

Douglas County Community and Senior Center
1329 Waterloo Lane, Gardnerville, NV 89410
Climbing Wall

CLIMBING WALL

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions listed below.

1.2 SUMMARY

A. This section includes:

1. Custom hybrid climbing wall assembly consisting of a combination of rope wall surfacing and bouldering wall surfacing. Work includes design and back-up support structure.
2. Landing zone materials.
3. Accessories and equipment.

B. The wall should include a variety of features to accommodate beginner through advanced climbers to include but not limited to a small overhang (~3' horizontal), a large overhang/roof (~6' horizontal), a slab climb (~15°), on overhanging face (~-15°), arêtes (at least one > 100°), dihedrals (at least one < 80°), a crack (full height of the wall, in a corner and/or on a face, varied in width but large enough for toe jams in many places), 45+ bouldering cave (~10" tall) and an arch. These features should give the wall more square feet of surface than if constructed as a flat wall. Final design to be by successful bidder and approved by Owner.

C. Coordinate final design and layout of climbing wall with the work and layout of items and equipment other trades and the owner's representative.

1.3 REFERENCES

A. CWA – Standards for Artificial Climbing Walls

B. IBC: International Building Code.

C. Manual of Steel Construction, Allowable Stress Design, 9th Edition AISC

1.4 SUBMITTALS

A. Design Process: The following will occur within 60 days after award and prior to Shop Drawing preparation:

1. On-line meeting to review program, design and budget.
2. On-Site design session.
3. On-line budget and program reconciliation session.

B. Shop Drawings

1. Include three-dimensional model, plans, elevations, sections, and attachment details.
2. Include loads and live loads for artificial climbing walls.

C. Product data including manufacturer's specifications, standard details, details particular to this project, and installation drawings.

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D. Samples: For each exposed artificial climbing wall product specified; minimum 12" by 12" showing substrate, handhold fastener density, and color and finish.

E. Delegated-Design Submittal: Analysis data signed and sealed by qualified professional engineer responsible for preparation of calculations and shop drawings. Indicate direction and magnitude of reactions resulting from installation of artificial climbing walls.

Analyze building structural system to verify loading resulting from artificial climbing walls will be adequately supported by building structural elements.

F. Welding certificates

G. Maintenance data for artificial climbing walls.

1.5 QUALITY ASSURANCE

A. Manufacturer Qualifications: Approved manufacturer listed in this section, with minimum 10 years of experience in the manufacture and assembly of artificial climbing walls used in similar applications.

B. Installer: Responsibility of climbing wall manufacturer. Supervising on-site personnel to have minimum 5 years of experience.

C. Professional Engineer's Qualifications: Qualified professional engineer, experienced in design of artificial climbing walls similar to those required for Project, and licensed in the State of Nevada.

1. Climbing wall shall be engineered to meet or exceed CWA standards for climbing wall construction.

D. Welding: All welding shall conform to the AISC and the American Welding Society (AWS) Standard Code for Arc and Gas Welding in Building Construction. All welding shall be performed by AWS certified welders. The technique of welding, the workmanship, appearance and quality of welds and the methods used in correcting nonconforming work shall be in accordance with "Section 3-Workmanship" and "Section 4-Technique" of the AWS Structural Welding Code-Steel, D1.1. Minimum size of welds shall be 1/8". Minimum return shall be 1". All welds shall be executed using E70XX electrodes unless specified otherwise in the shop drawings.

1. Surfaces Adjacent to Field Welds: Surfaces within 2" of any field weld location shall be free of materials that would prevent proper welding or produce toxic fumes during welding.

1.6 DELIVERY, STORAGE AND HANDLING

A. Protect products during transit, delivery, storage and handling to prevent damage and maintain integrity of components.

B. Store and handle products in accordance with manufacturer's recommendations in an

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area adjacent to the climbing wall installation.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Basis of Design: Specifications are based on the following climbing wall systems manufactured by Nicros, Inc. Climbing Wall Systems.

1. Rope Climbing Wall Surfacing: A.R.T. Wall™
2. Bouldering Wall Surfacing: 5.15 Wall™

B. Other Manufacturers: Subject to requirements, climbing wall systems manufactured by Eldorado, Entre Prises, and Walltopia are acceptable.

2.2 DESIGN DESCRIPTION

A. For purposes of bidding the basic base vertical surface area of wall and materials as follows:

1. Rope Climbing wall:
 - a. Type I (A.R.T. Wall™)
2. Bouldering Cave & Training Zone:
 - a. Type II (5.15 Wall™)

B. Design, Dimension and Profile Guidelines: Final Wall design by Contractors, see Basis of Bid concept drawings for available volume, structure and other limitations. See Summary description for minimum expectation of complexity of design. Surface area of walls will exceed base wall area as needed to provide complexity and non-vertical surfaces as required by final design. See structural drawings for approximate structural supporting system for basis of bid. The location and configuration of secondary building wall structure support is subject to modification and coordination as required by final design.

C. Exert no more than the following lbs. / square foot load vertically or horizontally on wall and floor systems.

1. Rope Wall: 25.
2. Bouldering Wall: 15.

D. Handhold Fastener Density: Supply two (2) handhold fastener per every sq. ft. of climbing wall surface area.

E. Climbing wall returns (sides of the climbing wall), shall return to the facility walls Seamlessly and conceal the interior structure of the climbing wall and restrict access behind climbing wall.

F. Lead routes: Equivalent of three (3) routes minimum, including anchors.

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1. First anchor installed per CWA Standards above ground level.
2. Subsequent anchors spaced every four feet vertically.
3. Double anchors installed at top of climbing wall.

2.3 MATERIALS

- A. Steel: A36, A500B for tube steel and Schedule 40, A53, Type S, Grade B for Standard weight structural pipe.
- B. Climbing Wall Surfaces: As described herein.

2.4 WALL CLIMBING SURFACE TYPE I

- A. Basis of Design: Nicros, Inc. Climbing Wall Systems: A.R.T. Wall™
- B. Description
 1. GFRC cast panels, minimum of ¾" in thickness. Seams shall be reinforced and sculpted with concrete to blend in with GFRC panels.
 - a. Surface coloration and characteristics chosen by Owner/Architect.
 2. Provide integral sculpted climbing holds as well as modular climbing hold attachment locations compatible with 3/8"-16 thread fasteners for surface mount. Handhold Fasteners shall be securely anchored to the sub-surface with permanent adhesive. Handhold fasteners shall be placed at minimum of 1.5 per sq. ft. of climbing wall surface area.
 3. Provide one (1) access door and hardware, allowing passage to the framework of the wall for maintenance and storage. Door to match the surface of the wall and serve as climbable terrain. Recessed hardware flush with climbing surface with no projections to snag climbers.

2.5 WALL CLIMBING SURFACE TYPE II

- A. Basis of Design: Nicros, Inc. Climbing Wall Systems: 5.15 Wall™.
- B. Description
 1. High-friction polymer enhanced cement bonded chemically and/or mechanically to the substrate. The surface shall be hand sculpted, with 3/16" to 2" in coverage.
 - a. Surface coloration chosen by Owner/Architect.
 2. Substrate: ¾" Plywood substrate shall consist of exterior grade fire retardant wood, and shall meet or exceed flame spread date provided in ASTM E 84: 25 or less. Unsupported seams shall be tongue and groove, or backed with appropriate blocking to minimize surface cracking at seams.
 3. Provide one (1) access door and hardware, allowing passage to the framework of the wall for maintenance and storage. Door to match the surface of the wall and serve as climbable terrain. Recessed hardware flush with climbing surface with no projections to snag climbers

2.6 ROPED WALL CLIMBING SURFACES

- A. Consists of Surface Type I.

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2.7 BOULDERING CLIMBING SURFACE

A. Consists of Surface Type II.

2.8 CLIMBING WALL FASTENERS

A. Modular Handhold Bolts

1. 3/8", 16 TPI socket head cap screws or flat head cap screws of appropriate length as suggested by and provided by the manufacturer of the Climbing Wall and handhold manufacturer.

B. Handhold fasteners

1. Fasteners shall be accessible for repair and/or replacement behind the climbing wall.
2. Screw-on fastener shall be 3/8" - 16 tpi, 1¼" wide flange attached to substrate with (3) screws.
3. T-nut screws shall be #8 x 7/8 particle board screws.
4. Heavy duty embedded couplers no glue on permitted.

2.9 CLIMBING PROTECTION / ANCHORS:

A. Top Rope Anchors: Double Point Discrete / Belay Bars

1. Quantity: 8.

B. Lead Anchors: UIAA approved bolt hangers shall be attached through the surface into the structural frame, minimum, a 3/8" Grade -5 hex bolt. The 3/8" hex bolt shall be sufficient length to extend through the structural frame and through a backup locknut behind the hardware.

C. Lead Top Anchors

1. At the top of the lead route, anchors shall consist of two UIAA approved bolt hangers attached through the substrate into the steel structure behind as per "Lead Bolts" above, or may be belay bar ends.
2. Minimum horizontal distance between bolt hangers shall be 6 inches.

D. Floor anchors to be installed at spacing indicated, along the front of the climbing wall, 4 ft out from the surface. Floor anchors to be composed of daisy chains anchored to floor with redundant (double) anchors. (As needed)

2.10 CLIMBING WALL EQUIPMENT

A. Climbing Ropes: Meet UIAA standards; Dynamic ropes sufficient length for wall height minimum of 10.3mm.

1. Manufacturer: Sterling Gym or equal by Blue Water.
2. Quantity: 1 – 200m spool.

B. Climbing Harnesses: Meet UIAA standards

1. Adjustable with double pass through buckles and gear loops.

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2. Manufacturer: Edelweiss or equal
3. Quantities
 - a. Medium: 10
 - b. Large: 10

C. Belay Devices

1. Tube style, manufactured by Black Diamond, Trango USA or equal that meets UIAA standards
2. Quantity: 4.

D. Locking Carabiners: Aluminum, Omega Jake Quik-Lok or equal by Petzl William, Black Diamond or Metolius.

1. Quantity: 4.

E. Quick Draws: Include (1) per lead anchor.

F. Handholds

1. Acceptable Manufacturers: Nicros, Inc. or others if approved by Owners.
2. Handhold selection shall be made based on strong functionality of the potential user base and shall include:
 - a. Large Holds
 - b. Medium Holds
 - c. Small Holds
3. To include handhold bolt of appropriate length.
4. Quantity: minimum of 1000.

H. Auto Belay System: To accommodate a 40-foot climbing wall; with mounting kit and hardware.

1. Quantity: 4.

2.11 MISCELLANEOUS EQUIPMENT

A. Provide the following:

1. Tap Handle: 2 required.
2. 3/8" Tap: 2 required.
3. 7/32" T-Handle Allen: 2 required.
4. 5/16" T-Handle Allen: 2 required.

2.10 CLIMBING WALL FALL ATTENUATION SYSTEM (FLOORING)

A. Dual durometer open and closed cell foam fall attenuation system with cover by others. Custom sized to fall areas indicated. Impact absorbing bottom layer comprised of open cell foam. Load distributing top layer comprised of 1-1/2" closed cell foam with a flame laminated surface layer.

1. Manufacturer: DropZone™ padding by Nicros, Inc. or similar climbing fall attenuation system approved by climbing wall manufacturer.
2. Thicknesses: 5-1/2" overall thickness.

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PART 3 - EXECUTION

3.1 EXAMINATION

A. Verification of Conditions: Examine areas where climbing walls are to be installed, with Installer present. Verify compliance with requirements for installation tolerances and other conditions affecting installation and performance.

1. Verify conditions meet requirements for tolerances and other requirements of manufacturer.
2. Correct unsatisfactory conditions prior to proceeding with installation.

3.2 ERECTION OF ARTIFICIAL CLIMBING WALLS

A. Comply with manufacturer's instructions and recommendations. Support, anchor, and fasten components securely using anchors and fasteners indicated and recommended by manufacturer for application

3.3 INSTALLTION OF PROTECTIVE FLOORING

A. Install in accordance with flooring manufacturer's instructions and recommendations.

3.4 INSPECTION

A. The completed climbing wall shall undergo a full complete final inspection by a trained representative of the manufacturer and shall be certified by the manufacturer that the finished product has been manufactured and erected in accordance with the manufacturer's approved installation drawings and these contract documents.

B. The completed climbing wall shall undergo a full and complete final inspection by the Architect at the completion of climbing wall installation.

3.5 TRAINING

A. Provide ½ day training session for the facility operations staff, following the climbing wall installation. Training shall cover the following topics:

1. Climbing wall maintenance and periodic inspections.
2. Route-setting methods and management.
3. Sample handhold installation and removal.
4. Climbing wall operations management.

3.6 PROTECTION

A. Protect climbing wall from damage during erection.

B. Provide final protection in a manner acceptable to the Owner that insures the climbing wall will be without damage or deterioration at time of substantial completion.

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END OF SECTION