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January 5, 2026

VIA ELECTRONIC MAIL
Phillip Jackson
IDEM, Office of Air Quality
Indiana Government Center North
100 North Senate Avenue, Room 13W
Indianapolis, Indiana 46204-2251
PJackso@idem.IN.gov

Re: Public Comments on Industrial Steel Construction, Inc.
Renewal of Part 70 Operating Permit No. T 089-49193-00161
Significant Source Modification No. 089-49654-00161

To Indiana Department of Environmental Management:

The Conservation Law Center and the Environmental Law & Policy Center (collectively, "Commenters") respectfully submit the following comments on the above-referenced Draft Title V Part 70 Operating Permit renewal and Significant Source Modification ("Draft Permit" or "Permit") issued by the Indiana Department of Environmental Management ("IDEM") to Industrial Steel Construction, Inc. ("ISC") for its facility located at 86 Bridge Street, Gary, Lake County, Indiana ("Facility"). We appreciate the opportunity to make these public comments.

Collectively, the commenters are non-profit organizations that work to promote a healthier environment for all. We believe that federal and state regulations exist to ensure that businesses operate in a manner that does little harm to human health and the environment. And that equitable enforcement of those regulations ensures that businesses stand on equal footing and do not receive a competitive advantage by polluting the environment.

Background and Summary of Comments

This Draft Permit would renew the Clean Air Act Title V permit of Industrial Steel Construction to operate a miscellaneous metal working and bridge beam fabrication facility and would approve the addition of a new automatic shot blaster. ISC operates its Facility from two buildings on nearly 150 acres north of the Grand Calumet River and I-90 and south of a large railyard in Gary. The Facility manufactures bridge girders and other steel structural supports. Its operations that generate particulate emissions ("PM") includes cutting, grinding, welding, and abrasive blasting. The Facility coats its products in two paint booths that generate volatile organic compounds ("VOCs").

ISC operated as a synthetic minor source for years because it leased about a third of its Facility to other steel-related companies and the majority of the remaining property was utilized as a warehouse for steel plate.[1] On August 4, 2006, due to increased business and the addition of a mechanical blaster and paint booth, ISC obtained a Part 70 permit from IDEM.[2] According to the Draft Permit, ISC's Facility currently contains:

- 4 grinders;
- 7 blasters of various types and seeks to install and operate a new automatic shot blaster;
- 1 metalizing operation;
- 49 flame cutting stations;
- 12 electric arc stick welders;
- 12 submerged arc welders; and
- 2 paint booths.

Commenters' interest in this Draft Permit arises from the health risks associated with the Facility's potential for emitting large quantities of PM and VOCs and its proximity to the surrounding community that must deal with dozens of other major sources of these emissions. The health impacts of particulate matter are fairly well understood, which can include respiratory, lung, and heart problems.[3] VOCs are a precursor to ozone, for which Lake County is in non-attainment for the 8-hour national ambient air quality standard. According to the Draft Permit, the Facility is capable of emitting over 3,000 tons of PM and 168 tons of VOCs per year.[4]

Title V of the Clean Air Act requires each Part 70 Operating Permit to "include enforceable limitations and standards," a compliance schedule, monitoring and reporting requirements, and "other such conditions as are necessary to assure compliance with applicable requirements[.]"[5] Likewise, federal regulations require that sources "shall have a permit to operate that assures compliance by the source with all applicable requirements[,]"[6] and Indiana regulations instruct that Part 70 permits shall include conditions "that assure compliance with all applicable requirements[.]"[7] Commenters believe that the Draft Permit falls short of these state and federal minimums. First, the Draft Permit fails to provide adequate compliance determination requirements to ensure continual compliance with numeric PM emission limits. Second, the Draft Permit provides conflicting and unsupported control efficiencies for its eight baghouse pollution control devices. Finally, the Draft Permit fails to include plans that are required for compliance with the permit's terms and conditions.

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1 *See* FESOP Application (Feb. 16, 1996) (VFC #35522619, pdf pg. 3).
2 VFC #43615917.
3 *Health and Environmental Effects of Particulate Matter*, U.S. EPA (May 23, 2025), https://www.epa.gov/pm-pollution/health-and-environmental-effects-particulate-matter-pm.
4 VFC #83901152 (pdf pg. 129).
5 Clean Air Act, 42 U.S.C. § 7661(c).
6 40 C.F.R. § 70.1 (2005).
7 326 I.A.C. 2-7-5.

Comment 1: IDEM Must Ensure that Numeric PM Emission Limits are Enforceable

Pursuant to 42 U.S.C § 7661c(a) and 40 C.F.R. § 70.6(a)(1), Title V Permits issued by IDEM must include "enforceable emission limitations and standards," and other conditions that "are necessary to assure compliance with applicable requirements." Thus, in addition to emissions limits, IDEM must include all monitoring, reporting, and recordkeeping requirements to assure compliance with such limits and other applicable standards.[8] However, IDEM has failed to include the requisite standards and conditions in this permit that will ensure the Facility can comply with the applicable requirements in this permit. The permit fails to ensure that the PM, PM_{10}, and $PM_{2.5}$ limits in Sections D.1 through D.4 are practically enforceable.

a. Condition D.1.2

Condition D.1.2 sets numeric emissions limits for PM for 14 listed emission units, but does not provide compliance determination requirements that will ensure continual compliance with these numeric limits. Pursuant to 326 IAC 6.8-1-2(a) (Particulate Matter Limitations for Lake County), particulate emissions from the following emission units shall not exceed 0.03 grains per dry standard cubic foot (dscf), each:[9]

Emission Unit
Mechanical Blaster #1 (EU #1)
Electric arc stick welding (EU #9)
OxyAcetylene/Methane Cutting (EU #13)
Mechanical Blaster #3 (EU #18)
Mechanical Blaster #5 (EU #21)
Submerged arc welding (EU #17)
One (1) plate sweep grinder
Three (3) slab grinders (EU #11)
Mechanical Blaster #6 (EU #23)
Hand Blasting Operation (EU #24)
Mechanical Blaster #4 (EU#2)
Mechanical Blaster #7 (EU #27)
Metalizing Operation (EU #28)
Mechanical Blaster #8 (EU #29)

The Draft Permit requires compliance to be demonstrated by performing PM, PM_{10}, and $PM_{2.5}$ testing on one of seven mechanical blasters, the hand blasting operation, or the metalizing operation once every five years.[10] As a result, compliance with the numeric PM emission limits for each of these emission units is only confirmed every 40 years, which is twice the typical

8 42 U.S.C. § 7661c(c); 40 C.F.R. § 70.3(a)(3).
9 Draft Permit at 32-33 (pdf pgs. 34-35).
10 *Id.* at 33 (Condition D.1.4) (pdf pg. 35).

lifespan of a fabric filter baghouse.[11] Moreover, there is no demonstration that the capture and control efficiency of each of these baghouses is similar to warrant using each as a surrogate for the others. ISC installed each of these baghouses at its Facility at a different time, for a different purpose, and sometimes with different contractors and suppliers. Each can be expected to deteriorate at a different rate depending on usage, maintenance, and other factors. The Commenters recommend that each baghouse be tested at least once every five years considering that each of these emission units are estimated to have the potential to emit between 50 and 600 tons of PM annually.

b. Condition D.2.5

Condition D.2.5 sets a collective numeric PM emission limit for the Facility's two paint booths but does not provide compliance determination requirements that will ensure continual compliance with this numeric limit. Pursuant to 326 IAC 6.8-1-2(a) (Particulate Matter Limitations for Lake County) and 326 IAC 2-2 (Prevention of Significant Deterioration), particulate matter emissions from the Facility's two paint booths combined shall not exceed 1.78 pounds per hour.[12]

The Draft Permit does not require any testing or other demonstration to comply with numeric PM emission limits for the paint booths. Instead, compliance is assumed by implementing work practices and operator training as an "equivalent control device."[13] The Draft Permit does not explain how work practices and operator training can measure, much less ensure compliance with the numeric PM emission limit for the paint booths. As these operations are enclosed and volatile emissions were previously controlled by a regenerative thermal oxidizer, conducting emissions testing on the paint booths is feasible and should be required as part of the Facility's compliance demonstration.

c. Condition D.4.1

Condition D.4.1 sets numeric PM emissions limits for "the brazing equipment, cutting torches, soldering equipment, space heaters, welding equipment structural steel and bridge fabrication activities and hand grinding," but does not provide compliance determination requirements that will ensure continual compliance with these numeric limits. Pursuant to 326 IAC 6.8-1-2(a) (Particulate Matter Limitations for Lake County), particulate matter emissions from "the brazing equipment, cutting torches, soldering equipment, space heaters, welding equipment structural steel and bridge fabrication activities and hand grinding" shall not exceed 0.03 grain/dscf, each.[14] The Draft Permit does not contain any compliance determination

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11 EPA, *Baghouses and Filters*, Section 1.5.2 at 1-48 (Dec. 1998) (available at: https://www.epa.gov/sites/default/files/2020-07/documents/cs6ch1.pdf

12 *Id.* at 39 (pdf pg. 41).

13 *Id.* at 40 (Condition D.2.9) (pdf pg. 42).

14 *Id.* at 45 (pdf pg. 47).

requirements for these numeric PM emission limits. As a result, the PM limits for these emission units, required by the EPA-approved State Implementation Plan, is wholly unenforceable.

The other conditions in Sections D.1, D.2, and D.4 fail to include any recordkeeping or reporting requirements to address the PM limits for these units. IDEM must include monitoring, recordkeeping, and reporting requirements that apply to and assure compliance with the PM emission limits in Conditions D.1.2, D.2.5, and D.4.1.

COMMENT 2: IDEM Must Verify Control Efficiencies for its Emissions Calculations

Calculating a facility's potential to emit is critical in determining the regulations with which it must comply. An application for a Part 70 permit must include all information necessary to calculate emissions. 326 IAC 2-7-4(c)(3). In the Draft Permit, the control efficiency of PM emissions from the Facility's eight baghouses is listed as 98% for all but Baghouse #21, which is listed as 99%.[15] The Draft Permit does not provide a bases for these control efficiencies, although some of them presumably have been subject to performance testing over the past 20 years. ISC's annual emissions statement calculates the control efficiencies of these units as being 99.9% based on a "Site-Specific Emission Factor."[16] IDEM must confirm and document the control efficiency of the numerous emission units at the Facility in order to calculate the potential to emit.

a. Baghouse #21

The baghouse with the highest control efficiency controls the emission unit with the highest potential to emit. ISC obtained approval to install Baghouse #21 in 2006, which appears to have been the subject of litigation when the equipment did not perform as promised.[17] The contract for the dust collector system for the new emission unit lists its control efficiency as 95%.[18] IDEM should objectively verify the control efficiency of Baghouse #21.

b. Baghouse #28

The Draft Permit would modify the source to include a new emission unit (EU #29), an automatic shot blaster, that would be controlled by the same baghouse (Baghouse #28) as the metalizing operation (EU #28). Neither the application for a source modification, nor the Draft Permit verifies that the existing baghouse for the metalizing operation is sized sufficient to also control PM emissions from the new shot blaster. IDEM should objectively verify the control efficiency of Baghouse #28 to control emissions from two emission units.

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15 Draft Permit, TSD App. A, pg. 4 (pdf pg. 132).

16 *See*, *e.g.*, 2024 Annual Emissions Statement (VFC #83836510).

17 *See Industrial Steel Constr. v. Pangborn Corp.*, Case No. 07-cv-423 (N.D. Ind.).

18 *See* Attached Exhibit, at 14.

COMMENT 3: IDEM Must Include Required Plans in the Permit.

The Draft Permit includes several plans that ISC is required to implement or comply with by the terms of the Permit, but the plans themselves are not contained in the Permit. As EPA has explained, when "compliance with the approved [plan] is required" by the specific terms of a permit, the content of the plan is information necessary to impose an applicable requirement and "the plan must be included in the permit" under 40 C.F.R. § 70.6(a)(1).[19] In addition, to the extent the plans are required under the Indiana SIP, they are also applicable requirements that must be included in the Permit.[20] Accordingly, IDEM must revise the Draft Permit to include the following plans either as text in the Permit or attachments to it:

A. Preventive Maintenance Plan ("PMP") in Condition B.10: This General Condition requires implementation of the PMP, as well as preparation and maintenance of the PMP within 90 days of the later of permit issuance or initial start-up.[21] The only PMP found in IDEM's records is from 2003 and is one page long applying only to the then-existing six emission units.[22] As ISC has had a Title V permit for this facility for nearly 20 years, the PMP should be in place.[23] The Permittee is also required to have a PMP under the Indiana SIP.[24] In addition, the Permit states that this PMP can be used to satisfy the federal applicable requirements of 40 CFR Part 60/63 for an Operation, Maintenance, and Monitoring plan. Accordingly, the PMP required in Condition B.10 must be contained in the Permit because it is an applicable requirement, can be used to satisfy the applicable requirements of the federal rules in Parts 60 and 63, and is also necessary to determine compliance with Condition B.10(a) and (b).
B. Preventive Maintenance Plan in Condition D.1.3: This Condition states that the PMP "is required for these facilities and their control devices."[25] Since the PMP is an applicable requirement and is also required to determine compliance with Condition D.1.4, it must be contained in the Permit.

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19 *In the Matter of WE Energies Oak Creek Power Plant*, Permit No. 241007690-P-10 (June 12, 2009), https://www.epa.gov/sites/default/files/2015-08/documents/oak_creek_decision2007.pdf, at 26. *See also In the Matter of Columbia Univ.*, Pet. NO. II-2000-08 (Dec. 16, 2002), https://www.epa.gov/sites/default/files/2015-08/documents/columbia_university_decision2000.pdf, at 27 (noting where a facility is subject to a plan, the permit must "properly incorporate that plan").

20 40 C.F.R. §§ 70.2 (definition of applicable requirement at (1)) and 70.6(a)(1) (permits must include terms to comply with applicable requirements).

21 Draft Permit at 12, Conditions B.10(a) and (b) (pdf pg. 14).

22 *See* Response to Violation Letter for FESOP (Aug. 4, 2003) (VFC #39134719, pdf pg. 5).

23 *See* New Source Review and Part 70 Permit for Industrial Steel Constr., Inc. (Aug. 4, 2006) (VFC #43615917).

24 55 Fed. Reg. 18604 (May 3, 1990) (SIP approval).

25 Draft Permit at 33 (pdf pg. 35).

C. Preventive Maintenance Plan in Condition D.2.6: This Condition states that the PMP "is required for EU #15 and EU #22, and their control devices."[26] Since the PMP is an applicable requirement and is also required to determine compliance with Condition D.2.7, it must be contained in the Permit.

D. Continuous Compliance Plan ("CCP") in Condition C.9: This Condition states that under SIP-approved state law, the "Permittee shall perform the inspections, monitoring and record keeping in accordance with the…applicable procedures in the CCP."[27] The permit also states that "failure to submit a CCP" and "maintain all information required by the CCP" is a violation of SIP-approved state law.[28] Since the CCP is an applicable requirement and is also required to determine compliance with Condition C.9, it must be contained in the Permit.

Conclusion

We urge IDEM to revise the permit as outlined in the above sections and produce a final permit consistent with Indiana regulations and the requirements of the Title V permit program.

Thank you for considering these comments.

Respectfully submitted,

Michael J. Zoeller
Senior Attorney

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26 *Id.* at 39 (pdf pg. 41).

27 *Id.* at 22 (pdf pg. 24); 71 Fed. Reg. 14383 (March 22, 2006) (SIP approval).

28 Draft Permit at 22, Condition C.9(c) (pdf pg. 24).

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February 20, 2006

Industrial Steel Construction
86 N. Bridge St.
Gary, IN 46404
Tel 219-885-7600

Attention: Mr. Dan Moore
demoore@iscbridge.com

Reference: Pangborn® "ES-1848" Vertical Descaling System
Proposal No. SDS-6614, **Rev. F**
Your Order No. H-5443

Dear Dan:

Thank you for your valued purchase order and for your time and effort on this project. The attached revised proposal covers all of the various changes and additions you and your team have requested to date.

Pangborn has been the industry leader in shotblast and descaling equipment for over one hundred years and the proposed machine is the most productive and state of the art descaling system available.

Pangborn Rotoblast wheel design, separator design and machine construction are the most efficient and maintenance friendly in the industry, resulting in the lowest possible operating costs.

Included in the base price is start-up assistance, training for your operators and maintenance personnel at machine start-up and continuing service with free quarterly inspections for the duration of the warranty period. Hot parts are stocked in our Georgetown, South Carolina warehouse and are available for same day shipment, if required.

We have also included four (4) additional Rotoblast units with MagnaValves, motors and controls in the event you decide to add these to your original purchase of the equipment. This pricing is good for sixty (60) days only.

When reviewing this proposal, please keep in mind Pangborn's tradition of furnishing highly engineered systems featuring the latest in technology to provide the optimum in performance, reliability and economic operation.

Another important benefit to our customers is Pangborn's state-of-the-art Customer Technology Center and Laboratory located here in Hagerstown. This facility and our technical support are at your disposal for testing your parts or to assist in the proper selection of abrasive to meet your cleaning and surface requirements. Our production calculations are conservative but as this project progresses, we will discuss how to pursue testing in our lab.

If you have any questions or require additional information, please don't hesitate to contact me at 800-638-3000, Ext. 2363, or Ozz Storie at 615-351-6170.

Sincerely,

/s/ Wayne Johnston

Wayne S. Johnston
Director, Application & Production Engineering

WSJ:baw
cc: Ozz Storie, Regional Manager

APPLICATION DATA

PRODUCT DESCRIPTION

Miscellaneous fabricated girders up to 5'-0" wide x **18'-0"** high in one (1) pass.

Workpieces up to 5'-0" high can be cleaned in one (1) pass using the lower ten (10) Rotoblast units only. See proposed Blast Diagram **M-050198, Rev. B.**

All steel to be pre-blasted to commercial finish (SSPC-SP6) prior to cutting and welding.

Note: Two (2) Rotoblast units are provided in the entry end of the blast compartment to clean the top of the bottom flange before abrasive can build up and cause blinding.

WORK ENVELOPE

The proposed descaling system will clean work pieces up to 5'-0" wide x **18'-0"** high in one (1) pass.

OPERATION

Descale to a near-white metal finish (SSPC-10) prior to painting.

ESTIMATED PRODUCTION *(Ref. Proposed Blast Diagram M-050198, Rev. B)*

Based on 440,000 lbs/hr. maximum abrasive flow for system.

Beams up to 5'-0" high ---------- 10 to 12 FPM
Using two (2) 25 HP Rotoblasts on top of bottom flange and lower eight (8) 40 HP Rotoblasts

Beams over 5'-0" high to 12'-0" high ---------- 6 to 8 FPM
Using fourteen (14) Rotoblasts at 25 HP flow

Beams over 12'-0" high to 18'-0" high ---------- 4 to 6 FPM
Using eighteen (18) Rotoblasts at 20 HP flow

QUALIFICATION

- Estimated production rates are based on cleaning mild steel of a SSPC-SP6 commercial finish as defined by SSPC.
- For surface conditions more severe than commercial or for more tenacious scale than is normally encountered on mild steel, a slower line speed will be required to achieve the desired results.
- The product must be dry and oil-free prior to descaling.
- Due to the many possible configurations of your fabrications, it is possible that all surfaces may not be blasted. Manual touch-up would be required.
- A test in our Customer Technology Center is required to verify production rates.
- Pangborn recommends an S-230 operating mix be used in lieu of S-280 to improve coverage and cleaning rates.

SUMMARY OF PRICES

BASE MACHINE & COLLECTOR

- One (1) Pangborn "ES-1848" Vertical Descaling Machine:
  - **Eighteen (18)** 265DD-2 "RI" Rim-Loc Rotoblast units
  - Single abrasive handling and reclamation system with BER (double drop) separator and MagnaValve abrasive gates
  - **Drain cleanouts on lower augers**
  - Service access platform
  - Four (4), 40 ton capacity work dollies and car puller system (300'-0" long car puller)
  - Work dollies arranged with fork pockets for ease of handling
  - One (1) 8 cubic foot abrasive replenisher
  - 15'-0" long spill hopper located at entrance end of machine with bar grated floor and abrasive return screw conveyor
  - 15'-0" wide x 35'-0" long x 22'-0" high touch-up/blow-off room with abrasive return conveyor, two (2) blast tanks and operator accessories. **(Blast tanks filled from main abrasive storage bin.)**
  - **80 foot candles minimum in touch-up/blow-off room. (Pangborn to investigate use of metal halide lights in lieu of fluorescent.)**
  - One (1) air cannon blow-off with 25 HP blower and **eight (8)** manually adjustable air cannons
  - Electrical controls and motors including Allen Bradley MicroLogic PLC and PanelView 550 MMI **(hard copy and diskette of operating program).**
  - Model PCO4-64 cartridge type dust collector with **75** HP exhauster for **30,000** CFM sized to ventilate blast machine (**2.47**:1 air to cloth ratio)
  - **Single line layout of ductwork by Pangborn.**
- **Three (3) sets work present photo eyes.**
- 10 HP car puller in lieu of 5 HP for 1 to 20 FPM operation **with split drive chain arrangement**.

- Eight (8) sets of polyurethane seals (includes one [1] set in blow-off vestibule after air cannon blow-off plus one [1] set polycarbonate seals at exit end of blow-off compartment.)
- Complete blast compartment lined with 1/2" thick cast wear resist plates bolted-in in lieu of 1/2" thick manganese steel plates bolted-in inline with wheel streams.
- Additional 3'-6" wide band of 1/2" manganese wear plates in line with Rotoblast streams on the cabinet walls.
- 4'-0" additional cabinet, vestibule, blow-off compartment height and elevator height including complete cast wear resist lining in cabinet extension.
- After filter for dust collector with transition and photohelic gauge
- **Ten (10)** days installation and start-up supervision including travel and expenses.
- **Three (3)** Operating & Maintenance Manuals.
- **Eighteen (18) month** warranty

DISCOUNTED PRICE COMPLETE SYSTEM ---------- US$ 714,194.00

OPTIONAL ITEM

- Engineering only order for above equipment for general arrangement, blast stream and foundation drawings.

PRICE ---------- US$ 25,000.00

(To be deducted from above price at time of equipment order placement.)

TERMS OF SALE

PRICES

Prices are subject to confirmation at time of order placement.

TERMS AND CONDITIONS

This proposal is based on Pangborn's Standard Terms and Conditions of Sale, Form 5132 STD., copy attached.

TERMS OF PAYMENT

20% deposit with purchase order;
30% upon completion of engineering and placement of P.O. for commercial components;
35% prior to shipment;
15% upon acceptance not to exceed forty-five (45) days after shipment.

ERECTION ASSISTANCE

TEN (10) DAYS INCLUDED IN BASE MACHINE PRICE

Services of an experienced technical advisor to aid and assist purchaser's labor in the assembly, erection and start-up of the equipment at a rate of $800.00 per eight (8) hour day, portal to portal (non-working Saturdays and Sundays excluded) plus all travel and living expenses.

If the services of a technical advisor are not purchased from Pangborn, the customer assumes all responsibility for training of personnel with regard to proper operation, maintenance and safety features of the proposed equipment.

Purchaser furnishes labor, tools, and all other items required to properly erect the equipment.

SHIPMENT

F.O.B. shipping point, freight collect, with delivery to be determined after receipt of purchase order and deposit.

GENERAL SYSTEMS DESCRIPTION

The **Pangborn "ES-1848" Vertical Descaling Machine** is comprised of the following general components, generally as shown on ***Drawing L-050198, Rev. B.*** (Preliminary foundation drawing generally per ***Drawing L-050283.)***

BLAST CABINET

Entrance Vestibule

- Approximately 6'-6" wide x 25'-6" high x 10'-0" long constructed of 3/16" carbon steel.

Blast Compartment

- Approximately 6'-6" wide **x 25'-6"** high x 11'-7" long.
- 3/8" abrasive-resistant manganese steel plate.
- 3/8" manganese steel Rotoblast unit mounting pods.
- Blast compartment completely lined with 1/2" cast wear resist plates bolted-in place.
- 3'-6" wide band of 1/2" thick manganese steel wear plates in line with blast streams.
- 1/2" thick cast wear resist wear plates bolted on hopper slopes in line with blast streams.

Exit Vestibule

- Approximately 6'-6" wide x 25'-6" high x 5'-0" long constructed of 3/16" carbon steel.

Features Include:

- Four (4) sets of flexible finger seals in entrance vestibule, three (3) sets in exit vestibule and one (1) set in blow-off vestibule after air cannon blow-off to minimize abrasive leakage. These eight (8) sets of seals are polyurethane for optimum abrasion resistance and durability. One (1) additional set **hanging vinyl curtains** at exit end of touch-up/blow-off compartment.
- Ventilation hood (with manganese steel abrasive baffling grid) for connection to customer's machine ventilation supply duct.
- Cabinet floor is constructed of standard bar grating for abrasive drainage and maintenance access with 1/2" manganese steel plate overlay inline with blast streams.
- Support beams for work dollies through cabinet.

ABRASIVE HANDLING AND RECLAMATION SYSTEM

"BER" Airwash Abrasive Separator

One (1) "BER" 90" long, high efficiency, high capacity, double airwash abrasive separator is provided as described below.

Used abrasive and fine refuse passing through the scalping drum is stored behind the metering gate and is allowed to fall in a uniform curtain through the 720 square inch upper airwash section and 1080 square inch lower airwash section, making a total of 1800 square inches of airwash area.

Features of this airwash section include:

- Two (2) adjustable metering gates (one above each airwash section) pre-set to allow uniform abrasive/sand curtain thickness with uniform density to fall through both 90" wide airwash sections.
- A two (2) position, air operated, probe controlled metering gate set and locked in position to provide uniform curtain thickness and a curtain of abrasive across the full width of the separator.
- A probe is provided at the end of the separator section to open and close the metering gate, as required, to maintain a full abrasive curtain across the airwash section. This feature ensures that optimum airwash efficiency is maintained during fluctuating flow conditions; i.e., changing sand content and/or abrasive volume.
- One (1) adjustable skimmer plate in each upper section; two (2) adjustable skimmer plates in each lower section. Primary skimmer plate removes only fine refuse, while secondary skimmer plate diverts mixture of good sand and abrasive for recycling.
- A three-piece removable screen is provided in the lower section for trapping out coarse particles that may have passed through scalping drum.
- With proper adjustment of the metering gate and skimmer plates, the amount of fines retained in the good abrasive will not exceed 1/2 of 1%.
- Only good, usable abrasive flows to the storage bin, and then to the Rotoblast wheels.

Storage Bin

- Stores good abrasive for supply to the Rotoblast units.
- 3/16" steel construction.
- Equipped with low-level bindicator.

MagnaValve Model VLP1000VAR Abrasive Flow Control Gates

- One (1) gate per Rotoblast unit to control Rotoblast abrasive flow.
- Electronically operated.
- Reduces noise from abrasive flow.
- No moving parts
- Each MagnaValve is remotely controlled by Variac located inside control panel.
- Rotoblast units provided with **multiple** Variac controls for automatic selection of abrasive flow rate via PLC controller **as follows:**
  - **Work up to 5'-0" high**

    Two (2) 25 HP downblast units.
    Eight (8) 40 HP lower Rotoblast units
  - **Work over 5'-0" to 12'-0" high**
    Fourteen (14) lower Rotoblasts at 25 HP flow.
  - **Work over 12'-0" to 18'-0" high**
    Eighteen (18) Rotoblasts at 20 HP flow.

Gravity Hopper

- Angled under cabinet for optimum abrasive reclamation.
- 3/16" steel under vestibules; 3/8" manganese steel under blast compartment.
- 3/8" manganese steel shroud over screw conveyor in blast compartment.

Screw Conveyors

The lower longitudinal screw conveyors (approximately 76'-6" long) will be arranged generally as follows:

- 15'-0" entry spill hopper – 9" diameter mild steel flights (1/4" thick) welded to 6" standard pipe shaft with separate 10 HP drive.
- 26'-6" cabinet screw – 16" diameter T-1 flights (3/8" thick) welded to 8" standard pipe shaft. Main screw conveyor is located below entry and exit hoppers and is provided with a separate 10 HP drive.

- 35'-0" exit blow-off – touch-up screw – 9" diameter mild steel flights (1/4" thick) welded to 6" standard pipe shaft.
- One (1) hanger bearing located near center of blow-off conveyor.
- 10 HP drive located at exit end of blow-off compartment.
- Cross auger and upper distributing screw – 16" diameter T-1 flights (3/8" thick) welded to 8" standard pipe with 10 HP drives.
- All screw conveyors and elevator boot provided with zero speed switches for no additional charge.
- All hopper angles arranged to provide shot flow to augers.
- **Cleanouts with pipe nipples and caps at bottom of troughs.**

Abrasive Elevator

- Receives abrasive and refuse from the return screw conveyors.
- Ductile iron buckets fastened to reinforced belting convey the abrasive vertically, discharging it into the airwash separator.
- A take-up mechanism allows belt tension between the boot (bottom) and head (top) pulleys to be adjusted for maximum belt traction.
- Shaft mounted drive with keyed shaft.
- Boot and clean-out access covers.
- Discharge spout inspection door.
- 487,500 lb/hr. maximum flow capacity.

Other Features:

- "C" face, totally enclosed, fan cooled ball-bearing motor.
- Elevator bearings lubricated and sealed-for-life.
- Dust- and abrasive-tight construction.
- Zero speed switch on boot pulley.

SERVICE PLATFORM

- For servicing elevator head and separator.
- Check plate floor and handrailing.
- Caged ladder.

CAR PULLER AND WORK DOLLIES

- One (1) 10 HP car puller drive with A/C motor and variable frequency controls (1 – 20 FPM).
- 300'-0" long drag chain (RC 120 dry lubricated).
- Four (4), 40-ton capacity work dollies with abrasion resistant manganese steel housing and chain attachment.
- Arranged with fork pockets for ease of handling.
- **Located at exit end of blow-off/touch-up room.**
- **With individual chain strands for entrance (up to drive) and exit (beyond drive).**

ROTOBLAST SYSTEM

Eighteen (18) 265DD-2 "RI", 26-1/2" diameter, direct drive Rim-Loc® Rotoblast wheels equipped with 2" wide reversible vanes provide the blast cleaning coverage. The "RI" straight vane delivers a more evenly distributed abrasive concentration across the work.

These units will provide a particle velocity of approximately 265 FPS and an abrasive flow rate of approximately 1100#/hr/HP.

Simply stated, you get faster cleaning cycles, and less wheel wear.

Specific features of the "RI" Rim-Loc wheel include:

- Efficient foot mounted **1800** RPM direct drive motor eliminates bearings and spindle assembly.
- Heavy-duty balanced cased hardened alloy steel runnerhead designed to withstand any load, which might occur under normal operating conditions.
- Eight (8) cast wear resist (hi-chrome/moly) reversible vanes, precision cast and balanced to provide long and continuous operation. Pangborn test evaluations have concluded that Rim-Loc blast wheels are superior to other types of blast wheels available. The advantage of the Pangborn Rim-Loc design includes a much longer wear life while producing the same flow rate and abrasive particle velocity of other wheels. In addition, the Rim-Loc wheel delivers a more effective and controlled abrasive pattern (distribution).

- The Rim-Loc wheel's runnerhead, vanes, impeller, and impeller case are reversible for either CW or CCW rotation, meaning fewer parts to stock. Also, the feed parts and feed spout need not be removed to change the vanes, reducing maintenance time and cost.
- A simple, positive lock spring arrangement to retain vanes in the runnerhead. Your maintenance people will be able to replace vanes quickly without the necessity of special tools.
- Centerfeed impeller and case are manufactured of **cast wear resist** material. They are designed to operate with minimum friction between abrasive and wheel parts, which in turn results in minimum power loss and more effective blast cleaning. The impeller is held in place by a single bolt clamp to assure fast, accurate reassembly.
- Unique blast stream adjustment conveniently located on outside of the wheel housing makes targeting the blast stream a simple procedure.

ABRASIVE REPLENISHER

- One (1) 8 cubic foot capacity automatic abrasive replenisher with diaphragm type low-level indicators mounted in the main storage bins, and air operated sound abatement abrasive gate mounted at the bottom of the replenisher hopper.
- In operation, when the level of abrasive in the main storage bin reaches a point below the indicator, the abrasive gate in the replenisher hopper will automatically open, replenishing new abrasive to the machine.
- When the level of shot in the main storage bin reaches a point above the indictor, the shot gate will automatically close.

SPILL HOPPER (ENTRANCE END)

- One (1) 15'-0" long x 6'-6" wide spill hopper including return screw conveyors and drive for entry end of blast machine.
- The purpose of the spill hopper is to provide a place to brush or blow-off abrasive that is carried out of the blast machine on the work and return that abrasive back into the machine.

TOUCH-UP/BLOW-OFF ROOM

- 15'-0" wide x 35'-0" long x 22'-0" high.
- Access door and fluorescent lights **for 80 foot candle illumination. (Pangborn will investigate use of metal halide lights.)**
- Reclaim floor (6'-6" wide).

- Two (2) 10 cu. ft. blast tanks with hose, nozzle and operator accessories. **(Tanks automatically fed from main storage bin.)**
- Air cannon blow-off with 25 HP blower and **eight (8)** manually adjustable air cannons.
- One (1) additional set polyurethane seals located after air cannon blow-off to protect touch-up operators.
- One (1) set **hanging vinyl** seals at exit end of room.

DUST COLLECTOR SYSTEM

- One (1) PCO4-64 Pangborn Cartridge Collector sized for a **30,000** CFM requirement.
- Sixty four (64) ultra-web cartridges rated at 99.999% efficient on 0.5 micron size.
- Cartridges are designed for air intake applications requiring high collection efficiency and minimum air restriction. Each cartridge contains 190 square feet of paper filter media for a total 12,160 square feet of filter media.
- Cartridges are changed from outside the collector for ease of maintenance and require no confined space permit providing a much cleaner and safer working environment.
- Air to surface ratio will be **2.47**:1 when operating at **30,000** CFM.
- All necessary solenoid and diaphragm valves, compressed air header(s) are included and factory mounted.
- Abrasive resistant inlet.
- One pyramid hopper terminating with flexible connection and drum cover adapter to accommodate customer supplied 55 gallon drum.
- Pulsing for the collector is initiated by a differential pressure control panel contained in a NEMA 4 enclosure activated by a Delta P control unit.
- Designed for indoor or outside operation.
- Collector is supplied with one primer coat of zinc chromate inside and out and a top coat of alkyd enamel on the outside only.
- One (1) **75** HP, TE, FC exhauster, capable of producing **30,000** CFM of air at 10.0 inches S.P.W.G.
- One (1) lot controls (located in blast machine control panel).
- 95% efficient after filter with photohelic gauge and transition.
- **Service platform with ladder.**
- **Pangborn to supply single line vent duct layout.**

SYSTEM MOTORS AND CONTROLS - 460V/3Ph/60Hz

Control and Operating Panel

- Multi-motor control panel.
- Mainline disconnect.
- Interlocked door handle.
- Branch circuit fusing.
- "IEC" starters.
- Control circuit transformer and necessary relays.
- Wired to terminal strips.
- NEMA 12 enclosure.
- Hour meter.
- Allen Bradley MicroLogic PLC and Allen Bradley PanelView 550 MMI. PanelView and PLC will be programmed for automatic one button start, shutdown and fault reporting. Includes documentation, software and eight (8) hours hands-on training for PC literate ISC maintenance personnel.
- **Hard copy and diskette of operating program.**

Motor List

UNIT	NO.	HP	RPM	MOTOR TYPE
Rotoblast Units	8	40	1800	TEFC Foot Mount
Rotoblast Units	10	25	1800	TEFC Foot Mount
Abrasive Conveyors	5	10	1800	TEFC "C" Face
Elevator	1	20	1200	TEFC "C" Face
Exhauster Fan	1	75	3600	TEFC "C" Face

ADDITIONAL MACHINE FEATURES

Blast Selector Switches

- Manual selector switches for ten (10) wheel, fourteen (14) wheel, **eighteen (18) wheel** and blast-on/blast-off are provided. (Number of wheels selected automatically by work present **switches in** automatic mode.)

Safety Signs

- For operation and maintenance personnel safety.

Paint

- Machine and dust collector extensions will be coated with primer and Pangborn Gray machinery enamel.
- Safety guards will be safety yellow.

Operating Manuals

- **Three (3)** sets of complete operating and maintenance manuals, complete with parts lists and assembly drawings.

Work Present Switches

- One (1) to detect work up to 5'-0" high for ten (10) wheel blasting
- One (1) to detect work over 5'-0" high for fourteen (14) wheel blasting.
- One (1) to detect work over 12'-0" high for eighteen (18) wheel blasting.

UTILITIES AND RELATED DATA

Compressed Air	390 SCFM at 80 PSIG
Electrical	460V/3Ph/60Hz at 800 AMPS Full Load
Ventilation	Customer to supply ducting sized for 3500 LFM
Overall System Dimensions (from floor level)	35'-0" high x 24'-0" wide x 46'-6" long
System Weight	75,000 pounds
Pangborn Drawing	***L-050198, Rev. B***

ITEMS TO BE FURNISHED BY OTHERS

- All building and facility alterations, as required.
- All foundation work, including design engineering.
- All anchor bolts.
- All lighting and heat for machine area, as required.
- All warning lights, horns, and any other personnel safety equipment deemed necessary by customer that is not specified in our proposal.
- All erection labor and tools to receive, unload and install the proposed equipment.
- Temporary facilities for erection advisor and start-up personnel.
- All ventilation ductwork (including design and installation), spark arrestor and blast gates to connect the cabinet vent outlets to the dust collector and exhauster.
- All field painting of customer supplied materials and required touch-up painting of Pangborn® supplied equipment.
- Suitable trash receptacles for collecting and disposal of refuse and debris generated.
- Compressed air dryer, filters, regulators, lubricators and control valves for blast equipment, and dust collector, as required.
- All compressed air piping from your source of supply to control valves, blow-off connections, dust collector, etc., as required (**design by purchaser**).
- All electrical wiring from your source of supply to the control panel, and from the control panel to the operator's push-button panel and individual motors and controls on the blast machine and dust collector, as required (**design by purchaser**).
- All utility supply systems.
- Responsibility for free flow and discharge from collector hopper of collected material.
- All handrailing, toe boards, and posts are shipped unassembled. Field welding and assembly are required.

PROPOSAL ACCEPTED

☐ **AS WRITTEN**

☐ **AS MARKED**

SIGNED:

_____ ***for*** _____
Printed Name *Customer*

_____
Signature

DATE:_____

_____ ***for*** **PANGBORN CORPORATION**
Printed

_____
Signature

DATE:_____

CUSTOMER'S P.O. NO.:_____

TERMS AND CONDITIONS OF SALE

1. GENERAL: These Terms and Conditions of Sale are Seller's standard terms for all contracts for the sale of its Products and apply unless modified by other parts of the Contract. As used herein, the term contract means Seller's Proposal, Quotation, Bid or Acknowledgement Terms and Conditions and all specifications and additional terms and conditions attached to or incorporated in any of such documents, directly or by reference and the terms "Product" or "Products" mean the equipment, machinery, services (if any), supplies, repair parts, drawings, data and other property in total or in part as the case may be, which are the subject of this Contract. This Contract does not include, unless otherwise expressly provided herein, the erection, installation, startup, testing, maintenance or other operation of any Product or the foundations or structures supporting or associated with any Product, all of which are the responsibility of the Buyer unless specifically stated otherwise by Seller.

2. OFFER AND ACCEPTANCE: The Contract, until accepted by Buyer, is only an offer to contract, which may be accepted by Buyer only on the exact terms hereof. Prices and other terms in any Bid, Proposal or Quotation are firm for 30 days. If a Contract is not agreed to within such period, Seller may adjust prices or other terms at any time prior to or upon confirmation of the order. If additional or different terms are proposed or requested by Buyer, such terms shall constitute a counter-offer and such terms are objected to unless Seller, at its option, specifically accepts any of such terms by written notice to Buyer. No such additional or different terms shall be deemed accepted by performance or acknowledgement of Buyer's purchase order or similar form document.

3. ENTIRE CONTRACT, MODIFICATIONS: This Contract constitutes the entire agreement between Seller and Buyer with respect to the Product, superseding any prior or contemporaneous representations, understandings or agreements, oral or written. Accordingly, Buyer expressly waives all provisions contained in correspondence , forms or other writings relating to the sale of the Product covered by this Contract which negate, limit, extend or conflict with the provisions hereof. In the event of any conflict among documents comprising the Contract, the later document shall control. No subsequent modifications to the contract shall be effective unless specifically agreed to in writing by Seller.

4. PRICES: Seller reserves the right to adjust prices after a contract is formed only in the event of any subsequent substituted increase in the cost of any materials included in the Product.

5. TAXES: The prices stated in this Contract do not include sales, use, value added, excise, ad valorem, property or other taxes, tariffs or duties (other than U.S. federal, state, or local taxes on Seller's net income) now or hereinafter imposed, directly or indirectly, by any governmental authority or agency with respect to the manufacture, production, sale, delivery, consumption or use of the Product covered by this Contract. Buyer shall pay such taxes directly or reimburse Seller upon demand for such taxes it may be required to pay.

6. TIME OF PAYMENT; REMEDIES FOR LATE PAYMENT: Payment is due net 30 days after shipment of the Product, unless otherwise specified in the contract. In addition to any other remedies for non-payment, if any payment is not made within 30 days after it becomes due, Buyer shall be liable for all costs of collection, including Seller's attorney's fees and expenses, and interest on all unpaid amounts due under the Contract accruing from the date due until paid in full at the lesser of (a) the maximum rate permitted by law or (b) 12% per annum compounded monthly. All payments shall be applied first to collection costs and other amounts due, then to accrued interest and last to payments of the price for the Product. Extension of any date for shipment, unless caused by Seller's fault, shall not excuse buyer from timely payment on the specified dates.

7. BUYER'S FINANCIAL RESPONSIBILITY: Seller's reasonable doubt as to the Buyer's financial responsibility, including the failure to make any payment when due under this contract, shall entitle Seller without liability to Buyer to suspend performance of or terminate this Contract, to require full or partial payment in advance or adequate security as a condition to performance, to decline shipment, to stop the Product in transit, or to defer further shipment, without any obligation to continue to perform until the Buyer shall have satisfied Seller of its continuing financial responsibility. Such action by Seller shall not affect Buyer's obligations hereunder. Any partial shipments shall be conclusively deemed to be separate contracts governed by the terms of this Contract.

8. SHIPMENT; TITLE; RISK OF LOSS: Unless otherwise specified, the Product shall be shipped f.o.b. Seller's designated shipping point. Title shall pass to and all risk of loss shall be assumed by Buyer on delivery to carrier, unless otherwise specified.

9. DATE OF SHIPMENT: The shipment schedule provided in this Contract is approximate and is based upon prompt receipt by Seller of all necessary information and data regarding the Product, timely receipt of all Buyer furnished material and prompt payment of all amounts due prior to shipment. Seller will use reasonable efforts to meet the stipulated shipment schedule; shipment within a reasonable time thereof shall constitute compliance with this Contract. Delivery hereunder shall be deemed made and complete upon shipment in accordance with the "Shipment; Title; Risk of Loss" paragraph above.

10. DELAY DUE TO CIRCUMSTANCES BEYOND SELLER'S CONTROL: Seller shall be excused for delay in delivery and/or may suspend performance of this contract without liability to Buyer in the event and to the extent of "force majeure", including the occurrence or existence of: Acts of God, war, civil strife, mobilization, riot, strike, lockout, work stoppage or other labor difficulties, fire, extreme weather or other natural disaster, explosion, accident, delays of carriers, embargoes, the acts or orders of governments, inability to obtain suitable and sufficient labor or raw materials, governmental priorities, or any other abnormality, contingency or cause beyond the control of Seller which adversely affects its ability to make, provide or ship the Product.

11. LIMITED WARRANTY; EXCLUSION OF OTHER WARRANTIES: Seller warrants that the Product, when shipped, is free from defects in materials and workmanship. If any such defects exist or later appear, Seller shall undertake, at its sole expense, prompt remedial action as stated herein to correct the same, provided, however that Seller shall have no obligation or liability under this warranty unless it shall have received, within thirty (30) days after the defect is discovered and no later than one (1) year on repair and equipment orders after date of shipment or use of the Product, written notice specifying such defect and the circumstances under which it was discovered. Warranty will be valid only if Buyer purchases and utilizes Seller's replacement parts purchased directly from Seller. Remedial action under this warranty shall require only that Seller, at its option, repair or modify the product, replace the same f.o.b. Buyer's plant or authorize and accept the return of the Product by Buyer at Seller's expense and refund the purchase price. This warranty does not cover consumables included in any Product and does not cover any Product or part thereof manufactured by others except to the extent of the manufacturer's warranty to Seller which Seller is allowed to pass on. This warranty does not cover repairs or replacements required as a result of misuse, mishandling, improper storage, extreme weather or other Acts of God, use other than under normal operating conditions, failure to install, test, use maintain and repair the Product in accordance with Seller's instructions or other use inconsistent with Seller's instructions.

The remedies specified in this paragraph constitute Seller's sole obligation and liability and Buyer's exclusive remedy under this warranty. THIS WARRANTY IS IN LIEU OF ANY AND ALL OTHER WARRANTIES, EXPRESS, IMPLIED OR STATUTORY, INCLUDING WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

12. LAWS, CODES, REGULATIONS, SAFETY DEVICES: Compliance with local, state or federal laws, codes or regulations relating to the Product and its use is the sole responsibility of the Buyer; Seller makes no warranty or representation with respect thereto. Seller shall be required to provide or install only such devices for the protection of safety and health as are specified in this Contract. Buyer assumes the responsibility for providing and installing any and all safety devices not required of Seller and agrees to indemnify and hold harmless the Seller against any expense, loss or damage which the Seller may incur or sustain as the result of Buyer's failure so to do.

13. PATENT INFRINGEMENT: Seller shall, at its own expense, assume the defense of any claim, suit or other proceeding brought against Buyer based upon a claim that the Product furnished under this Contract infringes any United States patent. Buyer shall give Seller prompt notice of any such claim made against or levied by Buyer and shall be liable for any loss or expense caused by any delay in notification. Buyer agrees to cooperate in the defense of any such proceeding and to provide information, assistance and authority necessary therefore. If the Product in such suit is held to infringe and the use of the Product is enjoined, or if Seller in settlement of any claim agrees to modify or discontinue use of any infringing feature, the Seller shall, at its own expense and at its option, procure for the Buyer the right to continue using, said Product, replace same with a substantially equal but noninfringing Product, modify it so it becomes noninfringing or refund the purchase price thereof, without further liability to Buyer. This paragraph shall not apply to and, Buyer shall not be liable for infringement by, any Product manufactured to Buyer's design or covered by patents issued after the date of the Contract.

14. LIMITATIONS OF SELLER'S LIABILITY: Except for the remedy described under Warranty above and except as otherwise required by law, Seller shall not be liable for any actual, direct, indirect, punitive, special incidental or consequential damages or losses Buyer may suffer, or incur relating to any Product, including but not limited to, loss of revenue or profits, damages, or losses as a result of Buyer's inability to operate, or shutdown any of its plant or operations, loss of use of the Product or other equipment or the cost of substitute equipment, facilities or services, inability to fulfill contracts with third parties, claims of customers, damage to property or personal injury and damages or losses Buyer may suffer or incur as a result of claims, suits or other proceedings made or instituted against Buyer by third parties, whether public or private in nature.

Buyer agrees to indemnify, defend, and hold Seller harmless from any and all liability, suits, demands, and claims for property damage or personal injury claimed or caused to any person or any other claim arising directly or indirectly out of the use and operation of the Product if modified mechanically or electrically by Buyer.

15. TERMINATION GENERALLY: Except as otherwise expressly provided in this Contract , this Contract is not subject to termination in whole or in part.

16. BUYERS DEFAULT AND TERMINATION: The following shall be defaults by Buyer under this contract:

(a) Any failure to make any payment required hereunder within thirty days following the date specified therefore.

(b) Any other failure by Buyer to comply with or perform any of its obligations under the Contract when required if not cured to Seller's satisfaction within ten days of the receipt of notice thereof.

(c) The institution of any proceedings by or against Buyer, voluntarily or involuntarily, under bankruptcy or insolvency laws or for the appointment of a receiver or trustee of Buyer or its assets or any assignment of its assets for the benefit of creditors or any other admission of its inability generally to pay its debts when due.

In the event of any such default, Seller may, without any obligation or liability to Buyer, terminate this Contract immediately by written notice to Buyer, such action by Seller shall not waive any of Seller's rights or remedies with respect to such default. Buyer shall be liable to Seller for all damages or losses, including loss of reasonable profits, and for costs and expenses, including attorney's fees, sustained by Seller arising from Buyer's default under this Contract. If Seller, if such a default occurs and Seller repossesses or retains the Product. Seller's damages shall be no less than the price specified in this Contract, plus, freight, storage, handling and all other disposal costs, less the then current reasonable scrap value of the Product.

17. BUYER FURNISHED MATERIALS AND SERVICES: Unless otherwise specifically provided herein, Buyer shall, at its expense, furnish: any building or other structure required to house the Product, assuming all responsibility for proper strength of same; location of the Product at site of installation, all foundations including excavation, concrete, reinforcements, etc; auxiliary units not integral parts of equipment specified, such as electrical wiring and conduit, protective guards, dual piping, dry compressed air and air piping; tools; labor, and supervision for erection; and all other materials and services not specifically included in the Contract required to install, test, operate, and maintain the Product. If before, during or after the Product has been installed, Buyer determines that a product or service in addition to that herein contracted for is required for installation, testing, maintenance or operation which Buyer is unable or unwilling to furnish upon Buyer's request, Seller will provide a separate quotation for such product or service.

18. COMPLIANCE WITH MANUALS, INSTRUCTIONS AND GOOD SAFETY PRACTICES: Buyer shall be responsible for ensuring compliance by its personnel and others given access to any product in Buyer's possession or control with all operating and maintenance manuals and instructions provided by Seller or any component supplier and with other normal safety, operation and maintenance practices commonly observed in the trade.

19. MISCELLANEOUS

(a) WAIVER: No Employee or other representative of Seller has any authority to waive, change, modify or add to the terms of this Contract without prior written approval by the President or a Vice President of Seller.

(b) ASSIGNMENT: Neither this Contract in its entirety nor any right or interest herein may be assigned by Buyer without prior written agreement by the Seller. Any such attempted assignment shall be void.

(c) LAW GOVERNING: This Contract and Buyer's acceptance thereof shall be interpreted in accordance with the laws of the State of Maryland, without regard to principle of conflicts of laws.

(d) PRINTED LITERATURE: Seller reserves the right to change the Product design from that stipulated in any printed bulletin or brochure without written notice; Seller's proposal (and

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specifications in any other Contract document) shall be the governing Product specifications.

(e) ARBITRATION. All disputes arising in connection with or relating to this Contract or the breach thereof shall be finally settled. If Seller so elects, by arbitration in accordance with the rules then in force of the American Arbitration Association. The award of the arbitrators shall be final; the parties shall not contest or seek other relief from the award in any court. Judgement upon the arbitration award may be rendered in any court having jurisdiction. Any arbitration under this clause shall be held in the City of Baltimore, Maryland, unless otherwise agreed by both parties to the agreement.