

**SPECIFICATION
FOR
TRACTORS, CRAWLER
(200 HP CLASS)**

(This specification is released for procurement purposes until revised or rescinded.)

SCOPE

This specification covers a diesel engine-driven, crawler tractor with dozer. It does not include all types and sizes of commercially available crawler tractors, but only the type and size used by the North Carolina Department of Transportation, Division of Highways.

I. CLASSIFICATION

TABLE 1

Net Brake Power (HP)*	Operating Weight (Lbs.)	Drawbar Pull @ 1.2 MPH (Lbs.)**	Track On Ground (In.)	Tractor Gauge (In.)
200	40,000	36,000	107	78

* In accordance with SAE J1349

** In accordance with SAE J87

II. APPLICABLE STANDARDS

The following documents of issue in effect on the date of the Invitation for Bids shall form a part of this specification to the extent specified:

J872	Reserve tractive ability test code.
J930	Storage batteries for off-road work machines
J1040	ROPS
J1166	Sound measurement-earth moving machinery-operator-work cycle
J1349	Engine power test code

Society of Automotive Engineers, Inc. (SAE)

400 Commonwealth Drive
Warrendale, PA 15096

Federal Occupational Safety and Health Act Codes

U. S. Department of Labor
200 Constitutional Avenue, NW
Washington, DC 20210

State Occupational Safety and Health Act Codes

N. C. Department of Labor

III. REQUIREMENTS

A. GENERAL

This specification covers diesel engine-driven, crawler tractors and allied attachments of conventional design and heavy duty construction. They are to be furnished with all operating accessories customarily furnished as standard equipment by the manufacturer whether stipulated herein or not.

1. Standard Products

The tractor offered shall be new and a standard production model of latest design and equipped as specified herein.

2. Use Conditions

Design and Construction shall be such that the tractor will withstand extremely hard usage including operation over rough terrain, storage and operation in the environment encountered in this type service. Components, particularly of the electrical, fuel, and exhaust systems shall be so designed as to resist any harmful effects of dust or fresh water.

3. Ease of Maintenance

The design of the tractor and accessory installations shall permit ready accessibility for servicing, replacement, and adjustment of component parts and accessories with minimum disturbance of other elements.

4. Frame

The frame shall be designed to withstand maximum stresses under normal operating conditions and in addition, provide adequate support for attaching any device approved by the tractor manufacturer for use in combination with the tractor.

5. Operating Weight

For purposes of determining the tractor drawbar pull (SAE-J872), the weight shall represent the tractor equipped as follows: ROPS, Canopy, 175 pound operator, fuel, oil, water, lubricants, standard advertised track shoes, hydraulic controls, and a completely equipped heavy duty mechanical angle blade with hydraulic tilt. Not more than the following attachments shall be included in the operating weight: Crankcase, transmission, and radiator guards. The minimum operating weight shall be as shown in Table 1.

6. Occupational Safety and Health Act

The tractor shall be furnished with all applicable equipment and accessories as required by the Occupational Safety and Health Act (U. S. Department of Labor and N. C. Department of Labor).

a) 29 CFR 1926.52 Occupational Noise Exposure

The tractor shall be constructed and assembled so that the noise at earlevel of the seated operator with all doors, windows, and vents closed, when measured in accordance with SAE J1166-Work Cycle Test, shall not exceed the permissible noise exposure limits of this regulation for an 8-hour operator exposure.

b) 29 CFR 1926.600 Equipment

Safety glass for enclosed cab.

c) 29 CFR 1926.602 Material Handling Equipment

Seat belts

d) 29 CFR 1926.100 Rollover Protective Structures (ROPS)

Cab with integral ROPS.

7. Drawbar Pull

The tractor, when equipped as specified in operating weight (see item III.A.5.), shall deliver not less than the minimum drawbar pull at a ground speed of not less than 1.2 MPH as shown in table 1. The drawbar pull shall be the reserve tractive force as shown in SAE J872. The manufacturer's certified operating weight and drawbar pull shall be furnished by the bidder upon request.

B. ENGINE

1. Diesel Engine

The engine shall be of the compression ignition type, turbo charged, two or four-stroke cycle, capable of operating on commercial diesel fuel as recommended by the manufacturer. The engine shall be equipped with an adequate and efficient fuel injection mechanism, heavy duty fuel oil filter and heavy duty full flow type lubricating oil filter(s).

2. Air Cleaner

The air cleaner shall be the dual element type (primary and safety dry type element) with a built-in precleaner and automatic dust ejection. The air cleaner hose shall be of metal or heavy duty flexible, non-collapsible type, with metal or molded rubber elbows. Wire reinforced hose is not acceptable. All connections shall be banded.

3. Engine Governor

The engine governor shall be of either the mechanical or hydraulic type, and driven from the engine. Provisions for permitting regulation of the governed speed-setting throughout the engine load range while the engine is in operation shall be included.

4. Engine Starting System

The manufacturer's standard or optional electric starting system, including heavy duty battery(ies) (SAEJ930) for cranking the tractor engine shall be acceptable. The starting system shall be capable of cranking the engine in an ambient temperature of -20 degrees Fahrenheit. The battery(ies) shall be designed to withstand the shock, vibration and dusty environment encountered in off-road machines. A shock resistant battery mount is not an acceptable substitute for the type of battery required, through such mount may be furnished in addition to the proper battery.

5. Engine cooling system

The tractor shall have a heavy duty radiator with the cooling system protected to at least -20 degrees Fahrenheit, and using a 50%/50% mixture of a permanent ethylene glycol type anti-freeze and water.

C. FUEL TANK(S)

The manufacturer's standard fuel tank(s) shall be acceptable and located so as not to be affected by heat from the engine, exhaust pipe, or muffler.

D. TRANSMISSION

Unless otherwise stated in the Invitation for Bids, the tractor shall be furnished with a power shift with torque converter having at least 3 forward and 3 reverse speeds, or a hydrostatic type transmission with infinitely variable forward and reverse speeds up to the maximum speed.

The maximum travel speed in the highest gear shall not be less than 5.8 MPH in forward travel and 5.8 MPH in reverse travel.

E. STEERING DEVICES AND SERVICE BRAKES

The manufacturer's current standard production steering devices and service brakes shall be acceptable.

F. FINAL DRIVE UNITS

The final drive units shall be in housings adequately sealed against mud, dust, and water. The final drive gears shall be heat-treated steel with machine-cut teeth. The drive sprockets shall be replaceable (bolt-on type) without removing the track frame.

G. UNDERCARRIAGE

Track links, pins, and bushings shall be of heat-treated steel, replaceable and interchangeable. The master link shall be the split link type. A recoil mechanism for cushioning the front idlers shall be included. Hydraulic track adjusters and sprocket guards shall be furnished.

The track rollers, top track carrier rollers and idlers shall be lubricated and permanently sealed. Track pins and bushing shall be sealed and lubricated.

The track shoe shall be extreme service type, 19-3/4" minimum, 25" maximum heavy grouser type, and of heat-treated steel unless otherwise specified.

H. HYDRAULIC SYSTEM

The manufacturer's standard hydraulic system, including heavy duty pump, filter, tank, and control valves shall be acceptable. The tank shall be equipped with a sight gauge to determine the level of hydraulic oil.

I. OPERATOR'S POSITION

The operator's position shall have a full suspension, adjustable, upholstered seat, armrests, backrest, and safety belt, with controls convenient to the operator.

J. TOOLS AND LUBRICATING EQUIPMENT

Special tools furnished as standard equipment with the tractor by the manufacturer shall be included. A tool box with hasp and padlock shall be furnished. Greasing equipment used to service all fittings shall be included.

K. PAINTING

The tractor and attachments shall be painted N. C. Division of Highways Yellow (Moline MPM # 11-Y169A leadfree or equivalent) over a rust inhibitive primer.

L. EQUIPMENT

The following equipment shall be furnished:

1. Muffler
2. Manufacturer's heavy duty radiator brush guard, heavy duty crankcase and transmission (bottom) guard(s).
3. Front pull hook.
4. Vandalism protection kit, including locking instrument panel cover, lock type caps for exposed filler caps and oil dipstick pipe (less padlocks). Include concealed electrical disconnect switch.
5. Engine hood with full coverage side doors, side shields or side guards.
6. Front and rear lighting. (Protected by a brush guard)
7. Fixed type drawbar. (Not to be furnished if ripper is ordered.)
8. Air cleaner service indicator.
9. Deflector type exhaust pipe.
10. In line fuel heater located prior to fuel filter.
11. Reserve turbo charger oiling capability to provide oiling turbo charger after engine shutdown and during initial start-up.
12. Back-up alarm.

M. INSTRUMENTS AND GAUGES

The instrument panel shall be located in full view of the seated operator. The manufacturer's standard instrumentation shall be furnished, but are to include the following as a minimum: Oil pressure, water temperature, ammeter or voltmeter, hourmeter, fuel

gauge, torque convertor and/or transmission oil temperature and tachometer. Audio warnings are required on instrumentation relating to engine oil pressure and engine water temperature.

N. DOZER

Unless otherwise specified, a mechanical angle dozer of the following description shall be furnished. The dozer shall be a heavy duty, mechanical, angle dozer blade with hydraulic tilt. Center bracket shall be double plated, gusseted and capable of withstanding 40,000 lbs. loads. Blade shall have additional gussetting for strength and end bits shall be reinforced to withstand 60,000 lbs. impact loads. "C" Frame shall be constructed of proper thickness, width and depth size steel to withstand a 90 degree sideload of 36,000 lbs. Dozer shall be completely equipped, including: hydraulic controls, push arms, braces, trunnions, reversible cutting edge and end bits. Shall have appropriate sized push cylinders and tilt cylinders to withstand impacts and loads of 60,000 lbs.

O. ATTACHMENTS

Attachments specified below are required and shall be of heavy duty construction.

1. Ripper

The ripper shall be a single shank, hydraulic adjustable, parallelogram, high impact ripper complete with hydraulic control valve(s). (Note: Do not furnish drawbar if ripper is ordered.)

2. Track Roller Guards

Heavy duty inner and outer track roller guards for full coverage of the track frame.

3. ROPS Canopy

A ROPS canopy shall be furnished and it shall conform to SAE J1040. No interior overhead structural member shall protrude into the overhead space so as to create a hazard to the operator when standing or seated.

4. Reversible Fan

A reversible blade fan shall be furnished.

IV. WARRANTY

The contractor warrants to the owner that all equipment furnished under this specification will be new, of good material and workmanship, and agrees to replace promptly any part or parts which by reason of defective material or workmanship shall fail under normal use, free of negligence or accident, for a minimum period of 12 months from the date placed in operation. Such replacement shall include all parts, labor, and transportation costs to the location where equipment is down, free of any charge to the owner.

Under same and all conditions as above, the power train (engine, transmission, torque converter and final drive), and structural members shall be covered for an additional period of at least 24

months. Any periodic inspections which need be performed by the contractor or his representatives shall be without charge to the State.

V. SERVICE, PARTS, AND MANUALS

The contractor shall furnish a qualified representative to instruct the owner's operator(s) in the operation and maintenance of the equipment for a minimum period of eight hours. The location(s) of such instruction shall be as designated in the Invitation for Bids.

Operator's manuals, shop manuals, complete parts catalog books, and line setting data sheets shall be furnished as specified in the Invitation for Bids.

VI. ACCEPTANCE EVALUATION AND QUALITY ASSURANCE

Upon receipt of each tractor at the receiving point, the purchaser or his authorized representative shall arrange for an acceptance inspection to determine compliance with this specification.

The contractor shall furnish a pilot model for inspection, tests and possible modification and/or adjustments of attachments in accordance with the Invitation for Bids. The site of the pilot model inspection will be designated in the Invitation for Bids.

VII. DELIVERY AND PAYMENT

Delivery of and payment for equipment furnished under this specification shall be in accordance with the terms and conditions of the Invitation for Bids. The contractor shall be responsible for any packaging, packing, or protection required to insure safe delivery in an undamaged condition.

Tractors shall be completely serviced and ready for operation when delivered.

VIII. ORDERING DATA (For Purchaser's Use Only)

Purchasers should exercise any desired options offered herein and should specify the following in the requisition and Invitation for Bids:

1. Title, number, and date of this specification.
2. If certified weight and drawbar pull is required with bid.
3. Number of sets of manuals and books required. (See Item V.)
4. Designate location(s) of operation and maintenance instructions by contractor's representative.
5. Designate site of pilot model inspection.

“END OF DOCUMENT”