



## SECTION 05 73 00

### ORNAMENTAL HANDRAILS AND RAILINGS

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#### PART 1 GENERAL

##### 1.01 SUMMARY

- A. Section Includes: X-tend2 Premounted Stainless Steel Flexible Mesh Handrail Panels
- B. Related Sections:
  - 1. Section 4 - Masonry Anchoring and Reinforcing
  - 2. Section 5 - Metal Stairs
  - 3. Section 5 - Metal Railings
  - 4. Section 5 – Wire Rope Assemblies
  - 5. Section 5 – Decorative Metal Railings
  - 6. Section 6 – Wood Stairs and Railings
  - 7. Section 32 – Exterior Fences and Gates
  - 8. Section 32 – Planting Accessories

##### 1.02 REFERENCES

- A. General: Standards listed by reference, including revisions by issuing authority, form a part of this specification section to extent indicated. Standards listed are identified by issuing authority, authority abbreviation, designation number, title or other designation established by issuing authority. Standards subsequently referenced herein are referred to by issuing authority abbreviation and standard designation.
- B. American Society for Testing and Material (ASTM International)
  - 1. ASTM A380 - Practice for Cleaning and Descaling Stainless Steel Parts, Equipment and Systems.
  - 2. ASTM A492 - Specification for Stainless Steel Rope Wire.
  - 3. ASTM A554 – Specification for Welded Stainless Steel Mechanical Tubing
  - 4. ASTM A555 - Stainless Steel Wire.

5. ASTM E985 – Standard Specification for Permanent Metal Railing Systems and Stairs for Buildings
  6. ASTM F1145 - Specification for Turnbuckles, Swaged, Welded, Forged.
- C. Military Specification (MIL)
1. MIL-C5688 - Pre-Stretching and Proof-Testing of Wire Rope Assemblies.
  2. MIL-W-83420 - Wire Rope, Flexible for Aircraft Control.

#### 1.03 SYSTEM DESCRIPTION

- A. Performance Requirements: Provide Flexible Stainless Steel Mesh Handrail Infill Panels and mounting hardware which have been manufactured and installed to maintain performance criteria stated by manufacturer without defects, damage or failure.

#### 1.04 SUBMITTALS

- A. Submit listed submittals in accordance with Conditions of the Contract and Division 1 Submittal Procedures Section.
- B. Product Data: Submit Manufacturer's product data sheet for specified products.
- C. Shop Drawings: Show layout, sizes, dimensions, details, and installation of railing frame components. Include mesh aperture and rope dimensions, cable and mesh attachment hardware, tensioning devices, mounting methodology.
- D. Samples: Submit samples of mesh and support hardware, as required.
- E. Quality Assurance/Control Submittals:
1. Test reports: Submit any test report demonstrating compliance with intended use and code requirements.
  2. Certificates: Submit manufacturer's certificate that product meet or exceed specified requirements
- F. Closeout Submittals: Submit the Following:
1. Warranty: Submit manufacturer's standard warranty documents
  2. Maintenance Data: Include manufacturer's standard cleaning and maintenance instructions to avoid detrimental actions to finishes and performance.

#### 1.05 QUALITY ASSURANCE

- A. Qualifications:
1. Installer Qualifications: Installer should be experienced in performing work of this section and should have specialized in installation of work similar to that required for this project.

- B. Regulatory Requirements and Approvals:
  - 1. [Code Agency Name]
    - a) [Report or Approval Description]
- C. Mock-Ups: Mock-Ups: Install at project site or appropriate location a job mock-up using acceptable products and manufacturer approved installation methods. Obtain Owner's and Architect's approval of product, application, and workmanship standards. Comply with Division 1 Quality Control (Mock-Up Requirements) Section.
  - 1. Mock-Up Size: [Specify mock-up size and fixation requirements].
  - 2. Maintenance and Disposal: Maintain mock-up during construction for workmanship comparison.
    - a) Removal: Remove and legally dispose of mock-up when no longer required.
    - b) Incorporation: Mock-up may be incorporated into final construction upon Owner's approval.
- D. Pre-Installation Meetings: Conduct meetings including Contractor, Architect, fabricator, installer and other subcontractors whose work involves railing system to verify project requirements, framing and support conditions, mounting surfaces, manufacturer's installation instructions, and warranty requirements. Comply with Division 1 requirements.

#### 1.06 DELIVERY, STORAGE, AND HANDLING

- A. General: Comply with Division 1 Product Requirements Sections Ordering: Comply with manufacturer's ordering instructions and lead time requirements to avoid construction delays.
- B. Delivery: Deliver in manufacturer's original, unopened, undamaged containers, identification labels intact.
- C. Storage and Protection: Store materials protected from exposure to harmful weather conditions and at temperature and humidity conditions recommended by manufacturer. Store cartons and panels in a secure location in a dry place at the project site.

#### 1.07 WARRANTY

- A. Manufacturer's Warranty: Submit, for Owner's acceptance, manufacturer's standard warranty document executed by authorized company official.

## PART 2 PRODUCTS

## 2.01 X-TEND2® PREMOUNTED STAINLESS STEEL FLEXIBLE MESH PANEL SYSTEM

- A. Manufactured and sold by: Carl Stahl-DécorCable Innovations LLC, 660 W. Randolph Street, Chicago, IL USA 60661. Tel: 800-444-6271, Fax: 312-474-1789, E: [sales@decorcable.com](mailto:sales@decorcable.com), Web: [www.decorcable.com](http://www.decorcable.com).
- B. Proprietary Products/Systems: X-TEND2® Handrail Infill Panel System consisting of X-Tend Stainless Steel Flexible Mesh panels premounted on 21.3mm Ø stainless steel tube frames.
- C. XTDCX-G Series X-tend2 panels for Horizontal Applications
1. Frame: Stainless Steel Tube Frame, ASTM A554, AISI 316Ti. 21.3mm Ø, 2mm wall thickness, 320 grain satin finish, corners secured with friction lock connection. Specify Panel Height from 3 choices x any length from 12 " to 78"-Outside dimension
    - a) 720mm (28.3")H x [tube length in inches min=12", max=78"]L
    - b) 840mm (33.0")H x [tube length in inches min=12", max=78"]L
    - c) 960mm (37.8")H x [tube length in inches min=12", max=78"]L
  2. Cable Diameter x Mesh Aperture Cable: Stainless steel wire rope 7x7 construction, ASTM A492 AISI 316 joined with seamless ferrules.
    - a) 1.5mm cable x 60mm Mesh Aperture
    - b) 1.5mm cable x 80mm Mesh Aperture
    - c) 2.0mm cable x 60mm Mesh Aperture
    - d) 2.0mm cable x 80mm Mesh Aperture
  3. Specify Ferrule Type:
    - a) Seamless Tinned Copper Ferrule
    - b) Seamless AISI 316Ti Stainless Steel Ferrule
- D. XTDCX-S Series X-tend2 Panels for Diagonal Applications
1. Frame: Specify Panel Height from 3 choices x any length from 12 " to 78"-Outside dimension  
Material: Stainless Steel Tube Frame, ASTM A554, AISI 316Ti. 21.3mm Ø, 2mm wall thickness, 320 grain satin finish, corners secured with friction lock connection.
    - a) 720mm (28.3")H x [tube length in inches min=12", max=78"]L
    - b) 840mm (33.0")H x [tube length in inches min=12", max=78"]L
    - c) 960mm (37.8")H x [tube length in inches min=12", max=78"]L
  2. Infill panel: Specify Cable Diameter x Mesh Aperture Mesh Material: Stainless steel wire rope 7x7 construction, ASTM A492 AISI 316 joined with seamless AISI 316 stainless steel ferrules.
    - a) 1.5mm cable x 60mm Mesh Aperture
    - b) 1.5mm cable x 80mm Mesh Aperture
    - c) 2.0mm cable x 60mm Mesh Aperture
    - d) 2.0mm cable x 80mm Mesh Aperture
  3. Specify Ferrule Type
    - a) Seamless Tinned Copper Ferrule
    - b) Seamless AISI 3161 Stainless Steel Ferrule
  4. Specify Rise Angle [Angle in Degrees min=29°, max=37°]
- E. Mounting System: Specify X-tend2 Fastening Set according to application. Material: AISI 316.
1. Fastening Set #1 Item #XTDCX001001. Includes Horseshoe Bracket, Tube Frame Support, Countersunk M8 Sleeve Nut, 4" Spacer, 40mm Ø Escutcheon plate.

2. Fastening Set #2 Item #XTDCX001002. Includes Horseshoe Bracket, Tube Frame Support, Countersunk M8 Sleeve Nut.
3. Fastening Set #3 Item #XTDCX001003. Includes Horseshoe Bracket, Only.

## 2.02 PRODUCT SUBSTITUTIONS

- A. Substitutions: No substitutions permitted.

## 2.03 FITTINGS AND ACCESSORIES

- A. General: Attachment Cable Material: ASTM A 492, Type 316 stainless steel 7x7 (or 7x19) wire rope.
- B. Accessories: Provide grommet, bushings, washers, swaging ferrules, studs, receivers, fittings and other components as required for system installation.

## 2.04 FABRICATION

- A. Infill Panel Construction: Panels shall be dimensioned and manufactured to specified size and labeled according to installer's specifications.

# **PART 3 EXECUTION**

## 3.01 MANUFACTURER'S INSTRUCTIONS

- A. Compliance: Comply with manufacturer's product data, including product technical bulletins, product catalog installation instructions and product carton instructions for installation.

## 3.02 EXAMINATION

- A. Site Verification of Conditions: Verify condition of railing and post system which has been previously installed under other sections, to ensure it is acceptable for product installation in accordance with manufacturer's instructions. Do not begin installation until backup surfaces are in satisfactory condition.

## 3.03 PREPARATION

- A. Supply items required to be cast into concrete or embedded in masonry with setting templates, to appropriate Sections.
- B. Take field measurements after permanent end terminations are in place and prior to preparation of shop drawings and fabrication, to ensure fitting of work.

## 3.04 INSTALLATION

- A. Install mesh panel infill system in accordance with manufacturer's instructions and the approved shop drawings.
- B. Provide anchorage devices and fittings to secure to in-place construction; including threaded fittings for concrete inserts, toggle bolts and through-bolts. Install mesh panel infill system plumb, level, square, and taut.
- C. Anchor railing system to mounting surfaces as indicated on the drawings.
- D. Separate dissimilar materials with bushings, grommets or washers to prevent electrolytic corrosion.

- E. Use manufacturer's supplied mounting hardware.
- F. Terminate and tension mesh panels in accordance with manufacturer's instructions.
- G. Ensure panels are clean, and without kinks or sags.
- H. Adjust frame support cable tension and connecting hardware.

### 3.05 CLEANING

- A. Remove temporary coverings and protection of adjacent work areas.
- B. Clean installed products in accordance with manufacturer's instructions before owner's acceptance. Do not use chlorine-based or abrasive cleaners.
- C. Remove from project site and legally dispose of construction debris associated with this work.

### 3.06 PROTECTION

- A. Protection: Protect installed product from damage during subsequent construction activities.

**END OF SECTION**