NOTE TO SPECIFYING ARCHITECT REGARDING SECTION 11062
THEATRE RIGGING AND EQUIPMENT
(PARTIAL FLY RIGGING-PARTIAL FIXED RIGGING)

This specification is appropriate for a stage with a limited vertical loft dimension but with a serious dramatic-musical program where counterweight sets are needed for scenery and lighting but the vertical dimensions do not allow floor length drapery to fly into loft space above the proscenium. For this reason floor-length drapery is installed to "dead-hung" or fixed tracks that permit lateral movement of the drapery, but not vertical movement.

This is an economical and practical solution for many high school and college situations.

The dimensions require adjustment to the parameters of your stage: width of opening, height of opening, and stage floor to overhead steel. We are happy to assist.

For clarification or explanation telephone 1-800-548-8982; No charge of course.

SECTION 11062
THEATRE RIGGING AND EQUIPMENT
(PARTIAL FLY RIGGING - PARTIAL FIXED RIGGING)

PART 1 GENERAL

1.01 STIPULATIONS

A. The specification sections "General Conditions", "Special Requirements", and "General Requirements" form a part of this section by this reference thereto and shall have the same force and effect as if printed herewith in full.

1.02 SCOPE

A. This section of specifications includes all labor, supervision, equipment, tools, materials and all other means of construction necessary to perform the stage equipment work as shown on the drawings, described in this specification, or as is necessary to complete the work in a first class manner.

B. This contractor must make a complete field check of the site conditions and shall take accurate measurements before fabrication. Miscellaneous items necessary for a proper installation of the stage curtains and equipment shall be supplied and correctly installed by the Contractor. The Contractor shall be held responsible for the quality of materials and labor furnished to insure the proper installation of the specified materials.

C. The front stage setting shall consist of valance, front stage curtain and teaser, and the associated track and pipe battens. The mid-stage setting shall consist of close-off curtains, and associated track and pipe battens. The concert setting shall consist of pivoting wing curtains, ceiling border curtains and rear curtain and associated track and pipe battens. Additional equipment for special effects shall also be provided as follows: scrim drop, sky drop, and the associated tracks and pipe battens, and projection screen.

D. All stage equipment items shall be supported from a system of parallel pipe battens, and stage curtain tracks. All stage curtain tracks shall be fastened to the pipe battens by means of pipe clamps or trim chains. A total of 11 counterweight sets shall be provided. All other line sets are installed at a fixed elevation. Ten line sets shall be at fixed elevation.

EQUIPMENT SCHEDULE

ITEM	FABRIC	HARDWARE	BATTENS: FIXED ELEVATION OR COUNTERWEIGHTED
Valance	26 oz. velour		fixed
Front Curtain	26 oz. velour	roped bi-parting track	fixed
Teaser	26 oz. velour		counterweighted
Lights		double pipe ladder truss	counterweighted
Scenery		unassigned	counterweighted
Legs	21 oz. velour	walk-along track & pair of pivots	fixed
Sound Reflector Panels		row of 6foot panels	counterweighted
Projection Screen	matte white	Motorized Dalite Electrol	fixed
Border	21 oz. velour		counterweighted
Lights		double pipe ladder truss	counterweighted
Scenery		unassigned	counterweighted
Mid Stage Traveler	21 oz. velour	roped bi-parting track	fixed
Legs	21 oz. velour	walk-along track & pair of pivots	fixed
Sound Reflector Panels		row of 6 foot panels	counterweighted
Scrim	sharkstooth	walk-along track(2 sets of carriers)	fixed
Border	21 oz. velour		counterweighted
Lights		double pipe ladder truss	counterweighted
Legs	21 oz. velour	walk along track & pair of pivots	fixed
Scenery		unassigned	counterweighted
Rear	21 oz. velour	roped bi-parting track	fixed
Sky Drop	seamless muslin	walk-along track(2 sets of carriers)	fixed

SUMMARY: Total of 11 counterweight sets and 10 battens with fixed elevation.

1.03 RELATED WORK IN OTHER SECTIONS OR CONTRACTS

A. Fire Stop Curtain with Braille Winch Rigging - Section 11061

B. Electrical Work - Electrical Contract

1.04 SUBMITTALS

A. Product Data: Submit manufacturer's technical data, product specifications, installation instructions, and other pertinent information as applicable for each product or material specified.

B. Test Reports: Submit certified laboratory test reports as necessary to show compliance with specified requirements.

C. Shop Drawings: Shop drawings shall meet requirements of applicable portions of General and Supplemental Conditions. Shop drawings shall show gages, profiles, sections of materials, details of construction, hardware, methods of attachment and/or anchoring, all as applicable for specified materials.

1. Furnish layouts for inserts, clips or other supports required to be installed by other trades for support of tracks and battens.

2. The stage equipment supplier shall provide a layout for approval by the architect and/or owner. The equipment shall be properly spaced to avoid all conflict with equipment furnished by other trades. Approval of the drawings is to facilitate cooperation among trades, but full responsibility for a properly functioning installation remains the obligation of the stage equipment contractor.

D. Submit samples as required for color selections.

PART 2 PRODUCTS

2.01 MANUFACTURER

A. All rigging materials shall be as manufactured by Janson Industries, 800 548 8982, Canton, Ohio 44706 or J.R. Clancy Co., Syracuse, NY., H and H Specialties, El Monte, CA or as approved by the architect.

2.02 MATERIAL AND WORKMANSHIP

A. Furnish and install all necessary structural metal or equipment as required for proper installation and further as required to meet the requirements and standards of cognizant authorities.

B. The front stage setting shall be manufactured from 54 inch cotton velour, napped, high quality weighing 26 ounces per running yard. The mid-stage traveler curtains and the concert setting (legs, borders, and rear curtain) shall be manufactured from 54 inch napped high quality velour, weighing 21 ounces per running yard. The sky drop shall be manufactured from seamed, sky blue muslin, and the scrim drop shall be manufactured from seamless sharkstooth scrim. The front stage curtain shall be lined with black denim. Liners for valance, teaser, and borders shall be Reno, and Bonanza, or Endura opaque, reinforced vinyl, beige color.

C. Fabrics specified above are standard products of K-M Fabrics, Greenville, South Carolina; Frankel Associates, New York City, New York; JL deBall America, New York, NY or Valley Forge, Miami, Florida, or as approved by the architect.

2.03 QUALITY

A. All materials hereinafter specified shall be first quality. All curtains shall be fabricated of standard width in full length. No horizontal splicing will be allowed or accepted. The following criteria shall be used in preparation of shop drawings.

B. The horizontal, end-to-end dimensions of all pipe battens and tracks shall be as shown on the drawings, or shall be 9 feet greater than the width of the proscenium opening, unless physical conditions of the structure and the building mechanical systems limit the dimensions.

C. The curtains shall be made in sections to provide convenient points for entering or leaving the stage. The sections shall lap 20 inches or more at all points of entry except at the mid-points which shall be 36 inches.

D. Curtain sections shall be furnished for the full length of all tracks or pipe battens except as indicated otherwise on the drawings, or as defined in this specification.

E. The vertical dimensions of all full height curtains on the stage shall be equal to the vertical dimension of the stage opening.

F. Masking elements shall be sufficient size to adequately mask the stage ceiling, walls, lights and tracks from the first row of seats. Ceiling masking elements that are counterweighted shall be 7 feet in vertical dimension. The fixed valance shall have a vertical dimension equal to ¼ the height of the proscenium opening.

G. Each leg curtain shall have a finished top not less than 1/6 the length of the batten.

2.04 FLAMEPROOFING

A. All fabrics shall be either inherently flame resistant or shall be flameproofed by vat immersion process in accordance with standard industry practice and the requirements of the fire codes and regulations of both state and local jurisdictions. All fabrics shall comply with the standards established in Bulletin 701, National Bureau of Fire Underwriters. Notarized certificates of flameproofing shall be furnished by this contractor attesting that the fabrics used in manufacturing comply with the regulations. The flame retardant chemical which produces a Flame Spread Rating of 10, a Smoke Density of 15 and Fuel Contributed Factor of 0 when tested in accordance with ASTM E-84 (Tunnel Test) shall be used.

2.05 FABRICATION

A. The tops of all fabric items shall be bound with 3-1/2" jute webbing. Fullness shall be added by box pleating to the webbing, with pleats of equal size, located on each vertical seam and at intervals between the seams not to exceed 12". Brass grommets,

number 3, shall be centered on each box pleat. Provide 75% added fullness for all front stage setting velour drapery and 60 percent fullness for the close-off traveler curtains and the concert setting. Hem all curtain sections to accord with standard industry practice, using six inch bottom hems for items that normally extend to the floor and three inch bottom hems for valances or teasers. Furnish a chain pocket within the bottom hem of full length curtains, inserting number eight jack chain wherever required. Provide two inch vertical side hems on all curtain sections except front platform curtain which shall be provided with half strip turnbacks at both leading edges and trailing edges of all curtain sections. Drop curtains required by the schedule shall be manufactured without pleated fullness.

B. Linings for the front stage curtain shall be manufactured from medium weight denim. Linings on items so specified shall have the same fullness, pleats and hems. The linings shall be attached to the face material only across the top. Bottom of the lining shall be attached to the face material with sewed on snap tapes 8" long spaced at each seam. The same detail shall apply to the side hems except the tapes shall be on 24" centers. Reinforced vinyl liners for valance, teaser and borders shall be sewn without pleats.

C. All full length curtains on the stage shall extend from track carriers to one inch above the platform floor. Masking elements shall be of sufficient size to adequately mask the stage walls and ceiling structure from the first row seats.

2.06 TRACKS

A. All stage curtain tracks that are roped shall be heavy duty, ball bearing type, Janson number J9000AL, Clancy 281, or, or ADC 281, complete with all necessary accessories. Straight traveler tracks shall be furnished with continuous operating lines, end pulleys and ball bearing floor pulleys. Curtain carriers shall incorporate two wheels and each wheel shall have a race of ball bearings with nylon or neoprene tires. Carriers shall be of metal construction and have a swivel and bumper feature to eliminate binding of successive wheels. Track shall be roped for bi-parting operation with center overlaps of 3 feet. All tracks shall be connected to pipe battens by means of pipe clamps on centers not to exceed 5 feet. Operating line shall be 3/8 braided cotton or synthetic fiber with reinforced center.

B. Walk-along tracks shall be I-beam type, Janson 880, ADC140 or Clancy 140. No rope and pulley system shall be provided. Track carriers shall have metal body construction with precision ball bearings at the hub of each wheel and with nylon or neoprene tires. Pivotal fixtures shall be furnished for all leg curtains. Pivotal fixtures shall be products of the track manufacturer and shall be equipped with integral brakes. Leg curtain tracks shall be walk-along type without center overlap. Drop curtains shall be walk-along type without center overlaps also. All walk-along tracks shall be reinforced with pipe battens on centers not to exceed 5 feet. Walk-along tracks for leg curtains and drop curtains shall extend completely across the stage (as shown on top drawings). Drop curtain tracks shall have carriers (one per foot) on both ends of the track to provide for rental drops.

2.07 PIPE BATTENS

A. All stage equipment items shall be supported from a system of parallel pipe battens, and a single pipe batten shall correspond to each item, including drapery items that are tied directly to pipe battens, as well as track items that are between the pipe batten and the drapery. All hardware shall be fastened to the pipe battens by means of pipe clamps or trim chains.

B. Pipe battens shall be 1½ inch, schedule 40, steel pipe, or 2 inch o.d. aluminum tubing, with precision internal splices not less than 24 inches in length with not less than (2) ¼ inch, grade 5 bolts and lock-nuts securing the pipe to the internal splice. Each lighting set shall have a pair of pipe battens. The top pipe shall be furnished and installed by the stage equipment installer. The bottom batten shall also be furnished and assembled by the stage equipment installer. The bottom batten shall be temporarily secured to the top batten by means of chains for later use by the electrical contractor. The Electrical Contractor will install the plug-in strip and provide the connecting bar stock and U-bolts.

2.08 OPAQUE BACKING FOR TEASER AND BORDERS

A. This contractor shall furnish and install opaque backing for valance, teaser, and borders. These shall be manufactured from Endura or Reno or Bonanza without pleats (tan color). Fabrics shall be opaque vinyl reinforced with internal polyester scrim. Width of each opaque backing shall be the same as for the teaser and the borders. Vertical length shall be 4 inches less than corresponding teaser and borders. Items shall be tied to corresponding pipe battens.

2.09 TRACK SCHEDULE

A. Furnish a total of 3 traveler tracks roped for bi-parting operation.

B. Furnish a total of 3 walk-along leg tracks each with a pair of pivoting fixtures and brakes and pivoting pipes.

C. Furnish a total of 2 drop curtain sets each with a double set of curtain carriers to accommodate rental drops on one of the ends.

D. Tracks shall have an end to end dimension equal to the batten length.

2.10 HANGERS

A. All supporting hangers for battens with a fixed elevation shall be 2/0 welded chain (proof coil) with a rust preventive finish. Top of hangers shall be secured to structural steel by means of beam clamps and 5/16 inch grade 5 bolts with lock-nuts,

or shall be secured by encircling the structural steel and bolting as indicated earlier. At the batten ends of the chain hangers the pipes shall be 1 ½ times wrapped with sufficient additional chain for adjusting the elevation of the battens. Hangers shall be located on centers not to exceed 10 feet. Screw pins shackles (1/4 inch) shall be used for adjustment.

2.11 STRUCTURAL SUPPORTS

A. All loads shall be directly supported from the structural steel or from auxiliary miscellaneous metal furnished and installed by the stage equipment contractor. Anchoring devices and miscellaneous metal required for proper installation shall be erected during the process of the general construction at the appropriate time to coordinate with the work of other trades. 3" x 2" x ¼" angles or 1½" schedule 40 pipe or the equivalent, may be used for auxiliary support.

2.12 PICTURE SCREEN

A. Furnish and install one Da-Lite Senior Electrol picture screen or Draper or Stewart equal with heavy duty windings, ball bearings, and limit switches preset at the factory. Screen size shall be 18 feet horizontal by 18 feet vertical. Provide steel hangers, pipe clamps, welded chain, beam clamps and turnbuckles for leveling supporting steel pipe batten. This contractor shall furnish and install the screen and shall deliver one control station to the electrical contractor on the job. Connective wiring and mounting of the control station shall be performed by the electrical contractor but the physical installation of the screen shall be made by the stage equipment contractor. The switch shall be a 3-button type for up, down and stop.

2.13 PIVOTAL DRAPERY FIXTURES

A. Furnish and install pivotal drape fixtures as required incorporating (2) ball bearing 2-wheel carriers for each fixture. Pivoting shall be accomplished from the floor and drapery shall be tied to a 1½ inch aluminum pipe batten securely fastened to the pivot fixtures. Pivotal fixtures shall be Janson #4028 or ADC #28 or H&H #40, or approved equal. All pivot fixtures shall be furnished with a brake that is operable from the floor.

2.14 FIRE STOP SHIELDS

A. Fire-stop shields shall be products of the following firms, or equal approved by the architect:

1. The Palmer Company (Boston, MA)
2. J R Clancy (Syracuse, NY)
3. Janson Industries (Canton, OH)

B. Provide (12) independent fire-stop shields for teasers and all borders, manufactured from inherently flame resistant, asbestos free, fiberglass fabric.

C. Fire shields shall be black in color, shall be sewed flat, and shall finish 60 inches in vertical dimension by 12 feet 0 inches in horizontal dimension. Weight of fabric shall be 32 ounces per square yard.

1. Fabric shall withstand continuous temperatures of up to 1100 degrees farenheit and short duration temperatures up to 2000 degrees farenheit.

D. Shields shall be tied to the teaser and border battens to provide a protective fire barrier. Provide number 3 black grommets and black tie lines.

2.15 SOUND REFLECTOR PANELS (OVER STAGE)

A. Sound reflectors shall be products of (as standard for the specifications) Janson Industries (1-800-548-8982 or 330-455-5919 fax).

B. Furnish and install sound reflector panels, hardware, fittings and rigging necessary for a complete functioning installation.

C. Panels shall consist of painted aluminum fabrication using material that is .125 in thickness.

1. Panels shall comply with fire resistance standards and properties of authorities having jurisdiction.

2. The color shall be selected by the Architect and shall be applied to both faces of each panel.

C. Panels shall be 6 feet 0 inches (front to rear) by modular dimensions aligned to provide two continuous rows, each of which is approximately equal in length to the width of the stage opening less 2 feet 0 inches.

D. Panels shall be aligned by through-bolting aluminum angles (3" x 2" x 1/4") as required. Angles shall be located out of sight of the audience and assure a flat surface for the ceiling sets.

E. Furnish and install pivot devices on 8 foot centers. These devices shall permit storage in a vertical mode and shall allow variable tilt in the use mode. These devices shall keep the panels in a plane.

F. The pivot devices shall be connected to a counterweight pipe batten. The tilt position shall be easily adjustable by means of shackle devices.

G. Each row of sound reflector panels shall be installed to a separate counterweight set as specified herein.

H. Install materials in accordance with manufacturer's printed instructions and recommendations, and comply with governing codes and regulations.

2.16 COUNTERWEIGHT RIGGING (T-BAR SYSTEM)

A. Furnish a total of 11 sets of multi-line counterweight rigging (T-bar channel system) firmly and securely attached to structure in the best and most workmanlike manner, fitted and arranged to clear all existing building construction, properly counterbalanced, adjusted, tensioned, and otherwise ready for operation in accordance with the requirements of the specifications and commonly accepted good practice for stage rigging. Each set shall contain the items listed below, which are catalog numbers of J.R. Clancy Company and The Janson Industries, H and H Specialties, or approved equal. All hardware shall be shop painted.

ITEM	CATALOG NUMBER (or size)
Head block precision tapered roller bearings	#1255
Loft blocks, ball bearing	#819
T-Bar carriage	#15 x 5
Floor block, ball bearing	#1015
Rope lock	#533
Cable clips or copper ferrules	1/4 inch
Lead cables (galvanized preformed aircraft)	1/4 inch 7 x 19
Composite rope, hand line, multiline II	3/4 inch
Pipe battens	1-1/2" ID steel pipe
Counterweights	600 lb. per set

B. Headblocks shall be of unit parallel type construction with heavy steel side plates extending above sheaves to accommodate three cross bolts and spacers to positively prevent cables escaping from grooves. All sheaves shall run on precision roller bearings of self-contained type operating in a ground cone independent of shaft and hub. Shaft shall be not less than one inch in diameter and shall be fitted with jam nut. Required: Class 30 gray iron (ASTM A-48) or nylatron; machined grooves; 5/8 inch steel shaft, keyed to side plate.

C. Loftblocks shall be of full steel side construction with cross spacers to prevent cables escaping from grooves. Supply hook and clamp to fasten to beams without drilling. Loftblocks shall incorporate ball bearings. Required: Class 30 gray iron (ASTM A-48) or nylatron; machined grooves; 5/8 inch steel shaft, keyed to side plate.

Loft Block idler assemblies shall be provided to carry the weight of the cables and prevent rubbing against adjacent block side plates. Idler assemblies shall consist of one or more 2-1/2 inch diameter, plastic idler pulleys mounted on the side of the loft block in a steel housing. The housing shall consist of a 12 gauge side plate and two 1/4 inch bolts and pipe spacers to mount the housing and captivate the cables in the

grooves. The sheaves shall have ball bearings, 1/4 inch cable grooves and shall ride on a 1/4 inch shaft. All nuts shall be of the nylon insert self locking type. Two rows of idler pulleys, one with 3 sheaves and one with 6 sheaves.

D. Counterweight carriages shall have 3/4 inch carriage side members. Guide blocks shall be of high molecular density hard durable plastic designed to work snugly and to operate smoothly and freely in the guide tracks. Provide double nuts at top and bottom of rods.

E. Floor blocks shall be manufactured from gray iron as a one piece casting fitted with an eight inch diameter sheave, lathe turned, for 3/4 inch hand line, operating on ball bearings. Required: Class 30 gray iron (ASTM A-48) or nylatron; 5/8 inch steel shaft, keyed to side plate.

F. Rope locks shall be manufactured as a unit casting of first grade gray ASTM ductile iron or shall be made from steel. Furnish cast iron jaws for clamping handline. The jaws shall be mounted on smooth pins or rivets. Handles shall be at least 9 inches in length and shall consist of one piece steel fabrication. Each rope lock shall have a cadmium plated thumb screw for adjustment of jaw openings. Each lock shall be equipped with a steel oval retaining ring.

G. Lead line cable shall be of aircraft construction 7 by 19 (galvanized, preformed) with breaking strength not less than 5000 pounds for 1/4 inch cable.

H. Handlines shall be of good quality composite rope, not less than 3/4 inches in diameter, free from slivers and foreign matter, with a non-stretch core and shall be Multi-line II.

I. Counterweight pipe battens shall be 1-1/2 inch (inside diameter) standard schedule 40 pipe. All joints shall be sleeve spliced internally using not less than 24 inch splice pieces. Bolts or rivets shall connect each end of the internal splice pieces to the pipe batten.

J. Counterweights shall be gray iron castings (or shall be cut from steel plate) free from rough edges or foreign matter, with slots at each end to accommodate the vertical rods of the counterweight carriages. All equipment shall be balanced and the surplus weight shall be neatly stacked. All counterweights shall be shop painted on all exposed surfaces in a smooth finish cost of black.

K. Muling blocks, as required, shall be provided. Sets shall be installed in direct lines where practical but if required, due to physical location of stairs, doorways or obstructions, all muling blocks, extra headblock and floor blocks necessary, together with supporting brackets, miscellaneous steel and additional cable and rope shall be furnished and installed to achieve a properly functioning system for each set.

L. Locking rails shall be number 518/1015, or approved equal, fabricated in a continuous battery or individually for locating sets as required. Heavy steel upright frames shall be furnished for each set and shall be provided with holes for use in anchoring to the floor. Furnish anchor bolts with required nuts, washers and plates.

2.17 CRADLES AND LIFT LINES FOR ELECTRICAL FEED CABLE

A. The stage equipment contractor and the electrical contractor shall have the joint responsibility of assuring that feed cables are not visible from any seat in the audience. The electrical contractor shall furnish and install the bar stock that connects the counterweight pipe (by stage equipment contractor) to the fixture pipe. The plug-in strip, the lighting instruments, and the electrical cable shall be provided and installed by the electrical contractor. The stage equipment contractor shall furnish and install all loft blocks, and steel cables required. The stage equipment contractor shall also furnish completely assembled fixture pipe battens for each counterweight set used for performance lighting plug-in strips and instruments. The installation of the fixture pipe batten and all electrical equipment shall be made by the electrical contractor.

2.18 T-BAR GUIDE TRACK SYSTEM

A. Furnish a complete extruded aluminum guide track system for each counterweight carriage and mount to the building wall construction. Each guide track shall consist of a four inch by two inch extruded channel with two flanges that fit the carriage guide blocks. A pair of flanges shall guide the carriages for each counterweight set. The guide tracks for the counterweight carriages shall be erected vertically and shall extend from the locking rails to the headblock to permit maximum movement (travel) by the carriages. The guide flanges shall be held parallel to within 1/16 inch. Provide wall knees (brackets) for supporting the guide track in a vertical plane regardless of irregularities in the masonry wall. Secure to masonry by means of suitable toggle bolts in masonry unit shells and expansive devices in mortar joints or solid masonry units. Horizontal angles, 3 inch by 2 inch shall be provided on five foot centers between the stage floor and the Headblock beam. Each of these angles shall extend for the full depth of the counterweight system wherever practical. One flange of the wall batten angles shall be bolted to the wall knee brackets and the other flange shall be bolted to each extruded channel. The purpose of the wall batten assembly is to assure a perfectly vertical plane for the counterweight carriage operation. Completed work will be leveled, tested, and left ready for use.

B. Individual channels shall be furnished for each counterweight set and shall extend from the headblock beam to the floor. Not more than one splice shall be used in assembly and the splice plate shall be not less than 24 inches in length.

C. The stage equipment supplier shall provide a layout for approval by the architect and/or owner. The equipment shall be properly spaced to avoid all conflict with equipment

furnished by other trades. Approval of the drawing is to facilitate cooperation among trades, but full responsibility for a properly functioning installation remains the obligation of the stage equipment contractor.

PART 3 EXECUTION

3.01 METAL FINISH

A. All items provided under this section shall have the manufacturer's standard finish and color, except as noted. All turnbuckles, clips, tracks, chains and other items of incidental hardware shall be furnished plated or painted.

3.02 COORDINATION

A. The stage equipment installer and the Electrical Contractor shall have the joint responsibility of assuring that feed cables are not visible from any seat in the audience.

3.03 FINISH:

A. All work shall be executed using high standards of workmanship in fabrications and erection. The finished installation shall be complete and functional in every respect with stage drapery trimmed, leveled, and left ready for use.

END OF SECTION