SECTION 05513

ALUMINUM INCLINED LADDERS

***** UPNOVR, Inc. manufactures several types of aluminum access ladders. This guide specification section can be used to specify fixed, inclined, aluminum ladders typically referred to as ship ladders. Fixed, vertical, aluminum access ladders can be specified in SECTION 05511 - FIXED ALUMINUM ACCESS LADDERS and caged access ladders can be specified in SECTION 05512 - CAGED ALUMINUM ACCESS LADDERS.

PART 1 - GENERAL

1.1 SUMMARY

***** UPNOVR, Inc. manufactures six models of inclined aluminum ladders. Select required type in the following paragraph and delete non-applicable types. *****

A. Section includes: Fixed, inclined, aluminum, [standard ship ladder with handrail] [ship ladder with roof hatch access] [ship ladder with platform] [folding mezzanine access ship ladder] [ship ladder with cross over access] [counterbalanced swing down ladder].

B. Related sections:

***** List other specification sections dealing with work directly related to this section such as the following. *****

1. Section 06100 - Rough Carpentry: Blocking in metal stud walls and partitions for anchorage of inclined ladders.

2. Section 07725 - Roof Hatch: Manufactured roof hatch to be accessed by inclined ship ladder.

1.2 REFERENCES

***** List by number and full title reference standards referred to in remainder of specification section. Delete non-applicable references. *****

A. American National Standards Institute (ANSI):

1. ANSI A14.3 - Ladders, Fixed, Safety Requirements.

B. American Society for Testing and Materials (ASTM) Publications:

1. ASTM B209 - Aluminum and Aluminum-Alloy Sheet and Plate.
2. ASTM B221 - Aluminum-Alloy Extruded Bar, Rod, Wire, Shape, and Tube.

1.3 SUBMITTALS

A. Provide in accordance with Section 01330 - Submittal Procedures:
   1. Product data for inclined ship ladders.
   2. Shop drawings showing elevations, dimensions, connections, size and type of fasteners, and fabrication and installation details.
   3. Certificate showing compliance with Paragraph 1.4.
   4. Installation and maintenance instructions.

1.4 QUALITY ASSURANCE

A. Access ladders shall be designed and installed to comply with ANSI A14.3.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. UPNOVR, Inc., 3 Crane Way, Hooksett, New Hampshire 03106; 603-625-8639.

B. Manufacturers of equivalent products submitted and approved in accordance with Section 01630 - Product Substitution Procedures.

2.2 MATERIALS

A. Extruded aluminum: ASTM B221, Alloy 6063 Temper T-6, non-spark.


***** Standard access ladder finish is mill finished aluminum. Electrostatically applied, powder paint color coatings can be provided as a special order. Contact UPNOVR, Inc. for information and assistance in specifying this special finish. *****

C. Finish: Mill finished aluminum.

2.3 GENERAL FABRICATION

A. Field verify ladder dimensions prior to fabrication.

B. Fabricate to designs indicated on Drawings and to meet performance requirements specified in Paragraph 1.4.
C. Components shall be welded and bolted. Ladder shall not require field assembly.

2.4 INCLINED SHIP LADDER

***** UPNOVR, Inc. manufacturers 6 models of inclined ship ladder. Select required type from the following options and delete non-applicable options. *****

A. Type: Fixed, inclined, aluminum, [standard ship ladder with handrail; Model No. U-501] [ship ladder with roof hatch access; Model No. U-502] [ship ladder with crossover access; Model No. U-503] [ship ladder with platform; Model No. U-504] [folding mezzanine access ship ladder; Model No. U-505] [counterbalanced swing down ship ladder; Model U-507] as manufactured by UPNOVR, Inc.

B. Accommodation height: [_____] feet. [As indicated on Drawings.]

***** Preferred angle of inclination is 75 degrees. Minimum angle is 60 degrees. *****

C. Angle of inclination: [_____] degrees. [As indicated on Drawings.]

***** Standard tread is a 6 inches wide by 1-3/4 inches deep aluminum channel shaped section with corrugated surface. An optional 6 by 1-3/4 inches aluminum, abrasive filled tread is available. Other options include 4 and 9 inches wide treads. 1-1/4 by 1-1/4 inches corrugated tubular rungs are used for treads for folding mezzanine access ship ladder, Model No. U-505. Delete the following paragraph if Model No. U-505 is being specified. *****

D. Treads: [6] [_____] inches wide by 1/3-4 inches deep by 24 inches wide aluminum channel shaped section with [corrugated surface.] [abrasive filled corrugations.]

1. Equally space treads as indicated on Drawings and reviewed shop drawings.
2. Connect treads to stringers with bolts to allow for future replacement.

***** Include the following paragraphs to specify standard ship ladder with handrail, Model No. U-501. *****

E. Stringers: 6 by 2 inches aluminum channel.

F. Handrail: Fabricate from 1-1/4 inches diameter aluminum pipe

1. Form returns with 6 inches radius.
2. Attach rail to stringer with pipe sections spaced at approximately 30 inches such that rail projects approximately 6 inches above stringer.
3. Locate bottom of handrail 36 inches above floor.
4. Extend rail above ladder such that top of rail is 42 inches above roof level.

***** Include the following paragraphs to specify ship ladder with roof hatch access,
Model No. U-502. *****

E. Stringers: 6 by 2 inches aluminum channel.

F. Handrail: Fabricate from 1-1/4 inches diameter aluminum pipe
   1. Form returns with 6 inches radius.
   2. Attach rail to stringer with pipe sections spaced at approximately 30 inches such that rail projects approximately 6 inches above stringer.
   3. Extend rail above ladder such that top of rail is approximately 6 inches above top tread and below roof hatch door.
   4. Locate bottom of handrail 36 inches above floor.

***** Include the following paragraphs to specify ship ladder with cross over access,
Model No. U-503. *****

E. Configuration: Two opposing inclined ladders connected by cross over platform as shown on Drawings and reviewed shop drawings.
   1. Distance between base of opposing ladders: [[_____] inches.] [As indicated on Drawings.]
   2. Cross over span: [[_____] inches.] [As indicated on Drawings.]

F. Stringers: 6 by 2 inches aluminum channel. Top of opposing stringers shall be connected with 6 by 2 inches channel which forms support for platform.

G. Platform: Provide cross over platform at top of ship ladder fabricated from 6 inches wide by 1 inch deep aluminum treads with corrugated surface.

H. Railings: Fabricate handrail and guardrail from 1-1/4 inches diameter aluminum pipe to configuration shown on Drawings and reviewed shop drawings.
   1. Form returns with 6 inches radius.
   2. Provide 42 inches high guardrail on either side of cross over platform.
   3. Attach rail to stringer with pipe sections spaced at approximately 30 inches such that rail projects approximately 6 inches above stringer.
4. Extend rail above ladder such that rail intersects and joins top of guardrail.

5. Locate bottom of handrail 36 inches above floor.

***** Include the following paragraphs to specify ship ladder with platform; Model No. U-504. *****

E. Stringers: 6 by 2 inches aluminum channel. Top of stringers shall return horizontally [_____] inches to wall and form support for platform.

F. Platform: Provide 24 inches wide by [_____] inches long platform at top of ship ladder fabricated from 6 inches wide by 2 inches deep aluminum treads with corrugated surface.

G. Railings: Fabricate handrail and guardrail from 1-1/4 inches diameter aluminum pipe to configuration shown on Drawings and reviewed shop drawings.

1. Form returns with 6 inches radius.

2. Provide 42 inches high guardrail on either side of platform.

3. Attach rail to stringer with pipe sections spaced at approximately 30 inches such that rail projects approximately 6 inches above stringer.

4. Extend rail above ladder such that rail intersects and joins top of guardrail.

5. Locate bottom of handrail 36 inches above floor.

***** Include the following paragraphs to specify folding mezzanine access ship ladder, Model No. U-505. In contrast to other ship ladders, Model No. U-505 has square tube treads. *****

D. Treads: Form with two 1-1/4 inches square tubes by 24 inches long with corrugated surfaces.

1. Equally space treads as indicated on Drawings and reviewed shop drawings.

2. Attach treads to stringers by welding.

E. Operation: Folding ladder shall store against wall with stringers in vertical position. Top of ladder shall pivot with sliding hinge assembly with stainless steel pin to inclined use position.

F. Stringers: 3 by 1 inch aluminum channel. Equip bottom of stringer with non-skid rubber foot. Top of stringer shall be supported by wall bracket fabricated from 3 inches by 1/4 inch thick aluminum plate.
G. Handrail: Fabricate from 1-1/4 inches diameter aluminum pipe
   1. Form returns with 6 inches radius.
   2. Attach rail to stringer such that rail projects approximately 6 inches above stringer.
   3. Extend rail above ladder to form guardrail extending 42 inches above top tread.
   5. Locate bottom of handrail 36 inches above floor.

***** Include the following paragraphs to specify swing down counterbalanced ship ladder to provide access to upper floor or mezzanine, Model No. U-507. *****

E. Operation: Swing down ladder attached to upper [mezzanine] [floor] structure with pivoting counterbalanced mechanism. Ladder shall store horizontally and can be placed in inclined access position with pull rope.

F. Stringers: 6 by 2 inches aluminum channel. Attach lead counter weights to top sides of stringers. Design ladder such that stringers project above upper floor level when ladder is in inclined position. Equip stringer extensions with safety chain guards.

G. Handrail: Fabricate from 1-1/4 inches diameter aluminum pipe
   1. Form returns with 6 inches radius.
   2. Attach rail to stringer such that rail projects 36 inches above treads when ladder is in inclined position.

H. Operating mechanism: Pivoting hinged counterbalanced mechanism attached to support structure with brackets as detailed on approved shop drawings.

2.5 ACCESSORIES

A. Support brackets: Support ship ladder with top wall brackets and bottom floor brackets fabricated from 2 by 1/4 inch minimum flat bar aluminum.

PART 3 - EXECUTION

3.1 PREPARATION

A. Prior to fabrication, field verify required dimensions.

B. Coordinate provision of access ladder with provision of roof hatch specified in Section 07725 - Roof Hatch to ensure height and position of ladder is compatible with roof hatch curb.
C. Coordinate ladder installation with construction of [CMU walls specified in Section 04220 - Concrete Unit Masonry to ensure block walls are adequately reinforced and cells grouted] [metal stud walls specified in Section 05400 - Cold Formed Metal Framing to ensure adequate support and blocking] [structural steel mezzanine and floor framing specified in Section 05120 - Structural Steel] [stud partitions specified in Section 09260 - Gypsum Board Assemblies to ensure adequate support and blocking] for attachment of brackets and support of ladder.

D. Insulate dissimilar metals to prevent electrolysis with bituminous paint or non-absorptive isolation pad to prevent contact.

3.2 INSTALLATION

A. Install inclined ladder in accordance with manufacturer's instructions and reviewed shop drawings.

B. Securely anchor support brackets with fasteners of type and size recommended by manufacturer. Place wall brackets at top and floor brackets at bottom of ladder. Place intermediate wall brackets at 48 inches maximum.

C. Ensure ladder is plumb, [aligned with center of roof hatch.] and rigid.

D. After installation inspect ladder to verify proper, secure, and safe installation.

E. Clean ladder using clean water and mild detergent. Do not use abrasive agent, steel wool, or harsh chemicals. Rinse with clean water.

END OF SECTION