

SECTION 151 GENERAL EQUIPMENT

151.01 GENERAL.

Equipment used on the work shall be of sufficient size and mechanical condition to produce a product of specified quality. The Engineer may order the removal, replacement, or repair of any equipment that produces non-specification work.

The Contractor may request, in writing, permission to use alternative and innovative equipment and shall furnish evidence that the proposed equipment produces work equal to the quality produced with specified equipment.

If permission is granted, permission may be withdrawn if the results are not satisfactory. Any defective or unsatisfactory work produced shall be removed and replaced or corrected at the Contractor's expense.

No additional compensation will be allowed for any delays or additional costs incurred as a result of applying this provision.

151.02 ROLLERS.

- A. **Tow-Type Pneumatic-Tired Rollers.** The roller shall be equipped with at least 7 wheels with pneumatic tires of equal size and ply.

The wheels shall be arranged to provide complete coverage of the area the roller travels.

The empty and ballasted weights shall be determined from the manufacturer's rating, provided the roller has not been modified from its original design and the ballast furnished is of known weight. If the roller has been modified or if the ballast is not of known weight, the Contractor shall provide a suitable scale for weighing the roller.

Tires shall be uniformly inflated so their air pressure will not vary by more than 5 psi. Rollers shall be operated with tire inflation pressures and wheel loads within the manufacturer's recommended range for the size and ply of tire being used. Rollers shall be constructed so they can be loaded to a gross weight of at least 225 pounds per inch of compaction width.

The tow-type rollers shall not be used to compact paver laid asphalt cement surfaces except for incidental patching.

- B. **Self-Propelled Pneumatic-Tired Rollers.** The roller shall be equipped with at least 7 wheels with pneumatic tires of equal size and ply.

The wheels shall be arranged to provide complete coverage of the area the roller travels.

Rollers shall start, stop, and reverse direction smoothly, without jerking or backlash, and shall be equipped with positive, accurate steering control.

To prevent pickup on asphalt pavement, the roller shall be equipped with smooth-tread tires, close-fitting scrapers for each wheel, and a system for uniformly moistening each wheel without excessive use of water and detergent. Petroleum products shall not be used for moistening the wheels. The roller shall be equipped with skirting of sufficient size to retain heat on the tires. "Wobble-wheel" rollers shall not be used.

The empty and ballasted weights shall be determined from the manufacturer's rating, provided the roller has not been modified from its original design and the ballast furnished for the roller is of known weight. If the roller has been modified or if the ballast is not of known weight, the Contractor shall provide a suitable scale for weighing the roller.

The tires shall be uniformly inflated so their air pressure does not vary by more than 5 psi. The roller shall be constructed so the contact pressure may be varied between 40 psi and 90 psi. The contact pressure shall be defined as the "average ground contact pressure," expressed in psi, obtained when the wheel load in pounds is divided by the gross contact area in square inches of the tire. The Contractor shall furnish any data necessary to determine the contact pressures for the full range of the manufacturer's recommended wheel loads and tire inflation pressures.

C. Smooth-Faced Steel-Wheel Roller.

1. **General.** All smooth-faced steel-wheel rollers shall be self propelled and capable of starting, stopping, and reversing direction smoothly, without jerking or backlash. The roller shall be equipped with positive, accurate steering control. The face of all rollers shall be smooth and free from defects which will mar the surface of the material being compacted. Each wheel or roller shall be equipped with adjustable spring scrapers, and a system for uniformly moistening the full width of each roll or wheel without use of excess water.
2. **Smooth-Faced Steel-Wheel Roller: Tandem - Type A.** This roller shall meet Section 151.02 C.1 and the following requirements:

The empty and ballasted weights shall be determined from the manufacturer's rating, provided the roller has not been modified from its original design and the ballast furnished is of known weight. If the roller has been modified or if the ballast is not of known weight, the Contractor shall provide a suitable scale for weighing the roller.

The roller shall be of a 2-axle or 3-axle tandem design and when fully ballasted shall have a gross weight of 10 tons or more.

3. **Smooth-Faced Steel-Wheel Roller: Tandem - Type B.** This roller shall meet Section 151.02 C.2 except that when fully ballasted it shall have a gross weight of 8 tons or more with no specified contact pressure.

- D. **Vibratory Rollers.** Vibratory rollers shall be of sufficient size and number to keep up with roadway production and provide the specified density.

Vibratory rollers for use on rock embankments, granular borrow, and bases shall meet speed and frequency ranges (vibrations per minute) shown in Table 151-1. Rollers should be operated at high amplitude unless otherwise directed and the roller speed and the vibrations per minute coordinated so there is a minimum of 6 impacts per linear foot.

**TABLE 151-1
AGGREGATE BASE AND EARTHWORK
Impacts per Linear Foot**

Roller Speed M.P.H. (ft./min.)	(Vibrations per Minute)							
	1000	1200	1400	1600	1800	2000	2200	2400
1.0 (88)	11.31	13.6	15.9	18.1	20.4	22.7	25.0	27.2
1.5 (132)	7.6	9.1	10.6	12.1	13.6	15.2	16.7	18.2
2.0 (176)	–	6.8	8.0	9.1	10.2	11.4	12.5	13.6
2.5 (220)	–	–	6.4	7.3	8.2	9.1	10.0	10.9
3.0 (264)	–	–	–	6.1	6.8	7.6	8.3	9.1
3.5 (308)	–	–	–	–	5.8	6.5	7.1	7.8
4.0 (352)	–	–	–	–	–	–	6.3	6.8
4.5 (396)	–	–	–	–	–	–	–	6.1

Vibratory rollers used on plant mix base and hot bituminous pavement shall be operated at the speed (mph) and frequency ranges to provide a minimum of 10 impacts per linear foot as shown in Table 151-2. Rollers shall be amplitude adjustable and operated at low amplitude unless otherwise directed. Only drum-type rollers will be permitted meeting the following minimum requirements: 1800 vibrations per minute (VPM), static force on drums of 135 pounds per linear inch (PLI) of roller width, and total applied force on vibrating drums (dynamic plus static) of 300 pounds per linear inch (PLI).

Rollers shall be self propelled, and equipped with spray bars to prevent pickup of asphalt material. Vibrators shall shut off automatically whenever the roller stops. Rollers shall be capable of being operated as a static roller.

Vibratory rollers shall be equipped with an accurate and working gauge or gauges for measuring the frequency of each drum or the Contractor shall provide the Engineer with an accurate hand-held resonant reed tachometer for each roller before using the roller on the Project. If the frequency gauge malfunctions or the tachometer is damaged, the Contractor shall have 48 hours to repair or replace it or the roller cannot be used on the Project.

Full instructions on the procedures of making amplitude adjustments shall accompany each roller.

**TABLE 151-2
ASPHALT PAVING
Impacts per Linear Foot**

Roller Speed M.P.H. (ft./min.)	(Vibrations per Minute)						
	1800	2000	2200	2400	2600	2800	3000
1.0 (88)	20.4	22.7	25.0	27.2	29.5	31.8	34.1
1.5 (132)	13.6	15.2	16.7	18.2	19.7	21.2	22.7
2.0 (176)	10.2	11.4	12.5	13.6	14.8	15.9	17.0
2.5 (220)	–	–	10.0	10.9	11.8	12.7	13.6
3.0 (264)	–	–	–	–	–	10.9	11.4

When the roller is in the static mode and prior to achieving required density, the traveling speed shall not exceed 4 mph.

- E. **Combination Rollers.** Combination Rollers shall meet the requirements of Section 151.02 D, except they shall have a single vibrating drum in the front and four smooth pneumatic tires in the rear. The roller shall have a gross weight of 20 tons or more.

The tires shall be of equal size and ply and shall be uniformly inflated so the air pressure of each tire does not vary by more than 5 psi. The contact pressure of the tires shall be as defined in Section 151.02 B.

- F. **Vibratory Sheep Foot/Pad Foot/Extended Pad Foot Rollers.** Vibratory sheep foot/pad foot/extended pad foot rollers shall be capable of developing centrifugal force of 50,000 lbs. or more, have a minimum operating weight of 23,000 lbs., and a minimum roller width of 6 feet.

151.03 HAULING EQUIPMENT.

- A. **Water-Hauling Equipment.** All water distribution vehicles shall be equipped with water-tight connections and a water-tight tank.

The distributor shall be equipped with a spraying device capable of evenly distributing water over the designated area. The Department will determine the water capacity and provide plates to attach to the tank indicating the capacity of the tank in "M" gallons before the tank is used on the Project.

- B. **Material-Hauling Equipment.** The hauling vehicles shall have a dump box capable of controlled discharge onto the roadbed or into pavers. The dump box shall be constructed and maintained so material is not lost during transit.

Bituminous mixture haul trucks shall be equipped with a smooth-lined dump box, free from cracks, holes, or deep dents. The truck frame or dump body shall not make direct contact with the paver, and the truck or box shall not exert pressure on

the paver during dumping operations. The dump box shall be lubricated when necessary with a thin film of material that does not dissolve the bitumen. Before use, excess coating shall be drained out of the box. Petroleum distillates such as kerosene or fuel oil will not be permitted.

A hole of sufficient diameter to receive the thermometer shall be provided on the driver's side of the truck box at the approximate intersection of imaginary diagonal lines drawn from the corners of the truck box.

Each truck shall be equipped with a cover made of canvas or other suitable material of adequate size to protect the hot mix from the weather.

151.04 BITUMINOUS PAVERS.

Self-propelled pavers shall be provided with a full width vibrating screed, heated if necessary, and capable of spreading and finishing the mix in lane widths to the specified typical section and thicknesses shown on the Plans. Hydraulic extendable screeds may be used for variable width pavements. The paver shall have an auger that extends to within one foot from either edge of the vibrating screed. Pavers used for shoulders and similar construction shall spread and finish the mix in widths shown on the Plans.

The paver's receiving hopper shall have sufficient capacity for a uniform spreading operation and with a distribution system that places the mixture uniformly in front of the screed.

The screed or strike-off assembly shall produce the specified finished surface without tearing, shoving, or gouging the mixture.

The paver shall operate at speeds consistent with continuous and uniform laying of the mixture.

The control system shall automatically control the elevation and transverse slope of the paver screed. A 30 foot minimum length rolling straightedge, erected stringline, or other approved device shall be used to establish the grade reference for control of the screed height. The tension in the stringline shall be adequate to prevent deflection due to the weight of the grade sensor. The system shall permit the grade reference device to operate on either side of the paver, and shall maintain the desired transverse slope regardless of changes in screed elevation. The system shall be capable of conversion to manual control of the screed slope and elevation. Whenever breakdown or malfunction of the automatic screed controls occurs, the equipment may be operated manually for the remainder of that working day, provided the finished product meets Specifications. Frequent or prolonged breakdown shall constitute cause for work suspension until satisfactory repairs or replacements are made.

151.05 LIQUID BITUMEN DISTRIBUTORS.

Distributors shall be mounted on a truck capable of maintaining uniform speeds for proper application of the bitumen.

The distributor shall apply the bitumen uniformly on the designated area, at the specified rate, within a tolerance of 0.02 gallon per square yard.

The truck shall be equipped with a tachometer, visible to the driver, which accurately registers the truck speed in feet per minute. The tachometer shall be operated by a wheel independent of the truck wheels.

The distributor shall be equipped with a circulating heating system that evenly controls the heating of the bitumen to the specified temperature. The tank shall be equipped with a visible thermometer that accurately registers the temperature of the contents.

The distributor pressure pump shall be capable of maintaining a uniform and sufficient pressure throughout the full length of the spray bar during operation. A gauge shall be provided which shows the pump output in gallons per minute.

The distributor shall be equipped with full-circulation spray bars designed to permit any adjustments necessary to obtain uniform, complete distribution of bitumen on the designated area. The flow of bitumen through the spray nozzles shall be controlled by cutoff valves to start and stop the flow quickly and uniformly over the length of spray bar without dripping. The Contractor shall provide data showing the manufacturer's instructions or recommendations for spray bar height above the road surface, nozzle size, and angle of spray fan with the spray-bar axis.

A workable gauge shall be visibly located on the distributor tank for determining the quantity of material in the tank at any time. The Engineer may require that the distributor be calibrated at any time. All necessary means and assistance for calibrating the distributor shall be provided by the Contractor.

For each distributor, the Contractor shall provide charts, tables, or other means for accurate, rapid determination of application rates in gallons per square yard for various spray bar widths, truck speeds, and pump pressure, or output.

151.06 AGGREGATE SPREADER.

The aggregate spreader shall deposit the designated quantity of aggregate per square yard in a smooth, uniform layer on the freshly deposited bitumen so the equipment wheels do not contact any bitumen not covered by aggregate. The rate of aggregate discharge shall be uniform over the full application width, and whenever necessary, cutoff plates shall be provided to reduce the width of spread in suitable increments to meet job requirements.

The application width of the spreader shall be adequate to cover the full width of one traffic lane plus one foot; however, the application width will not be required to exceed 13 feet.

151.07 SCALES

- A. **General.** The Contractor shall have the scale tested and certified by the Weights and Measures Division of the Public Service Commission or a certified scale service within 6 months prior to use on the Project. Before beginning the weighing operation, the Engineer shall test the scale, and if the scale is not within the required tolerance, the Engineer may serve written notice to have the scale retested by an approved agency before allowing it to be used on the Project.

The Contractor shall bear all expenses for having scales tested and certified by the Weights and Measures Division of the Public Service Commission or a certified scale service, and for making weight comparisons with other scales.

The scale shall not be altered from the manufacturer's original design unless alterations are approved by the Weights and Measures Division of the Public Service

Commission or a certified scale service, and specifically shall not be altered to weigh loads in excess of the rated capacity of the scale.

The Contractor shall provide 100 pounds of test weights in units of 50 pounds each. Weights shall be made of metal not easily altered in size or weight. Each weight shall be certified as to weight by the Weights and Measures Division of the Public Service Commission or a certified scale service, and stamped or permanently marked with its certified weight.

Scale persons may not be provided by the Department when electronic scales with automatic printers are used.

The Contractor is responsible for meeting the legal load limits established by law.

B. Truck Scales.

1. **General.** For each truck scale, the Contractor shall furnish a weathertight building equipped with light, heat, and a chair or stool for the scale operator's use. The building shall enclose the recording beams of the scale.
2. **Installation and Maintenance.** The scale shall be installed on a firm, level foundation. All working parts shall be installed and maintained in correct position with respect to level and vertical alignment. Adequate clearance shall be maintained around all working parts. Knife-edge pivots shall be sharp and straight, and pivot-bearing surfaces shall be smooth. The scale shall be cleaned as necessary for the proper functioning and accuracy. The Contractor is responsible for keeping the scale platform clean.
3. **Platform and Approaches.** The scale shall have a platform of adequate length to weigh the longest truck or truck-trailer combination in one operation or,
 - a. The truck or truck-trailer combination shall be weighed on separate scales whose platforms are at the same elevation and arranged to permit simultaneous weighing of the entire unit, or,
 - b. The wheel loads of the truck or truck-trailer combination may be weighed in separate operations provided any wheels not resting on the scale platform are supported on a concrete or asphalt paved level approach or on an independent level platform rigidly constructed of wood or steel.
4. **Scale Tests.** The Contractor shall maintain the scale balance and conduct the testing as the Engineer deems necessary to insure that the scale accuracy is within the Specifications. If the scale does not meet the tolerances specified below, use of the scale shall be discontinued until the scale is repaired and is within the specified tolerances. The scale shall meet the following:
 - a. **Zero Load Test.** When no load is on the scale and all beam weights are set at zero, the scale shall be adjusted to balance or to read zero.
 - b. **Comparison Test.** The scale shall be maintained within plus or minus 1% of the correct weight of the applied load. A minimum of one com-

parison test is required for every 5,000 tons of material weighed or one day's production, whichever is greater. The comparison test can be made by one of the following methods:

- (1) A loaded truck, which has been weighed on the Contractor's scale will be randomly selected by Department personnel at a random time and weighed on another certified scale.
- (2) A piece of equipment that has been certified as to weight shall be weighed on the Project scale. The piece of equipment shall weigh at least 60 percent of the maximum weight which will be applied to the scale for the Project. The certified weight shall be initially determined at the time the scale is certified and rechecked each time the scale is recertified. The piece of equipment shall have a plate showing the certified weight welded to it. The piece of equipment shall be clean of mud and dirt and shall be refueled each time it is used for the weight comparison. Recertification will be required when any changes, such as wheel weights and ballast are made that will affect the certified weight.

When a piece of equipment with a certified weight is used to make scale checks, weight comparisons are to be made with another certified scale for the first 2 days of operation and once a month thereafter.

Any weight comparisons that do not meet Specifications (plus or minus 1% of the applied load) will be rechecked after adjustments are made.

- c. **Sensitivity Test.** A weekly sensitivity test shall be made by adding 100 pounds of test weights to the scale after a loaded truck is on the scale and the load has been weighed. If the scale is not sensitive to the added weight, the scale shall not be used on the Project until it has been repaired.
- d. **Shift Test.** The scale shall weigh within the required accuracy regardless of the position of the load on the scale platform. The performance of the scale with off-center loading shall be checked by comparing the results obtained by weighing a loaded truck with: (1) the rear wheels at the extreme end of the scale platform; (2) the position of the truck is then reversed with the rear wheels at the extreme opposite end of the platform; and (3) the truck is centered on the scale platform.

This test shall be performed at the beginning of the Project and at least one other time during the Project. Weight differences shall not be greater than 0.2% of one another.

C. Electronic Truck and Hopper Scales.

1. **Electronic Weigh System.** The electronic digital weigh station shall use a load cell or cells. All scales shall conform to the current edition of the National Bureau of Standards Handbook 44. The weight indicated shall be accurate to within 1.0 percent of the true weight.

The system shall include an automatic printer that provides the following minimum information:

- a. Project Number (numerical)
- b. Date
- c. Time
- d. Ticket Number (consecutive)
- e. Haul Unit Number
- f. Gross Weight
- g. Tare Weight
- h. Net Tons in the Load
- i. Product Designation

Items f and g will not be needed if the material is weighed in a hopper scale.

The printer shall produce a minimum of 2 copies of each ticket with a maximum size of 5-1/2 x 8-1/2 inches, and the words and numerals shall be clear and legible.

The printer and the control shall be programmed or otherwise equipped to print a word or symbol identifying when any weight information is manually entered.

If the printer or control malfunctions, manual weighing and recording as specified in Section 151.07 B will be permitted. Also, in the event of a printer or control malfunction, material that is in storage or in a surge bin may be delivered to the roadway, if the weight of the material can be accurately established.

2. **Randomly Checked Weighing.** When a Department scaleperson is not used, the Engineer shall validate the truck and/or material weight by randomly reweighing the truck. The Engineer shall randomly select a minimum of one loaded truck for each 5,000 tons of material weighed or one day's production, whichever is greater, to validate the weight. The weight check must be done on a certified scale.

Should the random weight checks disclose weight differences of more than 1% using the comparison test, the scale shall be retested and adjusted as necessary to assure accurate weighing.

3. **Electronic Truck Scales.** Electronic truck scales shall meet Sections 151.07 A and 151.07 B.
4. **Hopper Scale Tests.**
 - a. **Sensitivity Test.** A weekly sensitivity test shall be made by adding 100 pounds of test weights after the hopper scale is loaded and weighed. If

the scale is not sensitive to the added weight, the scale shall not be used on the Project until it has been repaired.

- b. **Comparison Test.** The scale shall be maintained within plus or minus 1% of the correct weight of the applied load. One comparison test is required for every 5,000 ton of material weighed or one day's production, whichever is greater. The test shall be made by comparing the weight of the material in the hopper and the weight of the material after it is weighed on another certified scale.

D. **Full Length Electronic Platform Scales and Hopper Scales.** The Full Length Electronic Platform Scale (FLEPS) shall be equipped with a platform of sufficient length that the longest hauling unit can be weighed in one operation. Split weighing will not be allowed.

1. **Minimum Tonnage.** The Contractor shall furnish a Full Length Electronic Platform Scale or an Electronic Hopper Scale on any Contract that contains at least one pay item whose quantity must be determined by weighing, and the estimated quantity of that pay item is 50,000 tons or more. The Contractor may use other approved scales to weigh pay items of lesser tonnage.
2. **Digital Readouts.** Each FLEPS and Hopper Scale shall be equipped with an electronic digital readout which displays the tonnage being weighed and will operate continually during weighing operations.

E. **Belt and Loader Bucket Scales.**

1. **General.** Belt conveyor scales shall comply with the requirements for Belt-Conveyor Scales in the current edition of the National Bureau of Standards Handbook No. 44. The weight indicated shall be accurate to within 1.0 percent of the true weight.
2. **Comparison Test.** At the beginning of each day, the Contractor shall weigh five or more loads from sequential hauling units and compare the total weight with the total weight of the same loads taken on a platform scale meeting specification requirements. The belt scale shall be maintained within plus or minus 1% of the platform scale.
3. **Randomly Checked Weighing.** The Engineer will randomly select a minimum of one loaded truck for every 1,000 tons of material weighed or one day's production, whichever is less, to validate the weight. The weight check must be done on a certified scale.

Should random weight checks disclose weight differences of more than 1.0%, the scale shall be retested using the comparison test and adjusted as necessary to assure accurate weighing within 1%.

If testing shows the scale has been under-weighing, it shall be adjusted immediately. The Contractor shall not be compensated for any loss from under-weighing.

If the scale has been over-weighing, its operation shall cease immediately until adjusted. The Engineer will determine the weight of all material weighed

after the last comparison test meeting the specified requirements. This weight will be reduced by the percentage of scale error that exceeds one percent to determine the pay quantity.

4. **Weigh Tickets.** The Contractor shall provide two copies of weigh tickets that provide the following minimum information:
 - a. Project Number
 - b. Date
 - c. Time
 - d. Ticket Number (Consecutive)
 - e. Hauling Unit Number
 - f. Net tons in the load
 - g. Pit Location

The tickets and weighing procedures shall be approved by the Engineer.

F. Contractor Furnished Scale, Scale Person and Dump Person.

1. **General.** If specified on the plans, this work shall consist of providing a scale, scale person, and dump person for proper construction of the project.
2. **Construction Requirements.** The Contractor shall furnish and use a full length electronic truck scale meeting the requirements of Section 151.07 of the Standard Specifications and the following requirements for weighing all Aggregate Base or specified materials on the project.

The electronic truck scale system shall include an automatic printer for haul tickets and haul sheets.

The computerized scale system shall include an automatic printer that prints a haul ticket containing the following information:

- a. Project Number
- b. Date
- c. Time
- d. Ticket Number
- e. Haul Unit Number
- f. Gross Weight
- g. Tare Weight
- h. Net Weight (in tons)
- i. Type of Material
- j. Material Spread Distance

The system shall also print a daily haul sheet containing the following information:

Date	Type of Project	Haul Sheet Number
Project	County	Pit Location
Contractor	Material Hauled	Subcontractor
Haul Sheet Total	Running Total	Pit Owner

The haul sheet shall list each truck number and the net tons for each load hauled and total tons hauled for each unit. A haul sheet shall be made for each type of material.

The haul sheet shall also include a certified statement stating that this is a true and accurate quantity of material supplied to the project and a line for the Contractor's signature. The haul sheet shall be signed by the Contractor

and submitted to the Engineer at the end of each day. The haul sheet shall contain a blank line for the Engineer's signature.

In the case of computer malfunction, manual weighing will not be allowed for more than two consecutive work days.

The automated scale system shall be programmed so that when an overweight load is on the scale, a ticket will not be printed. An overweight load is defined as any load that is 1,000 lbs. over the Legal Gross Vehicle Weight. An overload message with the gross vehicle weight shall be displayed so the overload amount is known.

The Contractor shall also provide a scale person and a person to control the contractor's dumping operation. The scale person shall operate the computerized scale system and provide each truck driver with a scale ticket for each load. The scale person shall check and record the tare weights of each hauling unit on a daily basis and provide a daily tare weight report to the Engineer. The scale person shall, under the observation of the Engineer, conduct scale tests as indicated in Section 151.07 B.4 a, c, and d of the Standard Specifications to insure the scale is operating within specification tolerances. The Engineer will conduct test item b. Comparison Test by randomly selecting a loaded truck, already weighed, for the scale check. All scale checks shall be documented and given to the Engineer with the daily tare weight report.

If a weight comparison check shows the scale under-weighing, it shall be adjusted immediately. The Contractor shall not be compensated for any loss from under-weighing.

If the scale has been over-weighing, (greater than the 1.0 percent limitation), operations will cease immediately until adjusted. The Engineer will calculate the combined weight of all material weighed after the last test showing accurate results. This combined weight will be reduced by the percentage of scale error. The Contractor's payment for this material will then be calculated using the bid price times the reduced combined weight.

The dump person shall control the Contractor's truck-dumping operations to insure proper material placement.

3. **Basis of Payment.** All costs to provide a full length electronic scale, scale person, dump person, haul tickets, and haul sheets shall be included in the bid price for the item being hauled.

151.08 MINING/BLENDING MACHINE.

The mining/blending machine shall be a self-propelled machine designed to pulverize the existing asphalt layers to a specified maximum size. It shall be capable of uniformly blending the pulverized material with existing or added aggregate base material. The machine shall have a control system to automatically control the elevation of the cutting head and be heavy enough to mine and blend the material to the specified depth.