com)>  
**Sent:** Wednesday, April 9, 2025 6:13 PM  
**To:** Brad King <[brad.king@sunmachineryco.com](mailto:brad.king@sunmachineryco.com)>  
**Subject:** M&J Shredders

Brad,

I appreciated talking to you on the phone. As I mentioned, I am looking for some high level planning information for two M&J shredders for a facility at a military base in Germany. They will be processing base municipal solid waste which is mostly residential but they do get waste from the operations. That waste is not supposed to have stuff like part of a track for a tank, chunks of bulletproof glass, large chunks of steel, or cartridges but things happen and they are not always caught before processing. They also get some items such as Meals-Ready-Eat (MREs) or fuel containers that find their way to the plant. They need to shred the waste prior to compacting into a container and shipping to a facility where it is burned to generate energy. The following is a very brief bit of information for the two units.

Stationary primary shredder

19 tons per hour

Output nominally 8 – 12 inches

Operate approximately 4 hours per day 5 days per week

Need to be able to change out the cutting table reasonably quickly (within a day)

Need a feed chute

Stationary secondary shredder

19 tons per hour

Output nominally 4 inches If that is not reasonable, what could be achieved. Goal is to make sure there are no materials remaining that could damage the waste to energy facility where the waste goes.

Operate approximately 4 hours per day 5 days per week

Need to be able to change out the cutting table reasonably quickly (within a day)

Need a feed chute

At this time, we are working toward authorization to replace the underperforming 20-year old facility.

I need

- Basic model numbers and equipment dimensions so we can layout the building for the
  - shredders
  - hydraulic packs
- If you have catalog cuts for a description that would be helpful
- Budgetary pricing for
  - complete systems with all the typical bells and whistles for each shredder system
  - Normal spare parts for a year for each system plus a spare cutting table (shafts and knives) (they will plan to remove the cutting table, hard face, and return to service when the next round of replacement is needed)
- If you can provide any information or a rough idea about the installation costs that would be very helpful but I understand that is not your main work in most cases.

If you have any questions or need more information, please let me know.

Thanks,

**Greg Gesell, PE**  
*Mechanical Engineer*

**HDR**  
1917 S 67<sup>th</sup> Street  
Omaha, NE 68106-2973

D402 399 4978 M 402 301 3302  
[ggesell@hdrinc.com](mailto:ggesell@hdrinc.com)  
[hdrinc.com/follow-us](http://hdrinc.com/follow-us)



# M&J P250e

PATENTED  
MODULAR DESIGN  
Ensures large savings on  
the operating budget

## SPECIFICATION SHREDDER

		P250e 220	P250e 320
Overall dimensions with standard hopper (LxWxH)	inch	325* x 100 x 177	335* x 100 x 177
Standard color	RAL	7011. 9002	
Corrosion class		C2/M	
Loading height (without hopper)	inch	138	
Discharge height	inch	45	
Discharge width	inch	47	
<b>Temperature**</b>		Min	Max
Shredder unit	F	-4°	113°
<b>Grain size</b>			
6 knives	inch	90% less than 17,7	
8 knives	inch	90% less than 12	
9 knives	inch	90% less than 10	
10 knives	inch	90% less than 8	
12 knives	inch	90% less than 4	

\*Length including the conveyor

\*\*Max and min ambient temperature, Fahrenheit. Max altitude 3280 ft.



# M&J P250e



**TOMAHAWK**



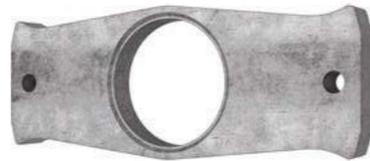
**DRAGON SWORD**



**NINJA STAR**



**SAMURAI**



**BUTTERFLY**



**TACHI**



**CLASSIC**

## Capacity per hour

Household waste	US ton/hour	Up to 110
Demolition wood	US ton/hour	Up to 77
Industrial waste	US ton/hour	Up to 44
Green waste (no stumps or roots)	US ton/hour	Up to 100
Bulky waste	US ton/hour	Up to 61

## CUTTING UNIT

Overall dimensions* (LxWxH)	inch	167.1 x 90.6 x 49.2
Opening in the cutting table (LxWxH)	inch	111.8 x 78.7 x 33.1
Cutting area	inch	97 x 79
Internal volume	ft <sup>3</sup>	144.8
Number of shafts		2
Number of knives		6 / 8 / 9 / 10 / 12
Knives width	inch	3.1 / 3.1 / 3.1 / 3.1 / 2.0
Number of counter knives		12 / 16 / 18 / 20 / 24
Distance between counter knives	inch	9.9 / 6.3 / 5.1 / 4.1 / 2.6
Assembly of the knives on the shaft		Welded
Assembly of the lower knives on the cutting table frame		Welded
Shaft torque	lb/ft	Up to 66
Centre distance between shafts	inch	34.3

\*Cutting Unit without drive, including Top and Cutting module



# M&J P250e

Possibility  
of grain size  
90% < 100 mm

## CUTTING UNIT

Rotating speed rpm Up to 59

### Bearings

Bearing type Roller bearing

Grease consumption oz/h 0,35

### Lubrication system

Automatic lubrication of main bearings with control of the grease supply

## CHASSIS

Overall dimensions (LxWxH) inch 149 x 92 x 89

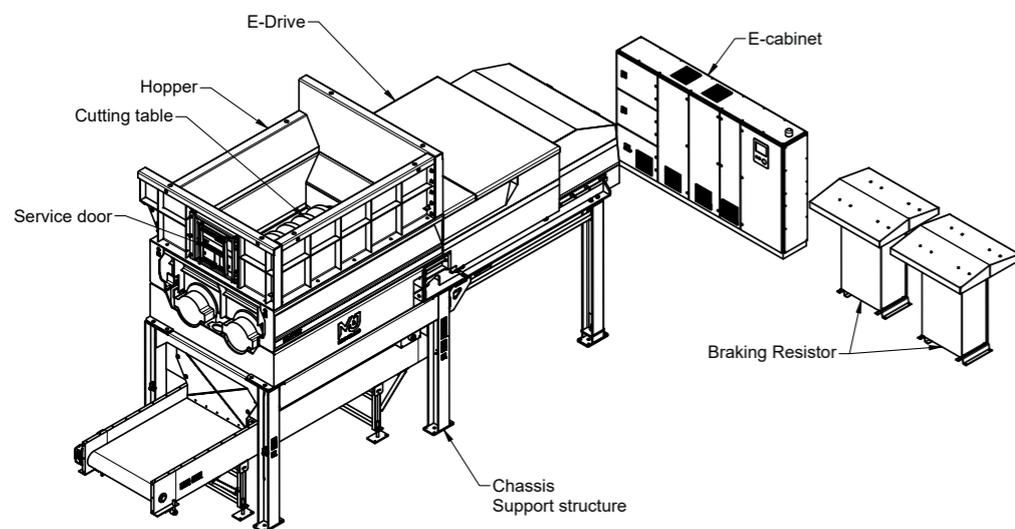
Standard conveyor (LxW) inch 197 x 47

## CONVEYOR DRIVE

Effect - Drive motor Horsepower 4

Belt speed inch/sec 39.4

Bearing type Ball bearing





# M&J P250e

## ELECTRICAL SPECIFICATION

### P250e 220

### P250e 320

Overall dimensions electric cabinet (LxWxH)	inch	123 X 25 X 73		
Power loss electrical cabinet	W	5000		
<b>Location and temperature*</b>		Min	Max	Location
Electrical cabinet	F	14°	86°	Dust free
Breaking resistor	F	NA	122°	Dust free and well ventilated

### Supply

Voltage	V	3 x 480 + PE		
Frequency	Hz	60		
Current - Fully loaded	A	450	575	

### Control voltage

Direct current	24			
Alternating current	230			

### Main e-motor

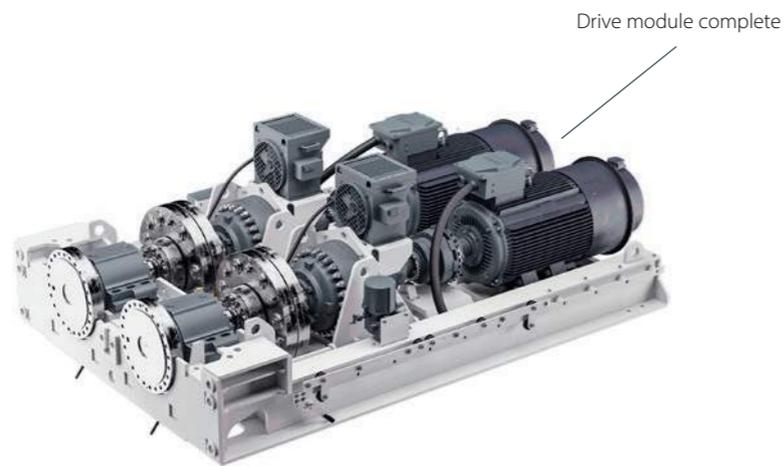
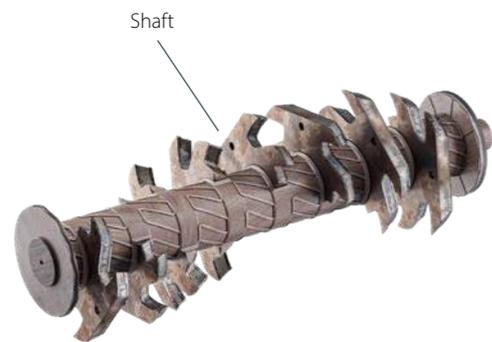
Effect	Horsepower	2 x 150	2 x 215	
Nominal current	A per motor	I <sub>N</sub> 172	I <sub>N</sub> 240	
Idle current	A per motor	I <sub>0</sub> 10	I <sub>0</sub> 10	
Peak current Up to 10% of operation time	A	I <sub>SOFT</sub> 740	I <sub>SOFT</sub> 1090	
Motor protection	per motor	PT100	PT100	

\*Max ambient temperature, Fahrenheit. Max altitude 3280 ft.





# M&J P250e



## PROTECTION AND SAFETY

IP Class	IP	54
Rated short circuit current	kA	30
Earthing system		TN-S
Emergency stop category		Safety category 2

## WEIGHTS (TON)

	6 knives	8 knives	9 knives	10 knives	12 knives
<b>Cutting Table/Module and Shaft</b>					
Cutting module with shafts	8.5	9.5	9.9	10.3	10.0
Top module with sealings			1.4		
Cutting module without shafts	3.1	3.4	3.6	3.8	4.0
Main bearing			0.6		
Shaft	2.8	3.0	3.2	3.3	3.0

## E-drive

		<b>P250e 220</b>	<b>P250e 320</b>
Drive module complete	US ton	12.13	15.43
Electrical panel	US ton	0.88	0.93



6/2/2025

HDR Inc.  
Des Moines, Iowa

RE: Viably USA, LLC Quotation

Greg Gesell

On behalf of Viably USA, LLC I would like to thank you for the opportunity to quote the following machinery and partner with your company. Below is a quotation that outlines the pricing, machine specifications and terms.

The following is not included:

- Electrical
- Site prep
- Lifting equipment

A deposit, signed purchase agreement and drawing would be required to secure production. Lead time approx. 6 months

We look forward to working with HDR Inc. on this project. Please let us know if there are any additional questions.

Regards,

Garrett Lapsys  
Area Sales Manager - Midwest US



Customer: HDR Inc.  
 Phone:  
 Shipping Address: Des Moines, Iowa  
 USA

Quote #: Q-01899-1  
 Date: 6/2/2025  
 Expires On: 7/2/2025  
 Prepared By: Garrett Lapsys

Contact Name: Greg Gesell  
 Phone:  
 Email: ggesell@hdrinc.com

PRODUCT	DESCRIPTION	QTY	NET UNIT PRICE	NET PRICE
Terminator 6000SE Complete Unit	Stationary electric, low-speed, high-torque, single-shaft industrial waste shredder. <b>Standard Features:</b> <ul style="list-style-type: none"> <li>Hydraulic drive system</li> <li>Central Lubrication</li> <li>Remote Control</li> <li>Commissioning and Training Included (two trips maximum)</li> </ul>	1.00	\$942,000.00	\$942,000.00
	Terminator XXF Shredding Unit - drum and countercomb. NOTE: This option is the surcharge ONLY from an "F" to an "XXF" shredding unit. A complete replacement shredding unit is priced separately.	1.00	\$28,000.00	\$28,000.00
	Additional three sided hopper wall extension. Provides additional 3' 7" of height extension on three sides.	1.00	\$13,000.00	\$13,000.00
	Built-in, horizontal conveyor underneath shredder and bolted to shredder frame. <ul style="list-style-type: none"> <li>Side belt seals with inside drum scraper</li> <li>Speed monitoring</li> <li>Cover hood on the discharge end</li> </ul>	1.00	\$32,000.00	\$32,000.00
	Incline discharge conveyor.	1.00	\$45,500.00	\$45,500.00
	Up to height of 60", additional cost applies for anything taller or any seismic requirement.	1.00	\$32,500.00	\$32,500.00
	UMP 130 160 Permanent Overbelt Magnet <ul style="list-style-type: none"> <li>Magnet Block: 51" W X 63" L</li> <li>3.0 kW Motor (Control by Others)</li> <li>EP400/3 Belt</li> <li>cUL Listed Motor</li> <li>Right Hand Drive Side</li> <li>Main Voltage: 480 V/ 3Ph/ 60Hz</li> </ul> + Suspension Rods M24 x 2400 mm  Support Stand not included in Price	1.00	\$43,000.00	\$43,000.00

PRODUCT	DESCRIPTION	QTY	NET UNIT PRICE	NET PRICE
	Two weeks for mechanical install + electrical support + commissioning	1.00	\$50,000.00	\$50,000.00
	Sold Equipment Freight Estimate - Full Package Quoted	1.00	\$65,000.00	\$65,000.00
<b>TOTAL:</b>				\$1,251,000.00

All prices quoted in  
USD

Any potential taxes, duties, fees, and tariffs are not included in the price and are the responsibility of the customer. Freight is FOB Origin location.

Sales Tax/GST: \*

\*Sales tax is estimated based on the shipping address on quote.

The final Sales Tax balance will be calculated on the invoice and can differ from the estimated balance.



SINGLE-SHAFT SHREDDER FOR  
MIXED C&D AND SOLID WASTE

# TERMINATOR

## HIGHLIGHTS

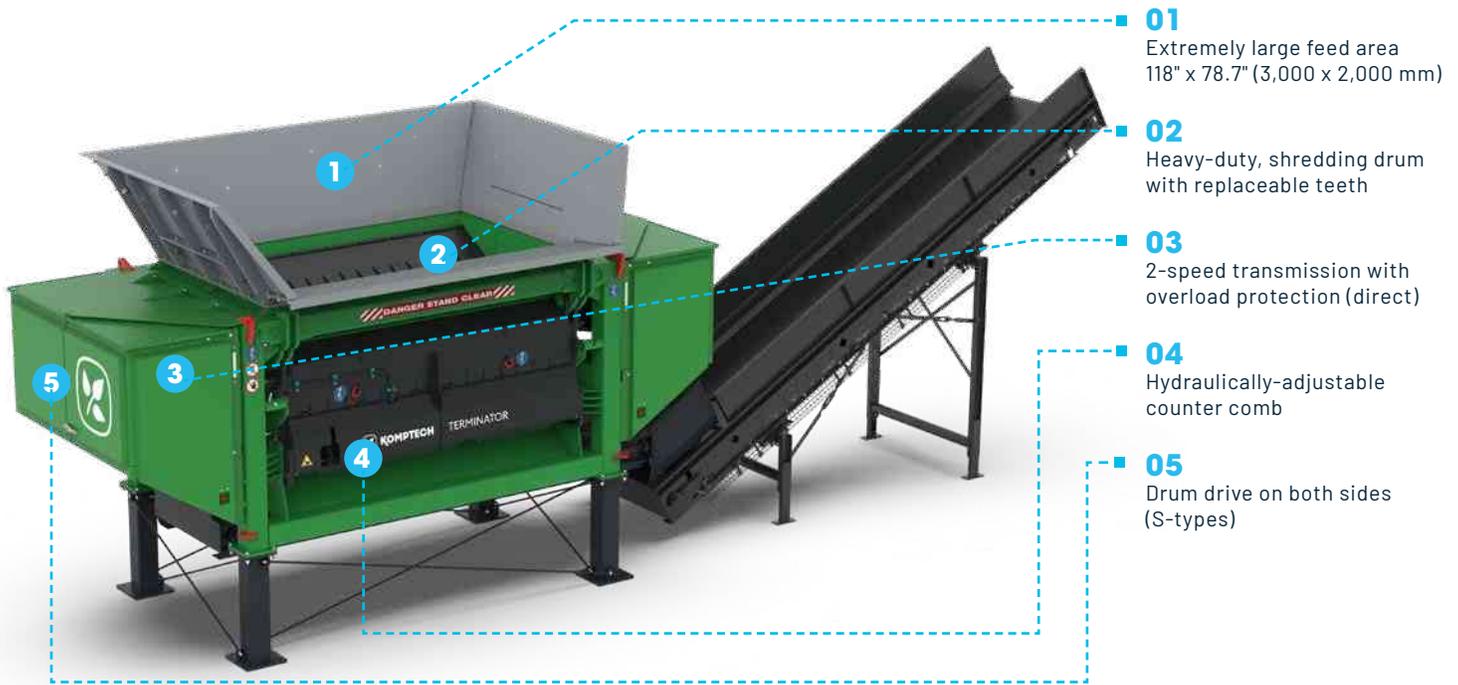
- Efficiently shreds difficult materials including C&D, tires, mattresses, bulky waste, white goods
- Low-speed, high-torque drum delivers high-throughput, load-dependent pre-shredding
- Variable output particle size from by adjusting hydraulic cutting gap and tooth configuration
- Direct drive with automatic 2-speed transmission (Terminator direct) or hydraulic drive with constant power control

The Terminator is a low-speed, high-torque single-shaft shredder built for tough-to-process waste. C&D, railroad ties, carpet, MSW, and tires are no problem for the rugged teeth mounted on the shredding drum with opposing counter comb. The stepless cutting gap enables quick size adjustment of the output material.

Power is delivered by an electric motor with minimal maintenance and transferred to the shredding drum either by a mechanical drive with optimum efficiency, or a hydraulic drive with constant power control. For the hydraulic system, the separation of the drive unit from the shredding unit is an option.



# Komptech Terminator Technology Overview



- 01** Extremely large feed area  
118" x 78.7" (3,000 x 2,000 mm)
- 02** Heavy-duty, shredding drum  
with replaceable teeth
- 03** 2-speed transmission with  
overload protection (direct)
- 04** Hydraulically-adjustable  
counter comb
- 05** Drum drive on both sides  
(S-types)

## KOMPTECH STATIONARY TERMINATOR / Technical Specifications

Terminator Direct Model:	1700	2200	3400	3400 S	5000 S	5200 SL	6000 S	6200 SL
<b>POWER</b>								
Power (kW):	1 x 75	1 x 132	1 x 160	2 x 75	2 x 110	2 x 110	2 x 160	2 x 132
<b>PROPORTION</b>								
Drum Length:	118" (3,000 mm)							
Drum Diameter:	41" (1,050 mm)							
Assembled Weight:	~13.6 tons	~13.6 tons	~14 tons	~15 tons	~15.3 tons	~16.8 tons	~15.8 tons	~17.1 tons
<b>PERFORMANCE (dependent on material)</b>								
Drum Speed:	14/10 RPM	17/13 RPM	19/14 RPM	14/10 RPM	20/14 RPM	Up To 30 RPM	28/20 RPM	Up To 30 RPM
Maximum Throughput:	~15 tons/hr	~20 tons/hr	~30 tons/hr	~35 tons/hr	~55 tons/hr	~60 tons/hr	~75 tons/hr	~80 tons/hr
Terminator Hydraulic Model:	2200	3400	3400 S	5000	5000 S	6000 S		
<b>POWER</b>								
Power (kW):	1 x 132	1 x 160	1 x 160	1 x 200	1 x 200	2 x 160		
<b>PROPORTION</b>								
Drum Length:	118" (3,000 mm)							
Drum Diameter:	41" (1,050 mm)							
Assembled Weight:	~13.6 tons	~13.6 tons	~14 tons	~15 tons	~15.3 tons	~15.8 tons		
<b>PERFORMANCE (dependent on material)</b>								
Maximum Drum Speed:	29 RPM	29 RPM	27 RPM	29 RPM	29 RPM	29 RPM	38 RPM	
Maximum Throughput:	~30 tons/hr	~45 tons/hr	~50 tons/hr	~60 tons/hr	~80 tons/hr	~100 tons/hr		

## TERMINATOR 6000S E- Combined Unit

---



### Customer

HDR Inc.

Author

Brad Check

### Sales organisation

Viably

## TERMINATOR 6000S E- Combined Unit

---

**Terminator 6000 S E CU**  
FTMES60SZEG2

qty. 1

Basic parts TM stationary

Slow-speed single-shaft shredder for all types of waste.

General operating conditions:

Temperature range: -10 °C / +37 °C (14 °F / 98.6 °F)

Paint:

Single-layer paint: 3 colors

RAL 6029 mint green

RAL 7021 black-gray

Layer thickness: min 80 (µm)

Frame TM6000 SE CU

Terminator 6000 S E specific

Hydraulic drive TM 6000SE CU

Specific parts TM S E CU

Specific parts TM hydraulic stat.

---

**Drive unit 6000 E**  
FMES60

qty. 1

Comprising of:

FAE001 Drive container

FAE006 Double PDG 50Hz 2200-6000

FAE0280 Drive unit 6000

FME280001 E-Motor 280kW 400V/50Hz 460V/60Hz

## TERMINATOR 6000S E- Combined Unit

---



**Cooler assembly container roof**  
FAE008

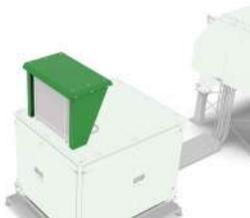
qty. 1

The hydraulic oil cooler is mounted on the roof of the drive container.



**Cooler cover**  
FAE047

qty. 1



**Siemens**  
FEO0002

qty. 1

Programmable logic controller

**Profinet**  
FEO0055

qty. 1

**BM electrical control system**  
FEG280

qty. 1

General conditions of use:  
Temperature range: +5°C / +35°C (41°F / 95°F)

## TERMINATOR 6000S E- Combined Unit

---

Technical data:

Type: TM6000E / TM6000SE / CR6000E / CR6200ED

Power: 280 kW (375 hp) Engine

Dimensions Terminator/Crambo 6000:

1800 x 2000 x 500 mm (5' 11" x 6' 7" x 1' 8") (base height 200 mm (8"))

Dimensions for selection of article

FEO0024 "Internal electrical control system":

1800 x 1600 x 500 mm (5' 11" x 5' 3" x 1' 8") (without base)

Dimensions Crambo 6200 direct:

1800 x 2000 x 500 mm (5' 11" x 6' 7" x 1' 8") (base height 200 mm (8"))

Temperature range:

Protection type: IP54 / Nema 12

Cable entries: from below

Design: 1,5 mm (0.06") sheet-steel housing (lockable)

Paintwork: RAL7035

Outside Switches: primary switch (lockable), emergency stop button

Notice:

According to EN 60204 the control panel and all emergency stop devices must be easily accessible and located between 0.6 m (23 5/8") and 1.7 m (5' 7") above the access level!

---

<b>Soft start 280 kW</b>	qty. 1
--------------------------	--------

FEM280SS

Technical data:

Type: start-up variant soft start

Power: 280 kW (375 hp)

Mode: rated operation S10

Current: starting current approx. 2,5 x rated current (guideline)

Notice:

No frequency conversion possible!

---

<b>Internal electrical control system</b>	qty. 1
---	--------

FEO0024

Electrical control system integrated in drive unit

The operating device (eg main control panel, all emergency stop) of the power supply device (supply circuit disconnecting) must be easily accessible and between 0.6 m (23 5/8") and 1.7 m (5' 7") above the

## TERMINATOR 6000S E- Combined Unit

---

access level.

---

<b>Oilflex cable 4G150 mm<sup>2</sup></b> FEO0048	qty. 1
--	--------

Technical data:

Type: 2 pcs. Oilflex cable

Diameter: 57,4 mm (2.3")

Bending radius: 230 mm (9.1")

Cable length: 4 m (13' 1")

---

<b>Control panel in electr. control system</b> FEO0057	qty. 1
---	--------

Control panel integrated in electrical control system

The operating device (eg main control panel, all emergency stop) of the power supply device (supply circuit disconnecting) must be easily accessible and between 0.6 m (23 5/8") and 1.7 m (5' 7") above the access level.

---

<b>Connect!</b> FMZ3503	qty. 1
----------------------------	--------

Connect! is the innovative telematics solution from Komptech. Thanks to a modern and clear user interface, the user always has an overview of the operating status.

Technical data:

Transmitter module: Komptech - M221 module

Transmission type: GSM - 2G / 3G / 4G

Certification: CE, FCC

Possible (data) export formats: xls.\* (Excel file)

Access / access data:

The users are invited by the respective local Komptech sales partner invited by e-mail.

Note:

The Connect! system is designed exclusively as a read-only system. It is not possible to change any parameters, e.g. by remote maintenance. is not possible.

The Connect! application is provided free of charge by Komptech until

## TERMINATOR 6000S E- Combined Unit

---

further notice. Komptech reserves the right to charge a fee for the continued use of Connect! at a later date or to terminate the provision. Any changes / adjustments will be notified in writing\* at least 4 weeks in advance.

---

<b>Covering design version 1 CU</b> FAE021	qty. 1
---	--------

Required for following selection:  
 Internal electrical control system  
 Control panel in electr. control system / external

---

<b>Adaptation electrical engineering USA</b> FEO0016	qty. 1
---	--------

Design of all drives /electrical components in 480V / 60Hz instead of 400V / 50Hz.

---

<b>Drum TM-XXF 22 teeth armored</b> FTMW2210G2	qty. 1
---	--------

Shredding drum with highly wear-resistant tooling

Comprising of:

- improved labyrinth liner of the drum by means of armored wear ring
- tooth bracket additionally fully armored
- additional armored wear strips on the drum

Length of shredding drum: 3000 mm (9' 10")

Outside diameter: 1050 mm (3' 6")

Drum tube diameter: 770 mm (2' 6")

screwable XXF-shredding teeth with armored cutting edges

number of teeth: 22 pcs. armored

hydraulically adjustable cutting clearance: 0-45 mm (0" - 0' 2")

inclusive armored return flap



## TERMINATOR 6000S E- Combined Unit

---

**Counter comb TM-XXF armored**  
FTMG10

qty. 1

Counter comb with screwable armored XXF shredding tools  
Straight cutting edge  
23 pcs. teeth armored inclusive removing mandrel



**Labyrinth liner**  
FTMW001G2

qty. 1

TM drum and drum bearing sealing by means of labyrinth segments and sealing segments.



**Filling hopper rigid asymmetric**  
FMZ1502

qty. 1

Seeding hopper (Rigid hopper walls)  
- filling height: 2254 mm (7' 5") + height substructure  
- filling width: 3990 mm (13' 1")  
- filling depth: up to 2850 mm (9' 4")  
- Volume: approx. 7 m<sup>3</sup>



## TERMINATOR 6000S E- Combined Unit

---

---

**Outfeed conveyor HC**  
FTMZ1706

qty. 1

## Technical data:

Belt width: 1000 mm (3' 3")

Center distance: 4350 mm (14' 3")

Conveyor speed: 1,4 m/s (4.6 ft/s)

Belt: Profile (V-Profile)

Power: 4,0 kW (5,4 hp)

Built in situation: Horizontal underneath shredder

Outfeed height: 1000 mm (3' 3")

## Equipment:

- Side belt seals
- Inside drum scraper
- Without outside belt scraper
- Speed monitor
- Sidewise safety cover from bottom and rear
- Cover hood, one side with steel palte, on out feed side with rubber curtain



---

**Preparation outfeed conveyor**  
FEO0006

qty. 1

Electrical preparation outfeed conveyor 7,5 kW (10 hp)

---

**Discharge conveyor L antimagnetic**  
FMZ160602

qty. 1

## Technical data:

Type: "L" Large

Design: antimagnetic area (position selectable)

Belt width: 1200 mm (3' 11")

Center distance: 6940 mm (19' 6")

Conveyor speed: 1,7 m/s (5.8 ft/s)

Belt: Profile (V-Profile and shoulder)

Power: 7,4 hp (5,5 kW)

## TERMINATOR 6000S E- Combined Unit

---

Built in situation: 30° rising  
 Substructure: minimum 1000 mm (3' 3") required

**Equipment:**

- Side belt seals
- Inside drum scraper
- Without outside belt scraper
- Speed monitor
- Continuous side wallds
- Sidewise safety cover up to 2500 mm (8' 2") from floor level
- Separate support of the conveyor (not fixed on the Shredder)




---

**Preparation discharge conveyor**  
 FEO0007

qty. 1

Electrical preparation discharge conveyor 7,5 kW (10 hp)

---

**Remote control**  
 FMZ11402

qty. 1

- Radio technology in the 2.4 GHz frequency range
- Automatic frequency management
- Machine status visible on the display
- Charging spot on machine
- Additional charging tray included e.g. for wheel loader



## TERMINATOR 6000S E- Combined Unit

---

---

**Central lubrication**

qty. 1

FTME007

- Central grease lubrication with automatic piston pump
- Integrated control for all main lubricating points
- Outfeed- / discharge conveyor belt excepted (lifetime lubricated)
- External filling connection

---

**Substructure height 1500 mm**

qty. 1

FMZ2806

- Comprising of:
- 6 pcs. Pedestal
  - Chemical anchors

Substructure height: 1500 mm (4' 11")

**Notice:**

Check the condition and thickness of the floor!



---

**Additional lacquer coat**

qty. 1

FMZ2714

Additional layer thickness: total min. 80 µm

The maximum manufacturable layer thickness is 240 µm.

Paintwork: 80 µm + max. 2 x 80 µm = 240 µm

**Notice:**

The type of the coating with a special coating structure (e.g. C4, according to standard DIN EN ISO 12944-2) must be checked separately and cannot be covered by this option by default.

Purchased components are excluded.

This option does not include special painting!

No additional discount may be granted for this option!

## TERMINATOR 6000S E- Combined Unit

---

---

**Transfer conservation**

qty. 1

FMZ2703

Light conservation of the machine.

Type: Rustilo DW 300 X

Recommended cleaning agent: Castrol Techniclean AS 58

Notice:

No additional discount may be granted for this option!

---

**TM-XXF drum teeth armored**

qty. 1

FTMVT003

Consisting of:

- 22 pcs. F-teeth armored
  - 22 pcs. fixing bolts
- 

**TM-XXF counter comb teeth armored**

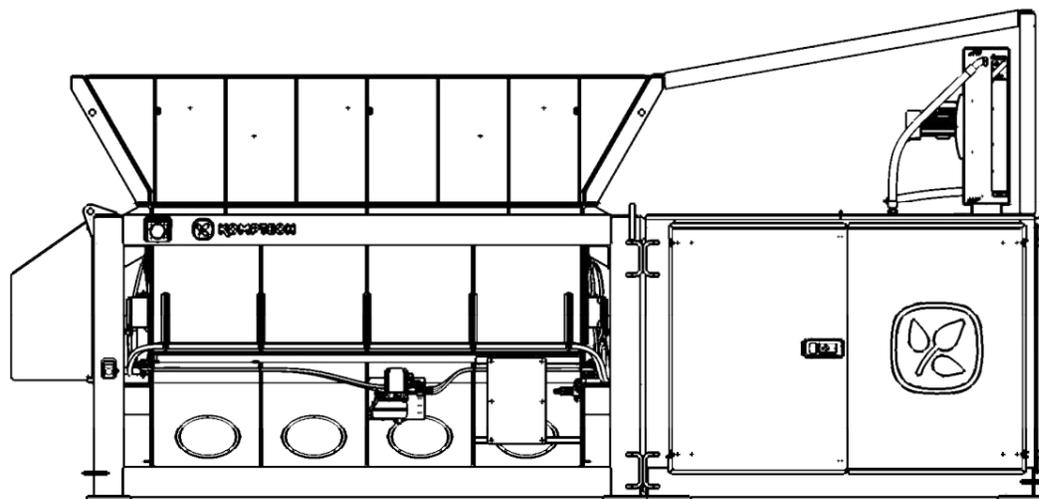
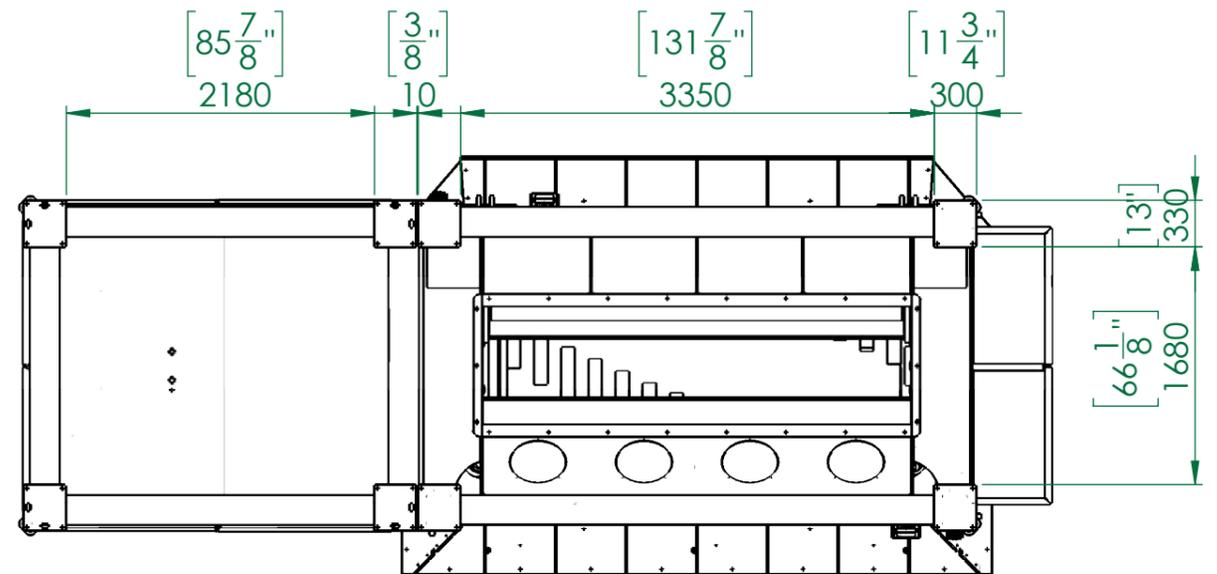
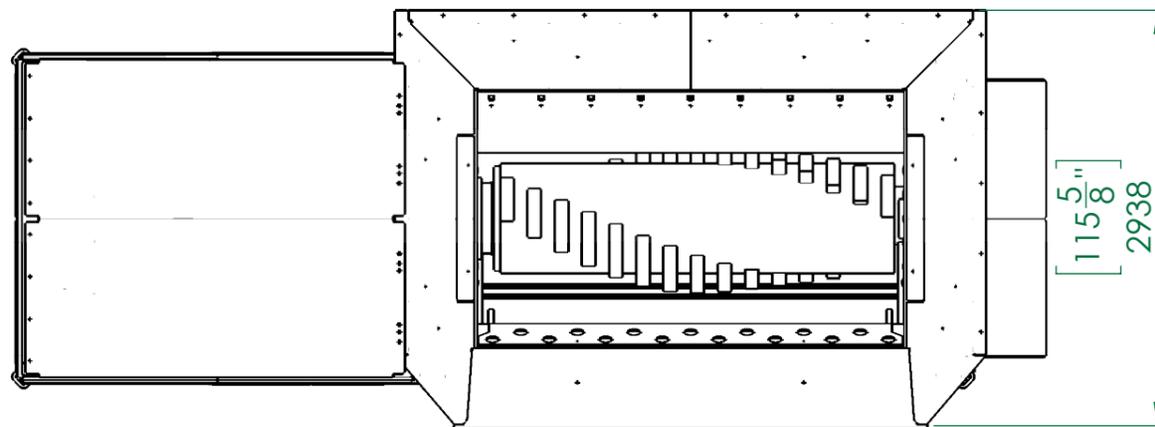
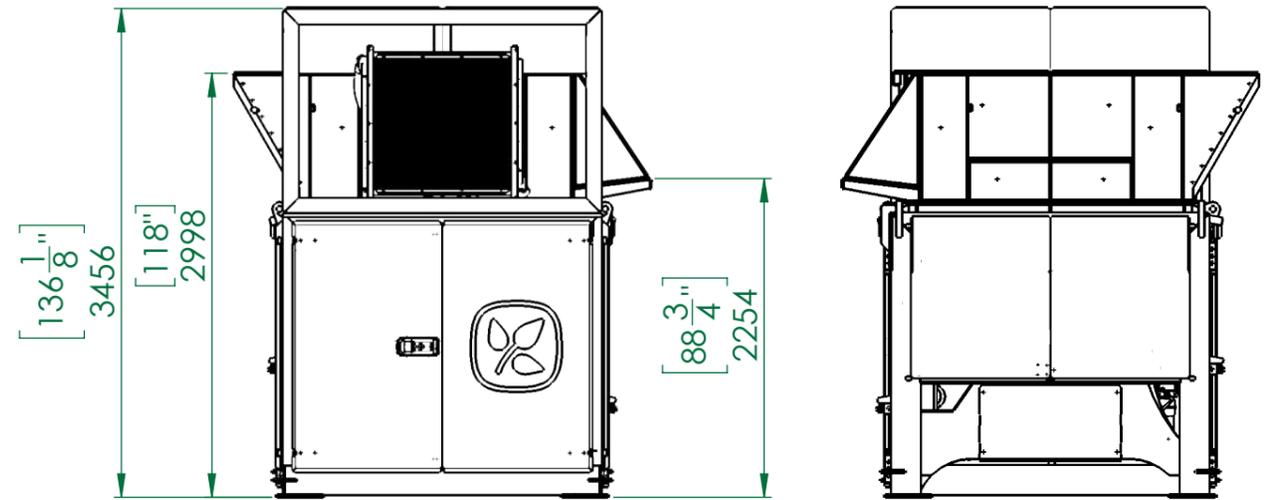
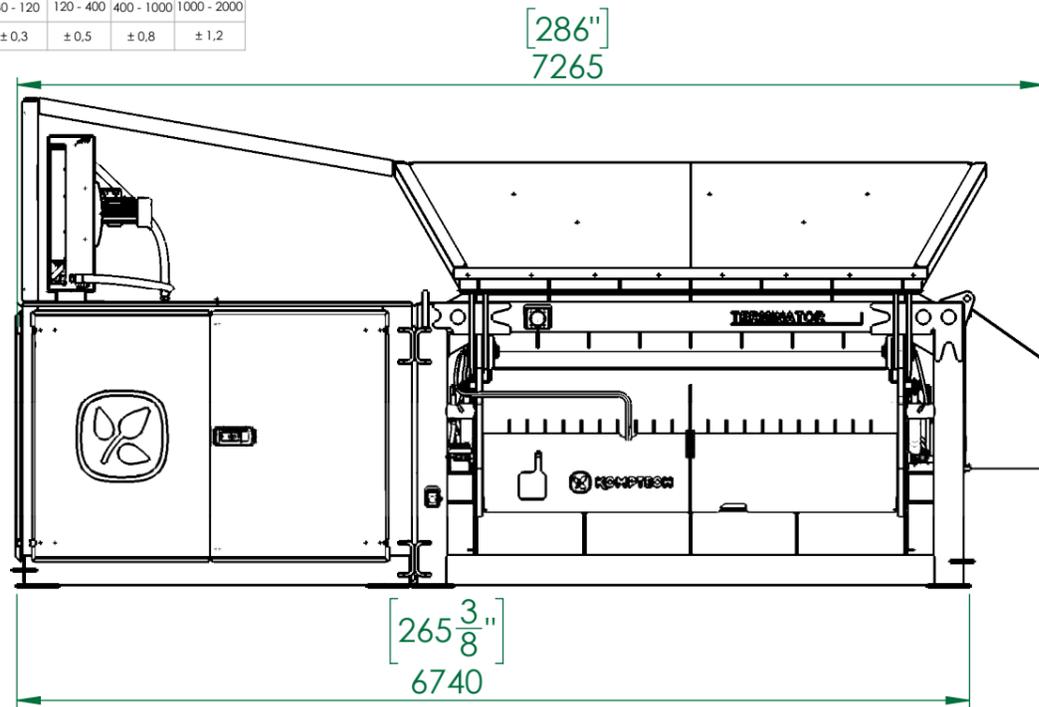
qty. 1

FTMVT011

Comprising of:

- 23 pcs. counter comb teeth TM-XXF
  - 23 pcs. washers
  - 23 pcs. fixing bolts
-

Freimaßtoleranz, DIN 7168 mittel							
Maß.	0,5 - 3	3 - 6	6 - 30	30 - 120	120 - 400	400 - 1000	1000 - 2000
Tol.:	±0,1	±0,1	±0,2	±0,3	±0,5	±0,8	±1,2



Dimensions valid for TM3400S E CU, TM5000S E CU and TM6000S E CU

Bez.	Änderung und Ergänzung	Tag	Name	Gepr.
1				
2				
3				

Gez.	Datum	Name
Gepr.	Datum	St. Mayer
Norm gepr.		-

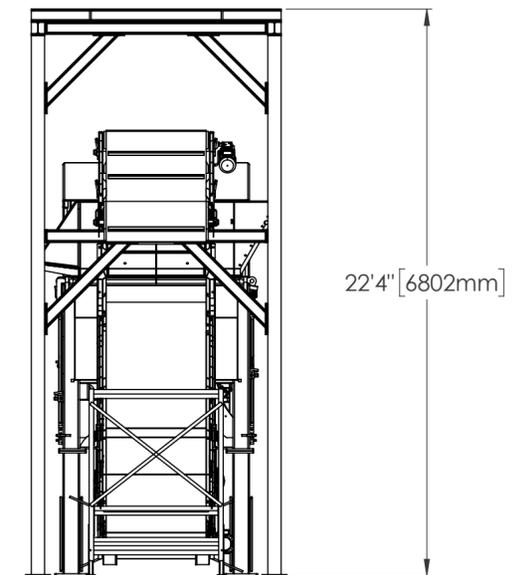
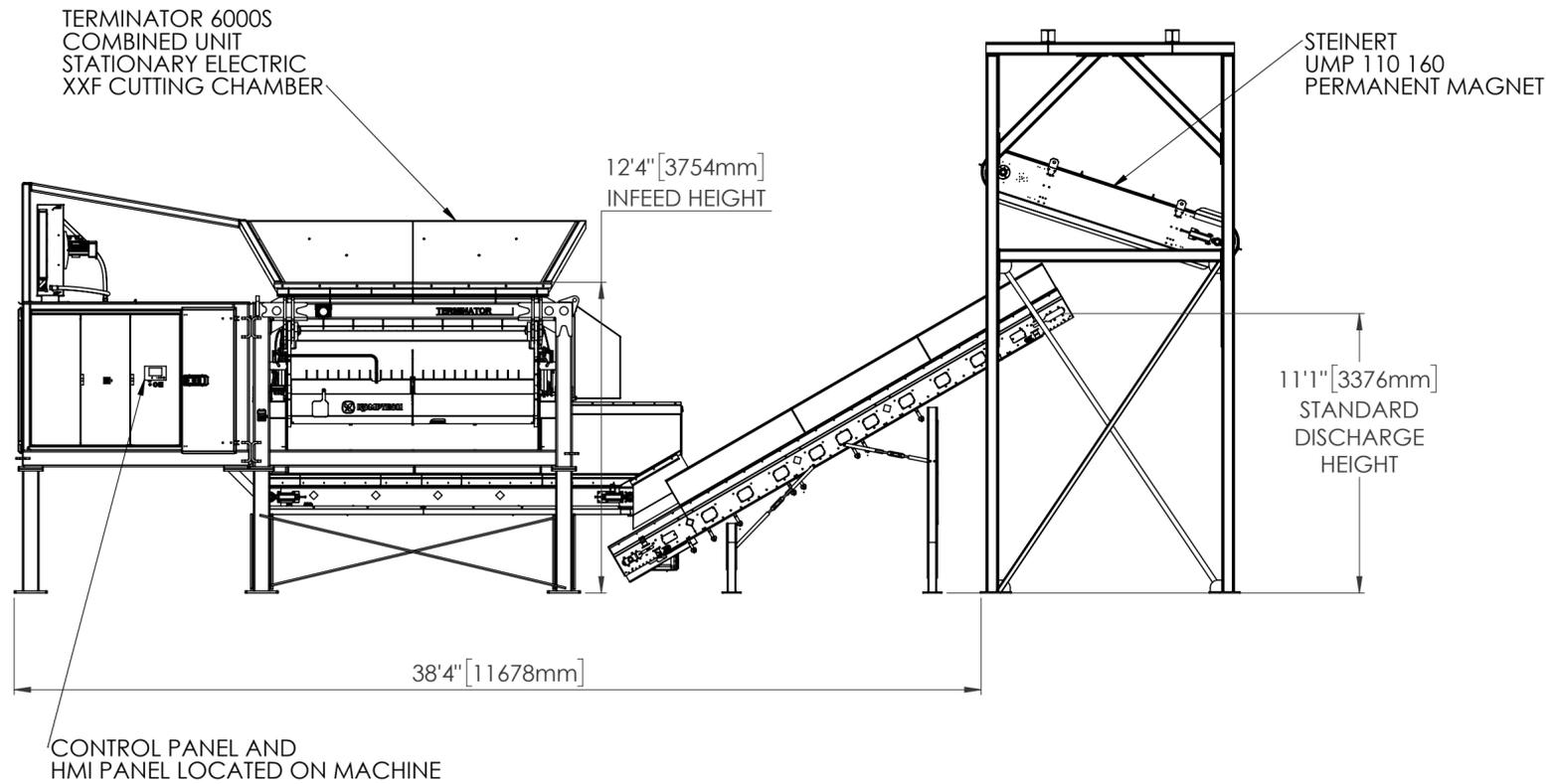
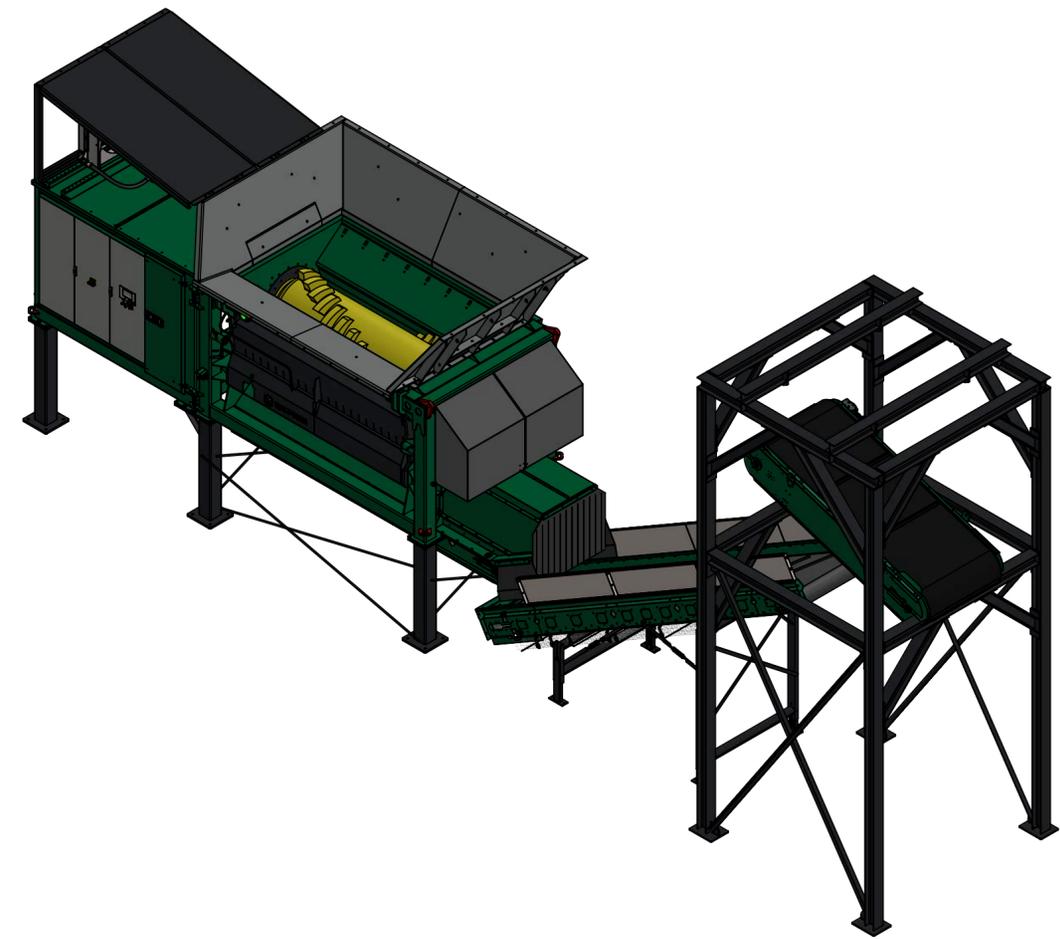
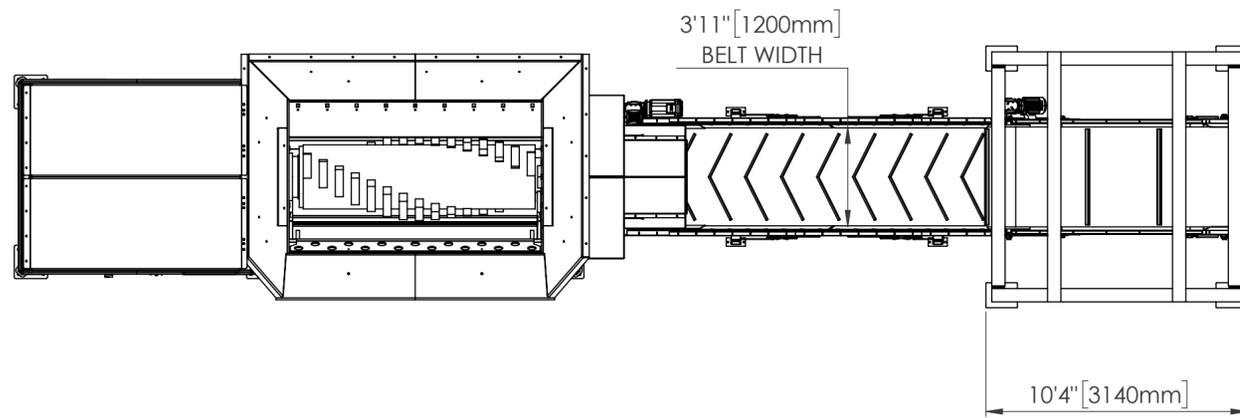


**KOMPTECH**  
 Kühau 37  
 A-8130 Frohnleiten  
 Tel: +43 3126 505-0  
 mail: info@komptech.com  
 http://www.komptech.com

Maßstab	Benennung	Zng. Nr.
1:50	TMXXXX E ZE	-

Freimaßtoleranz	Rev.Nr.:	Ersatz für:	Blatt 1/1
mittel			A3

GENERAL TOLERANCES:				DIMENSIONS ARE INCH UNLESS OTHERWISE SPECIFIED		FRACTIONS 1/32	
DIM. (INCH)	X.XXX	X.XX	X.X	ANGULAR ±0.5°		125 SURFACE FINISH	
UP TO 6	± 0.005	± 0.015	± 0.030				
6 TO 36	± 0.010	± 0.030	± 0.040				
36 TO 72	± 0.020	± 0.045	± 0.050				
72 TO 120	± 0.030	± 0.060	± 0.090			BREAK ALL SHARP EDGES TO 0.031" X 45°	
OVER 120	± 0.040	± 0.075	± 0.120				



EC	Engineering Changes and Additions	Date	Name	Checked
1				
2				
3				

Designed	5-28-25	CHECK		6345 Downing St. Denver, CO 80216 Tel: +1 720 890 9090 mail: hello@thinkviably.com https://www.thinkviably.com
Checked by				

Scale	Name	Project Number:
HDR TERMINATOR 6000S E CU PRELIMINARY DRAWING		Replacement For:
THIS DRAWING IS NOT TO BE USED OR RECREATED WITHOUT PERMISSION OF VIABLY.		Engineering Change Level: Sheet 1/1

## Gesell, Gregory H.

---

**From:** Nathan Wilt <NWilt@ssiworld.com>  
**Sent:** Friday, May 30, 2025 10:18 AM  
**To:** Gesell, Gregory H.  
**Subject:** RE: Shredder need

**CAUTION: [EXTERNAL] This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.**

Dear Gregory,

For 50tph, as long as the material is of sufficient density (around 350 lbs/yd<sup>3</sup> or so), the PR4200 would still be a good fit for MSW. You can direct feed a PR4200 with a loader or material handler, but we typically don't like to go smaller than the PR4200/4400 when being direct loaded with a wheel loader unless it is a smaller unit.

Depending on the goals, you may want to screen to remove organics after the first magnet, and then do a density separation to split the flow and make the eddy's more effective. The eddy currents typically don't like a heavy burden depth, so hitting it with something like drum separator would likely be a good idea. We would typically do that, another magnet to catch any remaining ferrous, and then the eddy current.

Best regards,



**Nathan Wilt | Technical Sales**  
**SSI Shredding Systems, Inc.**  
**Office:** 503-682-3633 | **Direct:** 503-682-6475 |  
**Cell:** 503-877 4171  
9760 SW Freeman Drive Wilsonville, Oregon 97070  
[nwilt@ssiworld.com](mailto:nwilt@ssiworld.com)

---

**From:** Gesell, Gregory H. <Gregory.Gesell@hdrinc.com>  
**Sent:** Thursday, May 29, 2025 3:54 PM  
**To:** Nathan Wilt <NWilt@ssiworld.com>  
**Subject:** RE: Shredder need

Nathan,

I appreciate your getting back with the holiday and all.

They want to recover ferrous and non-ferrous metal downstream. I think the ferrous recovery would be okay but the non-ferrous would be a little chunky.

They also are thinking they might want to increase to 50 tph so they can cut back to one shift. I imagine that will push to a larger unit size?

I have a few more comments below in **green**. Could you direct me to a link or a standard drawing for dimensional information so I can make sure I allocated enough space.

They are also looking at a baler. The primary material would be cardboard and paper but they eventually would be looking at single stream plastics. It would not be heavy use but I know cardboard is tough to bale. It will probably be in a next phase though. What information do you need to for sizing and costing for it?

Thanks,

**Greg Gesell, PE**  
Mechanical Engineer

**HDR**  
1917 S 67<sup>th</sup> Street  
Omaha, NE 68106-2973

D402 399 4978 M 402 301 3302  
[ggesell@hdrinc.com](mailto:ggesell@hdrinc.com)  
[hdrinc.com/follow-us](http://hdrinc.com/follow-us)

---

**From:** Nathan Wilt <[NWilt@ssiworld.com](mailto:NWilt@ssiworld.com)>  
**Sent:** Wednesday, May 28, 2025 5:35 PM  
**To:** Gesell, Gregory H. <[Gregory.Gesell@hdrinc.com](mailto:Gregory.Gesell@hdrinc.com)>  
**Subject:** RE: Shredder need

**CAUTION: [EXTERNAL] This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.**

Dear Greg,

Apologies on the delay – I’ve been on the road the last 3 weeks and have been trying to dig myself out.

With what you’ve described, we’d likely go with a PRIMAX style machine – the PR4200. A 6-8” particle size is a bit on the smaller size of this style of high throughput machine. We would typically target more of a 10-12” particle size – is that ok? What is driving the particle size request?

Ballpark price for a PR4200 with options would be \$580-650K depending on the options that are desired. I’ve attached a sales layout drawing of a standard PR4200. Please see below for comments in **RED** for your questions.

Best regards,



**Nathan Wilt | Technical Sales**  
**SSI Shredding Systems, Inc.**  
**Office:** 503-682-3633 | **Direct:** 503-682-6475 |  
**Cell:** 503-877 4171  
9760 SW Freeman Drive Wilsonville, Oregon 97070  
[nwilt@ssiworld.com](mailto:nwilt@ssiworld.com)

---

**From:** Gesell, Gregory H. <[Gregory.Gesell@hdrinc.com](mailto:Gregory.Gesell@hdrinc.com)>  
**Sent:** Tuesday, May 20, 2025 12:00 PM  
**To:** Nathan Wilt <[NWilt@ssiworld.com](mailto:NWilt@ssiworld.com)>  
**Subject:** Shredder need

Nathan,

I have a need for a shredder for a facility. A few basics to start –

- 25 – 30 tph mixed MSW Latest they are thinking about 50 tph
- 6” – 8” particle size
- Outflow will go to a ferrous magnet then two stages of eddy current separator for metal recovery. Waste will be landfilled.
- Located indoors.
- Frontend Loader fed. We typically recommend at least a PR4200 as the minimum size for direct feeding with a frontend loader. Any smaller, and the bucket of the typical buckets at waste transfer stations gets too close to the size of the hopper opening. You can flare out hoppers on smaller machines, but it can lead to material hanging up in the hopper. I will look at a metal pan conveyor to feed the unit.

For this project I will need a good cost estimate and will need to develop a layout. Please provide drawings for the shredder as well as the power pack. I will need to know clearances for maintenance (Typically we recommend 3’ of clearance around the machine and the HPU). We need to size a transfer station and the shredder will be located on the tipping floor.

It is shredding residential municipal solid waste but there could be explosives, typically an improperly disposed propane cylinder, smaller camping size as well as gas grill size. Possibly other hazards such as batteries or other items that could explode or burn. There will be workers not far away – in the loader, truck drivers, etc. I would like to discuss what safety measures you recommend – do you recommend a bunker enclosure? The Shredder itself is fine with this, but as you mentioned, propane bottles can become rockets if they get into the shredder. We have seen customers try different options, from making chain-link ‘enclosures’ on the hopper hood to stand-alone walls. The issue is that you want the hopper open to easily feed it, but the more open you make it, the more that material can escape. Providing a physical barrier to workers (and especially the public) would likely be something that should be designed into the building. We place warning decals on the PRIMAX machines to stay back 50’ when in operation.

How close does the hydraulic power unit need to be? Hose length should ideally be less than 15’, needs to be less than 20’. Ideally, the HPU is next to the drive end of the shredder.

The transfer station operators will complete their own maintenance on the shredder. If they plan to run the unit for 8 hours per day, how long will they be able to operate before they need to complete hard facing and other work? If the shredder is designed for say 30 tph, do you have a feel for how many hours it will operate and still be able to achieve 20 – 25 tph throughput? PRIMAX units are some of the more maintenance friendly shredders out there due to the cutting action. The PR4200 will easily be able to hit 40tph with MSW, so you could plan on 30tph for all 8 hours. Hardfacing is typically every 6 months or so, but with the cartridge design, we have a lot of customers that just run the units until they are worn (typically 2-3 years), and just swap out the cartridge and the cutters in a weekend or so. It takes a reasonably sized crew and the proper equipment, but is entirely possible to do in a weekend.

For this project I am on a tight schedule. We hope to get to a final design yet this year and want to be operating by June 2027. Is that possible? Lead time is 17 weeks right now on a shredder. The site construction will be the main driver on your schedule – the shredder would be a small part of that and fabrication is typically done in parallel with construction as long as we get a delivery date in sufficient time (6 months in advance is great, but we can get by with 17 weeks).

I will need cost information. The project is in Iowa. If you can approximate shipping costs, startup support, etc. that would be helpful. Basic cost information is provided, but a 2027 price is honestly not something I can provide with any level of firmness. We could tie it to an appropriate industrial index, but equipment prices have changed a lot in the past 2 years, and depending on tariffs and other factors, could be all over the place. Right now, I’d plan

on \$12K for shipping to Iowa. A 3 day startup is included with the price, but you'll need to plan on riggers to assemble the unit once onsite (typically 2-3 days with a 3 person crew and appropriate equipment to lift 40,000 lbs), and electricians to wire it (Figure 400A service). That helps. We will use the 2025 costs and escalate them recognizing there are a lot of wild cards these days..

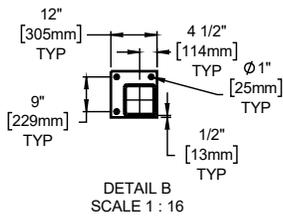
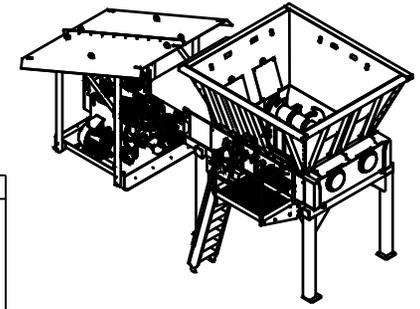
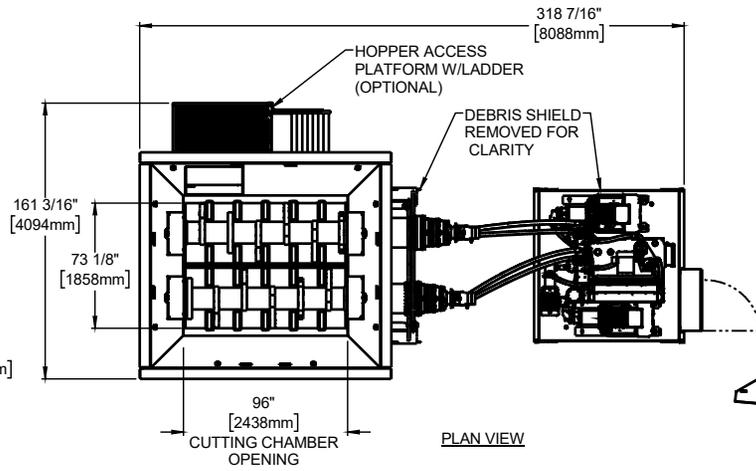
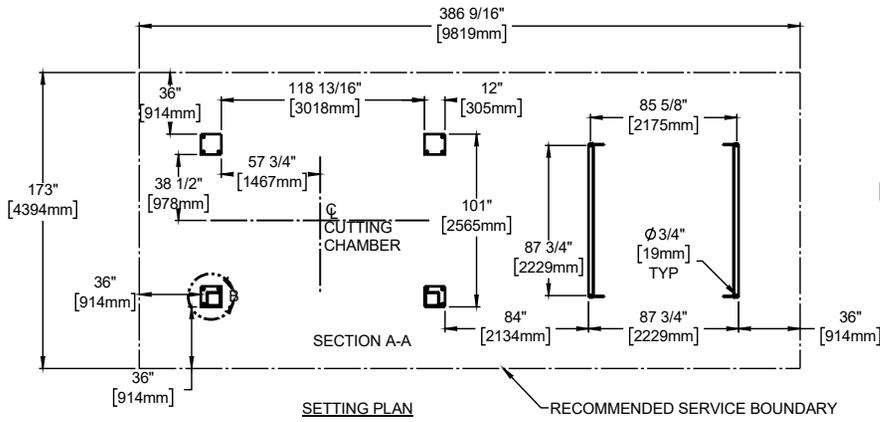
I will try to call to discuss or call me when convenient.

Thanks,

**Greg Gesell**, PE  
*Mechanical Engineer*

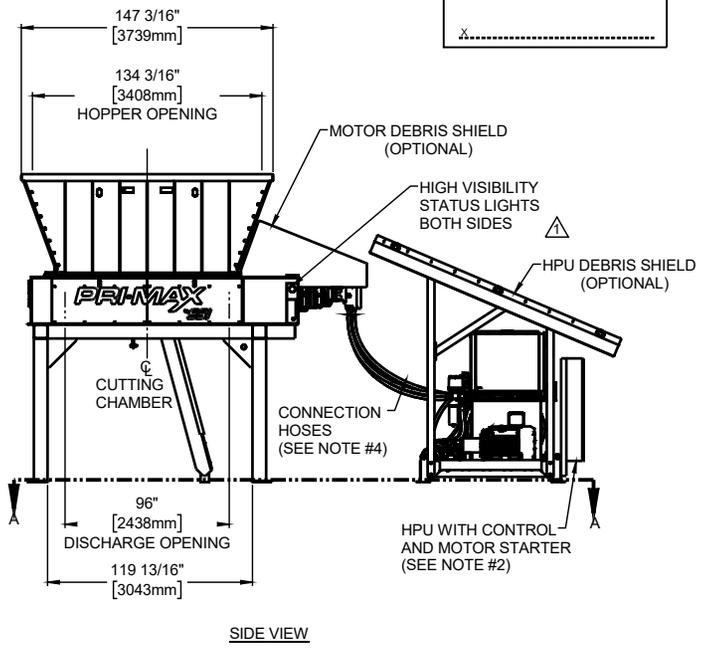
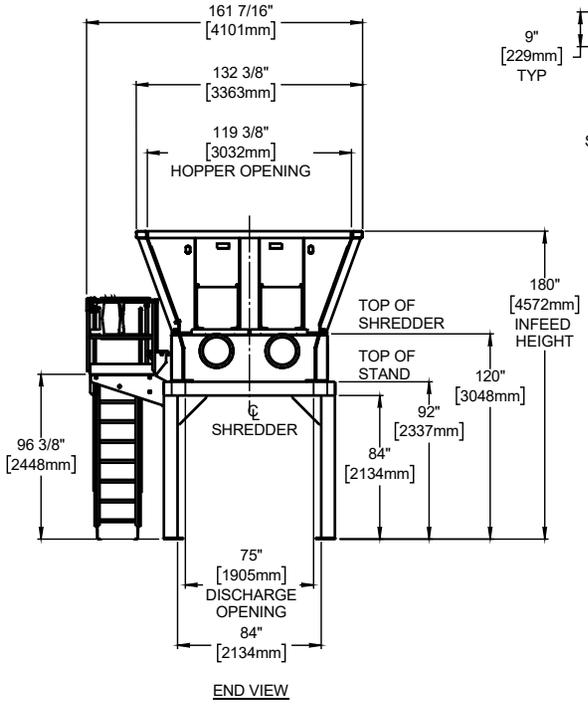
**HDR**  
1917 S 67<sup>th</sup> Street  
Omaha, NE 68106-2973

D402 399 4978 M 402 301 3302  
[ggesell@hdrinc.com](mailto:ggesell@hdrinc.com)  
[hdrinc.com/follow-us](http://hdrinc.com/follow-us)



CUSTOMER APPROVAL

SPECIFY STAND HEIGHT (FILL IN BOX)



- NOTES:**
- DIMENSIONS MAY DIFFER FROM ROUNDED VALUES ON SPECIFICATION.
  - ELECTRICAL PANEL(S) SHIPPED LOOSE.
  - STAND DEPICTED AT THE MAXIMUM STANDARD HEIGHT OF 84" (2133mm). HEIGHT OF STAND CAN BE ADJUSTED TO ANY CUSTOMER REQUIREMENTS. CONTACT SSI FOR ADDITIONAL NEEDS.
  - REGARDLESS OF HPU LOCATION, HOSE LENGTH LIMITED TO 15 FT (5000mm) UNLESS REVIEWED BY SSI ENGINEERING.
  - PRI-MAX™ SYSTEM SUBJECT TO SEISMIC PROTECTION DESIGN & REVIEW (BY OTHERS).

2	CHANGED HPU	DR16847	7/18/22	HES	MSS
1	REPLACE STAND	DR16388	1/14/22	TMS	MSS
0	RELEASED	DR15871	7/19/21	TMS	MSS
REV	CHANGE DESCRIPTION	PDR NO	DATE	DRAWN	APPR

**SSI** Shredding Systems Inc.  
 9760 SW Freeman Drive  
 Wilsonville, OR 97070-9286 USA  
 (503) 682-3633 FAX (503) 682-1704  
[www.ssiworld.com](http://www.ssiworld.com)

THIS PRINT CONTAINS CONFIDENTIAL INFORMATION WHICH IS THE PROPERTY OF SSI SHREDDING SYSTEMS, INC. BY ACCEPTING THIS INFORMATION, THE BORROWER AGREES THAT IT WILL NOT BE USED FOR ANY PURPOSE OTHER THAN THAT FOR WHICH IT IS LOANED.

**SYSTEM LAYOUT - PR4200**

DATE	DRAWN BY	SCALE
7/19/21	T.SMITH	1:36
REV	MODEL	SHEET
	853716-D	1/1
		2

**Magnet**

MAILING ADDRESS: P. O. BOX 10608 ♦ ERIE, PENNSYLVANIA 16514-0608 ♦ U. S. A.  
LOCATION: 2200 ASBURY ROAD ♦ ERIE, PENNSYLVANIA 16506 ♦ U. S. A.  
E-MAIL: [eriez@eriez.com](mailto:eriez@eriez.com) ♦ WEB SITE: [www.eriez.com](http://www.eriez.com)  
PHONE: 814/ 835-6000 ♦ FAX: 814/ 838-4960



May 22, 2025

Mr. Greg Gesell  
HDR  
1917 S 67<sup>th</sup> Street  
Omaha, NE 68106-2973

**SUBJECT: ERIEZ SRP PERMAMENT MAGNETIC SCRAP DRUM SEPARATOR**

Dear Greg:

Thanks for requesting pricing for Eriez SRP Permanent Magnetic Scrap Drums and the following proposal is based on the two sizes we discussed. Please review and advise if you have any questions or need additional information:

**QTY (1) – Eriez SRP Permanent Magnetic Scrap Drum Separator with the following features:**

- 3/8" Thick heavy duty manganese shell
- Radial or agitating magnetic elements
- Fabricated drum end flanges, clamp block, heavy duty sealed bearings, driven sprocket
- Magnetic element adjustment bar
- Mild steel shaft to match existing shaft
- Low maintenance and running cost
- Wide magnetic pick-up zone

**Net Price 60" Diameter x 72" Wide: \$127,060.00 each**

**Net Adder for 10HP Drive Package including Drive Sprocket, Chain, TEFC Motor with Chain Guard: \$13,500.00 each**

**Payment Terms:**

1/3 Due at time of order placement, 1/3 due prior to shipment, 1/3 due Net 30 Days, Ex Works Eriez Manufacturing's factory, Erie PA (Incoterms 2000), subject to Eriez Credit Department review and to Eriez' Terms and Conditions of Sale, a copy of which is attached, or can be obtained at <http://www.eriez.com>. Taxes may be applicable dependent upon state, province, or country.

**Lead Time:**

Approximately 16 weeks after receipt of order. **The Manufacturing Estimate is calculated from Eriez current backlogs and does not reflect a guarantee of shipment. This estimate may vary depending upon the timing of order placement, item quantity and complexity of design request. A firm shipping date will be established and advised via Eriez Order Acknowledgment after the order is processed at Eriez.**

**Shipping Terms:** Eriez' policy is to ship Best Way, F.O.B., Erie, PA, Freight Collect. If requested, Eriez will select a carrier, prepay the freight and invoice it separately, at cost. If a specific method/freight company is preferred, it must be clearly stated on your purchase order. Buyers not providing specific shipping instructions agree to accept and pay all freight charges resulting from the carrier selected by Eriez.

Eriez pricing is subject to review and escalation after order placement if your purchase order requires a release of approval before fabrication. We will contact you to review any price escalation prior to proceeding with your purchase order.

**Equipment Storage:** Shipments delayed at the request of buyer, by more than one week after completion of fabrication and availability to ship, are subject to storage fees. Eriez may arrange for equipment storage at current market rates and add these charges to the invoice. Eriez will invoice the order at time of storage transfer and provide appropriate documentation for transfer of ownership. Upon notification, Eriez will coordinate shipment from the storage location and issue final invoice for balance of shipping and storage fees.

This quotation is valid for 30 days.

**Purchase Orders:** Should be made out to:

***Eriez Manufacturing Co.  
2200 Asbury Road  
Erie, PA 46506***

We look forward to working on this project with you and thank you for your trust in Eriez.

Very Respectfully,

Jeanne Anderson  
Industrial Motion Technologies, Inc. / Eriez Representative Iowa-Nebraska  
[jeanne@industrialmotion.com](mailto:jeanne@industrialmotion.com)  
515-360-5080



Mailing Address: PO Box 10608 ♦ Erie, Pennsylvania 16514-0608 ♦ USA  
 Location: 2200 Asbury Road ♦ Erie, Pennsylvania 16506 ♦ USA Website: [www.eriez.com](http://www.eriez.com)

October 26, 2024

Mr. Gregory Gesell  
 HDR Inc.  
 Omaha, Nebraska

**Subject: Model P-Rex Rare Earth Scrap Drum**  
***Quote #IMT-102524-JA-PREX Spokane Resource Recovery Facility***

Dear Greg:

Thanks for taking time to talk today and following is an updated proposal for an Eriez P-Rex Drum 48" diameter x 72" width for application. Please review the following and let me know if you have any questions or if you need additional information:

**P REX DRUM SEPARATOR**

Permanent Magnetic Drum Separators are widely used for continuous separation of ferrous from non-ferrous materials in scrap metals. The **P-Rex** will obtain maximum recovery of ferrous materials from your properly pretreated product. These are the only magnets of their type that offer all of these benefits:

**BENEFITS**

- Strongest Scrap Drum Magnet Available.....**Increased Recovery!**
- Wider Pick-up Zone, (edge to edge).....**Increased Recovery!**
- No loss in strength due to temperature rise.....**Increased Recovery!**
- No Rectifier Required.....**Low Energy Consumption!**
- Recovers ferrous meatballs and knuckles....**Increased Recovery, Less Picking!**
- 12 inch suspension height from product centerline.....**Increased Recovery!**



Mailing Address: PO Box 10608 ♦ Erie, Pennsylvania 16514-0608 ♦ USA  
Location: 2200 Asbury Road ♦ Erie, Pennsylvania 16506 ♦ USA Website: [www.eriez.com](http://www.eriez.com)

---

## **FEATURES**

- Agitating Field to provide a cleaner ferrous product
- ***Underfed design***
- Fabricated heavy duty end flanges with 3" high side skirts
- Heavy duty sealed bearings
- Heavy duty drive option
- Suspension or base mounted support stand options
- **3/8 inch thick stainless steel shell**
- **3/8 inch thick stainless steel wear wrap**
- Clamp Blocks
- Drive Sprocket
- Adjustable arm with turnbuckle
- Robust construction

**QTY (1) Eriez P-Rex 48" diameter x 72" wide Permanent Rare Earth Scrap Drum.** This drum will be mounted up to a 10-12-inch gap from product centerline for maximum metal recovery.

- 48" Diameter x 72" Wide Drum
- 3/8" Thick Shell & 3/8" Thick Wear Wrap
- Permanent Rare Earth Magnetic Element
- Designed for Underflow for Maximum Frag Cleaning
- Adjustment Arm for Magnetic Element Location Adjustment
- Includes: Shaft, Heavy Duty End Flanges, Heavy Duty Sealed Bearings and Driven Sprocket

**Net Price: \$239,430.00 each**

**Net Adder 15HP Drive Package: \$14,970.00 each**



Mailing Address: PO Box 10608 ♦ Erie, Pennsylvania 16514-0608 ♦ USA  
Location: 2200 Asbury Road ♦ Erie, Pennsylvania 16506 ♦ USA Website: [www.eriez.com](http://www.eriez.com)

---

**Payment Terms:**

1/3 Due at time of order placement, 1/3 due prior to shipment, 1/3 due Net 30 Days, Ex Works Eriez Manufacturing's factory, Erie PA (Incoterms 2000), subject to Eriez Credit Department review and to Eriez' Terms and Conditions of Sale, a copy of which is attached, or can be obtained at <http://www.eriez.com>. Taxes may be applicable dependent upon state, province, or country.

**Lead Time:**

Approximately 16 weeks after receipt of order. The Manufacturing Estimate is calculated from Eriez current backlogs and does not reflect a guarantee of shipment. This estimate may vary depending upon the timing of order placement, item quantity and complexity of design request. A firm shipping date will be established and advised via Eriez Order Acknowledgment after the order is processed at Eriez.

**Shipping Terms:** Eriez' policy is to ship Best Way, F.O.B., Erie, PA, Freight Collect. If requested, Eriez will select a carrier, prepay the freight and invoice it separately, at cost. If a specific method/freight company is preferred, it must be clearly stated on your purchase order. Buyers not providing specific shipping instructions agree to accept and pay all freight charges resulting from the carrier selected by Eriez.

Eriez pricing is subject to review and escalation after order placement if your purchase order requires a release of approval before fabrication. We will contact you to review any price escalation prior to proceeding with your purchase order.

**Equipment Storage:** Shipments delayed at the request of buyer, by more than one week after completion of fabrication and availability to ship, are subject to storage fees. Eriez may arrange for equipment storage at current market rates and add these charges to the invoice. Eriez will invoice the order at time of storage transfer and provide appropriate documentation for transfer of ownership. Upon notification, Eriez will coordinate shipment from the storage location and issue final invoice for balance of shipping and storage fees.



Mailing Address: PO Box 10608 ♦ Erie, Pennsylvania 16514-0608 ♦ USA  
Location: 2200 Asbury Road ♦ Erie, Pennsylvania 16506 ♦ USA Website: [www.eriez.com](http://www.eriez.com)

---

**Purchase Orders:** Should be made out to:

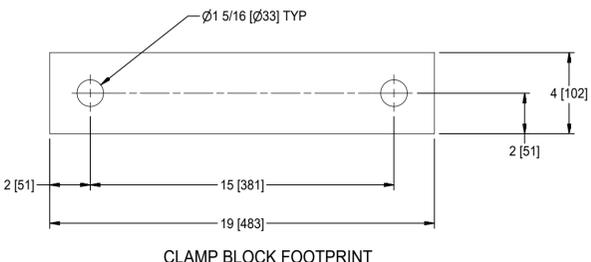
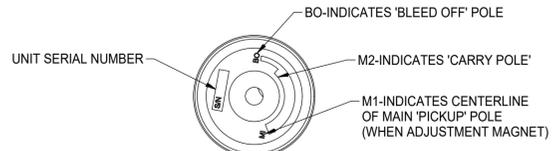
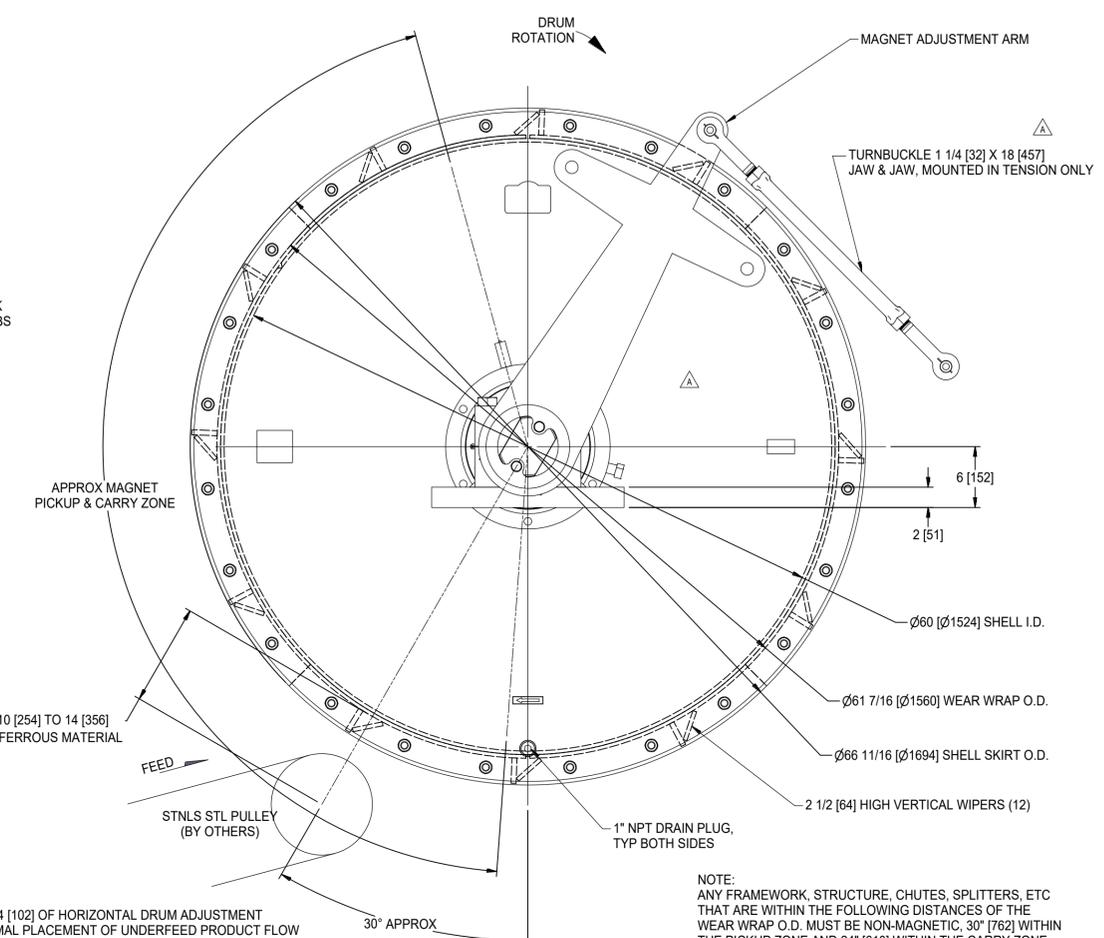
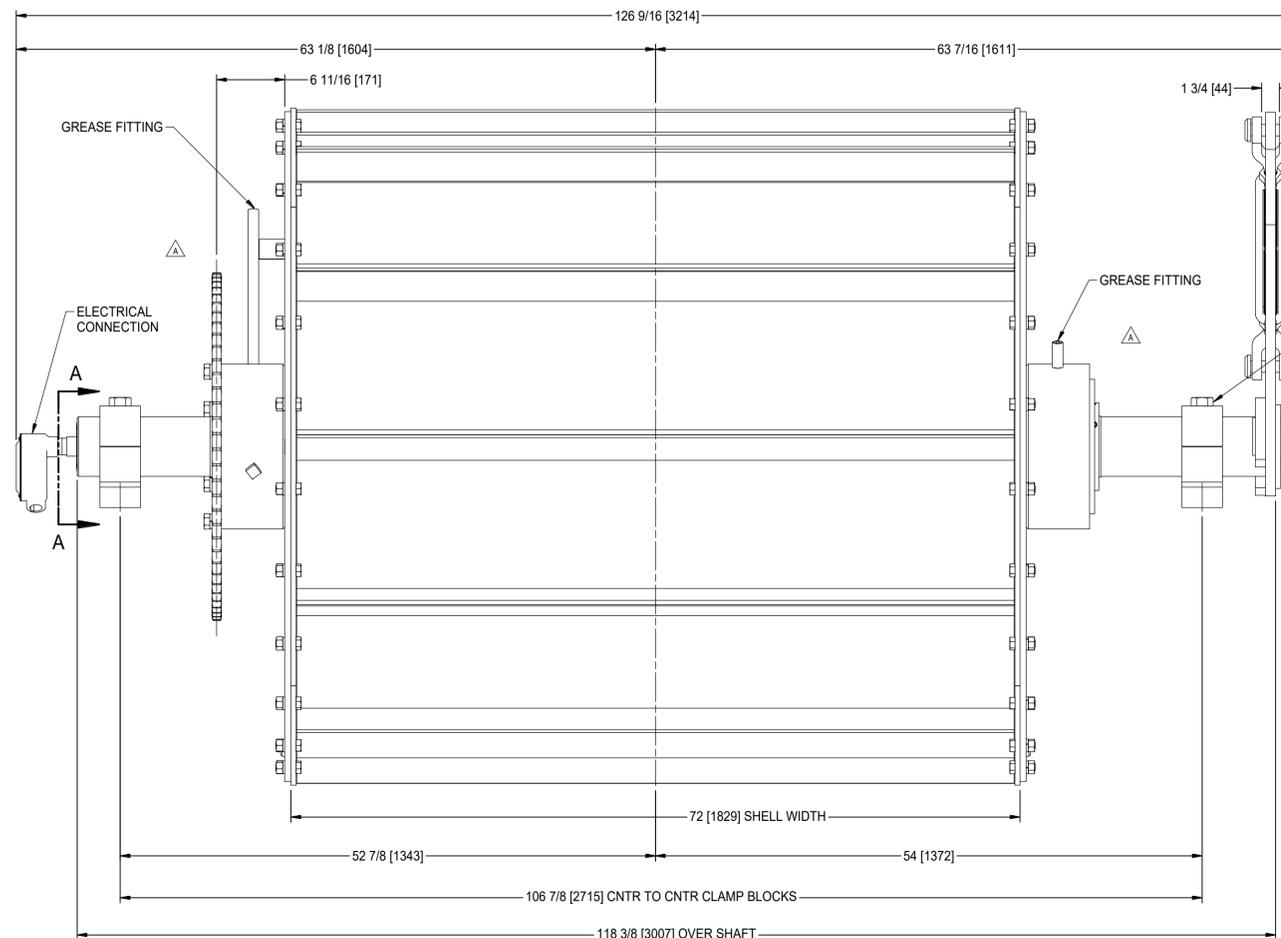
***Eriez Manufacturing Co.  
2200 Asbury Road  
Erie, PA 46506***

We look forward to working on this project with you and thank you for your trust in Eriez.

This quotation is valid for 30 days.

Regards,

Jeanne Anderson  
Industrial Motion Technologies, Inc.  
515-360-5080  
[jeanne@industrialmotion.com](mailto:jeanne@industrialmotion.com)



**NOTES:**

SHELL 3/8" [9] THICK NON-MAGNETIC MANGANESE STEEL  
 SHELL WRAP 3/8" [9] THICK NON-MAGNETIC MANGANESE STEEL  
 WIPERS (12) 2 1/2" [64] HIGH 340 STNLS STL

**MAGNET DATA:** VOLTS: 230V DC  
 AMPS: 44.9  
 WATTS: 10,340  
 OHMS: 5.12

**DRIVEN SPROCKET:** NO. OF CHAIN ROWS: 1  
 NO. TEETH: 70  
 SIZE: 120  
 PITCH: 1.50"

**ROTATIONAL SPEED: 15.5 RPM ( 250 FPM )**

**RECOMMENDED DRIVE SPECIFICATIONS (BY OTHERS):**  
 POWER: 10 HP GEARMOTOR  
 OUTPUT: 50 RPM  
 MINIMUM SERVICE FACTOR: 1.9  
 DRIVER SPROCKET: NO. OF CHAIN ROWS: 1  
 NO. TEETH: 22  
 SIZE: 120  
 PITCH: 1.50"

**CHAIN:** NO. OF CHAIN ROWS: 1  
 SIZE: 120  
 PITCH: 1.50"

CHAIN DRIVE MUST BE PROTECTED AGAINST DIRT AND MOISTURE AND BE PROPERLY LUBRICATED WITH GOOD QUALITY NON-DETERGENT MINERAL BASED OIL.

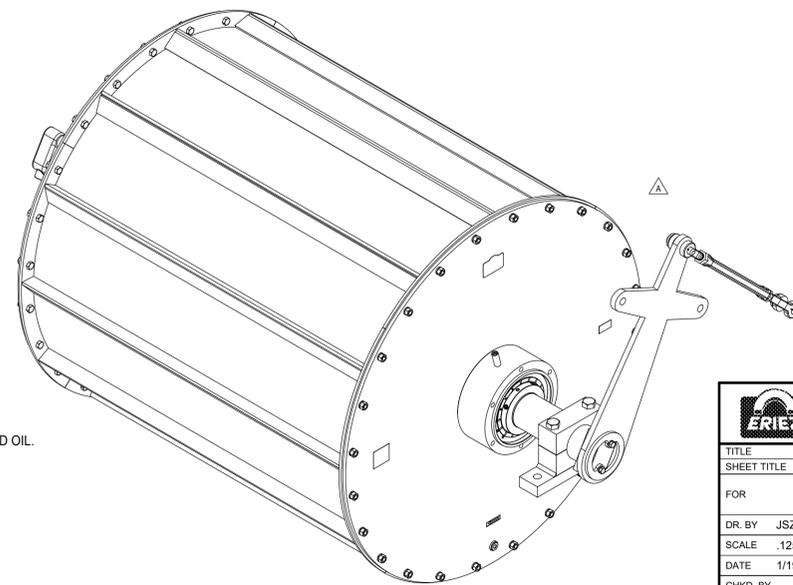
**WARNING LABELS (BOTH SIDES)**  
 STRONG MAGNETIC CIRCUIT 442333  
 CRUSH HAZARD 443061  
 DECAL ARROW 190045  
 LABEL ERIEZ LOGO 426793

FINISH PAINT: STANDARD EPOXY GRAY UNLESS OTHERWISE SPECIFIED ON ORDER.

APPROXIMATE WEIGHT: 16663.4 lbs [ 7558.2 kgs ]

\* ALLOW ±4 [102] OF HORIZONTAL DRUM ADJUSTMENT FOR OPTIMAL PLACEMENT OF UNDERFEED PRODUCT FLOW

NOTE: ANY FRAMEWORK, STRUCTURE, CHUTES, SPLITTERS, ETC THAT ARE WITHIN THE FOLLOWING DISTANCES OF THE WEAR WRAP O.D. MUST BE NON-MAGNETIC, 30" [762] WITHIN THE PICKUP ZONE AND 24" [610] WITHIN THE CARRY ZONE.



REV	CHANGES MADE	SHEET	BY	DATE	ORDER #
A	REVISED TO INCLUDE LIT BITE AND TO BREAK IN TO NOTE: THE DRUM SHOULD BE INSULATED TO MINIMIZE	1	JMS	01/19/23	863220

<b>ERIEZ</b> WORLD AUTHORITY IN SEPARATION TECHNOLOGIES GLOBAL HEADQUARTERS: ERIE, PENNSYLVANIA, USA	
<b>OUTLINE</b>	
TITLE	
SHEET TITLE	
FOR 60X72 ELECTRO AGITATOR SCRAP DRUM, LH DRIVE, 3/8 THK SHELL, 3/8 THK WEAR WRAP - 2 1/2 WIPERS	
DR. BY JSZUMIGALA	ORDER # 863220
NEXT ASSM 202206046	PRIOR REF 201300841
SCALE 1:25:1	E.R. # -
DATE 1/19/2023	NOTICE: THIS DRAWING AND THE PRINCIPLE OF DESIGN ARE THE PROPERTY OF AND PROPRIETARY TO ERIEZ.
CHKD. BY -	DRAWING NUMBER
<b>4R-202300379</b>	
INCHES [MILLIMETERS]	REVISION
	<b>1</b> OF <b>1</b>

# **Eddy Current Separator**

MAILING ADDRESS: P. O. BOX 10608 ♦ ERIE, PENNSYLVANIA 16514-0608 ♦ U. S. A.  
LOCATION: 2200 ASBURY ROAD ♦ ERIE, PENNSYLVANIA 16506 ♦ U. S. A.  
E-MAIL: [eriez@eriez.com](mailto:eriez@eriez.com) ♦ WEB SITE: [www.eriez.com](http://www.eriez.com)  
PHONE: 814/ 835-6000 ♦ FAX: 814/ 838-4960



May 22, 2025

Mr. Greg Gesell  
HDR  
1917 S 67<sup>th</sup> Street  
Omaha, NE 68106-2973

**SUBJECT: ERIEZ RevX-E EDDY CURRENT SEPARATOR**

Dear Greg:

Thanks for meeting with Mike and me today and following is a proposal for an Eriez RevX-E 2-meter Eddy Current Separator System. Please review the following and let me know if you have any questions or if you need further information:

**Product: Mixed MSW**  
**Rate: 30 - 50 TPH**  
**Size: 8" minus**

**ERIEZ RevX-E EDDY CURRENT SEPARATOR FEATURES:**

- New ECCENTRIC ECS Rotor for high strength & recovery
- Rare Earth Magnet Eddy Current Rotor is adjustable for optimal recovery
- Urethane weldable belt for long service life
- Belt Repair Kit for 30-minute repairs
- Steel channel frame with 4-support legs
- Long Reinforced 4 Side Shroud/Hood
- Top and side swing out Viewing Panels
- Hood with adjustable splitter
- Removable side covers for service
- TEFC Rotor Motor
- Compact design requires less space
- Remote Control with Starters and Logic
- Fully Guarded for Safety
- Serviced out of Erie, PA
- Globally Eriez has supplied over 800 various Eddy Current Separators
- Peace of mind...Eccentric Rotor design not effected by ferrous
- **QUICK CHANGE BELT DESIGN**
- **Direct DRIVE DESIGN**

**WORLD AUTHORITY IN ADVANCED TECHNOLOGY FOR MAGNETIC, VIBRATORY AND METAL DETECTION APPLICATIONS**

Manufacturing Facilities in: AUSTRALIA ♦ BRAZIL ♦ CANADA ♦ INDIA ♦ JAPAN ♦ MEXICO ♦ SOUTH AFRICA ♦ UNITED KINGDOM ♦ UNITED STATES

**Qty (2) Eriez Model REV-X MK3 Eccentric 80" Wide 2 Meter Rotor Eddy Current Separator with the following features:**

- Eriez 79-5/8" feed width conveyor, special urethane belt with corrugated sidewalls, 5 HP motor drive for variable speed of approximately 200-400 FPM, 10HP rotor drive, commercial side guides, adjustable splitter, tapered shroud with top and side swing out viewing panels.
- Eriez Model REV-XE Eccentric Rare Earth Permanent Magnetic Rotor Assembly, utilizing Erium 3000 Rare Earth arched magnets.
- Adjustable Hood/Discharge Chute with **Rack & Pinion Splitter**
- Above system mounted on a common framework
- Control panel with commercial motor starters and logic sequence start-up and shutdown provides a safe operation and long service life.
- Reference Brochure MMPB-99.

**NET TOTAL PRICE EACH: \$220,645.00 each**

**NET TOTAL FOR (2): \$441,290.00**

**OPITONS:**

**BF Vibratory Feeder with frame: \$41,541.00 each**

**Control for complete system listed above in Nema 12 Enclosure: \$16,804.00 each**

**NOTE: This proposal does not include a BF Vibratory Feeder shown on the outline drawing as we expect material will be fed by a chute or conveyor onto the ECS belt. A control package is not included to be provided by an electrical integrator.**

**Payment Terms:**

1/3 Due at time of order placement, 1/3 due prior to shipment, 1/3 due Net 30 Days, Ex Works Eriez Manufacturing's factory, Erie PA (Incoterms 2000), subject to Eriez Credit Department review and to Eriez' Terms and Conditions of Sale, a copy of which is attached, or can be obtained at <http://www.eriez.com>. Taxes may be applicable dependent upon state, province, or country.

**Lead Time:**

**Approximately 16 Weeks** and may ship after receipt of order. **The Manufacturing Estimate is calculated from Eriez current backlogs and does not reflect a guarantee of shipment. This estimate may vary depending upon the timing of order placement, item quantity and complexity of design request. A firm shipping date will be established and advised via Eriez Order Acknowledgment after the order is processed at Eriez.**

**Shipping Terms:** Eriez' policy is to ship Best Way, F.O.B., Erie, PA, Freight Collect. If requested, Eriez will select a carrier, prepay the freight and invoice it separately, at cost. If a specific method/freight company is preferred, it must be clearly stated on your purchase order. Buyers not providing specific shipping instructions agree to accept and pay all freight charges resulting from the carrier selected by Eriez.

Eriez pricing is subject to review and escalation after order placement if your purchase order requires a release of approval before fabrication. We will contact you to review any price escalation prior to proceeding with your purchase order.

**Equipment Storage:** Shipments delayed at the request of buyer, by more than one week after completion of fabrication and availability to ship, are subject to storage fees. Eriez may arrange for equipment storage at current market rates and add these charges to the invoice. Eriez will invoice the order at time of storage transfer and provide appropriate documentation for transfer of ownership. Upon notification, Eriez will coordinate shipment from the storage location and issue final invoice for balance of shipping and storage fees.

This quotation is valid for 30 days.

**Purchase Orders:** Should be made out to:

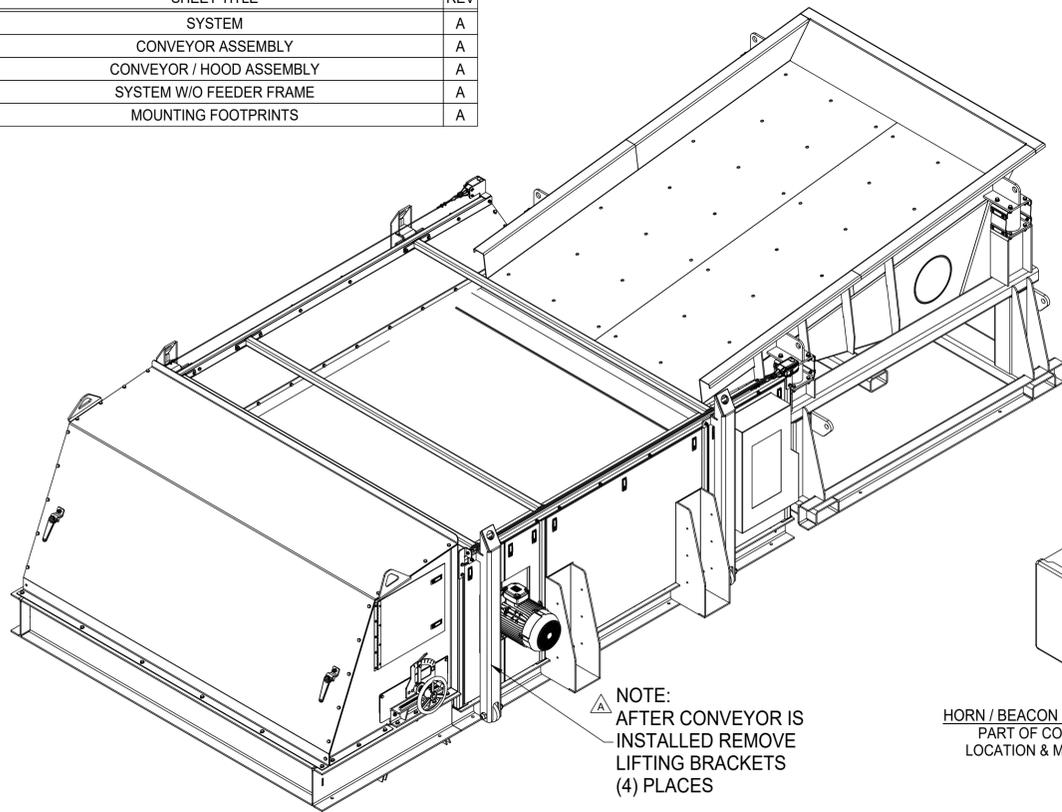
***Eriez Manufacturing Co.  
2200 Asbury Road  
Erie, PA 46506***

We look forward to working on this project with you and thank you for your trust in Eriez.

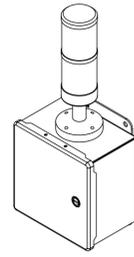
Very Respectfully,

Jeanne Anderson  
Industrial Motion Technologies, Inc. / Eriez Representative Iowa-Nebraska  
[jeanne@industrialmotion.com](mailto:jeanne@industrialmotion.com)  
515-360-5080

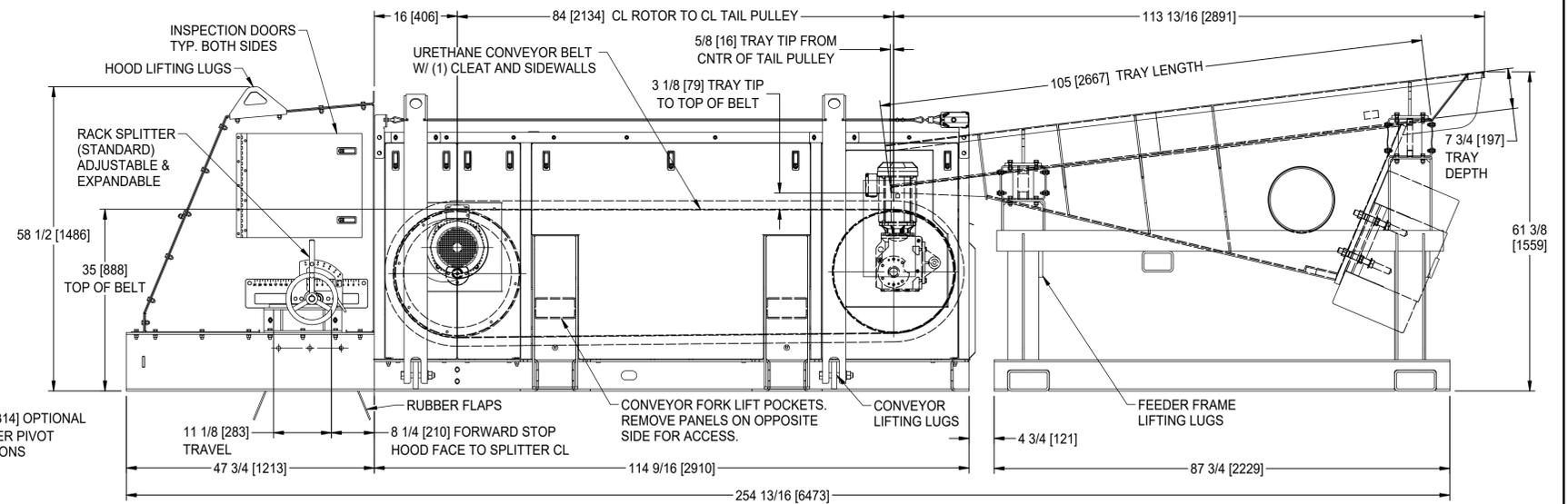
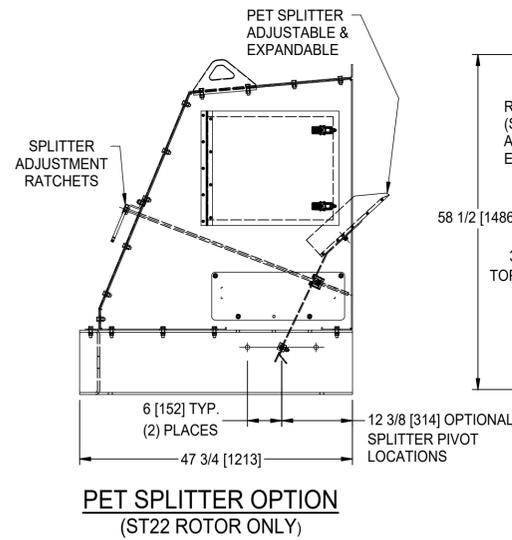
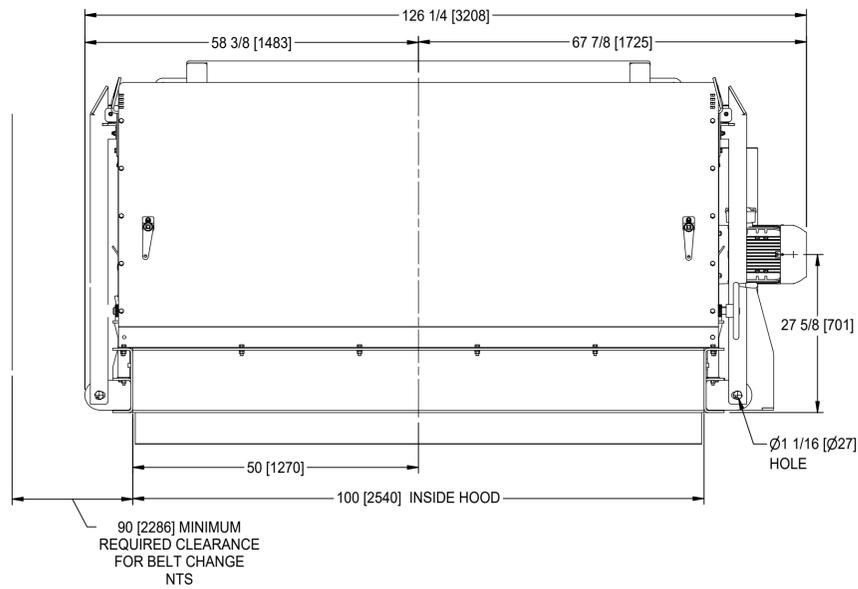
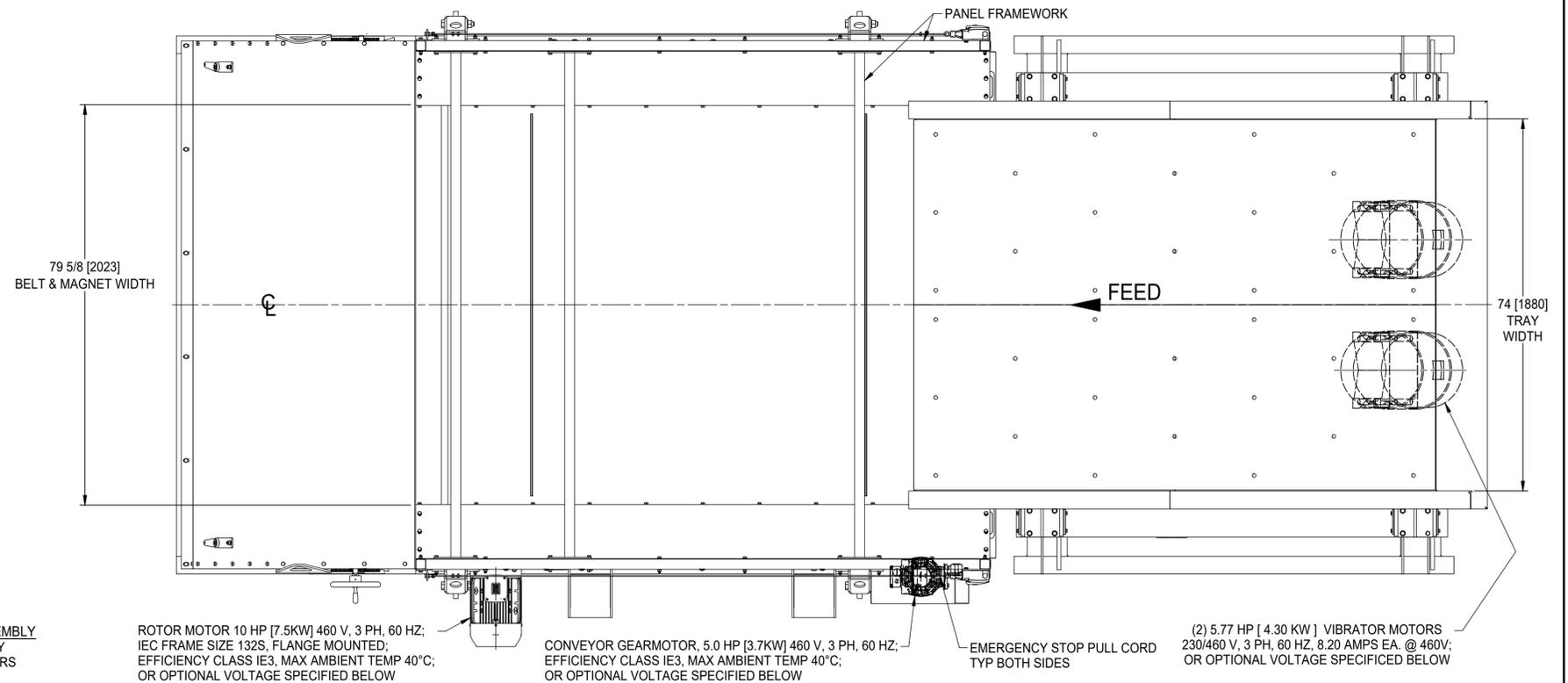
#	SHEET TITLE	REV
1	SYSTEM	A
2	CONVEYOR ASSEMBLY	A
3	CONVEYOR / HOOD ASSEMBLY	A
4	SYSTEM W/O FEEDER FRAME	A
5	MOUNTING FOOTPRINTS	A



NOTE:  
AFTER CONVEYOR IS  
INSTALLED REMOVE  
LIFTING BRACKETS  
(4) PLACES



HORN / BEACON STACKLIGHT ASSEMBLY  
PART OF CONVEYOR ASSEMBLY  
LOCATION & MOUNTING BY OTHERS



**CONFIGURATION NO. 1 SPECIFICATION REQUIREMENTS FOR:  
ECS REVX-E MK3 2.0M 3,000 RPM SYSTEM**

CUSTOMER: \_\_\_\_\_

P.O.#: \_\_\_\_\_

APPLICATION: \_\_\_\_\_

CUSTOMER APPROVAL: \_\_\_\_\_

APPROVAL DATE: \_\_\_\_\_

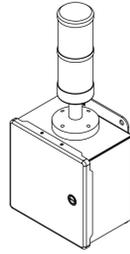
REFER TO 4P-201900831 FOR CONVEYOR SPARE PARTS LIST

FEATURE	STANDARD	SPECIFY OPTION
ROTOR & SPLITTER	LT2 W/ RACK	<input type="checkbox"/> ST22 W/ PET <input type="checkbox"/> ST22 W/ RACK
PAINT	SYSTEM: ERIEZ ORANGE	<input type="checkbox"/> RAL# _____
	PANEL FRAMEWORK: WHITE	<input type="checkbox"/> RAL# _____
AC POWER	460V, 60HZ, 3PH	<input type="checkbox"/> 575V, 60HZ, 3PH
MOTOR POSITION (VIEWED FROM FEEDER END)	LEFT HAND	<input type="checkbox"/> RIGHT HAND
<b>GENERAL SPECIFICATIONS:</b> ROTOR SPEED: (VARIABLE) 3,000 RPM MAX. CONVEYOR SPEED (VARIABLE) 200-600 FPM MAX. AMBIENT TEMPERATURE: 104°F [40°C] CONTROL <b>REQUIRED</b> FOR PROPER OPERATION (OFFERED SEPARATELY)		
APPROX. WEIGHT: SYSTEM: 17,426 LBS [ 7,904 Kg] RACK STYLE, 17,311 LBS [ 7,852Kg] PET STYLE		
	CONVEYOR: 8,250 LBS [ 3,742 Kg]	
	HOOD: 1,340 LBS [608 Kg] RACK STYLE, 1,225 LBS [ 556 Kg] PET STYLE	
	FEEDER: 4,511 LBS [ 2,046 Kg]	
	FEEDER FRAME: 3,325 LBS [ 1,508 Kg]	

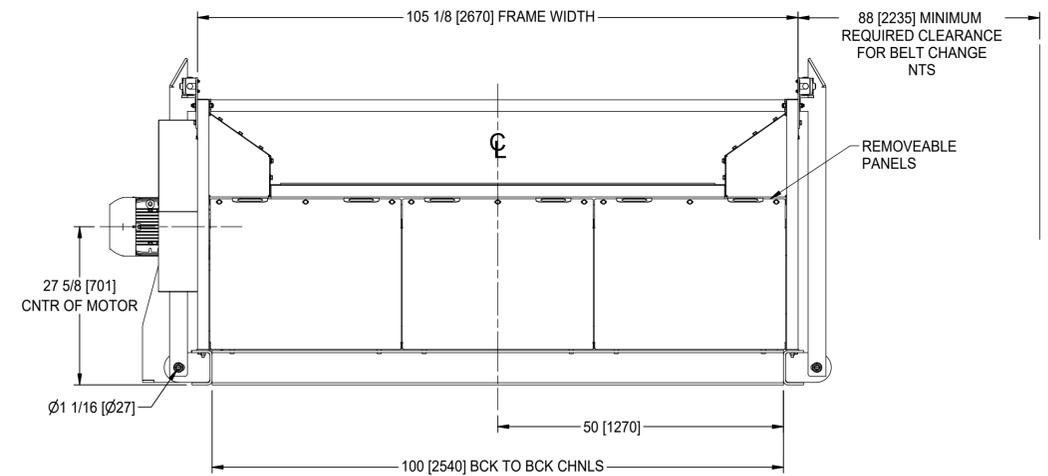
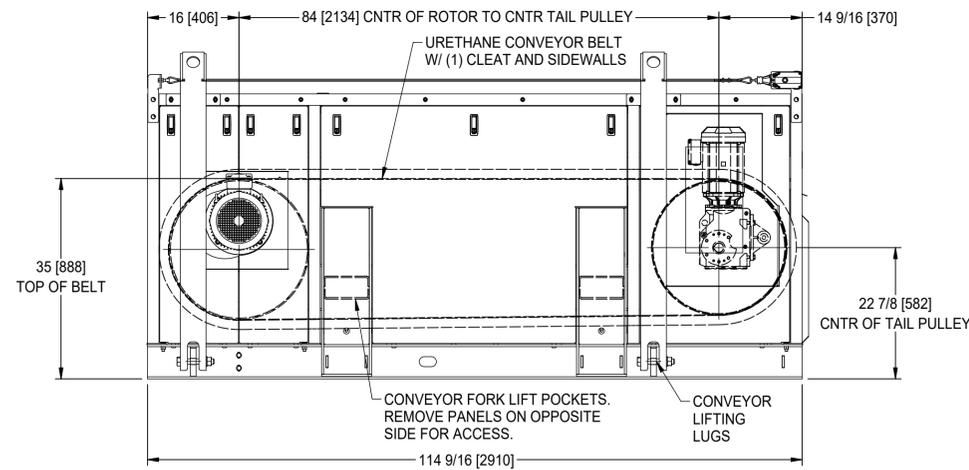
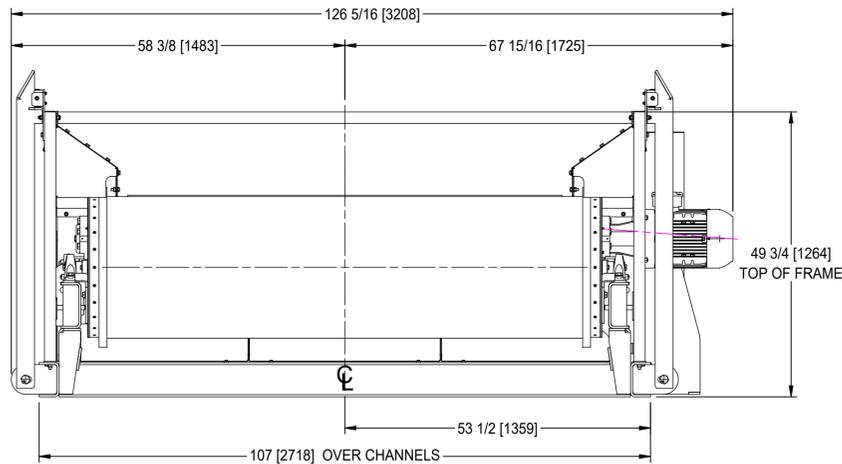
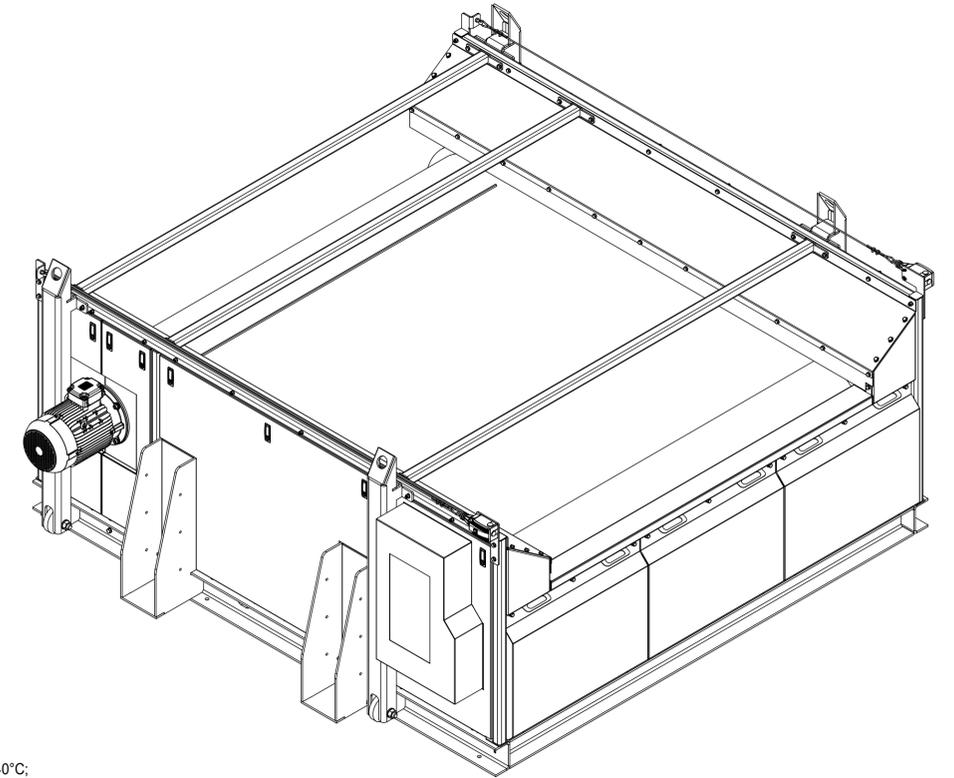
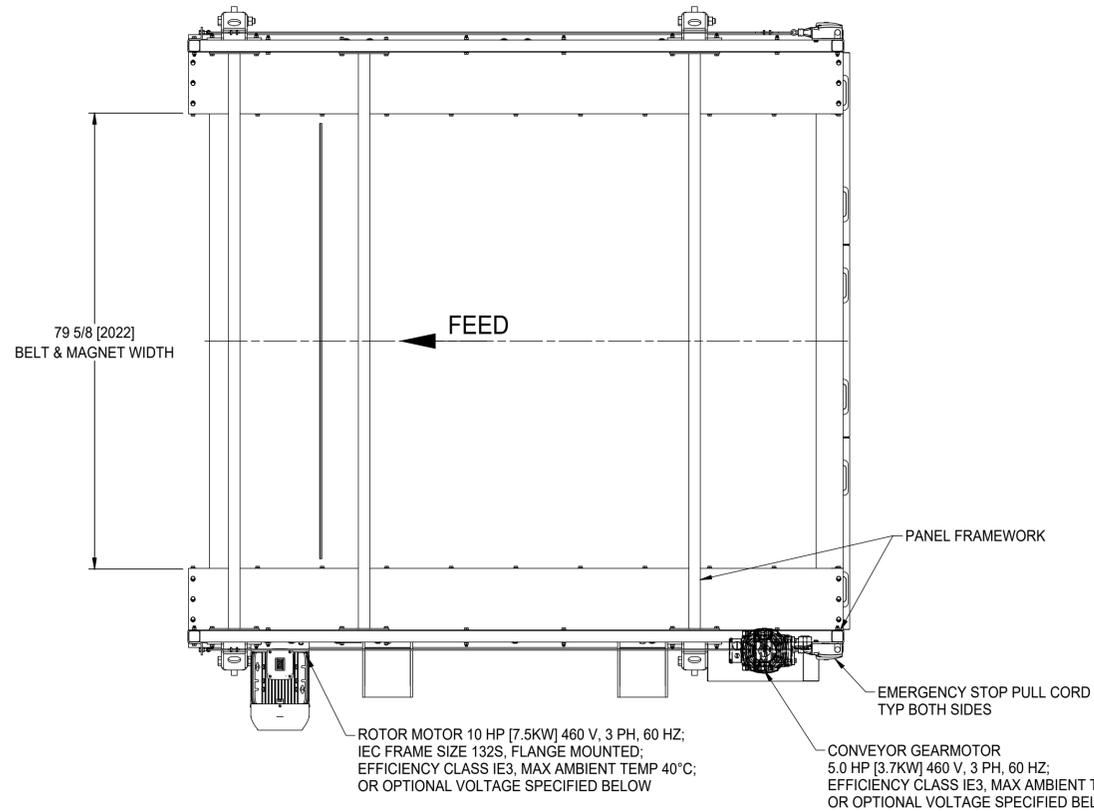
SEE SHEET 5 FOR MOUNTING FOOTPRINT

		<b>ERIEZ</b> WORLD AUTHORITY IN SEPARATION TECHNOLOGIES GLOBAL HEADQUARTERS: ERIE, PENNSYLVANIA, USA			
TITLE: <b>OUTLINE SYSTEM</b>					
SHEET TITLE: <b>SYSTEM</b>					
FOR: <b>ECS REVX-E MK3 2.0M 3,000 RPM ROTOR</b>					
DR. BY	DD	ORDER #	STD	NEXT ASSM	4N-201705990
SCALE	.063	E.R.#	201900384	PRIOR REF	201808905
DATE	2/21/2019	NOTICE—THIS DRAWING AND THE PRINCIPLE OF DESIGN ARE THE PROPERTY OF AND PROPRIETARY TO ERIEZ			
CHKD. BY	-	DRAWING NUMBER			
INCHES [MILLIMETERS]					REVISION
<b>4R-201900828</b>					<b>1</b> OF <b>5</b>

ORDER #	20000831
DATE	8-20
BY	KCZ
SHEET	1
CHANGE MADE	
REVISION	



HORN / BEACON STACKLIGHT ASSEMBLY  
PART OF CONVEYOR ASSEMBLY  
LOCATION & MOUNTING BY OTHERS



**CONFIGURATION NO. 2 SPECIFICATION REQUIREMENTS FOR:  
ECS REVX-E MK3 2.0M 3,000 RPM CONVEYOR ASSEMBLY**

CUSTOMER: \_\_\_\_\_

P.O.#: \_\_\_\_\_

APPLICATION: \_\_\_\_\_

CUSTOMER APPROVAL: \_\_\_\_\_

APPROVAL DATE: \_\_\_\_\_

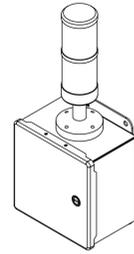
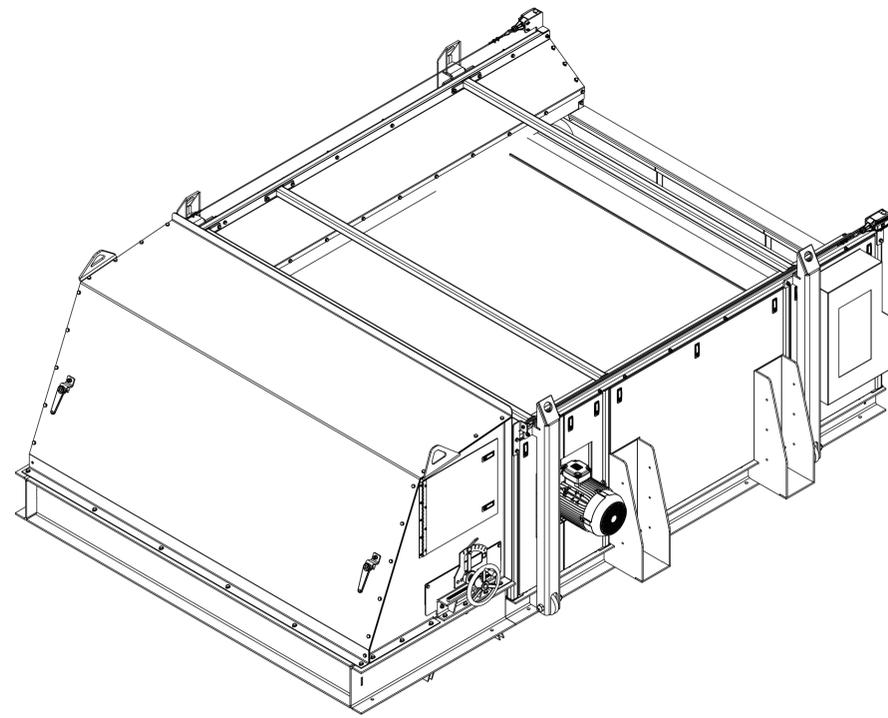
REFER TO 4P-201900831 FOR CONVEYOR SPARE PARTS LIST

FEATURE	STANDARD	SPECIFY OPTION
ROTOR	LT2	<input type="checkbox"/> ST22
PAINT	SYSTEM: ERIEZ ORANGE	<input type="checkbox"/> RAL# _____
	PANEL FRAMEWORK: WHITE	<input type="checkbox"/> RAL# _____
AC POWER	460V, 60HZ ,3PH	<input type="checkbox"/> 575V, 60HZ, 3PH
MOTOR POSITION (VIEWED FROM FEEDER END)	LEFT HAND	<input type="checkbox"/> RIGHT HAND
<b>GENERAL SPECIFICATIONS:</b> ROTOR SPEED: (VARIABLE) 3,000 RPM MAX. CONVEYOR SPEED (VARIABLE) 200-600 FPM MAX. AMBIENT TEMPERATURE: 104°F [40°C] CONTROL <b>REQUIRED</b> FOR PROPER OPERATION (OFFERED SEPARATELY) APPROX. WEIGHT: CONVEYOR: 8,250 LBS [ 3,742 Kg ]		

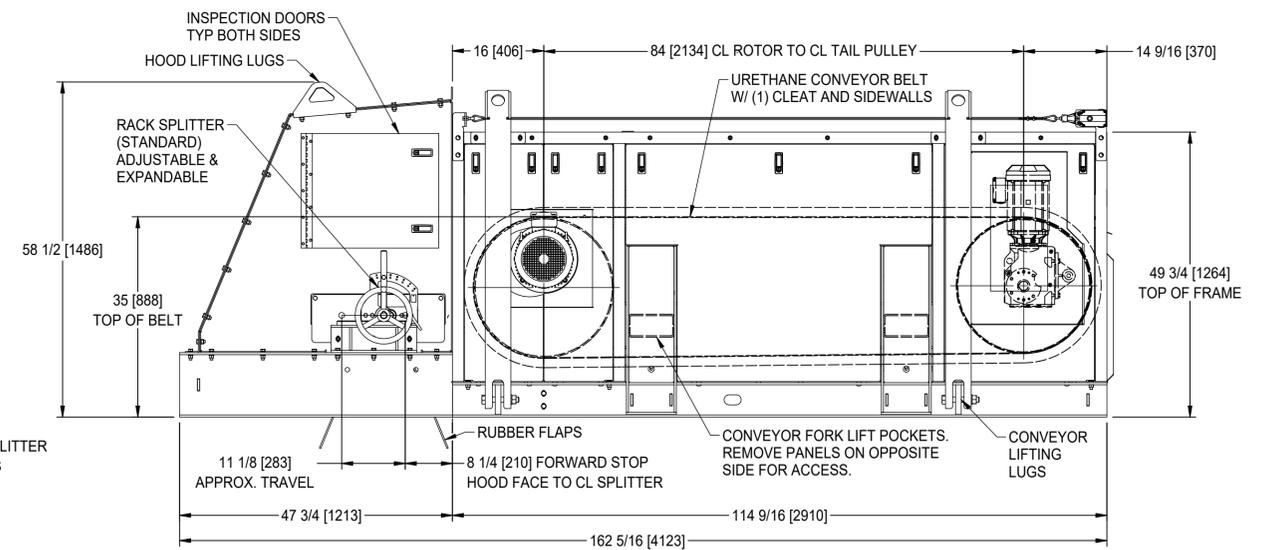
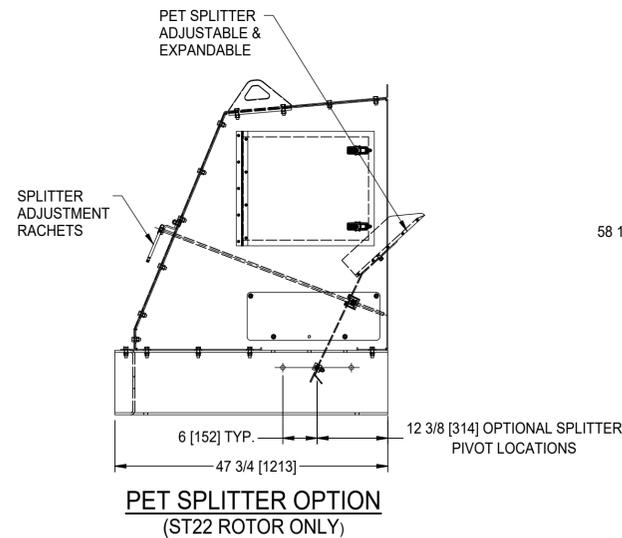
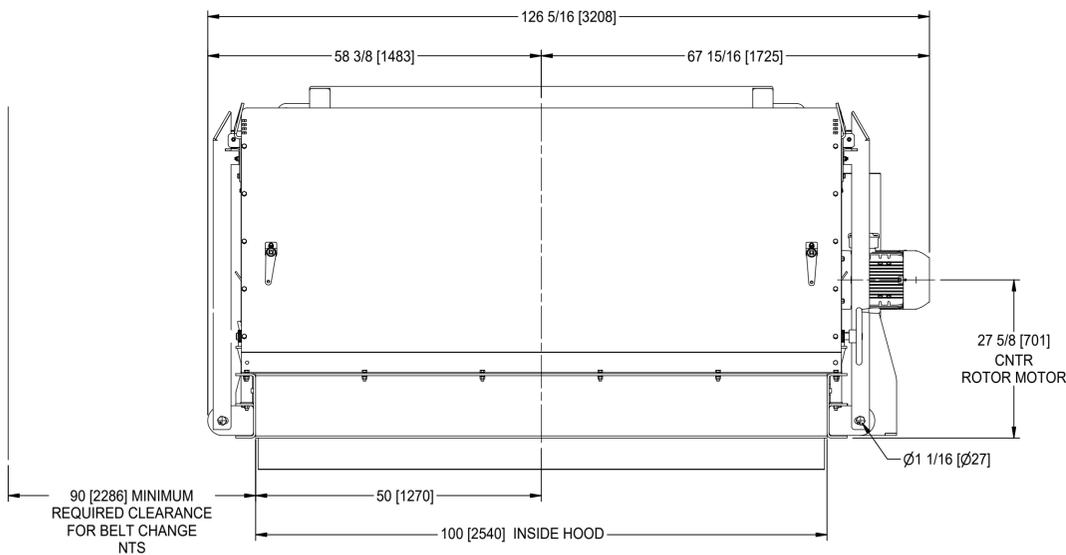
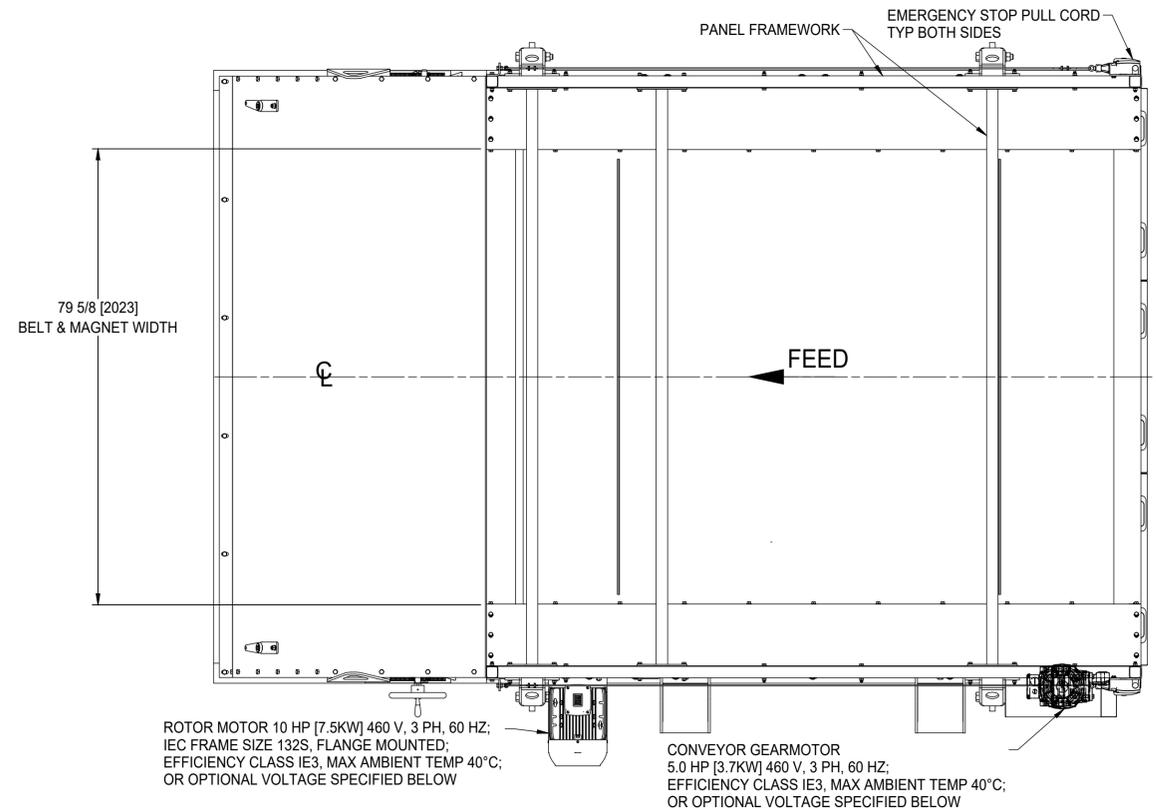
SEE SHEET 5 FOR MOUNTING FOOTPRINT

		<b>ERIEZ</b> <small>WORLD AUTHORITY IN ADVANCED TECHNOLOGY FOR MAGNETIC, VIBRATORY AND METAL DETECTION APPLICATIONS WORLD HEADQUARTERS, ERIE, PA, USA</small>			
<b>TITLE</b> CONVEYOR ASSEMBLY					
<b>FOR</b> ECS REVX-E MK3 2.0M 3,000 RPM ROTOR					
DR. BY	DD	ORDER #	STD	NEXT ASSM	4N-201705990
SCALE	.063	E.R.#	201900384	PRIOR REF	201808905
DATE	2/21/2019	<small>NOTICE—THIS DRAWING AND THE PRINCIPLE OF DESIGN ARE THE PROPERTY OF AND PROPRIETARY TO ERIEZ</small>			
CHKD. BY	-	<small>DRAWING NUMBER</small>			
INCHES [MILLIMETERS]					<b>4R-201900828</b>
					<b>2 OF 5</b>
					<small>REVISION</small> A

ORDER #	20200407
DATE	8-5-20
BY	KCZ
SHEET	2
CHANGE MADE	
UPDATED PICS ADDED LIFTING BRACKETS	



HORN / BEACON STACKLIGHT ASSEMBLY  
PART OF CONVEYOR ASSEMBLY  
LOCATION & MOUNTING BY OTHERS



**CONFIGURATION NO. 3 SPECIFICATION REQUIREMENTS FOR:  
ECS REVX-E MK3 2.0M 3,000 RPM CONVEYOR/HOOD ASSEMBLY**

CUSTOMER: \_\_\_\_\_

P.O.#: \_\_\_\_\_

APPLICATION: \_\_\_\_\_

CUSTOMER APPROVAL: \_\_\_\_\_

APPROVAL DATE: \_\_\_\_\_

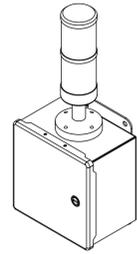
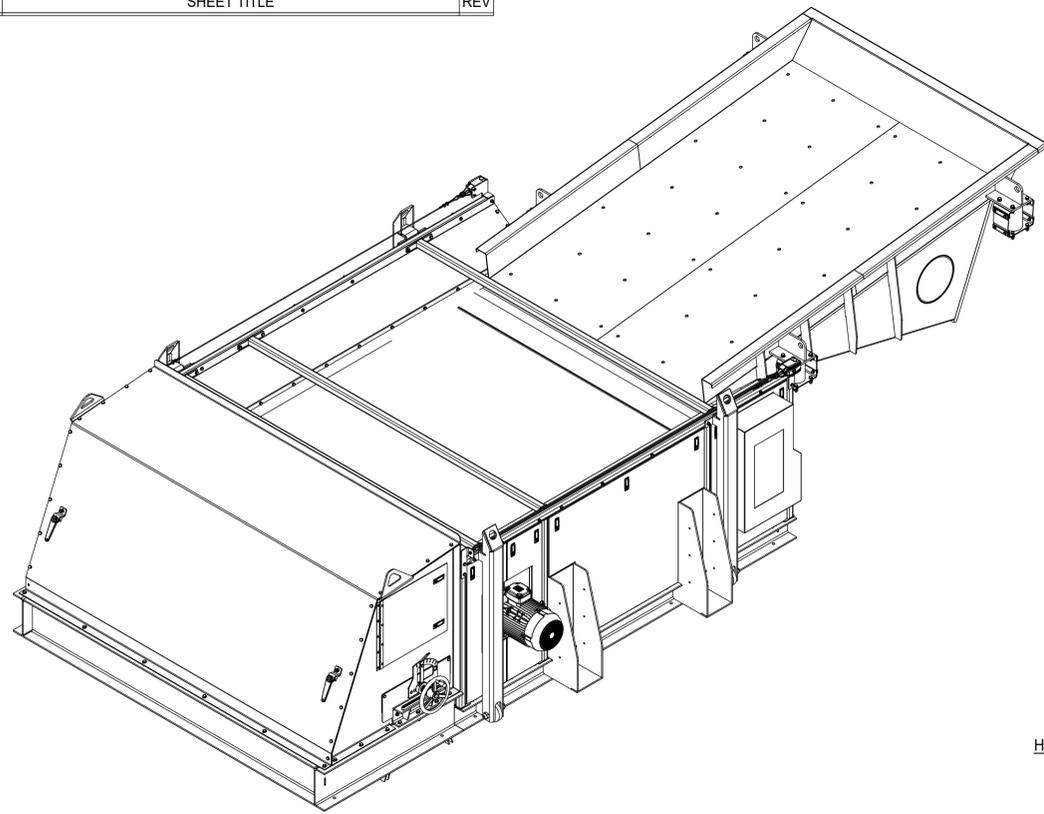
REFER TO 4P-201900831 FOR CONVEYOR SPARE PARTS LIST

FEATURE	STANDARD	SPECIFY OPTION
ROTOR & SPLITTER	LT2 W/ RACK	<input type="checkbox"/> ST22 W/ PET <input type="checkbox"/> ST22 W/ RACK
PAINT	SYSTEM: ERIEZ ORANGE	<input type="checkbox"/> RAL# _____
	PANEL FRAMEWORK: WHITE	<input type="checkbox"/> RAL# _____
AC POWER	460V, 60HZ, 3PH	<input type="checkbox"/> 575V, 60HZ, 3PH
MOTOR POSITION (VIEWED FROM FEEDER END)	LEFT HAND	<input type="checkbox"/> RIGHT HAND
<b>GENERAL SPECIFICATIONS:</b> ROTOR SPEED: (VARIABLE) 3,000 RPM MAX. CONVEYOR SPEED (VARIABLE) 200-600 FPM MAX. AMBIENT TEMPERATURE: 104°F [40°C] CONTROL <b>REQUIRED</b> FOR PROPER OPERATION (OFFERED SEPARATELY)		
APPROX. WEIGHT:	CONVEYOR: 8,250 LBS [3,742 Kg]	
	HOOD: 1,340 LBS [608 Kg] RACK STYLE	
	1,225 LBS [556 Kg] PET STYLE	

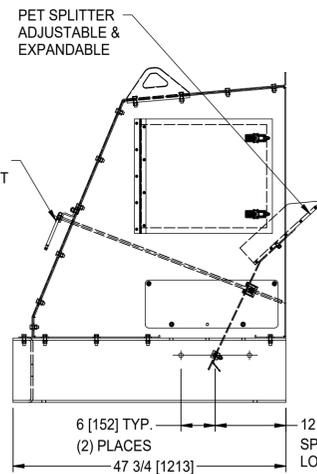
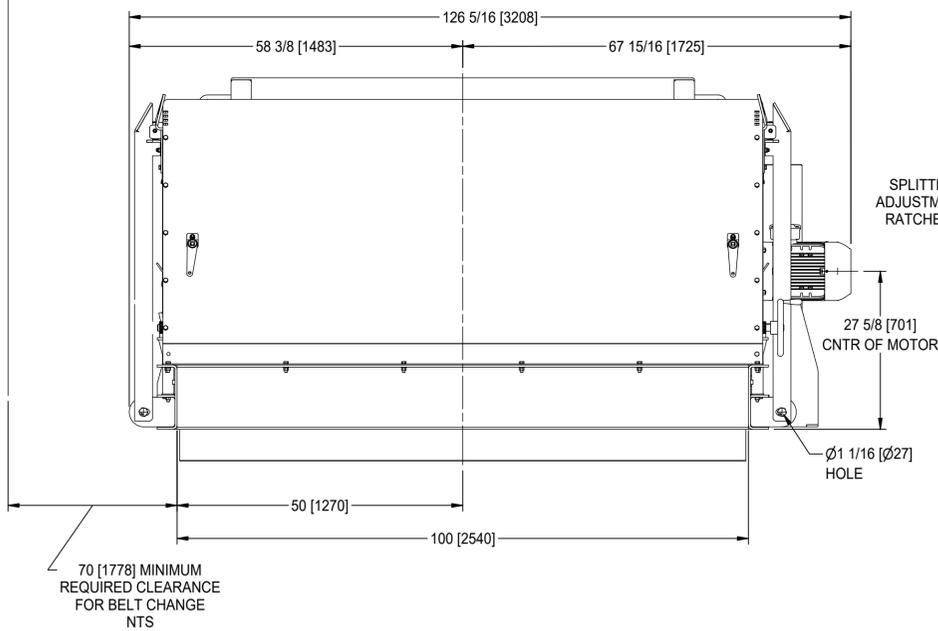
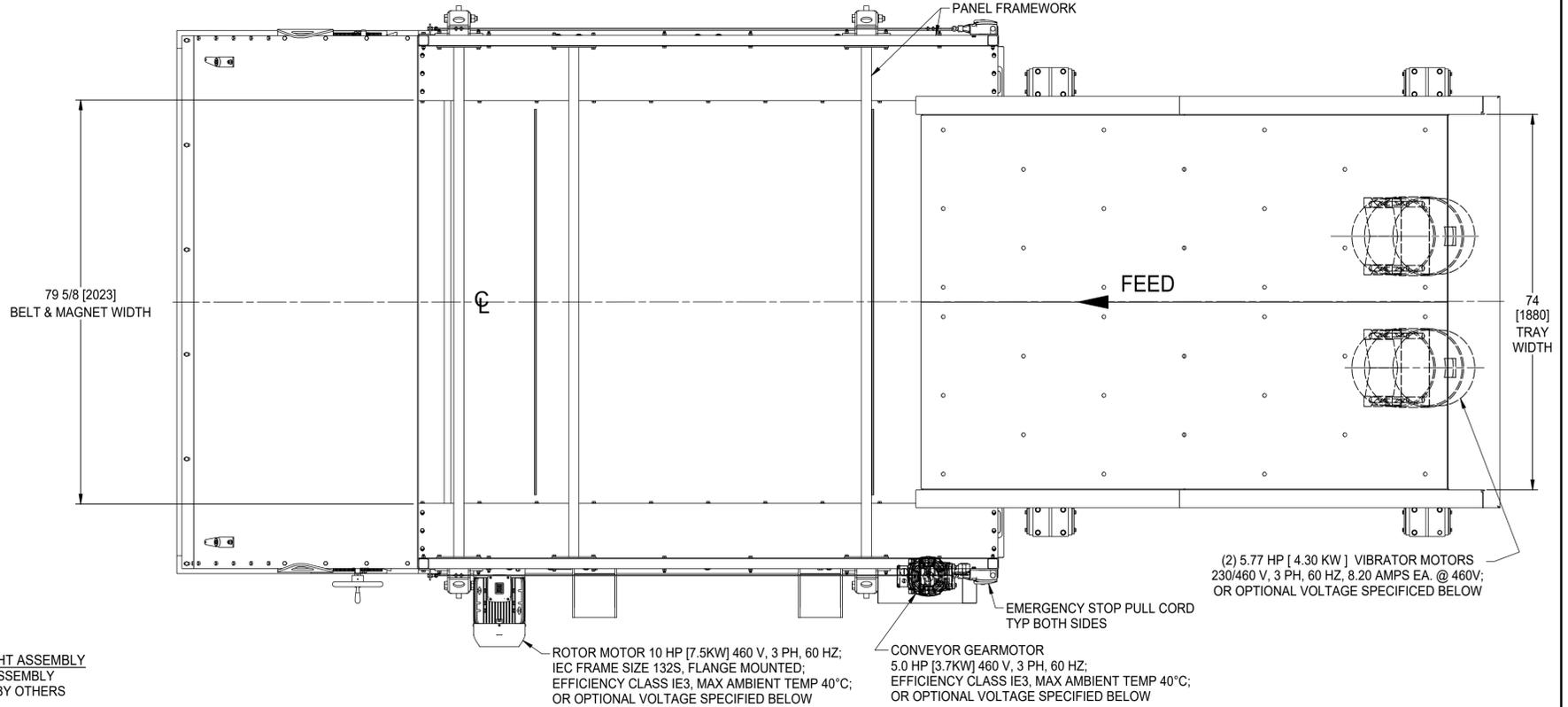
SEE SHEET 5 FOR MOUNTING FOOTPRINT

		<b>ERIEZ</b> <small>WORLD AUTHORITY IN ADVANCED TECHNOLOGY FOR MAGNETIC, VIBRATORY AND METAL DETECTION APPLICATIONS WORLD HEADQUARTERS, ERIE, PA, USA</small>		
<b>TITLE</b> OUTLINE				
<b>SHEET TITLE</b> CONVEYOR / HOOD ASSEMBLY				
<b>FOR</b> ECS REVX-E MK3 2.0M 3,000 RPM ROTOR				
DR. BY	DD	ORDER #	STD	NEXT ASSM
SCALE	.063	E.R.#	201900384	PRIOR REF
DATE	2/21/2019	NOTICE—THIS DRAWING AND THE PRINCIPLE OF DESIGN ARE THE PROPERTY OF AND PROPRIETARY TO ERIEZ		
CHKD. BY	-	DRAWING NUMBER		
<b>4R-201900828</b>				REVISION <b>3</b> OF <b>5</b>
INCHES (MILLIMETERS)				

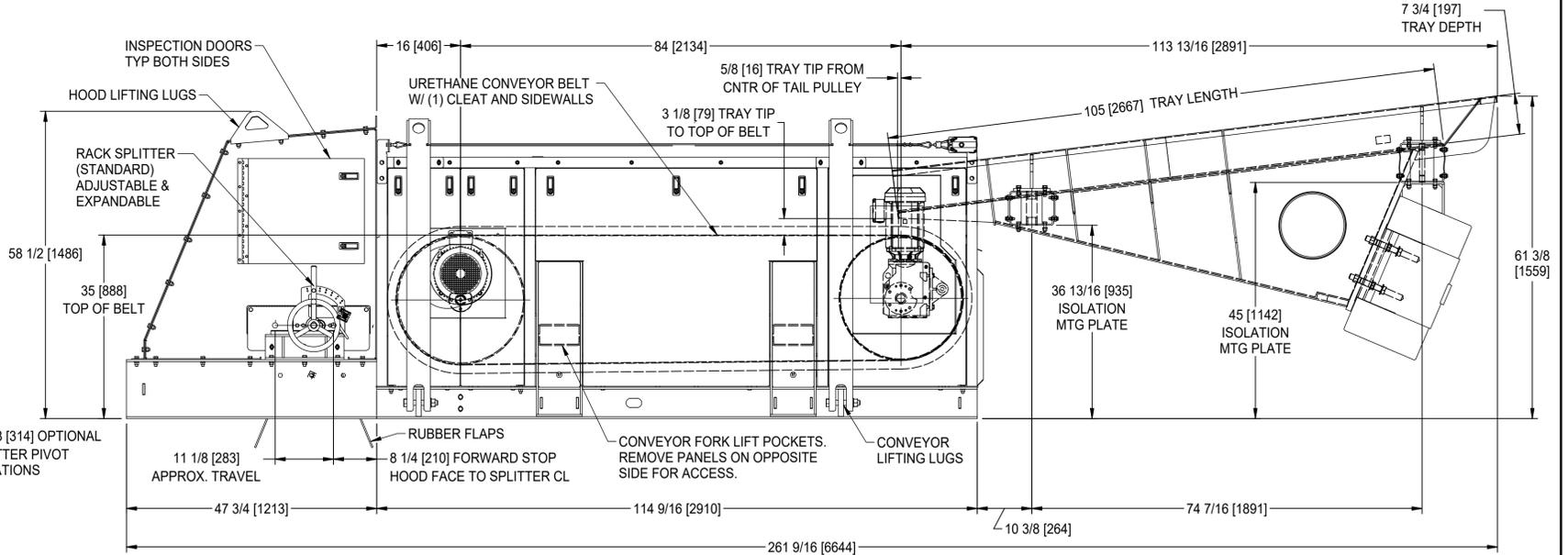
ORDER # 20090831  
DATE 8-5-20  
BY KCZ  
SHEET 3  
CHANGE MADE  
A UPDATED PICS ADDED LIFTING BRACKETS.



**HORN / BEACON STACKLIGHT ASSEMBLY**  
PART OF CONVEYOR ASSEMBLY  
LOCATION & MOUNTING BY OTHERS



**PET SPLITTER OPTION**  
(ST22 ROTOR ONLY)



**CONFIGURATION NO. 4 SPECIFICATION REQUIREMENTS FOR:  
ECS REVX-E MK3 2.0M 3,000 RPM SYSTEM**

CUSTOMER: \_\_\_\_\_

P.O.#: \_\_\_\_\_

APPLICATION: \_\_\_\_\_

CUSTOMER APPROVAL: \_\_\_\_\_

APPROVAL DATE: \_\_\_\_\_

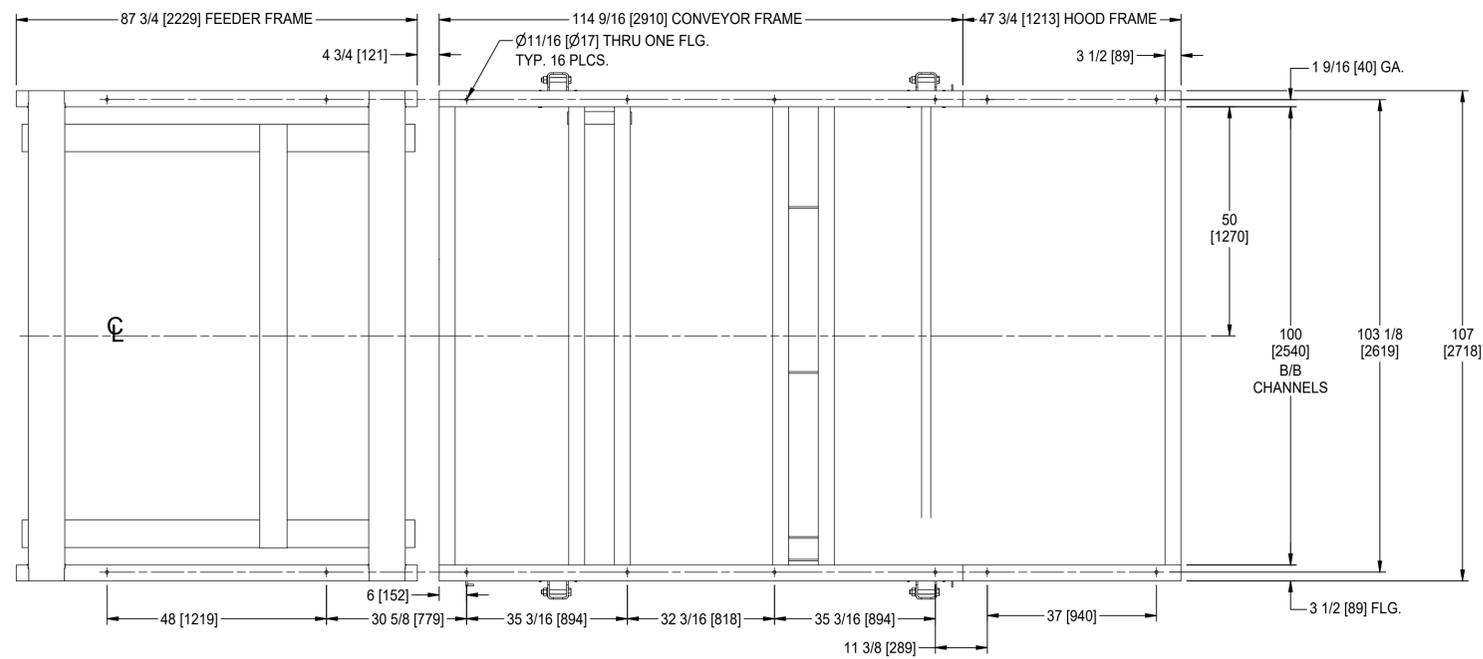
REFER TO 4P-201900831 FOR CONVEYOR SPARE PARTS LIST

FEATURE	STANDARD	SPECIFY OPTION
ROTOR & SPLITTER	LT2 W/ RACK	<input type="checkbox"/> ST22 W/ PET <input type="checkbox"/> ST22 W/ RACK
PAINT	SYSTEM: ERIEZ ORANGE	<input type="checkbox"/> RAL# _____
	PANEL FRAMEWORK: WHITE	<input type="checkbox"/> RAL# _____
AC POWER	460V, 60HZ, 3PH	<input type="checkbox"/> 575V, 60HZ, 3PH
MOTOR POSITION (VIEWED FROM FEEDER END)	LEFT HAND	<input type="checkbox"/> RIGHT HAND
<b>GENERAL SPECIFICATIONS:</b> ROTOR SPEED: (VARIABLE) 3,000 RPM MAX. CONVEYOR SPEED (VARIABLE) 200-600 FPM MAX. AMBIENT TEMPERATURE: 104°F [40°C] CONTROL <b>REQUIRED</b> FOR PROPER OPERATION (OFFERED SEPARATELY)		
APPROX. WEIGHT:	CONVEYOR: 8,250 LBS [ 3,742 Kg ] HOOD: 1,340 LBS [ 608 Kg ] RACK STYLE 1,225 LBS [ 556 Kg ] PET STYLE FEEDER: 4,511 LBS [ 2,046 Kg ]	

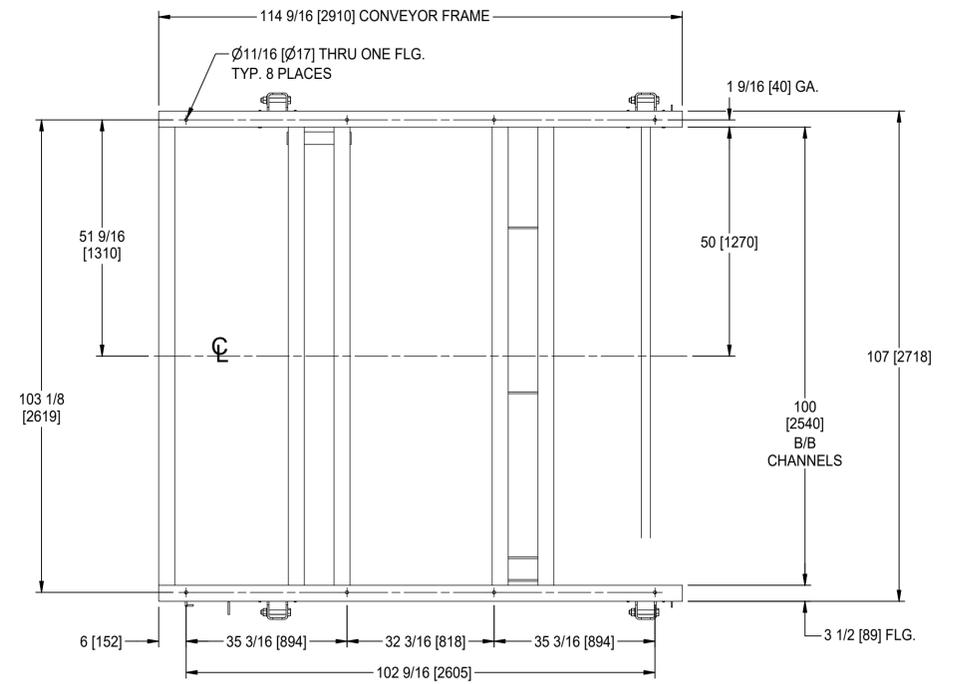
SEE SHEET 5 FOR MOUNTING FOOTPRINT

ORDER #	2000A087
DATE	8-5-20
BY	KCZ
SHEET	4
CHANGE MADE	
UPDATED PICS: ADDED LIFTING BRACKETS	

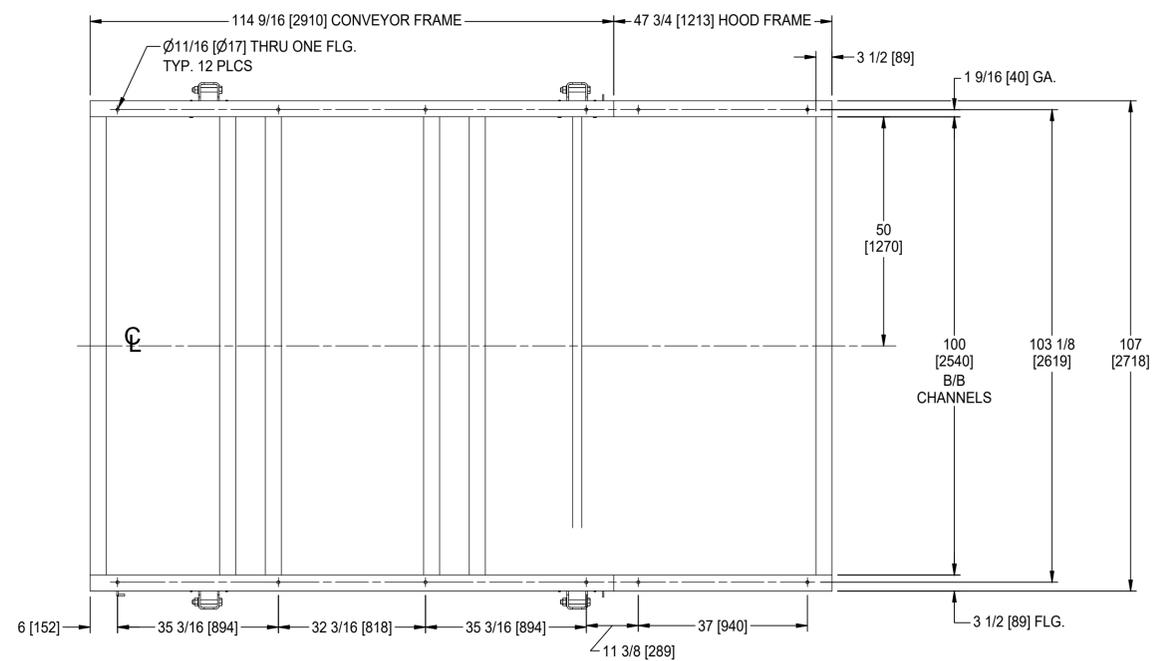
		<b>ERIEZ</b> <small>WORLD AUTHORITY IN SEPARATION TECHNOLOGIES GLOBAL HEADQUARTERS: ERIE, PENNSYLVANIA, USA</small>			
<b>TITLE</b> OUTLINE					
<b>SHEET TITLE</b> SYSTEM W/O FEEDER FRAME					
<b>FOR</b> ECS REVX-E MK3 2.0M 3,000 RPM ROTOR					
DR. BY	DD	ORDER #	STD	NEXT ASSM	4N-201705990
SCALE	.063	E.R.#	201900384	PRIOR REF	201808905
DATE	2/21/2019	NOTICE—THIS DRAWING AND THE PRINCIPLE OF DESIGN ARE THE PROPERTY OF AND PROPRIETARY TO ERIEZ			
CHKD. BY	-	DRAWING NUMBER			
<b>4R-201900828</b>					REVISION <b>A</b>



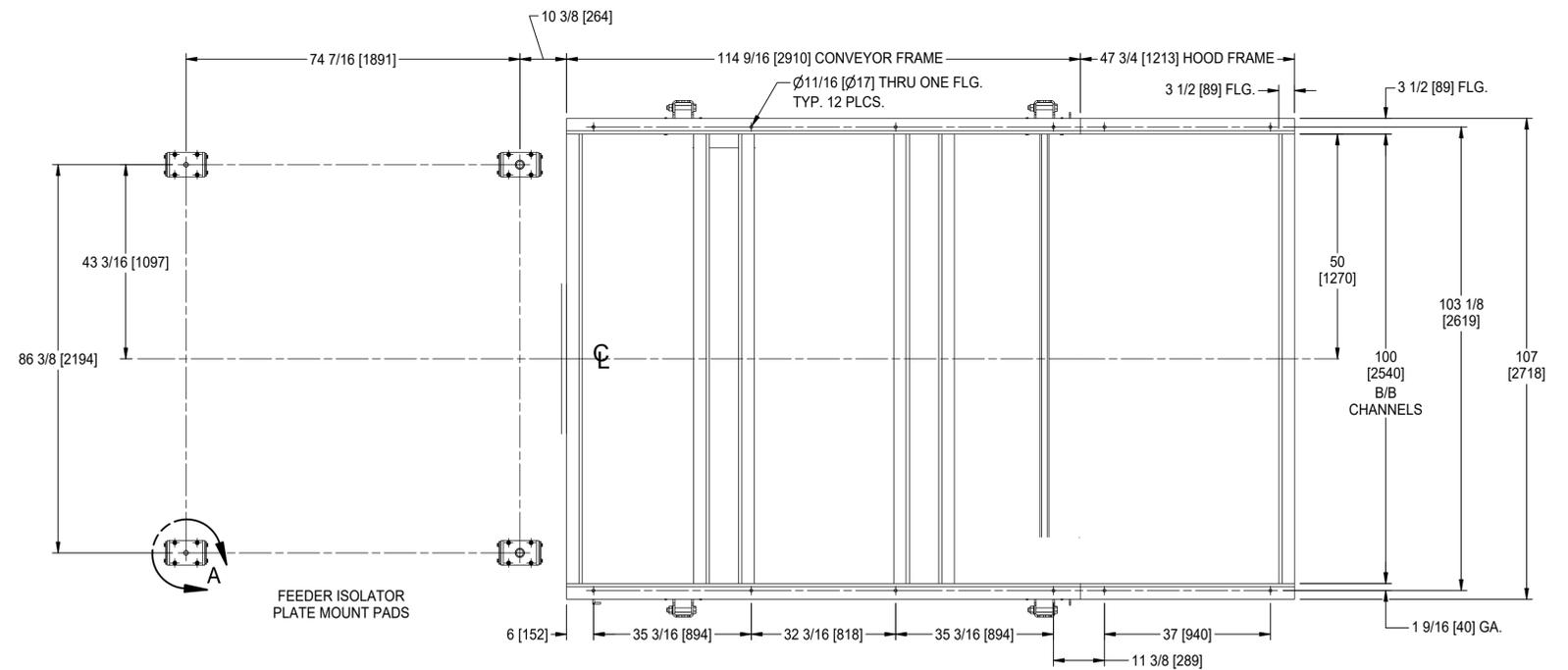
**CONFIGURATION NO. 1 SYSTEM MOUNTING FOOTPRINT**  
FRAME MOUNTING HOLES TYP ACROSS BOTH SIDES



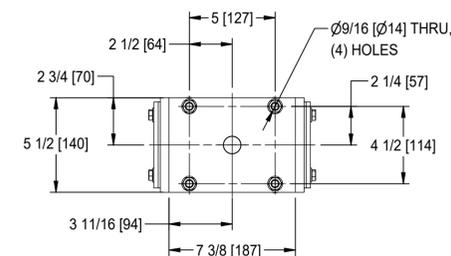
**CONFIGURATION NO. 2 CONVEYOR ASSEMBLY FOOTPRINT**  
FRAME MOUNTING HOLES TYP ACROSS BOTH SIDES



**CONFIGURATION NO. 3 CONVEYOR/HOOD ASSEMBLY**  
FRAME MOUNTING HOLES TYP ACROSS BOTH SIDES



**CONFIGURATION NO. 4 SYSTEM W/O FEEDER FRAME FOOTPRINT**  
FRAME MOUNTING HOLES TYP ACROSS BOTH SIDES



**DETAIL A**  
TYP. (4) PLACES  
SCALE .1875

NOTE: FRAME MOUNTING HOLES ARE SYMMETRICAL ABOUT THE UNIT CENTERLINE.

ORDER #	2000A087
DATE	8-5-20
BY	KCZ
SHEET	5
CHANGE MADE	
UPDATED PICS. ADDED LIFTING BRACKETS.	

		<b>ERIEZ</b> <small>WORLD AUTHORITY IN ADVANCED TECHNOLOGY FOR MAGNETIC, VIBRATORY AND METAL DETECTION APPLICATIONS. WORLD HEADQUARTERS, ERIE, PA, USA</small>			
<b>TITLE</b> OUTLINE					
<b>SHEET TITLE</b> MOUNTING FOOTPRINTS					
<b>FOR</b> ECS REVX-E MK3 2.0M 3,000 RPM ROTOR					
<b>DR. BY</b>	DD	<b>ORDER #</b>	STD	<b>NEXT ASSM</b>	4N-201705990
<b>SCALE</b>	.063	<b>E.R. #</b>	201900384	<b>PRIOR REF</b>	201808905
<b>DATE</b>	2/21/2019	<small>NOTICE—THIS DRAWING AND THE PRINCIPLE OF DESIGN ARE THE PROPERTY OF AND PROPRIETARY TO ERIEZ</small>			
<b>CHKD. BY</b>	-	<small>DRAWING NUMBER</small>			
<b>INCHES (MILLIMETERS)</b>					<b>5 OF 5</b>
<b>4R-201900828</b>					

Fact Sheet

# STEINERT EddyC® FINES



## + METAL SORTING

- + Produces valuable non-ferrous concentrates (Zorba), especially in the lower particle size range, by separating aluminium, copper, zinc and brass as a mix from a wide variety of feedstocks such as ASR, bottom ash, aluminium salt slags, moulding sands or electronic scrap.
- + Separation of non-metallic impurities, such as plastics, wood, rubber and minerals from fine-grained non-ferrous concentrates.

## + WASTE SORTING

- + Recovery of non-ferrous metal mixtures from different fine-grained material streams such as plastic flakes and granulates.
- + Cleaning of fine-grained material streams with a view to non-ferrous metal impurities such as aluminium, copper, brass, etc.

THE RESOURCE  
SEARCH ENGINE

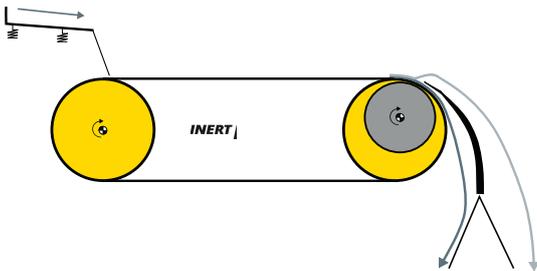
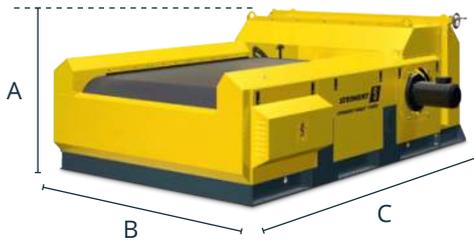
**CURIOSUS?**  
Learn more.



## + TECHNOLOGY

### STEINERT EddyC® FINES

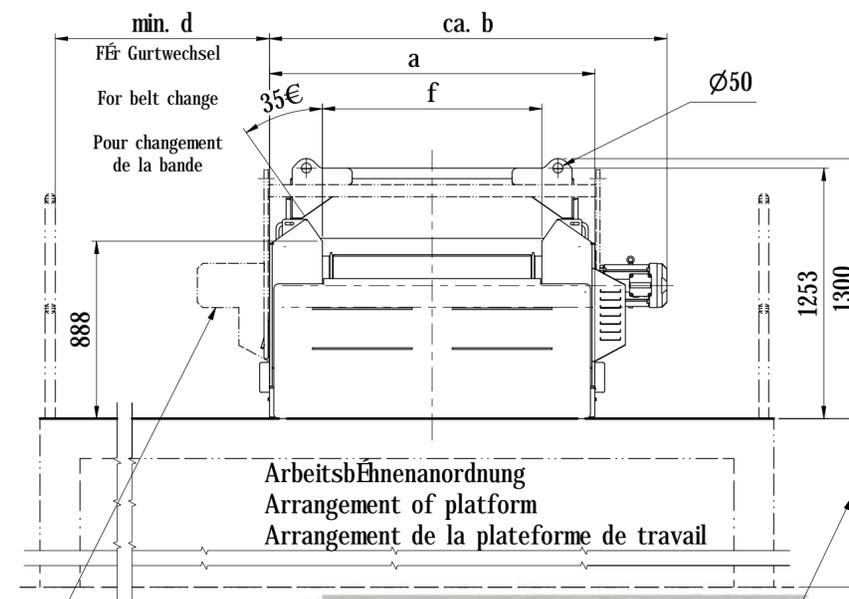
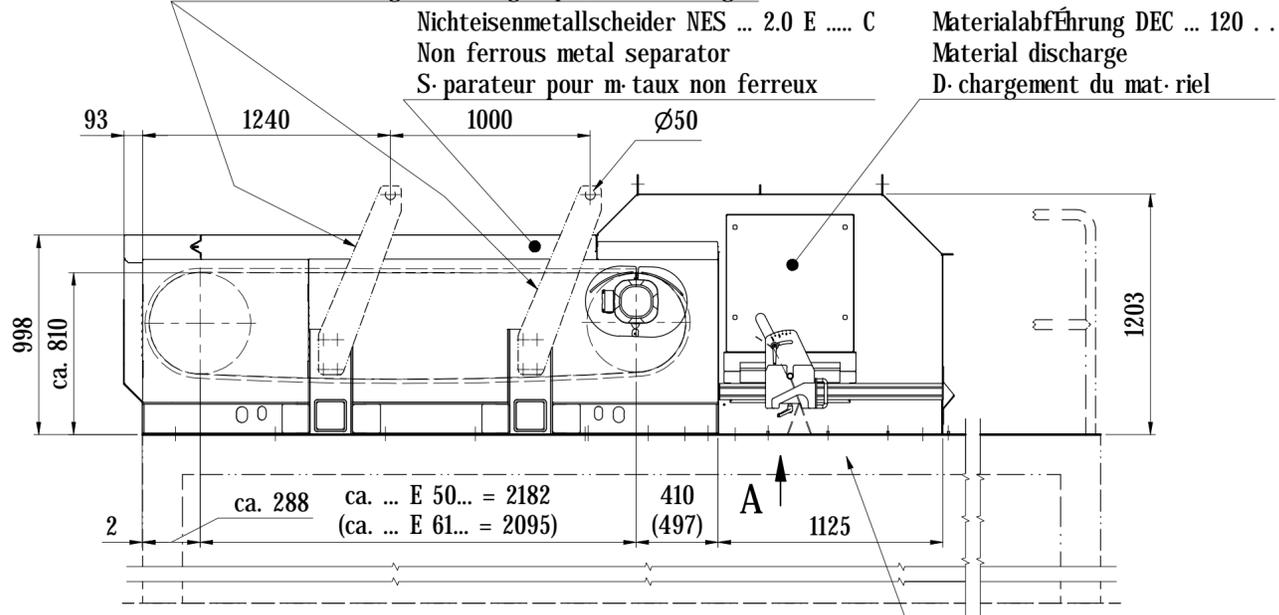
- + The head drum of the eddy current separator contains a neodymium permanent magnet system rotating at up to 4,000 rpm.
- + The rotation of the pole system causes the magnetic field to change polarity at a high frequency of up to 1.3 kHz.
- + Eddy currents are induced in conductive non-ferrous metals passing through this magnetic field, which generate their own magnetic field counteracting the excitation field.
- + Non-ferrous metals are rejected from the rest of the material flow due to the resulting repulsive force pulse.
- + The eccentric pole system developed by STEINERT guarantees maximum availability and cost-effectiveness.
- + The core feature of the STEINERT EddyC® model series is a self-supporting frame construction, which enables faster belt changes and optimised maintenance.
- + The special splitter blade enables high-precision adaptation to fine-grained material to be sorted and thus ensures optimum separation results down to 0.5 mm grain size.



STEINERT EddyC® FINES		NES 100	NES 150	NES 200
<b>General</b>				
Working width (mm)		1,000	1,500	2,000
Dimensions approx. (mm)	A	998	998	998
	B	2,140	2,640	3,140
	C	5,225	5,475	6,100
Weight approx. ZOR + EddyC FINES + AFP (kg)		3,380–3,430	5,070–5,230	5,280–6,330
<b>Environmental specifications</b>				
Permitted ambient temp. depending on version (°C)		-5 to +40		
Installation site		Under roof/indoor		
<b>Conformities</b>				
Given conformities		CE		
<b>Electrical specifications</b>				
Machine power consumption (kVA)		11.9–24.6		15.1–24.7
Machine protection class		IP66		
<b>Accessories + options + variants</b>				
Combination devices		MRB (upstream dual stage magnetic separator) MSB (head pulley magnet) MOR (upstream magnet drum with feeder)		
Example options		Dust protection, various belt types, belt scraper, central lubrication points, discharge options		
<b>Control</b>				
Dimensions approx. (mm)	Height	1,900/2,100		
	Width	800		
	Depth	400/600		
Weight (kg)		300		
Distance control to machine (m)		10–20		
Electrical connected load (A)		17.2–35.6		21.8–37.5

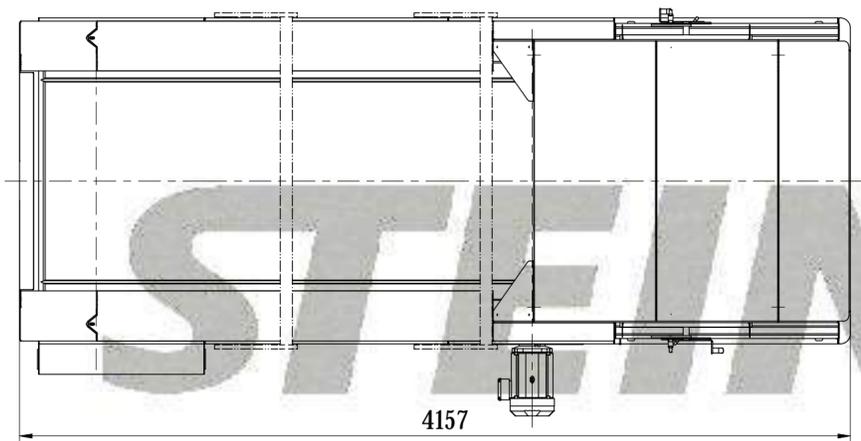
Technical alterations reserved. For more details see the operating instruction of the sorting system.

Anschlagpunkte sind nach der Montage zu entfernen.  
 Lifting material must be removed after assembly.  
 Il faut enlever l'engin de levage aprs l'assemblage.

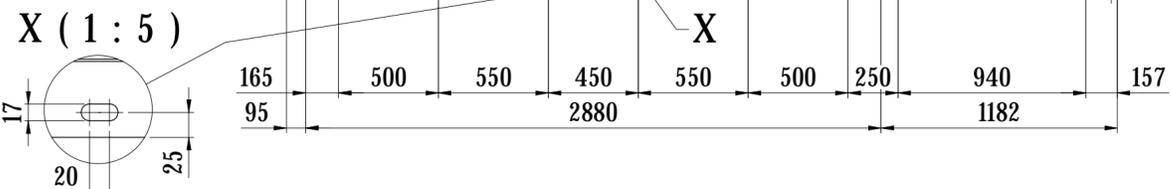
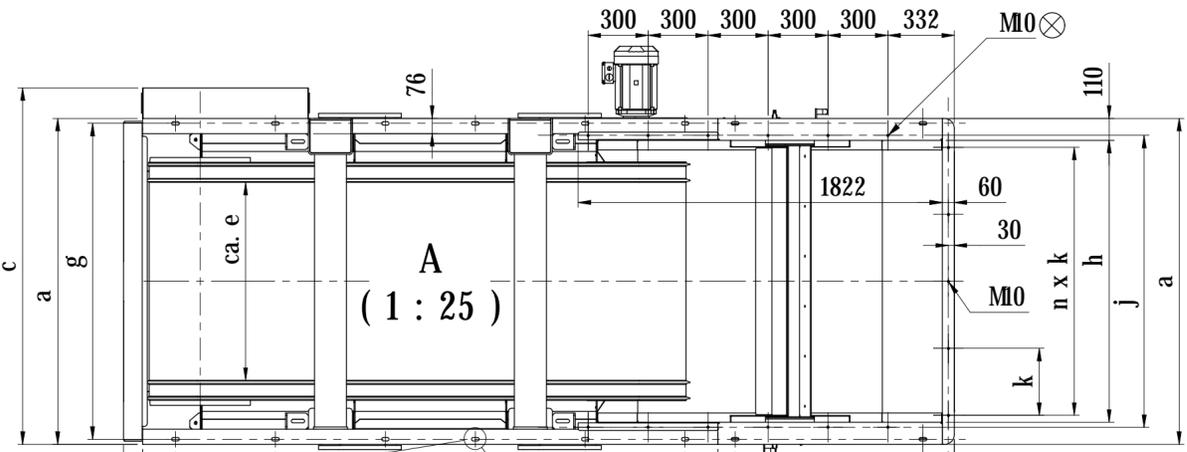
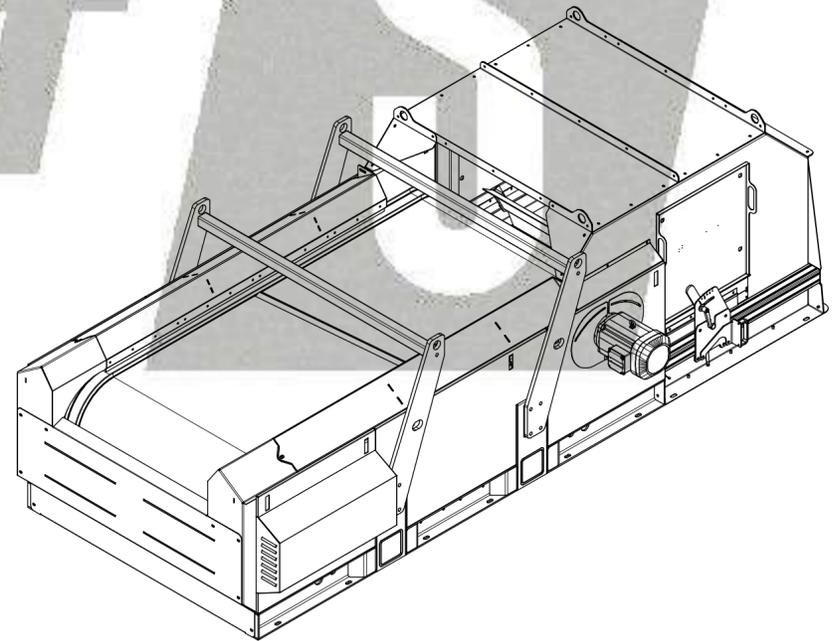


Linksausföhrung möglich  
 On request, motor on lefthand side  
 Entraînement à gauche possible

Einbauhöhe kundenabhöngig  
 Assembly height as per customer's requirement  
 Hauteur d'installation à d-cider par le client



Kontinuierliche Material-  
 Abfuhr vorsehen  
 Provide for continuous  
 material discharge  
 Un d-chargeement continu  
 du mat-riel est à pr-voir



Unterstützungs-konstruktion kundenseitig  
 Supports by customer  
 Construction de support par le client

01	ZOR eingefögt	26.09.2019	Gar
02	Bohrung M10	27.04.2021	Gar

Abmessungen / Dimensions													
Typ / Type	a	b	c	d	e	f	g	h	j	n x k	l	m	
NES 100 2.0 E .... C	1630	2160	1782	1200	990	1100	1580	1410	1460	4 x 335 (= 1340)	1360	1416	
NES 125 2.0 E .... C	1880	2410	2032	1500	1240	1350	1830	1660	1710	4 x 397,5 (= 1590)	1610	1666	
NES 150 2.0 E .... C	2130	2660	2282	1800	1490	1600	2080	1910	1960	5 x 368 (= 1840)	1860	1916	
NES 200 2.0 E .... C	2630	3160	2780	2400	1990	2100	2580	2410	2460	9 x 260 (= 2340)	2360	2416	

Freima-toleranzen nach geltenden TLV (SK\_SP\_204)  
 Oberflöche ISO 1302

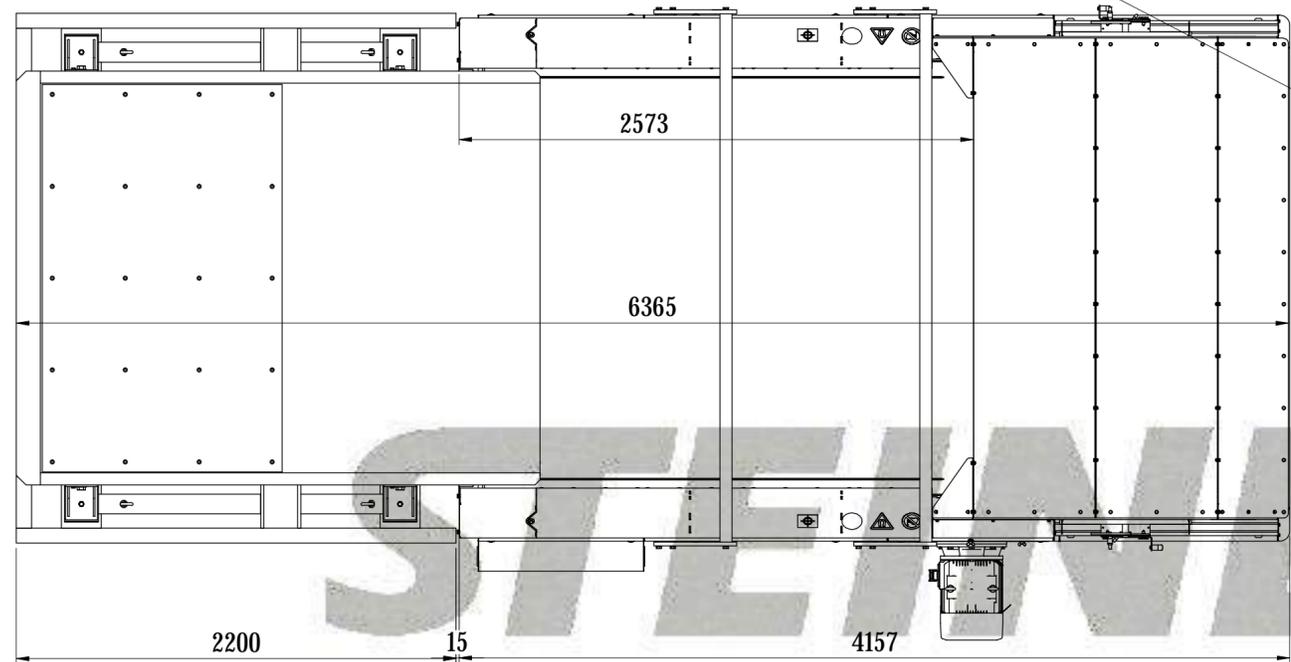
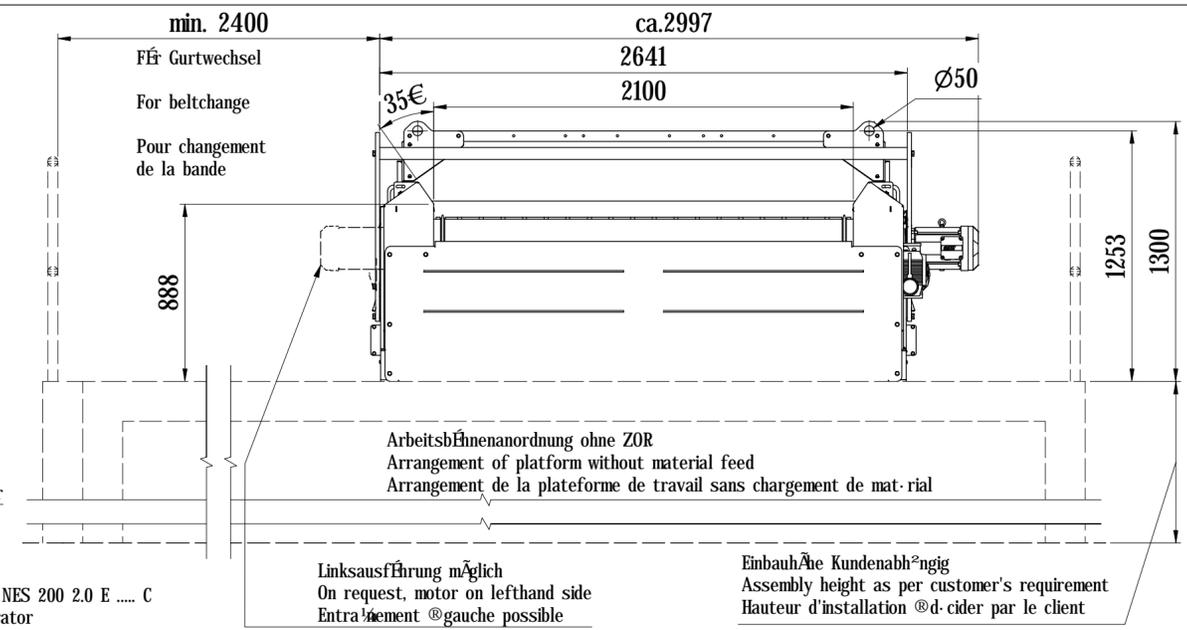
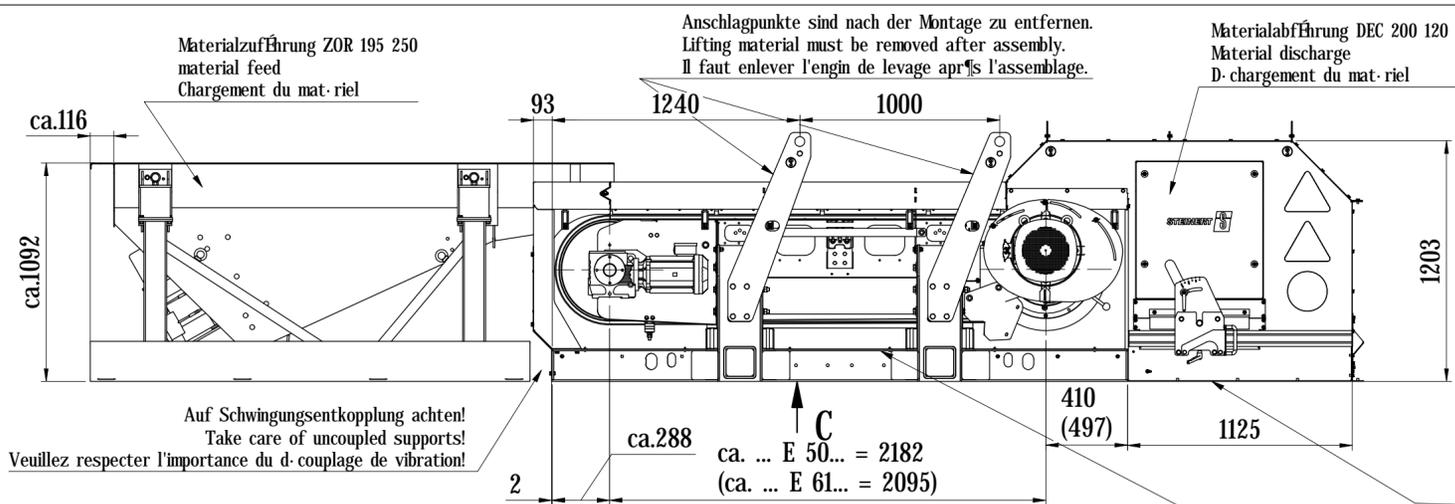
Erstellt Garcia  
 Ma-stab 1:25

Genehmigt Kneip  
 Ausgabedatum 28.04.2021

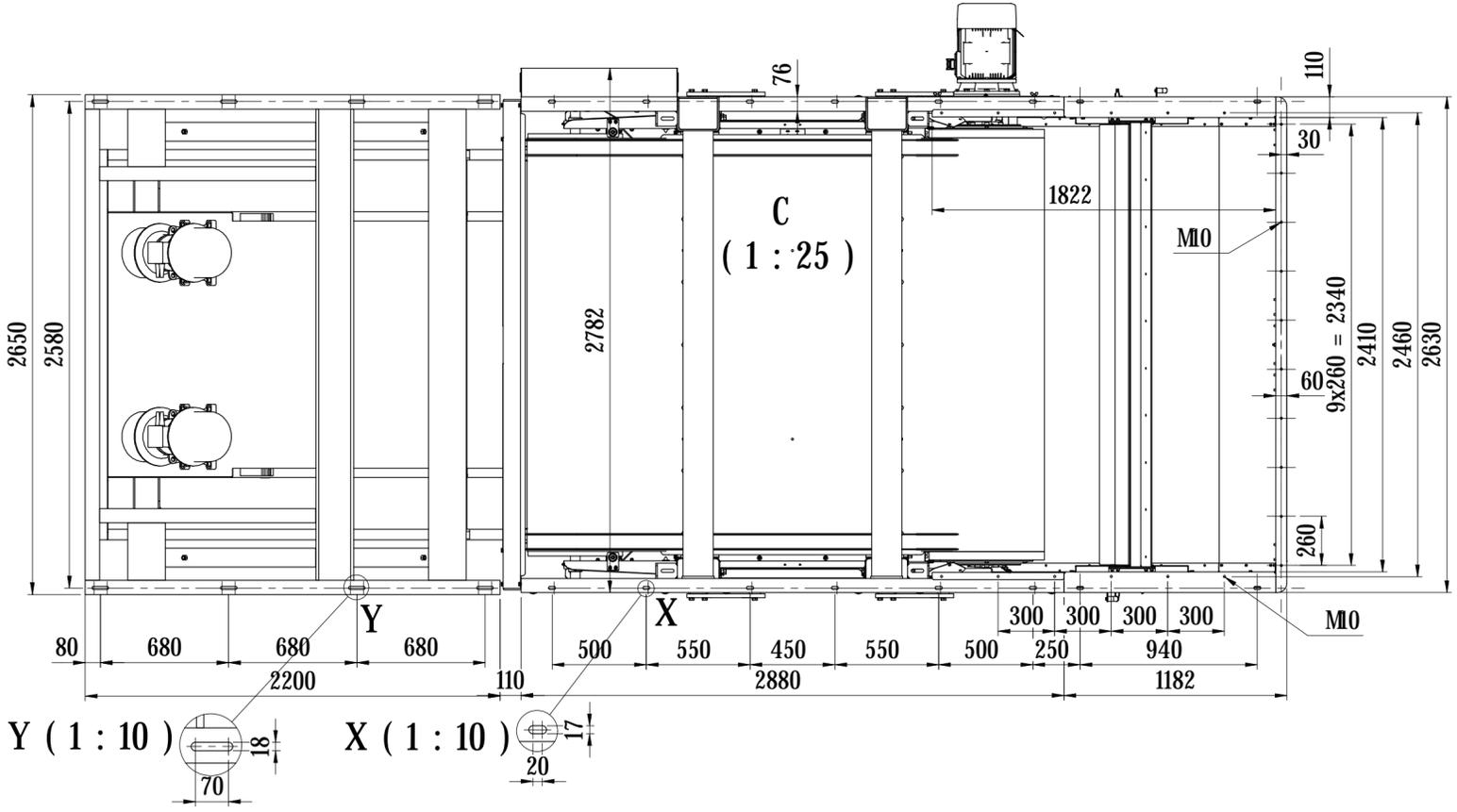
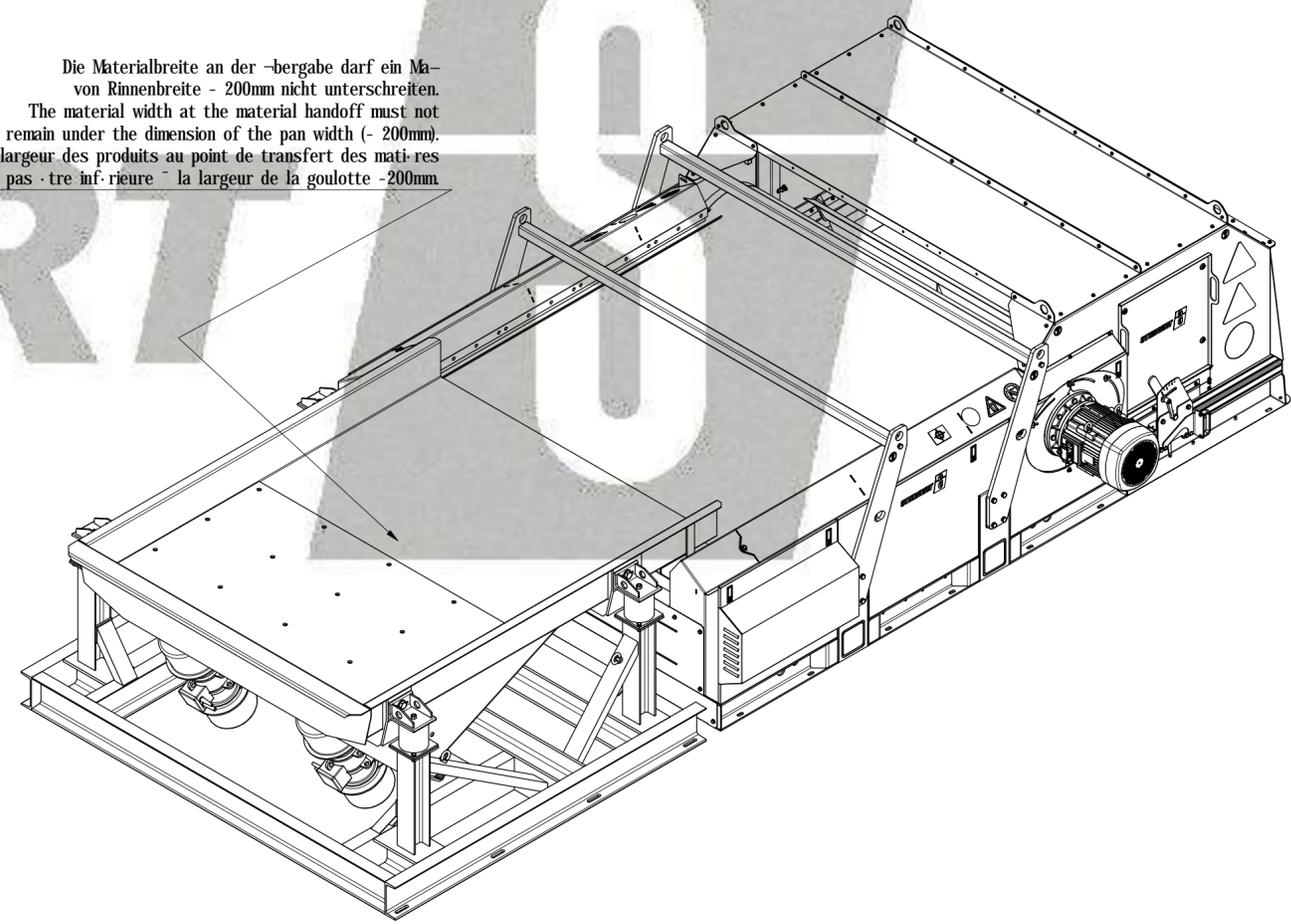
Gewicht  
 Werkstoff  
 Blatt Bezeichnung

**Aufstellungsplan**  
 Arrangement plan  
 Plan d'implantation  
 NES ... C + DEC ... 120DEC ...  
**V07 3273 80 11-02**

Blatt 1 Schutzvermerk nach ISO 16016



Die Materialbreite an der -bergabe darf ein Ma-  
von Rinnenbreite - 200mm nicht unterschreiten.  
The material width at the material handoff must not  
remain under the dimension of the pan width (- 200mm).  
La largeur des produits au point de transfert des mati- res  
ne doit pas - tre inf- rieur e la largeur de la goulotte -200mm



Freima- toleranzen nach geltenden TLV (SK_SP_204)	Erstellt <b>Barthel</b>	Genehmigt <b>Herbert</b>	Ausgabedatum 01.10.2019	Gewicht
Oberfl- che ISO 1302	Ma- stab 1:25	<b>Aufstellungsplan</b>		Werkstoff Blatt Bezeichnung
<b>STEINERT</b> MAGNETIC + SENSOR				Blatt <b>1</b>
<b>NES 200 2.0 E ..... C + V07 3273 80 15-00</b>				Schutzvermerk nach ISO 16016

# **Gantry Crane**

# GANTRY CRANES

Home (<https://www.aceworldcompanies.com>) » Overhead Cranes, End Trucks & Electric Hoists  
(<https://www.aceworldcompanies.com/material-handling-products/>) » Gantry Cranes



A **Gantry Crane** is supported by uprights that run along a rail at ground level. This type of crane is ideal for situations in which you have no elevated runway or top rail to run your crane along, or the building support structure cannot handle the weight of an overhead crane. Therefore gantry cranes are used in a lot of outdoor applications. The rail that the crane runs on is embedded into the concrete so that it is a flush surface allowing other equipment to cross the rail with ease. When choosing the proper gantry crane for your application there are a few things to consider, example:

- Gantry Crane Types – Double Leg Gantry or Semi (single leg gantry), will it run on rails or a track?
- What temperature will your crane be operating in? – Will there be extreme temperature changes? If so you may need motor heaters. You may also need specialized paint or a cover for your hoist to protect it from the elements.
- Outdoor conditions – Will it be windy, near salt water, with a lot of dust, or a lot of moisture?
- Power supply

These are just a few of the questions that will need to be answered. As a leading crane manufacturer, we can develop a custom crane solution that meets your needs—be it a semi-gantry or a double-leg crane. Our years of industrial crane design expertise and manufacturing experience ensure that your crane will be of the highest quality and will be a sound investment for years to come.

[Request A Quote \(https://www.aceworldcompanies.com/overhead-crane-or-gantry-crane-request-form/\)](https://www.aceworldcompanies.com/overhead-crane-or-gantry-crane-request-form/)

Double-leg gantries (both legs run along a rail at ground level) are often used in loading docks and shipyards and rail yards. The double-legged gantry crane can be customized with cabs, rotating hoists, dog houses (a cover that goes over your hoist to protect it from the elements), and much more.

## Semi Gantry

Semi-gantries are gantries in which a single leg runs along a rail at ground level and the other end of the bridge is supported by a truck that runs along an elevated runway. The Semi-gantry crane is ideal for warehouses and manufacturing buildings that need part of their bay for purposes other than a crane.

[Request A Quote \(https://www.aceworldcompanies.com/overhead-crane-or-gantry-crane-request-form/\)](https://www.aceworldcompanies.com/overhead-crane-or-gantry-crane-request-form/)

## Industries That Use A Gantry Crane:

- Steel
- Power Plants
- Manufacturing
- Scrap Yards
- Ship Builders
- Ship Yards
- Cement & Precast
- Rail Yards
- Fabrication Plants
- Service Centers



(<https://www.youtube.com/watch?v=hIFi0J5sB5A>)

Flipping a Ferry Engine Room

**Baler**

## Gesell, Gregory H.

---

**From:** Brian Mihm <BMihm@sierraintl.com>  
**Sent:** Friday, June 13, 2025 3:46 PM  
**To:** Gesell, Gregory H.  
**Subject:** Sierra Baler Information  
**Attachments:** REB1\_Brochure-WEB.pdf; REB2-150\_Brochure-WEB.pdf; REB2-250\_Brochure-WEB.pdf; REB4\_Brochure-WEB.pdf; Conveyors\_Brochure-SCR-PRINT.pdf; Copy of Copy of REB Bales TPH - 4-30-25.xlsx

You don't often get email from bmihm@sierraintl.com. [Learn why this is important](#)

**CAUTION: [EXTERNAL] This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.**

Greg,

Thank you for the call today.

Please see the attached balers, conveyors, and throughput for each model.

The REB1 sells for \$425,000 FOB Jesup, GA.

The REB2-150 sells for \$685,000 FOB Jesup, GA.

A 72" side feed conveyor sells for \$135,000 with a 15' lower feed section and is \$11,900 for each 5' section added to the lower feed section.

Thanks

Brian Mihm  
Director of Two-Ram Sales  
Sierra International Machinery, LLC  
Cell: 507-884-2351  
Company: 661-327-7073  
Email: bmihm@sierraintl.com



# REB-1

## TWO-RAM BALER

### **CYCLE INFO**

- DRY CYCLE CAPACITY: 12,000 CF/HR
- CHARGE BOX DISPLACEMENT: 50 CF
- DRY CYCLE TIME: 15 SECONDS

### **POWER**

- MAIN MOTOR: 75HP/460V/3PH/60HZ/TEFC
- ELECTRICAL SERVICE: 480V 225 AMP
- MATERIAL SETUP: 16 MATERIALS WITH 15 BALING PARAMETERS PER MATERIAL (SAVE, RESTORE AND RESET FACTORY DEFAULTS)

### **HYDRAULIC**

- SYSTEM OPERATING PRESSURE: 4500 PSI
- SHEAR/BALING FORCE: 143 TONS
- RAM-FACE PRESSURE: 241 PSI
- MAIN PUMP FLOW: 153 GPM
- PUMP: KAWASAKI PISTON/VICKERS VANE
- OIL FILTRATION: 5 $\mu$  RETURN LINE, 3 $\mu$  KIDNEY LOOP
- MAIN CYLINDER: 9" BORE - 143 TONS
- EJECT CYLINDER: 8" BORE - 88 TONS
- DOOR CYLINDER: 6" BORE - 40 TONS
- RESERVOIR CAPACITY: 500 GALLONS

**SIERRA**<sup>®</sup>

**MORE THAN 40 YEARS OF EXPERIENCE WENT INTO THE DESIGNING AND MANUFACTURING OF SIERRA'S HEAVY-DUTY REB-1 TWO-RAM BALER.**

THE REB-1 HAS A UNIQUE SHEAR BLADE THAT WORKS ON WASTE, FIBER, AND NON-FERROUS SCRAP METAL.

TO HELP ELIMINATE MATERIAL CONTAMINATION WHEN CHANGING MATERIAL THE REB-1 FEATURES AN INNOVATIVE BALE EJECT AND OVERSIZED BALE RELEASE DOOR. THIS FEATURE ALSO PRODUCES BETTER BALE INTEGRITY ESPECIALLY ON MATERIALS WITH LOTS OF MEMORY.

**SIERRA REBS CAN BE OUTFITTED WITH SPECIFICALLY DESIGNED BAGGING AND WRAPPING SYSTEMS.**

## **STANDARD FEATURES**

- WYE DELTA MAIN MOTOR STARTING
- FLOODED SUCTION POWER UNIT
- OIL COOLER/HEATER
- ADJUSTABLE RAM GUIDES
- SEPARATION DOOR WITH BALE RELIEF
- TONGUE AND GROOVE FLOOR LINER PLATES
- HARDOX 450 REPLACEABLE 1/2" LINERS
- ALLEN BRADLEY PLC
- PANEL VIEW HMI PROVIDES FOR MATERIAL SELECTION AND DIAGNOSTICS
- MODEM OR ETHERNET FOR ON-SITE DIAGNOSTICS
- AUTOMATIC OPERATIONS ON MOST MATERIALS
- CONVEYOR CONTROLS UP TO 10 HP
- MAIN RAM PENETRATION 60% OF BALE CHAMBER
- HEAVY DUTY FRAME AND RAM CONSTRUCTION
- AUTOMATIC WIRE TIER
- OPERATOR'S PLATFORM
- BALE TABLE



Note: Performance rates, bale weights and bale densities are subject to material pre-bale densities, feed rates and other variables in baling. Individual results may vary.

## **MATERIALS**

### **RECYCLE EVERYTHING BALER**

NON-FERROUS • FIBER • PLASTICS •  
MSW • RDF

## **PERFORMANCE**

### **AVERAGE BALE:**

ALUMINUM SHEET	1500 - 2000 LBS
ALUMINUM EXTRUSIONS	1200 - 1400 LBS
COPPER WIRE	3300 - 5500 LBS
COPPER TUBING	3800 - 4200 LBS
RADIATORS	2800 - 3500 LBS
STAINLESS STEEL	3500 - 4500 LBS
ALUMINUM CANS	1050 - 1150 LBS
PET BOTTLES	1250 - 1400 LBS
OCC	1400 - 1600 LBS
NEWS	1250 - 1650 LBS
SOLID WASTE	2300 - 2500 LBS

## **DIMENSIONS**

**OVERALL:** 34'-11" L X 15'-11" W X 7'-0" H

**HOPPER OPENING:** 60" W x 77" L

**CHARGE BOX OPENING:** 41" W x 72" L

**BALE SIZE EXPANDED:** 46" W x 31" H x 62" L

## **WEIGHT**

**SHIPPING WEIGHT:** APPROX 29 TONS

**SHIPPING TRUCK LOAD:** 2 LEGAL

**SEE MORE PHOTOS, SPECS, AND INFO  
AT [SIERRAINTL.COM](http://SIERRAINTL.COM)**

\*Sierra reserves the right to change specifications without notice.  
Rev. September 2018

# **SIERRA**

SIERRAINTL.COM | PH: (661) 327-7073 | USA: (800) 343-8503  
1620 E. BRUNDAGE LANE, BAKERSFIELD, CA 93307



# **REB-2**

(150 HP) TWO-RAM BALER

## **CYCLE INFO**

- DRY CYCLE CAPACITY: 25,714 CF/HR
- CHARGE BOX DISPLACEMENT: 100 CF
- DRY CYCLE TIME: 14 SECONDS

## **POWER**

- MAIN MOTORS: 2 @ 75HP/480V/3PH/60HZ/TEFC
- ELECTRICAL SERVICE: 480V 350 AMP
- MATERIAL SETUP: 16 MATERIALS WITH 15 BALING PARAMETERS PER MATERIAL  
(SAVE, RESTORE AND RESET FACTORY DEFAULTS)

## **HYDRAULIC**

- SYSTEM OPERATING PRESSURE: 4500 PSI
- SHEAR/BALING FORCE: 254 TONS
- RAM-FACE PRESSURE: 304 PSI
- MAIN PUMP FLOW: 306 GPM
- PUMP: KAWASAKI PISTON/ VICKERS VANE
- OIL FILTRATION: 5 $\mu$  RETURN LINE, 3 $\mu$  KIDNEY LOOP
- MAIN CYLINDER: 12" BORE - 254 TONS
- EJECT CYLINDER: 8" BORE - 113 TONS
- DOOR CYLINDER: 7" BORE - 87 TONS
- RESERVOIR CAPACITY: 900 GALLONS

# **SIERRA<sup>®</sup>**

**THE SIERRA REB-2 TWO-RAM BALER WAS A MACHINE DESIGNED BY RECYCLERS, FOR RECYCLERS.**

IT IS THE ULTIMATE MACHINE FOR ANY HIGH VOLUME OR HIGH PRODUCTION FACILITY. IT HAS THE ABILITY TO PROCESS A WIDE VARIETY OF MATERIALS WITH A HIGHER RATE OF PRODUCTION AND WILL ENSURE YOUR RETURN ON YOUR INVESTMENT.

THE REB-2 HAS A UNIQUE SHEAR BLADE THAT WORKS WELL WITH WASTE, FIBER, AND NON-FERROUS SCRAP METAL, ALLOWING YOU TO WORK WITH ANY MATERIAL.

**THE SIERRA REBS CAN BE OUTFITTED WITH SPECIFICALLY DESIGNED BAGGING AND WRAPPING SYSTEMS.**

### **STANDARD FEATURES**

- WYE DELTA MAIN MOTOR STARTING
- FLOODED SUCTION POWER UNIT
- OIL COOLER/HEATER
- ADJUSTABLE RAM GUIDES
- SEPARATION DOOR WITH BALE RELIEF
- TONGUE AND GROOVE FLOOR LINER PLATES
- HARDOX 450 REPLACEABLE LINERS
- ALLEN BRADLEY PLC
- PANEL VIEW HMI PROVIDES FOR MATERIAL SELECTION AND DIAGNOSTICS
- MODEM OR ETHERNET FOR ON-SITE DIAGNOSTICS
- AUTOMATIC OPERATIONS ON MOST MATERIALS
- CONVEYOR CONTROLS UP TO 10 HP
- MAIN RAM PENETRATION 70% OF BALE CHAMBER
- HEAVY DUTY FRAME AND RAM CONSTRUCTION
- AUTOMATIC WIRE TIER
- OPERATOR'S PLATFORM
- BALE TABLE



Note: Performance rates, bale weights and bale densities are subject to material pre-bale densities, feed rates and other variables in baling. Individual results may vary.

### **MATERIALS**

#### **RECYCLE EVERYTHING BALER**

NON-FERROUS • FIBER • PLASTICS •  
MSW • RDF

### **PERFORMANCE**

#### **AVERAGE BALE:**

ALUMINUM SHEET	1500 - 2000 LBS
ALUMINUM EXTRUSIONS	1200 - 1400 LBS
COPPER WIRE	3300 - 5500 LBS
COPPER TUBING	3800 - 4200 LBS
RADIATORS	2800 - 3500 LBS
STAINLESS STEEL	3500 - 4500 LBS
ALUMINUM CANS	1150 - 1250 LBS
PET BOTTLES	1300 - 1450 LBS
OCC	1400 - 1600 LBS
NEWS	1300 - 1700 LBS
SOLID WASTE	2300 - 2500 LBS

### **DIMENSIONS**

**OVERALL:** 37'-11" L X 19'-2" W X 8'-0" H

**HOPPER OPENING:** 78" W x 101" L

**CHARGE BOX OPENING:** 57 1/2" W x 96" L

**BALE SIZE EXPANDED:** 46" W X 31" H X 62" L

### **WEIGHT**

**SHIPPING WEIGHT:** APPROX 50 TONS

**SHIPPING TRUCK LOADS:** 1 LEGAL AND

1 HEAVY HAUL (WITHIN DIMENSIONAL LIMITS)

**SEE MORE PHOTOS, SPECS, AND INFO  
AT SIERRAINTL.COM**

\*Sierra reserves the right to change specifications without notice.  
Rev. May 2019

# **SIERRA**

SIERRAINTL.COM | PH: (661) 327-7073 | USA: (800) 343-8503  
1620 E. BRUNDAGE LANE, BAKERSFIELD, CA 93307



# **REB-2**

**(250 HP) TWO-RAM BALER**

## ***CYCLE INFO***

- DRY CYCLE CAPACITY: 45,000 CF/HR
- CHARGE BOX DISPLACEMENT: 100 CF
- DRY CYCLE TIME: 8 SECONDS

## ***POWER***

- MAIN MOTORS: 2 @ 125HP/480V/3PH/60HZ/TEFC
- ELECTRICAL SERVICE: 480V 500 AMP
- MATERIAL SETUP: 16 MATERIALS WITH 15 BALING PARAMETERS PER MATERIAL  
(SAVE, RESTORE AND RESET FACTORY DEFAULTS)

## ***HYDRAULIC***

- SYSTEM OPERATING PRESSURE: 4500 PSI
- SHEAR/BALING FORCE: 254 TONS
- RAM-FACE PRESSURE: 304 PSI
- MAIN PUMP FLOW: 564 GPM
- PUMP: KAWASAKI PISTON/ VICKERS VANE
- OIL FILTRATION: 5 $\mu$  RETURN LINE, 3 $\mu$  KIDNEY LOOP
- MAIN CYLINDER: 12" BORE - 254 TONS
- EJECT CYLINDER: 8" BORE - 113 TONS
- DOOR CYLINDER: 7" BORE - 87 TONS
- RESERVOIR CAPACITY: 1400 GALLONS

# **SIERRA<sup>®</sup>**

**THE SIERRA REB-2 TWO-RAM BALER WAS A MACHINE DESIGNED BY RECYCLERS, FOR RECYCLERS.**

IT IS THE ULTIMATE MACHINE FOR ANY HIGH VOLUME OR HIGH PRODUCTION FACILITY. IT HAS THE ABILITY TO PROCESS A WIDE VARIETY OF MATERIALS WITH A HIGHER RATE OF PRODUCTION AND WILL ENSURE YOUR RETURN ON YOUR INVESTMENT.

THE REB-2 HAS A UNIQUE SHEAR BLADE THAT WORKS WELL WITH WASTE, FIBER, AND NON-FERROUS SCRAP METAL, ALLOWING YOU TO WORK WITH ANY MATERIAL.

**THE SIERRA REBS CAN BE OUTFITTED WITH SPECIFICALLY DESIGNED BAGGING AND WRAPPING SYSTEMS.**

### **STANDARD FEATURES**

- WYE DELTA MAIN MOTOR STARTING
- FLOODED SUCTION POWER UNIT
- OIL COOLER/HEATER
- ADJUSTABLE RAM GUIDES
- SEPARATION DOOR WITH BALE RELIEF
- TONGUE AND GROOVE FLOOR LINER PLATES
- HARDOX 450 REPLACEABLE LINERS
- ALLEN BRADLEY PLC
- PANEL VIEW HMI PROVIDES FOR MATERIAL SELECTION AND DIAGNOSTICS
- MODEM OR ETHERNET FOR ON-SITE DIAGNOSTICS
- AUTOMATIC OPERATIONS ON MOST MATERIALS
- CONVEYOR CONTROLS UP TO 10 HP
- MAIN RAM PENETRATION 70% OF BALE CHAMBER
- HEAVY DUTY FRAME AND RAM CONSTRUCTION
- AUTOMATIC WIRE TIER
- OPERATOR'S PLATFORM
- BALE TABLE



Note: Performance rates, bale weights and bale densities are subject to material pre-bale densities, feed rates and other variables in baling. Individual results may vary.

### **MATERIALS**

#### **RECYCLE EVERYTHING BALER**

NON-FERROUS • FIBER • PLASTICS •  
MSW • RDF

### **PERFORMANCE**

#### **AVERAGE BALE:**

ALUMINUM SHEET	1500 - 2000 LBS
ALUMINUM EXTRUSIONS	1200 - 1400 LBS
COPPER WIRE	3300 - 5500 LBS
COPPER TUBING	3800 - 4200 LBS
RADIATORS	2800 - 3500 LBS
STAINLESS STEEL	3500 - 4500 LBS
ALUMINUM CANS	1150 - 1250 LBS
PET BOTTLES	1300 - 1450 LBS
OCC	1400 - 1600 LBS
NEWS	1300 - 1700 LBS
SOLID WASTE	2300 - 2500 LBS

### **DIMENSIONS**

**OVERALL:** 39'-6" L X 19'-2" W X 8'-11" H

**HOPPER OPENING:** 78" W x 101" L

**CHARGE BOX OPENING:** 57 1/2" W x 96" L

**BALE SIZE EXPANDED:** 46" W X 31" H X 62" L

### **WEIGHT**

**SHIPPING WEIGHT:** APPROX 52 TONS

**SHIPPING TRUCK LOADS:** 1 LEGAL AND

1 HEAVY HAUL (WITHIN DIMENSIONAL LIMITS)

**SEE MORE PHOTOS, SPECS, AND INFO  
AT SIERRAINTL.COM**

\*Sierra reserves the right to change specifications without notice.  
Rev. May 2019

# **SIERRA**

SIERRAINTL.COM | PH: (661) 327-7073 | USA: (800) 343-8503  
1620 E. BRUNDAGE LANE, BAKERSFIELD, CA 93307



# CONVEYORS

## **SCR SERIES**

### **CONVEYOR STYLE**

- S-STYLE
- 30° INCLINE, 5° NOSE DOWN

### **BELT WIDTH**

- 48", 60", 66", 72", 84", & 96"

### **DISCHARGE HEIGHT**

- APPROX. 10'- 4" (OTHER HEIGHTS BY REQUEST)
- CENTERLINE OF DRIVE SHAFT TO FLOOR

### **SPEED**

- 40 FEET PER MINUTE FIXED (VFD ON REB2 & REB4)

### **LIVE LOAD CAPACITY**

- 6,500 LBS.

### **GUARDING**

- SUPPLIED IN AREAS OF PERSONAL ACCESS  
UP TO 8'0"

# **SIERRA®**

SIERRA CONVEYORS DELIVER THE STRENGTH NEEDED TO KEEP UP PRODUCTION. THEY ARE FULLY INTEGRATED AND OFFER A TOTAL SOLUTION FOR YOUR BALING NEEDS. SIERRA'S CONVEYORS FEATURE A DIRECT DRIVE MOTOR WHICH REDUCES THE NUMBER OF MOVING PARTS AND INCREASES EFFICIENCY. THE CONVEYORS ARE EQUIPPED WITH A TENSIONED TAIL PULLEY THAT PROVIDES CONSTANT TENSION TO THE BELT. THIS ELIMINATES SLACK AND IMPROVES EFFICIENCY, WHILE REDUCING WEAR.



## **SCR SERIES**

### **BELTING**

- 9" PITCH, 1/4" THICK PRECISION DIE FORMED HINGE PANS
- 9" PITCH, 4" HIGH, 1/4" THICK PRECISION FORMED INTERLOCKING SIDE WINGS WELDED TO HINGE PAN
- 1/4" X 2" PRECISION DIE FORMED SIDE BARS
- SOLID BUSHINGS, HARDENED RC50-60 PRESS FIT INTO SIDEBARS
- 3" DIAMETER SINGLE FLANGE ROLLERS
- 3/4" DIAMETER THROUGH PIN CR1045 MATERIAL, ENDS MILLED, DRILLED FOR 1/4" DIA. COTTER PIN
- .970 OD X .760 ID 1008 TUBING
- COTTER PIN LOCKING STYLE
- ANGLE CLEATS 1/4" X 3" X 4" ON 72" CENTERS
- IMPACT SHOES 1" X 3" X 3" EVERY 2ND PITCH
- REINFORCEMENT BAR EVERY OTHER PITCH

### **FRAME**

- OPEN, STRUCTURAL STEEL CONSTRUCTION, COMPLETELY SHOP FITTED AND WELDED
- ASCE 25# RAILS
- SOLID METAL SIDE COVERS
- INSPECTION PANELS-BOLTED CONSTRUCTION.
- ELECTRIC/GRAVITY FEED CHAIN OILER
- 1/4" SIDE SKIRTS 36" HIGH INCLINE AND UPPER HORIZONTAL 12" HIGH PIT SECTION
- LOAD IMPACT BEAMS, 1 CENTERED FOR 48' X 60" & 2 EQUALLY SPACED FOR 72" X 84' 13 FOR 96"
- ADJUSTABLE SUPPORTS

### **BEARINGS & DRIVES**

- 3-7/16" DIA. HEAD SHAFT AND 2-15/16" DIA. TAIL SHAFT C1045, MACHINED ALIGNMENT
- 6 TOOTH SPROCKET, 9" PITCH, 18" PITCH DIA., MACHINED ALIGNMENT

SEE MORE PHOTOS, SPECS, AND INFO  
AT [SIERRAINTL.COM](http://SIERRAINTL.COM)

Sierra reserves the right to change specifications without notice.  
Rev. October 2020

# **SIERRA**

SIERRAINTL.COM | PH: (661) 327-7073 | USA: (800) 343-8503  
1620 E. BRUNDAGE LANE, BAKERSFIELD, CA 93307

<u>REB1</u>	Bale Weight - LBS	TPH	Bales per Hour
OCC	1500	7.5	10
ONP	1600	14	18
MIX PAPER	1550	12	15
PET	1250	5	8
NATURAL	1300	5	8
MIX PLASTIC	1300	5	8
ALUM CANS	1100	5	9
STEEL CANS	1900	9	9
Aluminum extrusions	1325	6	9
Aluminum siding	1850	5	5
Aluminum radiators	1700	7	8
Copper radiators	2800	9	6
Insulated copper wire	3800	12	6
Bright & shiny	4300	12	6
Copper tubing	1450	8	11
Solid waste	2000	17	17

<u>REB2 - 150</u>	Bale Weight - LBS	TPH	Bales per Hour
OCC	1550	17	22
ONP	1650	28	34
MIX PAPER	1600	26	33
PET	1400	8	11
NATURAL	1600	8	10
MIX PLASTIC	1500	8	11
ALUM CANS	1200	10	17
STEEL CANS	2000	13.5	14
Aluminum extrusions	1400	9	13
Aluminum siding	1900	8	8
Aluminum radiators	1800	10	11
Copper radiators	3300	14	8
Insulated copper wire	4000	20	10
Bright & shiny	5000	20	8
Copper tubing	1600	11	14
Solid waste	2450	36	29

<u>REB 2 - 250</u>	Bale Weight - LBS	TPH	Bales per Hour
OCC	1550	22	28
ONP	1650	34	41
MIX PAPER	1600	32	40
PET	1400	10	14
NATURAL	1600	10	13
MIX PLASTIC	1500	10	13
ALUM CANS	1200	12	20
STEEL CANS	2000	18	18
Aluminum extrusions	1400	12	17
Aluminum siding	1900	10	11
Aluminum radiators	1800	13	14
Copper radiators	3300	16	10
Insulated copper wire	4000	25	13
Bright & shiny	5000	25	10
Copper tubing	1600	14	18
Solid waste	2450	43	35

<u>REB 4 - 250</u>	Bale Weight - LBS	TPH	Bales per Hour
OCC	1550	27	35
ONP	1650	40	48
MIX PAPER	1600	38	48
PET	1400	15	21
NATURAL	1600	15	19
MIX PLASTIC	1500	15	20
ALUM CANS	1200	18	30
STEEL Cans	2000	21	21
Aluminum extrusions	1400	14	20
Aluminum siding	1900	12	13
Aluminum radiators	1800	15	17
Copper radiators	3300	18	11
Insulated Copper Wire	4000	28	14
Bright & shiny	5000	27	11
Copper Tubing	1600	16	20
Solid Wasste	2450	53	43

# Harris Balers

## Piranha

[Request Info](#)



### SMALL STATURE, BIG BITE

The Harris Piranha is a perfect entry level horizontal baler. It can handle any paper stock, secondary fiber, aluminum/steel cans, PET and HDPE you can throw at it. With a small footprint, the Piranha can fit in almost any location. As for power, don't let size fool you.

#### Heavy Duty Construction

Piranha horizontal balers are constructed using heavy duty .5" plate construction with 1" to 4" thick reinforcement. The Piranha also has an extra heavy duty baling chamber with a reinforced eject door. Hydraulically operated door latch is standard.

#### Reliable Power

The Harris Piranha features 96 tons of compression force and 110 pound per square inch ram face pressure, easily handling everything from bulk OCC to HDPE.

#### Versatility

The Piranha horizontal, closed-door baler can be supplied with flared hopper, above ground conveyor, or in ground conveyor to meet your requirements

#### Safety First

Harris horizontal balers utilize a Category 3 safety system. The system continuously checks the status and function of safety interlocks and emergency stop devices. All access doors are provided with three (3) pole magnetic safety rated interlock switches.

#### Brochures for Piranha

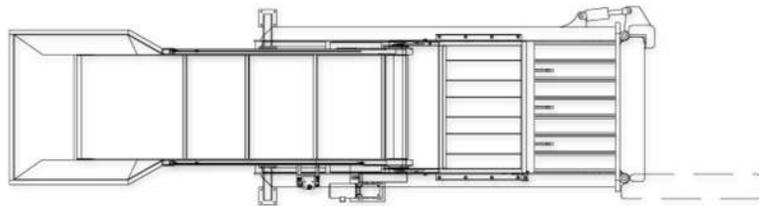
[Download link sent successfully to your email address.](#)

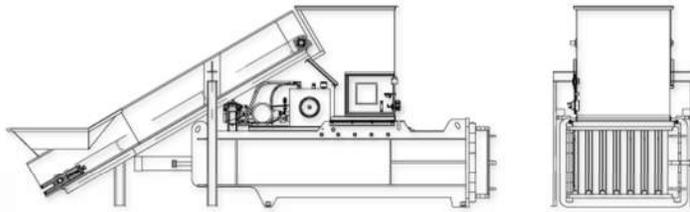
#### Materials Designed to Process

- Bulk OCC
- ONP
- Mixed Office Paper
- Magazines
- Aluminum UBC
- Steel Cans
- PET
- HDPE

#### Designed for these Facilities

- Printers
- Distribution Centers
- Multi-material Recycling Centers





MACHINE SPECIFICATIONS		
MODEL		PIRANHA
BALE SIZE	Width Height Length	60" 30" 40"
BALE VOLUME	cu.ft. expanded (Approximate)	41.66
CHARGE BOX OPENING	inches	36" x 56"
MAIN PUMP		34 gpm
CYCLE TIME		
SYSTEM PRESSURE	PSI	5000
RAM FACE PRESSURE	PSI	110
SHIPPING WEIGHT	tons	11
BALING MATERIAL	Bulk OCC ONP Mixed Office Paper Magazines Aluminum UBC Steel Cans PET HDPE	1400 lbs 1500 lbs 1500 lbs 2000 lbs 750 lbs 1200 lbs 900 lbs 1100 lbs



The Harris HL is a narrow-box and wide-mouth horizontal baler line. The balers are perfect in cramped quarters with smaller footprints and are useful in facilities ranging from warehouses to large volume retailers.

### Heavy Duty Construction

HL balers are constructed using one-piece, side wall design with plate reinforcement. This design increases overall strength and durability to withstand everyday wear and tear.

### Reliable Power

Harris HL models come in a selection of horsepower of 30HP or 40HP. Each model has a standard operating pressure of 3000psi to easily handle everything from shredded OCC to aluminum cans.

### Safety First

Harris horizontal balers utilize a Category 3 safety system. The system continuously checks the status and function of safety interlocks and emergency stop devices.

All access doors are provided with three (3) pole magnetic safety rated interlock switches.

### Brochures for HL

#### Wide Mouth Closed Door Horizontals

Name \*

Email \*

Send Download Link

#### Narrow Box Closed Door Horizontals

Name \*

Email \*

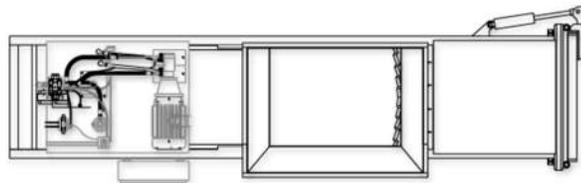
Send Download Link

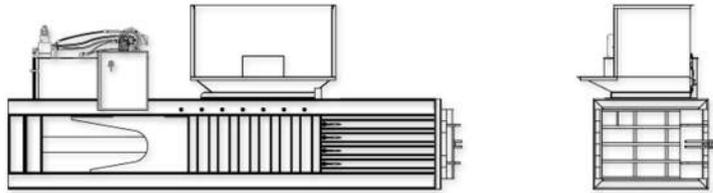
### Materials Designed to Process

- Shredded OCC
- Shredded News
- Perforated PET
- Whole Aluminum Cans

### Designed for these Facilities

- Warehouse
- Distribution Centers
- Warehouse/Bulk Stores
- Large Volume Retailers





<b>MACHINE SPECIFICATIONS</b>						
<b>MODEL</b>			<b>HL-12XHDM</b>	<b>HL-50</b>	<b>HL-60 M</b>	<b>HL-60 EB</b>
BALE SIZE	Width		30"	48"	48"	42"
	Height		36"	40"	40"	42"
	Length		60"	72"	72"	60"
BALE VOLUME	cu. ft.		45	72	80	61
CHARGE BOX OPENING	inches					
MAIN PUMP @800PSI	30 HP		1-52.5 gpm	1-52.5 gpm	1-52.5 gpm	1-69 gpm
	40 HP		--	--	--	--
MAIN PUMP @3000PSI	30 HP		1-15 gpm	1-15 gpm	1-15 gpm	1-21 gpm
	40 HP		--	--	--	--
CYCLE TIME	30 HP		28.5 sec	18.5 sec	28.5 sec	24 sec
	40 HP		--	--	--	--
SYSTEM PRESSURE	PSI		3000	3000	3000	3000
RAM FACE PRESSURE	PSI		117	68	80	97
SHIPPING WEIGHT	lbs		13,500	15,000	17,000	17,000
BALING MATERIAL	Shredded OCC		1170 lbs	1600 lbs	2100 lbs	up to 1575 lbs
	Shredded News		1260 lbs	--	--	--
	Perforated PET		720 lbs	--	--	--
	Whole Aluminum Cans		630 lbs	--	--	--



# Harris



# Piranha®

# What are the advantages?



This compact and ferocious machine can handle any paper stock, secondary fiber, aluminum/steel cans, PET and HDPE you can throw at it. With a small footprint, the Piranha® can fit in almost any location or facility. As for power - don't let the size fool you.

## **Structural Integrity**

Heavy duty ½" plate construction with 1" x 4" thick reinforcement. Single cylinder main ram provides superior transmission of power and force to the ram.

96 tons of compression force and 110 lbs/in<sup>2</sup> ram face pressure is the highest in its class.

Replaceable 3/8" thick abrasion resistant tongue and groove wear liners on baler floor and base of main ram for long life and minimum downtime.

Extra heavy duty baling chamber and eject door construction.

Full penetration and ejection of the bale.

Machined slots in shear knife and baling platen provide precise alignment between mating wire slots for easier wire threading.

## **Safety**

Category 3 safety system on conveyor hopper access door. Access to the conveyor hopper is protected by a dual circuit magnetic safety switch and a dual "trapped" key interlock system. The integrity of the safety circuit is continuously checked by a safety monitoring relay. Magnetic safety interlock switches on bale door and opening mechanism ensures that the door is fully open before the bale is ejected.

Operator warning alarms on bale door opening and ram retraction. (After manual tying operation and automatic start up).

Bale door opening mechanism is designed to relieve pressure from expansion of the bale.

Hydraulic door actuator cylinder incorporates a check valve on exhaust port to prevent unintended extension of the cylinder.

## **Just the Numbers**

Hopper Opening	<b>36"x56" (914.4mmx1422.4mm)</b>
Baling Cycle (Dry Cycle)	<b>29 Seconds</b>
Ram Face Pressure	<b>110 PSI (7.7 kgf/cm<sup>2</sup>)</b>
Motor Horsepower	<b>20 HP (14.91 kW)</b>
Main Pump	<b>33 gpm (124.88 lpm)</b>
Max Operating Pressure	<b>5000 PSI (344.82 Bar)</b>
Main Ram Force	<b>96 tons (87.091 tonnes)</b>

*Performance rates, bale weights, and bale densities are subject to moisture content, material pre-bale densities, feed rates, and other variables.*

7 7 0 . 6 3 1 . 7 2 9 0  
[www.harrisequip.com](http://www.harrisequip.com)



**Wide Mouth,  
Closed-Door  
Horizontal Balers**

# What are the advantages?

Manual, conveyor, pneumatic, or chute feed, the wide mouth, closed door horizontal balers are ideal for distribution centers, warehouses, industrial plants, and recycling facilities.

<b>HL-50</b>	<b>HP</b>	<b>Cylinder Bore</b>
48x36x72 (122x91x183)	30	7" (17.8cm)
<b>HL-50 M</b>		
48x36x60 (122x91x152)	30	7" (17.8cm)
<b>HL-50 HD</b>		
48x40x72 (122x102x183)	40	8" (20.3cm)
<b>HL-60 M</b>		
48x40x72 (122x102x183)	30	8" (20.3cm)
<b>HL-60 EB</b>		
42x42x60 (107x107x152)	40	8" (20.3cm)
<b>HL-60 EBHD</b>		
42x42x60 (107x107x152)	50	10" (25.4cm)
<b>HL-60 EBHDR</b>		
42x42x60 (107x107x152)	50	10" (25.4cm)
<b>HL-60 SS</b>		
42x30x60 (107x76x152)	40	8" (20.3cm)
<b>HL-60 S</b>		
42x42x60 (107x107x152)	30	7" (17.8cm)

## Materials Processed

High-Grade Paper  
Newspaper (ONP)  
Cardboard (OCC)  
Aluminum UBC  
Select Nonferrous Metals  
Steel Cans  
HDPE  
PET

7 7 0 . 6 3 1 . 7 2 9 0  
[www.harrisequip.com](http://www.harrisequip.com)