



NORTHWESTERN UNIVERSITY

MASTER SPECIFICATIONS

Division 11 – EQUIPMENT

Release 1.0
[March] 2017

Released by:
Northwestern University
Facilities Management Operations
2020 Ridge Avenue, Suite 200
Evanston, IL 60208-4301

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FOR: _____
ISSUED: 03/29/2017

MASTER SPECIFICATIONS: DIVISION 11 – EQUIPMENT

<u>SECTION #</u>	<u>TITLE</u>
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11 5213	PROJECTION SCREENS
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*** End of List ***

SECTION 11 5213 - PROJECTION SCREENS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:

- 1. Manually operated, front-projection screens.
- 2. Electrically operated, front-projection screens and controls.

- B. Related Requirements:

- 1. Section 055000 "Metal Fabrications" for metal support framing for front-projection screens.
- 2. **[Section 061000 "Rough Carpentry"] [Section 061053 "Miscellaneous Rough Carpentry"]** for wood backing for screen installation.

1.3 DEFINITIONS

- A. Gain: Ratio of light reflected from screen material to that reflected perpendicularly from a magnesium carbonate surface as determined per SMPTE RP 94.
- B. Half-Gain Angle: The angle, measured from the axis of the screen surface to the most central position on a perpendicular plane through the horizontal centerline of the screen where the gain is half of the peak gain.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Shop Drawings: Show layouts and types of front-projection screens. Include the following:
 - 1. Drop lengths.
 - 2. Location of seams in viewing surfaces.
 - 3. Location of screen centerline relative to ends of screen case.
 - 4. Anchorage details, including connection to supporting structure for suspended units.
 - 5. Details of juncture of exposed surfaces with adjacent finishes.
 - 6. Location of wiring connections for electrically operated units.
 - 7. Wiring diagrams for electrically operated units.
 - 8. Accessories.

- C. Samples for Initial Selection: For finishes of surface-mounted screen cases.

1.5 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For front-projection screens to include in maintenance manuals.

1.6 QUALITY ASSURANCE

- A. Comply with the most current edition of the Northwestern University Design Standards.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Environmental Limitations: Do not deliver or install front-projection screens until spaces are enclosed and weathertight, wet work in spaces is complete and dry, and temporary HVAC system is operating and maintaining ambient temperature and humidity conditions at occupancy levels during the remainder of the construction period.

1.8 COORDINATION

- A. Coordinate layout and installation of front-projection screens with adjacent construction, including ceiling suspension systems, light fixtures, HVAC equipment, fire-suppression system, and partitions.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Source Limitations for Projection Screens: Obtain front-projection screens from single manufacturer. Obtain accessories, including necessary mounting hardware, from screen manufacturer.

2.2 MANUALLY OPERATED, FRONT-PROJECTION SCREENS

- A. General: Manufacturer's standard spring-roller-operated units, consisting of case, screen, mounting accessories, and other components necessary for a complete installation.
 - 1. Screen Mounting: Top edge securely anchored to a 3-inch- (75-mm-) diameter, rigid steel roller; bottom edge formed into a pocket holding a tubular metal slat, with ends of slat protected by plastic caps, and with a saddle and pull attached to slat by screws.
- B. Surface-Mounted, Metal-Encased, Manually Operated Screens without Tab Tensioning: Units designed and fabricated for surface mounting on wall or ceiling, fabricated from formed-steel sheet not less than 0.027 inch (0.7 mm) thick or from aluminum extrusions; with flat back design and vinyl covering or baked-enamel finish. Provide units with matching end caps and concealed mounting.
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

- a. Bretford, Inc.
- b. Da-Lite Screen Company.
- c. Stewart Filmscreen Corporation.

2.3 ELECTRICALLY OPERATED, FRONT-PROJECTION SCREENS

- A. General: Manufacturer's standard units consisting of case, screen, motor, controls, mounting accessories, and other components necessary for a complete installation. Provide units that are listed and labeled as an assembly by UL or another testing and inspecting agency acceptable to authorities having jurisdiction.
1. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
 2. Controls: Remote, three-position control switch installed in recessed device box with flush cover plate matching other electrical device cover plates in room where switch is installed.
 - a. Provide one wall control switches for each screen, and tie-into educational technology components to allow from operation at podium.
 - b. Provide power supply for low-voltage systems if required.
 - c. Provide video interface control for connecting to projector. Projector provides signal to raise or lower screen.
 3. Motor in Roller: Instant-reversing motor of size and capacity recommended by screen manufacturer; with permanently lubricated ball bearings, automatic thermal-overload protection, preset limit switches to automatically stop screen in up and down positions, and positive-stop action to prevent coasting. Mount motor inside roller with vibration isolators to reduce noise transmission.
 4. Screen Mounting: Top edge securely anchored to rigid metal roller and bottom edge formed into a pocket holding a 3/8-inch- (9.5-mm-) diameter metal rod with ends of rod protected by plastic caps.
 - a. Roller for motor in roller is supported by vibration- and noise-absorbing supports.
- B. Suspended, Electrically Operated Screens with Automatic Ceiling Closure, with Motor-in Roller, and with Tab Tensioning: Units designed and fabricated for suspended mounting; with bottom of case composed of two panels, fully enclosing screen, motor, and wiring; one panel hinged and designed to open and close automatically when screen is lowered and fully raised, the other removable or openable for access to interior of case.
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Da-Lite Screen Company.
 - b. Draper Inc.
 - c. Stewart Filmscreen Corporation.
 2. Provide metal or metal-lined wiring compartment.
 3. Screen Case: Made from metal.
 4. Provide screen case constructed to be installed with underside flush with ceiling.
 5. Finish on Exposed Surfaces: Vinyl covering or baked enamel.

2.4 FRONT-PROJECTION SCREEN MATERIAL

- A. Matte-White Viewing Surface: Peak gain of not less than 0.9, and gain of not less than 0.8 at an angle of 50 degrees from the axis of the screen surface.
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. BEI Audio-Visual Products.
 - b. Da-Lite Screen Company.
 - c. Draper Inc.
- B. Glass-Beaded Viewing Surface: Peak gain of not less than 2.0, and half-gain angle of at least 15 degrees from the axis of the screen surface.
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. BEI Audio-Visual Products.
 - b. Da-Lite Screen Company.
 - c. Draper Inc.
- C. Material: Vinyl-coated, glass-fiber fabric.
- D. Mildew-Resistance Rating: Zero or 1 when tested according to ASTM G 21.
- E. Flame Resistance: Passes NFPA 701.
- F. Flame-Spread Index: Not greater than 75 when tested according to ASTM E 84.
- G. Seams: Where length of screen indicated exceeds maximum length produced without seams in material specified, provide screen with horizontal seam placed as follows:
 - 1. At top of screen at juncture between extra drop length and viewing surface.
- H. Seamless Construction: Provide screens, in sizes indicated, without seams.
- I. Edge Treatment: Black masking borders.
- J. Size of Viewing Surface: **<Insert dimensions>**.
- K. Provide extra drop length of dimensions and at locations indicated.
 - 1. Color: Black.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install front-projection screens at locations indicated to comply with screen manufacturer's written instructions.

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- B. Install front-projection screens with screen cases in position and in relation to adjoining construction indicated. Securely anchor to supporting substrate in a manner that produces a smoothly operating screen with vertical edges plumb and viewing surface flat when screen is lowered.
1. Install low-voltage controls according to NFPA 70 and complying with manufacturer's written instructions.
 - a. Wiring Method: Install wiring in raceway except in accessible ceiling spaces and in gypsum board partitions where unenclosed wiring method may be used. Use UL-listed plenum cable in environmental air spaces, including plenum ceilings. Conceal raceway and cables except in unfinished spaces.
 2. Test electrically operated units to verify that screen controls, limit switches, closures, and other operating components are in optimum functioning condition.
 3. Test manually operated units to verify that screen-operating components are in optimum functioning condition.

END OF SECTION 11 5213

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