

**SECTION 27 24 10
PROJECTOR SYSTEM**

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Conduit, cables, connectors, and boxes
- B. Power wiring and receptacles
- C. Provide complete wiring system to operate all electronic equipment in instructional spaces per codes, educational specifications, approved drawings, and DMS.

1.2 SYSTEM DESCRIPTION

- A. Projector system shall include the furnishing and installation of junction boxes, outlets, cables, conduits, connectors and 20 amp receptacles and other equipment shown on the drawings.
- B. Refer to details on the drawings for additional information. Architect shall obtain the latest copy of ceiling projector installation detail from the Educational Technology Department.

1.3 SUBMITTAL

- A. Submit under the provisions of Section 01 33 00.
- B. Shop Drawings: Indicate layout, raceway diagrams, cables, connectors, cut sheets, and other necessary components for a complete projector system.
 - 1. Work shall not commence, before the shop drawings are approved by the School District.
- C. Product Data: Provide data sheets for each item shown on the shop drawings.

1.4 RECORD DRAWINGS

- A. Submit under the provisions of Section 01 77 00.
- B. Accurately indicate actual locations of boxes, cables, and conduit runs.

PART 2 PRODUCTS

2.1 CONDUIT, CABLES, CONNECTORS, AND BOXES

- A. Provide 2-quad outlets connected to computer power, 1-data outlet, and 1-RJ45 connector with CAT5E cable to the projector, 1-VGA outlet, and 1-active USB type "A" cable at the teacher station.
- B. In instructional spaces such as science-labs with a fixed demonstration-desk and the instructor's desk positioned adjacent to the demonstration desk, install the teacher station outlets mentioned in Item A on the side of the demonstration desk at the opposite end from the sink.
- C. Provide one RCA cable, one data outlet, two quad receptacles connected to computer power.
 - 1. On the wall behind the multimedia cabinet
 - 2. Refer to installation detail on the drawings
- D. Provide 1-RCA cable, 1-CAT5E cable, 1-active USB type "B" cable, 1-3.5 mm stereo audio cable, and 1-VGA cable with male connectors and 10 feet slack at the projector location.
 - 1. Also, provide one 120 volts, 20 amps duplex receptacle at each projector location.
 - 2. See details on the drawings for all outlet locations and additional requirements.
- E. Provide a 3.5 mm stereo audio cable from a wall box at the teacher station to a wall box on the wall behind the multimedia cabinet.
- F. Overall VGA cable must have 125% aluminum Mylar shielding and 90% Braided Tinned Copper shielding and contain three 28 AWG internal mini-coax lines each with Braided Tinned Copper shielding for VGA, three 24 AWG twisted pair, and a single 24 AWG pair.
 - 1. Cable to support UXGA resolutions including 1600x1200 and 1920x1080 (WUXGA)

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2. VGA cable or lead ends Ferrite protected against EMI/RFI interference.
 3. Replaceable, provide threaded flying leads on both ends slip connectors are not acceptable.
 4. Connector equipped with a protective pulling cap rated at 30 pounds pulling tension.
 5. Provide manufacturer Lifetime Warranty.
 6. Use cable manufactured by "RapidRun" as specified here or approved equal:
 - a. 60005 - 50ft RapidRun Multi-Format Runner Cable CMG-rated.
 - b. 60081 - 1.5ft RapidRun Multi-Format Flying Lead HD15 Male (VGA), need one for each end.
 - c. 60004 - 35ft RapidRun Multi-Format Runner Cable CMG-rated, shorter for small rooms/conference rooms.
 - d. 60018 - 1.5ft Rapid-Run Multi Format Flying Lead HD15 Male (VGA) + 3.5mm + Composite Video (RCA) + Stereo Audio (RCA).
- G. Cafetorium, Media Center, Conference Rooms and Similar Spaces:
1. Control station shall have data outlet, CAT-5E with RJ-45 connector, VGA connector, one RCA cable for cafeteria public address system, microphone jack, and two quad receptacles.
 2. Refer to wiring detail, if the drawings do not have wiring detail; obtain it from Educational Technology Department.
 3. Satellite control station shall have data outlet, and receptacle, microphone jack for cafeteria public address system, 3.5 mm audio connection, and VGA connection.
- 2.2 POWER FEED
- A. Wall mounted projectors, install receptacle 6 inches below ceiling (typical classrooms).
 - B. Ceiling mounted projectors, install receptacle in the cutout of the ceiling tile.
 - C. Refer to the details on the drawings.

PART 3 EXECUTION

3.1 INSTALLATION

- A. Install system in accordance with NECA "Standard of Installation" and Sections 26 05 33, and 26 27 26 of the project specifications.
- B. Installation in large areas such as cafeteria and media center will be different from general Classrooms.
 1. Submit shop drawings for review prior to installation.
- C. Keep the row of ceiling tiles in line with the center of the projection screen clear of fire sprinklers, air conditioning diffusers, and light fixtures 4' in each direction from the location of the projector.
 1. This will provide some room to adjust the distance between the projector and the projection screen.
- D. Installer shall be licensed in this field and have minimum of 5-years successful experience.
- E. Classroom technology wiring system shall be capable to receive SDPBC Educational Network Channels.
 1. See other specification sections.

3.2 DEMONSTRATION AND TRAINING

- A. Training of the Owner's operation and maintenance personnel is required in cooperation with the Owner's Representative.

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1. Provide competent, factory authorized personnel to provide instruction to operation and maintenance personnel concerning the location, operation, and troubleshooting of the installed systems.
 2. Schedule the instruction in coordination with the Owner's Representative after submission and approval of formal training plans.
 3. Refer to Section 01 91 00, Commissioning, for further contractor training requirements.
- B. Provide demonstration and training for all types of ceiling projector installed in this project.

END OF SECTION