

SECTION 13125 – GRANDSTANDS (Treadweld Plus® Deck)

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This section includes the following:
 - 1. The work consists of providing labor, materials, equipment, engineering, installation and supervision of a permanent stadium grandstand system, including but not limited to the following:
 - a. Concrete foundations
 - b. Structural steel framing members
 - c. Decking System
 - d. Seating
 - e. Handrails / Guardrails
 - f. Ramps
 - 2. The construction and design of the grandstand shall be in compliance with the _____ Building Code.
 - 3. Dimensions / Capacities
 - a. The overall length of grandstand shall be _____
 - b. The number of rows shall be _____
 - c. Height of front cross aisle from grade shall be _____
 - d. The rise per row shall be _____
 - e. The depth per row shall be _____
 - f. Net seating capacity shall be _____.
- B. Related Sections include the following:
 - 1. Division 3 Section “Cast-in-Place Concrete” for concrete mix design and testing requirements.

1.3 SYSTEM PERFORMANCE REQUIREMENTS

- A. General: Provide a complete, grandstand system of mutually dependent components and assemblies that form a grandstand system capable of withstanding structural and other loads, thermally-induced movement, and exposure to weather without failure. Include primary and secondary framing, foundations, Decking System, seating, handrails and or

guardrails, and accessories complying with requirements indicated, including those in this Article.

- B. Structural Performance: Provide grandstand system capable of withstanding the effects of gravity loads and the following loads and stresses within limits and under conditions indicated:
1. Design Loads / Structural – Framing Members
 - a. Dead Loading: 6 PSF for understructure
 - b. Live Loads: 100 PSF for understructure
 - c. Deflection Limits: engineer assemblies to withstand design loads with deflections no greater than the following:
 1. Stringers and girders: vertical deflection of $L/240$
 2. Design Loads / Treadweld Plus® Decking System
 - a. Dead Loading: 6 PSF for decking, platforms, stairs and ramps
 - b. Live Loads: 100 PSF for decking, platforms, stairs and ramps
 - c. Deflection Limits: engineer assemblies to withstand design loads with deflections no greater than the following:
 1. Decking, platforms, stairs and ramps: vertical deflection of $L/360$
 - d. Sway loads of 24 PLF per row parallel to seat and 10 PLF per row perpendicular to seat run.
 3. Design Loads / Handrail / Guardrail
 - a. 50 PLF in any direction
 - b. 200 LB Concentrated load any direction
 4. Design Loads / Seat Boards
 - a. Live Loads: 120 PLF for seating

1.4 SUBMITTALS

- A. Shop Drawings: Submit manufacturer's approval drawings. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for each type of the following grandstand system components:
1. Foundations:
 - a. Footings, foundations, reinforcement and anchor bolt setting plan.
 2. Structural framing:
 - a. Primary and secondary framing including but not limited to the following:
 - 1.) Columns
 - 2.) Beams
 - 3.) Stringers
 - 4.) Bracing
 - 5.) Connecting hardware

3. Treadweld Plus® Decking System:
 - a. Decking Platforms
 - b. Risers
 - c. Supports for Seats
 - d. Aisle Steps
 - e. Aisle Handrails
 - f. Hardware
 4. Seating
 5. Handrails / Guardrails
 6. Ramps
 7. Egress Stairs
- B. Proposal Drawings: Submit with bid proposal the following schematic design plans:
1. Plan showing general design and seat locations
 2. A decking and aisle layout plan
 3. Structural steel framing plan

1.5 QUALITY ASSURANCE

- A. Concrete Installers Qualifications: An experienced installer who has completed concrete work similar in material, design and extent to that indicated for this project and whose work has resulted in construction of grandstands with a record of successful in-service performance. Submit superintendent's name, phone number and list of three similar jobs with bid.
- B. Erector Qualifications: An experienced erector who has specialized in erecting and installing grandstands similar in material, design, and extent to that indicated for this Project. Submit superintendent's name, phone number and list of three similar jobs with bid.
- C. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installation of grandstand systems that are similar to those indicated for this Project in material, design and extent. All approval drawings and calculations shall bear the seal of a registered professional engineer.
- D. Quality Control: Manufacturer's written quality control for manufacturing, shipping and installation shall be submitted with bid.

- E. Standards and Guidelines: Comply with the provisions of the following codes, specifications and standards, latest editions, except as otherwise noted or specified:
 - 1. American Institute of Steel Construction (AISC)
 - a. Code of Standard Practice for Steel Buildings.
 - b. Specification for the Design, Fabrication and Erection of Structural Steel.
 - c. Structural Steel: Comply with AISC S335, "Specification for Structural Steel Buildings-Allowable Stress Design", or AISC S342, "Load and Resistance Factor Design Specification for Structural Steel Buildings," for design requirements and allowable stresses.
 - 5. American Concrete Institute (ACI)
 - 6. Aluminum Association of American
 - 7. American Welding Society (AWS)
 - 8. Americans with Disabilities Act (ADA)

- F. Site visitation: Bidder shall visit the job site ten (10) days prior to the bid date. At the time of visitation, bidder must announce himself to the owner's representative.

1.6 DELIVERY, STORAGE AND HANDLING

- A. Deliver components, and other manufactured items so as not to be damaged or deformed. Package items for protection during transportation and handling. Handling: Unload items to prevent bending, warping, twisting and surface damage.

- B. Do not store items on the job site in contact with other materials that might cause staining, denting or other surface damage.

1.7 WARRANTY

- A. All products shall carry, after proper erection, and under normal use for the type of structure a one (1) year warranty against all defects in materials and workmanship.

PART 2 - PRODUCT

2.1 ACCEPTABLE MANUFACTURERS

- A. Structural Steel Framing Members and Aluminum Decking System
 - 1. Outdoor Aluminum, Inc. (800) 225-4249
PO Box 118
Geneva, AL 36340

- B. Other manufacturers seeking to be approved must submit the following to the Owner for review and receive approval from the Owner seven days prior to bid. Interlocking or tongue and groove decking systems are prohibited. To be submitted:
1. Seatboard sample
 2. Footboard sample
 3. Riserboard sample
 4. Handrail support post end cap sample
 5. 12" x 12" chain link fence sample
 6. Mid-aisle Grab Rail Unit sample
 7. Complete assembled closed deck section – with frame sample
 8. Seating plan indicating aisles, walkways, seating sections and exits
 9. End elevation indicating riser and row depth, depth configuration, railings, size of framing members, and walkway
 10. Schedule of work experience, including names of contacts and phone numbers – 30 jobs minimum
 11. List of (5) similar jobs – should the Owners (3 persons maximum) request a site visitation to any of these jobs, it will be at the Bidder's expense
 12. Resume including Corporate Officers, Sales Representatives, Technical Advisor, Project Manager and Job Site Superintendent
 13. Project schedule, including phasing with other trades and designation for all tasks, milestone dates for drawing submittal, fabrication time, key material delivery dates and designated dates of installation

2.2 STRUCTURAL – FRAMING MEMBERS

- A. Structural-Steel Shapes: ASTM A 36/A 36M or ASTM A 529/A 529M
- B. Steel Plate, Bar or Strip: ASTM A 529/A 529M, ASTM A 570/A 570M, or ASTM A 572/A 572M; 50,000-psi (345-MPa) minimum yield strength.
- C. Steel Tubing or Pipe: ASTM A 500, Grade B; ASTM A 501; or ASTM A 53, Grade B.
- D. Bolts, Nuts, and Washers: ASTM A 307, Grade A (ASTM F 568, Property Class 4.6); carbon –steel, hex-head bolts; and carbon-steel nuts.
- E. High-Strength Bolts as required: ASTM A 325 (ASTM A 325M), Type 1, heavy hex steel structural bolts, heavy hex carbon-steel nuts and hardened carbon-steel washers.
- F. Anchor Bolts, Bolts, Nuts and Washers: As follows:

1. Anchor Bolts: ASTM A 36 hot rolled Round 7/8" diameter x 1' - 6" long. Unit to be complete with 7/8" heavy hex nut permanently affixed to the bottom of its length.
 2. Washers: ASTM A 36/A 36M.
- G. Finish: Minimum 2 oz. hot dipped galvanized in accordance with ASTM 123-A with minimum thickness of 3.3 mils.
- H. Horizontal Beams: Horizontal beams shall be wide flange units, supported on columns as required to transfer stadium loads to foundations.
- I. Vertical Columns: Columns shall be of structural square tube, in order to minimize bracing and to also minimize the need for sway bracing. Use of wide flange beams for columns is prohibited.
- J. Bracing: All transverse bays shall be free of cross bracing. Longitudinal bays shall be braced in alternate bays where possible. All bracing shall be 7/8" rod and shall be double-nutted at connection points through the columns. Rigid angle bracing in longitudinal bays is prohibited.
- K. Stringers: Stringers shall be wide flange material with welded angle riser and tread supports.

2.3 DECKING SYSTEM: "Tredweld Plus® Decking System"

A. Decking System Platforms

1. Decking system platforms shall be an all-aluminum extruded system attached to the understructure by means of concealed aluminum clips, galvanized bolts, washers and nuts. The rear portion of the platform will turn ninety degrees vertical to accept the next row of decking platforms. The front portion of the platform shall be complete with a female front edge to allow for a positive male / female connection of a vertical riser. Individual aluminum components shall be joined by means of the metal inert gas process. The attachment of the riser to the platforms shall form a structurally integrated system.
2. Individual platforms shall be one piece; row depth x 7 5/16" x 37'-6" maximum.
3. Platform shall have a minimum aluminum wall thickness of .078" and aluminum shall be alloy 6063-T6.
4. Walking surface shall be fluted non-skid.
5. The platforms shall have integral bolt runners to allow for the attachment of seat supports, aisle steps and aisle handrails to be made without penetrating the decking system. Through bolting is prohibited. After installation of the above components, there shall be a

full closure of the bolt runner using an aluminum cover strip. Open portions of the bolt runner are prohibited.

6. Deck shall allow for reconfiguration of seating and aisles without alteration of the understructure.
7. At locations where platforms meet end to end a four-inch wide aluminum threshold shall be provided to cover the walking surface. Threshold shall be beveled on both sides so as not to create a trip hazard and must have a fluted surface to prevent slipping. Threshold shall be integrated with front and rear covers for the platforms that conceal transition from the horizontal to the vertical portions of the deck. Threshold must comply with specified deflection criteria and once installed must allow for expansion and contraction.

B. Decking System Riser

1. The decking system riser shall be extruded aluminum; alloy 6063-T6 with an anodized finish (Premium Optional: powder coated finish as specified by Owner).
2. This extrusion shall have a male ridge running continuous at the upper leading edge to interlock with the front portion of the decking system panel. The riser shall connect the decking platforms together, adding structural integrity and not simply covering the vertical gaps between platforms. Corrugated riser is prohibited.
3. The riser shall be structurally connected to the decking system panel every 12" longitudinal with 1/4" diameter structural aluminum grade rivets. Self-drilling fasters are prohibited.
4. There shall be no gaps or cavities between the riser portion of the decking system and any supports or attachments.

C. Decking System Seat Supports

1. The decking system seat support shall be of extruded aluminum angle, 2-1/2" x 2" x 3/16", alloy 6061-T6, mill finish.
2. Seat support shall be mounted directly against the vertical portion of the decking system riser and the connecting hardware shall not penetrate through or change the structural integrity of the Tredweld Plus® Decking System.
3. Once installed the seat support shall create a flush condition with the riser.
4. Seat support system shall be universally adjustable to any location on the vertical plane of the decking system.

D. Decking System Intermediate Aisle Steps (If Required)

1. The decking system aisle steps shall be extruded aluminum, alloy 6063-T6, and mill finish.

2. Step treads shall be complete with a female front edge to allow for a positive male / female connection of vertical portion of the step and shall completely close all areas.
3. Step height shall be one-half of the rise per row and step depth shall be one-half of the run per row. The length shall be the same as the width of the vertical aisle plus six inches.
4. Intermediate aisle steps shall attach to the deck using the bolt runner.
5. Contrasting step tread nosing to be anodized black. Nosing shall have no external fasteners. Powder coated nosing is prohibited.

E. Decking System Aisle Handrails

1. The decking system aisle handrails shall be 1-5/8" schedule 40 anodized aluminum pipe.
2. Aisles shall have an intermediate handrail with the top of rails set 34" above the leading edge of the steps. Handrails shall be discontinuous and shall not span more than five rows of seating and the spacing between rails shall not be less than 22" or more than 36".
3. Handrails shall attach to the decking system using the bolt runner without penetrating through the panel, riser or platform.

F. Egress Stairs

1. The decking system egress stair stringers are to be constructed of 8" aluminum channel, alloy 6061-T6. Tread supports to be welded to 8" member to totally cap the end of the 2" x 12" stair tread against the channel web.
2. Walking surface of tread shall be complete with female front edge to allow for positive male / female connection of the riser closure. All risers to be fastened to the rear tail of the stair tread with 1/4" diameter structural grade aluminum rivets.
3. Stair treads nosing to be anodized black. Nosing shall have no external fasteners. The leading edge of the step tread shall project 1/2" past the front of the vertical riser.
4. Stair grab rail to be constructed of 1-5/8" schedule 40 anodized aluminum pipe with no fittings at transition from sloped system to grade.

G. Decking System Hardware

1. The decking system attaching hardware shall not protrude through the decking system.
2. All bolts, washers and nuts shall be hot-dipped galvanized.
3. End caps shall be of a heavy duty, clamping, aluminum channel design fastened to the ends of extrusions with aluminum rivets. End caps shall close all end openings of extrusions and shall be a full-length

piece and match in both color and finish the extrusion to which they attach. Self-drilling fasteners are prohibited.

4. All riser fasteners shall be structural 1/4" diameter structural grade aluminum rivets.
5. All seat supports, aisle step supports, aisle handrails and risers shall be installed from the topside of the decking system.
6. Through bolting of decking system is expressly prohibited. Self-drilling fasteners are prohibited.

2.5 SEATING

A. Bench Seating

1. Seats shall be of extruded aluminum with a fluted non-skid surface, alloy 6063-T6, with 204R1 anodized clear finish
2. Plank shall be a 2" by 10" nominal with a wall thickness of .078" (+ / - .006" industry tolerance).
3. Finish size shall be at minimum 1-3/4" by 9-1/2".
4. Seats shall attach to the decking system seat supports by means of concealed aluminum clips, galvanized bolts, washers and nuts.
5. End caps shall be of extruded aluminum and shall match in both color and finish the plank to which they attach. All end caps shall be single piece and shall attach to the underside of the plank with a minimum of two aluminum rivets.

B. Optional Bench Seating with Backrests

1. Backrests shall be of extruded aluminum with a fluted surface, alloy 6063-T6, with 204R1 anodized clear finish. (Optional: powder coated finish as specified by owner).
2. Plank shall be a minimum 2" by 6" contour nominal with a wall thickness of .078" (+ / - .006" industry tolerance).
3. Backrests shall attach to an anodized aluminum channel stanchion and the stanchion shall connect to the underside of the seat plank. The stanchion shall connect to the backrests and seat plank using concealed aluminum clips.
4. End caps shall be of cast aluminum and shall match in color the plank to which they attach. All end caps shall be single piece and shall attach to the underside of the plank with a minimum of two stainless steel pan head screws.
5. (Note): Most codes require a minimum tread depth of 30" to accommodate backrests.

C. Optional Venue I Self Rising Stadium Chairs

1. Chairs shall be designed to allow the seat to flip up allowing for the specified clear aisle access way. Aisle access way shall be measured with the chair unoccupied.
2. Seat portion of chair shall be gravity activated with an internal quieting bumper. Spring type devices are strictly prohibited.
3. All welded one piece steel stanchions with arm rest supports.
4. Finish for steel stanchions shall be black powder coated.
5. Armrest shall be black injection molded plastic, with ultra-violet protection.
6. Seat, and back shall be blow molded plastic, with ultra-violet protection.
7. Seat & back moldings are available in the following standard colors: red, royal blue, navy blue, gold, green, and grey. For large quantities, the moldings can be matched to virtually any standard paint color.
8. There shall be no gap in warranty and completed liability insurance between the chair portion of the project and the grandstand portion. Grandstand manufacturer shall provide a written one year warranty for the grandstand self rising chairs.
9. The chair design must fully integrate with the Treadweld Plus® Deck System, allowing for additional chairs to be added with no modification to the decking system, and no through-bolting of the deck.
10. (Note): Most codes require a minimum tread depth of 30” to accommodate chairs.

2.6 HANDRAILS / GUARDRAILS

A. Grandstand Handrail / Guardrail System

1. All railing shall consist of 1-5/8” schedule 40 anodized pipe.
2. All pipe fittings shall be of cast aluminum.
3. Guardrail supports to be 3” aluminum channel, alloy 6061-T6.
4. Rail pipe shall be secured to the guardrail support by means of galvanized tension bands.
5. The top rail shall be 42” minimum above the nearest seat on the sides and rear, and 42” above the tread on the front walkway.
6. Handrails on stairs shall be 34” above the leading most edge of the stair tread.
7. A galvanized chain link fence shall be provided on the front, sides and rear of the grandstand and at all egress areas.
8. Handrails shall be provided at all walking areas and shall extend 1-1/2” from guardrail material. Standoff shall be extruded aluminum, alloy 6061-T6

9. Handrails shall have internal sleeves for splice purposes and finished rail shall be continuous and shall not exceed 1-5/8" diameter.

2.7 RAMPS

A. Grandstand Handicap Ramps

1. Wheel chair accessible ramps with a minimum 60" clear width and a maximum 1:12 slope shall be provided, conforming to code.
2. Understructure shall be constructed of same materials as grandstand support structure.
3. Decking and handrails shall be constructed of same materials as grandstand decking.

2.8 IDENTIFICATION

A. Optional Grandstand Seat and Row Lettering

1. Seat numbering shall be clearly and permanently marked with computerized engraving system.
2. Seats shall be marked at 18" minimum on center on the non-fluted portion of the seat board.
3. Row numbering shall be clearly and permanently marked with material providing a high contrast, high-resolution mark.
4. Row lettering shall be marked on the end caps.

PART 3 – EXECUTION

3.1 EXAMINATION

- A. Examine substrates, with erector present, for compliance with requirements for installation tolerances and other conditions affecting performance of grandstand system.
- B. Before erection proceeds, survey elevations and locations of concrete foundations, base plates, and anchor bolts to receive structural framing. Verify compliance with requirements and grandstand manufacturer's tolerances.

3.2 ERECTION

- A. Erect grandstand system according to manufacturer's written instructions and erection drawings.
- B. Do not field cut, drill or alter structural members without written approval from grandstand system manufacturer's professional engineer.

- C. Set structural framing in locations to elevations indicated according to AISC specifications referenced in this specification.

3.3 CLEANING AND PROTECTION

- A. Clean all metal surfaces promptly after installation of work.
- B. Exercise care to avoid damage to protective coatings and finishes.
- C. Remove all excess construction material and dispose of all debris.

END OF SECTION 13125