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# A Checklist and Sample Specifications for Front End Loaders

HERPICC

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HIGHWAY

1431

EXTENSION

AND  
RESEARCH

PROJECT

FOR  
INDIANA

COUNTIES

AND  
CITIES

**A CHECKLIST AND SAMPLE  
SPECIFICATIONS FOR  
FRONT END LOADERS**

**2-3 cyd ARTICULATING,  
RUBBER TIRED, 4-WHEEL DRIVE**

**MAY 1983**

**PURDUE UNIVERSITY - SCHOOL OF CIVIL ENGINEERING**  
In cooperation with

**INDIANA DEPARTMENT OF HIGHWAYS  
INDIANA ASSOCIATION OF COUNTY COMMISSIONERS  
INDIANA ASSOCIATION OF CITIES AND TOWNS  
FEDERAL HIGHWAY ADMINISTRATION**

# PURDUE UNIVERSITY

## HIGHWAY EXTENSION AND RESEARCH PROJECT FOR INDIANA COUNTIES AND CITIES

May 1983

Attached is a checklist and sample specifications for purchasing front end loaders for use in the maintenance of Indiana's local roads and streets.

This checklist and the sample specifications provide for individual preferences. They are not intended to dictate decisions or restrict bidding. If followed, they will assure a durable piece of maintenance equipment well suited for the uses placed on front end loaders by Indiana Counties, Cities and Towns.

A general observation of those with experience is that reducing specification requirements to obtain a lower first cost is nearly always a poor economic decision.

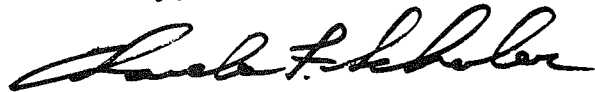
This information was developed by a task group on Maintenance Equipment Guidelines composed of the following:

John Dalton, Street Commissioner, Bedford  
Jim Harper, Street Commissioner, Crawfordsville  
Prof. Lloyd Jones, Civil Engineering, Purdue University  
Sheril Page, retired, Dugger  
Eugene Shurte, LaPorte County Road Supervisor  
J. William Strange, Hancock County Highway Engineer  
Dick Thompson, Huntington County Engineer  
Reno Ulerich, retired, Kokomo  
Sean Watt, Director of Division of Transportation, South Bend  
Wallace W. West, Indiana Department of Highways

HERPICC is proud to acknowledge the time and effort these men put into developing these items.

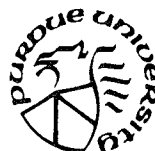
A previous checklist and sample specifications for "Single and/or Tandem Axle Dump Trucks" has been published. If you wish to have a copy please contact HERPICC. If you have comments or suggestions, please write to me.

Sincerely,



Charles F. Scholer  
Associate Director  
HERPICC

CFS:ms



Address Reply to:  
HERPICC  
Civil Engineering Building  
West Lafayette, Indiana 47907

CHECKLIST

for

PREPARING BASIC 2-3 cyd ARTICULATING, RUBBER TIRE, 4-WHEEL DRIVE  
FRONT END LOADER SPECIFICATIONS

The following pages contain various items to be considered when seeking bids for front end loaders.

- General description of equipment being bid.
- Statement of requirement of manufacture of equipment.
- Statement of standardization of all component parts of unit.
- Statement of parts availability and access.
- Statement of location of manufacturer and/or assembly of unit(s).
- Statement of bid submitting requirements.
- Statement of indemnification of local agency concerning patent devices.
- Statement concerning description of term "or equal".
- Statement of terms for accepting unit(s), new and used, year hold overs, inspection of unit(s), local, state and federal requirements, disposition of trade-in unit(s), location of units.

Bucket

- Size \_\_\_\_\_ cubic yards.
- Width \_\_\_\_\_ inches (must extend 3" beyond outside face of tires).
- Cutting Edge or Teeth (Bolt-on) (Welded).
- Corner Guards (yes) (no).
- Spill Guard (yes) (no).
- Automatic Leveler (yes) (no).
- Bucket Type - (General Purpose) (Low Profile) (Light Material)  
(Multi-Purpose 4 in 1) (Side Dump) (Extra Heavy Duty).
- Grab Hooks (yes) (no).
- Fork Lift Attachment (yes) (no).
- Multiple Attachment Mechanism (yes) (no).
- Alternate Sizes (yes) (no).
- Bucket Swing \_\_\_\_\_ degrees.

Tipping Load - Full Turn \_\_\_\_\_ pounds.

(This capacity is with basic machine without counterweight and hydroinflation, with standard tires and standard General Purpose Bucket).

Break-Out Force - \_\_\_\_\_ pounds (Equipped same as tipping load).

Automatic Hydraulic Cylinder Kickout at maximum dump lift arm height.

Minimum distance from front of tires to front edge of bucket with maximum dumping height and at 45 degrees dump angle is \_\_\_\_\_ inches.

Vendor shall provide the following engine information:

Vehicle Make \_\_\_\_\_ Model \_\_\_\_\_ Year \_\_\_\_\_.

Engine (Gasoline) (Diesel) (Natural Gas) (Propane)  
Make \_\_\_\_\_ Model \_\_\_\_\_.

Number of Cylinders \_\_\_\_\_ stroke-cycle.

Bore and Stroke \_\_\_\_\_ x \_\_\_\_\_.

Displacement \_\_\_\_\_ cubic inches.

Taxable Horse Power \_\_\_\_\_.

Continuous (Net) Flywheel Horse Power \_\_\_\_\_ @ \_\_\_\_\_ R.P.M.'s.

Governed Speed \_\_\_\_\_ R.P.M.'s.

Peak Torque \_\_\_\_\_ ft. lbs. @ \_\_\_\_\_ R.P.M.'s.

Compression Ratio \_\_\_\_\_ : \_\_\_\_\_.

Carburetion (Carburetor) (Naturally Aspirated) (Turbo Charged)

(2Bbl) (4 Bbl) (Other)

Cooling System Radiator Capacity \_\_\_\_\_ quarts.

Overflow recovery system. (Yes) (No)

Corrosion Resistor. (Yes) (No) Type \_\_\_\_\_ Location \_\_\_\_\_.

Silicone Hose System. (Yes) (No)

Engine Block Heater(s). (Yes) (No) Number \_\_\_\_\_ Size \_\_\_\_\_ Watts.

Type \_\_\_\_\_ Location \_\_\_\_\_.

Weatherhead Connection (Yes) (No) Location \_\_\_\_\_

Radiator Fan. (Standard) (Reversable)

Filters Air-Type \_\_\_\_\_ Location \_\_\_\_\_.

Pre-filter (Yes) (No) Type \_\_\_\_\_.

Oil-Number of filters \_\_\_\_\_ Location \_\_\_\_\_.

Oil-Extra Capacity (Yes) (No) Type \_\_\_\_\_ Location \_\_\_\_\_.

Fuel - (Yes) (No) Type \_\_\_\_\_ Location \_\_\_\_\_.

Water (Yes) (No) Type \_\_\_\_\_ Location \_\_\_\_\_.

Hydraulic External Mounted (Yes) (No)

Starter Rated Heaviest Duty for this application by manufacturer.

Alternator/Generator \_\_\_\_\_ amperes (Brush) (Brushless) Make & Model \_\_\_\_\_.

Regulator (Integral) (External)

Emergency Shut Down Warning System High Water Temperature - Low Oil Pressure

- Low Hydraulic Pressure - Low Air Pressure

visual and audible warning instruments.

Ignition (Compression Ignited) (Spark Ignited)

Batteries Quantity \_\_\_\_\_ (Standard) (Maintenance Free) Voltage \_\_\_\_\_.

Ampere Hour Capacity \_\_\_\_\_ Cold Crank Power @ 0 degree F. \_\_\_\_\_

Dry weight (each) \_\_\_\_\_ Group Number \_\_\_\_\_

Exhaust System

Muffler - (Standard) (Stainless Steel) (Horizontal) (vertical)

Electrical System

Headlights - Type and Location \_\_\_\_\_.

Tail Lights - Type & Location \_\_\_\_\_.

Working Lights - Type & Location \_\_\_\_\_.

Watts \_\_\_\_\_ Candle Power \_\_\_\_\_.

Strobe Lights - Candle Power \_\_\_\_\_ (Fixed) (Variable)

Separate Power Source (Yes) (No)

Mounting Location(s) \_\_\_\_\_.

Transmission (Manual) (Automatic) Model \_\_\_\_\_.

Number of (Speeds) Forward \_\_\_\_\_ Reverse \_\_\_\_\_.

Number of Speed Ranges \_\_\_\_\_.

Top Speed Forward \_\_\_\_\_ Top Speed Reverse \_\_\_\_\_ in each Range.

Auxillary Cooler (Yes) (No) Temperature Gauge (Yes) (No)

Auxillary Filter (Yes) (No)

Extended Warranty (Yes) (No)

Operating Weight \_\_\_\_\_ pounds.

Front Axle (Standard) (No Spin)

Rear Axle Manufacture \_\_\_\_\_ Model \_\_\_\_\_ (Standard) (No Spin)

(Hydraulically) (Air) Actuated Locking Mechanism

(External) (Internal) Planitarries

Osilating (Yes) (No)



Tires (radial) (Tubeless) (Tube Type)

Tread Style - L-2 \_\_\_\_\_ L-3 \_\_\_\_\_ .

Tire Size - \_\_\_\_\_ Ply \_\_\_\_\_ Quality \_\_\_\_\_ .

Vehicle Clearance Circle (outside diameter) \_\_\_\_\_ .

Wheelbase \_\_\_\_\_

Minimum Ground Clearance \_\_\_\_\_ .

Brake System

(Caliper) (Disk Type) (4-wheel Dual Air/Hydraulic)

(4-wheel Power Actuated/Wet)

Parking Brakes Specifications \_\_\_\_\_ .

Automatic Brake Set in event of Low Air Pressure.

Automatic Transmission Disconnect.

Spitter Valves (Yes) (No)

Air Dryer (Yes) (No) (Electric) (Alcohol)

Pancake Clearance from inside of tires \_\_\_\_\_ inches.

Fuel Tank

Size of tank \_\_\_\_\_ gallons.

Tank Marking (Diesel #1 or #2) (Gasoline - Regular, Unleaded, etc.)

Sight gauge on tank (Yes) (No)

Security Package (Yes) (No)

Lockable Tank Caps (Fuel) (Hydraulic) (Yes) (No)

Engine Side Panels (Yes) (No)

Radiator (Yes) (No)

Cab Ventilated and Insulated

Number of Doors (1) (2)

(Front Mounted) (Rear Mounted)

Tinted Glass (Yes) (No) (Windshield Only) (All Windows)

Inside Dome Light (Manual Operated) (Door Operated)

Cigar Lighter (Yes) (No)

Seat (Standard) (Adjustable Suspension)

Horn(s) (Electric) (Air)

Heater and Defroster (Standard) (Heavy Duty) (Front) (Rear)

Air Conditioning (Yes) (No) (Standard) (Deluxe)

Sun Visors (Yes) (No)

Radio (Yes) (No) (AM) (AM/FM)

Windshield Wipers & Washers (2 Speed) (Intermittent) (Electric)

(Air) (Front) (Rear)

Emergency Access Opposite Side from Door (Yes) (No)

Dual Mirrors - Size \_\_\_\_\_ . \_\_\_\_\_ .

Location (Inside) (Outside)

Adjustable Convex Mirror on Right Side (Yes) (No) Size \_\_\_\_\_ .

Backup Alarm (Yes) (No) Type \_\_\_\_\_ .

Exterior Grab Handles Type \_\_\_\_\_

Fenders (Yes) (No) (Front) (Rear)

Dash Mounted Gauges

Fuel (Switchable to either tank) (Separate gauge each tank)

Tachometer (Yes) (No)

Hourmeter (Yes) (No)

Ammeter (Light) (Needle Type) (Calibrated)

Oil Pressure (Light) (Needle Type) (Calibrated)

Water Temperature (Light) (Needle Type) (Calibrated)

Air Pressure (Needle Type) (Calibrated)

Transmission Temperature (Light) (Needle Type) (calibrated)

Hydraulic Oil (Pressure) (Temperature) (Yes) (No)

Warning Lights

High Water Temperature/Low Oil Pressure Emergency Shut Down Warning

System shall be dash mounted. (Yes) (No)

Paint Color \_\_\_\_\_ Type \_\_\_\_\_ .

Preparation \_\_\_\_\_ .

Warranty of Unit

(Extended Warranty) (Purchaser Designated Option)

(Manufacturers Standard) (Repair Guarantee)

(Scheduled Maintenance Guarantee)

(Guaranteed Minimum Repurchase Price Schedule)

Description \_\_\_\_\_ .

Manuals Operators, parts and service (Number of each required \_\_\_\_\_) .

Delivery Time

List of number of weeks required for delivery of Unit(s) from date of order \_\_\_\_\_ weeks .

**P.A.**  
**Checklist and Sample Specifications**  
**for Front End Loaders, A**

