

SECTION 10261

HANDRAILS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Handrails.
- B. Mounting hardware, accessories, and trim.

1.2 RELATED SECTIONS

- A. Section 05520 - Handrails and Railings: Metal stair railings for fire stairs.
- B. Section 06114 - Wood Blocking and Curbing: Blocking and handrail support.
- C. Section 06200 - Finish Carpentry: Wood handrails for monumental stairs.
- D. Section 09210 - Gypsum Plaster: Stud spacing and bracing.
- E. Section 09260 - Gypsum Board Assemblies: Stud spacing and bracing.

1.3 REFERENCES

- A. ANSI/CABO A117.1 - American National Standard for Buildings and Facilities; Providing Accessible and Usable Buildings and Facilities; Council of American Building Officials.
- B. ASTM B 221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Shapes, and Tubes.
- C. ASTM D 256 - Standard Test Method for Determining the Pendulum Impact Resistance of Notched Specimens of Plastic.
- D. ASTM D 543 - Standard Test Methods for Resistance of Plastics to Chemical Reagents.
- E. ASTM D 635 - Standard Test Method for Rate of Burning and/or Extent and Time of Burning of Self-Supporting Plastics in a Horizontal Position.

- F. ASTM D 638 - Standard Test Method for Tensile Properties of Plastics.
- G. ASTM D 648 - Standard Test Method for Deflection Temperature of Plastics Under Flexural Load.
- H. ASTM D 785 - Standard Test Method for Rockwell Hardness of Plastics and Electrical Insulating Materials.
- I. ASTM D 790 - Standard Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials.
- J. ASTM D 792 - Standard Test Methods for Density and Specific Gravity (Relative Density) of Plastics by Displacement.
- K. ASTM D 1784 - Standard Specification for Rigid Poly(Vinyl Chloride) (PVC) Compounds and Chlorinated Poly(Vinyl Chloride) (CPVC) Compounds.
- L. ASTM D 1822 - Standard Test Method for Tensile-Impact Energy to Break Plastics and Electrical Insulating Materials.
- M. ASTM D 2240 - Standard Test Method for Rubber Property-- Durometer Hardness.
- N. ASTM E 84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
- O. CAN/ULC S102.2 - Standard Method of Test for Surface Burning Characteristics of Building Materials.
- P. SAE J-1545 - Recommended Practice; Society of Automotive Engineers.
- Q. UL 94 - Tests for Flammability of Plastic Materials for Parts in Devices and Appliances.

1.4 SUBMITTALS

- A. Submit under provisions of Section 01300.

- B. Product Data: Manufacturer's complete and current product data for each product required, including complete installation requirements.
- C. Shop Drawings: Show locations of each item and installation details. Provide elevations of non-standard conditions.
- D. Selection Samples: Color charts consisting of actual product pieces, demonstrating full range of available colors, for initial color selection.
- E. Verification Samples: 12 inch long assemblies, including one end cap, in color specified.

1.5 QUALITY ASSURANCE

- A. Provide test reports showing compliance with the performance specified for:
 - 1. Fire-related properties.
 - 2. Accessibility and safety properties.
 - 3. Impact strength.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Provide Pro-Tek Handrails as manufactured by Pawling Corporation, Standard Products Division; Borden Lane, P.O. Box 200, Wassaic NY 12592; ASD. Tel. (800) 431-3456 (U.S. and Canada) or (914) 373-9300; Fax. (800) 451-2200 (U.S. and Canada) or (914) 373-8712; E-mail address sales@pawling.com
- B. Substitutions: Not permitted.

2.2 MATERIALS

- A. Vinyl: Provide handrail covers extruded or molded of fire retardant, high impact polyvinyl chloride (PVC) with tributyl tin stabilizer as an antimicrobial agent, and an embossed matte finish.
 - 1. Minimum thickness: 0.080 inch.
 - 2. Vinyl Properties:
 - a. Vinyl cell classification in accordance with ASTM D 1784: 16354.

- b. Specific gravity, tested in accordance with ASTM D 792: 1.33, minimum.
 - c. Tensile strength at yield, tested in accordance with ASTM D 638: 6500 psi, minimum.
 - d. Modulus of elasticity, tested in accordance with ASTM D 638: 400,000 psi.
 - e. Tensile impact energy, tested in accordance with ASTM D 1822: 75 ft lb/sq inch.
 - f. Flexural strength, tested in accordance with ASTM D 790: 12,500 psi.
 - g. Modulus of rupture, tested in accordance with ASTM D 790: 400,000 psi.
 - h. Izod impact strength, tested in accordance with ASTM D 256: 23.0 ft lb/inch of notch, minimum, 1/8 inch notch.
 - i. Izod impact strength, tested in accordance with ASTM D 256: 15.0 ft lb/inch of notch, minimum, 1/4 inch notch.
 - j. Hardness, Shore D, tested in accordance with ASTM D 2240: 79, minimum.
 - k. Hardness, Rockwell, tested in accordance with ASTM D 785: 108, minimum.
 - l. Deflection temperature at 264 psi, tested in accordance with ASTM D 648: 162 degrees F (72 degrees C).
 - m. Flammability, tested in accordance with ASTM D 635: Self-extinguishing.
 - n. Flammability, tested in accordance with UL 94: V-O.
3. Extruded Vinyl Component Properties:
- a. Surface burning characteristics, tested in accordance with ASTM E 84: Flame spread 5, smoke developed 180; maximum.
 - b. Surface burning characteristics, tested in accordance with CAN/ULC S102.2: Flame spread 10, smoke developed 250-330; maximum.
 - c. Izod impact strength, tested in accordance with ASTM D 256: 25.3 ft lb/inch of notch, average.
 - d. Charpy impact strength, tested in accordance with ASTM D 256: 26 ft lb/inch of notch, average.
 - e. Chemical and stain resistance, tested in accordance with ASTM D 543, 7 day immersion in standard reagents: Results available upon request.
 - f. Color match when tested in accordance with SAE J-1545: Accurate to within 1.0 or less Delta E by

CIE LAB 10 degree standard observer color difference and equation.

g. Combustion toxicity: Registered in accordance with New York State Uniform Fire Prevention and Building Code.

B. Aluminum for Handrail Retainers: Alloy 6063-T5, in accordance with ASTM B 221 or FS QQ-A-200; anodized finish complying with AAMA 611, Class II minimum.

C. Wood: Kiln dried solid maple or oak for handrails.

2.3 HANDRAILS

A. Handrails - Performance Requirements: Pull out and live load capacity complying with State of California requirements, as administered by the Office of Statewide Health Planning and Development (OSHPD), and ANSI A117.1 requirements.

B. BR-400C: Provide 6-1/4 inch high wood, aluminum and vinyl handrail and bumper system with 1-1/2 inch diameter oak or maple gripping area, 4 inch high vinyl covered bumper, contrasting color vinyl transition strip, and 1-1/2 inch standoff from wall.

1. Wood stain: As selected from manufacturer's standards.

2. Wood stain: _____.

3. Vinyl Colors: As selected from manufacturer's standards.

4. Vinyl Colors: _____.

C. BR-400V: Provide 6-1/4 inch high aluminum and vinyl handrail and bumper system with 1-1/2 inch diameter vinyl covered gripping area, 4 inch high vinyl covered bumper, contrasting color vinyl transition strip, and 1-1/2 inch standoff from wall.

1. Colors: As selected from manufacturer's standards.

2. Colors: _____.

D. BR-500: Provide 5-1/2 inch aluminum and vinyl handrail and guardrail system with 1-1/2 inch gripping area, contoured back, locking vinyl cover, and 3 inch projection from wall.

1. Color: As selected from manufacturer's standards.

2. Color: _____.

- E. BR-501: Provide 5-1/2 inch aluminum and vinyl handrail and guardrail system with contrasting color insert, contoured back, locking vinyl cover, 1-1/2 inch gripping area, and 3 inch projection from wall.
1. Color: As selected from manufacturer's standards.
 2. Color: _____.
 3. Accent stripe color: As scheduled on drawings for different areas.
 4. Accent stripe color: As selected from manufacturer's standards.
 5. Accent stripe color: _____.
- F. BR-1100: Provide 5-1/2 inch aluminum and vinyl handrail and guardrail system with 1-1/2 inch gripping area and 3 inch projection from wall.
1. Color: As selected from manufacturer's standards.
 2. Color: _____.
- G. BR-1101: Provide 5-1/2 inch aluminum and vinyl handrail and guardrail system with contrasting color stripe, 1-1/2 inch gripping area, and 3 inch projection from wall.
1. Color: As selected from manufacturer's standards.
 2. Color: _____.
 3. Accent stripe color: As scheduled on drawings for different areas.
 4. Accent stripe color: As selected from manufacturer's standards.
 5. Accent stripe color: _____.
- H. BR-300: Provide 7 inch aluminum and vinyl handrail and guardrail system with ergonomic 1-9/16 inch gripping surface, thumb groove, and 3-1/8 projection from wall.
1. Color: As selected from manufacturer's standards.
 2. Color: _____.
- I. BR-800: Provide 5-1/4 inch angled aluminum and vinyl handrail and guardrail system with 1-1/2 inch diameter gripping area and 3-3/4 inch projection from wall.
1. Color: As selected from manufacturer's standards.
 2. Color: _____.
- J. BR-1200: Provide 1-1/2 inch diameter aluminum handrail system with vinyl cover, modified polymer brackets, and 3 inch overall projection from wall.
1. Color: As selected from manufacturer's standards.
 2. Color: _____.

- K. BR-2400: Provide two 1-1/2 inch diameter BR-1200 aluminum and vinyl handrails on special brackets, with 3 inch overall projection from wall.
 - 1. Color: As selected from manufacturer's standards.
 - 2. Color: _____.

- L. BR-900 Uni-Rail: Provide 9 inch combination wall protection and handrail system, combining 1-1/2 inch diameter vinyl-covered aluminum handrail with aluminum and vinyl wall guard system, projecting 3-5/8 inch from finished wall surface.
 - 1. Color: As selected from manufacturer's standards.
 - 2. Color: _____.

- M. BR-1500: Provide 1-1/2 inch diameter wood handrail, with aniline stain and two coats of conversion varnish.
 - 1. Color: As selected from manufacturer's standards.
 - 2. Color: _____.

- N. BR-5500: Provide 5-1/2 inch deep wood handrail and crash rail combination, with aniline stain and two coats of conversion varnish.
 - 1. Color: As selected from manufacturer's standards.
 - 2. Color: _____.

2.4 ACCESSORIES

- A. Provide appropriate returns, corners, and mounting brackets as required to properly finish handrail system and to support it in conformance with Uniform Federal Accessibility Standards.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that wall surfaces are properly prepared to receive installation of handrails. Verify that required blocking and bracing is in place for stud walls before beginning installation.

3.2 INSTALLATION

- A. Install handrail systems in full compliance with manufacturer's installation instructions.

- B. Aluminum and Vinyl Handrails: Attach appropriate mounting brackets at 32 inches on center, at splices, and as near each return, outside corner, and inside corner as possible.
 - 1. Mount system so top of handrail is at 32 inches, unless otherwise indicated on drawings.

- C. Wood Handrails: Attach appropriate mounting brackets at 32 inches on center, and within 6 inches of each return and outside corner. Cut and assemble wood accessories using a minimum 120 tooth finishing saw blade and hardware as furnished by manufacturer.
 - 1. Mount system so top of handrail is at 32 inches, unless otherwise indicated on drawings.
 - 2. Touch up any nicks with finishing pens supplied with handrail system.

3.3 ADJUSTING AND CLEANING

- A. Verify that handrail is level and is rigidly secured to substrate; make any adjustments required.

- B. Clean areas of installation and handrail components, using materials and methods recommended by manufacturer. Remove from project site packaging and debris caused by installation.

END OF SECTION