

SECTION 05522

ENGINEERED EXTRUDED ALUMINUM COVERS

Revision 1.0 — April 2026

PROJECT TEMPLATE: This document is provided as a specification template. Contact RPS Engineering at 847-931-1950 to work with our team on completing project-specific requirements and specifications for your facility.

PART 1 — GENERAL

1.1 DESCRIPTION

- A. This specification is for a fully engineered, substantially airtight, aluminum cover structure comprised of panels and beams or trusses as manufactured by RPS Engineering, 1300 Crispin Drive, Elgin, IL 60123, Phone: 847-931-1950. This specification shall be regarded as a minimum standard for design and fabrication. All materials shall be suitable for continuous exposure to hydrogen sulfide (H₂S) gas and other corrosive byproducts of wastewater treatment environments.
- B. Scope of Work: Furnish all labor, materials, and equipment to provide a complete, installed system of fixed and removable, custom fit, flat aluminum covers. The tank cover system includes cover panels, structural support, and attaching hardware.

1.2 ENGINEERING

- A. A submittal shall be provided to the engineer prior to the beginning of fabrication. The submittal shall include:
 - 1. Complete structural calculations showing the governing stresses in all members and connections, and detailed shop drawings. Preliminary drawings shall be stamped by the cover manufacturer's PE. Final drawings and calculations shall bear the stamp of a local state PE if required.
 - 2. A Manufacturer's Guarantee.
 - 3. A letter of certification signed and sealed by a registered Professional Civil Engineer confirming that the aluminum cover is in full compliance with the plans and specifications including any testing provisions included therein.

1.3 QUALIFICATIONS

- A. Manufacturer: Shall be a company specialized in providing engineered aluminum covers for wastewater treatment tanks and troughs for at least ten (10) years. When requested by the Engineer, submit written evidence to show experience qualifications and adequacy of plant capability and facilities for performance of contract requirements.
- B. Erector: Regularly engaged for at least five (5) years in the erection of aluminum covers for wastewater treatment tanks.
- C. Welders: Qualified within the past two (2) years in accordance with AWS.

1.4 PERFORMANCE

- A. Span: The clear span length of the cover shall be as noted in the scope of work.
- B. Width: The inside width of the cover shall be as noted in the scope of work.
- C. Distributed Design Live Load and Deflection: All structural components shall be designed to support the dead weight of the structure plus a live load of 50 pounds per square foot of surface. The maximum deflection of any component under this load shall not exceed $L/240$ of the span of that component. In no event shall the dead load deflection exceed the rise of any component in order to avoid surface ponding.
- D. Concentrated Live Load: The structural components shall be designed to support a 400-pound load on a 12" x 12" area located anywhere on the surface of the structure without permanently deforming the tested area.
- E. Design Stresses: All allowable design stresses in structural aluminum shall be in accordance with the "Specifications for Aluminum Structures" for building-type structures by the Aluminum Association and ASCE 7-22.
- F. Skid Resistance: The cover shall possess an integral non-skid surface and no exposed area of cover system wider than one inch shall be without ribs/non-skid surface. The aluminum decking surface of the structure shall be RPS Engineering's extruded aluminum planks that are ribbed and cross-serrated to provide an aggressive non-skid surface. This surface shall not be achieved using paint, adhesive tapes, or sandblasting.
- G. Chemical Resistance: Panels shall be fabricated entirely of 6061-T6 (or equal) corrosion-resistant aluminum extrusions resistant to hydrogen sulfide (H₂S) and other corrosive gases typical of wastewater treatment environments. Every panel to beam connection shall be chemical resistant, will not weaken or corrode, and will interlock. A mechanical and replaceable neoprene seal shall isolate the cover perimeter from the concrete wall. No foam tape or caulk shall be allowed.
- H. Configuration: The aluminum cover shall be composed of panels and beams or trusses. All panels shall interlock with the adjoining beam or truss without the use of threaded fasteners. The weight of an individual panel shall not exceed 150 pounds. Each removable panel shall be easy to remove, and the lifting force needed shall not exceed the dead weight of the panel.

1.5 DELIVERY AND INSTALLATION

- A. Delivery: Delivery of the components of the structure shall be made to a location nearest the site that is accessible to over-the-road trucks, unless otherwise specified.
- B. Storage: The manufacturer shall be responsible for jobsite storage of the delivered components. The components shall be stored off the ground on a level surface in such a manner as to prevent damage.
- C. Installation: The manufacturer shall furnish such personnel, tools, equipment, and materials as required to install the cover using the recommended procedure.
- D. Contractor Installation: The cover manufacturer can provide installation instructions, on-site supervision, and inspection if desired.
- E. OEM Manual: The manufacturer shall provide an OEM Manual that includes "as-built" drawings, maintenance instructions, and removal and replacement instructions for the installed cover.

1.6 WARRANTY

- A. The Manufacturer's Guarantee shall warrant the fabricated aluminum cover materials and workmanship to be free of defects for a period of one (1) year from the date of substantial completion.

PART 2 — PRODUCTS

2.1 MANUFACTURERS

- A. RPS Engineering
 - 1. 1300 Crispin Drive, Elgin, IL 60123
 - 2. Phone: 847-931-1950 | Fax: 847-931-4274
 - 3. www.rpsengineering.com
 - 4. Woman-Owned Business

2.2 MATERIALS

- A. Aluminum: All aluminum used in the fabrication of the cover shall be alloy 6061-T6 (or equal). All plates shall be alloy 6061-T6 (or equal). Material shall be new and first quality.
- B. Welding Electrodes: Welding shall be with electrodes of an alloy that shall produce welds with strength and corrosion-resistant characteristics compatible with the base metal.
- C. Fasteners: All fasteners between aluminum components shall be stainless steel or structural plastic. Aluminum shall be isolated from dissimilar materials by means of a stainless-steel spacer or an elastomeric isolator. Beams and panels shall be fastened to concrete using stainless steel drill-in-place anchor bolts.
- D. Steel Accessories: No carbon steel components shall be used.
- E. Seals: A mechanical and replaceable neoprene seal shall isolate the cover perimeter from the concrete wall. No foam tape or caulk shall be allowed.
- F. Access Hatch Panels: Access to any location under the cover shall be gained through integral gear-hinged access hatches or approved equal. Access Hatch Panels shall have identical properties as the rest of the aluminum cover including loads, deflection, and slip resistance specifications. The access-hinged panels shall be full panel width. The length of the access panel shall be clearly indicated in drawings. Hinged panel components including hinges, decking, and lifting handles shall be extruded 6061-T6 (or equal). While in the closed position the hatches shall be completely flush, posing no tripping hazard. In the open position the panel shall lie flat on the cover and will not need a hold-open device.
- G. Handles: Shall be integral flush-mounted aluminum incorporated into the non-skid deck slat.

PART 3 — EXECUTION

3.1 FABRICATION AND WORKMANSHIP

- A. Workmanship: The quality of workmanship shall be equal to the best general practice in modern structural fabrication shops. Workmanship, fabrication, and shop connections shall be in accordance with the latest edition of ANSI/AWS D1.2 “Structural Welding Code — Aluminum”.
- B. Experience: The manufacturer must furnish adequate evidence of a minimum of ten (10) years of ongoing experience in the manufacture of similar structures.
- C. Preparation for Welding: All components to be welded shall be free of dirt, grease, and other contaminants and shall fit properly for sound welding. Surfaces to be welded may not be cut with oxygen. Sawing, shearing, or machining may be used.
- D. Welding Procedures: All welding shall be with an inert gas shield arc process. Machine settings shall be developed with test welds of the same material, alloy, and geometry as the work pieces, and samples will be tested destructively.

PART 4 — TESTS AND INSPECTION

4.1 TESTING

- A. Loads: After installation, the cover structure will be tested for conformance with the deflection limits. A load of 400 pounds will be placed as directed by the Engineer and the maximum deflection created by the load will be measured.
- B. Shop Testing: Manufacturer shall submit a shop air tightness test and certification for the cover configuration proposed. This test shall be performed in accordance with the “Procedural Standards for Testing, Adjusting and Balancing of Environmental Systems” as published by the National Environmental Balancing Bureau (NEBB). Said test shall be conducted and witnessed by a NEBB-certified technician. The report shall include a description and illustration of the cover configuration, a description and illustration of the test apparatus, and a report of the results. The cover shall maintain an air intrusion leakage rate not to exceed 0.2 cfm per square foot at an applied negative pressure of 0.2 inches of water column for a five (5) minute duration.

END OF SECTION 05522