

State of Illinois
Department of Transportation
Bureau of Operations

Specifications and Questionnaire for Carbide Dowel Type Blades for Snowplows

February 2012

This specification and questionnaire covers requirements for tungsten carbide dowels inserted into snowplow blades to be used by the Department of Transportation Division of Highways Operations forces. The snowplow blade sections shall be high-quality steel blades fitted with tungsten carbide dowels or cylinders complying with the following detailed specifications.

Bidders quoting on the specified products must submit with their bid written proof of the following:

1. The snowplow blades proposed are equal to, or exceeds that specified in all respects including size, operating features, and expected life-cycle.
2. The manufacturer of the equipment proposed has been actively involved in the manufacture of the carbide style blades called for in the solicitation for a period of not less than 4 years.
3. Service for the products proposed is readily available from within the State of Illinois.

It is the responsibility of each bidder to complete and return this questionnaire with the bid.

Unless otherwise specified, the proposed equipment shall be complete in all parts and ready for immediate use upon delivery.

Questionnaire for Carbide Dowel Style Plow Blades

Proposed with this bid:

Make: _____

Model: _____

Manufactured by: _____

Telephone: _____ / _____ - _____

Contact: _____

Blade Section:

The blade sections shall conform to the dimensions as shown on the attached drawing for the lengths as called for in the solicitation.

Complies: Yes ___ No ___

If No, Describe: _____

The hole punching of the cutting edges shall be as shown in the attached drawing. The holes shall be punched to an 11/16" diameter and countersunk to receive 5/8" diameter grade 8 blade bolts. The center of the holes shall be within 1/16" of the established centerline of the blade.

Complies: Yes ___ No ___

If No, Describe: _____

Each blade section shall be manufactured from flat, hot rolled, finished steel meeting or exceeding specifications for A36 or SAE 1040/1045 rated steel, with a finished thickness of 7/8".

Complies: Yes ___ No ___

SAE Steel #: _____

The holes drilled for the tungsten carbide inserts shall be drilled in the center of the thickness of the blade, spaced on .75" center to center for the entire length of the end of the blade section.

Blades thickness: _____ "

Hole spacing: _____ C to C

The tungsten carbide inserts shall be secured using a silver solder type material with sufficient strength to securely hold the dowel type inserts while being impacted during snow removal operations.

Complies: Yes ___ No ___

Describe solder material used: _____

The completed blade sections with inserts installed shall be free of warpage and longitudinal deviation. Blade sections exceeding .125" in a 4-foot section will be rejected.

Complies: Yes ___ No ___

Tungsten Carbide Inserts:

The inserts must be new and unused. Recycled raw materials may be used in the tungsten carbide inserts provided the finished inserts meet all the chemical and physical properties for hardness, cobalt, tantalum-titanium, density, and porosity detailed elsewhere in these specifications.

Complies: Yes ___ No ___

The inserts shall be round or cylindrical in shape with the following dimensions:

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Height (long side) 0.753" ± 0.007"
 Diameter 0.523" ± 0.004"
 Dome Radius = .266" ± .003"

Complies: Yes ___ No ___

If No, Describe: _____

The carbide inserts shall be high shock, WC Grade tungsten carbide. The composition of the inserts shall be as follows:

Cobalt	10 to 12.5%
Tantalum-Titanium	1.5%

The balance of the material composition shall be WC Grade tungsten carbide.

Cobalt: _____ %

Tantalum-Titanium (TaC-Tic): _____ %

WC Grade Tungsten: _____ %

The physical properties of the inserts shall be between 13.9 to 14.6 grams per cubic centimeter for density, and between a minimum 86.8 to a maximum of 89.2 hardness on a Rockwell "A" scale or equivalent based on appropriate coercive force correlation.

Density: _____ to _____ grams/cubic cm.

Hardness: _____ to _____ Rockwell "A" Scale

The inserts' maximum allowable porosity, based on testing in accordance with ASTM designation B276-79 shall be A08, B04, or C00.

Complies: Yes ___ No ___

Test level for material provided: _____

Note: Bidder shall furnish samples of the carbide inserts if requested by the Department of Transportation.

Finish and Markings:

Each blade section, with the exception of the cutting edge, shall have a minimum of one coat of a rust resistant paint or coating.

Complies: Yes ___ No ___

The cutting edge portion of the blade section shall be unpainted and taped with an easily removable product to facilitate inspection of the cutting edge.

Complies: Yes ___ No ___

All blade sections shall be plainly marked to indicate the front edge of the blade to avoid improper mounting.

Complies: Yes ___ No ___

Each and every blade section shall be stamped with the manufacturers name, or recognizable monogram. The stamping shall be located on the front and in an area not subject to wear from use.

Complies: Yes ___ No ___

Note: Failure to comply with this portion of the specification will result in immediate rejection of product at any delivery location.

If No describe: _____

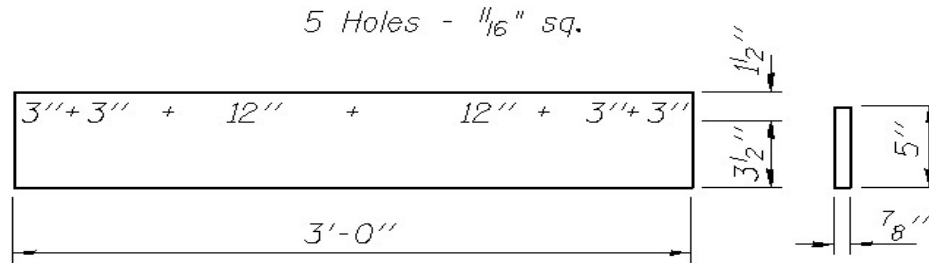
Bidders shall submit (as required below) two copies of each of the following with the bid response.

- a) Bid Document
- b) Specification Questionnaire
- c) Detailed and Dimensioned Shop Drawings (if requested)
- d) Descriptive Literature and Specifications Clearly Marked to Indicate the Composition of the Blade Sections

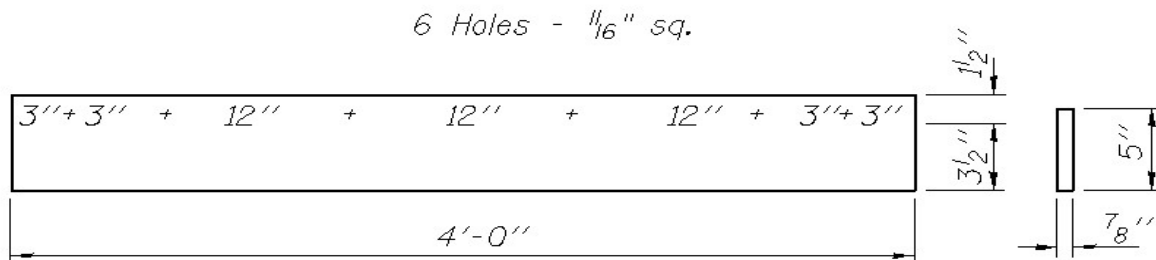
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ILLINOIS DEPARTMENT OF TRANSPORTATION

STANDARD PUNCHED CARBIDE INSERT TYPE
SNOWPLOW BLADE SECTIONS



Three Foot Section



Four Foot Section

Revised December, 1983
Revised February, 1991
Revised October, 2002