Dear Bidders;

Following is Addendum No. 3 for Bid Specification for Stage Curtain System Installation Bid #2019-62 for Huntley Community School District 158. Please acknowledge the addendum on your bid form. The bids due date is changed to 2:30 pm on January 8, 2020 as revised with Addendum No. 2. We look forward to seeing you at the bid opening.

Sincerely,

Doug Renkosik, CPMM
Director of Operations and Maintenance

**Items included in Addendum No. 3**

1. Replace specification section 00010 Table of Contents with attached
2. Replace specification section 00411 Bid Form with attached.
3. Replace specification section 116143 Stage Curtains with attached.
4. Replace drawing A101 with attached.
5. Add specification section 055000 Metal Fabrications Pipe Grid to the bid specifications
DOCUMENT 00010 - TABLE OF CONTENTS

SPECIFICATIONS
Section No. Title
000000 Title Page/Project Identification
000010 Table of Contents

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000100 Advertisement for Bid
000200 Instructions to Bidders
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DIVISION 1 - GENERAL REQUIREMENTS
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012100 Allowances
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DIVISION 5 – MISCELLANEOUS METALS
055000 Metal Fabrications Pipe Grid

DIVISION 11 – STAGE CURTAINS
116143 Stage Curtains

DRAWINGS
A101 Stage Curtain Rebid

END OF DOCUMENT 00010
TO: HUNTLEY COMMUNITY SCHOOL DISTRICT #158
   650 Dr. John Burkey Drive (formerly known as Academic Dr.)
   Algonquin, IL 60102

FROM: ________________________________
   (Company Name)

FOR: Stage Curtain System Installation Bid # 2019-62

Base Bid A:
Bid price—including all labor and materials for installation of all new pipe grid support system as called for in specification section 05 50 00 Metal Fabrications Pipe Grid and revised drawing A101 provided as a part of ADDENDUM #3
   $__________________________

Base Bid B:
Bid price—including all labor and materials for installation of all new track system for curtain and cyclorama and curtains as called for in specification section 11 61 43 Stage Curtains and revised drawing A101 provided as a part of ADDENDUM #3
   $__________________________

Alternate Bid 1 to Base Bid B:
Bid price—including all labor and materials for installation of all new cyclorama curtain on track as called for in specification section 11 61 43 Stage Curtains and revised drawing A101 provided as a part of ADDENDUM #3
   $__________________________

Curtain fabric material manufacturer and style provided with this bid shall be:

__________________________________________________________

Addendum(s) No(s) ______ thru ______ have been received and are dully noted.
I have carefully examined the instructions and specifications and have examined the site where the work is to take place. If awarded a contract within sixty (60) days, I agree to furnish all labor and materials required to complete the work described in these documents in accordance with the terms that have been outlined.

_________________________   _________________________
Company Name     By (Signature)

_________________________
Street Address

_________________________
Typed Name and Title

_________________________   _________________________
City,    State,   Zip Code

(____)___________________________ _____________________________________
Telephone No.     email address
CERTIFICATE OF ELIGIBILITY TO BID

____________________________(contractor), pursuant to Section 33E-11 of the Illinois Criminal Code of 1961 as amended, hereby certifies that neither (he, she, it) nor any of (his, her, its) partners, officers, or owners of (his, her, its) business has been convicted in the past five (5) years of the offense of bid-rigging under Section 33E-3 of the Illinois Criminal Code of 1961 as amended and that neither (he, she, it) nor any of (his, her, its) partners, officers or owners of (his, her, its) business has ever been convicted of the offense of bid-rotating under Section 33E-4 of the Illinois Criminal Code of 1961 as amended.

__________________________________________
Date                      Name of Contractor/Company

__________________________________________
Street Address                City, State, Zip

__________________________________________
Title of Officer              Name of Officer (Please Print)

__________________________________________
Signature of Officer
Certificate of Compliance
To the
Illinois Department of Human Rights Regulations

For this bid to receive consideration by the Board of Education of School District #158, Huntley, Illinois, the following certificate must be signed by an official of your company and returned with your bid. This is to certify that our company is in compliance with the provisions of the Illinois Department of Human Rights Regulations.

Signed: ____________________________

Signature

By: ________________________________

Printed Name

Title: ______________________________

Date: ______________________________
Certificate of Compliance with the Illinois Prevailing Wage Law

TO: Board of Education of Huntley Community School District 158

Dear Board of Education,

This letter is to certify that ____________________________________________

Name of Company

is in compliance with Chapter 48 and all amendments pertaining to the payment of prevailing wages (as established by the Department of Labor) to all laborers, workers and mechanics performing work under this contract.

Official Address: _________________________________________________________________________________

Street

City, State                                                      County                                                      Date

Signature                                   Title

Telephone Number (with area code)

Sworn and subscribed on the ______day of _____________________, 20______, before me, notary public, appointed in

__________________________ County for the State of IL

Signature of Notary                                   Name Typed or Printed

(seal)

My commission expires: __________________________

Month        Day       Year                                          City of Residence                                          County
HUNTLEY COMMUNITY SCHOOL DISTRICT 158
HOLD HARMLESS AGREEMENT

By signing this Hold Harmless Agreement, the bidder certifies that to the fullest extent permitted by law, the bidder agrees to defend, pay in behalf of, and hold harmless Huntley Community School District 158 and its elected and appointed officials, employees and volunteers and others working in behalf of Huntley Community School District 158; against any and all claims, demands, suits, loss, including all costs connected therewith, for any damages which may be asserted, claimed or recovered against of from Huntley Community School District 158, its elected and appointed officials, employees, volunteers and others working in behalf of Huntley Community School District 158, by reason of personal injury, including bodily injury and death; and/or property damage, including loss of use thereof, which arises out of or is in any way connected or associated with this contract.

_________________________________________ _________________________________________________
Signature of Notary      Name Typed or Printed
(seal)

My commission expires:

_________________________  ________________________  __________________________
Month           Day              Year                           City of Residence                                      County
Bid Form Page 7 of 8

Name of Contractor (Bidder) _________________________________________________________

EQUIPMENT TO BE UTILIZED FOR THE COMPLETION OF THIS WORK INCLUDES..................

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Name of Contractor (Bidder)

REFERENCE SHEET

Please submit the names of five different School Districts, Colleges or Companies for whom you have done similar work in the last four years.

1. Name ____________________________________________
   Address ___________________________________________
   City _______________________________________________
   Contact Person _____________________________________
   Telephone _________________________________________

2. Name ____________________________________________
   Address ___________________________________________
   City _______________________________________________
   Contact Person _____________________________________
   Telephone _________________________________________

3. Name ____________________________________________
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5. Name ____________________________________________
   Address ___________________________________________
   City _______________________________________________
   Contact Person _____________________________________
   Telephone _________________________________________
SECTION 11 61 43

STAGE CURTAINS (BASE BID B)

PART 1: GENERAL

1.01 SUMMARY

A. This Section includes the following types of stage curtains. New Black Box curtains and cyclorama.
B. Cyclorama track to be installed as part of the Base Bid B. Cyclorama fabric/curtain to be Alternate #1.

1.02 SUBMITTALS

A. Submit the following in accordance with Section 01 33 00:

1. Product data, installation instructions, and general recommendations, including data substantiating that materials comply with all code requirements.

2. Shop drawings including plans, elevations, and detail sections of stage curtain, track, and typical rigging elements. Show anchors, hardware, operating equipment, and other components not included in manufacturer's standard product data.
   a. Field Measurements: Check actual stage curtain openings by accurate field measurements before fabrication; show recorded measurements on final shop drawings. Coordinate fabrication schedule with Owner schedule to avoid delaying Work.

3. Samples, 12 inches square of each fabric in color indicated and with flameproofing applied.

B. Furnish extra materials that match products specified.

1. Fabrics: For each fabric, color and pattern indicated, from the same product run, full width lengths equal to 25 yards of each fabric, color and pattern.

1.03 QUALITY ASSURANCE

A. Fabricator/Installer Qualifications: Firm experienced in producing stage curtains similar to those indicated for this Project that have a record of successful in-service performance, and with sufficient production capacity to produce required units without causing a delay in the Work.

B. Fire-Performance Characteristics: Provide stage curtains that are certified to be inherently and permanently flame resistant according to requirements of NFPA 701. Permanently attach label to each curtain indicating that the curtain is permanently and inherently flame resistant.

1.04 WARRANTY

A. Special Warranty: Manufacturer’s standard form is which manufacturer agrees to repair or replace components of drapery track and drapery that fail in materials or workmanship within specific warranty period.

1. Warranty Period: Three years from date of Substantial Completion for the entire installation. All repairs shall be made at no cost to the owner and shall be scheduled at the mutual convenience of the owner and contractor. All repairs shall be scheduled during regular business hours.
PART 2: PRODUCTS

2.01 PANEL PERIMETER FABRIC

A. Polyester Velour:
   1. Napped fabric of 100 percent polyester weighing not less than 25 oz./linear yard, with pile height approximately 75 mils; inherently and permanently flame resistant; 54-inch minimum width.

B. Cyclorama (Alternate #1) – Cotton IFR Rose Brand Poly Cyc or equal IFR flat fabric.
   1. Permanent chain weight at bottom of curtain with pipe pocket in 10’-6” sections. Coupling of pipe with slip splices.
   2. Width to be length of track plus 5%.

C. Colors: All fabric to be Black.

2.05 CURTAIN FABRICATION

A. General: Provide no additional fullness for curtains, unless otherwise indicated. Provide vertical seams unless otherwise indicated. Do not use fabric cuts less than half width. Fabricate velour curtains with the nap down.
   1. Vertical Hems: Provide vertical hems not less than 2 inches wide, with a 1 inch tuck, and machine-sewn with no selvage material visible from front of curtain. Sew open ends of hems closed.
   2. Leading Edge Turnbacks: Where specified, provide turnbacks formed by folding 12 inches of face fabric back with a 1 inch tuck and secured by sewing the turnback vertically.
   3. Top Hems: Reinforce top hems by double-stitching 3-1/2 inch wide, heavy jute webbing to top edge with minimum 2 inches of face fabric turned under.
   4. Pleats: Provide fullness in curtains by sewing additional material into 6 inch double-stitched box pleats spaced at 12 inches o.c. along top hem reinforcing. Provide not less than No. 2 brass grommets, centered on box pleats, for tie lines or S hooks.
      a. Arrange vertical seams so that they do not fall on faces of pleats.
      b. For velour curtains provide not less than No. 3 grommets.
      c. For black curtains provide grommets with a black anodic finish.
   5. Bottom Hems: For curtains that do not hang to the floor, provide hems not less than 3 inches deep with 3/4 inch weight tape. For floor-length curtains, provide hems not less than 6 inches deep with 1 inch weight tape. Sew open ends of hems closed.

B. Drapery setting shall consist of 12 sections of 20’-0” curtain panels that can be rolled to any desired location. Curtain height to be sized from underside of pipe grid/track to 1 – 1 ½” above finished floor. Cyclorama curtain to be same height at panel perimeter and fitted to length of track.

C. The pipe weight shall be included with the cyc as part of alternate 1. It shall be ¼” schedule 40 steel pipe with slip splices. Threaded couplings shall not be used. The pipe shall be finished in flat black paint. The splices shall be ½” HR rod, 8” long. 4” of the rod shall be inserted and plug welded into one end of each ¾” pipe. The rods shall be straight and parallel with the pipes creating a straight weight pipe. The rod end shall be chamfered for ease of fit into the next pipe. The pipes shall be cut 10’0” maximum length each. The pipe weight shall be the width of the cyc plus 1’0”.

No. Stage Curtain Re-Bid  11 61 43-2  Stage Curtains (Base Bid B)  Addendums #3
2.06 ALUMINUM CURTAIN TRACK

A. Track to be Heavy Duty Stage Track designed for straight and curved track configurations. Track size to be determined by height and weight of curtains. Finished with matte black powder coat. H and H Specialties 316BW Tiffin Scenic; Continental #62 walk draw track or equal. Curves to be 4’-0” radius and roll formed.
   1. Shop fabricate curved portions of the track.
   2. Provide end stops for track rails.
   3. Spanners shall be provided by this contractor.
   4. Track supports shall be stamped plate, malleable or forged clamps or threaded rod.
   5. Chain and cable shall not be used.

B. Chain hangers shall be located on centers not to exceed 6’-0”.

C. Tracks to be supported/clamped from pipe grid. Tracks curves shall be supported within 6” of the center of the curves with spanners installed by this contractor. Spanners shall be Unistrut P-1000 or P-1001 depending on the load.

D. Battens: Seamless pipe with matte black finish, provide minimum 21’-0” lengths.

E. Cyclorama track to be Walk-along. Cyclorama track to be installed with base bid.

F. Carriers shall have nylon tired, ball bearing wheels. The wheels shall be set at the same angle as the bottom flange of the track. Carriers with vertical wheels shall not be acceptable.
   1. Carriers shall have black coated steel bodies with a 4” trim chain on a swivel hanger.
   2. Cyc track shall have 56 single carriers installed.

PART 3: EXECUTION

3.01 PREPARATION

A. Track and drapery shall be located as shown on the drawings. Furnish inserts, clips, uni-strut or other supports to support tracks and battens.

B. Drapery shall be installed after the floor has been finished and the black box has been cleaned.

C. Examine areas and conditions, with installer present, for compliance with requirements for rigging system pipe battens, supporting members, blocking, installation tolerances, clearances, and other conditions affecting performance of stage-curtain work. Proceed with installation only after unsatisfactory conditions have been corrected.

D. Examine inserts, clips, blocking or other supports required to be installed by others to support tracks and batten. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 INSTALLATION, GENERAL

A. Install materials according to manufacturer's printed instructions and recommendations.

3.03 CURTAIN INSTALLATION

A. Track-Hung: Secure curtains to track carriers with track manufacturer's special heavy-duty S hooks or snap hooks. S-hooks shall be squeezed shut.

B. Position all items accurately as indicated on the drawing and true, plumb and level.

C. Note any deviations required to adjust for field obstructions and report to required persons to incorporate changes on as-built drawings.

D. Coordinate work with trades performing adjoining work.

END OF SECTION 11 61 43
54'-6" CYCLORAMA CURTAIN (ALTERNATE #1) AND TRACK (BASE BID B) - CENTER ON WALL

1/8" = 1'-0"

1. MAIN LEVEL FLOOR PLAN - AREA B - BLACK BOX

2. PIPE GRID DETAIL (BASE BID A)

3. WALL FLANGE DETAIL (BASE BID A)

STEEL JOIST, SEE STRUCT.

JOIST FLANGE CLAMP, TYP AT EACH DIRECT CONNECTION TO JOIST

3/8" ROD FROM ANCHOR TO GRID HANGER, TYP.

GRID CLAMP AT ALL PIPE INTERSECTIONS, TYP.

PIPE WALL FLANGE.

PAINT ALL EXPOSED PIPING AND CONNECTIONS BLACK, TYP.

COMPLETE ENTIRE PIPE GRID INSTALL.

1 1/2" SCHEDULE 40 BLACK STEEL PIPE

SIDE FACE

ANCHORS SUITABLE FOR WALL TYPE AND LOAD.

ADDENDUM #1 - 11/15/2019
ADDENDUM #2 - 12/12/2019
ADDENDUM #3 - 12/30/2019
SECTION 05 50 00
METAL FABRICATIONS/ PIPEGRID (BASE BID A)

PART 1: GENERAL

1.01 SUMMARY

A. Section includes: All labor, material necessary to complete all items of miscellaneous metal as listed on the schedule in Part 2 and shown on the Drawings.

1. The design, fabrication, transportation to the project site, and associated operations required to complete miscellaneous metals, including all the various metal items manufactured to more or less standard details in sizes conforming to specific requirements of the project.

1.02 SUBMITTALS

A. Submit in accordance with Section 01 33 00.

1. Shop drawings required for all items. Show all work to be fabricated with all construction details shown in appropriate scale, methods of attachment to other materials, finished dimensions, shop welds and grinding of welds, field assembly joints, etc. Indicate welded connections, including net weld lengths, using standard AWS welding symbols.

2. Calculations: Accompany shop drawings with a complete structural design and analysis prepared and certified by a Structural Engineer (S.E.) licensed in the State in which the project is located. The design and analysis shall show all design loads, reactions, forces or stresses, and structural characteristics of members and connections for the items listed in section 2.01.B. Include a certified letter stating that shop drawings as submitted conform to the requirements on the design calculations.

3. Coordinate work with other suppliers and subcontractors; obtain their approved shop drawing where necessary, or obtain any necessary additional detail information regarding mounting conditions or other aspects of related work.

4. Structural Performance: Provide rigging capable of withstanding the effects of the weight of stage curtains, lighting and scenery. Design load for the pipe grid shall be 20 PLF. Requirements for supporting curtains, track, and the grid. Verify capacity of each track and rigging component to support loads.

5. Show fabrication and installation details for pipe grid. Include plans, elevations, sections, large-scale details, dimensions, attachment to other work, requirements for components to support loads. Show dead loads and projected loads that will be applied to the building structure.

6. Pipe grid section: 4’6” x 2’ sample.

7. Qualified Data: For qualified Installer. Fabricator of pipe grid system, or manufacturer’s authorized representative who is trained and approved for installation of units required for this Project, whose work has resulted in applications with a record of successful in-service performance.


1.03 PRODUCT PROTECTION

A. Package, handle, deliver and store at the job site in a manner that will avoid damage or deformation. Damaged material will be rejected.
B. Furnish items to be built into concrete, masonry, carpentry, etc. as the work progresses.

1.04 JOB CONDITIONS

A. Verify dimensions in field, as required, for pre-cut or prefabricated items. *Verify actual dimensions of openings and construction contiguous with pipe grid system by field measurements before fabrication and indicate measurements on Shop Drawings.*

B. Examine job conditions and adjoining construction which may affect the acceptability of the work.

C. *Coordinate pipe grid system with other construction that penetrates or is supported by the flat grid system. Coordinate the grid with house/work lighting.*

1.05 WARRANTY

A. Special Warranty: Manufacturer’s standard form is which manufacturer agrees to repair or replace components of pipe grid system drapery that fail in materials or workmanship within specified warranty period.

1. **Failures include, but are not limited to, faculty operation of the pipe grid system.**
2. **Warranty Period: Three years from date of Substantial Completion for the entire installation. All repairs shall be made at no cost to the owner and shall be scheduled at the mutual convenience of the owner and contractor. All repairs shall be scheduled during regular business hours.**

PART 2: PRODUCTS

2.01 DESIGN

A. All materials shall be free from defects impairing strength, durability, appearance, and shall be of the best commercial quality for the purposes indicated. Structural properties shall be such to withstand safely all strains and stresses to which they will be normally subjected.

B. Metal pipe grid, and other items specified in this section shall be designed to resist self-weight and the more stringent of and the following loads and stresses within limits and under conditions indicated:

1. **Design Loads: Weight of flat pipe grid system and the following:**
   a. Uniform load of 20 pounds per linear foot of pipe.
   b. Concentrated load of 150 pounds applied over a 12 inch long section of pipe grid.
   c. Uniform load and concentrated load need not be assumed to act concurrently.
   d. Deflection of grid frame shall not exceed L/180.

2. Superimposed Dead and Live Loads indicated on the Contract Documents, and


C. The maximum Live Load deflection shall be L/360. Deflection determined based on structural section(s) alone.

D. **Construction:**

1. The pipe grid shall be over/under or flat style. All pipe intersections shall be welded for a flat grid.
2. All pipe intersections shall be clamped with a four bolt style grid clamp equal to Mega-Gridlock by The Light Source.
3. For pipe runs greater than the length of the pipes, splices shall be internally sleeved with sleeves a minimum of 12” long with a wall thickness of no less than 3/16”. The splices shall be tight fitting and field plug welded twice on each side of the splice. Any gaps at pipe splices shall be 1/16” or less. Welds shall be ground smooth and field painted to match the pipe. Bolts shall not protrude from the pipe. Expanding Batten Splices by Rose Brand manufactured of hardened steel may be used.
4. See the addendum 1, 12/12/2019, drawing sheet, 1-Main Level Floor Plan- Area B- Black Box. Pipe grid hangers shall be attached to every other bar joist to achieve a uniform load over the roof support system.

5. At any point where a pipe intersects a wall, there shall be a wall bracket fabricated of 6” x 6” x ¼” HR flat with a tight fitting tube receiver for the pipe. When the system is installed and level, the wall brackets shall be installed with appropriate masonry anchors. The pipe receivers shall be welded with a minimum of 1 ½” of 3/16 fillet weld. All parts shall be ground smooth and painted to match the flat pipe grid. If the grid has any visible sway after installation when tested, five pair of diagonal braces shall be added along center line of both directions to resist sway in both directions.

E. Pipe grid shall be vertically supported. No horizontal loads shall be imposed upon building except for seismic loads and sway loads caused by movement of personnel on pipe grid.

F. Basis-of-Design Manufacturer: Tiffin Scenic, Inc. Subject to compliance with requirements, provide flat pipe grid system or a comparable product by one of the following:

1. Peter Albrecht Company, Inc.
2. Grand Stage Company.

G. Acceptable Installers: Subject to compliance with requirements, installers that may install pipe grid system include the following:

1. Tiffin Scenic Studios, Tiffin, OH
2. Peter Albrecht Company, Inc. Greendel, WI
3. Grand Stage Company, Chicago, IL
4. Atlanta Rigging Systems, Atlanta, GA
5. Other contractors wishing to bid on this installation shall request prequalification from the architect. Bids from non-prequalified contractors shall not be accepted.

2.02 MATERIALS

A. Structural Steel: ASTM A36 or A992.

B. Fastenings: Bolts, welds, rivets or other fastenings as required.

C. Anchor Bolts, Nuts: ASTM F1554, Grade 36. SAE Grade 5 unless otherwise noted.

D. Steel Pipe: ASTM A53, Grade B. 1-1/2” standard weight (Schedule 40) unless otherwise indicated.

E. Steel Tubing: ASTM A500 Grade B.

F. Shop Paint Primer: Manufacturer’s standard rust inhibiting primer. Thoroughly clean grid system components of grease, dirt, oil, flux and other foreign matter, and pretreat. Immediately after cleaning and pretreating, apply manufacturer’s recommended shop primer to uncoated surfaces of metal fabrications, with a minimum dry film thickness of 2 mils and two coats. Subject to compliance with requirements, provide water based DTW primer coating in black.

G. Galvanizing: ASTM A123.

H. Expansion and Adhesive Anchors.

1. Wedge Anchors: Hilti "Kwik Bolt II" or Ramset/Redhead "Trubolt" or equal.

2. Heavy Duty Sleeve Anchors: Hilti "HSL" or equal.

3. Adhesive Anchors: Hilti "HVA" or "HIT", Ramset/Redhead "EPCON" or equal.

I. Optional ¾” steel rod for stair rail bracket: Wagner #R170, ¾” dia. bar bend.
J. Galvanizing Repair Compound: Galvilite as manufactured by ZRC Worldwide.

K. Suspended Overhead Pipe Supports for Theatrical Lighting:

1. General: Grid shall be installed to support the dead weight of the rigging assembly and the following superimposed loads, NOT coincident:
   a. 15 lbs per LF or 450 lbs total on any single batten.
   b. 300 lbs at any single point.
   c. 2500 lbs total

2. Steel pipe battens: ASTM A53, 1-1/2" nominal size, black rust-resistant painted finish, one piece full length, or with a maximum of one piece consisting of 18" long internal sleeve with minimum 0.15" wall thickness secured with (4) plug welds or (4) 3/8" dia grade 5 bolts with self-locking nuts.

3. Cross grid connector: formed steel, for 1-1/2" pipe size, 1500 lbs rated working load, black powder coated finish, with grade 5 bolts; JR Clancy #015-100, or equal.

4. Pipe clamps: formed steel clamp for 1-1/2" pipe size, 750 lbs rated working load, with grade 5 bolts; JR Clancy #026-22X1.5, or equal.

5. Batten caps: Flexible vinyl slip-on cap, size to fit pipe battens, yellow color; JR Clancy #099-BATCAP, or equal.

6. Batten suspension (dead-hung): 1/4" proof coil chain, conforming to Fed Spec RRC-271-E, Grade 30, zinc plated, 1250 lb. rated working load; JR Clancy 022-250 or equal; with drop forged, 1/4" screw pin anchor shackles conforming to Fed Spec RR-C-271D, hot dip galvanized, 1000 lb rated working load; JR Clancy 019-A312S or equal. Shackles pins shall be fitted with cotter pins or safety-wired shut after installation. Chain shall be secured to pipe clamp with shackle. Chain shall be secured to structure with shackles and suitable anchorage devices to suit conditions. Provide chain braces in X-Y directions to inhibit side sway of grid assembly. Hangers shall be spaced 10 feet on center, maximum, and no more than 3 feet from batten ends.

7. Suspension Rods and Fasteners: Minimum diameter of ½ inch equal to Chicago Hardware B-7 threaded rod. Hardware to attach the hanger rods to the structure and the pipe grid shall have a minimum safe working load of 800 LB at a safety factor of 5 to 1. Rod spacing shall not exceed 10’ OC in either direction. Hanger clamps shall be equal to Anvil #92. Pipe clamps shall be equal to H and H Specialties #680. The rod ends shall be equal to Cooper #B3222-1/2. All fasteners used shall be minimum grade 5.

8. Steel-Structural C-channel or steel angle may be used for miscellaneous bracing and support of the grid.

   a. All steel parts for the pipe grid shall be painted flat black with two coats of flat black primer. This includes pipe, hanger rods and any additional spanners or parts.

2.03 GENERAL REQUIREMENTS FOR FABRICATION

A. Weld permanent connections wherever possible; use continuous welds where exposed and grind smooth, straighten members after welding.

B. Perform welding in accordance with AWS D1.1.

C. Perform shop cutting, drilling, fitting and assembly wherever possible. Take field measurements before fabrication when required.

D. Provide all supporting members, fasteners, framing, hangers, bracing, brackets, straps, bolts, angles, etc. required to set, connect the work rigidly and properly to other construction.
E. At all areas of exposed steel that is to receive a finish:

1. Piece marks hidden: Fabricate such that piece marks are fully hidden in the final structure or made with such media to permit full removal after erection.
2. Mill mark removal: Deliver steel with no mill marks (stenciled, stamped, raised, etc) in exposed locations. Omit mill marks by cutting of mill material to appropriate lengths where possible. Where not possible, fill and/or grind to a surface finish consistent with the adjacent material.

2.04 SHOP COATS PROTECTIVE TREATMENT

A. Clean free of all mill scale, rust and foreign matter by wire brushing, scraping, sandblasting or flame cleaning. Remove grease, oil with solvent. Dust, dirt: Remove with air blast or brush.

B. Apply one shop coat of specified primer to all ferrous metal products, except galvanized. Provide primer for field touch up. Be responsible for quality and adhesion of shop prime finish.

C. Hot-dip galvanize all ferrous metal items exposed to weather in the finish work and shop prime with primer recommended for use on galvanized metal as specified above.

2.05 SCHEDULE OF MISCELLANEOUS METAL ITEMS

A. Items listed in this Section are intended only as a guide, but do not relieve responsibility for verifying quantities and inclusion of all similar items. Thoroughly examine all Drawings for items of miscellaneous metal fabrications.

1. Black Box pipe grid.
2. Other miscellaneous metal items shown on Drawings.

PART 3: EXECUTION

3.01 INSTALLATION GENERAL REQUIREMENTS

A. Anchor to concrete and masonry with expansion or adhesive anchors where built-in anchorage is not provided; do not fasten to wood plugs set in masonry.

B. Vertical members set into concrete or masonry: As shown.

C. Bolts, screws, etc., for field connections: Same material, finish as base material.

D. Install items plumb and level, accurately fitted. Install the pipe grid in a workmanlike manner so the grid is level with the stage deck.

E. Secure rigging to building structure. Attach to steel joists only within 6” of joist panel point or other attachment locations specifically provided in the structure. Provide lateral stays to inhibit side-sway.

F. Examine areas, with installer present, for compliance with requirements for supporting members, installation tolerances, clearances, and other conditions affecting performance of pipe grid system.

G. Examine pertinent dimensions and sizes and appropriateness of supporting structures and devices.

H. Proceed with installation only after unsatisfactory conditions have been corrected.
3.02 INSTALLATION OF PIPE GRID SYSTEM

A. **Fastening to In-Place Construction:** Provide anchorage devices and fasteners where necessary for securing pipe grid system to in-place construction. Include threaded fasteners for concrete and masonry inserts, through-bolts and other connectors.

B. **Install pipe grid system plumb, straight, square and level with the theater floor, in location indicated, according to system manufacturer’s written instructions, and as indicated on Shop Drawings.**

C. **Cutting, Fitting, and Placement:** Perform cutting, drilling and fitting required for installing pipe grid system. Set pipe sections accurately in location, alignment and elevation; measured from established lines and levels.

D. **Fit exposed connections accurately together to form neat and clean joints. There shall be no gaps at points where the pipes are spliced that exceed 1/16”.

   1. *Weld connections that are not to be left as exposed joints without finishing.*
      a. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
      b. Obtain fusion without undercut or overlap.
      c. Remove welding flux immediately.
      d. At exposed connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing. Paint all field welds to match shop coating.

3.03 FIELD SPLICES, WELDS

A. Perform field welding in accordance with AWS D1.1.

B. Welders shall be certified by AWS.

C. Continuously weld field splices and grind smooth where exposed to view.

D. Fill exposed splice joints with body filler and sand smooth.

E. Touch-up joints, welds with specified primer.

F. Touch-up damaged hot dipped galvanizing with Galvanizing Repair Compound per manufacturer’s requirements.

3.04 FIELD QUALITY CONTROL

A. **Structural Testing and Special Inspection**

   1. Comply with the requirements of Section 05 10 00 – Structural Steel Framing

   2. The Owner will employ a Special Inspector for the following:

      a. Visual inspect 100% of all fillet welds, for size, length, and quality, per AWS D1.1. Qualifications: Technical II.

END OF SECTION 05 50 00