

## Suggested Transpired Solar Collector Specification – Aluminum Panel

### 23 56 13 Heating Solar Collectors

#### PART 1 – GENERAL

##### 1.1 Summary

- A. Transpired Solar Collector (solar thermal air heating wall system) to be designed and supplied by ATAS International, Inc. and to include vertical wall cladding and horizontal canopy cladding (if required), flashing and closures, summer bypass damper (when required), and sub-framing to support wall cladding and canopy. Design must develop specified solar heat gain requirements, and provide optimum energy gain and flow to satisfy air intake needs.
- B. For direct air supply into building, fan assembly shall be ATAS model # (\_\_\_\_\_), fully assembled, tested and complete with intake and return air modulating dampers and automatic discharge air temperature control, as supplied by ATAS International, Inc. When required, summer bypass louvers have dampers controlled by outdoor thermostats.
- C. In the application that the transpired solar collector is supplying pre-heated replenishment air into the air handler/heating system (HVAC), the HVAC fan is to be specified at (\_\_\_\_\_) cfm at (1/2") static pressure, complete with (\_\_\_\_\_) HP totally enclosed motor and bearings designed for continuous operation, (\_\_\_\_) Volts, (\_\_\_\_) Phase, (\_\_\_\_) Hz.

##### 1.2 Performance Requirements (Heating capacity)

- A. The solar collector cladding shall be designed to balance the air flow passing through it and the air shall then be ducted to the nearest intake fan. The capacity of the total wall shall be (\_\_\_\_\_) cfm/ft<sup>2</sup> of collector area. Supplier shall use the most current version of RETScreen® solar air heating software to model the anticipated heating energy delivered by the system. Supplier shall provide both the input data and the results from the analysis.
- B. System shall meet performance requirements of all applicable design loads.

##### 1.3 Submittals

- A. Product Data: manufacturer's current product specifications and installation instructions.
- B. Shop Drawings: Include small scale elevations, as required. Show details of trim and flashing components, fastening and anchorage methods of both panels and sub-framing.
- C. Samples:

1. Submit actual panel samples and color chips for architectural selection.
- D. Evaluation Reports:
1. Submit detailed report showing projected energy savings and greenhouse gas reduction analysis, based upon most current RETScreen® Solar Air Heating Model ([www.retscreen.net](http://www.retscreen.net)).

#### **1.4 Quality Assurance**

- A. Installer: Company must specialize in type of work required for this project and be familiar with both panel installation, as well as mechanical component integration to the system.
- B. Manufacturer: Company must be ISO 9001:2008 compliant. Transpired solar collector to be fabricated in the USA.

#### **1.5 Warranty**

- A. Panel coating warranty: Provide manufacturer's standard 30 year finish warranty for color retention, adhesion and freedom from chalking.
- B. Provide documented absorption value of color selected.

### **PART 2 – PRODUCTS**

#### **2.1 Manufacturer**

- A. Specification is based upon the products of ATAS International, Inc. No other manufacturer of transpired solar collectors will be accepted as an alternate product without prior written approval. The substitution request must meet specifications and must be submitted a minimum of ten (10) days prior to date of bid.
- B. Coordinate panel, louver, fan and duct installation for compliance with performance requirements noted within these specifications.
- C. Provide secondary support framing members as designed by panel manufacturer to meet design load requirements.

#### **2.2 Exposed Fastener, Lap Seam Metal Wall Panels**

- A. Basis of Design: ATAS International, Inc. InSpire Wall panel. Panel to have a lanced perforation as required for solar need and air balancing requirements.
- B. Material: .032 Aluminum. Recycled content as specified for LEED accreditation submission.
- C. Finish: To be selected from ATAS standard color selection established for heat gain and proper absorption values.

- a. Finish: KYNAR 5000® PDVF or HYLAR 5000® Finish
- D. Product specifications required to meet LEED.

## **2.3 Fabrication**

- A. Panels to be factory fabricated in a controlled environment.
- B. Panels to be produced in longest length available to accommodate required field handling and expansion/contraction values.
- C. Accessories: Fabricate trim and flashing components in standard 12'-0" lengths.
  - 2. Form panel lines, breaks and angles to be sharp and true, with surfaces free from warp and buckle.
- E. Panel, fabrication and installation shall meet the requirements of Metal Construction Association Preformed Metal Wall Guidelines.

## **PART 3 – EXECUTION**

### **3.1 Preparation**

- A. Field Measurements
  - 1. Field measurements should be taken by the installer for verification of dimensional correctness in relationship to original plans, prior to providing manufacturer with a bill of material.
- B. Delivery, Storage and Handling
  - 1. Do not deliver materials of this section to project site until suitable facilities for storage and protection are available.
  - 2. Protect materials from damage during transit and at project site. Store under cover but sloped to provide positive drainage. Do not expose materials with strippable protective film to direct sunlight or extreme heat.
  - 3. Do not allow storage of other materials or allow staging of other work on installed metal panel system.
  - 4. Upon receipt of delivery of metal panel system, and prior to signing the delivery ticket, the installer is to examine each shipment or damaged shipment for completion of the consignment.
- C. Sequencing and Scheduling
- D. Installer shall coordinate with general contractor as to scheduled delivery time after receipt of field verified bill of material by manufacturer as it relates to actual project scheduling.

### **3.2 Metal Wall Panel Installation, General**

- A. General: Install metal wall panels in orientation, sizes and locations indicated on Drawings. Install panels perpendicular to girts and subgirts, unless otherwise indicated. Anchor metal wall panels and other components of the work securely in place, with provisions for thermal and structural movement. Field cutting of metal wall panels by torch is not permitted. Rigidly fasten base end of metal wall panels and allow eave end free to thermal expansion and contraction. Pre-drill panels as required. Install screw fasteners.
  - 1. Locate panel splices over, but not attached to, structural supports. Stagger panel splices and end laps to avoid a four-panel lap splice condition.
  - 2. Provide weatherproof escutcheons for pipe and conduit penetrating exterior walls.
  
- B. Fasteners:
  - 1. Aluminum Wall Panels: Use of stainless-steel fasteners or metallic coated fasteners for surfaces exposed to the exterior and aluminum or galvanized steel fasteners for surfaces exposed to the interior.
  - 2. Exposed fasteners shall have a high performance, factory, applied coating to match paint color.
  - 3. Metal Protection: Where dissimilar metals will contact each other or corrosive substrates, protect against galvanic action by painting contact surfaces with bituminous coating, by applying rubberized-asphalt underlayment to each contact surface, or by other permanent separation as recommended by metal wall panel manufacturer.
  - 4. Coat back side of aluminum wall panels with bituminous coating where wall panels will contact dissimilar materials.
  
- C. Joint Sealers: Install gaskets, joint fillers and sealants where indicated and where required for weatherproof performance of metal wall panel assemblies.

### **3.3 Accessory Installation**

- A. General: Install accessories with positive anchorage to building and weathertight mounting and provide for thermal expansion. Coordinate installation with flashings and other components.
  - 1. Install components required for a complete metal wall panel assembly including trim, copings, corners, seam covers, flashings, sealants, gaskets, fillers, closure strips and similar items.
  - 2. Comply with performance requirements, manufacturer's written installation instructions, and SMACNA's "Architectural Sheet Metal Manual." Provide concealed fasteners, where possible and set units true to line and level as indicated. Install work with laps, joints and seams that will be permanently watertight and weather-resistant.

### **3.4 Cleaning and Protection**

- A. Remove temporary protective coverings and strippable films, if any, as metal wall panels are installed. Maintain in a clean condition during construction.

- B. Protection Provide, as required, completed work of this section will be without damage or deterioration at date of substantial completion.
- C. Touch up minor abrasions with matching paint provided by panel manufacturer. Remove and replace panels that cannot be satisfactorily touched up. See Metal Construction Association Technical Bulletin #95-1051.
- D. Sweep and remove chips, shavings and dust from roof area on a daily basis during installation period. Leave installed work clean, free from grease, finger marks and stains. Remove all protective masking from material immediately after installation of product.
- E. Upon completion of installation, remove scraps and debris from project site.

**END OF SECTION 23 56 13**