DIVISION 11

SECTION 11E METAL CHIMNEY (EXTERIOR)

11E.01 GENERAL: Comply with all of the Contract Documents.

11E.02 SCOPE OF WORK: Refer to "Division Scope of Work"

11E.03 WORK OF OTHER SECTIONS

A. The following items are excluded from the work of this Section:

1. Masonry base foundation by Section 3A. (If required, see drawings)

11E.04 MATERIALS

A. The factory built modular positive pressure chimney shall be laboratory tested and listed in accordance with Underwriters Laboratories Standard UL 103 for use with building heating equipment-burning gas, solid or liquid fuels with flue gases not exceeding 1400° F, continuous operation and 1800° F intermittent operation. Section shall bear the UL listing mark.

B. Section shall be sealed with banded flanges and silicone joint sealant for temperatures up to 600° F, ceramic joint sealant for temperatures exceeding 600° F. The banded flanges are to maintain airtight integrity at pressures up to 72” of water column at room temperature.

C. Inner shell material shall be type 304 stainless steel for use with natural gas fired appliances. Inner shell thickness shall be .036” for 6” to 36” diameter systems and .048 for 38” to 48” diameter systems. All inner shell seams shall be full penetration welded the entire length of the pipe section. Riveted, tack or spot welded seams are not permitted.

D. Outer shell thickness of type 304 stainless steel shall be .030” for 6” to 36” diameter systems and .048” diameter systems. All outer shell seams shall be full penetration welded the entire length of the pipe section. Riveted, tack or spot welded seams are not permitted.

E. Between, the inner and outer shells there shall be a minimum of 1” air gap and 2” of 1600° F rated low conductivity ceramic fiber insulation. The insulation is to be securely attached to the inner shell with steel straps and insulating pins, welded to the inner shell. Stainless steel centering clips shall be welded to the outer shell to maintain the 3” spacing and ensure concentricity of the shells.

F. Breeching and chimney sections, when installed according to manufacturer’s instructions, shall comply with National Safety Standards and Building Codes.

G. All materials must conform to all Building Code requirements.

H. Chimney System shall be, Model P2A as manufactured by Schebler or approved equal.

11E.05 ACCESSORIES

A. Provide lightning protection. Lightning protection will be designed to meet the standards contained in and published by the National Fire Protection Association. Grounding shall be accomplished by providing pads at the stack base for attachment of grounding cables (Per NFPA Code 78 [1977] 3-11.8 "Chimneys" and 5-11 "Metal Stacks").

B. A base anchorage system shall be provided at the base of the chimney to transmit the forces in the shell to the foundation either directly or through the anchor bolts, without inducing local stresses of appreciable magnitude in the shell or exceeding the allowable bearing stress of the concrete.

11E.06 INSTALLATION

A. If indicated on drawings, this chimney shall be installed on a masonry chimney base (provided by General Contractor). Masonry base mounted chimneys shall be provided with a base support drain assembly, wall support and 90deg. tee type cleanout section with removable vertical cap. Final assembly must comply with all manufacture’s requirements and codes. See architectural detail.

B. The masonry base will vary in height based on field conditions; however the maximum height of the masonry base shall be 4’-0” above grade. A straight section and/or adjustable length section shall be provided if the distance between masonry base top and tee to boiler equipment cannot be met. A wall support shall be provided with appropriately mounted wall support bracket capable of supporting the entire weight of chimney. Final assembly must comply with all manufacture’s requirements and codes. See architectural detail.

C. If indicated on drawings, wall supported chimneys shall be provided with appropriately mounted wall support bracket at base capable of supporting the entire weight of chimney. A removable drain tee horizontal cap shall be provided at base and serve as a drain and cleanout. Final assembly must comply with all manufacture’s requirements and codes.

D. The stack shall be mounted on appropriate exterior wall support and guides, provided by this Contractor. Detailed design calculations for tension, compression, cantilever, vibration, dynamic stability and seismic forces shall be furnished by a registered structural engineer designated by the manufacturer. Wind forces are to be calculated in accordance with the requirements of ANSI - A58.1 - 1972. Deflection shall in no case exceed rates of 1 to 200 in reference to stack height. Internal angle-shelves shall be provided to prevent ovaling.

E. Assembly in the field shall be made by joining sections with high temperature sealant. All field welding, if required, shall be done by certified welder.

F. All exterior surfaces of the chimney shall be thoroughly cleaned of all rust, scale, dirt, grease, oil and other foreign matter.

G. The chimney shall be secured to the foundation with plumbness, not to exceed 1" per 50 feet. Grounding of the chimney base plate shall be by the chimney erector or the General Contractor.

H. Provide drainage of assembly for both horizontal and vertical sections as recommended by manufacture.

I. All components required for this complete assembly must be from one manufacture, mixing of components from different companies is not acceptable.

J. Stacks terminating above a roof must terminate as required by Fuel Gas code Chapter 5 and NFPA 211.

11E.07 GENERAL

A. The outer jacket of the chimney shall be designed to resist the stresses resulting from the weight of the chimney, the effect of wind and Earthquake, and to resist corrosion from the weather. The inner liner shall be designed to resist corrosion and temperature associated with the flue gases, absorb and dampens the effects of aerodynamic wind forces.

B. All surfaces to be welded shall be smooth, uniform, and free of laminations, scale, grease, or other material, which might adversely affect the welding. Precautions shall be taken to minimize distortion and stresses due to heat build-up. The stack manufacturer shall have developed weld-procedures, which in conjunction with the overall fabrication methods, will produce a stack that meets the quality requirements of these specifications. The detailed design shall take into consideration shipping procedures and adequately provide for any stresses, which might normally develop there from.

C. The allowable unit stresses for structural shapes shall be as given in the American Institute of Steel Construction Specification for Design, Fabrication and Erection of Structural Steel for Buildings.

D. Anchor bolts shall be set by wood or metal template furnished by manufacture and plumbed in two directions true and level to the foundation by the contractor.

E. The chimney erector shall use special care in unloading and handling all materials from truck and/or cars. The erector shall handle all materials in such a way as to minimize damage and to avoid scarring or damaging the outer jacket or liner. If temporary erection clips or braces are employed, care should be used to prevent unsightliness upon removal. Tack welds should be ground smooth and holes shall be filled with weld metal and ground smooth. All finish welds are to be clean, showing good fusion and 100% penetration with extensive visual inspection.

11E.08 SHOP DRAWINGS

A. The scope of the work to be provided by manufacturer will be shown on shop drawings. All materials to be provided by manufacturer will be noted as will materials and work designated as "by others" on such shop drawings. Shop drawings will contain details as to thickness of outer shell and complete information on all chimney accessories to be provided by manufacturer. Shop drawings shall be submitted to the Engineer before the start of fabrication so that he/she may review the drawings and either approve them or suggest revisions. Complete computations bearing the stamp of a registered professional engineer shall be submitted (if requested) to the Engineer for review at the same time the shop drawings are submitted for approval. Calculations shall account for all stresses characteristic to that stack installation. The engineer's review shall not constitute checking or approval and shall in no way relieve the stack manufacturer of his full responsibility for the accuracy of the calculations and the ultimate safety and structural integrity of the stack. The stack and breaching shall fully conform to overall dimensions and characteristics as shown on the drawings and field conditions.

11E.09 CODES

A. All work under this Section shall be installed in strict accordance to, and in conformance with, all Local and State Regulations and Codes having Jurisdiction, and the N.B.F.U.

11E.10 CERTIFICATES

A. Contractor shall submit certificate for compliance with building code and manufacturer specifications.

11E.11 GUARANTEES

A. Guarantee all items of work furnished and installed under this Section for (1) one year, in addition to manufacturer’s standard warranties. All guarantees to be from the date, when **Final Certificate of Occupancy** is issued from Department of Buildings.

END OF SECTION