

## SECTION 15631

### SOLAR ENERGY SYSTEMS

#### PART 1 - GENERAL

##### 1.01 SUMMARY

###### A. Section Includes:

1. Solar Fluid Heat Exchanger (Shell and Tube).
2. Solar Fluid Heat Exchanger (Double Wall Tube).
3. Solar Collectors.
4. Thermal Storage Tanks (Domestic Hot Water).
5. Thermal Storage Tank (Underground).

###### B. Related Sections:

1. Section 15010 - Basic Mechanical Requirements.
2. Section 15050 - Basic Mechanical Materials and Methods.
3. Section 15250 - Mechanical Insulation.
4. Section 15511 - Hydronic Piping and Specialties.
5. Section 15540 - HVAC Pumps.
6. Section 15950 - Controls.
7. Section 15985 - Control Sequence of Operation.

##### 1.02 REFERENCES

- A. American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE).
- B. International Association of Plumbing and Mechanical Officials (IAPMO).
- C. National Sanitation Foundation (NSF).
- D. American Society of Mechanical Engineers (ASME).

##### 1.03 SYSTEM DESCRIPTION

###### A. Design Requirements:

###### 1. General:

- a. For potable water systems, comply with latest Edition of IAPMO Uniform Solar Energy Code.

###### 2. Solar Collectors:

- a. Specify manufacturer to furnish all supports, bracing and cross-bracing to withstand 55 PSF wind (146 mph) loading from any direction.
- b. Specify manufacturer to submit F-Chart data indicating energy output using the ASHRAE 93-77 efficiency curve and the net aperture area of the total array of the collector.
- c. Run F-Chart for a full year by months.
- d. Specify compliance with ASHRAE 93-77 (ANSI B198.1) Methods of Testing to Determine the Thermal Performance of Solar Collectors.

##### 1.04 QUALITY ASSURANCE

- A. Manufacturer: Company specializing in Solar Energy Equipment with minimum of five years experience.

- B. Installation: Contractor shall be required to submit a list of references of successful contracts showing at least three years experience installing solar energy systems.

## 1.05 WARRANTIES

### A. Specify the following for Solar Collectors:

1. Provide written warranty signed by manufacturer, agreeing to replace/repair defective units where materials or workmanship failures have resulted in leakage of liquid, obstruction of liquid flow, excessive internal soiling, significant loss of efficiency, abnormal aging or deterioration of materials or finishes, or other failures of units or forms of deterioration causing units to not perform as initially required; warranty includes disconnection, removal, reinstallation and reconnection of units and replacement of solar fluid.
2. Product warranty period shall be for a period of ten years from date of substantial completion.

## PART 2 - PRODUCTS

### 2.01 SOLAR FLUID HEAT EXCHANGER (Shell and Tube)

#### A. Manufacturers:

Ace-Buehler  
Adamson  
A. O. Smith  
Carlson  
ITT Bell and Gossett  
Noranda  
Weben-Jarco

- B. Unit National Board Certified, ASME Certified and Labeled.

### 2.02 SOLAR FLUID HEAT EXCHANGER (Double Wall Tube)

#### A. Manufacturers:

Ace-Buehler  
Novan/Noranda

#### B. Description:

1. Heat exchanger with double wall copper tubes and manifolds with leak detection feature.

### 2.03 SOLAR COLLECTORS

#### A. Manufacturers:

Gulf Thermal  
Lennox  
Novan  
Raypak  
Solaron  
U.S. Solar Corporation

#### B. Description:

1. Manufacturer's standard or custom fabricated liquid solar collector units.

### 2.04 THERMAL STORAGE TANKS (Domestic Hot Water)

A. Manufacturers:

Ace-Buehler  
Adamson  
A. O. Smith  
Lochinvar  
Rheem  
Weben-Jarco  
Wessels

B. NSF Approved, ASME Certified and Labeled and National Board Certified.

2.05 THERMAL STORAGE TANK (Underground)

A. Manufacturers:

Eaton Metal Products/American Steel and Iron Works, Inc.

B. Tanks complete with "Stip 3" corrosion protection.

PART 3 - EXECUTION

3.01 APPLICATION/INSTALLATION

A. In general, for project specifications, remove "Design Requirements" sub-paragraph A in Part 1, paragraph 1.03 "System Description" of this Design Guide and use list to expand on specific project applications in Part 2 - Products and specific installation requirements in this Part 3 for each item specified.

END OF SECTION