

**SECTION 11 82 19
PACKAGED INCINERATORS**

SPEC WRITER NOTES:

1. Delete between // ---- // if not applicable to project. Also delete any other item or paragraph not applicable. Deleted paragraphs should be labeled "Omitted".
2. It is extremely important that the composition and quantity of waste be accurately determined and specified.
3. Applicable emissions regulations must be carefully researched and specified.

PART I - GENERAL

1.1 DESCRIPTION:

Factory built, packaged, manual batch feed, pathological //and solid waste// incinerator with burners, stack, controls, and accessories.

1.2 RELATED WORK:

SPEC WRITER NOTE: Section 21 05 11, COMMON WORK RESULTS FOR FIRE SUPPRESSION, Section 22 05 11, COMMON WORK RESULTS FOR PLUMBING, Section 23 05 11, COMMON WORK RESULTS FOR HVAC AND STEAM GENERATION, and Section 23 05 41, NOISE AND VIBRATION CONTROL FOR HVAC PIPING AND EQUIPMENT referenced below are intended for HVAC and plumbing. They must be revised to suit incinerator applications.

- A. Stack thimble and flashing: Section 07 60 00, FLASHING AND SHEET METAL.
- B. Stack painting: Section 09 91 00, PAINTING.
- C. Section 21 05 11, COMMON WORK RESULTS FOR FIRE SUPPRESSION, Section 22 05 11, COMMON WORK RESULTS FOR PLUMBING, and Section 23 05 11, COMMON WORK RESULTS FOR HVAC AND STEAM GENERATION.
- D. Section 23 05 41, NOISE AND VIBRATION CONTROL FOR HVAC PIPING AND EQUIPMENT.
- E. Fuel piping: Section 22 05 19, METERS AND GAGES FOR PLUMBING PIPING, Section 22 05 23, GENERAL-DUTY VALVES FOR PLUMBING PIPING, Section 22 05 33, HEAT TRACING FOR PLUMBING PIPING, Section 22 11 00, FACILITY WATER DISTRIBUTION, Section 22 13 00, FACILITY SANITARY SEWERAGE, Section 22 13 23, SANITARY WASTE INTERCEPTORS, Section 22 14 00, FACILITY STORM DRAINAGE, Section 22 66 00, CHEMICAL-WASTE SYSTEMS FOR LABORATORY AND HEALTHCARE FACILITIES, Section 23 11 23, FACILITY NATURAL-GAS PIPING, and Section 33 51 00, NATURAL-GAS DISTRIBUTION.

1.3 QUALITY ASSURANCE:

- A. Coordinate the entire assembly of incinerator, stack, controls, fuel supply.
- B. Provide written certification that the entire assembly has been coordinated to achieve the required performance and to provide the required features.
- C. Equipment, installation, and operation shall conform to NFPA 82. Where conflicts exist between NFPA 82 and this specification, this specification shall govern.
- D. Provide written certification that the incinerator complies with permit to construct issued by _____.

1.4 SUBMITTALS:

- A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. Incinerator:
 - 1. Arrangement, description of construction, and outline drawings of incinerator and accessories showing clearances and dimensions.
 - 2. Predicted performance including burn time based on waste composition specified.
 - 3. Calculation of secondary chamber retention time.
 - 4. Piping and stack connection locations and sizes.
 - 5. Technical data including temperature rating and arrangement of refractory and insulation.
 - 6. Weights of unit and loading diagram of foundation. Evidence that contractor has coordinated support requirements with foundation design.
 - 7. Recommended anchorage to foundation. // Seismic requirements apply. Submit calculations by professional engineer. Refer to Section 13 05 41, SEISMIC RESTRAINT REQUIREMENTS FOR NON-STRUCTURAL COMPONENTS. //
 - 8. Predicted external surface temperatures.
 - 9. Certified test report on performance of similar unit burning waste types (0, 1, 3, 4, and 6) which has composition similar to Article, PROJECT CONDITIONS, this specification:
 - a. Overall burn time and weight reduction.
 - b. Waste quantity and composition per batch.
 - c. Emissions in all categories specified in PART 2.
 - d. Auxiliary fuel use.
 - 10. Catalog data on burners, sound attenuators, fuel trains, motors.

11. Fuel requirements: Flow rate, pressure at inlet to fuel train.
 12. Full load power, efficiency, and power factor of all motors greater than one horsepower.
 13. Electrical service requirements for all motors and controls.
 14. Predicted sound level of all systems.
 15. Schematic diagrams of control systems. Catalog cuts on components of control and instrument systems. Description of operation of control system.
 16. Arrangement and location of control panels.
- C. Stack System:
1. Drawings showing system arrangement and dimensions.
 2. Weights of subassemblies.
 3. Design, construction, pressure and temperature limitations of entire system including expansion joints and dampers.
 4. Support point locations and loads for entire system.

1.5 PROJECT CONDITIONS:

A. Waste Material to be Incinerated Each Day:

1. Typical Day Number 1:

a. General Waste: _____ kg, _____ cubic meters (_____ pounds, _____ cubic feet).

b. Pathological Waste: _____ kg, _____ cubic meters (_____ pounds, _____ cubic feet).

SPEC WRITER NOTE: Some manufacturers recommend only one batch per 24 hour day.

c. Daily Feeding Schedule: // One batch in one eight hour shift each day. // One batch in each of two eight hour shifts each day. // Two batches in one eight hour shift per day. //

2. Typical Day Number 2:

a. General Waste: _____ kg, _____ cubic meters, (_____ pounds, _____ cubic feet).

b. Pathological Waste: _____ kg, _____ cubic meters (_____ pounds, _____ cubic feet).

c. Daily Feeding Schedule: // One batch in one eight hour shift each day. // One batch in each of two eight hour shifts each day. // Two batches in one eight hour shift per day. //

3. Waste Composition by Weight:

SPEC WRITER NOTE: The following waste material composition is given as an

example. Revise as necessary to suit the project conditions.

- a. General Waste: Solid waste, 65 percent Type 0, 20 percent plastic (including PVC), and 15 percent Type 4.
 - b. Pathological Waste: 95 percent Type 4, 5 percent plastic.
- B. Auxiliary Fuel:
- // Natural gas: Furnished by local utility. High heating value _____MJ/cubic meter (_____ BTU per cubic foot) at gas company flow metering base pressure and temperature. Pressure at inlet to burner-mounted regulator ____ kPag (____psig) minimum, ____ kPag (____psig) maximum. // // Fuel oil: Furnished under Government contract. Number 2 burner fuel. // // Liquefied Petroleum Gas (LPG): Furnished under Government contract. High heating value _____MJ/cubic meter (_____ BTU/cubic foot) (propane) at standard conditions (100 kPag, 15.5 degrees C)(14.7 psig, 60 degrees F). Pressure at inlet to burner - mounted pressure regulator ____kPag (____PSIG) maximum. //

1.6 DEFINITIONS:

- A. Type 0 Waste: Trash, rated 19.8 MJ/kg (8500 BTU per pound). A mixture of highly combustible waste such as paper, cardboard and wood. Contains up to 10 percent by weight of petrochemical waste, 10 percent moisture, and 5 percent non-combustible solids.
 - B. Type 1 Waste: Rubbish, rated 15.1 MJ/kg (6800 BTU per pound). Combustible waste paper, cartons, rags, wood scraps, floor sweepings. Contains up to 25 percent moisture and up to 10 percent non-combustible solids.
 - C. Type 3 Waste: Garbage, rated 5.8 MJ/kg (2500 BTU per pound). Consists of animal and vegetable wastes from kitchens. Contains up to 70 percent moisture and up to 5 percent non-combustible solids.
 - D. Type 4 Waste: Human and animal remains, rated 2.3 MJ/kg (1000 BTU per pound). Consists of carcasses, organs, and solid organic wastes from hospitals and laboratories. Contains up to 85 percent moisture and 5 percent non-combustible solids.
- SPEC WRITER NOTE: Actual heating value of Type 6 should be determined by test.
- E. Type 6 Waste: Infectious/solid by-product waste, such as rubber, plastics, wood from industrial and hospital operations, rated 23.3 - 27.9 MJ/kg (10,000-12,000 BTU per pound).

1.7 APPLICABLE PUBLICATIONS:

- A. The publications listed below form a part of this specification to the extent referenced. The publications are referenced in the text by basic designation only.
- B. ASTM International (ASTM):
 - C401-91 (2005) Standard Classification of Alumina and Alumina-Silicate Castable Refractories
 - C612-10 Mineral Fiber Block and Board Thermal Insulation
- C. National Fire Protection Association (NFPA):
 - 70-11 National Electrical Code
 - 82-09 Incinerators and Waste and Linen Handling Systems and Equipment
- D. Underwriters Laboratories (UL):
 - 50-07... Enclosures for Electrical Equipment

PART 2 - PRODUCTS

SPEC WRITER NOTE: Make material requirements agree with applicable requirements specified in the referenced Applicable Publications. Update and specify only that which applies to the project.

2.1 INCINERATOR:

- A. Type: Controlled air, multi-stage combustion, manual batch feed, factory assembled, packaged unit. Auxiliary burners designed for firing // natural gas // LP gas (propane) // Number 2 fuel oil //.
- B. Service: Designed for batch feeding with feeding schedules and waste materials as specified. Incineration process shall convert the waste and auxiliary fuel to carbon dioxide, water vapor and ash. No waste materials will be fed to the incinerator during the burning process. //All components weatherproof for outdoor location. //
- C. Performance:
 - 1. Emissions in Flue Gas:

SPEC WRITER NOTE: Review all national, regional and local codes and revise the following to the most stringent requirements. Investigate types of material to be incinerated and determine if air pollution control devices such as scrubbers, must be incorporated in the project specification.

- a. Particulate: Maximum _____grains per standard cubic meter (_____grains per standard cubic foot) corrected to 7 percent oxygen (O₂).
 - b. Opacity: Less than 10 percent (non-visible) 98 percent of the time.
 - c. Retention Time: Minimum // 0.5 // 1.0 // 2.0 // _ // seconds in secondary chamber.
 - d. Carbon Monoxide: 100 parts per million (ppm) maximum corrected to 7 percent oxygen (O₂).
 - e. Other Emissions: _____
2. Weight Reduction of Waste: Minimum 90 percent of combustible portion.
 3. Burn Rate: Sufficient to completely burn types and quantities of waste as specified within the time period specified.
 4. Sustained Temperature in Secondary Chamber: Minimum _____degrees C (_____degrees F).
 5. Sound Levels: Shall not exceed 85 DBA when measured 3 meters (10 feet) from the source. If sound levels exceed requirements, modify or replace the equipment as necessary.
- D. Operation:
1. Primary Chamber:
 - a. Provide manual door for waste feed, access door for manual ash removal, burner, underfire combustion air.
 - b. Burners shall commence firing to ignite the load after loading of waste is complete and required temperature is reached in secondary chamber and shall automatically operate to maintain adjustable minimum temperature sufficient for proper combustion. In the pathological mode, one or more burners shall fire continuously until the end of a timed cycle.
 - c. Provide automatic modulating combustion air supply controlled by effluent temperature leaving the primary chamber. Adjustable set point range 425 - 1315 degrees C (800-2400 degrees F). Burner shall fire only when combustion air supply has automatically increased to the highest flow rate and effluent temperature is below the set point.
 2. Secondary Chamber:
 - a. Includes elements of the incinerator where volatiles and entrained particulates are burned. Retention time is based on the

volume of these elements. Measure volume from downstream of location of last introduction of combustion air.

- b. Automatic modulating combustion air supply controlling effluent gas temperatures. Adjustable set point range 815 - 1315 degrees C (1500-2400 degrees F).
- c. Secondary burner shall automatically operate to control effluent gas temperatures when temperatures go significantly below the temperature setting of the combustion air control. Burner shall operate at start-up and achieve the required secondary chamber temperature with the primary chamber burner not operating.

E. Design:

1. Primary Chamber:

- a. Enclosure: Carbon steel of sufficient thickness and reinforcing to preclude deflection. All surfaces lined with refractory backed with insulation board or insulating refractory. Hearth shall be castable refractory with raised rim to prevent waste fluid leakage.
- b. Refractory: Minimum rating 1480 degrees C (2700 degrees F) castable, ASTM C401, Class D or higher; or, equivalent firebrick.
- c. Refractory Anchors: Stainless steel AISI 304, 310, or 316 high temperature type, 8 mm (0.31-inch) minimum thickness. Anchors within 610 mm (two feet) of burner AISI 316 stainless steel. Maximum spacing three times refractory thickness. Length $2/3 - 3/4$ refractory thickness, staggered arrangement.
- d. Insulating Board: Mineral fiber, ASTM C612, Class 5.
- e. Charging Door: Refractory lining and insulation same as incinerator enclosure. Minimum clear opening 510 mm (20 inches) square, hinged, operable by one person. Temperature of door handles shall be sufficiently low to allow operation with bare hands. Counter balance top-opening doors.
- f. Combustion Air Ducts and Ports: Designed to avoid plugging or to permit cleaning from outside the incinerator.
- g. Ash Removal Door: Refractory lined and insulated same as shell. Hinged, operable by one person. Locate at lowest part of chamber so that ashes can be raked from the incinerator into a container.

2. Secondary Chamber:

- a. Enclosure: Carbon steel of sufficient thickness and reinforcing to preclude deflection. All surfaces lined with refractory backed with insulation board or insulating refractory.
 - b. Refractory: Minimum rating 1480 degrees C (2700 degrees F). Castable refractory ASTM C401, Class D or higher; or, equivalent firebrick.
 - c. Refractory Anchors: Stainless steel AISI 304, 310, or 316 high temperature type, 8 mm (0.31-inch) minimum thickness. Anchors within 610 mm (two feet) of burner AISI 316 stainless steel. Maximum spacing three times refractory thickness. Length 2/3 - 3/4 refractory thickness. Staggered arrangement.
 - d. Insulating Board: Mineral fiber, ASTM C612, Class 5.
 - e. Access: Provide access openings to allow cleaning and repair of all areas.
3. Viewports: Provide sufficient quantity to allow inspection of at least 75 percent of hearth area.
- F. Exterior Finish: Provide heat resistant surface treatment, prime and finish coats of standard color of incinerator manufacturer. Refer to Section 09 91 00, PAINTING. Finish requirements of NFPA 82 do not apply.

2.2 BURNERS:

- A. Type: // Natural gas // Fuel oil // LP gas (propane) //, forced draft, automatic firing, with fuel valve trains and safety interlock devices. Designed to burn fuel listed in PART I.
- B. Igniter: Direct electric ignition or gas igniter (pilot).
- C. Code Compliance: Fuel valves, safety and interlock devices shall be UL listed for burner service. Provide dual automatic safety shut off valves on fuel train.
- D. Flame Safeguard: Automatic programmer, microprocessor-based solid state electronic with self-diagnostics, UL-listed. Lockout on flame failure and on actuation of interlocks. Flame failure response time four seconds maximum. Provide ten second trial for ignition.
- E. Burner Operation Control: Actuated by temperature controllers and operating cycle controllers.
- F. Fuel Pressure Control: Provide pressure regulator.
- G. Automatic Burner Shut-Down Interlocks Required:
 - 1. Low combustion air flow.
 - 2. High and low fuel pressure.

3. Fuel valves not closed prior to ignition.

H. Automatic Burner Cooling: Provide control to automatically provide cooling air if burner overheats when not firing. Cooling air flow shall not cause emissions to exceed limits.

2.3 FORCED DRAFT FAN:

A. Type: Electric motor driven, inlet or outlet damper controlled. Design for required combustion air at site altitude.

B. Dampers: Heavy duty, self-lubricating bearings, adjustable linkage.

C. Sound Attenuators: Provide attenuators on fan intakes to reduce sound levels to meet requirements.

2.4 MOTORS:

Direct-connected, high-efficiency, non-overloading under all operating conditions, design for 40 degrees C ambient. Provide totally enclosed motors on outdoor installations, open-drip-proof on indoor installations.

2.5 CONTROLS AND INSTRUMENTS:

A. General: Complete microprocessor-based system providing automatic operation and monitoring of incinerator with manual starting of normal cycle and manual initiation of a pathological burning cycle.

B. Control Functions and Arrangement:

1. Start-Up:

a. Provide lockable start switch. Actuation of manual switch shall start forced draft fan and then shall initiate automatic prepurge of entire incinerator with eight air changes and then shall start secondary chamber burner.

b. Primary chamber burner shall be locked out until secondary chamber reaches set temperature (adjustable 815 - 1090 degrees C)(1500 - 2000 degrees F).

c. After charging waste, actuation of manual switch shall start primary chamber burner.

d. Manual initiation of pathological mode shall actuate automatic cycle that keeps the primary chamber burners in continuous operation for an adjustable time period.

2. Operation of Incinerator:

a. Automatic modulation of combustion air to primary and secondary chambers to maintain adjustable set temperatures in each chamber.

b. Automatic operation of secondary chamber burner to maintain adjustable minimum temperature in secondary chamber.

- c. Automatic operation of primary chamber burner to maintain adjustable minimum temperature in primary chamber.
 - d. Interlock to prevent opening of primary chamber access doors until combustion and burn-down cycles are complete.
3. Burn-Down Cycle:
- a. Automatic timed operation of primary and secondary chamber forced draft fan and burners.
 - b. Automatic shut-down of entire system at conclusion of burn-down.
- C. Operation Indicators:
- 1. Type: LED or industrial pilot lights, oil tight, transformer type, different color for each function.
 - 2. Functions:
 - a. Power on.
 - b. Forced draft fan on.
 - c. Burners on.
 - d. Pathological mode.

SPEC WRITER NOTE: Delete temperature recorder unless required by emissions regulations. Emissions regulations may require additional instrumentation which must be added to the specification.

- D. Alarm Indicators: Low temperatures.
- E. Temperature Indicators // and Recorder //:
- 1. General: Provide indicators of primary chamber temperature, secondary chamber exit temperature. //Provide recorder of secondary chamber exit temperature. //
 - 2. Indicators:
 - a. Dial type or digital, direct reading, 0 - 1300 degrees C (0 - 2400 degrees F) range, thermocouple sensors, minimum accuracy plus or minus 0.10 percent of full scale. Thermocouples shall have metal-ceramic protection tubes.
 - //b. Recorder: Seven day circular chart, one pen; or electronic color paperless.
 - 1) Chart diameter, 250 mm (10 inches) minimum or 150 mm (6 inch) square minimum paperless.
 - 2) Sealed dust tight case.
 - 3) Record on linear scale graduated 0 - 1300 degrees C (0 - 2400 degrees F).
 - 4) One piece disposable fiber tip pen for chart type recorder.

5) Paperless recorder shall include data storage and retrieval on 88 mm (3-1/2 inch) diskettes.

6) Operated by signals from incinerator thermocouple. //

F. Control Panel:

1. Locate manual switches, and indicating and recording (if furnished) devices in panel mounted approximately 900 mm (three feet) from the incinerator and convenient to the feeding area.
2. Panel Construction: Cabinet-type enclosure, hinged access door full size of panel, key lock, equipment mounted on sub-bases. Locate indicating lights, alarms, manual switches, recorder (if furnished) on outside face of panel. NEMA 3 panel for outdoor installations; NEMA 12 for indoor installations (UL-50).
3. Interior and Exterior Finish: Corrosion-resistant prime coat after metal has been cleaned. Two coats of surfacer sanded smooth, two coats of lacquer or enamel. Incinerator manufacturers' standard colors.
4. Identification: All elements on face of and inside panel shall be labeled with laminated plastic nameplates secured to the panel. Nomenclature shall be keyed to wiring diagram. Standard labeling system of manufacturer is acceptable if it has equal clarity and durability.
5. Panel Mounting: Surface mount to structural element of the building.
6. Wiring and Piping:
 - a. General: All devices mounted on and in the panel shall be factory-wired.
 - b. Wiring: Conform to National Electrical Code NFPA 70, all wiring in troughs, termination in terminal blocks, wiring coded by numbers or color. Provide 20 percent extra terminals in terminal blocks. Number all terminals on terminal blocks.
 - c. Power Wiring (over 120 volts): No exposed bare wires or terminals within the panel.

2.6 STACK:

- A. Factory-built system coordinated with requirements of incinerator.
- B. Service: Design for continuous temperature of 1480 degrees C (2700 degrees F), wind loading of _____, internal pressure plus or minus 18 kPa (five inches WC).
- C. Size (Diameter): Sufficient to allow negative pressure in incinerator primary chamber under all operating conditions.

SPEC WRITER NOTE: Include UL requirement if stack will be near combustible building elements.

D. Type: Steel jacketed, refractory lined, circular cross section, // UL listed for ____mm (____inches) clearance to combustible materials and ____mm (____inches) clearance to non-combustible materials//.

E. Construction:

1. Complete factory-engineered system consisting of factory-built standard sections connected in the field with joining system designed by system manufacturer. Conform to NFPA 82.
2. Refractory ASTM C401, 1480 degrees C (2700 degrees F) 50 mm (2 inches) minimum thickness.
3. Clean-out door where shown.
4. Gas-tight connections between sections.
5. Bracing system to withstand wind-loading specified and designed to accommodate thermal expansion.
6. Emission monitoring ports above incinerator. Locate eight stack diameters above incinerator outlet and at least three diameters downstream from bends and restrictions.
7. Provide expansion joints as necessary and as shown to accommodate thermal expansion.
8. Roof penetrations: Refer to Section 07 60 00, FLASHING AND SHEET METAL.
9. Coating: Aluminized or galvanized outer wall. On portion outside the building, provide prime and finish coats of heat and corrosion-resisting paint. Refer to Section 09 91 00, PAINTING.

F. Accessories:

1. Spark Arrestor: Stainless steel cylindrical screen on flue gas outlet, reinforced.
2. Draft Control: Provide if required for proper operation of the incinerator. Automatic, adjustable barometric damper sized and located in accordance with damper and incinerator manufacturers' recommendations.

2.7 SPARE PARTS:

- A. Lens for viewport.
- B. One set of drive belts for each belt driven apparatus.
- C. One set of replacement elements for each fuel filter.
- D. One flame control-programmer-amplifier chassis complete.

- E. One flame scanner complete.
- F. One igniter assembly of each type utilized.
- G. Four indicator lamps.
- H. One of each type of control relay.
- I. Four hundred recorder charts (if chart recorder furnished).
- J. Two fiber-tip pens for recorder (if chart recorder furnished).

PART 3 - EXECUTION

3.1 INSTALLATION:

- A. Equipment Access Openings: Arrange all equipment and piping to allow access to openings without disassembly of equipment or piping. Provide space which permits full opening of all doors, panels, and other access openings.
- B. Operating Space: Do not reduce or alter personnel working spaces shown except with prior approval of Resident Engineer.

SPEC WRITER NOTE: Revise following paragraph to suit design of fuel oil system.

- C. Fuel Oil System: Coordinate set pressure of house fuel oil system with requirements of burner-mounted pumps. Do not exceed inlet pressure limitations (typically 14 kPa or 2 psi or less), or suction lift capabilities of burner-mounted pumps.
- D. Pipe all drains to floor drain.
- E. Anchor all equipment to building floor or structure as shown or as recommended by manufacturer with allowance for thermal expansion as necessary. // Refer to seismic requirements in Section 13 05 41, SEISMIC RESTRAINT REQUIREMENTS FOR NON-STRUCTURAL COMPONENTS.//
- F. Control and Instrument Panel: Rigidly attach enclosure to structural element of the building. Locate panel so that all control switches and indicators are within 1700 mm (5.5 feet) of the floor and are located alongside the area where personnel will be loading the unit.
- G. Clean interior and exterior of all equipment before placing in service.
- H. Initially operate incinerator at firing rates and time periods recommended by the manufacturer of the refractory to provide proper curing of the refractory. Provide printed curing instructions from refractory manufacturer at the site prior to first start-up.
- I. Personnel Protection for High Surface Temperature: If incinerator has surface temperatures exceeding 40 degrees C (70 degrees F) above ambient, provide removable chain barricades mounted on 1070 mm (3-1/2

feet) high removable steel posts spaced 1200 mm (four feet) on centers. Locate barricade at least 900 mm (three feet) away from hot surfaces. Provide yellow polyethylene chain with removable hooks at each post. Provide sign attached to each chain reading, "Caution, High Temperature".

3.2 INSPECTIONS AND TESTS:

- A. General: Demonstrate to the Department of Veterans Affairs that all equipment complies with requirements. The Contracting Officers Technical Representative (COTR)/Resident Engineer (RE), or their representative shall witness all tests. // Representatives of the pollution control authority that has jurisdiction shall also witness emissions tests.// Provide two weeks advance notice to the COTR/RE of all testing. Pretest all items prior to the final testing that is witnessed by the COTR/RE.
- B. Condition of Equipment After Delivery, Rigging, Placement: After setting equipment on foundations, and prior to making any connections to equipment, the Contractor and COTR/RE jointly shall inspect interior and exterior for damage. Correct all damage by repair or replacement to achieve a like new condition.

SPEC WRITER NOTE: In addition to the tests specified below, specify all tests required by state and local emissions authorities.

C. Incinerator Tests:

1. Reduction of Waste:

- a. Test shall be conducted by factory-authorized representative of incinerator manufacturer.
- b. Demonstrate required weight reduction of specified waste. Waste shall be fed in a single batch to the unit. After termination of manufacturer's predicted burning period, inspect and weigh the residue.

SPEC WRITER NOTE: Emissions testing may be deleted if not required by state or local authorities. List all additional tests required by state and local emission authorities.

2. Emissions:

- a. Test shall be conducted by independent testing organization provided by Contractor which has a minimum of three years

- experience in emissions testing and which has been approved by the pollution control authority that has jurisdiction.
- b. Conduct tests during the reduction of waste test specified above.
 - c. Test methods must comply with EPA Reference Method 5, 40 CFR 60, Appendix B, "Determination of Particulate Emissions from Stationary Sources".
 - d. Demonstrate that incinerator complies with specified emission limits.
3. Sound Levels: Demonstrate conformance to sound level limitation.
 4. Report: Furnish complete written report (three copies), which includes test data, calculations, results compared with requirements, list of personnel, and other pertinent information. Furnish report within three weeks of test date.

- - E N D - - -