

North Dakota Department of Transportation
INVITATION TO BID

NDDOT Contract # 50161713

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| Bid Number: 760-06-16-050 | Bid Opening Date & Time: 08/10/2016 02:00 PM |
| Items: Cutting Edges | Buyer: Vanessa Brosten |
| Bid Mailing Address: 608 East Boulevard Avenue | Telephone Number: 701-328-4466 |
| City, State, Zip: Bismarck, North Dakota, 58505 | Email: vbrosten@nd.gov |
| Contract Period: 08/15/2016 TO 07/31/2017 | Date Prepared: 07/22/2016 |

BID RESPONSE

Please submit your bid response on the attached forms in conformance with the instructions and specifications in the NDAC 04-12-01 – 04-12-16. One copy of your bid response must be returned to the North Dakota Department of Transportation (NDDOT) prior to the time and date specified for the bid opening. Bid responses received after the time and day specified for the bid opening will be rejected. Mark envelope with word "BID" and the opening time and date. **If your bid response is accepted by NDDOT, then your bid response will constitute a binding contract.**

CONTRACT

This contract is made and entered into by and between NDDOT for the state of North Dakota (hereinafter state) and

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| Vendor Name Kennametal Inc. | Vendor Address 442 Chalybeate Road Bedford, Pa 15522 |
|---------------------------------------|--|

(hereinafter vendor). In consideration of and for the acceptance by the state of the offer made by the vendor pursuant to the bid response, the vendor agrees and promises to sell, furnish, and deliver to the state, at the time, places, and prices specified in the bid response, all goods, merchandise, supplies, commodities, equipment, or other items contained in the bid response and for which the vendor has been awarded this contract by the state. The vendor shall fully perform this contract in accordance with the terms and conditions contained in the bid response including all specifications, rules, or regulations mentioned therein, and shall comply with all applicable provisions of the NDAC 04-12-01 – 04-12-16 promulgated by the State Purchasing Division; such manual being made a part of this contract by reference. The Risk Management Appendix and Appendices A and E of the Title VI Assurances, attached, are hereby incorporated into and made a part of this agreement.

The following must be completed by the vendor; failure to do so may result in the rejection of the vendors bid proposal.

| | | |
|--|-----------------------------------|--|
| Vendor Name Kennametal Inc. | | |
| Mailing Address 442 Chalybeate Road, Bedford, Pa 15522 | | |
| Telephone Number 800-564-9489 | Fax Number 814-623-4497 | E-mail Address cary.ritchey@kennametal.com |

Cary D. Ritchey Sales Manager - Specialty Products

Name & Title (Type or Print)

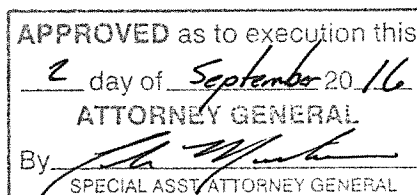
[Signature]
Signature

August 8, 2016
Date

To be signed by Owner; Partner; Corp. Pres., Vice Pres., or other authorized Corp. Officer or bid may be rejected. (if signed by other authorized Corp. Officer, please attach copy of Power of Attorney or other documentation showing authority to sign.)

FOR ND DEPARTMENT OF TRANSPORTATION USE ONLY Accepted by the state according to provisions of award.

| | |
|---|--|
| Authorized Signature <i>Grant Levi</i> | Date 9/2/16 |
| Recommended for approval <i>Brad Jones</i> | Approximate contract amount \$ Unknown |



CLA 7480 (Div. 50)

MAILING INSTRUCTIONS

Mail only one completed and signed request for bid document per envelope, unless instructed otherwise. Request for bid documents not signed or received after the date and time specified in the request for bid will be rejected.

BID IS: ☒ SEALED ☐ NOT SEALED

Address the envelope containing your response in the following manner:

BID NUMBER - 760-06-16-050
BID OPENING DATE/TIME - August 10, 2016; 2:00 p.m.
N. D. DEPT. OF TRANSPORTATION
PROCUREMENT
608 EAST BOULEVARD AVENUE
BISMARCK ND 58505-0700

Sealed bids will be received for furnishing "**CUTTING EDGES**" as per the following instructions and specifications. To be considered, this bid form must be completed in its entirety and received by the North Dakota Department of Transportation (NDDOT) no later than **2:00 PM CENTRAL TIME, THURSDAY, AUGUST 10, 2016**, at which time and place such bids will be properly opened and read.

REORDER PRICING IS REQUIRED IF REQUESTED IN THIS DOCUMENT.

BIDDERS INSTRUCTIONS

1. **Assistance to Bidders with a Disability.** Bidders with a disability and/or language assistance, contact Civil Rights Division, NDDOT, 701-328-2978 or civilrights@nd.gov or TTY 711, as soon as possible so that reasonable accommodations can be made. Additionally, the Request for Reasonable Accommodations form (SFN 60135) can be accessed at the following NDDOT website location: <http://www.dot.nd.gov/forms/sfn60135.pdf>.

2. **Award.** Award will be made to a responsive, responsible bidder with the lowest price considering conformity with specifications, terms of delivery, quality, and serviceability. NDDOT reserves the right to consider bids varying in minor respects from any specific requirements herein, but judged to meet the intent of this request. Award will be made as follows:

- Split award per item.

2. **Bid Bond.** Waived in this instance: however, bidder(s) failing to enter into a contract with this office, upon notification of award, may be subject to removal from the bidder's list.

3. **Bid Held Firm.** Bids are not awarded at the bid opening. Bid responses will be firm for 30 days, unless stated otherwise.

4. **Bid Opening.** All sealed bids received by the NDDOT Procurement Office will be opened and read at 608 East Boulevard Avenue, Bismarck, North Dakota, at the time specified in the solicitation. Interested parties are invited to attend the bid opening.

5. **Bid Summary.** Bid summaries are available when the bid has been awarded. When bids are issued using the State's electronic bidding system, the bid summary will be posted and available for download from:
<http://www.nd.gov/spo/>

Bid summaries will be mailed to those bidders who supply a self-addressed, stamped envelope with their bid response. A copy of the bid summary may also be obtained by visiting the NDDOT Procurement Office during normal working hours.

6. **Bidder Checklist.** HAVE YOU REMEMBERED TO:

- Review all instructions, terms and conditions, and specifications to ensure your bid response complies?
- Prepare your price in the specified unit of measure, F.O.B. Destination, Freight Prepaid to the delivery location listed on the cover sheet?
- Indicate whether you can meet the delivery date indicated on the cover sheet?
- Sign your bid response on the cover sheet?
- Initial all changes and corrections?
- Submit any required samples or enclosures, if applicable?
- Mark the envelope as indicated above?
- Review and complete all requirements contained in this solicitation to ensure compliance.

7. **Clarifications, Bid Changes and Questions Deadline.** The Procurement Officer is the point of contact. Any irregularities, lack of clarity, requested bid changes and all questions regarding this bid and the procurement process must be addressed to the Procurement Officer referenced on the first page of this document not later than end of business August 1, 2016. (Contact information is indicated on cover page). If a bid amendment is required, it will generally be issued after this date.

The bidder is cautioned that the requirement of this solicitation can be altered only by written amendments and that verbal communications from whatever source are of no effect.

8. **Corrections.** The bidder's authorized representative must initial any corrections and alterations (i.e. erasures, whiteouts, correction tape, etc.) made to the bid response. Those bid responses with corrections and alterations that are not initialed are subject to confirmation by the Procurement Officer.

9. **Definitions.**

- Bidder - any person or firm submitting a competitive bid in response to a solicitation.
- Bid summary - a summary of all bid responses received by the NDDOT Procurement Office.
- Bid response - the executed document submitted by a bidder in response to a solicitation.
- Contract - a deliberate written agreement between two or more competent persons to perform specific act or acts.
- Contractor - any person or firm having a contract with a governmental body.
- Initial order – Order placed by Procurement Office after contract start and after each contract extension.
- Solicitation - the process of notifying prospective bidders that the State wishes to receive bids for furnishing goods or services.

10. **Electronic & Facsimile Bids.** Bid responses are not to be email attached or faxed to the NDDOT unless this transmittal method has been authorized by the Procurement Officer or bid document. (Contact the Procurement officer regarding additional requirements and exceptions.) Bid responses electronically submitted or faxed may be rejected as non-responsive. Bids may be faxed to a third party who will put it in a properly-addressed envelope and deliver it to the NDDOT Procurement Office before the date and time specified in the solicitation.

11. **Freight/F.O.B. Destination.** Freight and transportation charges are to be included in the price of the products, unless otherwise specified in the solicitation. (F.O.B. - Free On Board).

12. **Indemnification.** Bidders must review the attached Risk Management Appendix for indemnification and insurance requirements. The indemnification and insurance provisions are incorporated and made part of this solicitation and the resultant final contract. Objections to any of the provisions of the indemnification and insurance requirements must be made in writing to the attention of the Procurement Officer by the time and date set for receipt of questions. No alteration of these provisions will be permitted without prior written approval from the Purchasing Agency or Entity in consultation with the North Dakota Risk Management Division. Upon receipt of the Notice of Award, the successful bidder must obtain the required insurance coverage and provide the Procurement Officer with proof of coverage prior to contract approval. The coverage must be satisfactory to the Purchasing Agency or Entity, in consultation with the North Dakota Risk Management Division. A bidder's failure to provide evidence of insurance coverage is a material breach and grounds for withdrawal of the award or termination of the contract.

13. **Late Bids.** It is the bidder's responsibility to ensure that a bid response is physically deposited with the NDDOT Procurement Office prior to the date and time specified for the opening. Late bid responses will not be opened and will be rejected and returned regardless of the degree of lateness or the reasons.

14. **Minor Informalities.** The State reserves the right to waive minor informalities in bid responses in accordance with N.D.A.C. 4-12-10. Minor informalities are insignificant omissions or nonjudgmental mistakes that are matters of form rather than substance, evident from the bid document, with a negligible effect on price, quantity, quality, delivery, or contractual conditions that can be waived or corrected without prejudice to other bidders.

15. **Multiple Bid(s).** Bidders may submit more than one bid response(s) for the item(s) specified in the solicitation. Each bid submitted must comply in all aspects with the bid requirements and these instructions.

16. **Negotiation.** NDDOT reserves the right to negotiate with the successful bidder to ensure the best possible consideration is afforded to all concerned.

17. **New Equipment and Materials.** Unless otherwise indicated in the detailed specifications of this solicitation, all equipment and materials shall be new and under current production for use in the United States.

18. **Open Records.** After the bid opening, bid documents will be subject to the North Dakota open records law. Records are closed or confidential only if specifically stated in law. If a request for public information is received, the procurement officer will determine whether the information is an exception to the North Dakota open records law, and the information will be processed appropriately. Those interested in reviewing the bid file are to make arrangements with the NDDOT Procurement Office. The NDDOT Procurement Office hours are 8:00 a.m. - 12:00 p.m. and 1:00 p.m. - 5:00 p.m. Monday through Friday.

19. **Packaging.** All shipments are to be packaged according to accepted commercial practices to avoid damage in shipment.

20. **Performance Bond.** Successful bidders will not be required to furnish a performance bond; however, failure to perform satisfactorily will result in the immediate termination of the contract(s) and bidders may be subject to removal from the bidder's list.

21. **Preparation of Bid:** Bids will be accepted on NDDOT forms only. The bidder's name shall be printed or typed on each sheet on which an entry is made. Bidders are cautioned to examine specifications and all instructions. Failure to do so will be at the bidder's risk. Any irregularities or lack of clarity in the invitation for bid must be brought to the attention of the Procurement Officer (Telephone: 701-328-4466, Fax: 701-328-0310, E-mail: vbrosten@nd.gov) as soon as possible. **Bidders shall indicate the manufacturer and provide complete specifications for materials being supplied at the time the bid is submitted. No bidder will be allowed to change any specification after the bid opening.**

22. **Pricing.** Unit prices are to be stated in United States currency and based on the unit of measurement specified in the solicitation, F.O.B. Destination, to the NDDOT delivery locations specified herein.

In the event of mathematical differences between the unit price and extended total, the unit price will prevail.

23. **Protest of Award.** An interested party may protest the award within seven days after receiving notice in accordance with N.D.C.C. 54-44.4-12 and N.D.A.C. 4-12-14. Notice of award will be issued only to those bidders who submitted responses to this IFB. Seven calendar days after award or issuance of the Notice of Intent to Award; it will be assumed that all interested parties knew or should have known all the facts surrounding the award.

24. **Rejection.** Bid responses may be rejected if:

- The bid response is not legible.
- The bid response is not completed as requested.
- The bid response is faxed to the procurement office.
- The bid response is not responsive to the specifications or other requirements of the solicitation.
- The bid response is received after the time and date specified.
- The bidder has not met Vendor Registration requirements or is suspended or debarred.
- The bid document has been altered by the bidder.
- The bidder is determined to be not responsible (N.D.A.C. 4-12-11-04).

25. **Signature.** The bid must be signed manually in ink. The name and title of the person signing the bid response must be typed or printed above the signature. The bid must be signed by **Owner, Partner, Corp. Pres., Vice Pres., or other authorized Corp. Officer** or the bid may be rejected. If signed by other authorized Corp. Officer or representative, please attach a letter signed by the Owner, Partner, Corp. Pres., or Vice Pres. indicating the

individual has authority to enter into a contract on behalf of the company (or a Power of Attorney).

26. **Specifications, Brand Name or Equivalent.** Unless otherwise indicated in the detailed specifications of this solicitation, the use of a specific brand name or make/model is for illustrative purposes only, and the State will consider equivalent products. If a commodity or service put forth by a bidder is rejected as not being equivalent, the Procurement Officer will notify the bidder of the rejection.

27. **Specifications, Compliance.** All bids submitted in response to this Invitation for Bid must comply with the specifications contained herein, and the successful bidder will be held responsible. Noncompliance with specifications is grounds for rejection of the bid response. Bidders who desire to submit commodities or services that deviate from these specifications or have any objections to the specifications stated herein must be clearly pointed out PRIOR TO THE DEADLINE FOR RECEIPT OF QUESTIONS; otherwise, it will be considered that the items offered are in strict compliance with these specifications, and the bidder will be held responsible.

28. **Supplemental Terms and Conditions.** Bids including supplemental terms and conditions will be accepted, but supplemental conditions that conflict with any conditions contained in this ITB or that diminish the State's rights will be considered null and void. The State is not responsible for identifying conflicting supplemental terms and conditions before issuing a contract award.

After award of contract:

- a) If a conflict arises between a supplemental term or condition included in the bid and a term or condition of the ITB, the term or condition of the ITB will prevail, and,
- b) If the State's rights would be diminished as a result of application of a supplemental term or condition included in the bid, the supplemental term or condition will be considered null and void.

Changes, modifications, additions, or alterations to the bid document could be cause for rejection of the submitted bid at the sole discretion of the NDDOT. Contact the Procurement Officer in writing prior to the deadline for clarifications.

29. **Taxes.** The State does not pay sales tax or federal excise tax. The state sales tax exemption number is E-2001. The federal tax-free transaction number is 45-70-0010K. The Purchasing Agency will furnish a tax exempt certificate upon request.

30. **Vendor Registration.** Bids will be accepted from bidders who are not currently Approved Bidders for the State of North Dakota; however, the successful bidder may be required to become approved prior to award, in accordance with N.D.C.C. 54-44.4-09. To become an Approved Bidder, you must: 1) register with the North Dakota Secretary of State (fees apply), and 2) submit a completed Bidder List Application to the ND State Procurement Office. Registration instructions and forms are available on-line at: www.nd.gov/spo/vendor. Contact the ND State Procurement Office at 701-328-2683 or infospo@nd.gov for assistance.

Placement on the bidders list does not guarantee a bidder will receive notice of every formal solicitation. Bidders must maintain current information by submitting a Notice of Change form to the State Procurement Office (Fax 701-328-1615). Visit the website for forms: www.nd.gov/spo/vendor.

31. **Withdrawal or changes to a bid response prior to the bid opening date and time.** A bidder may withdraw or make a change to his bid response prior to the bid opening date and time. The request to make a change or withdraw must be in writing by a representative of the firm. The request to withdraw or change must be signed by the bidder or his designated representatives.

32. **Withdrawals after the bid opening date and time.** After the bid opening, no changes may be made to the bid response. The bidder may make a written request to withdraw the bid response, subject to approval by the NDDOT Procurement Office. Vendors continually withdrawing bids after the bid opening may be removed from the Vendor Database.

GENERAL CONTRACT TERMS AND CONDITIONS

1. **Affirmative Action.** The contractor will take affirmative action in complying with all Federal and State requirements concerning fair employment and employment of individuals with disabilities, and concerning the treatment of all employees without regard to discrimination by reason of race, color, religion, sex, national origin, or disability.
2. **Applicable Law and Venue.** Any dispute arising out of this agreement will be resolved under the laws of the State of North Dakota.
3. **Billing and Payment Procedures.** The initial order will be issued by NDDOT Procurement Office. Reorders may be placed by the individual NDDOT district locations during the contract period.

Invoices are to be submitted as indicated on the purchase orders unless otherwise instructed. Since all invoices must be processed by individual NDDOT districts before payment is made, submission of these items to this office may delay payment. Failure to submit correct invoices to the appropriate NDDOT office may delay contractor payment.

Payment will normally be made within thirty days after delivery and acceptance of commodities or services under this contract and receipt of a correct invoice. All invoice and payment inquiries must be directed to the purchasing agency.

4. **Binding Contract.** The acceptance of a bid response in writing by the purchasing agency constitutes a contract between the bidder and the State. Written acceptance from the purchasing agency will be in the form of a purchase order, notification of award, or contract. Any oral agreement or arrangement by a bidder with a State employee or purchasing agency will have no force or effect unless reduced to writing.
5. **Compliance with Laws.** The contractor must, in performance of work under this contract, fully comply with all applicable federal, state or local laws, rules, regulations and policies, including those relating to nondiscrimination, affirmative action, accessibility and civil rights including Title VI of the Civil Rights Act of 1964. The contractor agrees to file all required reports on time, to make required payroll deductions, and to pay all taxes and premiums owed on time, including sales and use taxes and unemployment compensation and workers' compensation premiums. The contractor shall have and keep current at all times during the term of this contract all licenses and permits required by law.
6. **Contract Amendments, Waivers.** After a binding contract has been entered into, no changes (i.e. additions, substitutions, subcontracting or a price adjustment) may be made, unless prior approval has been obtained from the purchasing agency and Procurement Officer.

The terms of this contract shall not be waived, altered, modified, supplemented, or amended, in any manner whatsoever, except by written instrument signed by the parties. No waiver consent, modification or change of terms of this agreement shall bind either party unless in writing and signed by both parties. Such waiver, consent, modification, or change, if made shall be effective only in the specific instance and for the specific purpose given. There are no understandings, agreements, or representations, oral or written, not specified herein regarding this agreement.

7. **Contract Price Adjustment:** The Contract Unit Prices shall be firm for the initial order. The initial price shall be used to purchase the quantities specified in the bid document.

Reorder prices shall be provided in the bid document based on the current price of raw materials. Thereafter, all unit reorder prices may be subject to price adjustment (increase / decrease). The request for a price adjustment must be submitted to the Procurement Office at least fifteen (15) days before the requested implementation date. Any request for an increase in price must include a justification with supporting documentation for the proposed change. The Procurement Officer will respond as follows:

- (1) The request may be granted,
- (2) The contract may be cancelled and solicitation may be re-advertised
- (3) The contract may be continued without change.

If a price increase is approved by the NDDOT, the date the increase will be effective along with the new unit prices will be included in a contract amendment document. The adjusted price will be firm through the balance of the contract or for a minimum period of 30 days.

The State shall also be advised of and receive the benefit of any price decrease. The same notification and review process will apply to a decrease in cost.

7. Contract Term and Renewal Option. The NDDOT will enter into a contract with an effective date **beginning August 15, 2016, and ending July 31, 2017**, inclusive. This contract may be renewed upon satisfactory completion of the initial contract term. The NDDOT reserves the right to execute up to two options to renew this contract for a period of twelve (12) months each, not to exceed thirty-six (36) months total. Renewals will be documented by amendment.

The NDDOT reserves the right to renegotiate price and terms provided that such negotiated price and terms fall within the original scope of work for this bid. Negotiations may be conducted annually or at such times that additional and unexpected services falling within the scope of the contract may occur. Such changes will be documented by amendment to the contract.

8. Contract Termination.

- a. **Termination without Cause.** This contract may be terminated by mutual consent of both parties, or by either party upon 30 days' written notice.
- b. **Termination for Lack of Funding or Authority.** The State may terminate this contract effective upon delivery of written notice to the contractor, or on any later date stated in the notice, under any of the following conditions:
 - i. If funding from federal, state, or other sources is not obtained and continued at levels sufficient to allow for purchase of the services or supplies in the indicated quantities or term. The contract may be modified by agreement of the parties in writing to accommodate a reduction in funds.
 - ii. If federal or state regulations or guidelines are modified, changed or interpreted in such a way that the services are no longer allowable or appropriate for purchase under this contract or are no longer eligible for the funding proposed for payments authorized by this contract.
 - iii. If any license or certificate required by law or regulation to be held by the contractor to provide the services required by the contract is for any reason denied, revoked or not renewed.Any such termination of this contract under (i), (ii), or (iii), above, shall be without prejudice to any obligations or liabilities of either party already accrued prior to such termination.
- c. **Termination for Cause.** The State by written notice to the contractor may terminate the whole or any part of this contract:
 - i. If the contractor fails to provide services required by this contract within the time specified herein or any extension thereof; or
 - ii. If the contractor fails to perform any of the other provisions of this contract, or so fails to pursue the work as to endanger performance of this contract in accordance with its terms and after receipt of written notice from the State, fails to correct such failures within ten days or such longer period as NDDOT may authorize.
 - iii. The rights and remedies of the State provided in the above clause related to defaults by the contractor are not exclusive and are in addition to any other rights and remedies provided by law or under this contract.
- d. **Termination, Deliveries.** If the contract is terminated for any reason, the contractor is responsible for delivery of all commodities and services ordered prior to the termination, unless those orders had been canceled by the Purchasing Agency or Entity.

9. Inspection and Investigations. The State reserves the right to conduct inspections and investigations related to the bidder and offered commodities or services, including but not limited to the firm, its facility, personnel, qualifications, and the commodities and/or services offered to make determinations regarding compliance with the bid requirements and responsibility of the bidder.

10. Materials and Workmanship. All material and workmanship shall be subject to inspection and testing at the discretion of the purchasing agency either at the point of manufacturer, place of storage, or upon receipt.

11. **Receiving.** Deliveries must arrive at the designated destination(s) during normal business hours unless other shipping/receiving instructions are issued by NDDOT personnel. The contractor shall contact the NDDOT to schedule delivery dates and times at least 24 hours in advance of delivery.

All NDDOT offices will be closed in recognition of State holidays. Any day declared a holiday by the President or Governor will also be recognized by office closure.

12. **Subcontracts, Assignment.** The contractor shall not subcontract, assign or transfer the contractor's interests or duties under this contract without express written consent of the purchasing agency. However, the contractor may enter into subcontracts provided that any such subcontractor acknowledges the binding nature of this contract and incorporates this contract, including any attachments. The contractor is solely responsible for the performance of any subcontractor. The contractor shall not have the authority to contract for or incur obligations on behalf of the State.

13. **Successors in Interest.** The provisions of this agreement shall be binding upon and shall inure to the benefit of the parties hereto, and their respective successors and assigns.

14. **Specifications:** **Bidder's shall submit detailed manufacturer's specifications along with this response,** and upon acceptance of the bid, shall become part of the bidder's specifications. Specifications must include: brand, composition, blade analysis, hardness rating, design, dimensions, weight, etc. Promotional literature is generally not adequate. Any discrepancies between products to be furnished on the bid and manufacturer's printed specification must be documented.

15. **Testing and acceptance:** Blades may be tested upon delivery to ensure compliance with specifications prior to payment. The testing procedure requires approximately sixty (60) days. Materials failing to meet specifications will be returned at the bidder's expense.

If the cutting edges fail to meet the requirement of the specifications, they will be rejected and the material returned to the Vendor without any charges to the Department.

- a. Reimbursement for unused cutting edges.
- b. Return shipping at no cost to NDDOT.
- c. If a restocking fee applies, indicate the percentage of the purchased value here: _____%

16. **Service Representative.** The contractor must provide a dedicated customer service representative to provide support for this contract. The contractor shall notify the Procurement Officer in the event the representative is changed.

NAME: Charlene Dollar
(Name of person servicing this contract)

BUSINESS NAME: Kennametal Inc.

MAILING ADDRESS: 442 Chalybeate Road

CITY & STATE: Bedford, Pa ZIP CODE: 15522

PHONE NUMBER: 814-623-4705 TOLL FREE: 800-564-9489

FAX NUMBER: 814-623-4497 E-MAIL: charlene.dollar@kennametal.com

**NORTH DAKOTA DEPARTMENT OF TRANSPORTATION
SPECIFICATIONS FOR
SECTIONAL TUNGSTEN CARBIDE-TIPPED CUTTING EDGES
SNOWPLOW, MOTOR GRADER, AND UNDERBODY SCRAPER**

BLADE:

1. The blades shall be SAE 1020-1045 steel.
2. The blades shall be fabricated in various sized sections to provide the lengths indicated on the bid sheet, and shall be manufactured in accordance with the dimensions detailed in ATTACHMENT A.
3. Hole-punching shall be $1\frac{1}{16}$ " square, countersunk to receive $\frac{5}{8}$ " diameter plow bolts or $1\frac{3}{16}$ " square, countersunk to receive $\frac{3}{4}$ " diameter plow bolts. The hole spacing shall be as per AASHTO standards.
4. The finished blade section shall be given one coat of rust resistant lacquer.
5. The finished blade sections shall be free of warpage, with the longitudinal deviation not to exceed $\frac{1}{8}$ " in a four-foot section.
6. The complete cutting edge shall consist of a combination of sections, with the two end sections interchangeable.

TUNGSTEN CARBIDE INSERTS:

1. The inserts shall be a high W.C. grade of tungsten carbide with 11 to 13 percent cobalt content. The tungsten carbide shall be new; no reclaimed tungsten carbide may be used.
2. The density shall be in the range of 14.1 to 14.6.
3. The hardness shall be in the range of 87.5 minimum to 89.0 maximum Rockwell "A" scale.
4. The transverse rupture strength of the carbide shall be 350,000 psi minimum.
5. The dimensions of the insert shall be as shown on the attached drawing, with 1" nominal length.
6. The sections shall essentially have 1" of tungsten per each 1" of section. A carbide grade analysis certification shall be submitted with each bid.
7. Carbide inserts shall extend a minimum of .010" and a maximum of .040" beyond the leading edge of the blade.
8. Carbide inserts shall be 25 degree trap and $\frac{3}{4}$ " height.
9. The supplier shall furnish the Central Office with a certified test result of Rockwell Hardness, Transverse Rupture Strength, Density, and Cobalt Content for each cemented carbide lot or batch, used in fabricating the cutting edges. Each test sample shall meet the specified physical requirements.

BRAZING:

1. The braze material strength shall have a minimum tensile strength of 30,000 psi.
2. The braze (weld) shear stress in tension to the tungsten carbide insert and the blade base material shall have a minimum shear strength of 25,000 psi.
3. The inserts shall be brazed on all sides consistent with sound brazing practice, with no evidence of voids, pin holes, or use of shims.

4. A loss of 6" or more of tungsten carbide inserts per cutting edge during normal usage shall be considered brazing failure.

SPECIFIC REQUIREMENTS

1. The supplier shall also provide written certification that states the cutting edges shipped meet all the requirements contained in the specification.
2. Materials and assembly shall be guaranteed with replacement against breakage and brazing failure, as well as satisfactory performance under normal cold weather snow and ice removal operations.

REFERENCE ATTACHMENT B DRAWING

**SECTIONAL TUNGSTEN CARBIDE TIPPED SNOWPLOW CUTTING EDGES
5" HEIGHT, 5/8" BOLT & HOLE PUNCHING**

Please provide a delivered reorder price for every line.

| BRAND NAME: Kennametal | | | | | |
|---|--------------------------------|---------------------------|--------------------------|----------------|----------------------------------|
| MANUFACTURER: Kennametal | | | | | |
| District | Length NDDOT Part Number | Order Quantity Each | Price Per Lineal Foot | Extended Price | Reorder Price Per Lineal Foot |
| Bismarck, ND 58504 | 3FT 76006-365597 | | \$ 46.67 | \$ 140.00 | \$ 46.67 |
| | 4FT 76006-365662 | | \$ 47.43 | \$ 189.71 | \$ 47.43 |
| Valley City, ND 58072 | 3FT 76006-365597 | | \$ 46.67 | \$ 140.00 | \$ 46.67 |
| | 4FT 76006-365662 | | \$ 47.43 | \$ 189.71 | \$ 47.43 |
| Devils Lake, ND 58301 | 3FT 76006-365597 | | \$ 46.67 | \$ 140.00 | \$ 46.67 |
| | 4FT 76006-365662 | | \$ 47.43 | \$ 189.71 | \$ 47.43 |
| Minot, ND 58701 | 3FT 76006-365597 | | \$ 46.67 | \$ 140.00 | \$ 46.67 |
| | 4FT 76006-365662 | | \$ 47.43 | \$ 189.71 | \$ 47.43 |
| Dickinson, ND 58601 | 3FT 76006-365597 | | \$ 46.67 | \$ 140.00 | \$ 46.67 |
| | 4FT 76006-365662 | | \$ 47.43 | \$ 189.71 | \$ 47.43 |
| Grand Forks, ND 58208 | 3FT 76006-365597 | | \$ 46.67 | \$ 140.00 | \$ 46.67 |
| | 4FT 76006-365662 | | \$ 47.43 | \$ 189.71 | \$ 47.43 |
| Williston, ND 58802 | 3FT 76006-365597 | | \$ 46.67 | \$ 140.00 | \$ 46.67 |
| | 4FT 76006-365662 | | \$ 47.43 | \$ 189.71 | \$ 47.43 |
| Fargo, ND 58103 | 3FT 76006-365597 | | \$ 46.67 | \$ 140.00 | \$ 46.67 |
| | 4FT 76006-365662 | | \$ 47.43 | \$ 189.71 | \$ 47.43 |
| Delivery Days After Receipt of Order: <u>45</u> Days | | | | | |
| Minimum order quantity for Reorder price: <u>100</u> LF | | | | | |

Initial Order Delivery Days ARO 30-45 (Not later than October 15)

BIDDER Kennametal Inc.

SECTIONAL TUNGSTEN CARBIDE TIPPED UNDERBODY SCRAPER CUTTING EDGES

Please provide a delivered reorder price for every line.

| BRAND NAME: Kennametal | | | | | |
|---|--------------------------------|---------------------------|--------------------------|----------------|----------------------------------|
| MANUFACTURER: Kennametal | | | | | |
| 5" HEIGHT, 5/8" HOLE-PUNCHING | | | | | |
| District | Length NDDOT Part Number | Order Quantity Each | Price Per Lineal Foot | Extended Price | Reorder Price Per Lineal Foot |
| Bismarck, ND 58504 | 3FT 76006-366009 | 29 | \$ 53.11 | \$ 159.34 | \$ 53.11 |
| | 4FT 76006-366108 | 51 | \$ 52.92 | \$ 211.66 | \$ 52.92 |
| Valley City, ND 58072 | 3FT 76006-366009 | | \$ 53.11 | \$ 159.34 | \$ 53.11 |
| | 4FT 76006-366108 | | \$ 52.92 | \$ 211.66 | \$ 52.92 |
| | 5FT 76006-366157 | | \$ 59.00 | \$ 295.00 | \$ 59.00 |
| Devils Lake, ND 58301 | 3FT 76006-366009 | | \$ 53.11 | \$ 159.34 | \$ 53.11 |
| | 4FT 76006-366108 | | \$ 52.92 | \$ 211.66 | \$ 52.92 |
| | 5FT 76006-366157 | | \$ 59.00 | \$ 295.00 | \$ 59.00 |
| Minot, ND 58701 | 3FT 76006-366009 | | \$ 53.11 | \$ 159.34 | \$ 53.11 |
| | 4FT 76006-366108 | | \$ 52.92 | \$ 211.66 | \$ 52.92 |
| Dickinson, ND 58601 | 3FT 76006-366009 | | \$ 53.11 | \$ 159.34 | \$ 53.11 |
| | 4FT 76006-366108 | | \$ 52.92 | \$ 211.66 | \$ 52.92 |
| | 5FT 76006-366157 | | \$ 59.00 | \$ 295.00 | \$ 59.00 |
| Grand Forks, ND 58208 | 3FT 76006-366009 | | \$ 53.11 | \$ 159.34 | \$ 53.11 |
| | 4FT 76006-366108 | 200 | \$ 52.92 | \$ 211.66 | \$ 52.92 |
| Williston, ND 58802 | 3FT 76006-366009 | | \$ 53.11 | \$ 159.34 | \$ 53.11 |
| | 4FT 76006-366108 | | \$ 52.92 | \$ 211.66 | \$ 52.92 |
| Fargo, ND 58103 | 3FT 76006-366009 | | \$ 53.11 | \$ 159.34 | \$ 53.11 |
| | 4FT 76006-366108 | | \$ 52.92 | \$ 211.66 | \$ 52.92 |
| | 5FT 76006-366157 | | \$ 59.00 | \$ 295.00 | \$ 59.00 |
| INITIAL ORDER TOTAL | | | | \$ | |
| 5" HEIGHT, 3/4" HOLE-PUNCHING | | | | | |
| Grand Forks, ND 58208 | 3FT 76006-366009 | | \$ 54.67 | \$ 164.00 | \$ 54.67 |
| | 4FT 76006-366108 | | \$ 66.25 | \$ 265.00 | \$ 66.25 |
| Delivery Days After Receipt of Order: 45 Days | | | | | |
| Initial Order Delivery Days ARO 30-45 (Not later than October 15) | | | | | |
| Minimum order quantity for Reorder price: 100 LF | | | | | |

BIDDER Kennametal Inc.

SECTIONAL TUNGSTEN CARBIDE TIPPED MOTOR GRADER CUTTING EDGES

Please provide a delivered reorder price for every line.

| BRAND NAME: Kennametal | | | | | |
|---|--------------------------------|---------------------------|--------------------------|----------------|----------------------------------|
| MANUFACTURER: Kennametal | | | | | |
| 8" HEIGHT, 5/8" HOLE-PUNCHING | | | | | |
| District | Length NDDOT Part Number | Order Quantity Each | Price Per Lineal Foot | Extended Price | Reorder Price Per Lineal Foot |
| Bismarck, ND 58504 | 3FT 76006-361604 | | \$ 60.00 | \$ 180.00 | \$ 60.00 |
| | 4FT 76006-361638 | | \$ 60.00 | \$ 240.00 | \$ 60.00 |
| Valley City, ND 58072 | 3FT 76006-361604 | | \$ 60.00 | \$ 180.00 | \$ 60.00 |
| | 4FT 76006-361638 | | \$ 60.00 | \$ 240.00 | \$ 60.00 |
| Devils Lake, ND 58301 | 3FT 76006-361604 | | \$ 60.00 | \$ 180.00 | \$ 60.00 |
| | 4FT 76006-361638 | | \$ 60.00 | \$ 240.00 | \$ 60.00 |
| Minot, ND 58701 | 3FT 76006-361604 | | \$ 60.00 | \$ 180.00 | \$ 60.00 |
| | 4FT 76006-361638 | | \$ 60.00 | \$ 240.00 | \$ 60.00 |
| Dickinson, ND 58601 | 3FT 76006-361604 | | \$ 60.00 | \$ 180.00 | \$ 60.00 |
| | 4FT 76006-361638 | | \$ 60.00 | \$ 240.00 | \$ 60.00 |
| Williston, ND 58802 | 3FT 76006-361604 | | \$ 60.00 | \$ 180.00 | \$ 60.00 |
| | 4FT 76006-361638 | | \$ 60.00 | \$ 240.00 | \$ 60.00 |
| Fargo, ND 58103 | 3FT 76006-361604 | | \$ 60.00 | \$ 180.00 | \$ 60.00 |
| | 4FT 76006-361638 | | \$ 60.00 | \$ 240.00 | \$ 60.00 |
| 8" HEIGHT, 3/4" HOLE-PUNCHING | | | | | |
| Grand Forks, ND 58208 | 3FT 76006-361604 | | \$ 60.00 | \$ 180.00 | \$ 60.00 |
| | 4FT 76006-361638 | | \$ 60.00 | \$ 240.00 | \$ 60.00 |
| Delivery Days After Receipt of Order: <u>45</u> Days Minimum order quantity for Reorder price: <u>100</u> LF | | | | | |

Initial Order Delivery Days ARO 30-45 (Not later than October 15)

BIDDER Kennametal Inc.

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION
SPECIFICATIONS FOR
THRU-HARDENED STEEL VEE-SNOWPLOW EDGE

GENERAL SPECIFICATIONS:

1. Cutting edges must be cut in the lengths as specified herein.
2. Cutting edge ends shall be square and cleanly cut.
3. Cutting edges shall meet minimum 25 Rockwell hardness on the Rockwell C-scale and Brinell hardness minimum 250. Rating must be furnished with the bid.
4. Lengths, as noted on the proposal, shall not vary more than $\pm 1/8$ " specified in order to fit total moldboard length in various combinations.
5. Bidder must specify delivery dates.
6. Materials and assembly shall be guaranteed with replacement against breakage, as well as satisfactory performance under normal cold weather snow and ice removal operations.

VEE-SNOWPLOW CUTTING EDGES:

1. Sizes and length as designated.
2. Flat.
3. Unpolished.

| | | |
|-----------------------------------|------------------------------------|--|
| Brand Name: | | |
| Manufacturer: | | |
| 8" HEIGHT X 1/2" THICK | | |
| LENGTH DOT PART NUMBER | ORDER PRICE LINEAL FOOT | DELIVERY DAYS AFTER RECEIPT OF ORDER _____ Freight TBD at time of purchase. Minimum order quantity for this price = _____ LF |
| 5FT 76006-368005 | \$ No Bid | |
| 6FT 76006-368104 | \$ No Bid | |
| 7FT 76006-368153 | \$ No Bid | |

BIDDER Kennametal Inc.

**KUEPER BRAND CUTTING EDGES
TUCA SX - TUNGSTEN CARBIDE/STEEL VULCANIZED IN RUBBER CUTTING EDGES
5/8" HOLE PUNCHING – ALL DISTRICTS**

General Specifications:

1. Materials and assembly shall be guaranteed with replacement against breakage, as well as satisfactory performance under normal cold weather snow and ice removal operations.

| TUCA SX SNOW PLOW CUTTING EDGES | | | | | | |
|---|--------------------------|---------------------------|-----------------------------|---|------------------------------|----------------------------------|
| Please provide a delivered reorder price for every line. | | | | | | |
| Delivery Location | Cutting Edge Length Each | NDDOT P/N KUEPER P/N | Initial Order Quantity Each | Initial Order Price Each FOB Destination | Initial Order Extended Price | Reorder Price @ 1 Each Delivered |
| Bismarck, ND 58504 | 3 FT | 76006-369155 34855836X | 25 | \$ No Bid | \$ | \$ |
| | 4 FT | 76006-369177 34855936X | 51 | \$ No Bid | \$ | \$ |
| Valley City, ND 58072 | 3 FT | 76006-369155 34855836X | | \$ No Bid | \$ | \$ |
| | 4 FT | 76006-369177 34855936X | | \$ No Bid | \$ | \$ |
| Devils Lake, ND 58301 | 3 FT | 76006-369155 34855836X | | \$ No Bid | \$ | \$ |
| | 4 FT | 76006-369177 34855936X | | \$ No Bid | \$ | \$ |
| Minot, ND 58701 | 3 FT | 76006-369155 34855836X | | \$ No Bid | \$ | \$ |
| | 4 FT | 76006-369177 34855936X | 27 | \$ No Bid | \$ | \$ |
| Dickinson, ND 58601 | 3 FT | 76006-369155 34855836X | 2 | \$ No Bid | \$ | \$ |
| | 4 FT | 76006-369177 34855936X | 10 | \$ No Bid | \$ | \$ |
| Williston, ND 58802 | 3 FT | 76006-369155 34855836X | | \$ No Bid | \$ | \$ |
| | 4 FT | 76006-369177 34855936X | | \$ No Bid | \$ | \$ |
| Grand Forks, ND 58208 | 3 FT | 76006-369155 34855836X | | \$ No Bid | \$ | \$ |
| | 4 FT | 76006-369177 34855936X | | \$ No Bid | \$ | \$ |
| Fargo, ND 58103 | 3 FT | 76006-369155 34855836X | | \$ No Bid | \$ | \$ |
| | 4 FT | 76006-369177 34855936X | | \$ No Bid | \$ | \$ |
| INITIAL ORDER TOTAL | | | | \$ | | |
| TUCA Snowplow "Each" is the cut-to-length edge price for each location and includes freight. Delivery Days After Receipt of Order: _____ Days Minimum order quantity for Reorder price: _____ LF | | | | | | |

TUCA SX UNDERBODY SCRAPER

| DISTRICT | DESCRIPTION | Initial Order Quantity | ORDER PRICE LINEAL FOOT | Extended Price | Reorder Price Per Lineal Foot |
|-----------------------|-----------------------------------|------------------------------|----------------------------|-------------------|-------------------------------------|
| Bismarck, ND 58504 | 3 Ft, Kueper TUCA SX UB 3485583TX | 26 | \$ No Bid | \$ | \$ |
| | 4 Ft, Kueper TUCA SX UB 3485593TX | 50 | \$ No Bid | \$ | \$ |
| | 5 Ft, Kueper TUCA SX UB 3485603TX | | \$ No Bid | \$ | \$ |
| | 6 Ft, Kueper TUCA SX UB 3485653TX | | \$ No Bid | \$ | \$ |
| Valley City, ND 58072 | 3 Ft, Kueper TUCA SX UB 3485583TX | | \$ No Bid | \$ | \$ |
| | 4 Ft, Kueper TUCA SX UB 3485593TX | | \$ No Bid | \$ | \$ |
| | 5 Ft, Kueper TUCA SX UB 3485603TX | | \$ No Bid | \$ | \$ |
| | 6 Ft, Kueper TUCA SX UB 3485653TX | | \$ No Bid | \$ | \$ |
| Devils Lake, ND 58301 | 3 Ft, Kueper TUCA SX UB 3485583TX | | \$ No Bid | \$ | \$ |
| | 4 Ft, Kueper TUCA SX UB 3485593TX | | \$ No Bid | \$ | \$ |
| | 5 Ft, Kueper TUCA SX UB 3485603TX | | \$ No Bid | \$ | \$ |
| | 6 Ft, Kueper TUCA SX UB 3485653TX | | \$ No Bid | \$ | \$ |
| Minot, ND 58701 | 3 Ft, Kueper TUCA SX UB 3485583TX | 6 | \$ No Bid | \$ | \$ |
| | 4 Ft, Kueper TUCA SX UB 3485593TX | 12 | \$ No Bid | \$ | \$ |
| | 5 Ft, Kueper TUCA SX UB 3485603TX | | \$ No Bid | \$ | \$ |
| | 6 Ft, Kueper TUCA SX UB 3485653TX | | \$ No Bid | \$ | \$ |
| Dickinson, ND 58601 | 3 Ft, Kueper TUCA SX UB 3485583TX | 4 | \$ No Bid | \$ | \$ |
| | 4 Ft, Kueper TUCA SX UB 3485593TX | 2 | \$ No Bid | \$ | \$ |
| | 5 Ft, Kueper TUCA SX UB 3485603TX | | \$ No Bid | \$ | \$ |
| | 6 Ft, Kueper TUCA SX UB 3485653TX | | \$ No Bid | \$ | \$ |
| Grand Forks, ND 58208 | 3 Ft, Kueper TUCA SX UB 3485583TX | | \$ No Bid | \$ | \$ |
| | 4 Ft, Kueper TUCA SX UB 3485593TX | | \$ No Bid | \$ | \$ |
| | 5 Ft, Kueper TUCA SX UB 3485603TX | | \$ No Bid | \$ | \$ |
| | 6 Ft, Kueper TUCA SX UB 3485653TX | | \$ No Bid | \$ | \$ |
| Williston, ND 58802 | 3 Ft, Kueper TUCA SX UB 3485583TX | | \$ No Bid | \$ | \$ |
| | 4 Ft, Kueper TUCA SX UB 3485593TX | | \$ No Bid | \$ | \$ |
| | 5 Ft, Kueper TUCA SX UB 3485603TX | | \$ No Bid | \$ | \$ |
| | 6 Ft, Kueper TUCA SX UB 3485653TX | | \$ No Bid | \$ | \$ |
| Fargo, ND 58103 | 3 Ft, Kueper TUCA SX UB 3485583TX | | \$ No Bid | \$ | \$ |
| | 4 Ft, Kueper TUCA SX UB 3485593TX | | \$ No Bid | \$ | \$ |
| | 5 Ft, Kueper TUCA SX UB 3485603TX | | \$ No Bid | \$ | \$ |
| | 6 Ft, Kueper TUCA SX UB 3485653TX | | \$ No Bid | \$ | \$ |

| | |
|--|----|
| INITIAL ORDER TOTAL | \$ |
| DELIVERY DAYS AFTER RECEIPT OF ORDER _____ | |
| Minimum order quantity for this price per part number = _____ LF | |

SNOWPLOW BLADE ISOLATED CARBIDE EDGE CUTTING BLADES (I.C.E.)

BLADE

1. The blade shall be fabricated using flat hot-rolled finished steel to meet or exceed specifications for A36 or 1040 type steels.
2. Punching shall be 11/16" square holes with countersink to receive 5/8" diameter plow bolts. Location and spacing of the holes shall be as specified by the user. For Standard Highway Punch style spacing refer to the attached drawing.
3. Center of bolt holes shall be in line within 1/32" of established horizontal centerline and 1/16" of established vertical centerline.

TUNGSTEN CARBIDE INSERTS

1. The inserts shall be a high shock WC grade of tungsten carbide with (10.5 to 12.5) percent cobalt content.
 - a. Density: 13.9 Minimum to 14.6 Maximum
 - b. Hardness: 86.8 Minimum to 89.2 Maximum Rockwell. "A" Scale or Equivalent based on appropriate coercive force correlation.
 - c. The Maximum Allowable Porosity: (Based on testing in accordance with ASTM designation B276-79) shall be:

A08
B04
C00
2. The carbide insert manufacturer to furnish certification to the State Highway Department that the inserts meet the specifications as set forth in 2.1.
3. The inserts shall be a cylindrical design with a dome-shaped end of the following dimensions:
 - a. Height: .753" +/- .007 (long side)
 - b. Diameter: .523" +/- .004
 - c. Bottom Angle: 25 degrees with a nose radius of 1/16" minimum
4. A metallurgical evaluation of the carbide insert shall show no evidence of cross grade contamination. Evaluation to be based on a photomicrograph of a polished and etched specimen at 500x magnification.

BRAZING

1. The brazing material shall be a high strength alloy type.
2. The tungsten carbide inserts shall be positioned in holes drilled in the center of the thickness of the blade and shall be spaced .75" center to center along the entire length of each cutting edge section.
3. The inserts shall be brazed on all sides consistent with sound brazing practice with no evidence of voids in the braze joint.

SPECIFIC REQUIREMENTS

1. The finished blade section shall be free of warpage and longitudinal deviation not to exceed 1/8" in a four-foot blade section.
2. Each blade section shall be identified with manufacturer's identification stamp into the metal or on a label in a non-wear area of the blade.
3. Materials and assembly shall be guaranteed with replacement against breakage and brazing failure, as well as satisfactory performance under normal cold weather snow and ice removal operations.

REFERENCE ATTACHMENT C DRAWING

Kennametal Isolated Carbide-Edge (I.C.E. Series)

| QTY. | ITEM | UNIT PRICE |
|---|-------------------|--|
| KENNAMETAL I.C.E. CURB GUARD | | |
| BRAND | <u>Kennametal</u> | PART NO. (L) <u>3556530 (5/8 BOLT), 5528929 (3/4 BOLT)</u> |
| | | PART NO (R) <u>3556530 (5/8 BOLT), 5528929 (3/4 BOLT)</u> |
| Delivery Days After Receipt of Order: <u>30-45</u> Days | | \$ 193.00 (5/8 Bolt) |
| Freight TBD at time of purchase. | Price Each (L): | <u>\$ 198.00 (3/4 Bolt)</u> |
| | | \$ 193.00 (5/8 Bolt) |
| Minimum order quantity for this price = <u>10</u> EA | Price Each (R): | <u>\$ 198.00 (3/4 Bolt)</u> |

SPECIFICATIONS FOR STANDARD CURB GUARD

GENERAL SPECIFICATIONS:

1. The Curb Guards shall be SAE 1020-1045 steel.
2. Hole-punching shall be 11/16" square, countersunk to receive 5/8" diameter plow bolts or 13/16" square, countersunk to receive 3/4" diameter plow bolts. The hole spacing shall be as per AASHTO.
3. The finished Curb Guard shall be given one coat of rust resistant lacquer.
4. Must protect moldboard ends from impact.
5. Must list Curb Guard for the left and right side of plow.
6. Must be carbide reinforced.
7. Must provide literature on your Curb Guard.

| | |
|---|---|
| STANDARD CURB GUARD | |
| BRAND <u>Kennametal</u> PART NO. (L) <u>3336844 (5/8 Bolt) 6279041 (3/4 Bolt)</u> PART NO (R) <u>3336844 (5/8 Bolt) 6279041 (3/4 Bolt)</u> | |
| Delivery Days After Receipt of Order: <u>30-45</u> Days Freight TBD at time of purchase. Minimum order quantity for this price = <u>10</u> EA | Price Each (L): \$ <u>86.47 (5/8 Bolt)</u> Price Each (L): \$ <u>88.00 (3/4 Bolt)</u> Price Each (R): \$ <u>86.47 (5/8 Bolt)</u> Price Each (R): \$ <u>88.00(3/4 Bolt)</u> |

BIDDER Kennametal Inc.

Amendment No. 1

To: ALL INTERESTED SUPPLIERS
From: North Dakota Department of Transportation
Date: August 1, 2016
Re: Amendment to Bid 760-06-16-050, CUTTING EDGES

Bidders Instruction #7 of the solicitation established a deadline for receipt of questions. The responses to these questions are provided as addenda to the solicitation. When necessary, the solicitation has been amended.

Question 1:

Reference Page 18 of this ITB titled:

"Sectional Tungsten Carbide Inserted snowplow cutting edges, 5" height, 5/8" hold-punching" Kennametal Isolated Carbide-Edge (I.C.E. Series)

The Kennametal material numbers for the PB536 and PB548 blades that you have listed are incorrect. Kennametal material number for the PB536 is 1553693, the PB548 is 1553694. These blades are manufactured with a square top edge.

Kennametal material number 2035932 is for the 3ft section with a beveled top edge.

Kennametal material number 2035931 is for the 4ft section with a beveled top edge.

Would you please clarify which style you wish use to bid on?

Answer 1:

NDDOT does request both square and beveled top edge ICE blades.
Replace page 18 of 19 of the bid document with page 2 of this amendment.

Question 2:

Your attached drawing (attachment C) does not show a side view, so we are questioning whether you need these blades with a square top or a beveled top.

Answer 2:


Delete Attachment C of the bid document and replace with the attached 4 drawings.

Vendors are instructed to acknowledge receipt of and compliance with this amendment by signing below and returning this acknowledgement with your bid or proposal.

Any questions regarding this amendment must be submitted in writing to the undersigned Procurement Officer.

Vanessa Brosten, Procurement Officer
PHONE: 701-328-4466
FAX: 701-328-0310
E-MAIL: vbrosten@nd.gov

By my signature below, I hereby acknowledge receipt of and compliance with this amendment to the above referenced solicitation.

| | |
|--|------------------------|
| PRINTED NAME OF BIDDER OR OFFEROR <u>and</u> TITLE | |
| Cary D. Ritchey Sales Manager - Specialty Products | |
| SIGNATURE  | DATE August 8, 2016 |

**NORTH DAKOTA DEPARTMENT OF TRANSPORTATION
APPENDIX A OF THE TITLE VI ASSURANCES**

During the performance of this contract, the Contractor, for itself, its assignees, and successors in interest (hereinafter referred to as the Contractor) agrees as follows:

1. Compliance with Regulations: The Contractor (hereinafter includes consultants) will comply with the Acts and the Regulations relative to Non-discrimination in Federally-assisted programs of the U.S. Department of Transportation, the Federal Highway Administration, as they may be amended from time to time, which are herein incorporated by reference and made a part of this contract.
2. Non-discrimination: The Contractor, with regard to the work performed by it during the contract, will not discriminate on the grounds of race, color, or national origin in the selection and retention of subcontractors, including procurements of materials and leases of equipment. The Contractor will not participate directly or indirectly in the discrimination prohibited by the Acts and the Regulations, including employment practices when the contract covers any activity, project, or program set forth in Appendix B of 49 CFR Part 21.
3. Solicitations for Subcontracts, Including Procurements of Materials and Equipment: In all solicitations, either by competitive bidding, or negotiation made by the Contractor for work to be performed under a subcontract, including procurements of materials, or leases of equipment, each potential subcontractor or supplier will be notified by the Contractor of the Contractor's obligations under this contract and the Acts and the Regulations relative to Non-discrimination on the grounds of race, color, or national origin.
4. Information and Reports: The Contractor will provide all information and reports required by the Acts, the Regulations, and directives issued pursuant thereto and will permit access to its books, records, accounts, other sources of information, and its facilities as may be determined by the Recipient or the Federal Highway Administration to be pertinent to ascertain compliance with such Acts, Regulations, and instructions. Where any information required of a Contractor is in the exclusive possession of another who fails or refuses to furnish the information, the Contractor will so certify to the Recipient or the Federal Highway Administration as appropriate, and will set forth what efforts it has made to obtain the information.
5. Sanctions for Noncompliance: In the event of a contractor's noncompliance with the Nondiscrimination provisions of this contract, the Recipient will impose such contract sanctions as it or the Federal Highway Administration may determine to be appropriate, including, but not limited to:
 - a. withholding payments to the Contractor under the contract until the Contractor complies; and/or
 - b. cancelling, terminating, or suspending a contract, in whole or in part.
6. Incorporation of Provisions: The Contractor will include the provisions of paragraphs one through six in every subcontract, including procurements of materials and leases of equipment, unless exempt by the Acts, the Regulations and directives issued pursuant thereto. The Contractor will take action with respect to any subcontract or procurement as the Recipient or the Federal Highway Administration may direct as a means of enforcing such provisions including sanctions for noncompliance. Provided, that if the Contractor becomes involved in, or is threatened with litigation by a subcontractor, or supplier because of such direction, the Contractor may request the Recipient to enter into any litigation to protect the interests of the Recipient. In addition, the Contractor may request the United States to enter into the litigation to protect the interests of the United States.



**NORTH DAKOTA DEPARTMENT OF TRANSPORTATION
APPENDIX E OF THE TITLE VI ASSURANCES**

During the performance of this contract, the contractor, for itself, its assignees, and successors in interest (hereinafter referred to as the Contractor) agrees to comply with the following non-discrimination statutes and authorities; including but not limited to:

Pertinent Non-Discrimination Authorities:

- Title VI of the Civil Rights Act of 1964 (42 U.S.C. § 2000d *et seq.*, 78 stat. 252), (prohibits discrimination on the basis of race, color, national origin); and 49 CFR Part 21.
- The Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, (42 U.S.C. § 4601), (prohibits unfair treatment of persons displaced or whose property has been acquired because of Federal or Federal-aid programs and projects);
- Federal-Aid Highway Act of 1973, (23 U.S.C. § 324 *et seq.*), (prohibits discrimination on the basis of sex);
- Section 504 of the Rehabilitation Act of 1973, (29 U.S.C. § 794 *et seq.*), as amended, (prohibits discrimination on the basis of disability); and 49 CFR Part 27;
- The Age Discrimination Act of 1975, as amended, (42 U.S.C. § 6101 *et seq.*), (prohibits discrimination on the basis of age);
- Airport and Airway Improvement Act of 1982, (49 USC § 471, Section 47123), as amended, (prohibits discrimination based on race, creed, color, national origin, or sex);
- The Civil Rights Restoration Act of 1987, (PL 100-209), (Broadened the scope, coverage and applicability of Title VI of the Civil Rights Act of 1964, The Age Discrimination Act of 1975 and Section 504 of the Rehabilitation Act of 1973, by expanding the definition of the terms "programs or activities" to include all of the programs or activities of the Federal-aid recipients, sub-recipients and contractors, whether such programs or activities are Federally funded or not);
- Titles II and III of the Americans with Disabilities Act, which prohibit discrimination on the basis of disability in the operation of public entities, public and private transportation systems, places of public accommodation, and certain testing entities (42 U.S.C. §§ 12131-12189) as implemented by Department of Transportation regulations at 49 C.F.R. parts 37 and 38;
- The Federal Aviation Administration's Non-discrimination statute (49 U.S.C. § 47123) (prohibits discrimination on the basis of race, color, national origin, and sex);
- Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, which ensures non-discrimination against minority populations by discouraging programs, policies, and activities with disproportionately high and adverse human health or environmental effects on minority and low-income populations;
- Executive Order 13166, Improving Access to Services for Persons with Limited English Proficiency, and resulting agency guidance, national origin discrimination includes discrimination because of limited English proficiency (LEP). To ensure compliance with Title VI, you must take reasonable steps to ensure that LEP persons have meaningful access to your programs (70 Fed. Reg. at 74087 to 74100);
- Title IX of the Education Amendments of 1972, as amended, which prohibits you from discriminating because of sex in education programs or activities (20 U.S.C. 1681 *et seq.*).



Risk Management Appendix

Supply Contracts with Private Individuals, Companies, Corporations, Etc.:

Each party agrees to assume its own liability for any and all claims of any nature including all costs, expenses and attorney's fees which may in any manner result from or arise out of this agreement.

Contractor, or Contractor's delivery agent, shall secure and keep in force during the term of this agreement, from insurance companies, government self-insurance pools or government self-retention funds authorized to do business in North Dakota, the following insurance coverages:

- 1) **Commercial general liability and automobile liability** insurance.
- 2) **Workers compensation** insurance.

Contractor shall produce certificates of insurance or copies of insurance policies upon request by the State.

When a portion of a Contract is sublet, the Contractor shall obtain insurance protection (as outlined above) to provide liability coverage to protect the Contractor and the State as a result of work undertaken by the Subcontractor. In addition, the Contractor shall ensure that any and all parties performing work under the Contract are covered by public liability insurance as outlined above. All Subcontractors performing work under the Contract are required to maintain the same scope of insurance required of the Contractor. The Contractor shall be held responsible for ensuring compliance with those requirements by all Subcontractors.

RM Consulted 2007
Revised 6-07



**NORTH DAKOTA DEPARTMENT OF TRANSPORTATION
PROCUREMENT BID NO. 760-06-16-050**

ATTACHMENTS

- **SIGNATURE AUTHORIZATION**

- **CONFORMANCE CERTIFICATE**

- **CERTIFICATE OF LEABILITY INSURANCE**

- **Specifications for 7/8" thick blades with 3/4" carbide**
 - **Line Art**
 - **Literature**

- **Specifications for I.C.E. blades**
 - **Line Art**
 - **Literature**

- **Specifications for I.C.E. curb guards**
 - **Line Art**
 - **Literature**

- **Specifications for standard carbide curb guards**
 - **Line Art**
 - **Literature**

Pete Dragich
Kennametal Inc.
600 Grant Street, Suite 5100, Pittsburgh, PA 15219
T 412-248-8228 | F 412-248-8106
www.kennametal.com



July 27, 2016

North Dakota Department of Transportation Procurement
608 East Boulevard Avenue
Bismarck, ND 58505-0700

Reference: Bid Number 760-06-16-050
Bid Opening Date/Time: August 10, 2016; 2:00 pm

I, Pete Dragich, President, Infrastructure and Manufacturing, hereby give Kennametal's Sales Manager for Specialty Products, Mr. Cary Ritchey, full authority to sign these bid documents.

Sincerely,

A handwritten signature in black ink that reads 'Pete A. Dragich'.

Pete Dragich
Vice President, Kennametal Inc.
President, Infrastructure Business Segment



**KENNAMETAL
CONFORMANCE CERTIFICATE
FOR MATERIAL BID**

We hereby certify that all materials used in the manufacturing of parts called for on

Bid Number 760-06-16-050

Dated July 22, 2016

Received by us from North Dakota Dept. of Transportation

Conform to the material and/or manufacturing specifications indicated on the drawing or specifications as called for on the said bid.

Furthermore, we certify the Kennametal grade K3030C carbide used in the manufacture of these products will conform to the following:

Cobalt = 11% to 12-1/2%

Density = 14.1 MIN to 14.6 MAX

Hardness = 87.8 to 88.4 Rc. "A" Scale

Transverse Rupture Strength shall be 350,000 PSI minimum

KENNAMETAL INC.
BEDFORD, PA

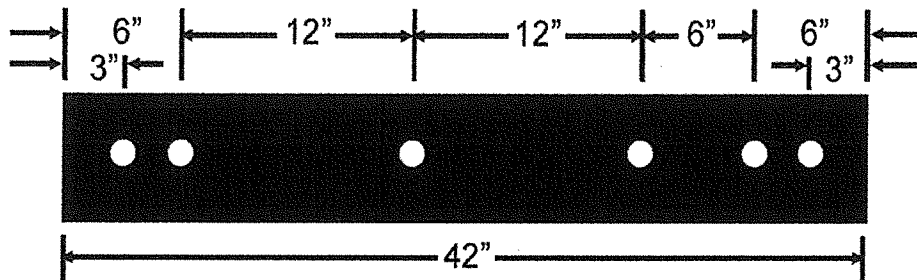
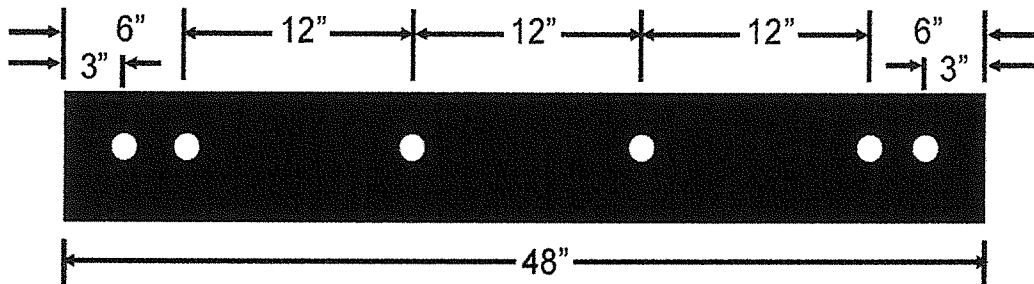
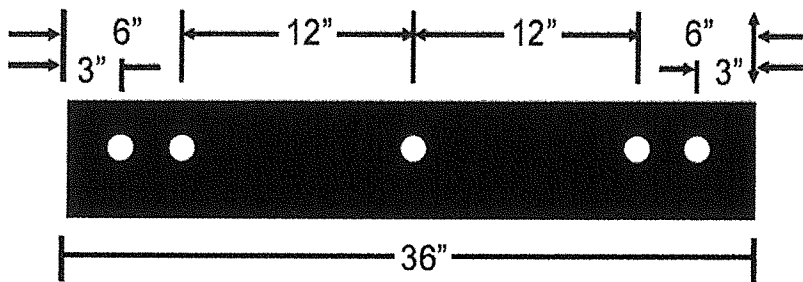
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Cary D. Ritchey
Sales Manager – Specialty Products

DATE August 8, 2016

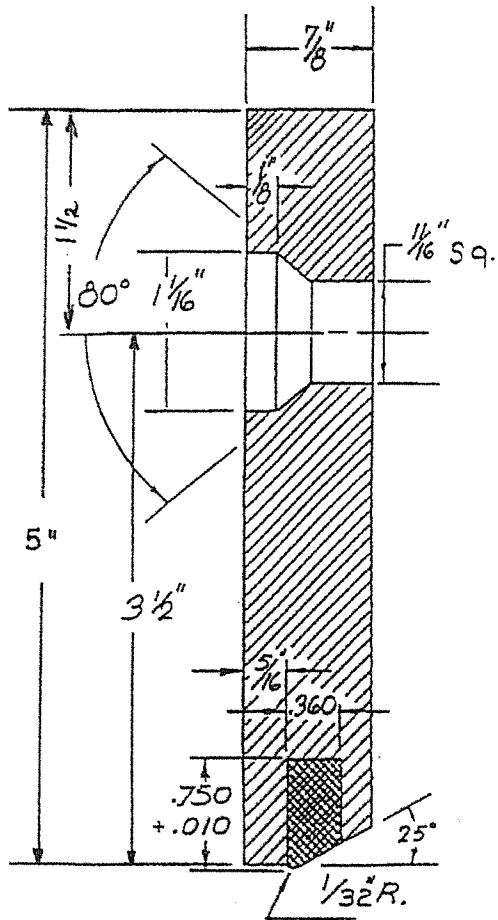
NORTH DAKOTA DEPARTMENT OF TRANSPORTATION

PUNCHING SPACE SNOWPLOW CUTTING EDGES

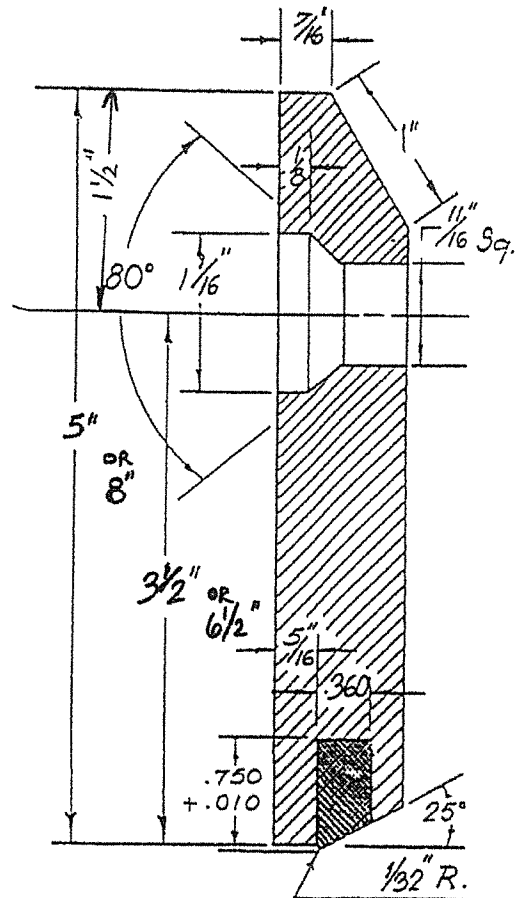


ATTACHMENT A

TUNGSTEN EDGES



SNOWPLOW

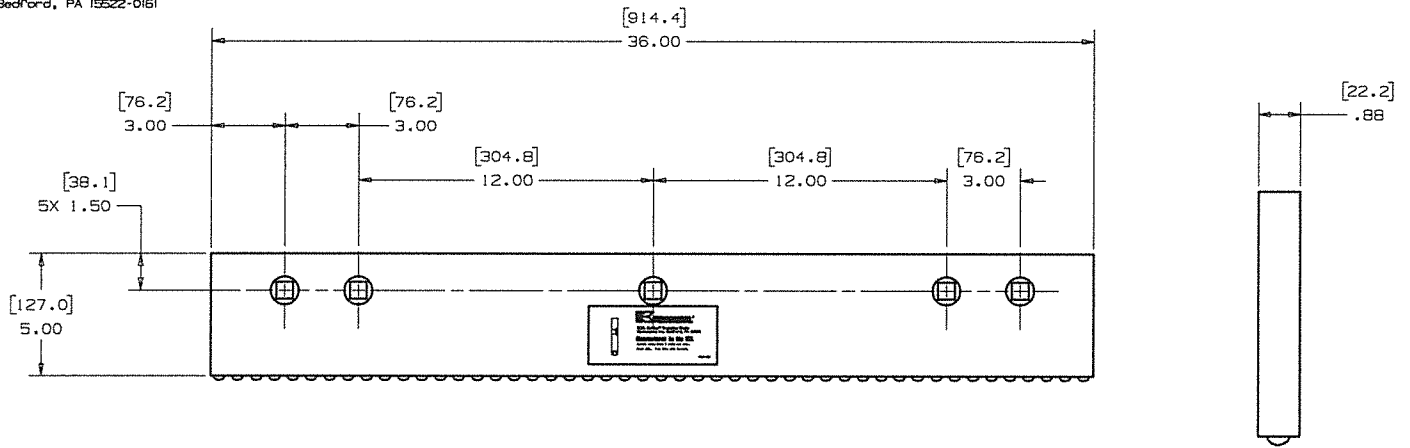


8"- MOTOR GRADER
5"- UNDERBODY



Mining and Construction Division
442 Chalybeate Road
Bedford, PA 15522-0161

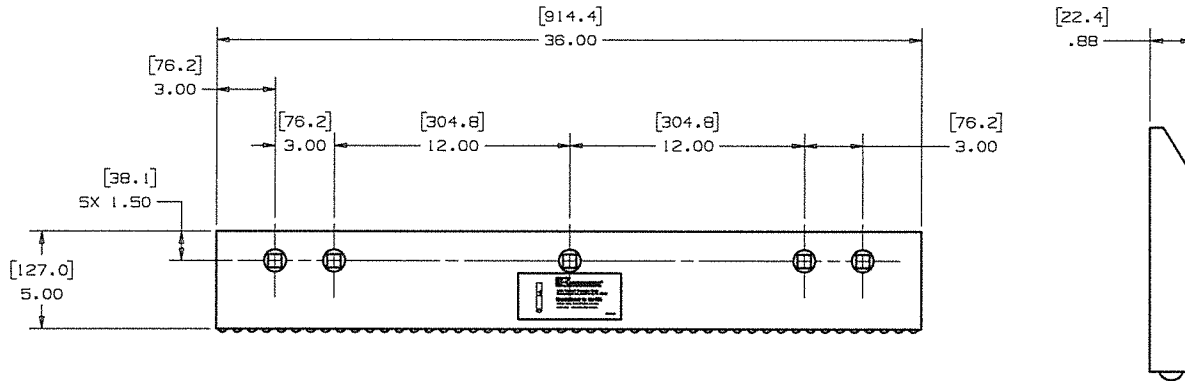
2011-11-10





Mining and Construction Division
442 Chalybeate Road
Bedford, PA 15522-0161

2011-11-11

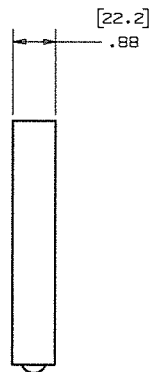
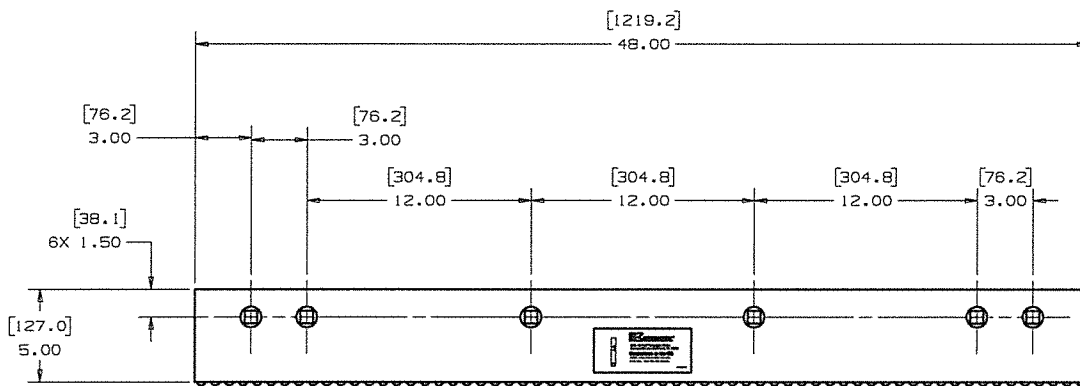


2035932
PB636
7/8 X 5 X 36
I.C.E. GRADER PLOW BLADE
ASSEMBLY



Mining and Construction Division
442 Chalfont Road
Bedford, PA 15522-0161

2011-11-10

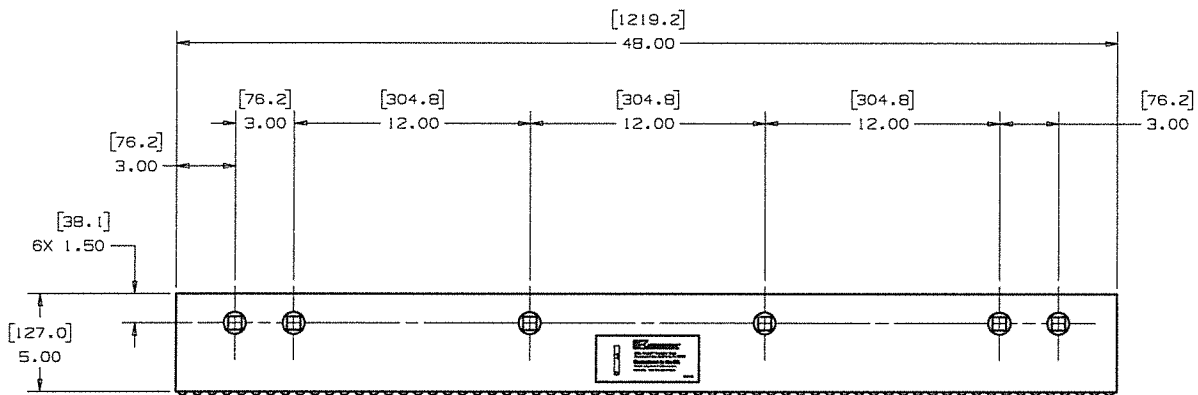


1553694
PB548
7/8 X 5 X 48
ICE SNOWPLOW BLADE
ASSEMBLY W/O BEVEL



Mining and Construction Division
442 Chalfont Road
Bedford, PA 15522-0161

2011-11-11



2035931
PBC48
7/8 X 5 X 48
I.C.E. GRADER PLOW BLADE
ASSEMBLY

PLM # 4888367



KENNAMETAL INC.
MINING AND CONSTRUCTION DIVISION

RECOMMENDED SPECIFICATIONS FOR
7/8" THICK SECTIONAL TUNGSTEN CARBIDE TIPPED
SNOWPLOW BLADE CUTTING EDGES (BLADES) WITH
3/4" HIGH TRAPEZOID INSERTS

The following specifications are the result of years of constant field research and development. These revised specifications help assure State and Municipal Highway Departments of a quality product when procuring carbide tipped snowplow blades.

1. BLADE

- 1.1 The blade shall be flat hot-rolled finished steel to meet or exceed specifications for SAE 1040 -1045 type steels.
- 1.2 Punching shall be 11/16" square holes with countersink to receive 5/8" diameter plow bolts. Location and spacing of the holes shall be as specified by the user.
- 1.3 The groove for the carbide inserts shall be milled in the center of the blade edge.
- 1.4 Center of holes shall be in line within 1/32" of established horizontal centerline and 1/16" of established vertical centerline.

2. TUNGSTEN CARBIDE INSERTS

- 2.1 The inserts shall be a high shock WC grade of tungsten carbide with (11 to 12½) percent cobalt content.

Density: 14.1 Minimum to 14.6 Maximum

Hardness: 87.5 Minimum to 89.0 Maximum
Rc. "A" Scale

Transverse Rupture Strength (p.s.i): 350,000 Minimum

Porosity: (Based on testing in accordance with ASTM designation B276-79)

A06

B02

C00

2.2 The carbide insert manufacturer to furnish certification to the State Highway Department that the inserts meet the specifications as set forth in 2.1.

2.3 The inserts shall be a trapezoid design of the following dimensions:

Height: .750" +/- .005 (long side)

Width: .365" +/- .010

Length: 1" Nominal

Bottom Angle: 30 degrees with a nose radius of 1/16" minimum

2.4 A metallurgical evaluation of the carbide insert shall show no evidence of cross grade contamination. Evaluation to be based on a photomicrograph of a polished and etched specimen at 500x magnification.

3. BRAZING

3.1 The brazing material shall be a high strength alloy type.

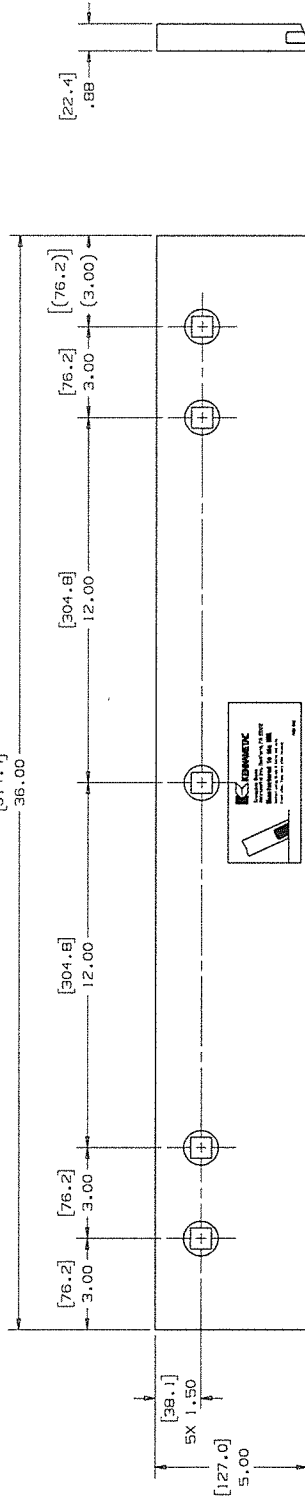
3.2 The tungsten carbide inserts shall be positioned in the milled groove at approximately .010 between the inserts the entire length of each cutting edge section.

3.3 The inserts shall be brazed on all sides consistent with sound brazing practice with no evidence of voids or use of shims.

- 3.4 Each blade section to contain one insert, one inch nominal length for each inch of blade section length. Due to the thickness of the braze joints between inserts it may be necessary for several inserts to be slightly shorter or longer than the nominal 1" length to insure the carbide insert runs the entire length of the blade without protruding from the end of the steel body.

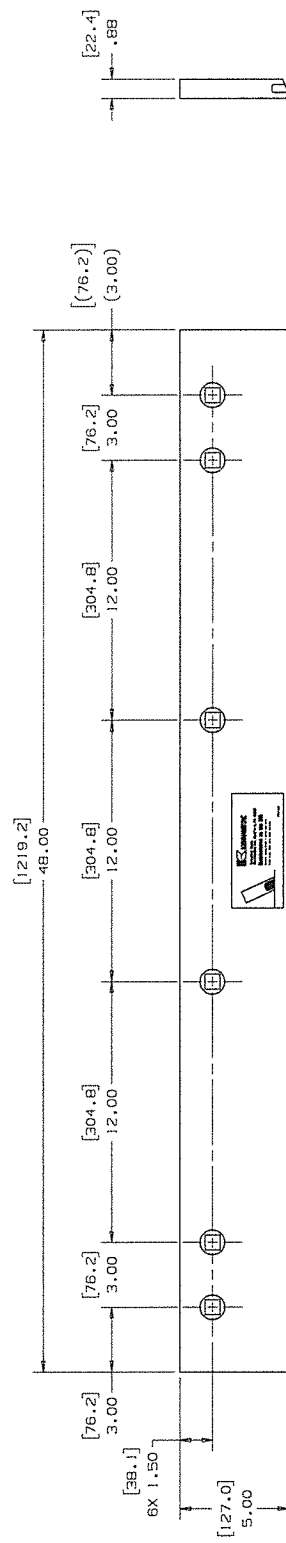
4. SPECIFIC REQUIREMENTS

- 4.1 The difference between the highest and lowest tip point (on any two adjacent inserts) not to exceed 1/32" on any given blade assembly.
- 4.2 The finished blade section shall be free of warpage and longitudinal deviation not to exceed 1/8" in a four-foot blade section.
- 4.3 Each blade section shall be identified with manufacturer's identification stamp.
- 4.4 The finished blade sections shall have marking showing the front edge of the blade to avoid improper mounting.



ND DOT Part# 76006-365597

| | | | |
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| Drawn | RG5005 | 2014-10-08 | Scale |
| Checked | KENNOBJ | 2014-10-08 | NONE |
| Approved | KENNOBJ | 2014-10-08 | |
| Cust. Part# | | | |
| Cust. Des. # | | | |
| Quote No. | | | |
| Order No. | | | |
| Reference | | | |
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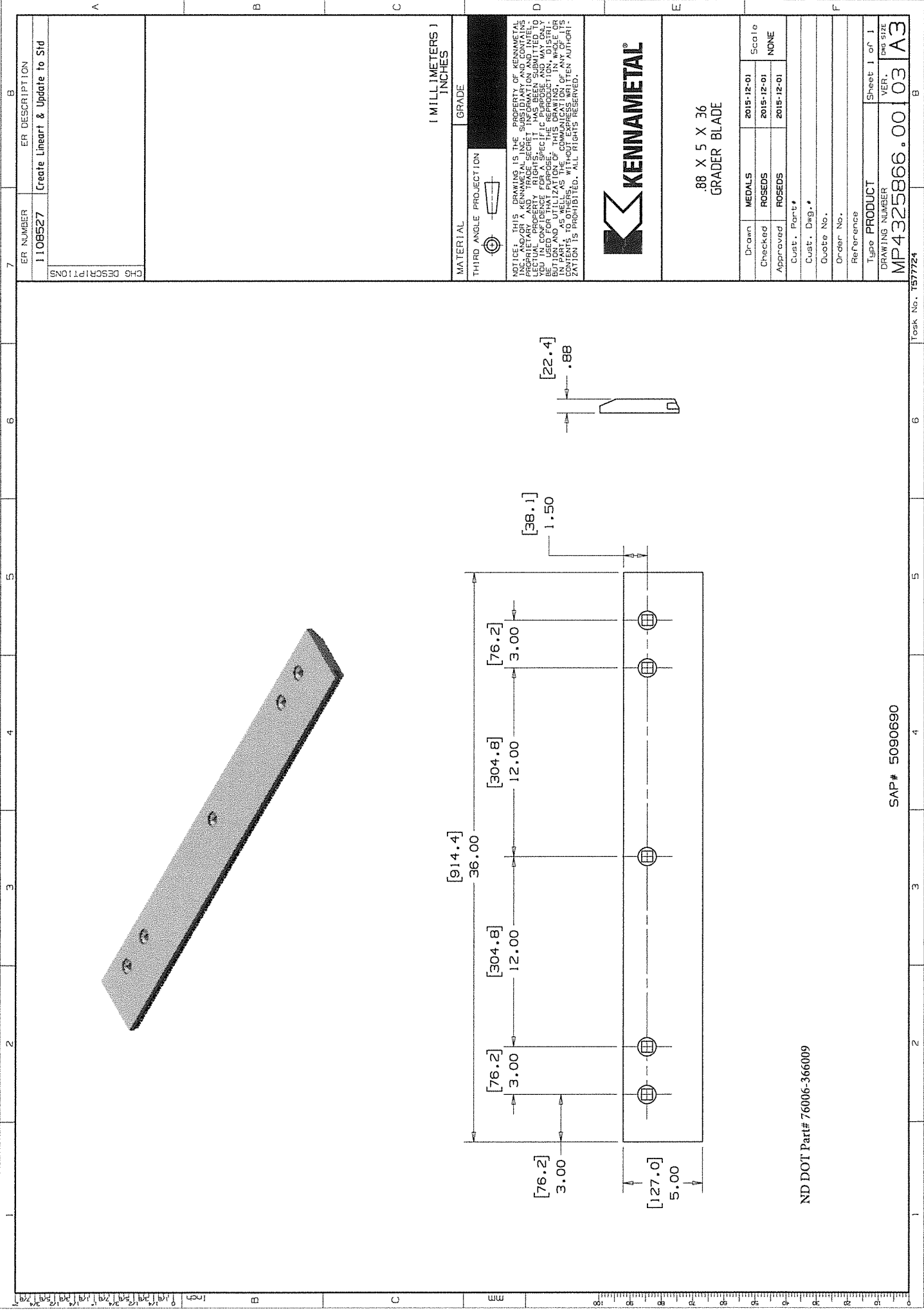

KENNAMETAL®

PB348H
 .875 X 5 X 48
 SNOW PLOW BLADE

| | 2014-10-06 | Scale |
|----------|------------|-------|
| Drawn | ROSEDS | |
| Checked | KENNOBJ | NONE |
| Approved | KENNOBJ | |

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|-------------|--|
| Cust. Port# | |
| Cust. Deg.# | |
| Quote No. | |
| Order No. | |

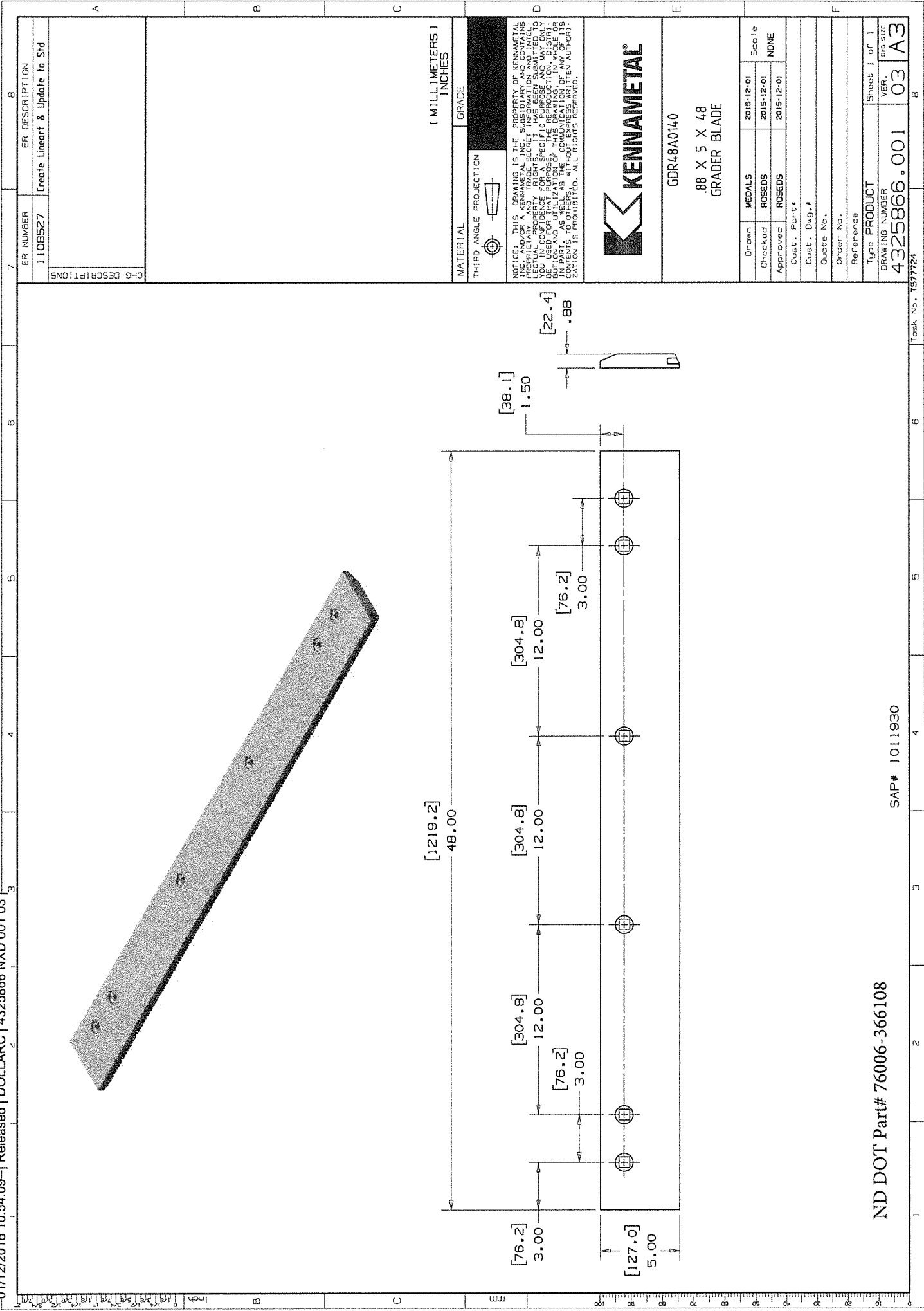
ND DOT Part# 76006-365662



ND DOT Part# 76006-366009

SAP# 5090690

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| CHG DESCRIPTIONS | | | |
| MATERIAL THIRD ANGLE PROJECTION | | | |
| GRADE | | I MILLIMETERS) INCHES | |
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| KENAMETAL® | | | |
| .88 X 5 X 36 GRADER BLADE | | | |
| Drawn | MEDALS | 2015-12-01 | Scale |
| Checked | ROSEDS | 2015-12-01 | NONE |
| Approved | ROSEDS | 2015-12-01 | |
| Cust. Part # | | | |
| Cust. Dwg. # | | | |
| Quote No. | | | |
| Order No. | | | |
| Reference | | | |
| Type PRODUCT | | Sheet 1 of 1 | |
| DRAWING NUMBER | | VER. | |
| MP4325866.00 | | 03 A3 | |



ND DOT Part# 76006-366108

SAP# 1011930

Task No. 1577724

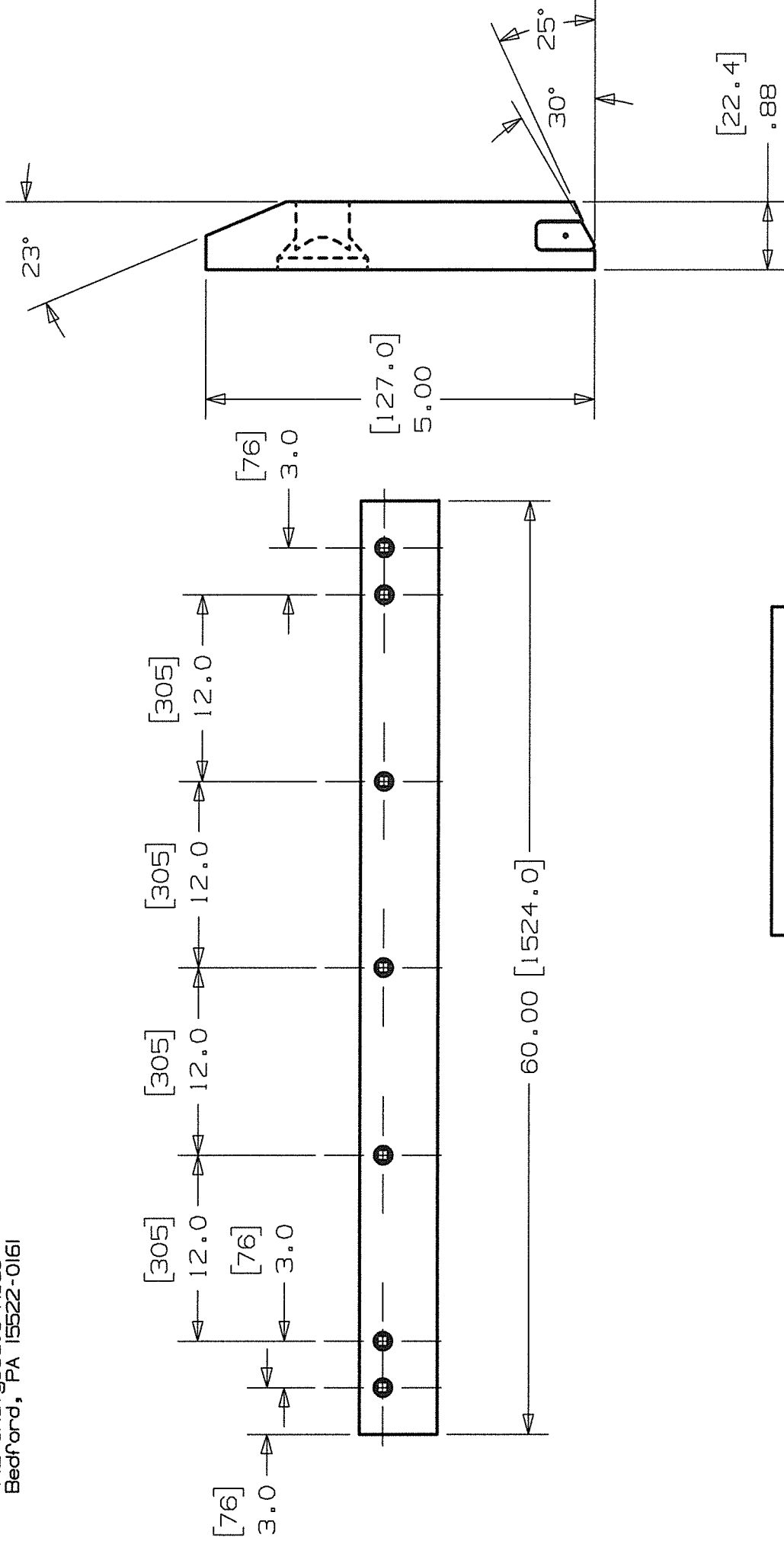
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| | | | |
| GDR48A0140 .88 X 5 X 48 GRADER BLADE | | | |
| Drawn | MEDALS | 2015-12-01 | Scale |
| Checked | ROSEDS | 2015-12-01 | NONE |
| Approved | ROSEDS | 2015-12-01 | |
| Cust. Part # | | | |
| Cust. Dwg. # | | | |
| Quote No. | | | |
| Order No. | | | |
| Reference | | | |
| Type | PRODUCT | Sheet 1 of 1 | |
| DRAWING NUMBER | 4325866.001 | VER. | 03 |
| | | Part Size | A3 |



KENNAMETAL

Mining and Construction Division
442 Chalfonte Road
Bedford, PA 15522-0161

20050CT25



1718071
GDR60A0143
7/8 X 5 X 60 5/8 HOLE
GRADER BLADE

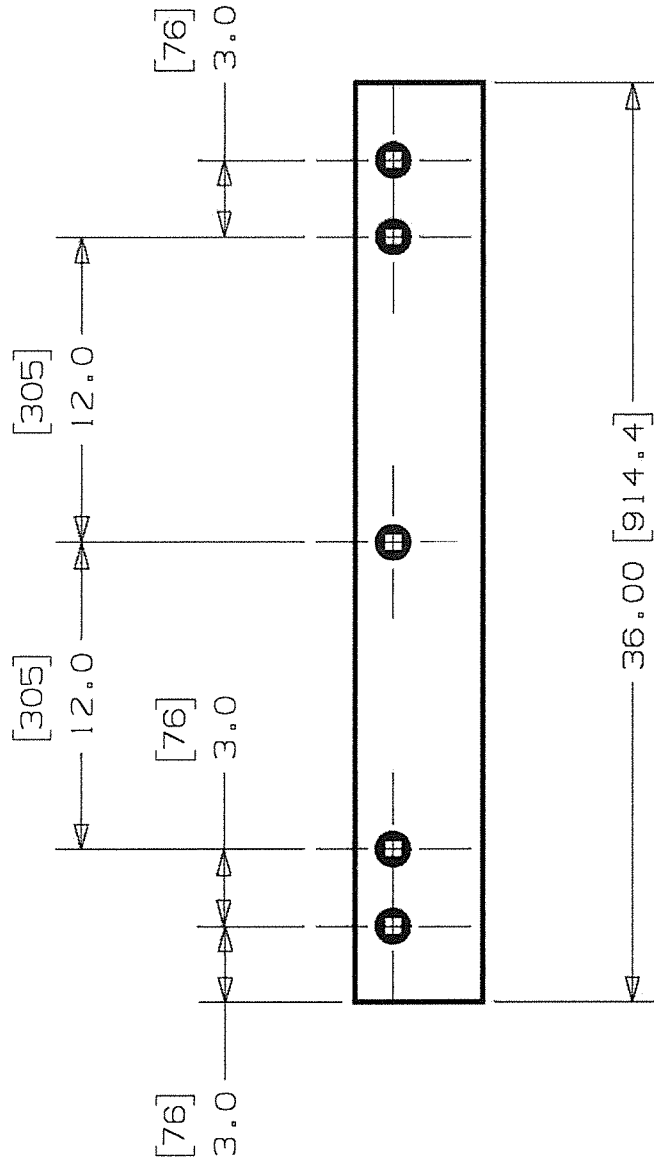
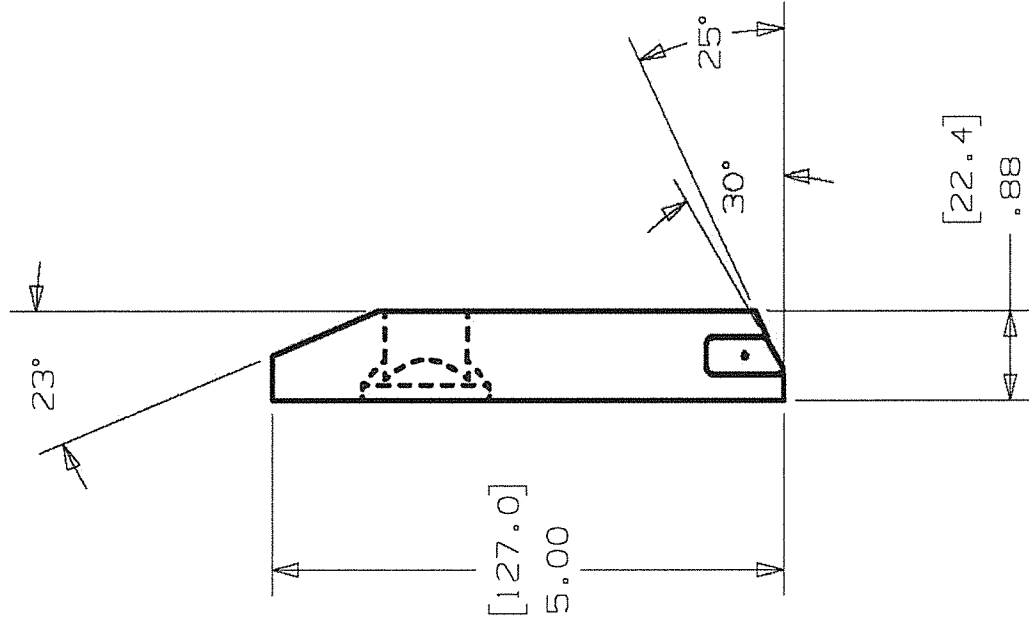
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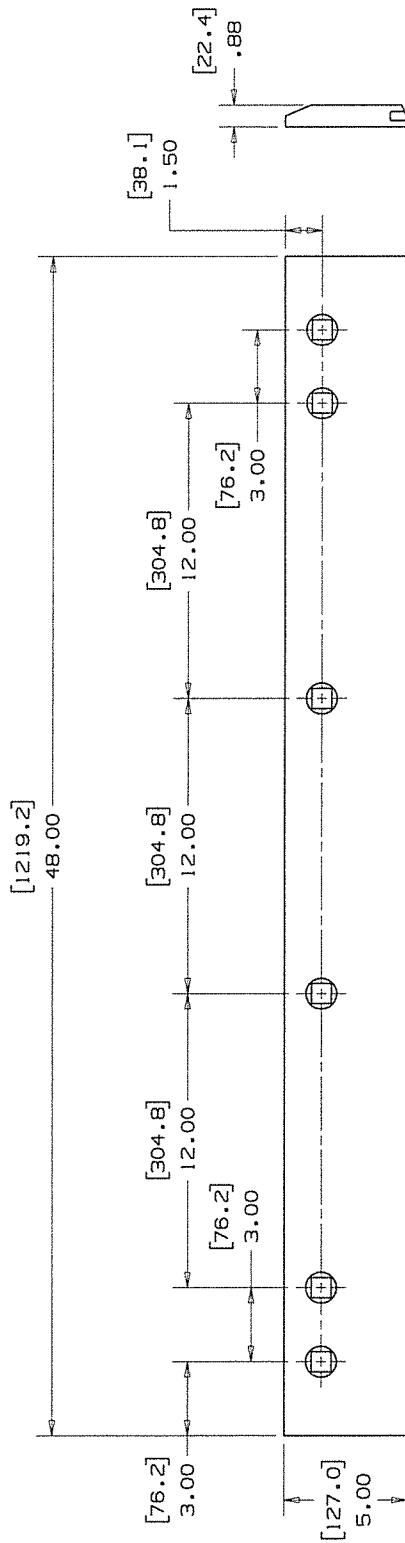
Mining and Construction Division
442 Chalfonte Road
Bedford, PA 15522-0161

20050CT25



5090648
GDR36B0139
7/8 X 5 X 36 3/4 HOLE
GRADER BLADE

ND DOT Part# 76006-366009



MATERIAL
THIRD ANGLE PROJECTION

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GDR48A0141

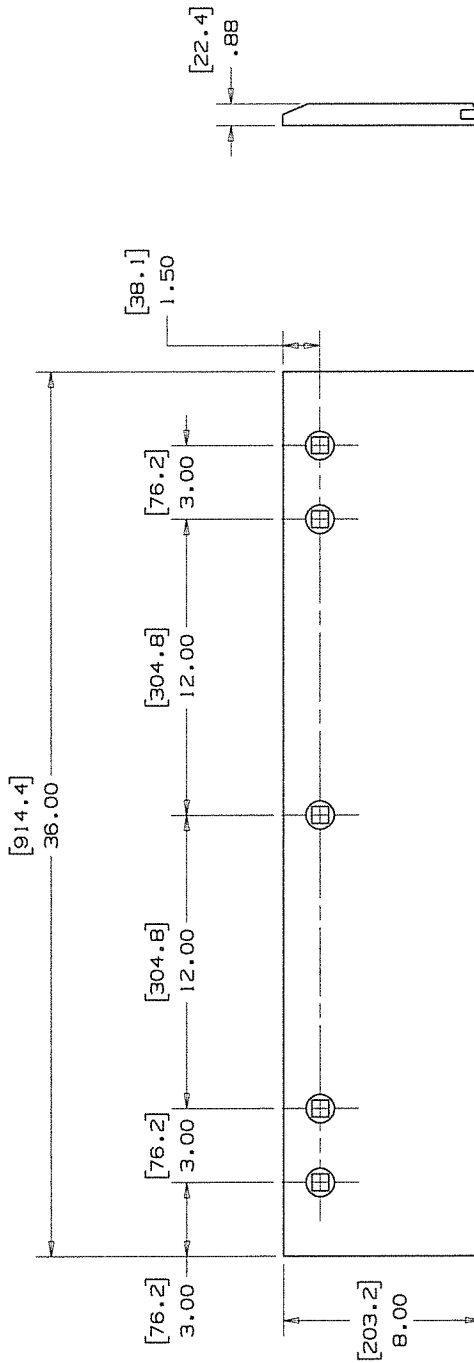
87 X 5 X 48
GRADER BLADE

| | | | |
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| Order No. | | | |
| Reference | | | |
| Type PRODUCT | | Sheet 1 of 1 | |
| DRAWING NUMBER | | VER. | DWG SIZE |
| MP43255866.00 | | 03 | A3 |

ND DOT Part# 76006-366108 (3/4 Bolt)

SAP # 5090699

Task No. T577724



KENNAMETAL®

.88 X 8 X 36
GRADER BLADE

| | Drawn | MEDALS | 2015-12-01 | Scale |
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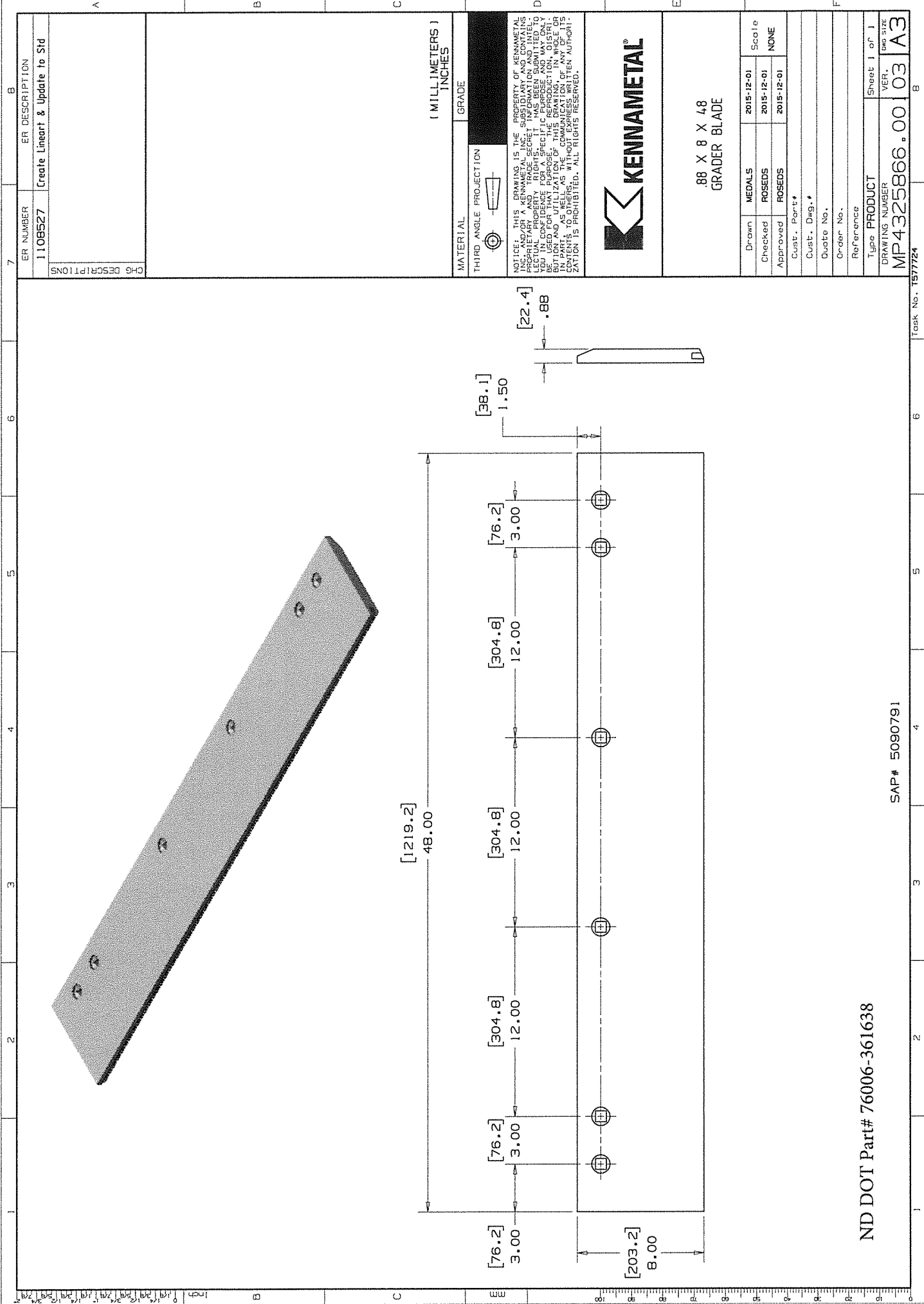
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| Type | PRODUCT | Sheet 1 of 1 |
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ND DOT Part# 76006-361604

SAP # 5090694

Task No. T577724

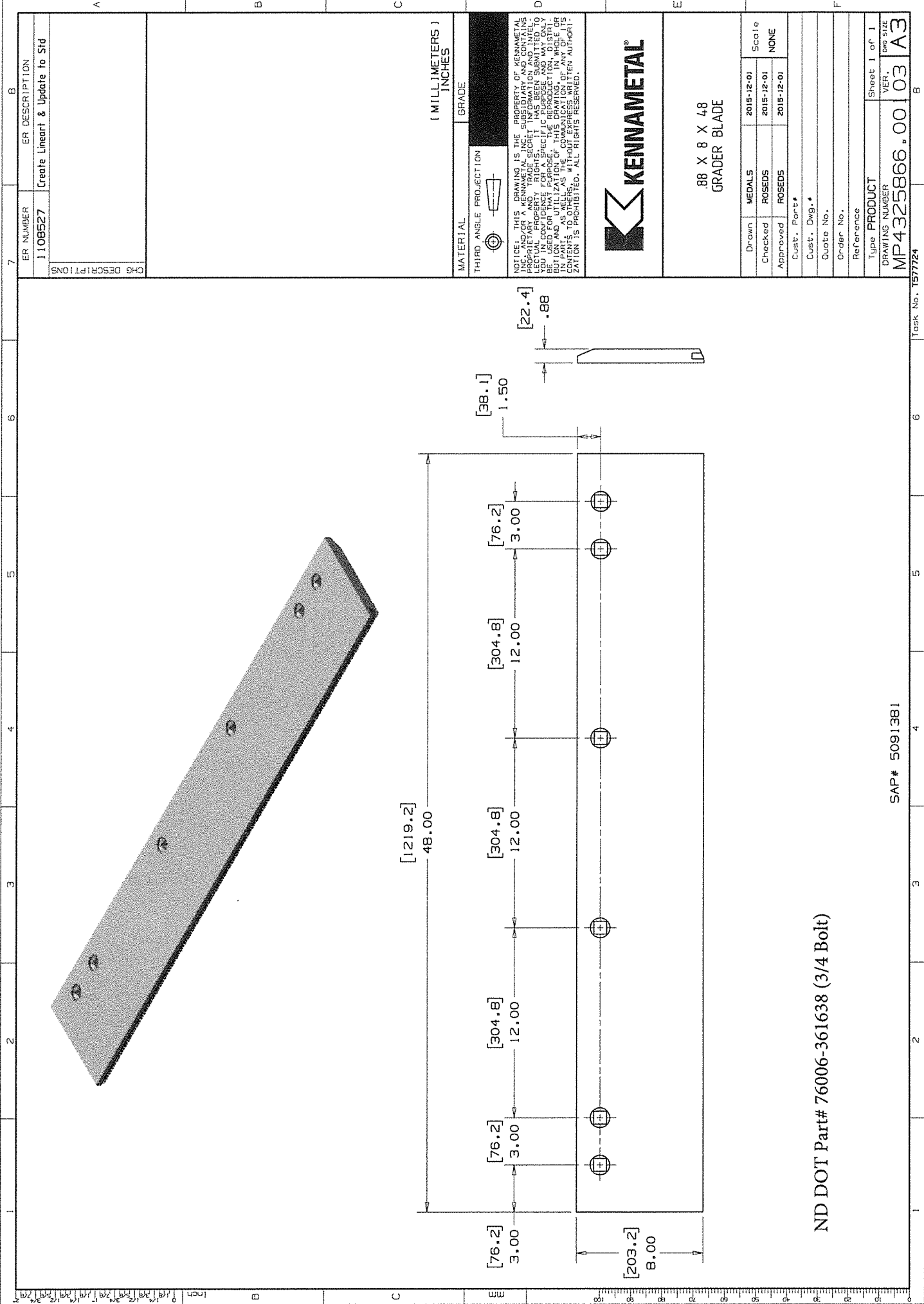


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| 7 | | 8 | |
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| OHG DESCRIPTIONS | | | |
| MATERIAL THIRD ANGLE PROJECTION | | GRADE (MILLIMETERS) INCHES | |
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| 88 X 8 X 48 GRADER BLADE | | | |
| Drawn | MEDALS | 2015-12-01 | Scale |
| Checked | ROSEDS | 2015-12-01 | NONE |
| Approved | ROSEDS | 2015-12-01 | |
| Cust. Part # | | | |
| Cust. Dwg. # | | | |
| Quote No. | | | |
| Order No. | | | |
| Reference | | | |
| Type PRODUCT | | Sheet 1 of 1 | |
| DRAWING NUMBER | | VER. | |
| MP4325866.00 | | 03 | |
| A3 | | | |

ND DOT Part# 76006-361638

SAP # 5090791

Task No. 1577724



ND DOT Part# 76006-361638 (3/4 Bolt)

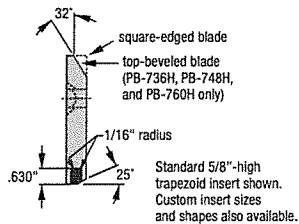
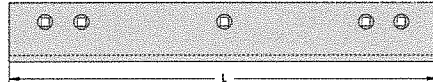
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Task No. 1577724

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| GRADE | | [MILLIMETERS] INCHES | |
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| KENAMETAL® | | | |
| .88 X 8 X 48 GRADER BLADE | | | |
| Drawn | MEDALS | 2015-12-01 | Scale |
| Checked | ROSEDS | 2015-12-01 | NONE |
| Approved | ROSEDS | 2015-12-01 | |
| Cust. Part# | | | |
| Cust. Dwg.# | | | |
| Quote No. | | | |
| Order No. | | | |
| Reference | | | |
| Type PRODUCT | | Sheet 1 of 1 | |
| DRAWING NUMBER | | VER. | |
| MP4325866.00 | | 03 A3 | |

Tungsten Carbide-Edged Snowplow Blades and Accessories

- Equipped with genuine Kennametal tungsten carbide inserts.
- Unparalleled hardness and fracture/wear resistance.
- Our brazing expertise ensures that inserts stay firmly in place — dramatically lowering your replacement part inventory and overall operating costs.
- Available in an unmatched variety of styles and sizes — each backed by the road maintenance industry's best quality assurance program.
- Sold in sections preventing the need to replace an entire blade — replace only the damaged segment.



Significantly outlasts all steel blades!

Snowplow Blades • Ordering Information

| length | catalog number | material number | blade dimensions | bolt hole distance from top | hole spacing | lbs |
|---|------------------------|-----------------|------------------|-----------------------------|-------------------------|-----|
| Standard-Size 5/8" Carbide Inserts | | | | | | |
| 24" | PB-124 | 1011840 | 3/4 x 6 x 24" | 2" | 3-3-12-3-3" | 31 |
| 28" | PB-128C | 1011805 | 3/4 x 6 x 28" | 2" | 6-8-8-6" | 36 |
| 36" | PB-136 | 1011807 | 3/4 x 6 x 36" | 2" | 3-3-12-12-3-3" | 47 |
| 36" | PB-136H | 1011848 | 7/8 x 5 x 36" | 1-1/2" | 3-3-12-12-3-3" | 45 |
| 36" | PB-236 | 1011842 | 3/4 x 6 x 36" | 1-1/2" | 3-3-12-12-3-3" | 47 |
| 36" | PB-436 | 1011859 | 3/4 x 5 x 36" | 1-1/2" | 3-3-12-12-3-3" | 38 |
| 36" | PB-736H top beveled | 1011883 | 7/8 x 5 x 36" | 1-1/2" | 3-3-12-12-3-3" | 40 |
| 42" | PB-142 | 1011815 | 3/4 x 6 x 42" | 2" | 3-3-12-12-6-3-3" | 53 |
| 44" | PB-144E | 1011811 | 3/4 x 6 x 44" | 2" | 2-8-8-8-8-2" | 57 |
| 44" | PB-144C | 1011809 | 3/4 x 6 x 44" | 2" | 6-8-8-8-8-6" | 57 |
| 48" | PB-148 | 1011813 | 3/4 x 6 x 48" | 2" | 3-3-12-12-12-3-3" | 62 |
| 48" | PB-148H | 1011854 | 7/8 x 5 x 48" | 1-1/2" | 3-3-12-12-12-3-3" | 60 |
| 48" | PB-248 | 1011844 | 3/4 x 6 x 48" | 1-1/2" | 3-3-12-12-12-3-3" | 62 |
| 48" | PB-448 | 1011861 | 3/4 x 5 x 48" | 1-1/2" | 3-3-12-12-12-3-3" | 51 |
| 48" | PB-748H top beveled | 1011885 | 7/8 x 5 x 48" | 1-1/2" | 3-3-12-12-12-3-3" | 55 |
| 60" | PB-160C | 1011819 | 3/4 x 6 x 60" | 2" | 6-8-8-8-8-8-6" | 77 |
| 60" | PB-760H top beveled | 1011887 | 7/8 x 5 x 60" | 1-1/2" | 3-3-12-12-12-12-3-3" | 70 |
| Heavy-Duty 3/4" Carbide Inserts | | | | | | |
| 36" | PB-336 | 1011968 | 3/4 x 6 x 36" | 1-1/2" | 3-3-12-12-3-3" | 47 |
| 36" | PB-336H | 1011924 | 7/8 x 5 x 36" | 1-1/2" | 3-3-12-12-3-3" | 47 |
| 36" | GDR36A0138 top beveled | 1011928 | 7/8 x 5 x 36" | 1-1/2" | 3-3-12-12-3-3" | 45 |
| 48" | PB-348 | 1011970 | 3/4 x 6 x 48" | 1-1/2" | 3-3-12-12-12-3-3" | 62 |
| 48" | PB-348H | 1011926 | 7/8 x 5 x 48" | 1-1/2" | 3-3-12-12-12-3-3" | 62 |
| 48" | GDR48A0140 top beveled | 1011930 | 7/8 x 5 x 48" | 1-1/2" | 3-3-12-12-12-3-3" | 57 |
| 60" | PB-360 | 1011972 | 3/4 x 6 x 60" | 1-1/2" | 3-3-12-12-12-12-3-3" | 77 |
| 72" | PB-372 | 1011974 | 3/4 x 6 x 72" | 1-1/2" | 3-3-12-12-12-12-12-3-3" | 92 |
| 57" Tall Bullnose Inserts | | | | | | |
| 36" | PB875362470182 | 3323727 | 7/8 x 5 x 36" | 1-1/2" | 3-3-12-12-3-3" | 42 |
| 48" | PB875482470183 | 3323726 | 7/8 x 5 x 48" | 1-1/2" | 3-3-12-12-12-3-3" | 55 |
| 60" | PB875603470217 | 3505710 | 7/8 x 5 x 60" | 1-1/2" | 3-3-12-12-12-12-3-3" | 72 |
| Made-To-Order Inserts | | | | | | |
| 44" | 7/8X6X44W/.81X40DEG | 1157211 | 7/8 x 6 x 44" | 2" | 2-(10) 4" spaces-2 | 64 |
| 48" | 7/8X6X48W/.81X40DEG | 1157212 | 7/8 x 6 x 48" | 2" | 4-(5) 8" spaces-4 | 71 |
| 56" | PB876561440148 | 3007351 | 7/8 x 6 x 56" | 2" | 4-(6) 8" spaces-4 | 79 |

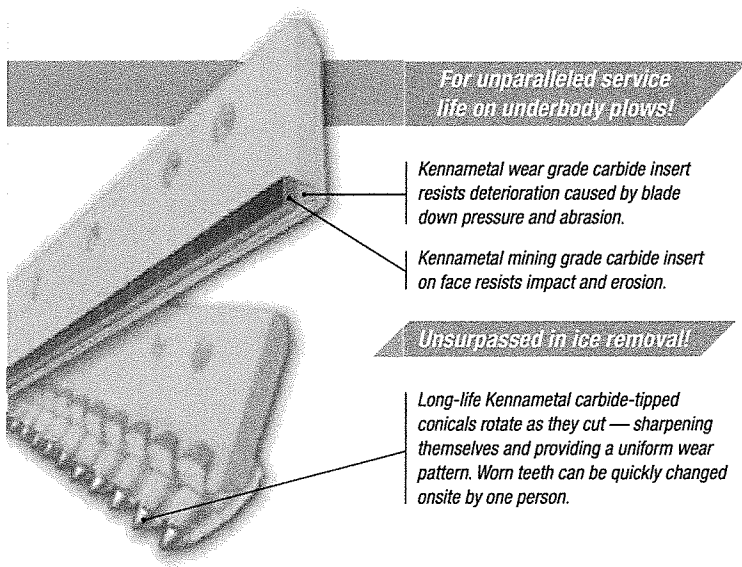
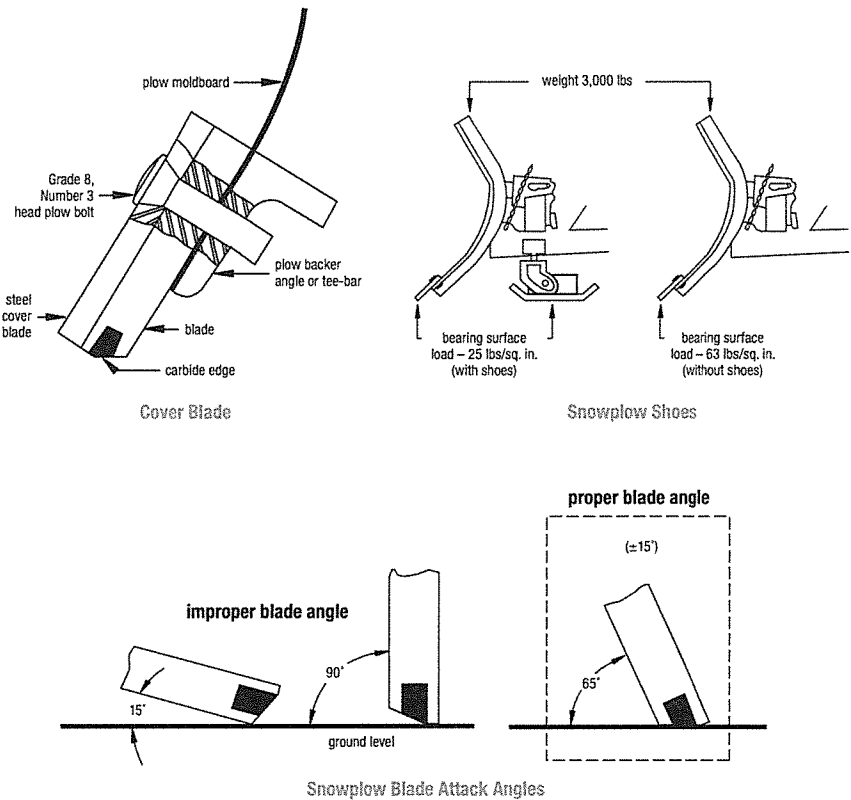
Snowplow Blades and Shoes Operating Tips

To significantly reduce blade chatter and bolt failure, we highly recommend Grade 8, Number 3 head plow bolts with self-locking nuts for mounting our blades.

We also recommend use of a “cover blade” — a steel section bolted to the front of the carbide blade — to reinforce your moldboard, absorb shock, and greatly diminish steel erosion around the carbide insert area. Cover blades can improve blade life by as much as 30%.

Snowplow shoes can be employed with our snowplow blades to provide uniform plow frame weight distribution.

Lastly, we strongly suggest that you set your snowplow blade attack angle at 65° from the ground. A higher or lower angle can result in increased vibration and decreased wear life.



Tungsten Carbide Grader and Scarifier Blades

- Our proprietary dual carbide-edge grader blades stay straight, maintain a clean/sharp cutting edge, and stop crowning.
- Kennametal scarifier blades feature replaceable carbide tools that rotate as they cut, easily penetrating ice and hard-packed gravel roads — enabling you to quickly bring embedded rock back to the surface.

Safety Note

Kennametal Inc. is concerned with the safe use of its products. To help avoid personal injury or damage to equipment, please:

- Wear all appropriate and approved personal protection equipment.
- Be sure to use proper blade size.
- Use Grade 8, Number 3 head plow bolts; use proper size and torque.
- Inspect blades and moldboard prior to each plowing run.
- Do not plow at excessive speeds.

Kennametal, the stylized K, I.C.E. Series, and KenCast are trademarks of Kennametal Inc., and are used as such herein.

Fisher, Meyer, The Boss, and Western are trademarks of their respective companies, and are used as such herein.



You can't do a job — and do it right — without tools that are up to the challenge.

Kennametal is continually engineering products that will provide exceptional performance on snow and ice removal. Our blades come in a wide variety of styles and sizes each backed by the road maintenance industry's best quality assurance program.

Kennametal uses the best in engineering to give you unsurpassed quality and performance.





KENNAMETAL INC.
MINING AND CONSTRUCTION DIVISION

RECOMMENDED SPECIFICATIONS FOR
I.C.E. (Isolated Carbide Edge)
SNOWPLOW BLADE CUTTING EDGES (BLADES)

The following specifications have been developed by Kennametal Inc. to describe I.C.E. style blades. These specifications are recommended to be used by State and Municipal Highway Departments to procure and inspect I.C.E. style blades to insure they receive a superior quality product. The blades are to be manufactured according to the attached drawings using materials conforming to the following:

1. BLADE

- 1.1 The blade shall be fabricated using flat hot-rolled finished steel to meet or exceed specifications for SAE 1040-1045 type steel.
- 1.2 Punching shall be 11/16" square holes with countersink to receive 5/8" diameter plow bolts. Location and spacing of the holes shall be as specified by the user. For Standard Highway Punch style spacing refer to the attached drawing.
- 1.3 Center of bolt holes shall be in line within 1/32" of established horizontal centerline and 1/16" of established vertical centerline.

2. TUNGSTEN CARBIDE INSERTS

- 2.1 The inserts shall be a high shock WC grade of tungsten carbide with (10.5 to 12.5) percent cobalt content.

Density: 13.9 Minimum to 14.6 Maximum

Hardness: 86.8 Minimum to 89.2 Maximum
Rc. "A" Scale or Equivalent based on appropriate coercive force correlation.

The Maximum Allowable Porosity: (Based on testing in accordance with ASTM designation B276-79) shall be:

A08
B04
C00

- 2.2 The carbide insert manufacturer to furnish certification to the State Highway Department that the inserts meet the specifications as set forth in 2.1.
- 2.3 The inserts shall be a cylindrical design with a dome-shaped end of the following dimensions:
- Height: .753" +/- .007 (long side)
- Diameter: .523" +/- .004
- 2.4 A metallurgical evaluation of the carbide insert shall show no evidence of cross grade contamination. Evaluation to be based on a photomicrograph of a polished and etched specimen at 500x magnification.

3. BRAZING

- 3.1 The brazing material shall be a high strength alloy type.
- 3.2 The tungsten carbide inserts shall be positioned in holes drilled in the center of the thickness of the blade and shall be spaced .75" center to center along the entire length of each cutting edge section.
- 3.3 The inserts shall be brazed on all sides consistent with sound brazing practice with no evidence of voids in the braze joint.

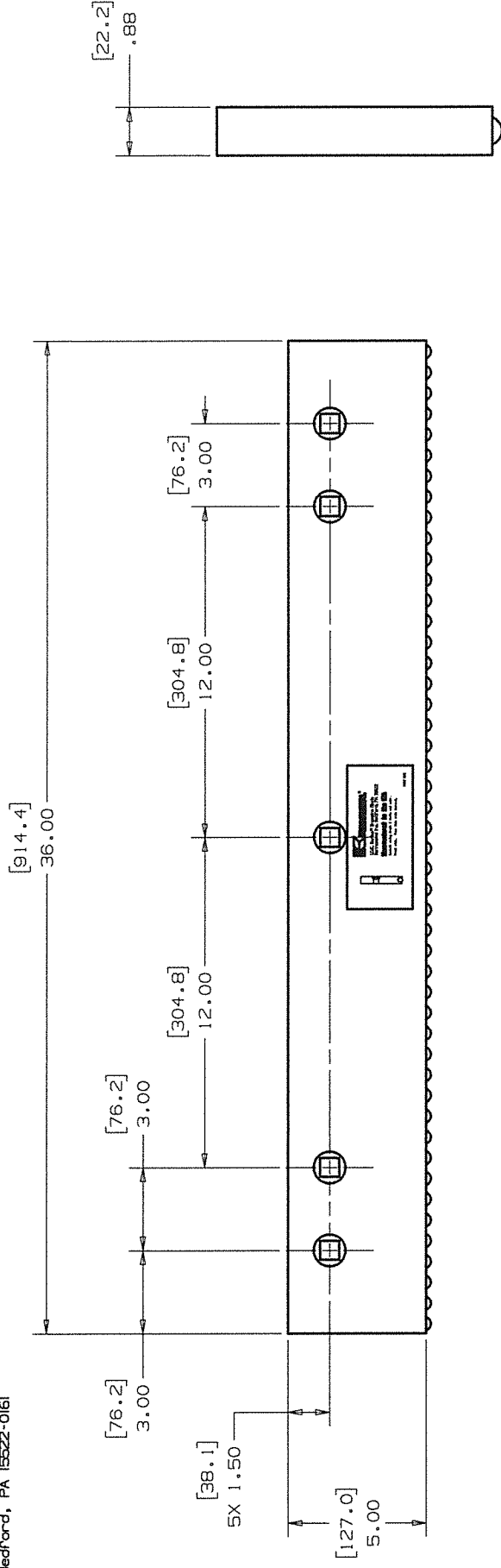
SPECIFIC REQUIREMENTS

- 3.4 The finished blade section shall be free of warpage and longitudinal deviation not to exceed 1/8" in a four-foot blade section.
- 3.5 Each blade section shall be identified with manufacturer's identification stamp into the metal or on a label in a non-wear area of the blade.



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Bedford, PA 15622-0161

2011-11-10



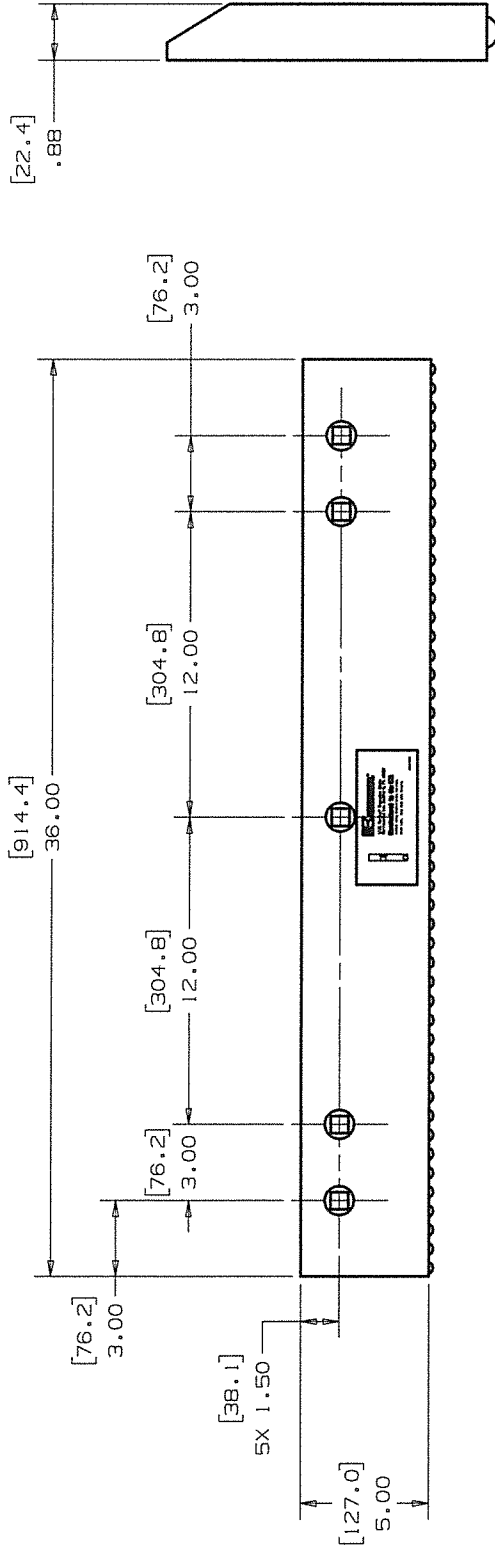
1553693
PB536
7/8 X 5 X 36
ICE SNOWPLOW BLADE
ASSEMBLY W/O BEVEL

ND DOT Part#
76006-653693
Square Top



Mining and Construction Division
442 Chalfont Road
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2011-11-11



ND DOT Part#
76006-653693
Beveled Top

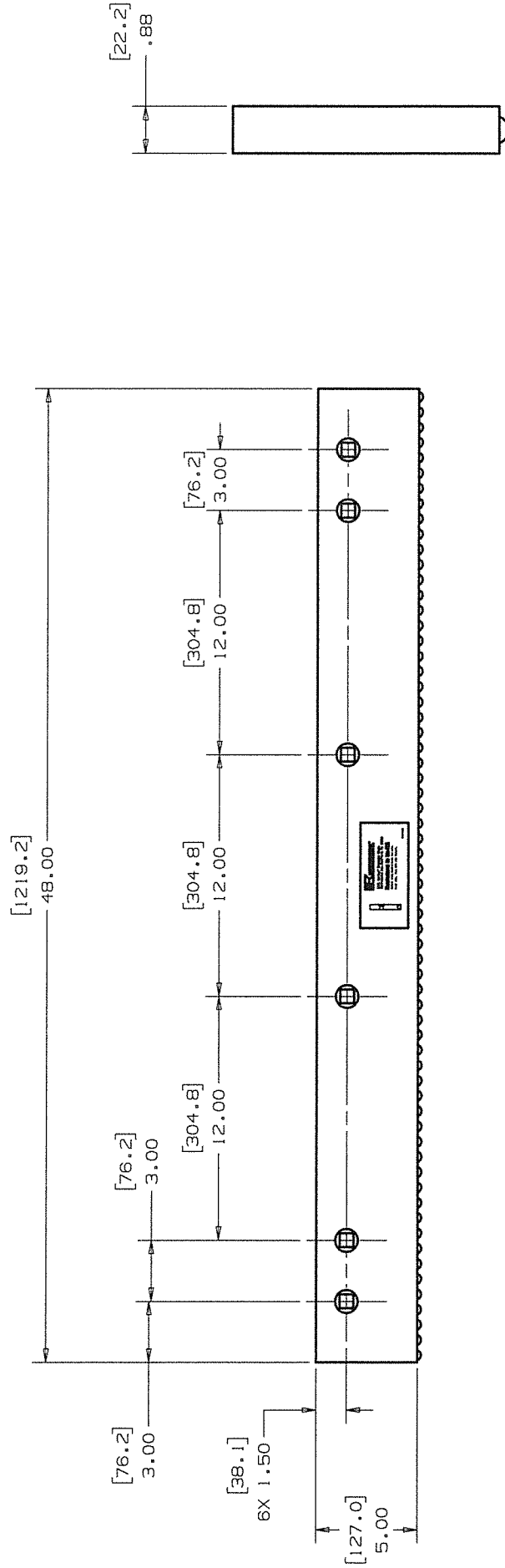
2035932
PB636
7/8 X 5 X 36
I.C.E GRADER PLOW BLADE
ASSEMBLY



KENNAMETAL

Mining and Construction Division
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2011-11-10



ND DOT Part#
76006-654894
Square Top

1553694
PB548
7/8 X 5 X 48
ICE SNOWPLOW BLADE
ASSEMBLY W/O BEVEL

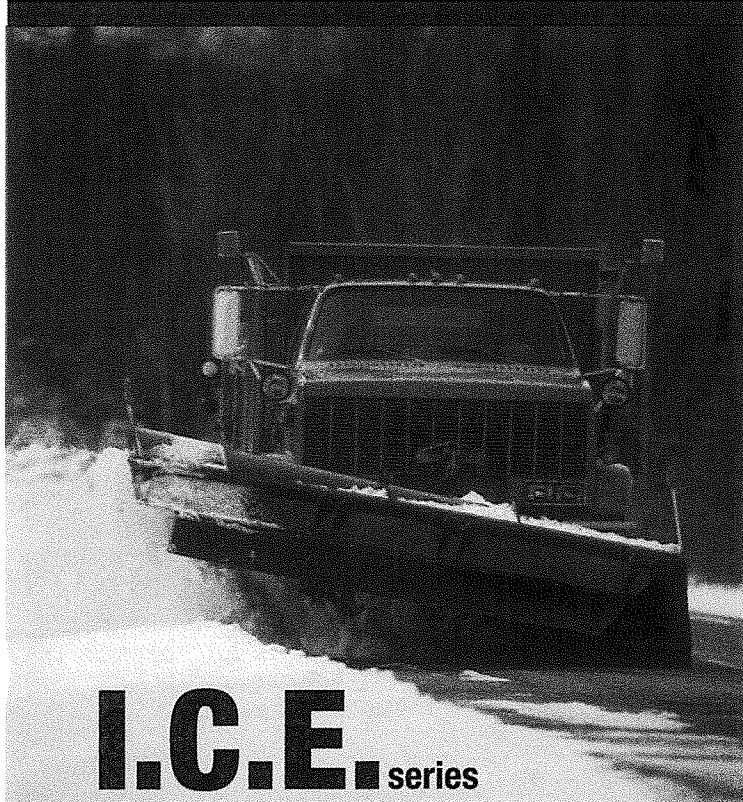
PLM # 4888106

Mining and Construction Division
442 Chalybeate Road
Bedford, PA 15522-0161

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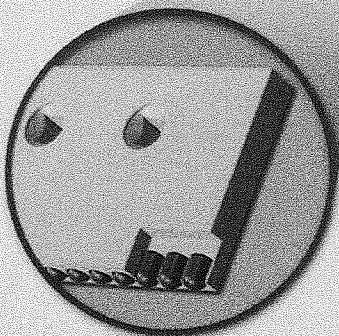
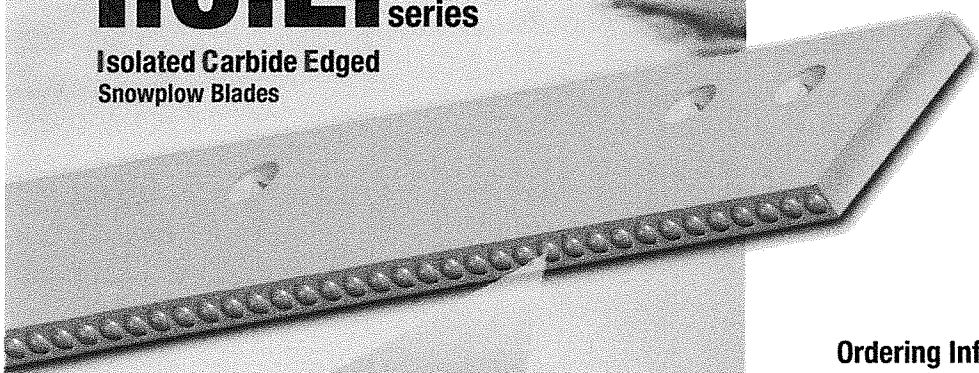
2035931
PB648
7/8 X 5 X 48
I.C.E GRADER PLOW BLADE
ASSEMBLY

PLM # 4888367



I.C.E. series

Isolated Carbide Edged
Snowplow Blades



*Lasts up to three times longer than standard
carbide-edged styles in impact conditions!*

Kennametal I.C.E.-Series™ Isolated Carbide-Edged Blades...

*...engineered specifically to last exceptionally long in even
the most challenging road conditions!*

- especially effective in applications involving imbedded lane markers and rumble strips — greatly reducing blade breakage!
- ideal for high-speed plowing over roads with excessive joints and cracks — uneven surfaces, too!
- ultra-durable, dome-shaped carbide inserts are securely mounted and strategically isolated from one another to provide optimum fracture resistance throughout the entire blade length!
- available in 3' and 4' (7/8" -thick; 5"-high) sections that can be easily installed and rotated on the plow for balanced wear throughout a season!
- patented design!

Ordering Information – I.C.E. Blades

| Blade Length (inch) | Catalog Number | Material Number | Blade Dimensions (inch) | Bolt Hole Distance from Top | Hole Spacing (inch) | Weight (lbs.) |
|-------------------------------|----------------|-----------------|-------------------------|-----------------------------|---------------------|---------------|
| Square Top Edge for Snowplows | | | | | | |
| 36" | PB-536 | 1553693 | 7/8 x 5 x 36 | 1-1/2 | 3-3-12-12-3-3 | 45 |
| 48" | PB-548 | 1553694 | 7/8 x 5 x 48 | 1-1/2 | 3-3-12-12-12-3-3 | 62 |
| Top Edge Beveled for Graders | | | | | | |
| 36" | PB-636 | 2035932 | 7/8 x 5 x 36 | 1-1/2 | 3-3-12-12-3-3 | 45 |
| 48" | PB-648 | 2035931 | 7/8 x 5 x 48 | 1-1/2 | 3-3-12-12-12-3-3 | 62 |
| 60" | PB-660 | 3384812 | 7/8 x 5 x 60 | 1-1/2 | 3-3-12-12-12-12-3-3 | 72 |

**Rounded-tip carbide inserts deliver
exceptional penetration performance
in even the hardest-packed snow!**



KENNAMETAL INC.
MINING AND CONSTRUCTION
DIVISION

RECOMMENDED SPECIFICATIONS
FOR
I.C.E. (Isolated Carbide Edge) Style
Blade Savers and Curb Guards

The following specifications have been developed by Kennametal Inc. to describe Curb Guards. These specifications are recommended for use by State and Municipal Highway Departments to procure and inspect these products to insure they receive a superior quality product. The parts are to be manufactured according to the attached drawings using materials conforming to the following:

1. BLADE

- 1.1 The main flat blade portion shall be fabricated using 1" thick flat hot-rolled finished steel to meet or exceed specifications for A36 or 1020 type steels.
- 1.2 Punching shall be 11/16" square holes with countersink to receive 5/8" diameter plow bolts. Location and spacing of the holes shall be as specified by the user. For "Standard Highway Punch" style spacing refer to the attached drawing. The holes of the Curb Guard will be countersunk on both sides so that the part can be used for either a "right hand" or "left hand" part.
- 1.3 Center of boltholes shall be in line within 1/32" of established horizontal centerline and 1/16" of established vertical centerline

2. KENCAST WEAR GUARD

The end guard to be made of Kennametal Kencast material--a composite combining the exceptional hardness of Kennametal cemented tungsten carbide with the toughness of air-hardening steel to resist wear in severe operating conditions. The type and amount of steel matrix and tungsten carbide in a composite varies.

- 2.1 The ranges for the composite ingredients:
- | | |
|----------------------------------|-----------|
| Tungsten Carbide | 86-91 HRA |
| Matrix Steel (bonded to carbide) | 52-58 HRC |
| Base Steel | 38-50 HRC |
- 2.2 Air-hardening (Cr-Ni-Mo) steel is used. During the metallurgical bonding, the matrix steel (around the carbide particles) alloys with tungsten and cobalt.
- 2.3 Tungsten carbide granules are approximately ¼-inch-thick in the wear surface.
- 2.4 Steel Matrix (figures are weight%)
- | | | | |
|-----------|---------|------------|---------|
| Carbon | .28-.35 | Nickel | 1.0-2.0 |
| Manganese | 1.5-2.0 | Chrome | .80-1.2 |
| Silicon | 1.3-1.7 | Molybdenum | .20-.30 |
| Aluminum | .08-.15 | | |

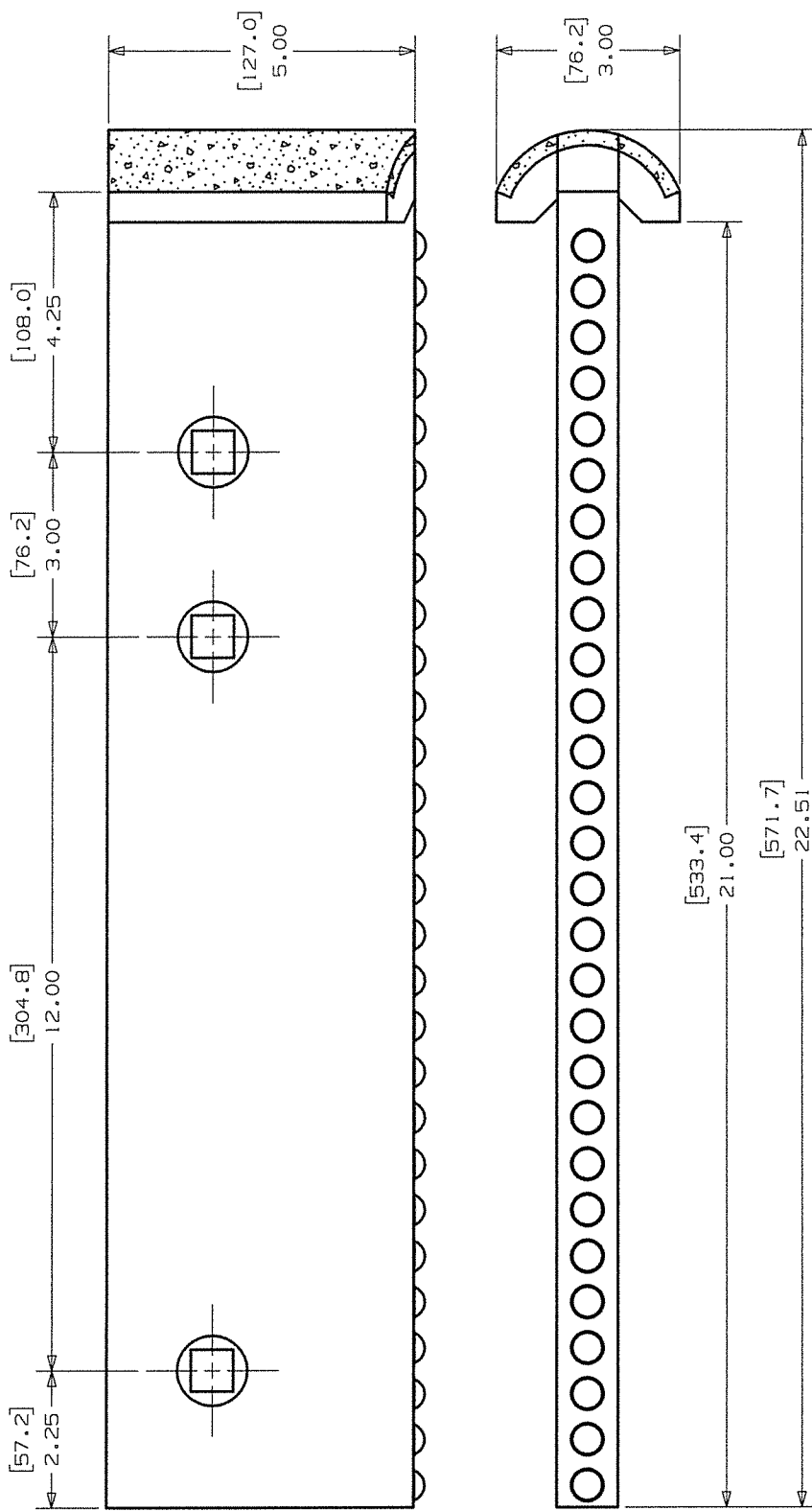
3. SPECIFIC REQUIREMENTS

- 3.1 Each blade section shall be identified with manufacturer's identification stamp into the metal or on a label in a non-wear area of the blade.



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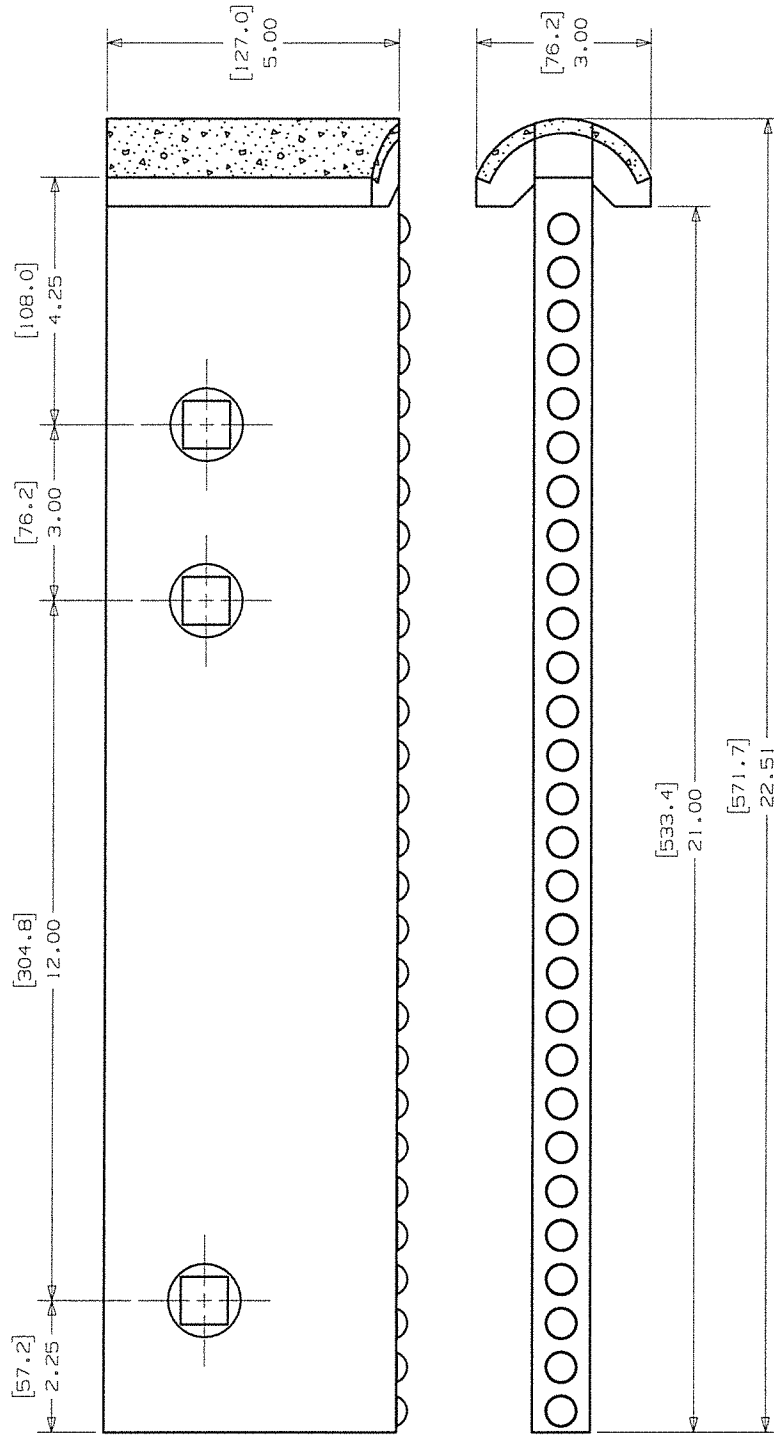
I.C.E. Curb Guard
5/8 Bolt

3556530
KCWB - 0592
ICE BLADE GUARD
ASSEMBLY



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Bedford, PA 15522-0151

29 JAN 2008

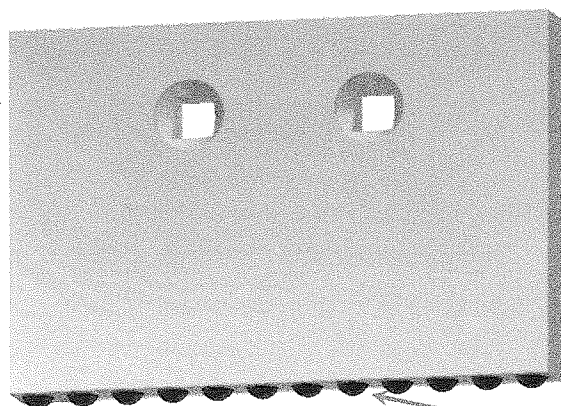


I.C.E. Curb Guard
(3/4 Bolt)

9528929
KCWB-0592-3/4 H
ICE BLADE GUARD
ASSEMBLY

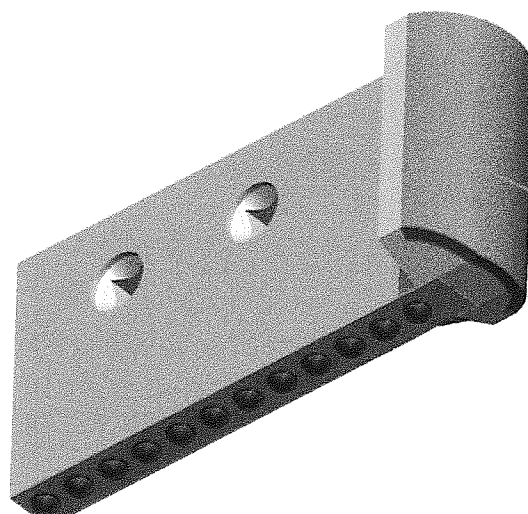
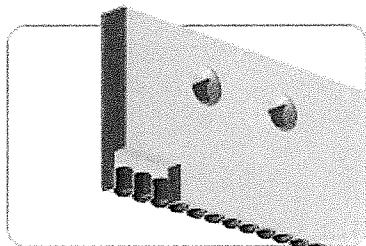
Kennametal's I.C.E. style Blade-Savers

- Blade Savers mount over standard blades using the same bolt holes
- Blade Savers can be strategically positioned at high wear areas of moldboard
- Blade Savers incorporate Kennametal's exclusive I.C.E. (Isolated Carbide Edge) tungsten carbide insert technology to increase wear life while resisting breakage
- Blade Savers are available in a variety of sizes and bolt patterns to fit most popular plow and blade styles



I.C.E. Blade Saver

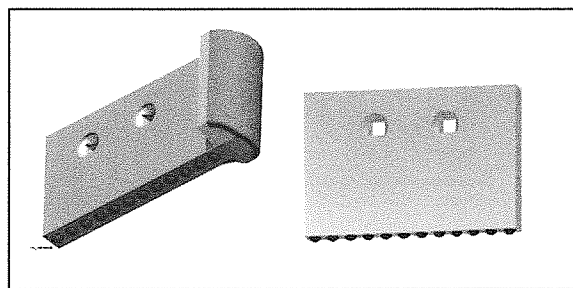
I.C.E. Blades Savers and Curb Guards feature bullet shaped, individually spaced carbide inserts for maximum breakage resistance



I.C.E. Blade Saver and Curb Guard combination

I.C.E. Curb Guards use tough KenCast composite material to protect the blade end from the curb. KenCast is a combination of tungsten carbide granules in a tough and wear resistant steel matrix manufactured in our own foundry. The bottom edge is protected with I.C.E. inserts.

Kennametal's I.C.E. style Blade-Savers & Curb Guards



WHY USE BLADE SAVERS:

- You know your blades don't wear evenly. Blade savers enable you to strategically reinforce the high wear areas of a plow blade arrangement, to balance the wear across the entire length of the blade moldboard. We have styles available that can be used with either standard steel or tungsten carbide insert style blades. The Blade Savers mount directly over your blade/cutting edge using the same boltholes.
- Blade savers also extend the overall wear life of the blade. Because the wear is balanced you get optimal life out of the base blade. You don't need to scrap unused portions because of uneven wear. The added thickness of the blade saver also provides more surface area to reduce down pressure on the blade providing increased wear life where you need it.
- Reduce or eliminate the need for moldboard shoes.
- Reduce downtime by reducing how often you need to change blades.

WHY USE CURB GUARDS:

- Curb Guards protect the ends of the moldboard from damage and wear resulting from contact with curbs and concrete barriers. A relatively small investment in a Curb Guard can prevent costly, major moldboard repair.

WHY USE KENNAMETAL BRAND BLADE SAVERS AND CURB GUARDS:

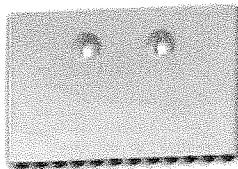
- **Superior materials:** Kennametal Blade Savers and Curb Guards utilize **tungsten carbide** for wear resistance, which is significantly harder than a typical chrome carbide hardfacing or the hardened steels which are utilized in competitive products.
- **Superior design:** Kennametal Blade Savers incorporate our patented I.C.E. (Isolated Carbide Edge) insert technology. The I.C.E. design uses "bullet" shaped inserts in individual pockets, separated by tough steel to greatly improve breakage resistance.
- The I.C.E. edge design is more aggressive than a flat edge, and enables you to penetrate hard packed ice and snow quickly. Competitive models can be bulky and blunt, causing the plow to ride over rather than cut in to hard pack.
- The radiused "curb side" portion of Kennametal curb guards feature our exclusive KenCast material. KenCast is composed of wear resistant tungsten carbide cast into a tough and wear resistant steel matrix. The entire outer edge of the guard is protected by tungsten carbide so you'll have carbide wear you need it, no matter what the cast angle of your plow is. The radiused edge design is beefier than wrap around styles, which have thin metal at the most critical areas.
- The boltholes in our Curb Guards are countersunk on both faces. This enables them to be used on either the right or left hand sides of the moldboard simply by turning them over.
- **Superior Quality and Service:**
 - Our Guards and Blade Savers are available in the most popular sizes and bolt patterns.
 - You can order with confidence because the products are backed by Kennametal- the industry leader for high quality carbide blades and accessories.
 - 100% MADE IN USA

Presenting

Kennametal I.C.E. Series™ Center and End Blade Savers featuring genuine Kennametal tungsten carbide at the point of impact — for ultimate wear resistance and moldboard protection.

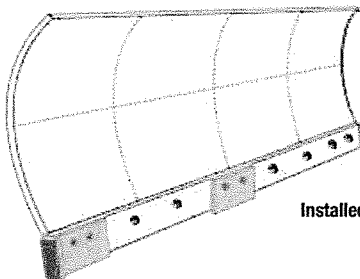
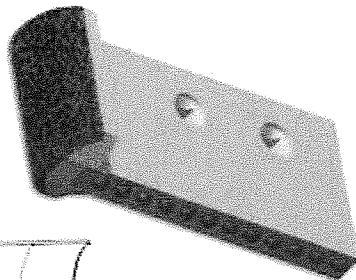
- Position at the highest wear areas of your moldboard to ensure substantially improved blade performance and a straight edge, in even the hardest-packed ice and snow.
- Simply mount over your blades, on either side of the moldboard, using the same bolt holes.
- Vastly superior to competitive chrome-carbide hardfaced or hardened-steel offerings.
- Eliminates need for moldboard shoes.
- Dome-shaped (no sharp corners to chip), individually spaced carbide inserts deliver maximum breakage defense.
- End model incorporates KenCast™ tungsten carbide material to safeguard the blade end from curb contact, saving you on replacement inventory and labor — no matter the cast angle of your plow.
- Available in a wide array of sizes and bolt patterns to fit virtually all plow and blade designs.

Drastically reduce downtime by extending blade life!



I.C.E. Center Blade Saver

I.C.E. End Blade Saver



Installed Blade Savers

I.C.E. Blade Savers • Ordering Information

| part number | blade height | hole spacing | gauge line | length | bolt size |
|---------------------------------------|--------------|--------------|------------|--------|-----------|
| End Blade Savers 2-Bolt Styles | | | | | |
| 2040087 | 5" | 3-3" | 1.5" | 10.5" | 5/8" |
| 2040088 | 5" | 3-3" | 1.5" | 10.5" | 3/4" |
| 2040089 | 6" | 3-3" | 1.5" | 10.5" | 5/8" |
| 2040090 | 6" | 3-3" | 1.5" | 10.5" | 3/4" |
| 2040091 | 6" | 3-3" | 2" | 10.5" | 5/8" |
| 2040092 | 6" | 3-3" | 2" | 10.5" | 3/4" |
| 2040123 | 8" | 3-3" | 1.5" | 10.5" | 5/8" |
| 2040124 | 8" | 3-3" | 1.5" | 10.5" | 3/4" |
| 2040125 | 8" | 3-3" | 2" | 10.5" | 5/8" |
| 2402490 | 6" | 2-8-2" | 2" | 14.5" | 5/8" |
| End Blade Savers 3-Bolt Styles | | | | | |
| 2402494 | 6" | 3-3-12-2.25" | 2" | 22.5" | 5/8" |
| 2402495 | 6" | 3-3-12-2.25" | 1.5" | 22.5" | 5/8" |
| 2402485 | 6" | 3-3-12-2.25" | 1.5" | 22.5" | 3/4" |
| 2402489 | 6" | 3-3-12-2.25" | 2" | 22.5" | 3/4" |
| 2457130 | 8" | 3-3-12-2.25" | 1.5" | 22.5" | 5/8" |
| 3556530 | 5" | 3-3-12-2.25" | 1.5" | 22.5" | 5/8" |
| Center Blade Savers | | | | | |
| 2038043 | 6" | 3-3-9-3-3" | 1.5" | 21" | 5/8" |
| 2040864 | 6" | 3-3-9-3-3" | 2" | 21" | 5/8" |
| 2035512 | 6" | 3-3-12-3-3" | 1.5" | 24" | 5/8" |
| 2037952 | 6" | 3-3-12-3-3" | 2" | 24" | 5/8" |
| 2037951 | 5" | 3-3-12-3-3" | 1.5" | 24" | 5/8" |
| 2038044 | 6" | 3-3-3" | 1.5" | 9" | 5/8" |
| 2038045 | 8" | 3-3-3" | 1.5" | 9" | 5/8" |
| 2038046 | 6" | 3-12-3" | 1.5" | 18" | 5/8" |
| 2042998 | 8" | 3-3-12-3-3" | 1.5" | 24" | 5/8" |

NOTE: End blade saver bolt holes countersunk on both sides of blade to facilitate use as a left-hand or right-hand part.

Blade is 1"-thick on all blade savers.

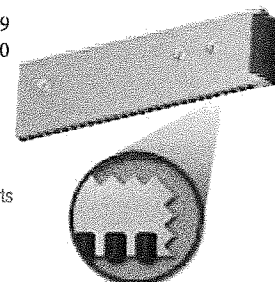
To choose the optimum blade saver for your application, simply match blade height, hole spacing, hole size, and gauge to the cutting edge you need to protect. Blade savers are available in various lengths to enable you to safeguard any size area on your main cutting-edge assembly.

Custom hole-spacing available.

3/4 Bolt - Kenn Part# 5528929
5/8 Bolt - Kenn Part# 3556530

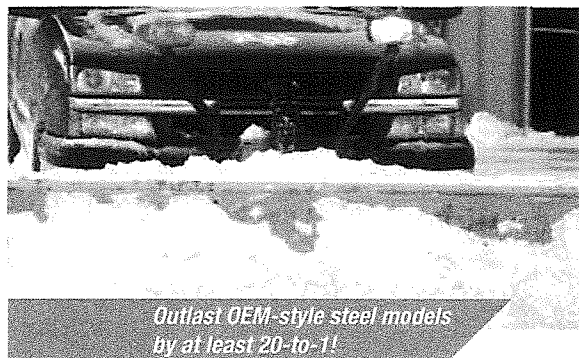
Now available in a 3-bolt-hole design for more secure fastening.

Features I.C.E.-style inserts to resist breakage.



Tungsten Carbide Pick-Up Plow Blades

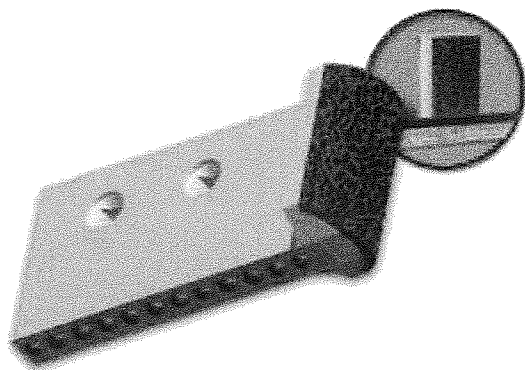
- Specially engineered for your Meyer™, Western™, The Boss™, or Fisher™ snowplow — regardless of the hole pattern.
- Sold in sections for economical and convenient installation and replacement.
- Use the same square-hole style carriage bolts as your original plow blade.



*Outlast OEM-style steel models
by at least 20-to-1!*

KenCast™ Tungsten Carbide Wear Material

- Specially engineered to guard against premature and costly wear on your valuable heavy equipment — saving you on downtime and replacement parts.
- Made with tungsten carbide particles metallurgically bonded in air-hardening steel to withstand extremes of abrasion and impact.
- Easy to weld.
- Particularly effective on curb bumpers, snowplow shoes, moldboard shoes, and plow blade end protectors.



Pick-Up Plow Blades • Ordering Information

| plow type and length | material number | replacement blade length | bolt size | lbs | quantity replacement blades needed |
|-------------------------------------|----------------------|--------------------------|-----------|-----|------------------------------------|
| Straight Plows | | | | | |
| 7'-6" (90") Meyer / Fisher* | 1826114 | 45" | 1/2" | 62 | 2 |
| 8'-0" (96") Meyer / Fisher* | 1826115 | 48" | 1/2" | 63 | 2 |
| 8'-6" (102") Meyer / Fisher* | 1826116 end blade | 34" | 1/2" | 50 | 2 |
| | 1826117 center blade | 34" | 1/2" | 50 | 1 |
| 7'-6" (90") Western Pro Series | 2401740 | 45" | 1/2" | 60 | 2 |
| 7'-6" (90") Western Pro Plus Series | 3381745 | 45" | 5/8" | 60 | 2 |
| 8'-0" (96") Western | 1826118 | 48" | 1/2" | 66 | 2 |
| 8'-6" (102") Western | 1826124 | 51" | 1/2" | 68 | 2 |
| 8'-6" (102") Western Plus Series | 3577996 | 51" | 5/8" | 68 | 2 |
| 9'-0" (108") Western | 2415564 | 54" | 1/2" | 70 | 2 |
| 9'-0" (108") Western Pro Plus | 3017373 | 54" | 5/8" | 70 | 2 |
| 9'-0" (108") Fisher MC (3 pc set) | 3336769 end blade | 31-3/8" | 3/4" | 40 | 1 |
| | 3336770 center blade | 45" | 3/4" | 60 | 2 |
| 10'-0" (120") Fisher MC | 3277933 | 60" | 3/4" | 77 | 2 |
| 9'-6" (120") Western-MVP | 2604937 | 55-3/4" | 1/2" | 65 | 2 |
| Blizzard Model 8611 (2 pc set) | 3041839 | 39-1/2" | 5/8" | 51 | 1 |
| | 3048141 | 55" | 5/8" | 64 | 1 |
| 7'-6" (90") The Boss | 2263063 | 45" | 1/2" | 56 | 2 |
| 8'-0" (96") The Boss | 2263064 | 48" | 1/2" | 62 | 2 |
| 8'-6" (102") The Boss | 2263065 | 51" | 1/2" | 64 | 2 |
| 9'-0" (108") The Boss | 2263066 | 54" | 1/2" | 68 | 2 |
| 10'-0" (120") The Boss | 1011842 end blade | 36" | 5/8" | 47 | 2 |
| | 1011844 center blade | 48" | 5/8" | 62 | 1 |
| V Plows | | | | | |
| 7'-6" (90") The Boss VRTII | 2263008 | 44" | 1/2" | 47 | 2 |
| 7'-6" (90") The Boss VRT3 | 2402074 | 44" | 5/8" | 47 | 2 |
| 8'-2" (98") The Boss VRTII | 2263009 | 48" | 1/2" | 60 | 2 |
| 8'-2" (98") The Boss VRT3 | 1961521 | 48" | 5/8" | 60 | 2 |
| 9'-2" (110") The Boss VRTII | 2263010 | 54" | 1/2" | 66 | 2 |
| 9'-2" (110") The Boss VRT3 | 2263011 | 54" | 5/8" | 66 | 2 |
| 10' (120") The Boss VRT3 | 2263012 | 59" | 5/8" | 72 | 2 |
| 9'-1/2" Western-MVP | 2604937 | 55-3/4" | 1/2" | 65 | 2 |

*old style Fisher



KENNAMETAL INC.
MINING AND CONSTRUCTION
DIVISION

RECOMMENDED SPECIFICATIONS
FOR
Curb Guards

The following specifications have been developed by Kennametal Inc. to describe Curb Guards. These specifications are recommended for use by State and Municipal Highway Departments to procure and inspect these products to insure they receive a superior quality product. The parts are to be manufactured according to the attached drawings using materials conforming to the following:

1. BLADE

- 1.1 The main flat blade portion shall be fabricated using 1" thick flat hot-rolled finished steel to meet or exceed specifications for A36 or 1020 type steels.
- 1.2 Punching shall be 11/16" square holes with countersink to receive 5/8" diameter plow bolts. Location and spacing of the holes shall be as specified by the user. For "Standard Highway Punch" style spacing refer to the attached drawing. The holes of the Curb Guard will be countersunk on both sides so that the part can be used for either a "right hand" or "left hand" part.
- 1.3 Center of boltholes shall be in line within 1/32" of established horizontal centerline and 1/16" of established vertical centerline.

2. KENCAST WEAR GUARD

The end guard to be made of Kennametal Kencast material--a composite combining the exceptional hardness of Kennametal cemented tungsten carbide with the toughness of air-hardening steel to resist wear in severe operating conditions. The type and amount of steel matrix and tungsten carbide in a composite varies.

2.1 The ranges for the composite ingredients:

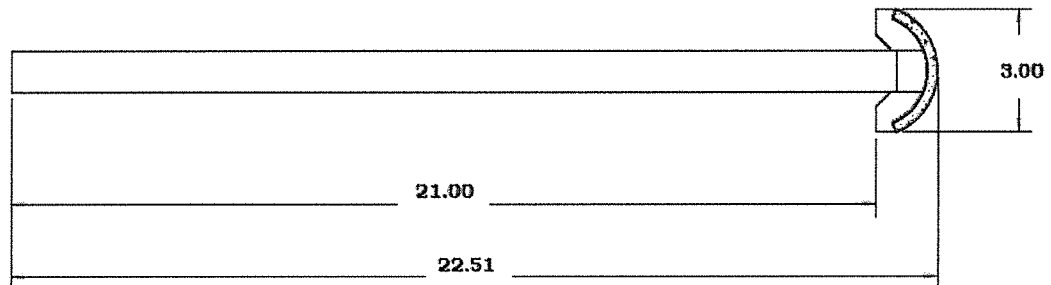
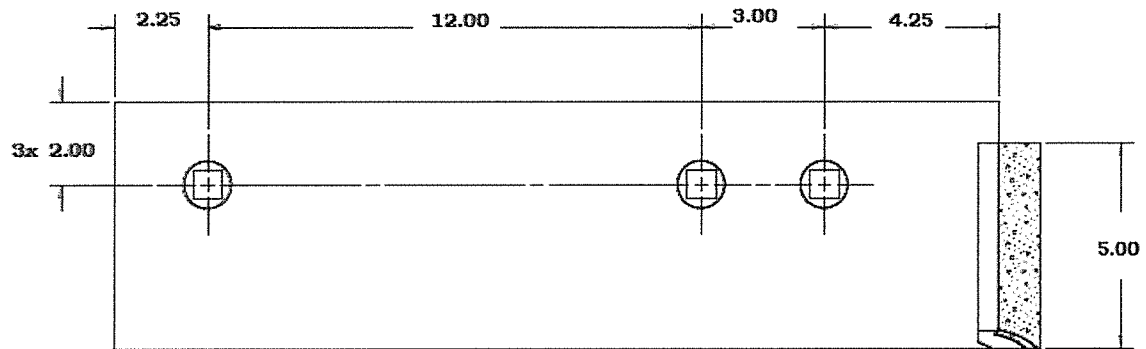
| | |
|----------------------------------|-----------|
| Tungsten Carbide | 86-91 HRA |
| Matrix Steel (bonded to carbide) | 52-58 HRC |
| Base Steel | 38-50 HRC |

2.2 Air-hardening (Cr-Ni-Mo) steel is used. During the metallurgical bonding, the matrix steel (around the carbide particles) alloys with tungsten and cobalt.

2.3 Tungsten carbide granules are approximately 1/4-inch-thick in the wear surface.

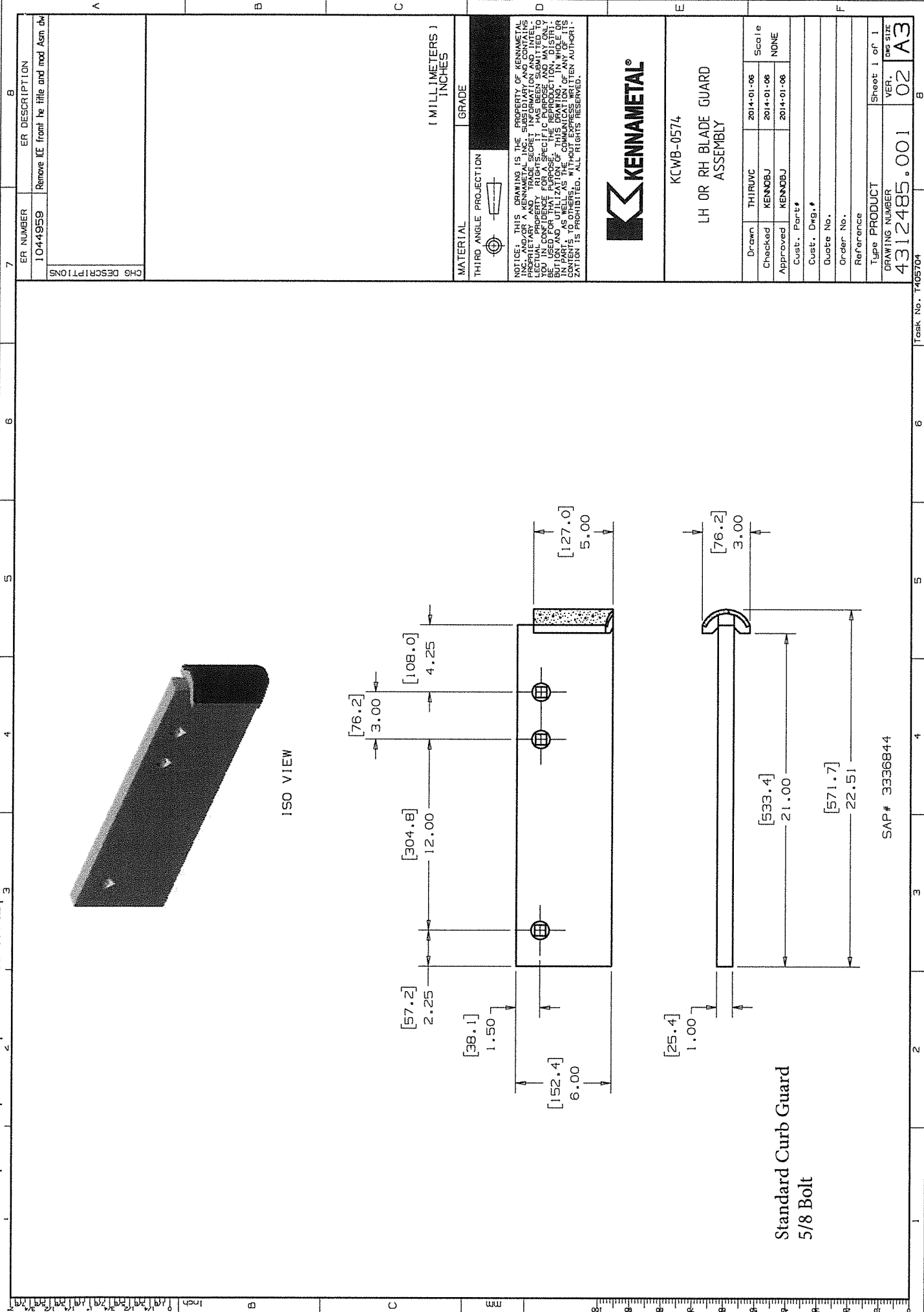
2.4 Steel Matrix (figures are weight%)

| | | | |
|-----------|---------|------------|---------|
| Carbon | .28-.35 | Nickel | 1.0-2.0 |
| Manganese | 1.5-2.0 | Chrome | .80-1.2 |
| Silicon | 1.3-1.7 | Molybdenum | .20-.30 |
| Aluminum | .08-.15 | | |



ABOVEEXAMPLE:

KCWB-0574
3336844



| | | |
|-------------------------------|---|---------------------|
| ER NUMBER 1044959 | ER DESCRIPTION Remove ICE from the title and mod Assn dw | CHG DESCRIPTIONS |
| Drawn THIRUVU | Checked KENNOBJ | Approved KENNOBJ |
| Scale 2014-01-08 | Scale 2014-01-08 | Scale 2014-01-08 |
| Cust. Part# | Cust. DWG.# | Quote No. |
| Order No. | Reference | Type PRODUCT |
| DRAWING NUMBER 4312485.001 | Sheet 1 of 1 | Dwg size A3 |

THIRD ANGLE PROJECTION

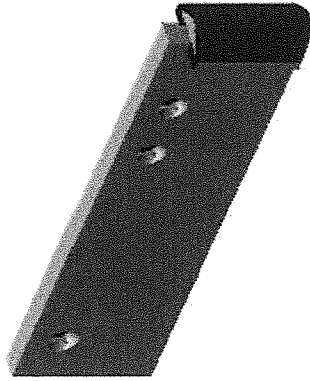
NOTICE: THIS DRAWING IS THE PROPERTY OF KENNAMETAL INC. AND/OR A KENNAMETAL INC. SUBSIDIARY AND CONTAINS PROPRIETARY AND TRADE SECRET INFORMATION AND INTELLECTUAL PROPERTY. IT IS TO BE USED FOR THE PURPOSES OF THE REPRODUCTION, DISTRIBUTION, AND/OR REUSE OF THE INFORMATION CONTAINED HEREIN. NO PART OF THIS DRAWING IS TO BE REPRODUCED, COPIED, OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING, OR BY ANY INFORMATION STORAGE AND RETRIEVAL SYSTEM, WITHOUT THE WRITTEN AUTHORIZATION OF KENNAMETAL INC. ALL RIGHTS ARE RESERVED.



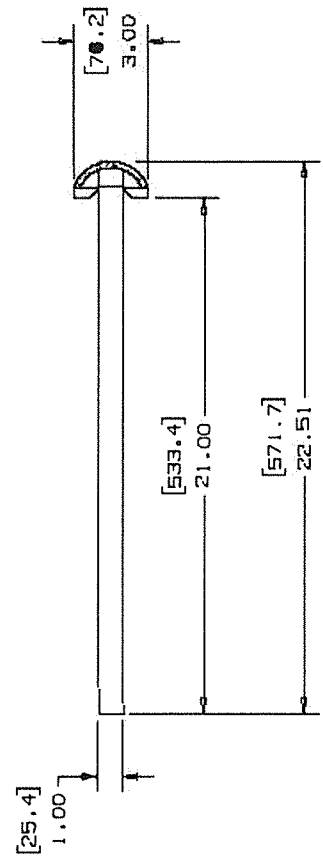
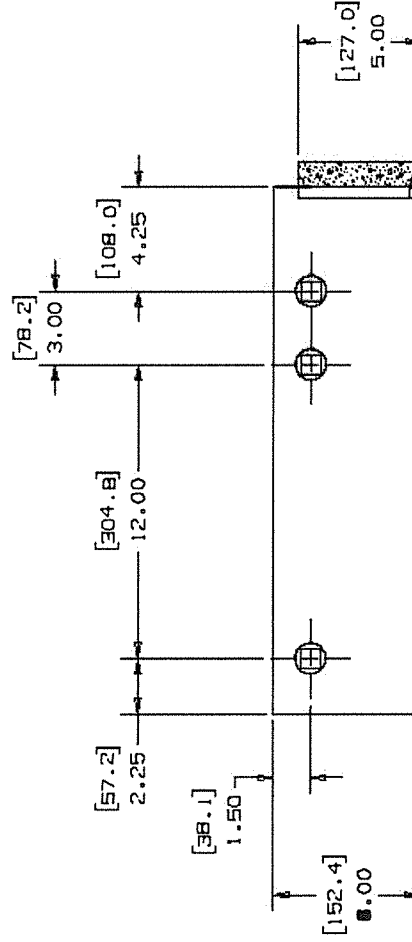
KCWB-0574
LH OR RH BLADE GUARD ASSEMBLY

SAP # 3336844

Task No. T405704



150 VIEW



Standard Curb Guard
(3/4 Bolt)

SAP# 6279041

Task No. 1405701

| | | | |
|--|----------|-------------------------------|-------|
| 7 | | B | |
| ER NUMBER | | ER DESCRIPTION | |
| CHG DESCRIPTIONS | | | |
| A | | B | |
| C | | D | |
| MATERIAL | | GRADE | |
| THIRD ANGLE PROJECTION | | | |
| NOTICE: THIS DRAWING IS THE PROPERTY OF KENNAMETAL INC. AND/OR A KENNAMETAL INC. SUBSIDIARY AND CONTAINS PROPRIETARY INFORMATION. IT HAS BEEN SUBMITTED TO THE U.S. PATENT OFFICE FOR PROTECTION. ANY REPRODUCTION OR USE IN CONNECTION WITH A SPECIFIC PROJECT AND NOT FOR GENERAL INFORMATION OR FOR THE PURPOSE OF REPRODUCTION OR UTILIZATION OF THIS DRAWING IN WHOLE OR IN PART IS PROHIBITED. THE COMMUNICATION OF ANY OF ITS CONTENTS TO ANY OTHER PERSON WITHOUT THE WRITTEN AUTHORITY OF KENNAMETAL INC. IS PROHIBITED. ALL RIGHTS RESERVED. | | KENNAMETAL | |
| E | | F | |
| KCWB-0574-3/4 HOLE | | LH OR RH BLADE GUARD ASSEMBLY | |
| Drawn | THIRUMIC | 2014-01-08 | Scale |
| Checked | KENHOB | 2014-01-08 | NONE |
| Approved | KENHOB | 2014-01-08 | |
| Cust. Part # | | | |
| Cust. Dwg. # | | | |
| Quote No. | | | |
| Order No. | | | |
| Reference | | | |
| Type PRODUCT | | Sheet 1 of 1 | |
| DRAWING NUMBER | | VER. | |
| M4312485.00 | | 02 A3 | |

Tungsten Carbide-Reinforced Snowplow Shoes

- Improve blade life.
- Prevent blade dig-ins during road-shoulder work.
- Protect moldboards against premature failure.
- Kennametal's unique high-hardness KenCast™ material provides unsurpassed wear resistance versus competitive mild-steel/brazed designs.
- Custom shoes also available — just provide us your drawing or a sample.

Extend snowplow blade life by as much as 30%!

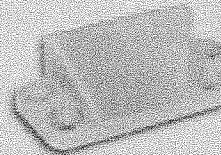
Use long-life, weldable KenCast bars to rebuild your worn all-steel shoes.



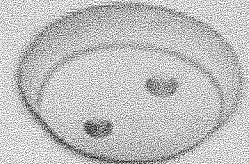
KCWB-0167
1012483



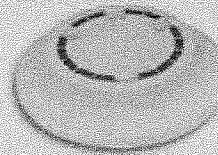
PBS-1212*
1012590



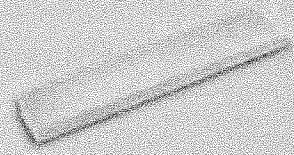
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1012434



KCWB-0295
1012582



KCWB-0154
1012472



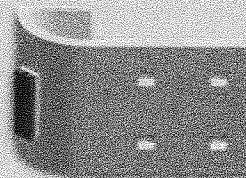
KCWB-0187
1012493

*Please specify hole size, bracket thickness, distance from shoe top to center of hole, and distance between brackets. Other shoes are available upon request. To ensure proper fit, we need to know the specific style, make, model number, hole spacing, and hole size.

Tungsten Carbide-Reinforced Curb Guards

- Guard moldboard ends and blades from extensive impact and abrasion.
- Feature the same tough KenCast material as on our I.C.E. Series™ blade guards.
- Offered in easy-to-attach, easy-to-change wrap-around and mushroom-cap styles.

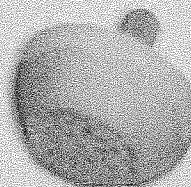
Inexpensive insurance against major moldboard repair!



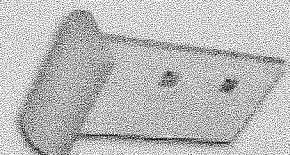
KCWB-0578**
3390176



KCWB-0574** 5/8 Bolt 3336844
KCWB-0574 3/4 Bolt 6279041



KCWB-0145
1012465



KCWB-0307-A
1012592
(for standard 12" punching)
KCWB-0307-B
2426053
(for 8" punching)

**Used with blades punched 1-1/2" from blade top to center of hole. Our curb bumpers fit most snowplow makes and models.

**North Dakota Department of Transportation
AMENDMENT TO CONTRACT NO. 50161773
Project No.**

THIS AMENDMENT to the above-referenced contract is entered into by and between the State of North Dakota, acting through its Director of Transportation, hereinafter known as NDDOT, whose address is 608 East Boulevard Avenue, Bismarck, North Dakota 58505-0700, and Kennametal, Inc., hereinafter known as the Contractor, whose address is 442 Chalybeate Road, Bedford, Pennsylvania 15522.

WHEREAS, the parties entered into a contract on September 2, 2016; and

WHEREAS, the contract was competitively bid and awarded to the Contractor; and

WHEREAS, the Contractor has performed satisfactorily under the terms of the contract; and

WHEREAS, the Contractor has expressed a willingness to extend the term of the above-referenced contract for an additional twelve (12) months; and

NOW THEREFORE, the Contractor and NDDOT agree that the term of the contract is extended through July 31, 2018.



All other terms and conditions of the above-referenced contract are incorporated herein by reference and remain in full force and effect.

EXECUTED the date last below signed.

WITNESS:

Jackie Zitt

NAME (TYPE OR PRINT)

Jackie Zitt

SIGNATURE

To be signed by Owner, Partner, Corp. Pres., Vice Pres., or other authorized Corp. Officer. (If signed by other authorized Corp. Officer, please attach copy of Power of Attorney or other documentation showing authority to sign.)

CONTRACTOR:

Kennametal Inc.

COMPANY NAME

Michelle R. Keating

OFFICER'S NAME (TYPE OR PRINT)

Michelle R. Keating

SIGNATURE

VP, Secretary + General Counsel

TITLE

7/20/17

DATE

WITNESS:

Sandra Goebel

NAME (TYPE OR PRINT)

Sandra Goebel

SIGNATURE

NORTH DAKOTA DEPARTMENT
OF TRANSPORTATION

Ronald J. Henke

DIRECTOR (TYPE OR PRINT)

Ronald J. Henke

SIGNATURE

7/26/17

DATE

APPROVED as to substance by:

Brian Derr

DIVISION DIRECTOR (TYPE OR PRINT)

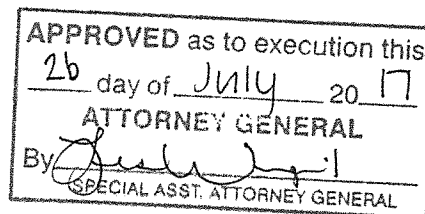
Brian Derr

SIGNATURE

7-26-17

DATE

CLA 52494 (Div. 06)
L.D. Approved 5-19-00; 5-03



**North Dakota Department of Transportation
AMENDMENT TO CONTRACT NO. 50161773
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WHEREAS, the parties entered into a contract on September 2, 2016; and

WHEREAS, the contract was competitively bid and awarded to the Contractor; and

WHEREAS, the Contractor has performed satisfactorily under the terms of the contract; and

WHEREAS, the Contractor has expressed a willingness to extend the term of the above-referenced contract for an additional twelve (12) months with a price increase; and

NOW THEREFORE, the Contractor and NDDOT agree that the contract will be extended with new pricing through July 31, 2019. New prices are listed on the attached letter from Kennametal dated July 26, 2018.



All other terms and conditions of the above-referenced contract are incorporated herein by reference and remain in full force and effect.

EXECUTED the date last below signed.

WITNESS:

Toni L. Fedeli

NAME (TYPE OR PRINT)

Toni L. Fedeli

SIGNATURE

To be signed by Owner; Partner; Corp. Pres., Vice Pres., or other authorized Corp. Officer. (If signed by other authorized Corp. Officer, please attach copy of Power of Attorney or other documentation showing authority to sign.)

CONTRACTOR:

Kennametal Inc.

COMPANY NAME

Tim LaMantia

OFFICER'S NAME (TYPE OR PRINT)

Tim LaMantia

SIGNATURE

General Manager

TITLE

July 26, 2018

DATE

WITNESS:

Sandra Gochel

NAME (TYPE OR PRINT)

Sandra Gochel

SIGNATURE

NORTH DAKOTA DEPARTMENT
OF TRANSPORTATION

Ronald J. Henke

DIRECTOR (TYPE OR PRINT)

Ronald J. Henke

SIGNATURE

7/30/18

DATE

APPROVED as to substance by:

Brad Darr

DIVISION DIRECTOR (TYPE OR PRINT)

Mike Kiseba

SIGNATURE

7-27-18

DATE

CLA 52494 (Div. 06)
L.D. Approved 5-19-00; 5-03

APPROVED as to execution this
27 day of July 2018
ATTORNEY GENERAL
By *[Signature]*
SPECIAL ASST ATTORNEY GENERAL





July 26, 2018

Dear Vanessa

Please consider this request for price adjustment to North Dakota Contract 50161773 that will extend our contract for period ending 7/31/19.

As I am sure you are aware, cost of many materials and services have been rising dramatically. Due to our pro-active stance regarding cost control, productivity and efficiency measures, Kennametal has been able to absorb many of the increases related to the rising cost of steel and cobalt, as well as many other supply items over the contract period; minimizing the impact on you, our valued customer. Regretfully, due to ongoing escalating cost increases, we are now unable to absorb any additional cost and find it necessary to implement new pricing based on these factors. Below is a revised Pricing Sheet that shows both the original contract pricing and our requested price changes.

Thank you in advance for consideration in this matter, I truly appreciate your help. Please advise if you need any additional information. Kennametal values our relationship with you and the State of North Dakota and hope we can continue to serve your needs in the future.

| <i>ND DOT Part#</i> | <i>Description</i> | <i>Kenn Part#</i> | <i>Kenn Description</i> | <i>Current Price</i> | <i>Renewal Price</i> |
|---------------------|------------------------------|-------------------|-------------------------|----------------------|----------------------|
| 76006-653693 | Sq. Top 3' I.C.E. Blade | 1553693 | PB536 | \$221.00 | \$221.00 |
| 76006-653693 | Beveled Top 3' I.C.E. Blade | 2035932 | PB636 | \$221.00 | \$221.00 |
| 76006-654894 | Sq. Top 4' I.C.E. Blade | 1553694 | PB548 | \$295.00 | \$295.00 |
| 76006-654894 | Beveled Top 3' I.C.E. Blade | 2035931 | PB648 | \$295.00 | \$295.00 |
| n/a | I.C.E. Curb Guard 5/8 Bolt | 3556530 | KCWB-0592 | \$193.00 | \$218.72 |
| n/a | I.C.E. Curb Guard 3/4 Bolt | 5528929 | KCWB-0592-3/4 Bolt | \$198.00 | \$218.72 |
| n/a | Standard Curb Guard 5/8 Bolt | 3336844 | KCWB-0574 | \$86.47 | \$135.48 |
| n/a | Standard Curb Guard 3/4 Bolt | 6279041 | KCWB-0574-3/4 Bolt | \$88.00 | \$135.48 |

Kindest regards

Toni L Fedeli
Kennametal Inc.
Inside Sales Supervisor
1600 Technology Way
Latrobe PA 15650
Mobile: 724 493 1680
Email: toni.fedeli@kennametal.com