




 **ELEMENT 13**
Next Generation Tank Products

Specification for Flat Panel Covers

SP-FPC-1303

Rev	Date	Prepared By	Checker Approval	Operations Approval	Management Approval
B	August/2023	KHP	CAB	KRK	BEL

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I. GENERAL

This specification is for a wholly engineered aluminum flat panel cover system composed of panels and beams as manufactured by Element 13, LLC (Houston, Texas)

II. SCOPE OF WORK

Element 13 shall furnish a design that includes all materials necessary to fabricate and deliver a complete flat panel cover system as specified herein.

III. ENGINEERING

- A. Before executing any fabrication, an engineering submittal will be provided to the engineer of record for approval. The submittal will include the following:
 - i. Complete structural calculations summarizing governing design stresses in all members and connections.
 - ii. Detailed structural drawings.
- B. Approved for fabrication and/or construction engineering submittals and drawings shall be stamped by cover manufacturer's P.E.

IV. MATERIALS


A. Aluminum:

All aluminum alloys used in the Element 13 aluminum flat panel cover system are as follows:

- i. Extrusions: 6005A-T5 or 6061-T6
- ii. Plate: 3003, 5052, 6061, 7075
- iii. Sheet: 3003, 5052, 6061, 7075

B. Fasteners:

All fasteners between aluminum components shall be stainless steel. 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

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steel drill in place anchor bolts. All fasteners and anchors shall be 300 series stainless steel.

C. Welding:

No welding will be required.

D. Steel Accessories:

No carbon steel components shall be used.


E. Accessories:

Doors, Hatches, Vents Flanged Connections: 3003, 5052, 6061, 6005A, 7075

V. PERFORMANCE & DESIGN

A. Performance

- i. The cover is a clear-span structure supported by the specified tank structure.
- ii. Individual panels alternately mate with adjacent panels and overlap the support structure.
- iii. No more than the adjacent panels need removal to remove any one panel.
- iv. Each panel assembly is comprised of a primary extrusion, extruded plank, stiffener, and an integrated bidirectional non-skid surface.
- v. Handles, bolts, and hinges shall pose no tripping hazard once installed.
- vi. The Dead Load of individual removable panels not to exceed 150 lbs.
- vii. All dissimilar surfaces are separated by gasket.
- viii. All mating and bearing surfaces are gasketed, forming a substantially air-tight system.
- ix. The cover will be adequately sealed to allow the odor control system to work properly while allowing for air intake. A safety intake should also be present.
- x. No appreciable water ponding allowed to remain on the surface.

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- xi. The cover shall possess an integral non-skid surface and no exposed area of the cover system wider than one inch shall be without knurlings/non-skid surface. The non-skid surface shall not be accomplished with the use of coatings, adhesive tapes, sandblasting, or any other means other than an extruded profile.
- xii. As-built field dimensions need to be provided and verified by the contractor or manufacturer prior to the issuance of the final “For Fabrication” drawing package. Any discrepancies between the “As-built” field dimensions as shown on the “For Construction” drawings shall be brought to the attention of Element 13 and the Client. No fabrication shall proceed until site conditions are remedied to the point that the cover will be fabricated correctly and in compliance with the approved drawing set. Any remedies deemed necessary are not the responsibility of the cover manufacturer.

B. Design


- i. All structural components, unless approved otherwise, shall be designed to support the self-weight of the structure, plus a live load of 50 psf. The maximum deflection of any component under this load shall not exceed L/240.
- ii. Design Stresses: All allowable design stresses in structural aluminum shall be in accordance with the “Specification for Aluminum Structures” for building type structures by the Aluminum Association, 2015 Edition.

VI. FABRICATION & WORKMANSHIP

- A. 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. Under no circumstances shall welding of structural components or main panel assemblies be allowed.

VII. TESTING

- A. Field testing: After installation, the cover structure shall be tested for conformance with the deflection limits. A load of 500 pounds will be placed as directed by the engineer and the maximum deflection created by the load will be measured.

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B. Shop Testing: The manufacturer shall perform a prequalified shop air tightness test and certification for the cover components proposed. This test shall be performed in accordance with the “Procedural Standards for Testing, Adjusting and Balancing of Environment System” as published by the National Environmental Balancing Bureau (NEBB) on cover components of not less than 80 square feet. Said test shall be conducted and witnessed by a NEBB certified technician. The method of testing, test apparatus, and proposed contents of the test report shall be submitted to the engineer for approval. After the receipt of the engineer’s approval, the manufacturer shall set up testing protocol and schedule the test. The manufacturer will provide the engineer with at least 72 hours’ notice prior to the scheduled test. A report of the test shall be prepared by the certified technician and shall be sealed with the NEBB seal. The report shall include a description and illustration of the test components, 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 5-minute duration.

VIII. DELIVERY

- A. The manufacturer shall not be responsible for job site storage of the delivered components.
- B. The contractor shall be responsible for the unloading, storing, and handling of the delivered components.
- C. The components should be stored off the ground on a level surface in such a manner as to prevent damage.


IX. INSTALLATION

- A. The manufacturer can provide installation instructions, on-site supervision, and inspection if desired.
- B. The manufacturer shall provide an OEM Manual that includes drawings, maintenance instructions, and removal and replacement instructions for the installed cover.

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X. WARRANTY

- A. Materials and workmanship are guaranteed for a period of one (1) year from the date of material delivery. A limited structural warranty is guaranteed for a period of three (3) years from the date of material delivery. Structural defects, faulty workmanship, or defective material shall be reported to be repaired or replaced to Element 13 within 10 working days from discovery, or the suggested structural defects, faulty workmanship, or defective material shall not be subject to this warranty. Faulty workmanship of installation shall not be covered if Element 13 does not perform the installation of materials.
- B. This warranty does not cover defects in any component parts or labor of the aluminum tank products which are not considered the structural components or which were not manufactured by Element 13; defects in any items or labor which are covered by a separate warranty from the original manufacturer of any part that is used by Element 13 in the structural components; deterioration due to normal wear, tear and exposure; repairs or replacements made necessary by negligence, negligent use of, misuse of, abuse of, loading the unit beyond its gross weight limitations, accidents, acts of God, modifications or alterations in or to the structural components by anyone, and failure to maintain or care for the structural components, and any and all matters which were not within the control of the Element 13; neglect of the product or structural components; repairs or replacements made necessary by reason of a failure of the original retail consumer purchaser or others to follow ordinary maintenance procedures as recommended by the Element 13 or the manufacturer or dealer of the Structural components; any defects in work, labor, materials or parts not actually manufactured by, performed by or made by Element 13; delamination caused by water intrusion from lack of required exterior seal maintenance; routine maintenance and adjustments; damage that has occurred as a result of misuse, abuse, neglect, or lack of maintenance; damage caused by unregulated water pressure, tank over-fill or plumbing system modifications resulting in flooding; damage caused by overloading or improper weight distribution.
- C. If Element 13 did not perform the installation of materials, and structural defects or faulty workmanship is discovered, the Client can provide a change order for Element 13 to visit the worksite and determine the nature of faulty workmanship. Element 13 will not be responsible for repairs or additional installation requirements at that point but will provide recommendations for repairs and the option to repair at the Client's expense.
- D. Any warranty work performed will not extend the term of the original warranty period. Element 13's warranty is limited in scope and liability to repairing or

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redoing the nonconforming Work or materials. Element 13 shall not be obligated under warranty or otherwise to repair or replace defects caused by operating abuse, neglect, erosion, corrosion, acts of God, or other similar causes or normal wear and tear. No credit shall be allowed for any cost or expense Customer may incur in replacing or connecting materials or workmanship hereunder, unless prior written notice to Element 13 is provided and Element 13 has had the reasonable opportunity to perform and has agreed not to perform in exchange for a credit. Except as expressly provided in herein, Element 13 provides no Warranties, express or implied, of merchantability, fitness for use or otherwise.

END OF SPECIFICATION