

## SECTION 23 65 14

### INDUCED DRAFT FRP COUNTER FLOW COOLING TOWERS

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#### PART 1 GENERAL

##### 1.1 SECTION INCLUDES

- A. Counter flow induced draft FRP water cooling towers.

##### 1.2 RELATED SECTIONS

- A. Section 03 30 00 - Cast In Place Concrete. Requirements for concrete inertia bases.
- B. Section 13 05 41 - Seismic Restraint Requirements for Non-Structural Components. Seismic restraint for equipment.
- C. Section 23 05 11 - Common Work Results for HVAC and Steam Generation. General mechanical requirements and items, which are common to more than one item.
- D. Section 23 05 41 - Noise and Vibration Control for HVAC Piping and Equipment. Requirements for vibration isolation.
- E. Section 23 21 13 - Hydronic Piping. Requirements for water piping and fittings.
- F. Section 23 25 00 - HVAC Water Treatment. Requirements for condenser water treatment.

##### 1.3 REFERENCES

- A. Better Business Bureau (BBB):
- B. Cooling Technology Institute:
- C. European Standards (EN):
  - 1. EN 60034-1 - Rotating Electrical Machines Rating and Performance
  - 2. EN 60204-1+A1 - Safety of machinery. Electrical equipment of machines Requirements for semiconductor fabrication equipment.
- D. European Union's (EU) Conformity Mark:
  - 1. CE Marking: Applicable Standards: EN 60034-1, EN 60204-1+A1
- E. International Standards Organization:
  - 1. ISO 9001:2015
- F. Standards Conformance Canada:
  - 1. CSA C22.2 No. 100-14 - Motors and Generators.

- G. Underwriters Laboratories (UL):
  - 1. UL 1004-1 - Rotating Electrical Machines - General Requirements,

#### 1.4 SUBMITTALS

- A. Submit under provisions of Section 01 30 00 - Administrative Requirements.
- B. Product Data:
  - 1. Manufacturer's data sheets on each product to be used.
  - 2. Preparation instructions and recommendations.
  - 3. Storage and handling requirements and recommendations.
  - 4. Typical installation methods.
- C. Verification Samples: Two representative units of each type, size, pattern, and color.
- D. Shop Drawings: Include details of materials, construction, and finish. Include relationship with adjacent construction.

#### 1.5 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with a minimum five years documented experience.
- B. Installer Qualifications: Company specializing in performing Work of this section with minimum two years documented experience with projects of similar scope and complexity.
- C. Source Limitations: Provide each type of product from a single manufacturing source to ensure uniformity.
- D. Mock-Up: Construct a mock-up with actual materials in sufficient time for Architect's review and to not delay construction progress. Locate mock-up as acceptable to Architect and provide temporary foundations and support.
  - 1. Intent of mock-up is to demonstrate quality of workmanship and visual appearance.
  - 2. If mock-up is not acceptable, rebuild mock-up until satisfactory results are achieved.
  - 3. Retain mock-up during construction as a standard for comparison with completed work.
  - 4. Do not alter or remove mock-up until work is completed or removal is authorized.

#### 1.6 PRE-INSTALLATION CONFERENCE

- A. Convene a conference approximately two weeks before scheduled commencement of the Work. Attendees shall include Architect, Contractor and trades involved. Agenda shall include schedule, responsibilities, critical path items and approvals.

#### 1.7 DELIVERY, STORAGE, AND HANDLING

- A. Store and handle in strict compliance with manufacturer's written instructions and recommendations.
- B. Protect from damage due to weather, excessive temperature, and construction operations.

#### 1.8 PROJECT CONDITIONS

- A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's recommended limits.

## 1.9 WARRANTY

- A. Cooling Tower Systems ("CTS") warrants products against failure due to defect in materials or workmanship under normal use and maintenance as follows:
  - 1. Warranty periods begin on the date of original purchase or assembly, and are for the durations, listed below.
  - 2. If a part fails due to defect during the applicable warranty period, CTS will provide a new part, to replace the failed defective part at no charge.
  - 3. Alternatively, and at its option, CTS will allow a credit in the amount of the then factory selling price for a new equivalent part toward the retail purchase price of a new CTS product.
  - 4. Except as otherwise stated, those are CTS's exclusive obligations under this warranty for a product failure.
- B. All warranties are subject to all provisions, conditions, limitations and exclusions listed below
  - 1. Domestic Warranty: Orders placed within the United States.
    - a. Twenty (20) Years on FRP, (fiberglass) casing, and cold water basins.
    - b. Two (2) Years on PVC fittings.
    - c. One (1) Year on Fan Motors, major drive components, and internal moving parts.
  - 2. International Warranty:
    - a. Eighteen (18) months, after shipping date.
    - b. One (1) year, after start-up of Cooling Tower.
  - 3. Products must be registered at [http://coolingtowersystems.com/warranty\\_registration.php](http://coolingtowersystems.com/warranty_registration.php) or contact CTS sales office toll free at 1-800-752-1905.

## PART 2 PRODUCTS

### 2.1 MANUFACTURERS

- A. Acceptable Manufacturer: Cooling Tower Systems, Inc., which is located at: 196 Lower Cherry St.; Macon, GA 31201; Toll Free Tel: 800-752-1905; Tel: 478-755-1905; Fax: 800-203-4925; Email: [request info](mailto:request_info@coolingtowersystems.com) ([info@coolingtowersystems.com](mailto:info@coolingtowersystems.com)); Web: <https://www.coolingtowersystems.com>
- B. Substitutions: Not permitted.
- C. Requests for substitutions will be considered in accordance with provisions of Section 01 60 00 - Product Requirements.

### 2.2 DESIGN REQUIREMENTS

- A. Certifications:
  - 1. ISO 9001:2015.
  - 2. UL 1004-1 - Rotating Electrical Machines - General Requirements,
  - 3. CSA C22.2 No, 100-14 - Motors and Generators.
  - 4. Cooling Technology Institute.
  - 5. CE Marking: Applicable Standards: EN 60034-1, EN 60204-1+A1.
  - 6. BBB: Rating A+.
- B. Design Features:

1. Induced-draft counter-flow design with an axial flow fan mounted on top of the tower to draft air out.
  2. Casing and Basin: Non-rusting fiberglass reinforced polyester (FRP). A gel coat forms a smooth surface and provides UV protection.
  3. Shape: Circular.
- C. Casing: Non-rusting fiberglass-reinforced plastic. Individual fiberglass panels.
1. Easy access through casing simplifies cleaning.
  2. Construction: Bolted. Stainless steel fasteners.
  3. Casing Supports: Nylon.
- D. Cold Water Basin: Non-rusting fiberglass-reinforced plastic.
- E. Fan Blades: Aerodynamically designed propeller type fan blades, conserve power and assure quiet operation.
1. Models T-25 Through T-230: Factory-balanced ABS plastic blade. Coupled to the fan hub with bolts and glue.
  2. Models T-240 and Above: All aluminum alloy. The blades are freely adjustable by the pitch angle scale of the fan hub.
  3. Fan Guard Material: PP.
- F. Fan Drive:
1. Models T-25 through T-2200: Direct drive fan motors.
  2. Models T-2225 and Larger: Unique belt drive, to reduce noise levels.
    - a. Gear drives.
  3. Motor: Weatherproofed, totally enclosed for less noise and efficient long-term performance.
- G. Water Distribution System: A set of sprinkler pipes and one sprinkler head that is mounted on top of the stand pipe on the cooling tower. Little or no head pressure loss and minimum maintenance.
1. Models T-25 through T-260: ABS plastic sprinkler head with stainless steel shaft. The sliding part is lubricated by the water.
  2. Models T-270 and Above: Aluminum alloy sprinkler head. Fitted with sealed type bearings to take thrust and radial loads and to ensure that the sprinkler head revolves smoothly.
  3. Sprinkler Pipes: Sturdy PVC material pierced with closely spaced holes allowing thorough distribution of water in a rotating spray covering the entire surface of the filler.
    - a. Sprinkler is rotated by the circulating water pressure. There are numerous holes in the sprinkler pipe to allow the water to jet out as the pump impacts rotation.
  4. Efficient operation results from the smooth pumping of re-circulated water through the stand pipe and up into the sprinkler pipes.
  5. A large diameter outlet pipe draws a constant supply of cooled water from the basin to serve the facility.
- H. Air Inlet Louvers: Non-rusting PVC plastic mesh provides easy access to sump while preventing foreign objects from entering water basin.
1. The round casing design permits maximum air intake regardless of wind direction.
- I. Ladder: Models T-240 and Above: For maintenance and inspection accessibility to fan and sprinkler systems.
- J. Fill Material: Honeycomb heat-embossed PVC formed to permit high heat transfer efficiency.

1. Inlet Water Temperature: Up to 125 degrees F (52 degrees C).
    - a. Fill Material creates a surface area that allows the maximum dispersion of water and superior cooling effect.
  2. Filling Supports: PVC.
- K. Mechanical Equipment Supports: HDGS.
- L. Tower Support Framework:
1. Model: T-25 - T-2175: FRP base legs are incorporated with the water basin in a single unit to withstand wind pressure and vibration.
  2. Models T-2200 - T-3000: Hot-dip galvanized steel to resist corrosion and rust.

## 2.3 COOLING TOWER SYSTEMS - MODEL T-2 SERIES

- A. Model T-23:
1. Design and Operating Conditions:
    - a. Tower Type: Counter Flow Induced Draft Stand Pipe: PVC.
    - b. Water Flow Rate: 9 gpm (34 lpm).
    - c. Entering Water Temperature: 95 degrees F (35 degrees C).
    - d. Leaving Water Temperature: 85 degrees F (49 degrees C).
    - e. Wet Bulb Temperature: 75 degrees F (24 degrees C).
    - f. Total Fan Brake Horse Power: 1/6 hp (124.3 Watts).
    - g. Total Pump Head: 5.0 feet (1524 mm).
    - h. Drift Loss of Water Flow: 0.1 percent.
    - i. Evaporation Loss of Water Flow: 0.93 percent.
    - j. Design Wind Load: 30.7 lbs per sq ft (1.47 kN per sq m)
  2. Structural Details:
    - a. Overall Diameter: 27-1/8 inch (689 mm).
    - b. Overall Height: 50 inch (1270 mm).
    - c. Dry Weight: 84 lbs (38.1 kg).
    - d. Operating Weight: 227 lbs (102.9 kg).
  3. Fan: Axial flow. One unit per tower.
    - a. Nominal Air Volume: 883 cfm (25 cu m per min).
    - b. Motors: Induction. One per tower.
      - 1) Insulation: F class.
      - 2) Rated Horse Power: 1/6 hp (124.3 Watts).
      - 3) Voltage and Phase: 110 / 220 V / 1.
  4. Piping Connections:
    - a. Primary Water Inlet Diameter: 1-1/2 inches (38 mm).
    - b. Primary Water Outlet Diameter: 1-1/2 inches (38 mm).
    - c. Auto Fill Inlet Diameter: 1-1/2 inches (38 mm).
    - d. Overflow Outlet Diameter: 1 inch (25 mm).
    - e. Drain Diameter: 3/4 inch (19 mm).
  5. Warranty: Twenty (20) Years on FRP, (fiberglass) casing, and cold water basins.
- B. Model T-25:
1. Design and Operating Conditions:
    - a. Tower Type: Counter Flow Induced Draft.
    - b. Water Flow Rate: 15 gpm (56.8 lpm).
    - c. Entering Water Temperature: 96 degrees F (36 degrees C).
    - d. Leaving Water Temperature: 85 degrees F (49 degrees C).
    - e. Wet Bulb Temperature: 75 degrees F (24 degrees C).
    - f. Total Fan Brake Horse Power: 1/6 hp (124.3 Watts).
    - g. Total Pump Head: 5.0 feet (1524 mm).
    - h. Drift Loss of Water Flow: 0.1 percent.
    - i. Evaporation Loss of Water Flow: 0.93 percent.

- j. Design Wind Load: 30.7 lbs per sq ft (1.47 kN per sq m).
  - 2. Structural Details:
    - a. Overall Diameter: 33-1/2 inch (851 mm).
    - b. Overall Height: 52 inch (1321 mm).
    - c. Dry Weight: 86 lbs (39 kg).
    - d. Operating Weight: 229 lbs (103.9 kg).
  - 3. Fan: Axial flow. One unit per tower.
    - a. Nominal Air Volume: 2118 cfm (59.97 cu m per min).
    - b. Motors: Induction. One per tower.
      - 1) Insulation: F class.
      - 2) Rated Horse Power: 1/6 hp (124.3 Watts).
      - 3) Voltage and Phase: 110 / 220 V / 1.
  - 4. Piping Connections:
    - a. Primary Water Inlet Diameter: 1-1/2 inches (38 mm).
    - b. Primary Water Outlet Diameter: 1-1/2 inches (38 mm).
    - c. Auto fill inlet diameter: 1-1/2 inches (38 mm).
    - d. Quick Fill Inlet Diameter: 1/2 inches (13 mm).
    - e. Overflow Outlet Diameter: 1 inch (25 mm).
    - f. Drain Diameter: 3/4 inch (19 mm).
  - 5. Warranty: Twenty (20) Years on FRP, (fiberglass) casing, and cold water basins.
- C. Model T-28:
- 1. Design and Operating Conditions:
    - a. Tower Type: Counter Flow Induced Draft.
    - b. Water Flow Rate: 24 gpm (90.8 lpm).
    - c. Entering Water Temperature: 95 degrees F (35 degrees C).
    - d. Leaving Water Temperature: 85 degrees F (49 degrees C).
    - e. Wet Bulb Temperature: 75 degrees F (24 degrees C).
    - f. Total Fan Brake Horse Power: 1/6 hp (124.3 Watts).
    - g. Total Pump Head: 5.0 feet (1524 mm).
    - h. Drift Loss of Water Flow: 0.1 percent.
    - i. Evaporation Loss of Water Flow: 0.93 percent.
    - j. Design Wind Load: 30.7 lbs per sq ft (1.47 kN per sq m).
  - 2. Structural Details:
    - a. Overall Diameter: 33-1/2 inch (851 mm).
    - b. Overall Height: 56 inch (1422 mm).
    - c. Dry Weight: 101 lbs (45.8 kg).
    - d. Operating Weight: 315 lbs (142.9 kg).
  - 3. Fan: Axial flow. One unit per tower.
    - a. Nominal Air Volume: 2648 cfm (74.98 cu m per min).
    - b. Motors: Induction. One per tower.
      - 1) Insulation: F class.
      - 2) Rated Horse Power: 1/6 hp (124.3 Watts).
      - 3) Voltage and Phase: 110 / 220 V / 1.
  - 4. Piping Connections:
    - a. Primary Water Inlet Diameter: 1-1/2 inches (38 mm).
    - b. Primary Water Outlet Diameter: 1-1/2 inches (38 mm).
    - c. Auto fill inlet diameter: 1/2 inches (13 mm).
    - d. Quick Fill Inlet Diameter: Not applicable.
    - e. Overflow Outlet Diameter: 1 inch (25 mm).
    - f. Drain Diameter: 3/4 inch (19 mm).
  - 5. Warranty: Twenty (20) Years on FRP, (fiberglass) casing, and cold water basins.
- D. Model T-210:

1. Design and Operating Conditions:
  - a. Tower Type: Counter Flow Induced Draft.
  - b. Water Flow Rate: 29 gpm (34 lpm).
  - c. Entering Water Temperature: 95 degrees F (35 degrees C).
  - d. Leaving Water Temperature: 85 degrees F (49 degrees C).
  - e. Wet Bulb Temperature: 75 degrees F (24 degrees C).
  - f. Total Fan Brake Horse Power: 1/4 hp (186.4 Watts).
  - g. Total Pump Head: 5.0 feet (1524 mm).
  - h. Drift Loss of Water Flow: 0.1 percent.
  - i. Evaporation Loss of Water Flow: 0.93 percent.
  - j. Design Wind Load: 30.7 lbs per sq ft (1.47 kN per sq m).
2. Structural Details:
  - a. Overall Diameter: 41-3/4 inch (1060 mm).
  - b. Overall Height: 54 inch (1372 mm).
  - c. Dry Weight: 108 lbs (49 kg).
  - d. Operating Weight: 321 lbs (145.6 kg).
3. Fan: Axial flow. One unit per tower.
  - a. Nominal Air Volume: 3531 cfm (100 cu m per min).
  - b. Motors: Induction. One per tower.
    - 1) Insulation: F class.
    - 2) Rated Horse Power: 1/4 hp (186.4 Watts).
    - 3) Voltage and Phase: 110 / 220 V / 1.
4. Piping Connections:
  - a. Primary Water Inlet Diameter: 1-1/2 inches (38 mm).
  - b. Primary Water Outlet Diameter: 1-1/2 inches (38 mm).
  - c. Auto fill inlet diameter: 1/2 inches (13 mm).
  - d. Quick Fill Inlet Diameter: Not applicable.
  - e. Overflow Outlet Diameter: 1 inch (25 mm).
  - f. Drain Diameter: 3/4 inch (19 mm).
5. Warranty: Twenty (20) Years on FRP, (fiberglass) casing, and cold water basins.

E. Model T-215:

1. Design and Operating Conditions:
  - a. Tower Type: Counter Flow Induced Draft.
  - b. Water Flow Rate: 44 gpm (166.6 lpm).
  - c. Entering Water Temperature: 95 degrees F (35 degrees C).
  - d. Leaving Water Temperature: 85 degrees F (49 degrees C).
  - e. Wet Bulb Temperature: 75 degrees F (24 degrees C).
  - f. Total Fan Brake Horse Power: 1/4 hp (186.4 Watts).
  - g. Total Pump Head: 5.3 feet (1615 mm).
  - h. Drift Loss of Water Flow: 0.1 percent.
  - i. Evaporation Loss of Water Flow: 0.93 percent.
  - j. Design Wind Load: 30.7 lbs per sq ft (1.47 kN per sq m).
2. Structural Details:
  - a. Overall Diameter: 46 inch (1168 mm).
  - b. Overall Height: 59 inch (1499 mm).
  - c. Dry Weight: 154 lbs (69.8 kg).
  - d. Operating Weight: 628 lbs (284.8 kg).
3. Fan: Axial flow. One unit per tower.
  - a. Nominal Air Volume: 3531 cfm (100 cu m per min).
  - b. Motors: Induction. One per tower.
    - 1) Insulation: E class.
    - 2) Rated Horse Power: 1/4 hp (186.4 Watts).
    - 3) Voltage and Phase: 110 / 220 V / 1.
4. Piping Connections:

- a. Primary Water Inlet Diameter: 2 inches (51 mm).
  - b. Primary Water Outlet Diameter: 2 inches (51 mm).
  - c. Auto fill inlet diameter: 1/2 inches (13 mm).
  - d. Quick Fill Inlet Diameter: Not applicable.
  - e. Overflow Outlet Diameter: 1 inch (25 mm).
  - f. Drain Diameter: 1 inch (25 mm).
5. Warranty: Twenty (20) Years on FRP, (fiberglass) casing, and cold water basins.

F. Model T-220:

- 1. Design and Operating Conditions:
  - a. Tower Type: Counter Flow Induced Draft.
  - b. Water Flow Rate: 58 gpm (219.5 lpm).
  - c. Entering Water Temperature: 95 degrees F (35 degrees C).
  - d. Leaving Water Temperature: 85 degrees F (49 degrees C).
  - e. Wet Bulb Temperature: 75 degrees F (24 degrees C).
  - f. Total Fan Brake Horse Power: 1/4 hp (186.4 Watts).
  - g. Total Pump Head: 5.6 feet (1707 mm).
  - h. Drift Loss of Water Flow: 0.1 percent.
  - i. Evaporation Loss of Water Flow: 0.93 percent.
  - j. Design Wind Load: 30.7 lbs per sq ft (1.47 kN per sq m).
- 2. Structural Details:
  - a. Overall Diameter: 54-3/8 inch (1381 mm).
  - b. Overall Height: 63 inch (1600 mm).
  - c. Dry Weight: 167 lbs (75.7 kg).
  - d. Operating Weight: 639 lbs (289.8 kg).
- 3. Fan: Axial flow. One unit per tower.
  - a. Nominal Air Volume: 3531 cfm (100 cu m per min).
  - b. Motors: Induction. One per tower.
    - 1) Insulation: F class.
    - 2) Rated Horse Power: 1/2 hp (372.8 Watts).
    - 3) Voltage and Phase: 110 / 220 V / 1.
    - 4) Voltage and Phase: 220 / 440 V / 3.
- 4. Piping Connections:
  - a. Primary Water Inlet Diameter: 2 inches (51 mm).
  - b. Primary Water Outlet Diameter: 2 inches (51 mm).
  - c. Auto fill inlet diameter: 1/2 inches (13 mm).
  - d. Quick Fill Inlet Diameter: Not applicable.
  - e. Overflow Outlet Diameter: 1 inch (25 mm).
  - f. Drain Diameter: 1 inch (25 mm).
- 5. Warranty: Twenty (20) Years on FRP, (fiberglass) casing, and cold water basins.

G. Model T-225:

- 1. Design and Operating Conditions:
  - a. Tower Type: Counter Flow Induced Draft.
  - b. Water Flow Rate: 73 gpm (276.3 lpm).
  - c. Entering Water Temperature: 95 degrees F (35 degrees C).
  - d. Leaving Water Temperature: 85 degrees F (49 degrees C).
  - e. Wet Bulb Temperature: 75 degrees F (24 degrees C).
  - f. Total Fan Brake Horse Power: 3/4 hp (559.3 Watts).
  - g. Total Pump Head: 5.6 feet (1707 mm).
  - h. Drift Loss of Water Flow: 0.1 percent.
  - i. Evaporation Loss of Water Flow: 0.93 percent.
  - j. Design Wind Load: 30.7 lbs per sq ft (1.47 kN per sq m).
- 2. Structural Details:



- a. Overall Diameter: 54-3/8 inch (1381 mm).
  - b. Overall Height: 70-15/16 inch (1802 mm).
  - c. Dry Weight: 196 lbs (88.9 kg).
  - d. Operating Weight: 930 lbs (421.8 kg).
3. Fan: Axial flow. One unit per tower.
- a. Nominal Air Volume: 7000 cfm (198.2 cu m per min).
  - b. Motors: Induction. One per tower.
    - 1) Insulation: F class.
    - 2) Rated Horse Power: 3/4 hp (559.3 Watts).
    - 3) Voltage and Phase: 220 / 440 V / 3.
4. Piping Connections:
- a. Primary Water Inlet Diameter: 2-1/2 inches (64 mm).
  - b. Primary Water Outlet Diameter: 2-1/2 inches (64 mm).
  - c. Auto fill inlet diameter: 1/2 inches (13 mm).
  - d. Quick Fill Inlet Diameter: Not applicable.
  - e. Overflow Outlet Diameter: 1 inch (25 mm).
  - f. Drain Diameter: 1 inch (25 mm).
5. Warranty: Twenty (20) Years on FRP, (fiberglass) casing, and cold water basins.

H. Model T-230:

1. Design and Operating Conditions:
- a. Tower Type: Counter Flow Induced Draft.
  - b. Water Flow Rate: 88 gpm (333.1 lpm).
  - c. Entering Water Temperature: 95 degrees F (35 degrees C).
  - d. Leaving Water Temperature: 85 degrees F (49 degrees C).
  - e. Wet Bulb Temperature: 75 degrees F (24 degrees C).
  - f. Total Fan Brake Horse Power: 1 hp (745.7 Watts).
  - g. Total Pump Head: 6 feet (1829 mm).
  - h. Drift Loss of Water Flow: 0.1 percent.
  - i. Evaporation Loss of Water Flow: 0.93 percent.
  - j. Design Wind Load: 30.7 lbs per sq ft (1.47 kN per sq m).
2. Structural Details:
- a. Overall Diameter: 62-1/4 inch (1581 mm).
  - b. Overall Height: 38-3/8 inch (975 mm).
  - c. Dry Weight: 223 lbs (101.1 kg).
  - d. Operating Weight: 1205 lbs (546.6 kg).
3. Fan: Axial flow. One unit per tower.
- a. Nominal Air Volume: 8100 cfm (229.4 cu m per min).
  - b. Motors: Induction. One per tower.
    - 1) Insulation: F class.
    - 2) Rated Horse Power: 1 hp (745.7 Watts).
    - 3) Voltage and Phase: 220 / 440 V / 3.
4. Piping Connections:
- a. Primary Water Inlet Diameter: 2-1/2 inches (64 mm).
  - b. Primary Water Outlet Diameter: 2-1/2 inches (64 mm).
  - c. Auto fill inlet diameter: 1/2 inches (13 mm).
  - d. Quick Fill Inlet Diameter: Not applicable.
  - e. Overflow Outlet Diameter: 1 inch (25 mm).
  - f. Drain Diameter: 1 inch (25 mm).
5. Warranty: Twenty (20) Years on FRP, (fiberglass) casing, and cold water basins.

I. Model T-240:

1. Design and Operating Conditions:
- a. Tower Type: Counter Flow Induced Draft.

- b. Water Flow Rate: 118 gpm (446.7 lpm).
  - c. Entering Water Temperature: 95 degrees F (35 degrees C).
  - d. Leaving Water Temperature: 85 degrees F (49 degrees C).
  - e. Wet Bulb Temperature: 75 degrees F (24 degrees C).
  - f. Total Fan Brake Horse Power: 1-1/2 hp (1118.5 Watts).
  - g. Total Pump Head: 6.6 feet (2012 mm).
  - h. Drift Loss of Water Flow: 0.1 percent.
  - i. Evaporation Loss of Water Flow: 0.93 percent.
  - j. Design Wind Load: 30.7 lbs per sq ft (1.47 kN per sq m).
2. Structural Details:
- a. Overall Diameter: 71-5/8 inch (1819 mm).
  - b. Overall Height: 74-1/2 inch (1892 mm).
  - c. Dry Weight: 308 lbs (139.7 kg).
  - d. Operating Weight: 1254 lbs (568.8 kg).
3. Fan: Axial flow. One unit per tower.
- a. Nominal Air Volume: 9800 cfm (277.5 cu m per min).
  - b. Motors: Induction. One per tower.
    - 1) Insulation: F class.
    - 2) Rated Horse Power: 1-1/2 hp (1118.5 Watts).
    - 3) Voltage and Phase: 220 / 440 V / 3.
4. Piping Connections:
- a. Primary Water Inlet Diameter: 2-1/2 inches (64 mm).
  - b. Primary Water Outlet Diameter: 2-1/2 inches (64 mm).
  - c. Auto fill inlet diameter: 1/2 inches (13 mm).
  - d. Quick Fill Inlet Diameter: Not applicable.
  - e. Overflow Outlet Diameter: 1 inch (25 mm).
  - f. Drain Diameter: 1 inch (25 mm).
5. Warranty: Twenty (20) Years on FRP, (fiberglass) casing, and cold water basins.

J. Model T-250:

1. Design and Operating Conditions:
- a. Tower Type: Counter Flow Induced Draft.
  - b. Water Flow Rate: 148 gpm (560.2 lpm).
  - c. Entering Water Temperature: 95 degrees F (35 degrees C).
  - d. Leaving Water Temperature: 85 degrees F (49 degrees C).
  - e. Wet Bulb Temperature: 75 degrees F (24 degrees C).
  - f. Total Fan Brake Horse Power: 1-1/2 hp (1118.5 Watts).
  - g. Total Pump Head: 6.6 feet (2012 mm).
  - h. Drift Loss of Water Flow: 0.1 percent.
  - i. Evaporation Loss of Water Flow: 0.93 percent.
  - j. Design Wind Load: 30.7 lbs per sq ft (1.47 kN per sq m).
2. Structural Details:
- a. Overall Diameter: 78-3/4 inch (2000 mm).
  - b. Overall Height: 74-1/2 inch (1892 mm).
  - c. Dry Weight: 342 lbs (155.1 kg).
  - d. Operating Weight: 1658 lbs (752 kg).
3. Fan: Axial flow. One unit per tower.
- a. Nominal Air Volume: 11500 cfm (325.6 cu m per min).
  - b. Motors: Induction. One per tower.
    - 1) Insulation: F class.
    - 2) Rated Horse Power: 1-1/2 hp (1118.5 Watts).
    - 3) Voltage and Phase: 220 / 440 V / 3.
4. Piping Connections:
- a. Primary Water Inlet Diameter: 3 inches (76 mm).
  - b. Primary Water Outlet Diameter: 3 inches (76 mm).

- c. Auto Fill Inlet Diameter: 0.75 inches (19 mm).
  - d. Quick Fill Inlet Diameter: Not applicable.
  - e. Overflow Outlet Diameter: 1 inch (25 mm).
  - f. Drain Diameter: 1 inch (25 mm).
5. Warranty: Twenty (20) Years on FRP, (fiberglass) casing, and cold water basins.

K. Model T-260:

- 1. Design and Operating Conditions:
  - a. Tower Type: Counter Flow Induced Draft.
  - b. Water Flow Rate: 177 gpm (670 lpm).
  - c. Entering Water Temperature: 95 degrees F (35 degrees C).
  - d. Leaving Water Temperature: 85 degrees F (49 degrees C).
  - e. Wet Bulb Temperature: 75 degrees F (24 degrees C).
  - f. Total Fan Brake Horse Power: 1-1/2 hp (1118.5 Watts).
  - g. Total Pump Head: 6.6 feet (2012 Watts).
  - h. Drift Loss of Water Flow: 0.1 percent.
  - i. Evaporation Loss of Water Flow: 0.93 percent.
  - j. Design Wind Load: 30.7 lbs per sq ft (1.47 kN per sq m).
- 2. Structural Details:
  - a. Overall Diameter: 78-3/4 inch (2000 mm).
  - b. Overall Height: 74-11/16 inch (1897 mm).
  - c. Dry Weight: 437 lbs (198.2 kg).
  - d. Operating Weight: 1752 lbs (794.7 kg).
- 3. Fan: Axial flow. One unit per tower.
  - a. Nominal Air Volume: 14700 cfm (416.3 cu m per min).
  - b. Motors: Induction. One per tower.
    - 1) Insulation: F class.
    - 2) Rated Horse Power: 1-1/2 hp (1118.5 Watts).
    - 3) Voltage and Phase: 220 / 440 V / 3.
- 4. Piping Connections:
  - a. Primary Water Inlet Diameter: 3 inches (76 mm).
  - b. Primary Water Outlet Diameter: 3 inches (76 mm).
  - c. Auto fill inlet diameter: 3/4 inch (19 mm).
  - d. Quick Fill Inlet Diameter: Not applicable.
  - e. Overflow Outlet Diameter: 1 inch (25 mm).
  - f. Drain Diameter: 1 inch (25 mm).
- 5. Warranty: Twenty (20) Years on FRP, (fiberglass) casing, and cold water basins.

L. Model T-270:

- 1. Design and Operating Conditions:
  - a. Tower Type: Counter Flow Induced Draft.
  - b. Water Flow Rate: 206 gpm (779.8 lpm).
  - c. Entering Water Temperature: 95 degrees F (35 degrees C).
  - d. Leaving Water Temperature: 85 degrees F (49 degrees C).
  - e. Wet Bulb Temperature: 75 degrees F (24 degrees C).
  - f. Total Fan Brake Horse Power: 1-1/2 hp (1118.5 Watts).
  - g. Total Pump Head: 6.6 feet (2012 mm).
  - h. Drift Loss of Water Flow: 0.1 percent.
  - i. Evaporation Loss of Water Flow: 0.93 percent.
  - j. Design Wind Load: 41 lbs per sq ft (1963 N per sq m).
- 2. Structural Details:
  - a. Overall Diameter: 85-5/8 inch (2175 mm).
  - b. Overall Height: 79-3/8 inch (2016 mm).
  - c. Dry Weight: 610 lbs (276.7 kg).

- d. Operating Weight: 2268 lbs (1028.7 kg).
- 3. Fan: Axial flow. One unit per tower.
  - a. Nominal Air Volume: 17500 cfm (495.5 cu m per min).
  - b. Motors: Induction. One per tower.
    - 1) Insulation: F class.
    - 2) Rated Horse Power: 1-1/2 hp (1118.5 Watts).
    - 3) Voltage and Phase: 220 / 440 V / 3.
- 4. Piping Connections:
  - a. Primary Water Inlet Diameter: 4 inches (102 mm).
  - b. Primary Water Outlet Diameter: 4 inches (102 mm).
  - c. Auto fill inlet diameter: 3/4 inch (19 mm).
  - d. Quick Fill Inlet Diameter: Not applicable.
  - e. Overflow Outlet Diameter: 1 inch (25 mm).
  - f. Drain Diameter: 1 inch (25 mm).
- 5. Warranty: Twenty (20) Years on FRP, (fiberglass) casing, and cold water basins.

M. Model T-280:

- 1. Design and Operating Conditions:
  - a. Tower Type: Counter Flow Induced Draft.
  - b. Water Flow Rate: 236 gpm (893.3 lpm).
  - c. Entering Water Temperature: 95 degrees F (35 degrees C).
  - d. Leaving Water Temperature: 85 degrees F (49 degrees C).
  - e. Wet Bulb Temperature: 75 degrees F (24 degrees C).
  - f. Total Fan Brake Horse Power: 1-1/2 hp (1118.5 Watts).
  - g. Total Pump Head: 6.6 feet (2012 mm).
  - h. Drift Loss of Water Flow: 0.1 percent.
  - i. Evaporation Loss of Water Flow: 0.93 percent.
  - j. Design Wind Load: 41 lbs per sq ft (1963 N per sq m).
- 2. Structural Details:
  - a. Overall Diameter: 85-5/8 inch (2175 mm).
  - b. Overall Height: 79-3/8 inch (2016 mm).
  - c. Dry Weight: 645 lbs (292.6 kg).
  - d. Operating Weight: 2301 lbs (1043.7 kg).
- 3. Fan: Axial flow. One unit per tower.
  - a. Nominal Air Volume: 18900 cfm (535.2 cu m per min).
  - b. Motors: Induction. One per tower.
    - 1) Insulation: F class.
    - 2) Rated Horse Power: 2 hp ( Watts).
    - 3) Voltage and Phase: 220 / 440 V / 3.
- 4. Piping Connections:
  - a. Primary Water Inlet Diameter: 4 inches (102 mm).
  - b. Primary Water Outlet Diameter: 4 inches (102 mm).
  - c. Auto fill inlet diameter: 3/4 inch (19 mm).
  - d. Quick Fill Inlet Diameter: Not applicable.
  - e. Overflow Outlet Diameter: 1 inch (25 mm).
  - f. Drain Diameter: 1 inch (25 mm).
- 5. Warranty: Twenty (20) Years on FRP, (fiberglass) casing, and cold water basins.

N. Model T-2100:

- 1. Design and Operating Conditions:
  - a. Tower Type: Counter Flow Induced Draft.
  - b. Water Flow Rate: 295 gpm (1116.7 lpm).
  - c. Entering Water Temperature: 95 degrees F (35 degrees C).
  - d. Leaving Water Temperature: 85 degrees F (49 degrees C).

- e. Wet Bulb Temperature: 75 degrees F (24 degrees C).
  - f. Total Fan Brake Horse Power: 3 hp (2237 Watts).
  - g. Total Pump Head: 8.2 feet (2499 mm).
  - h. Drift Loss of Water Flow: 0.1 percent.
  - i. Evaporation Loss of Water Flow: 0.93 percent.
  - j. Design Wind Load: 41 lbs per sq ft (1963 N per sq m).
2. Structural Details:
- a. Overall Diameter: 104-3/8 inch (2651 mm).
  - b. Overall Height: 85-1/16 inch (2186 mm).
  - c. Dry Weight: 889 lbs (403.2 kg).
  - d. Operating Weight: 3952 lbs (1792.6 kg).
3. Fan: Axial flow. One unit per tower.
- a. Nominal Air Volume: 24500 cfm (693.8 cu m per min).
  - b. Motors: Induction. One per tower.
    - 1) Insulation: F class.
    - 2) Rated Horse Power: 3 hp (2237 Watts).
    - 3) Voltage and Phase: 220 / 440 V / 3.
4. Piping Connections:
- a. Primary Water Inlet Diameter: 4 inches (102 mm).
  - b. Primary Water Outlet Diameter: 4 inches (102 mm).
  - c. Auto fill inlet diameter: 1 inch (25 mm).
  - d. Quick Fill Inlet Diameter: Not applicable.
  - e. Overflow Outlet Diameter: 1 inch (25 mm).
  - f. Drain Diameter: 1 inch (25 mm).
5. Warranty: Twenty (20) Years on FRP, (fiberglass) casing, and cold water basins.
- O. Model T-2125:
1. Design and Operating Conditions:
- a. Tower Type: Counter Flow Induced Draft.
  - b. Water Flow Rate: 369 gpm (34 lpm).
  - c. Entering Water Temperature: 95 degrees F (35 degrees C).
  - d. Leaving Water Temperature: 85 degrees F (49 degrees C).
  - e. Wet Bulb Temperature: 75 degrees F (24 degrees C).
  - f. Total Fan Brake Horse Power: 3 hp (2237 Watts).
  - g. Total Pump Head: 10 feet (3048 mm).
  - h. Drift Loss of Water Flow: 0.1 percent.
  - i. Evaporation Loss of Water Flow: 0.93 percent.
  - j. Design Wind Load: 41 lbs per sq ft (1963 N per sq m).
2. Structural Details:
- a. Overall Diameter: 120-1/8 inch (3051 mm).
  - b. Overall Height: 87 inch (2210 mm).
  - c. Dry Weight: 1027 lbs (465.8 kg).
  - d. Operating Weight: 4850 lbs (2200 kg).
3. Fan: Axial flow. One unit per tower.
- a. Nominal Air Volume: 29100 cfm (824 cu m per min).
  - b. Motors: Induction. One per tower.
    - 1) Insulation: F class.
    - 2) Rated Horse Power: 3 hp (2237 Watts).
    - 3) Voltage and Phase: 220 / 440 V / 3.
4. Piping Connections:
- a. Primary Water Inlet Diameter: 6 inches (152 mm).
  - b. Primary Water Outlet Diameter: 6 inches (152 mm).
  - c. Auto fill inlet diameter: 1 inch (25 mm).
  - d. Quick Fill Inlet Diameter: Not applicable
  - e. Overflow Outlet Diameter: 2 inches (51 mm).

- f. Drain Diameter: 1 inch (25 mm).
- 5. Warranty: Twenty (20) Years on FRP, (fiberglass) casing, and cold water basins.

P. Model T-2150:

1. Design and Operating Conditions:
  - a. Tower Type: Counter Flow Induced Draft.
  - b. Water Flow Rate: 446 gpm (1688.3 lpm).
  - c. Entering Water Temperature: 95 degrees F (35 degrees C).
  - d. Leaving Water Temperature: 85 degrees F (49 degrees C).
  - e. Wet Bulb Temperature: 75 degrees F (24 degrees C).
  - f. Total Fan Brake Horse Power: 5 hp (3728.5 Watts).
  - g. Total Pump Head: 10 feet (3048 mm).
  - h. Drift Loss of Water Flow: 0.1 percent.
  - i. Evaporation Loss of Water Flow: 0.93 percent.
  - j. Design Wind Load: 41 lbs per sq ft (1963 N per sq m).
2. Structural Details:
  - a. Overall Diameter: 130 inch (3302 mm).
  - b. Overall Height: 90 inch (2286 mm).
  - c. Dry Weight: 1377 lbs (624.6 kg).
  - d. Operating Weight: 6181 lbs (2803.6 kg).
3. Fan: Axial flow. One unit per tower.
  - a. Nominal Air Volume: 33260 cfm (941.8 cu m per min).
  - b. Motors: Induction. One per tower.
    - 1) Insulation: F class.
    - 2) Rated Horse Power: 5 hp (3728.5 Watts).
    - 3) Voltage and Phase: 220 / 440 V / 3.
4. Piping Connections:
  - a. Primary Water Inlet Diameter: 6 inches (152 mm).
  - b. Primary Water Outlet Diameter: 6 inches (152 mm).
  - c. Auto fill inlet diameter: 1 inch (25 mm).
  - d. Quick Fill Inlet Diameter: Not applicable
  - e. Overflow Outlet Diameter: 2 inches (51 mm).
  - f. Drain Diameter: 1 inch (25 mm).
5. Warranty: Twenty (20) Years on FRP, (fiberglass) casing, and cold water basins.

Q. Model T-2175:

1. Design and Operating Conditions:
  - a. Tower Type: Counter Flow Induced Draft.
  - b. Water Flow Rate: 518 gpm (1960.8 lpm).
  - c. Entering Water Temperature: 95 degrees F (35 degrees C).
  - d. Leaving Water Temperature: 85 degrees F (49 degrees C).
  - e. Wet Bulb Temperature: 75 degrees F (24 degrees C).
  - f. Total Fan Brake Horse Power: 5 hp (3728.5 Watts).
  - g. Total Pump Head: 11 feet (3353 mm).
  - h. Drift Loss of Water Flow: 0.1 percent.
  - i. Evaporation Loss of Water Flow: 0.93 percent.
  - j. Design Wind Load: 41 lbs per sq ft (1963 N per sq m).
2. Structural Details:
  - a. Overall Diameter: 130 inch (3302 mm).
  - b. Overall Height: 97-7/8 inch (2486 mm).
  - c. Dry Weight: 1571 lbs (712.6 kg).
  - d. Operating Weight: 6375 lbs (2891.6 kg).
3. Fan: Axial flow. One unit per tower.
  - a. Nominal Air Volume: 40250 cfm (1139.7 cu m per min).

- b. Motors: Induction. One per tower.
        - 1) Insulation: F class.
        - 2) Rated Horse Power: 5 hp (3728.5 Watts).
        - 3) Voltage and Phase: 220 / 440 V / 3.
    - 4. Piping Connections:
      - a. Primary Water Inlet Diameter: 6 inches (152 mm).
      - b. Primary Water Outlet Diameter: 6 inches (152 mm).
      - c. Auto fill inlet diameter: 1 inch (25 mm).
      - d. Quick Fill Inlet Diameter: Not applicable
      - e. Overflow Outlet Diameter: 2 inches (51 mm).
      - f. Drain Diameter: 1 inch (25 mm).
    - 5. Warranty: Twenty (20) Years on FRP, (fiberglass) casing, and cold water basins.
- R. Model T-2200:
- 1. Design and Operating Conditions:
    - a. Tower Type: Counter Flow Induced Draft.
    - b. Water Flow Rate: 592 gpm (2241 lpm).
    - c. Entering Water Temperature: 95 degrees F (35 degrees C).
    - d. Leaving Water Temperature: 85 degrees F (49 degrees C).
    - e. Wet Bulb Temperature: 75 degrees F (24 degrees C).
    - f. Total Fan Brake Horse Power: 5 hp (3728.5 Watts).
    - g. Total Pump Head: 11 feet (3353 mm).
    - h. Drift Loss of Water Flow: 0.1 percent.
    - i. Evaporation Loss of Water Flow: 0.93 percent.
    - j. Design Wind Load: 41 lbs per sq ft (1963 N per sq m).
  - 2. Structural Details:
    - a. Overall Diameter: 148-3/8 inch (3769 mm).
    - b. Overall Height: 117-3/4 inch (2991 mm).
    - c. Dry Weight: 1918 lbs (870 kg).
    - d. Operating Weight: 8370 lbs (3796.6 kg).
  - 3. Fan: Axial flow. One unit per tower.
    - a. Nominal Air Volume: 43760 cfm (1239.1 cu m per min).
    - b. Motors: Induction. One per tower.
      - 1) Insulation: F class.
      - 2) Rated Horse Power: 5 hp (3728.5 Watts).
      - 3) Voltage and Phase: 220 / 440 V / 3.
  - 4. Piping Connections:
    - a. Primary Water Inlet Diameter: 6 inches (152 mm).
    - b. Primary Water Outlet Diameter: 6 inches (152 mm).
    - c. Auto Fill Inlet Diameter: 1-1/4 inches (32 mm).
    - d. Quick Fill Inlet Diameter: 1-1/4 inches (32 mm).
    - e. Overflow Outlet Diameter: 2 inches (51 mm).
    - f. Drain Diameter: 2 inches (51 mm).
  - 5. Warranty: Twenty (20) Years on FRP, (fiberglass) casing, and cold water basins.
- S. Model T-2225:
- 1. Design and Operating Conditions:
    - a. Tower Type: Counter Flow Induced Draft.
    - b. Water Flow Rate: 656 gpm (2483.2 lpm).
    - c. Entering Water Temperature: 95 degrees F (35 degrees C).
    - d. Leaving Water Temperature: 85 degrees F (49 degrees C).
    - e. Wet Bulb Temperature: 75 degrees F (24 degrees C).
    - f. Total Fan Brake Horse Power: 7.5 hp (5592.7 Watts).
    - g. Total Pump Head: 11 feet (3353 mm).

- h. Drift Loss of Water Flow: 0.1 percent.
- i. Evaporation Loss of Water Flow: 0.93 percent.
- j. Design Wind Load: 41 lbs per sq ft (1963 N per sq m).
- 2. Structural Details:
  - a. Overall Diameter: 148-3/8 inch (3769 mm).
  - b. Overall Height: 125-5/8 inch (3191 mm).
  - c. Dry Weight: 2116 lbs (959.8 kg).
  - d. Operating Weight: 8569 lbs (3886.8 kg).
- 3. Fan: Axial flow. One unit per tower.
  - a. Nominal Air Volume: 61270 cfm (1735 cu m per min).
  - b. Motors: Induction. One per tower.
    - 1) Insulation: F class.
    - 2) Rated Horse Power: 7.5 hp (5592.7 Watts).
    - 3) Voltage and Phase: 220 / 440 V / 3.
- 4. Piping Connections:
  - a. Primary Water Inlet Diameter: 6 inches (152 mm).
  - b. Primary Water Outlet Diameter: 6 inches (152 mm).
  - c. Auto Fill Inlet Diameter: 1-1/4 inches (32 mm).
  - d. Quick Fill Inlet Diameter: 1-1/4 inches (32 mm).
  - e. Overflow Outlet Diameter: 2 inches (51 mm).
  - f. Drain Diameter: 2 inches (51 mm).
- 5. Warranty: Twenty (20) Years on FRP, (fiberglass) casing, and cold water basins.

T. Model T-2250:

- 1. Design and Operating Conditions:
  - a. Tower Type: Counter Flow Induced Draft.
  - b. Water Flow Rate: 737 gpm (2789.8 lpm).
  - c. Entering Water Temperature: 95 degrees F (35 degrees C).
  - d. Leaving Water Temperature: 85 degrees F (49 degrees C).
  - e. Wet Bulb Temperature: 75 degrees F (24 degrees C).
  - f. Total Fan Brake Horse Power: 7.5 hp (5592.7 Watts).
  - g. Total Pump Head: 12 feet (3658 mm).
  - h. Drift Loss of Water Flow: 0.1 percent.
  - i. Evaporation Loss of Water Flow: 0.93 percent.
  - j. Design Wind Load: 41 lbs per sq ft (1963 N per sq m).
- 2. Structural Details:
  - a. Overall Diameter: 148-3/8 inch (3769 mm).
  - b. Overall Height: 125-5/8 inch (3191 mm).
  - c. Dry Weight: 2270 lbs (1029.6 kg).
  - d. Operating Weight: 8723 lbs (3956.7 kg).
- 3. Fan: Axial flow. One unit per tower.
  - a. Nominal Air Volume: 61270 cfm (1735 cu m per min).
  - b. Motors: Induction. One per tower.
    - 1) Insulation: F class.
    - 2) Rated Horse Power: 7.5 hp (5592.7 Watts)
    - 3) Voltage and Phase: 220 / 440 V / 3.
- 4. Piping Connections:
  - a. Primary Water Inlet Diameter: 8 inches (203 mm).
  - b. Primary Water Outlet Diameter: 8 inches (203 mm).
  - c. Auto Fill Inlet Diameter: 1-1/4 inches (32 mm).
  - d. Quick Fill Inlet Diameter: 1-1/4 inches (32 mm).
  - e. Overflow Outlet Diameter: 2 inches (51 mm).
  - f. Drain Diameter: 2 inches (51 mm).
- 5. Warranty: Twenty (20) Years on FRP, (fiberglass) casing, and cold water basins.



- U. Model T-2300:
1. Design and Operating Conditions:
    - a. Tower Type: Counter Flow Induced Draft.
    - b. Water Flow Rate: 883 gpm (3342.5 lpm).
    - c. Entering Water Temperature: 95 degrees F (35 degrees C).
    - d. Leaving Water Temperature: 85 degrees F (49 degrees C).
    - e. Wet Bulb Temperature: 75 degrees F (24 degrees C).
    - f. Total Fan Brake Horse Power: 10 hp (7457 Watts).
    - g. Total Pump Head: 12 feet (3658 mm).
    - h. Drift Loss of Water Flow: 0.1 percent.
    - i. Evaporation Loss of Water Flow: 0.93 percent.
    - j. Design Wind Load: 41 lbs per sq ft (1963 N per sq m).
  2. Structural Details:
    - a. Overall Diameter: 148-3/8 inch (3769 mm).
    - b. Overall Height: 125-5/8 inch (3191 mm).
    - c. Dry Weight: 2270 lbs (1029.6 kg).
    - d. Operating Weight: 8723 lbs (3956.7 kg).
  3. Fan: Axial flow. One unit per tower.
    - a. Nominal Air Volume: 61270 cfm (1735 cu m per min).
    - b. Motors: Induction. One per tower.
      - 1) Insulation: F class.
      - 2) Rated Horse Power: 7.5 hp (5592.7 Watts)
      - 3) Voltage and Phase: 220 / 440 V / 3.
  4. Piping Connections:
    - a. Primary Water Inlet Diameter: 8 inches (203 mm).
    - b. Primary Water Outlet Diameter: 8 inches (203 mm).
    - c. Auto Fill Inlet Diameter: 1-1/4 inches (32 mm).
    - d. Quick Fill Inlet Diameter: 1-1/4 inches (32 mm).
    - e. Overflow Outlet Diameter: 2 inches (51 mm).
    - f. Drain Diameter: 2 inches (51 mm).
  5. Warranty: Twenty (20) Years on FRP, (fiberglass) casing, and cold water basins.

- V. Model T-2350:
1. Design and Operating Conditions:
    - a. Tower Type: Counter Flow Induced Draft.
    - b. Water Flow Rate: 1036 gpm (3921.7 lpm).
    - c. Entering Water Temperature: 95 degrees F (35 degrees C).
    - d. Leaving Water Temperature: 85 degrees F (49 degrees C).
    - e. Wet Bulb Temperature: 75 degrees F (24 degrees C).
    - f. Total Fan Brake Horse Power: 10 hp (7457 Watts).
    - g. Total Pump Head: 13.2 feet (4023 mm).
    - h. Drift Loss of Water Flow: 0.1 percent.
    - i. Evaporation Loss of Water Flow: 0.93 percent.
    - j. Design Wind Load: 41 lbs per sq ft (1963 N per sq m).
  2. Structural Details:
    - a. Overall Diameter: 188-5/8 inch (4791 mm).
    - b. Overall Height: 133-1/2 inch (3391 mm).
    - c. Dry Weight: 3002 lbs (1361.7 kg).
    - d. Operating Weight: 9962 lbs (4518.7 kg).
  3. Fan: Axial flow. One unit per tower.
    - a. Nominal Air Volume: 77020 cfm (2181 cu m per min).
    - b. Motors: Induction. One per tower.
      - 1) Insulation: F class.
      - 2) Rated Horse Power: 10 hp (7457 Watts).
      - 3) Voltage and Phase: 220 / 440 V / 3.

4. Piping Connections:
  - a. Primary Water Inlet Diameter: 8 inches (203 mm).
  - b. Primary Water Outlet Diameter: 8 inches (203 mm).
  - c. Auto Fill Inlet Diameter: 1-1/4 inches (32 mm).
  - d. Quick Fill Inlet Diameter: 1-1/4 inches (32 mm).
  - e. Overflow Outlet Diameter: 2 inches (51 mm).
  - f. Drain Diameter: 2 inches (51 mm).
5. Warranty: Twenty (20) Years on FRP, (fiberglass) casing, and cold water basins.

W. Model T-2400:

1. Design and Operating Conditions:
  - a. Tower Type: Counter Flow Induced Draft.
  - b. Water Flow Rate: 1190 gpm (4504.6 lpm).
  - c. Entering Water Temperature: 95 degrees F (35 degrees C).
  - d. Leaving Water Temperature: 85 degrees F (49 degrees C).
  - e. Wet Bulb Temperature: 75 degrees F (24 degrees C).
  - f. Total Fan Brake Horse Power: 15 hp (11185.5 Watts).
  - g. Total Pump Head: 13.2 feet (4023 mm).
  - h. Drift Loss of Water Flow: 0.1 percent.
  - i. Evaporation Loss of Water Flow: 0.93 percent.
  - j. Design Wind Load: 41 lbs per sq ft (1963 N per sq m).
2. Structural Details:
  - a. Overall Diameter: 203-7/8 inch (5178 mm).
  - b. Overall Height: 153-1/8 inch (3889 mm).
  - c. Dry Weight: 4786 lbs (2170.9 kg).
  - d. Operating Weight: 15174 lbs (6882.8 kg).
3. Fan: Axial flow. One unit per tower.
  - a. Nominal Air Volume: 91030 cfm (2577.7 cu m per min).
  - b. Motors: Induction. One per tower.
    - 1) Insulation: F class.
    - 2) Rated Horse Power: 15 hp (11185.5 Watts)
    - 3) Voltage and Phase: 220 / 440 V / 3.
4. Piping Connections:
  - a. Primary Water Inlet Diameter: 8 inches (203 mm).
  - b. Primary Water Outlet Diameter: 8 inches (203 mm).
  - c. Auto Fill Inlet Diameter: 2 inches (51 mm).
  - d. Quick Fill Inlet Diameter: 2 inches (51 mm).
  - e. Overflow Outlet Diameter: 4 inches (102 mm).
  - f. Drain Diameter: 2 inches (51 mm).
5. Warranty: Twenty (20) Years on FRP, (fiberglass) casing, and cold water basins.

X. Model T-2500:

1. Design and Operating Conditions:
  - a. Tower Type: Counter Flow Induced Draft.
  - b. Water Flow Rate: 1505 gpm (5697 lpm).
  - c. Entering Water Temperature: 95 degrees F (35 degrees C).
  - d. Leaving Water Temperature: 85 degrees F (49 degrees C).
  - e. Wet Bulb Temperature: 75 degrees F (24 degrees C).
  - f. Total Fan Brake Horse Power: 15 hp (11185.5 Watts).
  - g. Total Pump Head: 13.2 feet (4023 mm).
  - h. Drift Loss of Water Flow: 0.1 percent.
  - i. Evaporation Loss of Water Flow: 0.93 percent.
  - j. Design Wind Load: 41 lbs per sq ft (1963 N per sq m).
2. Structural Details:

- a. Overall Diameter: 219-5/8 inch (5578 mm).
  - b. Overall Height: 154-11/16 inch (3929 mm).
  - c. Dry Weight: 5352 lbs (2427.6 kg).
  - d. Operating Weight: 18028 lbs (8177.4 kg).
3. Fan: Axial flow. One unit per tower.
- a. Nominal Air Volume: 91030 cfm (2577.7 cu m per min).
  - b. Motors: Induction. One per tower.
    - 1) Insulation: F class.
    - 2) Rated Horse Power: 15 hp (11185.5 Watts).
    - 3) Voltage and Phase: 220 / 440 V / 3.
4. Piping Connections:
- a. Primary Water Inlet Diameter: 10 inches (254 mm).
  - b. Primary Water Outlet Diameter: 10 inches (254 mm).
  - c. Auto Fill Inlet Diameter: 2 inches (51 mm).
  - d. Quick Fill Inlet Diameter: 2 inches (51 mm).
  - e. Overflow Outlet Diameter: 4 inches (102 mm).
  - f. Drain Diameter: 2 inches (51 mm).
5. Warranty: Twenty (20) Years on FRP, (fiberglass) casing, and cold water basins.

Y. Model T-2600:

1. Design and Operating Conditions:
- a. Tower Type: Counter Flow Induced Draft.
  - b. Water Flow Rate: 1777 gpm (6726.7 lpm).
  - c. Entering Water Temperature: 95 degrees F (35 degrees C).
  - d. Leaving Water Temperature: 85 degrees F (49 degrees C).
  - e. Wet Bulb Temperature: 75 degrees F (24 degrees C).
  - f. Total Fan Brake Horse Power: 20 hp (14914 Watts).
  - g. Total Pump Head: 16.4 feet (4999 mm).
  - h. Drift Loss of Water Flow: 0.1 percent.
  - i. Evaporation Loss of Water Flow: 0.93 percent.
  - j. Design Wind Load: 41 lbs per sq ft (1963 N per sq m).
2. Structural Details:
- a. Overall Diameter: 259-7/8 inch (6601 mm).
  - b. Overall Height: 171-5/8 inch (4359 mm).
  - c. Dry Weight: 7416 lbs (3363.8 kg).
  - d. Operating Weight: 27447 lbs (12449.7 kg).
3. Fan: Axial flow. One unit per tower.
- a. Nominal Air Volume: 125000 cfm (3539.6 cu m per min).
  - b. Motors: Induction. One per tower.
    - 1) Insulation: F class.
    - 2) Rated Horse Power: 20 hp (14914 Watts).
    - 3) Voltage and Phase: 220 / 440 V / 3.
4. Piping Connections:
- a. Primary Water Inlet Diameter: 10 inches (254 mm).
  - b. Primary Water Outlet Diameter: 10 inches (254 mm).
  - c. Auto Fill Inlet Diameter: 2 inches (51 mm).
  - d. Quick Fill Inlet Diameter: 2 inches (51 mm).
  - e. Overflow Outlet Diameter: 4 inches (102 mm).
  - f. Drain Diameter: 2 inches (51 mm).
5. Warranty: Twenty (20) Years on FRP, (fiberglass) casing, and cold water basins.

Z. Model T-2700:

1. Design and Operating Conditions:
- a. Tower Type: Counter Flow Induced Draft.

- b. Water Flow Rate: 2101 gpm (78953.1 lpm).
  - c. Entering Water Temperature: 95 degrees F (35 degrees C).
  - d. Leaving Water Temperature: 85 degrees F (49 degrees C).
  - e. Wet Bulb Temperature: 75 degrees F (24 degrees C).
  - f. Total Fan Brake Horse Power: 20 hp (14914 Watts).
  - g. Total Pump Head: 18.2 feet (5547 mm).
  - h. Drift Loss of Water Flow: 0.1 percent.
  - i. Evaporation Loss of Water Flow: 0.93 percent.
  - j. Design Wind Load: 41 lbs per sq ft (1963 N per sq m).
2. Structural Details:
- a. Overall Diameter: 259-7/8 inch (6601 mm).
  - b. Overall Height: 181-5/16 inch (4605 mm).
  - c. Dry Weight: 7863 lbs (3566.6 kg).
  - d. Operating Weight: 27896 lbs (12653.4 kg).
3. Fan: Axial flow. One unit per tower.
- a. Nominal Air Volume: 125000 cfm (3539.6 cu m per min).
  - b. Motors: Induction. One per tower.
    - 1) Insulation: F class.
    - 2) Rated Horse Power: 20 hp (14914 Watts)
    - 3) Voltage and Phase: 220 / 440 V / 3.
4. Piping Connections:
- a. Primary Water Inlet Diameter: 10 inches (254 mm).
  - b. Primary Water Outlet Diameter: 10 inches (254 mm).
  - c. Auto Fill Inlet Diameter: 2 inches (51 mm).
  - d. Quick Fill Inlet Diameter: 2 inches (51 mm).
  - e. Overflow Outlet Diameter: 4 inches (102 mm).
  - f. Drain Diameter: 2 inches (51 mm).
5. Warranty: Twenty (20) Years on FRP, (fiberglass) casing, and cold water basins.

AA. Model T-2800:

1. Design and Operating Conditions:
- a. Tower Type: Counter Flow Induced Draft.
  - b. Water Flow Rate: 2370 gpm (8971.4 lpm).
  - c. Entering Water Temperature: 95 degrees F (35 degrees C).
  - d. Leaving Water Temperature: 85 degrees F (49 degrees C).
  - e. Wet Bulb Temperature: 75 degrees F (24 degrees C).
  - f. Total Fan Brake Horse Power: 20 hp (14914 Watts).
  - g. Total Pump Head: 20 feet (6096 mm).
  - h. Drift Loss of Water Flow: 0.1 percent.
  - i. Evaporation Loss of Water Flow: 0.93 percent.
  - j. Design Wind Load: 41 lbs per sq ft (1963 N per sq m).
2. Structural Details:
- a. Overall Diameter: 299-1/4 inch (7601 mm).
  - b. Overall Height: 194-11/16 inch (4945 mm).
  - c. Dry Weight: 9656 lbs (4379.9 kg).
  - d. Operating Weight: 41349 lbs (18755.6 kg).
3. Fan: Axial flow. One unit per tower.
- a. Nominal Air Volume: 175000 cfm (495.5 cu m per min).
  - b. Motors: Induction. One per tower.
    - 1) Insulation: F class.
    - 2) Rated Horse Power: 20 hp (14914 Watts)
    - 3) Voltage and Phase: 220 / 440 V / 3.
4. Piping Connections:
- a. Primary Water Inlet Diameter: 12 inches (305 mm).
  - b. Primary Water Outlet Diameter: 12 inches (305 mm).

- c. Auto Fill Inlet Diameter: 2 inches (51 mm).
  - d. Quick Fill Inlet Diameter: 2 inches (51 mm).
  - e. Overflow Outlet Diameter: 4 inches (102 mm).
  - f. Drain Diameter: 3 inches (76 mm).
5. Warranty: Twenty (20) Years on FRP, (fiberglass) casing, and cold water basins.

**BB. Model T-3000:**

- 1. Design and Operating Conditions:
  - a. Tower Type: Counter Flow Induced Draft.
  - b. Water Flow Rate: 3011 gpm (11397.9 lpm).
  - c. Entering Water Temperature: 95 degrees F (35 degrees C).
  - d. Leaving Water Temperature: 85 degrees F (49 degrees C).
  - e. Wet Bulb Temperature: 75 degrees F (24 degrees C).
  - f. Total Fan Brake Horse Power: 30 hp (22371 Watts).
  - g. Total Pump Head: 20 feet (6096 mm).
  - h. Drift Loss of Water Flow: 0.1 percent.
  - i. Evaporation Loss of Water Flow: 0.93 percent.
  - j. Design Wind Load: 41 lbs per sq ft (1963 N per sq m).
- 2. Structural Details:
  - a. Overall Diameter: 299-1/4 inch (7601 mm).
  - b. Overall Height: 202-1/2 inch (5143 mm).
  - c. Dry Weight: 10220 lbs (4635.7 kg).
  - d. Operating Weight: 27359 lbs (12409.8 kg).
- 3. Fan: Axial flow. One unit per tower.
  - a. Nominal Air Volume: 218950 cfm (6200 cu m per min).
  - b. Motors: Induction. One per tower.
    - 1) Insulation: F class.
    - 2) Rated Horse Power: 30 hp (22371 Watts).
    - 3) Voltage and Phase: 220 / 440 V / 3.
- 4. Piping Connections:
  - a. Primary Water Inlet Diameter: 12 inches (305 mm).
  - b. Primary Water Outlet Diameter: 12 inches (305 mm).
  - c. Auto Fill Inlet Diameter: 2 inches (51 mm).
  - d. Quick Fill Inlet Diameter: 2 inches (51 mm).
  - e. Overflow Outlet Diameter: 4 inch.
  - f. Drain Diameter: 3 inches (76 mm).
- 5. Warranty: Twenty (20) Years on FRP, (fiberglass) casing, and cold water basins.

**CC. Model T-3500:**

- 1. Design and Operating Conditions:
  - a. Tower Type: Counter Flow Induced Draft.
  - b. Water Flow Rate: 4516 gpm (17094.9 lpm).
  - c. Entering Water Temperature: 95 degrees F (35 degrees C).
  - d. Leaving Water Temperature: 85 degrees F (49 degrees C).
  - e. Wet Bulb Temperature: 75 degrees F (24 degrees C).
  - f. Total Fan Brake Horse Power: 50 hp (37285 Watts).
  - g. Total Pump Head: 23 feet (7010 mm).
  - h. Drift Loss of Water Flow: 0.1 percent.
  - i. Evaporation Loss of Water Flow: 0.93 percent.
  - j. Design Wind Load: 41 lbs per sq ft (1963 N per sq m).
- 2. Structural Details:
  - a. Overall Diameter: 331-7/8 inch (8430 mm).
  - b. Overall Height: 202-1/2 inch (5143 mm).
  - c. Dry Weight: 15432 lbs (6999.8 kg).

- d. Operating Weight: 57789 lbs (23212.6 kg).
- 3. Fan: Axial flow. One unit per tower.
  - a. Nominal Air Volume: 264874 cfm (7500.4 cu m per min).
  - b. Motors: Induction. One per tower.
    - 1) Insulation: F class.
    - 2) Rated Horse Power: 50 hp (37285 Watts).
    - 3) Voltage and Phase: 220 / 440 V / 3.
- 4. Piping Connections:
  - a. Primary Water Inlet Diameter: 12 inches (305 mm).
  - b. Primary Water Outlet Diameter: 12 inches (305 mm).
  - c. Auto Fill Inlet Diameter: 2-1/2 inches (64 mm).
  - d. Quick Fill Inlet Diameter: 2-1/2 inches (64 mm).
  - e. Overflow Outlet Diameter: 4 inches (102 mm).
  - f. Drain Diameter: 3 inches (76 mm).
- 5. Warranty: Twenty (20) Years on FRP, (fiberglass) casing, and cold water basins.

DD. Model T-3250:

- 1. Design and Operating Conditions:
  - a. Tower Type: Counter Flow Induced Draft.
  - b. Water Flow Rate: 3761 gpm (14236.9 lpm).
  - c. Entering Water Temperature: 95 degrees F (35 degrees C).
  - d. Leaving Water Temperature: 85 degrees F (49 degrees C).
  - e. Wet Bulb Temperature: 75 degrees F (24 degrees C).
  - f. Total Fan Brake Horse Power: 40 hp (29828 Watts).
  - g. Total Pump Head: 23 feet (7010 mm).
  - h. Drift Loss of Water Flow: 0.1 percent.
  - i. Evaporation Loss of Water Flow: 0.93 percent.
  - j. Design Wind Load: 41 lbs per sq ft (1963 N per sq m).
- 2. Structural Details:
  - a. Overall Diameter: 331-7/8 inch (8430 mm).
  - b. Overall Height: 202-1/2 inch (5143 mm).
  - c. Dry Weight: 14449 lbs (6553.9 kg).
  - d. Operating Weight: 56806 lbs (25766.8 kg).
- 3. Fan: Axial flow. One unit per tower.
  - a. Nominal Air Volume: 218950 cfm (6200 cu m per min).
  - b. Motors: Induction. One per tower.
    - 1) Insulation: F class.
    - 2) Rated Horse Power: 40 hp (29828 Watts)
    - 3) Voltage and Phase: 220 / 440 V / 3.
- 4. Piping Connections:
  - a. Primary Water Inlet Diameter: 12 inches (305 mm).
  - b. Primary Water Outlet Diameter: 12 inches (305 mm).
  - c. Auto Fill Inlet Diameter: 2-1/2 inches (64 mm).
  - d. Quick Fill Inlet Diameter: 2-1/2 inches (64 mm).
  - e. Overflow Outlet Diameter: 4 inch.
  - f. Drain Diameter: 3 inches (76 mm).
- 5. Warranty: Twenty (20) Years on FRP, (fiberglass) casing, and cold water basins.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Do not begin installation until the substrates have been properly constructed and prepared.

- B. If substrate preparation is the responsibility of another installer, notify Architect in writing of unsatisfactory preparation before proceeding.

### 3.2 PREPARATION

- A. Clean surfaces thoroughly prior to installation.
- B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

### 3.3 INSTALLATION

- A. Install in accordance with manufacturer's instructions, approved submittals, and in proper relationship with adjacent construction.

### 3.4 FIELD QUALITY CONTROL

- A. Field Inspection: Coordinate field inspection in accordance with appropriate sections in Division 01.
- B. Manufacturer's Services: Coordinate manufacturer's services in accordance with appropriate sections in Division 01.

### 3.5 CLEANING AND PROTECTION

- A. Clean products in accordance with the manufacturers recommendations.
- B. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION