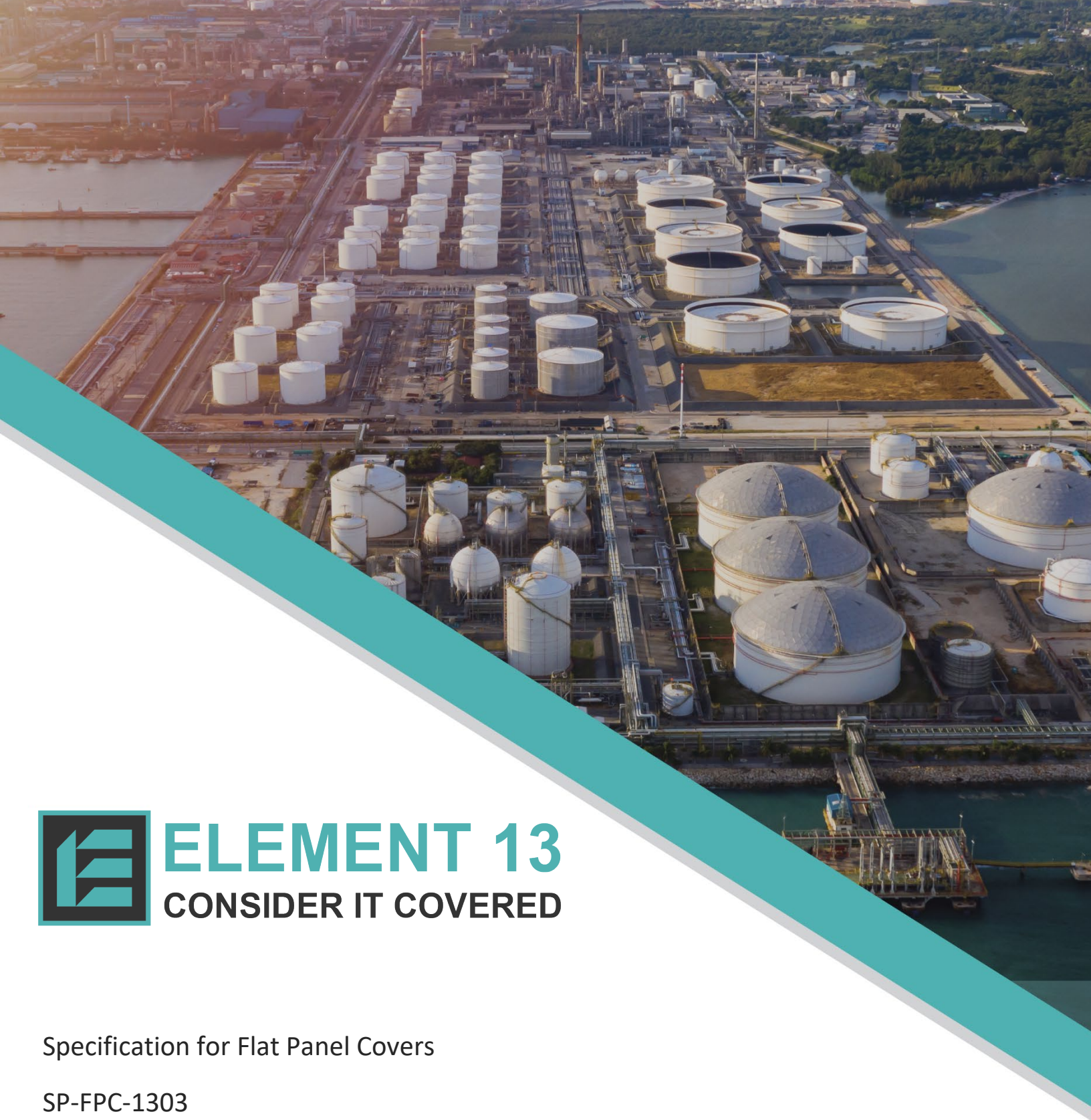

ELEMENT 13

CONSIDER IT COVERED

Specification for Flat Panel Covers

SP-FPC-1303

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

PART 1 GENERAL

1.01 SCOPE

A. 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).

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

1.02 SUBMITTALS

A. Drawings shall be submitted showing dimensions, sizes, thicknesses, gauges, materials, finishes, joint attachments, and erection procedures.

B. A complete set of design calculations for the cover shall also be submitted and stamped by a Professional Engineer. These calculations shall be signed by a registered professional engineer. All work shall be fabricated and erected in accordance with the approved drawings.

C. Certification that the specified material alloys, sizes, and quantities have been furnished shall be submitted with materials upon delivery.

1.03 REFERENCES

A. The following codes and standards form a part of this section to the extent specified herein:

1. ASTM C509 Standard Specifications for Elastomeric Cellular Preformed Gasket and Sealing Material
2. ASTM C1115-00 Standard Specification for Dense Elastomeric Silicone Rubber Gaskets
3. ASTM C920 Standard Specification for Elastomeric Joint Sealants
4. Aluminum Association Specifications for Aluminum Structures
5. Aluminum Association Aluminum Design Manual; Specifications and Guidelines for Aluminum Structures
6. ASCE 7 Minimum Design Loads and Associated Criteria for Buildings and Other Structures
7. ASCE 8 Specification for the Design of Cold-Formed Stainless Steel Structural Members
8. ASTM F593 Standard Specification for Stainless Steel Bolts, Hex Cap Screws, and Studs
9. Federal Specifications TT-S-00230C & A-A-59588

PART 2 PRODUCTS

2.01 DESCRIPTION

A. The cover shall be a clear-span structure supported by the specified tank's structure.

B. Individual panels shall alternately mate with adjacent panels and overlap the support structure.

C. No more than the adjacent panels shall need removal to remove any one panel.

D. Each panel assembly shall be comprised of a primary extrusion, extruded plank, stiffener, and an integrated bidirectional non-skid surface.

E. Handles, bolts, and hinges shall pose no tripping hazard once installed.

F. The Dead Load of individual removable panels shall not exceed 150 lbs.

G. All dissimilar surfaces shall be separated by gasket.

H. All mating and bearing surfaces shall be gasketed, forming a substantially air-tight system.

I. The cover shall be adequately sealed to allow the odor control system to function properly while allowing for air intake. A safety intake shall also be present.

J. No appreciable water ponding allowed to remain on the surface.

K. The cover shall possess an integral non-skid surface and no exposed area of the cover system wider than one inch shall be without knurling or a 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.

L. 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 and on the "For Construction" drawings shall be brought to the attention of Element 13 and the Client.

M. 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.

2.02 EXPERIENCE / QUALIFICATIONS

A. The cover must be manufactured in a US-based manufacturing facility. The use of a fabrication facility that is not US-based is expressly prohibited. Manufactures that do not meet these qualifications will not be considered.

2.03 MATERIALS

A. Materials provided to meet the provisions of this section shall be new and shall comply with all the requirements listed above in "References." All aluminum alloys shall be as defined by the Aluminum Association and published in the *Aluminum Standards and Data*.

1. Bolts and Fasteners - Threaded fasteners shall be 300 series stainless steel per ASTM F593, Alloy Group 1. Lockbolts shall be 7075-T73 aluminum, 304 or 305 stainless steel. Screws shall be aluminum or 300 series stainless steel.
2. Plates and Sheets - Plate and sheet material shall be aluminum alloy 3003-H16, 3105-H154, 6061-T6, 5052-H32 or 5052-H36, with mill finish AA - M10 as fabricated.
3. Structures - Aluminum structural shapes shall be alloy 6061-T6, 6005A-T61, 6005A-T5.
4. Miscellaneous Shapes (Vents, Hatches, etc.) - Miscellaneous aluminum shapes shall be alloy 6061-T6, 6005A-T61, 6005A-T5, 3003-H14, 3003-H16 or 5052-H32.
5. Gaskets - All gaskets shall be ozone resistant Silicone or Neoprene only. If Neoprene gaskets are utilized, they must not be exposed to ultraviolet light in application. The gaskets shall have a minimum thickness of 1/8".
6. Sealant - All sealants shall be silicone, resistant to ozone and ultraviolet light, remain flexible over all allowable temperature ranges, and shall conform to Federal Specification TT-S-00230C.
7. Other Penetration Seals – Any other seals penetrating the cover structures and parts shall be weatherproof rubber seals.

2.04 DESIGN

A. 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.

B. 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.

PART 3 EXECUTION

3.01 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 "Structural Welding Code – Aluminum".

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

3.02 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.

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.

3.03 WARRANTY

A. The cover manufacturer shall warrant that the work described herein shall be free from defects, workmanship, and material. The cover manufacturer shall replace or repair only faulty workmanship or defective material furnished by it that is reported to it within one year from the date of completion of this scope of work. 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 the cover manufacturer 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 the cover manufacturer 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 the cover manufacturer; defects in any items or labor which are covered by a separate warranty from the original manufacturer of any part that is used by the cover manufacturer 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 cover manufacturer; 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 cover manufacturer 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 the cover manufacturer; 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 the cover manufacturer did not perform the installation of materials, and structural defects or faulty workmanship is discovered, the Client can provide a change order for the cover manufacturer to visit the worksite and determine the nature of faulty workmanship. The cover manufacturer 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. The cover manufacturer's warranty is limited in scope and liability to repairing or redoing the nonconforming Work or materials. The cover manufacturer 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 the cover manufacturer is provided and the cover manufacturer has had the reasonable opportunity to perform and has agreed not to perform in exchange for a credit. Except as expressly provided in herein, the cover manufacturer provides no Warranties, express or implied, of merchantability, fitness for use or otherwise.

PART 4 SPECIAL PROVISIONS

Not used.

END OF SECTION