HARFORD
COMMUNITY COLLEGE
DEPARTMENT FOR PROCUREMENT

SOLICITATION NUMBER AND TITLE:	**IFB 24B-002 Amoss Theater Renovations/Repairs**
SOLICITATION DUE DATE AND TIME:	**DECEMBER 5, 2023 2:00 PM LOCAL TIME**
BID OPENING:	**DECEMBER 5, 2023 2:30 PM LOCAL TIME**
SOLICITATION DOCUMENTS:	**https://hccweb1.harford.edu/Procurement/solicitationDocuments.asp**
DELIVERY LOCATION OF SUBMITTAL:	**HARFORD COMMUNITY COLLEGE, PROCUREMENT OFFICE 401 THOMAS RUN ROAD, BEL AIR, MD 21015 CONOWINGO BUILDING STE 105**
SITE VISIT DATE AND TIME:	**NOVEMBER 15, 2023 10:00 AM LOCAL TIME**
SITE VISIT LOCATION:	**Harford Technical High School - Amoss Theater 200 Thomas Run Road, Bel Air, MD 21015**
QUESTIONS DUE DATE AND TIME:	**NOVEMBER 20, 2023 12:00 Noon, LOCAL TIME**
PROCUREMENT AGENT:	**Questions must be received by the date and time noted above via email to: Dave Pyle at dpyle@harford.edu**
BID DEPOSIT:	**BID DEPOSIT REQUIRED: 5% of BID PRICE**
BONDING REQUIREMENTS:	**PAYMENT AND PERFORMANCE BONDS REQUIRED: 100% of BID PRICE**
INSURANCE REQUIREMENTS:	**Include Installation Floater and Professional E&O**

Harford Community College encourages small and minority businesses to respond to and participate in solicitation opportunities.

GENERAL TERMS AND CONDITIONS
For ALL Harford Community College purchases

G1) COMPLETE AGREEMENT
These terms and conditions, together with any other documents incorporated herein by reference, constitute the sole and entire agreement between the College and Vendor with respect to the subject matter hereof, superseding completely any oral or written communications unless the terms thereof are expressly incorporated herein. Where Vendor's quotation is referred to, such quotation is incorporated in this document only to the extent of specifying the nature or description of the goods ordered and only to the extent such items are consistent with the other terms herein.

G2) TERMS OF DELIVERY
Delivery terms shall be FOB Destination unless otherwise stated. All prices shall include delivery. Delivery shall be made in accordance with the solicitation specifications. The College, in its sole discretion, may extend the time of delivery for excusable delays due to unforeseeable causes beyond the Vendor's control. The College unilaterally may order in writing the suspension, delay, or interruption of delivery hereunder. No charge will be allowed for cartage unless prior written agreement. All deliveries must be prepaid and delivered to Harford Community College, Conowingo Building, 401 Thomas Run Road, Bel Air, MD 21015-1627. NO COLLEGE SHIPMENTS OR SIDEWALK DELIVERIES WILL BE ACCEPTED.

G3) PACKAGING
All goods delivered under this agreement shall be packed in accordance with acceptable trade practices. Cartons containing packing list must be so marked. Uncrated or bundled goods must be tagged with waterproof tags. The purchase order number shall be shown on all packing slips, bills of lading and invoices affixed or included with each shipment. No charges may be made over and above an offered price for packaging or for deposits on containers unless specified prior to offer acceptance.

G4) TIME IS OF THE ESSENCE
Time is of the essence in the performance of this agreement. If goods are not delivered or service performed within the time specified herein, or if no time is specified then within a reasonable time, or if any goods or services fail to comply with specifications, the College shall have the right to purchase the goods and services on the open market, and Vendor shall be liable to the College for any excess cost of replacement goods or services over the price shown on this purchase order.

G5) QUANTITIES
The College assumes no obligation for articles or materials shipped in excess of the quantity ordered. Any over shipments will be subjected to rejection and may be returned at Vendor's expense.

G6) ERRORS IN EXTENSION
Where the unit price and the extension price are at variance, the unit price will prevail. The College may reject a submittal as non-responsive if the unit prices are mathematically or materially unbalanced.

G7) TERMS OF PAYMENT
Unless a payment is unauthorized, deferred, or delayed, payments to the Vendor pursuant to this Contract shall be made no later than 30 days after the College's receipt of a true and correct invoice from the Vendor.

G8) ELECTRONIC TRANSMISSION
Any purchase order, contract, contract amendment or official documents is transmitted by electronic means, such transmission shall have the legal significance of a duly executed original,

G9) INVOICES
Invoices must include the Purchase Order number. Failure to include the Purchase Order number on the invoice may result in delayed payments. Invoices may be emailed to accountspayable@harford.edu. Invoices may be mailed to Harford Community College, Accounts Payable Department, 401 Thomas Run Road, Bel Air, MD 21015. Invoices mailed via USPS may result in delayed payments.

G10) TAX EXEMPTION
The College is exempt from Federal Excise and Maryland Sales and Use Tax. Exemption certificates are available upon request. Where a Vendor is required to furnish and install material in the construction or improvement of real property in performance of a contract, the Vendor shall pay the Maryland Sales Tax as the exemption does not apply.

G11) INSPECTION AND NON-CONFORMING GOODS
All goods received shall be subject to inspection by the College. The College shall have a reasonable time within which to inspect the goods and shall not be obligated to inspect goods purchased as spare parts, inventory or for future use until the same are to be used by the College. Excess or defective goods or goods not in accordance with the College's specifications will be held for a reasonable period of time for disposition in accordance with the Vendor's instructions at Vendor's risk and expenses and, if Vendor directs, will be returned at Vendor's expense. If the Vendor fails to cure any defects within ten (10) business days, the College reserves the right to repurchase the items elsewhere and the Vendor shall be liable for any excess price paid for the replacement item, plus applicable expenses. Payment for goods or services furnished or performed by Vendor shall not constitute acceptance by

the College, and such payments shall be deemed to have been made without prejudice to any and all claims the College may have against Vendor. The College reserves the right to test any materials, equipment, supplies, or services delivered to determine if the specifications have been met. Any material that is defective or fails to meet the terms of the solicitation specifications shall be rejected. Rejected materials shall be promptly replaced. All goods are fit for the purpose for which they were sold. U.C.C. as adopted by state law, concerning warranties applies to this purchase order.

G12) WARRANTY

The Vendor expressly warrants that all articles, material and work offered shall conform to each and every specification, drawing, sample or other description which is furnished to or adopted by the College and that they will be fit and sufficient for the purpose intended, merchantable, of good material and workmanship, and free from defect. Such warranty shall survive a contract and shall not be deemed waived either by the College's acceptance of said materials or goods, in whole or in part, or by payment for them, in whole or in part. The Vendor further warrants all articles, material and work performed for a period of one (1) year, unless otherwise stated, from date of acceptance of the items delivered and installed. All repairs, replacements or adjustments during the warranty period shall be at Vendor's expense.

G13) INTELLECTUAL PROPERTY

Vendor guarantees that the sale and/or use of the goods and services offered will not infringe upon any U.S. or foreign patent, trademark or copyright. Vendor will, at their own expense, indemnify, protect and save harmless the College, its Trustees, employees, agents and students with respect to any claim, action, cost or judgment for intellectual property infringement, arising out of the purchase or use of these materials, supplies, equipment or services covered by this contract.

G14) HAZARDOUS AND TOXIC SUBSTANCES

Vendor must comply with all applicable Federal, State, County and local laws, ordinances and regulations relating to hazardous and toxic substances including such laws, ordinances, and regulations pertaining to access to information about hazardous and toxic substances. Pursuant to Occupational Safety and Health Act (OSHA) 29 CFR 1910, where applicable, SDS for the products supplied or used as a result of this contract must be sent to the attention of Coordinator for Campus Operations, Harford Community College, 401 Thomas Run Rd., Bel Air, MD 21015-1627. SDS must identify the contract number under which the products were supplied or used. The successful contractor shall submit Safety Data Sheets on any item requested by the procurement manager or other College official.

G15) MINIMUM SAFETY REQUIREMENTS

The Vendor shall be responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the work. The Vendor shall comply, and shall secure compliance by its employees, agents, and lower tier subcontractors, with all applicable health and safety laws and regulations, including without limitation, Federal OSHA and equivalent OSHA state regulations, city and county ordinances and codes, uniform fire codes, DOT regulations, and owners' facility rules and regulations. The Vendor shall submit to owner, a copy of its Safety and Health Program for review and shall agree to make necessary changes in order to comply with specific facility rules and regulations if needed. The Vendor shall effectively execute the program elements and maintain the job site in a safe and healthful matter. The Vendor shall provide a safe and healthful environment for its employees and agents as well as the owners' representatives and agents. The Vendor shall report to the owners any governmental inspections or inquiries at the job site. The reasons for the inspection and results of the inspection shall be shared with the owners as soon as possible and no later than the next business day. Oral notification is expected as well as a written report detailing the inspection. All injuries, illnesses, and work-related incidents should be reported to the College immediately but, in no event, later than the next business day after the incident. The Vendor shall fill out an Incident Report and submit to the College no later than 48 hours after the initial incident. The College reserves the right to audit the Vendor safety and health related records and statistical information at any time.

G16) INSURANCE

The Vendor shall maintain such insurance as will indemnify and hold harmless the College for property damage and personal injury, including death, which may arise from the Vendor's or subcontractor's operations under this agreement, or by anyone directly or indirectly employed by the Vendor or subcontractor. The Vendor shall maintain, at a minimum, general liability, worker's compensation, and automobile liability insurance in amounts acceptable to the College. A waiver of Subrogation in favor of Harford Community College is required for Worker's Compensation and General Liability. Coverages and coverage amounts are dependent on solicitation requirements. Insurance coverages and required amounts will be specified in the solicitation documents. Prior to beginning work, the Vendor shall send a certificate of insurance to the College's Procurement Department, and the College shall be named as additional insured on the insurance certificate and all applicable policies.

G17) INDEMNIFICATION

The Vendor shall indemnify, defend, and hold harmless Harford County, Maryland, Harford Community College, the Harford Community College Foundation and their respective trustees, officials, officers, directors, employees, agents, contractors, volunteers, successors and assigns from all claims, demands, causes of action, suits, liabilities, judgments, damages, losses, fines, penalties, costs, and expenses that may arise by virtue of any acts or omissions by the indemnifying party, its agents, contractors, or employees. The College is subject to the protections of Maryland law, including without limitation, the State Government Tort Claims Act and/or the Local Government Tort Claims Act, and agree that nothing herein shall interfere with the tort immunities or other protections available under Maryland law; and further, the College is free to assert all defenses that are or may become available to them as a governmental or State agency or otherwise by operation of law. This section shall survive the termination of any Agreement.

The College shall not assume any obligation to indemnify, hold harmless, or pay attorneys' fees that may arise from or in any way be associated with the performance or operation of this agreement. The Vendor shall protect, hold free and harmless, defend and indemnify the College including its officers, agents and employees) from all liability, penalties, costs, losses, damages, expenses, causes of action, claims or judgments (including attorney's fees) resulting from injury to or death of any person or damage to property of any kind, which injury, death of any person or damage arises out of, or is in any way connected with the performance of the work under this agreement. This agreement shall apply to any acts or omissions, willful misconduct or negligent conduct, whether active or passive, including acts or omissions of the Vendor's agents or employees, except that this agreement shall not be applicable to injury, death or damage to property arising from the sole negligence or sole willful misconduct of the College, its officers, agents and employees. Accordingly, the College shall notify the Contractor promptly, in writing, of any claim or action brought against the College in connection with the work under this Contract. Upon such notification, the Vendor shall promptly take over and defend any such claim or action. The College shall have the right and option to be represented in any such claim or action at its own expense. Vendor shall, at all times, keep the College free and clear from all liens asserted by any person, firm or corporation for any reason whatsoever, arising from furnishing of services (whether services, work or labor performed, or materials or equipment furnished) by the vendor.

G18) DELAYS; FORCE MAJEURE

In no event shall the College be responsible or liable for any failure or delay in the performance of its obligations hereunder arising out of or caused by, directly or indirectly, forces beyond its reasonable control, including, without limitation, strikes; work stoppages; accidents; acts of war or terrorism; civil or military disturbances; riots; hostile foreign action; government action; nuclear incidents or explosions; acts of God; natural disasters, such as hurricanes, tornados, earthquakes, typhoons, floods, fires or other catastrophic natural event; epidemics or pandemics; interruptions, loss or malfunctions of utilities, communications, transportation or computer (software and hardware) services; or any other act or failure to act by the other party or such other party's employees, agents, or contractors. The Vendor shall be liable for delays due to its fault or negligence. In the event of any excusable delay, the date of performance may be extended for a period equal to the time lost by reason of such delay, on written approval of the Director of Procurement. An equitable financial adjustment may be negotiated between parties for any period of nonperformance.

G19) CHANGES

The College retains the unilateral right to order in writing, changes in the work within the scope of the contract. No change which increases rates or affects levels of service shall be made unless a signed change order is issued to the Vendor by the College's Procurement Department, incorporating such change and agreeing to the rate increment or revised service. If any changes cause an increase or decrease to the Vendor's cost of, or change in the time required for performance, an equitable adjustment shall be made, and the contract shall be modified in writing accordingly. No claim by the Vendor for an equitable adjustment hereunder shall be allowed if asserted after final payment under this contract.

G20) DISPUTES

Any disputes arising under this contract which is not disposed of by agreement shall be decided by the President of Harford Community College or designee. Pending final decision of the dispute, the Vendor shall proceed diligently with the contract performance. Nothing hereunder shall be interpreted to preclude the parties from seeking, after completion of the contract, any and all remedies provided by law.

G21) ARBITRATION

Any controversy or claim arising out of or relating to this contract, or the breach thereof, shall be settled by arbitration administered by the American Arbitration Association in accordance with its Arbitration Rules including the Optional Rules for Emergency Measures of

Protection, and judgment on the award rendered by the arbitrator(s) may be entered in any court having jurisdiction thereof. If a dispute arises out of or relates to this contract, or the breach thereof, and if the dispute cannot be settled through negotiation, the parties agree first to try in good faith to settle the dispute by mediation administered by the American Arbitration Association under its Commercial Mediation Procedures before resorting to arbitration, litigation, or some other dispute resolution procedure. If they do not reach such solution within 60 days, then, upon notice by either party to the other, all disputes, claims, questions, or differences shall be finally settled by arbitration administered by the American Arbitration Association in accordance with the provisions of its Commercial Arbitration Rules

G22) SUSPENSION OF WORK

The College, unilaterally, may order the Vendor, in writing, to suspend, delay, or interrupt all or any part of the contract for such period of time as he may determine to be appropriate for the convenience of the College.

G23) TERMINATION FOR CONVENIENCE

The College may terminate all or any part of the purchase order, contract, or these terms and conditions for any reason at the College's convenience upon thirty (30) calendar day's written notice to the Vendor. The College will pay all reasonable costs associated with this contract for satisfactory work completed prior to termination and any reasonable costs associated with termination. Upon such termination Vendor agrees to waive all claims for damages, including those for loss of anticipated profits and to accept as its sole remedy for termination the value of all work performed prior to the termination and reasonable costs occasioned by termination. The College shall have no liability whatsoever for goods which are Vendor's standard stock.

G24) TERMINATION FOR DEFAULT

If the Vendor has not performed, or has performed unsatisfactorily, or failed to provide acceptable form of current Certificate of Insurance, or acceptable form of bond (if required), the College may terminate the contract by written notice to the vendor. Written notice shall specify the act(s) or omission(s) of vendor to cause termination. The College shall pay for satisfactory performance for work completed prior to notice of termination, minus cost of any damage caused by Vendor's breach. If the cost of Vendor's damages exceeds any final compensation due, the Vendor will remain liable and the College may collect costs owed to it. Failure on the part of the Vendor to fulfill contractual obligations shall be considered just cause for termination of the agreement and the Vendor is not entitled to recover any costs incurred by the Vendor up to the date of termination.

G25) TERMINATION FOR NON-APPROPRIATION

Harford Community College is a public institution of higher education and its budget is subject to funding by governmental entities. If funds are not appropriated or otherwise made available to support continuation in any fiscal year succeeding the first fiscal year, this Contract shall be terminated automatically as of the beginning of the fiscal year for which funds are not available. The Vendor may not recover anticipatory profits or costs incurred after termination. The effect of termination of the Contract hereunder will be to discharge both the Vendor and the College from future performance of the Contract, but not from their rights and obligations existing at the time of termination. The Vendor may not recover anticipatory profits or costs incurred after termination

G26) TERMINATION FOR INSOLVENCY

If the College has reasonable cause to believe the Vendor is insolvent, or if any petition in bankruptcy or under any law for the relief of debtors is filed by or in respect of Vendor, then, at the option of the College, the agreement shall immediately terminate. In no event shall the agreement become an asset in any such proceeding nor shall the College be bound hereby after any act of bankruptcy by Vendor. Any delay by the College to exercise the right to terminate under this section shall not diminish or waiver that right.

G27) NON-COLLUSION

Vendor certifies that is has neither agreed, conspired, connived or colluded to produce a deceptive show of competition in the compilation of bid or offer being submitted herewith. Vendor also certifies that it has not in any manner, directly or indirectly, entered into any agreement, participated in any collusion to fix the bid price or price proposal of the Vendor or offeror herein or any competitor, or otherwise taken any action in restraint of free competitive bidding in connection with the contract for which the bid or offer is submitted.

G28) VENDOR SUSPENSION OR DEBARMENT

The Vendor certifies that is not suspended or debarred from participating in any State of Maryland or Federal contract awards.

G29) INDEPENDENT CONTRACTOR

The Vendor agrees and understands that the services performed are done so as an Independent Contractor and not as an employee of the College and that the Vendor acquires none of the rights, privileges, powers or advantages of College employees. The Vendor is required to pay Federal and State taxes. The College shall not be responsible for withholding taxes with respect to the Vendor's compensation. The Vendor shall have no claim against the College for vacation pay, sick leave, retirement

benefits, social security, worker's compensation, health or disability benefits, unemployment insurance benefits, or employee benefits of any kind.

G30) NON-HIRING OF EMPLOYEES

No employees of the College, or any Department, Commission, Agency or branch thereof whose duties as such include matters relating to or attending the subject matter of this agreement shall, while being employed, become or be an employee of the Vendor or subcontractor on this contract.

G31) BACKGROUND INVESTIGATIONS FOR VENDORS

As a condition of award of this contract, all Vendors and subcontractors who will be working (this includes attending meetings) on the College campus or any other site leased, owned or used by the College, may be required to provide proof of a successful background check upon award of the Contract. This includes, but is not limited to, verification of credentials, criminal history, and driving records (as appropriate). The College reserves the right to request documentation from the successful Vendor and subcontractor for proof of their ability to work in the United States.

G32) NON-DISCRIMINATION

The Vendor agrees:

a) not to discriminate in any manner against an employee or applicant for employment due to age, race, color, religion, sex, creed, national origin, marital status, ancestry, gender, genetic information, physical or mental handicap unrelated in nature and extent so as reasonably preclude the performance of such employment, status as an individual with a disability, veteran, sexual orientation, or any other status as protected by law; and

b) to inform and instruct its employees that all forms of sex discrimination, sexual harassment and sexual misconduct are expressly prohibited, that employees who have been or are being subjected to sex discrimination, sexual harassment or sexual misconduct or who are aware of another who has been or is being subjected to such actions shall immediately notify Vendor's management, that retaliation for reporting any such conduct is expressly prohibited and that the Vendor will take timely and appropriate action against any of its employees who commit such prohibited acts; and

c) above the provisions (a) and (b) above apply in any subcontract for standard commercial supplies or raw materials; and

d) to post and to cause subcontractor to post in conspicuous places to employees and applicants for employment, notices setting forth the substance of this clause.

Failure to comply with the terms of this section shall be considered just cause under Termination for Default

G33) COMPLIANCE WITH THE IMMIGRATION REFORM AND CONTROL ACT OF 1986

Vendor warrants that both the Vendor and/or any subcontractor of the Vendor do not and shall not hire, recruit or refer for a fee, for employment under this contract or any subcontract, an alien knowing the alien is an unauthorized alien and hire any individual without complying with the requirements of the Immigration Reform and Control Act of 1986, as amended from time to time (hereinafter referred to as "IRCA"), including but not limited to any verification and record keeping requirements. Vendor agrees to indemnify and save the College, its trustees, and/or employees harmless from any loss, costs, damages, or other expenses suffered or incurred by the College, its trustees and/or employees by reason of the Vendor's or any subcontractor of the Vendor's noncompliance with "IRCA." Vendor agrees to defend the College, its trustees and/or employees in any proceeding, action or suit brought against the College, including but not limited to administrative and judicial proceedings, arising out of or alleging noncompliance of the Vendor with "IRCA". Vendor recognizes that it is the Vendor's responsibility to ensure that all certifications and verifications as required by law are obtained and maintained for the applicable time period.

G34) AFFIRMATIVE ACTION NOTICE

Vendor is notified that they may be subject to the provisions of 41 CFR Section 60-300.5(a); 41 CFR Section 60-741.5(a); 41 CFR Section 60-1.4(a) and (c); 41 CFR Section 60-1.7(a); 48 CFR Section 52.222- 54(e); and 29 CFR Part 471, Appendix A to Subpart A with respect to affirmative action program and posting requirements. All vendors and subcontractors shall abide by the requirements of 41 CFR 60-741.5(a). This regulation prohibits discrimination against qualified individuals on the basis of disability, and requires affirmative action by covered prime contractors and subcontractors to employ and advance in employment qualified individuals with disabilities, and 41 CFR 60-300.5(a). This regulation prohibits discrimination against qualified protected veterans and requires affirmative action by covered prime contractors and subcontractors to employ and advance in employment qualified protected veterans.

G35) POLITICAL CONTRIBUTION DISCLOSURE

Vendor shall comply with §§14-101-14-109, of the Election Law Article of the Annotated Code of Maryland, which requires that every person that enters into contracts, leases, or other agreements with the State, a county, or an incorporated municipality, or their agencies, during a calendar year in which the person or business receives in the aggregate $200,000 or more, shall file with the State Board of Elections a statement disclosing contributions in excess of $500 made during the reporting

period to a candidate for elective office in any primary or general election.

G36) FINANCIAL DISCLOSURE
The Contractor shall comply with State Finance and Procurement Article, §13-221, Annotated Code of Maryland, which requires that every business that enters into contracts, leases or other agreements with the State or a state unit and receives in the aggregate $200,000 or more during a calendar year shall, within 30 days of the time when the $200,000 is reached, file with the Secretary of State certain specified information to include disclosure of beneficial ownership of the business.

G37) REGISTRATION
Per the Annotated Code of Maryland, Corporations and Associations Article, all businesses formed in Maryland must be registered with the State Department of Assessments and Taxation.

G38) FOREIGN BUSINESS REGISTRATION
Pursuant to §7-202 et seq. of the Corporations and Associations Article of the Annotated Code of Maryland, corporations not incorporated in the State shall be registered with the State Department of Assessments and Taxation, before doing any interstate or foreign business in this State.

G39) ASSURANCE OF NON-CONVICTION OF BRIBERY
The Vendor hereby declares and affirms that, to its best knowledge, none of its officers, directors or partners and none of its employees directly involved in obtaining contracts has been convicted of bribery, attempted bribery or conspiracy to bribe under the laws of any college, any state, or the Federal Government.

G40) MARYLAND PUBLIC INFORMATION ACT
The Vendor recognizes that the College is subject to the Maryland Public Information Act of Title 4 of the General Provisions Article of the Annotated Code of Maryland. Vendor agrees that it will provide any justification as to why any material, whole or in part, is deemed to confidential, proprietary information or trade secrets and provide any justification of why such materials should not be disclosed.

G41) AUDIT
The Vendor shall permit audit and fiscal and programmatic monitoring of the work performed under any contract issued. The College shall have access to and the right to examine and/or audit any records, books, documents and papers of Vendor and any subcontractor involving transactions related to this agreement during the term of this agreement and for a period of three (3) years after final payment under this agreement.

G42) RECORD RETENTION
The Vendor shall retain and maintain all records and documents relating to this Contract for three (3) years after final payment by the College hereunder or any applicable statute of limitations, whichever is longer, and shall make them available for inspection and audit by authorized representatives of the College at all reasonable times.

G43) COMPLIANCE WITH LAWS
The Vendor agrees to comply, at no additional expense, with all applicable executive orders, Federal, State, County, regional and local laws, ordinances, rules and regulations in effect as of the date of this agreement and as they may be amended from time to time. The Vendor shall obtain, at its expense, all licenses, permits, insurance, and governmental approvals, if any, necessary to the performance of its obligations.

G44) MARYLAND LAW
This agreement shall be construed, interpreted, and enforced according to the laws of the State of Maryland.

G45) VENDOR'S PRESENCE ON CAMPUS
The Vendor or Vendor's subcontractor will be required to have proper identification showing Vendor's or subcontractor's name and technician name at all times while on campus. The Vendor agrees that all employees whose duties bring them upon the College's premises shall abide by its rules, regulations and the reasonable directions of its officers in enforcing rules, regulations and in internal security and theft control. The College shall have no responsibility for loss, theft, mysterious disappearance of, or damage to, equipment, tools, materials, supplies and other personal property of vendor or its employees, subcontractors, or materialmen. Vendor's employees shall have the right to use only those College facilities necessary to the performance of the contract. Such employees shall comply with the College's policy of: **No Tobacco Use of Any Kind on Campus including private vehicles.**

G46) NDAA COMPLIANCE
If this contract involves the purchase of telecommunication equipment or services, the Vendor represents and warrants that it is compliant with the John S. McCain National Defense Authorization Act ("NDAA") for Fiscal Year (FY) 2019 (Pub. L. 115-232) and the interim rule amending the Federal Acquisition Regulation to implement Section 889 of NDAA. The Vendor represents and warrants that it will not provide covered telecommunications equipment or services, as defined by NDAA, to the College in the performance of any contract, subcontract or other contractual instrument resulting from this agreement. After conducting a reasonable inquiry, the Vendor represents and warrants that it does not use covered telecommunications equipment or

services, as defined by NDAA, or use any equipment, system, or service that uses covered telecommunications equipment or services.

G47) CONFIDENTIAL AND SENSITIVE INFORMATION

All Vendors that work in the proximity of Confidential and Sensitive Information (CSI) must agree to abide by the College's identity theft prevention policies and procedures. In the event that the service provider becomes aware of a red flag or data incident, the service provider is required to report the incident to their point of contact at the College. All Vendors that process, store or transport CSI provided by the college are required to give the College sufficient documentation to assess the provider's data security risk.

G48) ASSIGNMENT

The Vendor shall not assign or subcontract, in whole or in part, its rights or obligations under any contract without prior written consent of the College. Any attempted assignment without said consent shall be void and of no effect. Assignment of Accounts Receivables may be made only upon written notice furnished to the College

G49) SUBCONTRACTORS

Vendors are solely responsible for the performance of their subcontractors. Subcontractors, if any, shall be identified and a complete description of their role relative to the Vendor and their performance shall be stated. The College reserves the right to reject any subcontractor. Nothing contained in these documents shall create any contractual relationship between any subcontractor and the College. Prior to receiving the final payment of a project, the Vendor shall certify in writing that payments to subcontractors have been made from the proceeds of prior payments, and that from the Vendor shall make final payment to its subcontractor(s) and suppliers in a timely manner in accordance with its contractual relationship with them.

G50) PUBLICITY

The Vendor shall not in any way or in any form publicize or advertise in any manner the fact that it is providing services to the College without the express written approval of the College, obtained in advance.

G51) RESERVATIONS

The College reserves the right to accept or reject any and all submittals in whole or in part, received as a result of any solicitation; to waive minor technicalities, or to negotiate with any or all responsible Vendors, in any manner necessary, to serve the best interest of the College. Further, the College reserves the right to make an award in whole, in part, or no award at all.

The College reserves the right to reject the submittal of a Vendor who, investigation shows, is not currently in a position to perform the contract, or who has previously failed to perform contracts of similar nature in a proper and timely manner.

The College reserves the right to make such investigation as it deems necessary to determine the ability of the Vendor to provide the required services, and the Vendor shall furnish to the College all such information for this purpose as they may request. Should such investigation or evidence fail to satisfy the College that the Vendor is fully qualified to execute and complete the contract, the submittal may be rejected.

The College reserves the right to increase or decrease the quantities for which it is soliciting offers hereunder.

G52) SEVERABILITY

If any term or condition of this contract is held invalid by any court, such invalidity shall not affect the validity of other terms and conditions of this contract.

HARFORD COMMUNITY COLLEGE
FORMAL SOLICITATION (RFP/IFB/RFQ)
TERMS AND CONDITIONS
Formal Solicitation Terms and Conditions are in addition to the General Terms and Conditions

FS1) SOLICITATION ADVERTISEMENT AND SOLICITATION DOCUMENTS

Harford Community College solicitations are posted on the eMaryland Marketplace Advantage website, www.procurement.maryland.gov, for public notification only.

The Harford Community College's Procurement Bid Board is the only official repository of solicitation documents and any addenda, if posted. It is incumbent on Vendors to monitor Harford Community College's Procurement Bid Board to ensure that they have received the correct information, complete documents and any addenda. The College assumes no responsibility for verbal communications. Failure to monitor Harford Community College's Procurement Bid Board may result in a non-receipt of important information prior to the due date which may result in the rejection of a submittal.

Harford Community College's Procurement Bid Board may be accessed here or via the following link: https://hccweb1.harford.edu/Procurement/solicitationDocuments.asp.

FS2) ADDENDA

Should any vendor find discrepancy in the solicitation documents, or should the vendor be in doubt as to their meaning or intent of any part thereof, the vendor must, prior to questions due date and time, request clarification from the Director of Procurement in writing, who will clarify via a posted addendum on the Harford Community College Procurement Bid Board. All posted addenda shall form a part of the contract. The College will assume no responsibility for oral communications. Posted addenda must be acknowledged in the appropriate area of the solicitation submittal. Failure to acknowledge posted addenda may render the submittal as non-responsive.

FS3) FORM OF SUBMITTAL

Each submittal must be tendered in a securely sealed envelope, prominently marked with the solicitation number and title, the due date and time, and the name of the vendor. Required submittal documents must be completed in ink and signed by a person authorized to bind the vendor to a contract, if offered. Only original wet signatures or digitally certified electronic signatures will be accepted. Solicitation responses via email or facsimile shall not be accepted. When pricing is requested in both words and figures, the sum written in words shall govern in the case of any discrepancy. The College shall not pay any expenses incurred in the preparation or submission of any solicitation response. The College reserves the right to consider informal any bid not prepared in accordance with instructions. Conditional or qualified submittals may be rejected.

FS4) CANCELLATION

The College may cancel or withdraw any solicitation, in whole or in part, at any time.

FS5) LATE SUBMITTALS

Submittals are due according to solicitation requirements. Submittals received after the specified due date and time will not be accepted.

FS6) SPECIFICATIONS / ALTERNATES COMPLIANCE

The Vendor shall comply with the true intent of the specifications and not take advantage of any unintentional error or omission, but shall fully complete every part as hereinafter described. Failure to request clarification(s) by the questions due date and time is a waiver to any claim by the Vendor for expense made necessary by reason of later interpretation of the contract documents. Alternate(s) may be offered by the Vendor in their submittal, however, the College reserves the right to reject any alternate(s) and require the specifications to be adhered to as indicated in the specifications.

FS7) VALIDITY

Submittals must be valid for a period of ninety (90) calendar days following the due date. Should there be reasons why the Contract cannot be awarded within the specified period, the time may be extended by mutual agreement between the College and the vendor.

FS8) WITHDRAWAL

Submittals may be withdrawn by the vendor at any time prior to the due date and time for the solicitation. Request for withdrawal must be made in writing to the College's Procurement Department.

FS9) ERRORS IN SUBMITTAL

Vendors are expected to fully acquaint themselves with all governing laws and ordinances, and inform themselves as to the instructions, terms and conditions, specifications, and other requirements before responding to a solicitation. Failure to do so will be at the Vendor's own risk; relief cannot be secured on plea of error.

FS10) SOLICITATION DUE DATE

a) For Invitation for Bids (IFB): Each bid shall be submitted to the Procurement Department at the place specified herein, on or before the day and hour fixed for its receipt or opening. Bids received prior to that time will be securely kept unopened. No responsibility will attach to the College or its representative(s) for premature opening of any bid not secured and addressed as specified above. The Director for Procurement will determine when

the hour fixed for opening has arrived. At the time specified in the IFB document, Bids will be publicly opened and read aloud. No bid received thereafter will be considered. At the public bid opening, no determination of responsiveness or responsibility will be made.

b) For Request for Proposals: Each Proposal submitted shall be securely held until the date and time for the RFP closing. The Director for Procurement shall determine when the time for closing has arrived. No proposals shall be accepted after that time. There will be no public viewing of submitted proposals until after a contract is awarded, subject to Maryland Public Information Act requirements.

FS11) PRESENTATIONS

Vendors who respond to College solicitations may be required to make presentations to College representatives, at no expense to the College.

FS12) BASIS FOR AWARD

Award may be made to the lowest responsive and responsible vendor(s). In addition to price, consideration will be given to the following when determining the lowest responsive and responsible vendor(s): what is in the best interest of the College; the quality and performance of the goods and services to be supplied; conformity to specifications; delivery time; previous performance; vendor location; references; and other unique requirements outlined in the request.

FS13) MULTIPLE AWARD

The College reserves the right to offer contracts to one or multiple vendors. Selected vendor(s) shall be responsible for all products and services required by the solicitation.

F14) CHANGES

Contract(s) arising from this solicitation shall not be modified, altered, or changed except by mutual agreement confirmed in writing by an authorized representative of each party to the Contract. No change which increases rates or affects levels of service shall be made unless a signed change order is issued to the vendor by the College's Procurement Office, incorporating such change and agreeing to the rate increment or revised service.

FS15) RECIPROCITY

The College is committed to support local businesses when practicable. If a vendor's jurisdiction applies a preference that favors a resident business over a non-resident business, the College may apply a reciprocal preference against the non-resident bidder or offeror in the evaluation of that procurement.

FS16) COOPERATIVE PURCHASING

The College reserves the right to extend the terms and conditions of this solicitation to any federal, state, municipal, county, or local governmental agency under the jurisdiction of the United States and its territories. This shall include but not be limited to parochial institutions, special districts, intermediate units, non- profit agencies providing services on behalf of the government, and/or state, community and/or private colleges/universities, and other schools that require these goods, commodities and/or services. This is conditioned upon mutual agreement of all parties pursuant to requirements which may be appended thereto. The vendor agrees to notify the issuing body of those entities that wish to use any contract resulting from this solicitation and will also provide usage information, if requested. A copy of the contract pricing and bid requirements incorporated in the resulting contract will be supplied to the requesting agencies. Each participating jurisdiction or agency shall enter into its own contract with the vendor and this contract shall be binding only upon the principals signing such an agreement. Invoices shall be submitted directly to the ordering jurisdiction for each unit purchased. Disputes over the execution of any contract shall be the responsibility of the participating jurisdiction or agency that entered into that contract. Disputes must be resolved solely between the participating agency and the vendor. Harford Community College does not assume any responsibility other than to obtain pricing for the specifications provided in the solicitation document.

HARFORD COMMUNITY COLLEGE
CONSTRUCTION TERMS AND CONDITIONS
Construction Terms and Conditions are in addition to
The General Terms and Conditions and
Formal Solicitation Terms and Conditions

C1) BONDING REQUIREMENTS

BID/PROPOSAL SECURITY:

For construction solicitations estimated to exceed $100,000.00, Contractor's submittal must be accompanied by a bid/proposal security. Security may be a bond issued by a Surety licensed in the State of Maryland, properly executed in favor of the Board of Trustees of Harford Community College in an amount not less than five percent (5%) of the Contractor's submitted price or may be a Cashier's check, in an amount of not less than five percent (5%) of the submittal price. Submittals received without security will be rejected. Contractors who submit a cashier's checks as security for projects requiring performance and payment bonds must state on their submittal the name and address of the Surety that will furnish such bonds. Attorney-in-fact that executes the required bonds on behalf of the Surety shall affix thereto a certified and current copy of his power of attorney. Bid/proposal security will be returned to unsuccessful Contractors within 48 hours after the College and the awarded Contractor have executed the contract. If no contract is executed within ninety (90) days after the solicitation due date, bid/proposal security will be returned upon demand, provided that the Contractor has not received notice of intent to award.

PAYMENT AND PERFORMANCE BOND:

For construction contracts exceeding $100,000.00, prior to contract execution, the successful Contractor shall deliver to the College a Performance Bond and a Payment Bond in the amount of 100% of the contract amount covering faithful performance of the contract. Should additional work be added to the Contract arising from this bid, the College may, at its discretion, ask for and the Contractor shall provide, additional bonding covering both the additional work and guarantee thereon. In the event of contract termination for cause as provided for in the **General Terms and Conditions,** the College shall immediately serve notice upon the Contractor and the Surety, and the Surety shall have the right to assume and perform the contract. Should the Surety fail to commence performance thereof within ten (10) calendar days of such notice, the College shall have the right to take over and complete the contract, and the Contractor and the Surety shall be liable for any excess costs incurred thereby.

C2) RETAINAGE

The College shall make progress payments on account of the Contract Price on the basis of the approved Contractor's Applications for Payment. If specified in the solicitation document, the College shall retain a portion of the amount due the Contractor in accordance with the following:

a) Withholding may be five percent (5%) of the payment claimed.

b) Any reduction in the percentage shall be made at the sole discretion of the College and will be considered only if the Contractor is making satisfactory progress and there is no specific cause for greater withholding.

c) The College may retain up to ten percent (10%) withholding if the Contractor is not making satisfactory progress or if there is other specific cause for such withholding.

Prior to Substantial Completion, progress payments will be made in an amount equal to the percentage of work completed but, in each case, less than the aggregate of payments previously made and less such amounts as the College may withhold, including but not limited to, liquidated damages, in accordance with the Contract.

Upon Final Completion and acceptance of the work by the College, the College shall pay an amount sufficient to increase total payments to the Contractor to one hundred percent (100%) of the work completed, less any liquidated damages assessed

C3) LIQUIDATED DAMAGES

As specified in the solicitation document, the Contractor agrees that the work shall be prosecuted regularly, diligently, and uninterruptedly at such rate of progress as will insure full completion thereof within the time for completion. It is expressly understood and agreed, by and between the Contractor and the College, that the time for completion, takes into consideration the average climatic range and usual industrial conditions prevailing in this locality. If the Contractor shall neglect, fail or refuse to complete the work within the time herein specified, or any proper extension thereof granted by the College, then the Contractor does hereby agree, as a part of consideration for the awarding of the contract, to pay to the College the amount set forth in the specifications for each calendar day past the date of Final Completion, not as a penalty, but as liquidated damages for such breach of contract as hereinafter set forth, for each and every calendar day or as otherwise described in the specifications, that the Contractor shall be in fault after the time stipulated in the contract for completing the work. The said amount is fixed and agreed upon by and between the Contractor and the College because of the impracticability and extreme difficulty of fixing and ascertaining the actual damages the College would in such event sustain, and said amount is agreed to be the amount of damages which the College would sustain and said amount shall be retained by the College from the payments due the Contractor.

C4) PERMITS, LICENSES, CERTIFICATES

The Contractor shall obtain and pay for all necessary permits, licenses, and/or certificates, unless otherwise specified herein.

C5) STANDARD OF PERFORMANCE

The Contractor agrees to complete the work specified herein in good, workmanlike fashion, with that standard of care, skill and diligence normally provided by like professional organizations in the performance of similar services. The Contractor shall permit inspection of its operations, at any time, by the Board of Trustees of Harford Community College or its authorized representatives, to determine that standards of quality are being met.

C6) MATERIALS

Unless otherwise specified, the Contractor shall provide and pay for all materials, labor, construction equipment and machinery, tools, utilities, water, transportation and other services and facilities necessary for the completion of the work, whether temporary or permanent. The Contractor warrants that all materials and equipment shall, unless otherwise specified, be new and that all work will be of good quality, free from faults and defects and in conformance with the specifications. The use of a brand or manufacturer's name in the description of any item is meant to indicate the quality, style, type or character or the article(s) desired, and shall be the basis upon which submittals are submitted and evaluated; it is not intended in any way to restrict competition.

C7) SUBSTITUTIONS

Articles offered by the Contractor must equal to those specified by the solicitation. Requests for substitutions must be in writing, accompanied by documentary proof of equality from the manufacturer or supplier, and a statement of any credit or extra involved. Such requests shall not be considered a valid cause for delay. The decision of the College with regard to any such request shall be final in all cases, and no substitutions shall be purchased or installed without written approval.

C8) SHOP DRAWINGS

The Contractor shall review and submit for approval all shop drawings, schedules, and samples required. The College will check and approve same for conformance with the design concept and compliance with the contract documents, and all work shall be in accordance with approved submittals.

C9) LAWS AND REGULATIONS, ROYALTIES AND PATENTS

The Contractor shall give all notices and comply with all laws, ordinances, rules and regulations bearing on the conduct of the work, and promptly notify the College if the specifications or drawings are at variance therewith. Should the Contractor knowingly perform work contrary to such laws or regulations, and without such notice, he shall bear all costs arising therefrom. The Contractor shall pay all royalties and license fee and shall defend all suits or claims for infringement of patent rights, and save the College harmless from loss on account thereof.

C10) CONTRACTOR'S EMPLOYEES, SAFETY & SECURITY

The Contractor shall at all time enforce strict discipline and good order among its employees, who shall be thoroughly experienced in the particular class of work for which they are employed. The Contractor shall supervise and direct the work using the best skill and attention to detail and shall be solely responsible for the adequacy, efficiency and safety of the plant, equipment, and methods, and for coordination of all work performed under the contract. The Contractor shall be represented at all times at the site by a supervisor or foreman satisfactory to the College, who shall meet with its representative regularly to ensure coordination of schedules and enforcement of College policy.

The Contractor shall provide to the College's representative the qualifications of the site supervisor or foreman with evidence of their ability to manage the day-to-day operations of the project. The Contractor shall be responsible to the College for the acts and omissions of its employees, subcontractors and their agents or employees, and other persons performing any work under the contract. In the event of an accident or injury of any kind, the Contractor shall immediately notify the College's Public Safety officers and furnish information for a full written report of the incident.

C11) SUBCONTRACTORS

The Contractor shall submit for approval a written statement concerning proposed award to any subcontractor, furnishing such information as the College may require, and shall not award work to any subcontractor until the College's written approval is secured. The Contractor shall be as fully responsible to the College for the acts and omissions of its subcontractors, and their agents or employees, as it is for the acts of person directly employed. Contracts between the Contractor and the subcontractor(s) shall require each subcontractor to assume toward the Contractor all obligations and responsibilities which the Contractor assumes toward the College, insofar as applicable to the extent of the subcontractor's work. Nothing herein shall create any contractual relationship between any subcontractor and the College.

C12) HAZARD COMMUNICATION PROGRAM

Contractors, subcontractors and their employees are required to exchange information with the College if they will be working in an area that uses or stores

hazardous chemicals or if they will be bringing or using hazardous chemicals on the College campus. Contractors, subcontractors and their employees shall be permitted to view the Chemical Information Lists and the Safety Data Sheets (SDS) for all chemicals in the work area and shall be informed of the availability of the College's Hazard Communications Program. This information exchange shall be conducted by the College's Coordinator for Campus Operations. If applicable, the Contractors, subcontractors and their employees shall provide verification of Hazard Communication training by submitting a completed College "Verification of Contracted Employees Training" form to the College's Environmental and Occupational Health Office.

C13) ACCESS TO SITE, INSPECTIONS, CONCURRENT OPERATIONS

The College and its authorized representatives shall at all times have access to the work, to ensure that all instructions, terms and conditions and specifications are being strictly adhered to. The Contractor shall provide proper facilities for access. If the instructions, specifications, or any laws or ordinances require specific approvals or inspections, the Contractor shall give the College or other authority timely notice of its readiness of same. If any work should be covered up without such approvals or inspections, the College may require that it be uncovered at the Contractor's expense. The College reserves the right to perform work with its own forces, or to award separate contracts for work at the site under these, or similar, conditions. The Contractor shall cooperate with the College to ensure that all work progresses in a manner that does not unduly conflict with these activities or with normal operations of the College.

C14) USE OF PREMISES, RESPONSIBILITY FOR TOOLS, MATERIALS, ETC.

The Contractor shall confine its equipment, storage of materials, and operations to the limits indicated by law, ordinances and the directions of the College, and shall not unreasonably encumber the premises with these materials. The Contractor shall store equipment and materials in such orderly fashion as will not unduly interfere with the progress of the work, the work of other contractors, or the routine operations of the College. The Contractor shall dispose of refuse, scrap, and debris daily, and ensure that the worksite has an orderly and workmanlike appearance at all times. The College shall have no responsibility for the loss, theft, disappearance of or damage to, equipment, tools, materials, or personal property of the Contractor or its employees, subcontractors, or materialmen, which may be stored at the jobsite.

C15) TIME

All time limits stated herein are of the essence to the contract; thus, the Contractor shall expedite the work and achieve substantial completion within those limits.

C16) PROTECTION OF PUBLIC, WORK AND PROPERTY

The Contractor shall take all necessary precautions to ensure the safety of employees on the worksite and other persons who may be affected thereby, and comply with all applicable federal, state and municipal safety laws, ordinances, rules and regulations, and orders of public authorities. The Contractor shall be responsible for initiating and maintaining all safety programs, including erection of safeguards for the protection of workmen and the public required by the progress of the work. The Contractor shall give all notices and post all required signs warning against hazards created by such features of the work, including, but not limited to, stairways, hatchways, hoists, scaffolding, and falling materials. The Contractor shall advise the College of the name of a member of its organization on the worksite responsible for enforcement of the above requirements. The Contractor shall at all times provide reasonable protection to prevent damage or loss to the work and all equipment and materials to be incorporated therein, as well as other property at or adjacent to the worksite. The Contractor shall promptly make good any such damage or loss it caused, or by its subcontractors, or anyone directly or indirectly employed, or for whose acts any of them may be liable, except for damage or loss directly attributable to the College, or to errors in the contract documents. The Contractor shall not load or permit any part of the structure to be loaded with a weight that will endanger its safety.

C17) CHANGES IN THE WORK

The College may order additions or modifications to, or deletions from the work specified, and the contract prices and time may be adjusted accordingly by written change order. The cost or credit for changes shall be based upon one or more of the following:

1) unit prices previously approved; and/or

2) a lump sum determined by mutual agreement; and/ or

3) the actual cost of direct labor, direct materials, plus overhead and profit at a fixed fee determined by mutual agreement. No claims for extra work or costs shall be allowed except upon issuance of a written change order from the College. The Contractor shall furnish an estimate of such costs with his request, and must furnish such bills, vouchers and payrolls as the College may request to support such claim(s).

C18) CHANGE ORDER RATES AND PRICING

1) The billing rate for labor on a time and material basis shall be limited to the actual per hour cost of base wage, fringe benefits, employment taxes, workers comp.,

and insurance, plus a 10% markup on the base wage component only to cover overhead, plus a 5% mark-up on the base wage component only to cover profit, not compounded. Superintendent's time will not be allowed.

2) The price for materials or supplies on a time and material basis shall be limited to the actual purchase price, as paid by the contractor, including any discounts, for materials actually incorporated into the extra work, plus a markup of 10% on materials and supplies with a value up to $1,000.00, or a markup of 7% on materials and supplies with a value between $1,000.00 and $2,000.00, or a mark-up of 5% on materials and supplies with a value greater than $2,000.00. There shall be no markup on sales tax.

3) The price for rental of vehicles, heavy equipment, or machinery on a time and material basis shall be limited to the actual daily costs, but not to exceed 100% of the current rates recommended by the Associated Equipment Distributors® based on the following schedule: If the time of use is 3 days or less, figure hourly rates from the schedule of rates per day; if time of use is more than 3 days and less than 3 weeks, figure the hourly rate from the schedule of rates per week; if time of use is more than 3 weeks, figure the hourly rate from the schedule of rates per month; to compute hourly rate, use 8 hours per day, 40 hours per week, 176 hours per month.

4) The markup by the Contractor for work performed by a subcontractor, for any extra work, shall not exceed 5%. It is the prime contractor's responsibility to see that work performed by a subcontractor on a time and material basis shall be in accordance with items 1, 2, and 3 above.

C19) UNCOVERING AND CORRECTION OF WORK

If re-examination of questioned work is ordered by the College or its authorized representative, the Contractor must uncover that portion, and, if it is found to be defective or non-conforming, must bear all costs of uncovering and correction. Should the work be found in accordance with the specifications, or if the defects are determined attributable to another contractor, the costs of uncovering and replacement will, by written change order, be assumed by the College.

C20) WARRANTY

The Contractor shall correct, at his own expense, any work found to be defective or non-conforming within one (1) year after final acceptance, or such longer period as may be prescribed by law or any applicable special warranty. This provision is applicable to work of subcontractors, as well as direct employees of the Contractor.

INSURANCE POLICY REQUIREMENTS

A. Harford Community College, 401 Thomas Run Road, Bel Air, MD 21015, and its elected or appointed officials, and employees are to be named additional insured, designated in the Description of Operations Box, and must be listed as the Certificate Holder on the Certificate of Insurance.

B. Failure to provide, and to continue in force for the life of the contract, the required insurance shall be deemed a material breach of contract. Furnishing of the insurance required herein shall not relieve the Contractor of any responsibilities or obligations assumed under the Contract, or for which the Contractor may be liable by law or otherwise.

C. Insurance coverage will be evidenced by Certificate of Insurance issued directly to the College and provide thirty (30) days written notice of cancellation or material change in coverage.

D. It shall be permissible for required liability limits to be met by combination of one or more policies.

E. Policies for Commercial General Liability insurance must be written to protect the Contractor against claims arising from operations of Subcontractors. Coverages to be included: Broad form property damage, including products and completed operations, independent contractors, and contractual liability coverages previously purchased separately.

F. Damages not to be excluded: Such insurance shall contain no exclusions applying to operations by the Contractor or Subcontractor in the performance of the Contract pertaining to: (1) Collapse of, or structural injury to, any building or structure; (2) Damage to underground property; or (3) Damage arising out of blasting or explosion.

G. Contractor shall obtain insurance in the specified minimum coverages and for himself and his subcontractor in connection with providing goods and services under this Contract.

H. The Contractor hereby agrees to indemnify and hold harmless Harford County, Maryland, Harford Community College, the Harford Community College Foundation and their respective trustees, officials, officers, directors, employees, agents, contractors, volunteers, successors and assigns from all claims, demands, causes of action, suits, liabilities, judgments, damages, losses, fines, penalties, costs, and expenses, including courts costs and attorneys' fees, that may arise by virtue of any acts or omissions by the indemnifying party, its agents, contractors, or employees. The College is subject to the protections of Maryland law, including without limitation, the State Government Tort Claims Act and/or the Local Government Tort Claims Act, and agree that nothing herein shall interfere with the tort immunities or other protections available under Maryland law; and further, the parties are free to assert all defenses that are or may become available to them as a governmental or State agency or otherwise by operation of law. This section shall survive the termination of any Agreement.

I. In the event the Contractor enters into subcontract for the work to be performed, it shall be the obligation of Contractor to require the Subcontractor maintain all insurances specified in the Contract, in like form and amount, and to include Harford Community College and its elected or appointed officials, related entities and employees to be additional insured under Subcontractor's

liability policies. All policies of Subcontractor shall be primary and non-contributory, with the exception of Workers' Compensation, to any coverage or self-insurance program available to the

College and shall include waiver of each insurer's rights of subrogation in favor of the College.

J. It is understood that the coverages stated are minimums only. Contractors or Subcontractors may, at their own cost and expense, obtain insurance additional to that required by the College under this Contract.

K. All required insurance, with the exception of Workers' Compensation, shall be primary and non-contributory to any coverage or self-insurance program available to the College, and shall include waiver of each insurer's rights of subrogation in favor of the College.

L. The Contractor shall comply with and qualify under current Workers' Compensation laws and at all times cause every Subcontractor who shall be engaged in the work, to comply with and qualify under such laws.

M. The Contractor agrees that if, by any reason of its failure, or failure of any such Subcontractor, shall be required at any time to pay any sum because any employee of Contractor or its Subcontractor is or shall be considered as the employee of the College as provided in such Workers' Compensation laws, the Contractor shall repay to the College such sums paid by the College.

N. Evidence satisfactory to the College that the Contractor and each of its Subcontractors have qualified under the Workers' Compensation laws shall be submitted prior to the commencement of the work contemplated.

INSURANCE COVERAGE LIMITS

Prior to contract execution and during the progress of the work, the Contractor shall provide and maintain the insurance set forth below.

Type of Coverage	Limits
Workers' Compensation and Employer's Liability	Statutory Limits for Maryland $100,000 per accident $100,000 disease each employee $500,000 disease policy limit
General Liability (including bodily injury, property damage, personal and advertising injury, contractual, premises, ongoing operations, products and completed operations liability)	$1,000,000 each occurrence $1,000,000 personal injury, & advertising injury, $2,000,000 general aggregate per project $2,000,000 products & completed operations aggregate $3,000,000 general aggregate for contracts with high-risk features
Business Automobile Liability (covering owned, hired, and non-owned vehicles)	$1,000,000 combined single limit $3,000,000 per accident (if contract involves heavy equipment)
Umbrella Excess Liability (following form of Primary General, Auto, and Employers Liability)	$1,000,000 each occurrence $2,000,000 aggregate
Installation Floater	Contract Price, including materials while in transit or temporary storage
Professional/Errors & Omissions Liability (professional liability Insurance shall be kept in force until at least one (1) year after final payment)	$1,000,000 each occurrence $1,000,000 aggregate

PURPOSE AND OBJECTIVE

The purpose of this IFB is to contract with a qualified, reliable firm to provide labor, equipment, materials, insurance, bonds and supervision for Performance Rigging and Performance Technical System Repairs/Renovations in the Amoss Theater (also known as the Amoss Performing Arts Center (PAC)), located in Harford Technical High School located at 200 Thomas Run Rd, Bel Air, MD 21015.

The project includes but not limited to refurbishment and modification to existing counterweight stage rigging equipment, replacement of existing pit safety net, and repairs and modification of the performance lighting circuit systems and other items as detailed on bid drawings and specifications.

It shall be the responsibility of the successful bidder to review all field conditions and obtain all necessary field dimensions prior to fabrication and installation of materials.

All work shall be performed per applicable NEC, State, Federal and Local code.

Bid Award: In order for the College to maximize available funds, the Bid form is broken out by line item based on primary packages and add alternates. It is NOT the intent of the College to split the contract award among multiple vendors, however, the College reserves the right to award all, portions of, or none of the line items specified as is deemed in the best interest of the College.

1.0 Qualifications for Project Contractor:

a. The Contractor shall have been an authorized representative of the manufacturer of not less than one of the specified equipment systems for a minimum of five (5) years.

b. Contractor shall have been involved in this type of work for a period of ten (10) years or more and shall have successfully completed at least ten (10) installations in the country in which the work is being performed of this type and scope, which have been in service successfully for not less than two (2) years. Project scope requirements include, but are not limited to project complexity, project construction cost and equipment contractor's construction costs. The College is the final judge of the suitability of the experience.

c. Submit three (3) references on the form provided in this solicitation package and in accordance with the instructions note herein.

d. The right is reserved to inspect previous equipment or systems as furnished or installed by this Contractor. In addition, the right is reserved to reject a Contractor who has failed in any respect to comply with the provisions of previous contracts.

e. All Sub-Contractors musts be named and included as part of the bid. All terms and requirements herein apply to the Sub-Contractor. The right is reserved to reject the proposed Sub-Contractor based on the terms stated herein.

f. Regardless of whether a Sub-Contractor is accepted and used for installation, the contractor shall have a person under the Contractor's Company's direct employee, supervising the installation at all times.

g. Where overhead rigging is part of the work, it shall be supervised on-site at all times through the entirety of installation and system commissioning by an Entertainment Technician Certification Program (ETCP) Certified rigger – Theatre, or a licensee of authority having jurisdiction. A copy of the required license shall be submitted within the bid package.

h. The bidder's price shall include electrical work indicated in the bid documents. All electrical work shall be performed by an Electrical Contractor licensed to work in the location of the project. A copy of the license shall be part of the bid package.

i. Project sites shall be kept clean, neat and organized. It is the Contractor's responsibility for removal and replacement of signs to facilitate work. Restoration of any damage to the buildings/grounds will be the Contractor's responsibility.

j. Mobilization, set up of contractor equipment, parking, dumpsters etc. shall be coordinated with the College's representative at the pre-construction meeting.

k. The Contractor shall receive a Notice to Proceed once all documents are received and officially executed.

l. The Contractor shall:

1. Provide a 24-hour emergency contact phone number.
2. Provide a project schedule at the pre-construction meeting.
3. A qualified, English-language speaking superintendent on the project premises at all times. Any change in supervision shall be communicated to the College's Project Manager immediately.
4. Attend progress meetings during the course of the project.
5. Any RFI's or issues shall immediately be brought to the attention of the College's Project Manager.

1.1 Qualifications for Section 116100 – Performance Machinery General Requirements:

a. The contractor performing this part of the project must meet the qualification requirements as set in this section.

b. If the contractor performing the functions of this section is a sub-contractor, the project contractor must adhere to the requirements a stated for sub-contractors.

2.0 Pre-bid meeting will be held for this solicitation. Attendance is **STRONGLY ENCOURAGED.** An accompanied site visit will occur immediately following the pre-bid meeting. Pre-bid is scheduled for November 15, 2023 at 10:00 AM at the Amoss Theater, Harford Technical High School, 200 Thomas Run Road, Bel Air, MD 21015. Email David Pyle, Procurement Agent, at dpyle@harford.edu to confirm attendance.

3.0 All work shall be completed during regular business hours of 7AM to 4PM. Any work outside these hours shall be approved by the College prior to the workday/s. Work on this project shall commence on June 17, 2024 and must be completed no later than August 16, 2024.

4.0 Liquidated Damages of $350.00 per calendar day will be assessed per day beyond the contracted completion date**.**

5.0 Any requested equipment substitutions shall be requested for review no later than November 20, 2023, Noon, Local Time via email to Dave Pyle at DPyle@harford.edu. No questions or substitution requests shall be accepted after this date and time.

SCOPE OF WORK AND SPECIFICATION:

B. The Scope of Work and Specifications are attached as part of this solicitation.

1. Specifications:

A. Section 116100 – Performance Machinery General Requirements pages 1 – 24

B. Section 116133 – Performance Manual Rigging pages 1 – 12

C. Section 116195 – Stage Protection Nets pages 1 – 6

D. Section 260000 – Basic Electrical Requirements pages 1 – 5

E. Section 260001 – Basic Electrical Materials and Methods pages 1 – 2

F. Section 260519 – Low Voltage wires and Cables (100-600 Volts) pages 1 – 6

G. 260553 – Electrical Identification pages 1 – 3

2. Drawings:

A. William H. Amoss Moss Performing Arts Center: Performance Rigging System Upgrades: Issued 13 October 2023

- ET 0.00: Electrical Cover Sheet
- ET 1.10: Performance Rigging Electrical
- QT 0.00: Cover Sheet
- QT 0.10: Performance Rigging; Schedules and Notes
- QT 1.10: Performance Rigging; Layouts
- QT 1.11: Performance Rigging; Layouts
- QT 1.30: Performance Rigging; Elevations
- QT 2.10; Performance Rigging; Orchestra Pit Safety Net

Harford Community College
Procurement Department
401 Thomas Run Road
Bel Air, MD 21015

IFB 24B-002 Amoss Theater Renovations/Repairs
Bid Form

All bids must be fully and properly executed, securely sealed, and marked with the number and title of the bid. Envelopes shall be addressed to the Procurement Department and must be received in the Procurement Department located in the Conowingo Center building, Room 105, at Harford Community College not later than **2:00 PM, December 5, 2023.**

Late bids will not be accepted.

To be considered responsive, each bid submitted must, at a minimum, include the following documents:

1. Bid form, completed and signed;
2. Bid Bond, 5% of bid price
3. Schedule of installation (post NOA/NTP)
4. Solicitation Affidavits, completed and signed;
5. Company profile of contractor (see sections 1.0a and 1.0b)
6. References on the form provided
7. Listing of potential sub-contractor(s) (see section 1.0e)
8. Copy of Contractor's License, Contractor's/Sub-Contractor's Electrical License and copy of the required ETCP Certification or licensee of authority having jurisdiction. (see sections 1.0g and 1.0h)

BID OF: (Firm Name)
_____DATE_____
In accordance with the foregoing Instructions, General Terms and Conditions, and Specifications, including Addenda (if applicable) No.___ Through___, I/we submit the following for evaluation:

1. BID PRICE: Provide labor, supervision, materials, insurance and equipment for project completion per IFB scope, specifications and drawings**:**

Line 1:
Refurbish Single Purchase Counterweight Linesets:

_____DOLLARS $_____
(Written Words) (Figures)

Line 2:
Refurbish Performance Lighting Single Purchase Counterweight Linesets and Power Feeds:

_____DOLLARS $_____
(Written Words) (Figures)

Line 3:
Refurbish and Covert Double Purchase Line Sets with Single Purchase:

_____DOLLARS $_____
(Written Words) (Figures)

Line 4:
Replace Existing Orchestra Pit Safety Net and Hardware:

_____DOLLARS $_____
(Written Words) (Figures)

TOTAL BID PRICE
Line 1 + Line 2 + Line 3 + Line 4:

_____DOLLARS $_____
(Written Words) (Figures)

2. EXECUTION: The undersigned, duly authorized to bind the named firm, agrees, upon receipt of written notice of acceptance of this bid within ninety (90) calendar days after its opening, to execute the contract in accordance with the bid as accepted, and to render and payment and performance bonds and a certificate of insurance within ten (10) calendar days after notification of award.

_____	_____
Firm	Authorized Signature
_____	_____
Street Address	Typed/Printed Name
_____	_____
City, State, Zip	Title
_____	_____
Telephone	Email

If a corporation state:

Name of president:_____

Name of secretary:_____

Under laws of what state incorporated:_____

Minority Business Certification: (Please check one)_____MBE _____WBE _____Not applicable

Harford Community College
Procurement Department
401 Thomas Run Road, Bel Air, Maryland 21015

SOLICITATION AFFIDAVITS

FIRM NAME:_____

FIRM ADDRESS: _____

A) NON-COLLUSION:

I AFFIRM THAT: Neither I, nor, to the best of my knowledge, information and belief, the above firm nor any of its other representatives I here represent have:

(1) Agreed, conspired, connived or colluded to produce a deceptive show of competition in the compilation of the proposal being submitted herewith; and

(2) Not in any manner, directly or indirectly, entered into any agreement, participated in any agreement, participated in any collusion to fix the price proposal of the offeror herein or any competitor, or otherwise taken any action in restraint of free competition in connection with the Contract for which this proposal is submitted.

B) SUSPENSION AND DEBARMENT:

I AFFIRM THAT: Neither I, nor to the best of my knowledge, information, and belief, the above business, or any of its officers, directors, partners, or any of its employees directly involved in obtaining or performing contracts with public bodies, has ever been suspended or debarred (including being issued a limited denial of participation) by any Federal or public entity, except as follows: (List each debarment or suspension providing the dates of the suspension or debarment, the name of the public entity and the status of the proceedings, the name(s) of the person(s) involved and their current positions and responsibilities with the business, the grounds of the debarment or suspension, and the details of each person's involvement in any activity that formed the grounds of the debarment or suspension)

_____

_____

(1) The above business was not established and it does not operate in a manner designed to evade the application of or defeat the purpose of debarment pursuant to Title 16, of the State Finance and Procurement Article of the Annotated Code of Maryland; and

(2) The business is not a successor, assignee, subsidiary, or affiliate of a suspended or debarred business, except as follows: (Indicate the reasons why the affirmation cannot be given without qualification)

_____

_____

I DO SOLEMNLY DECLARE AND AFFIRM UNDER THE PENALTIES OF PERJURY THAT THE CONTENTS OF THIS AFFIDAVIT ARE TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE, INFORMATION, AND BELIEF.

By:_____ _____

Signature of Authorized Representative and Affiant Printed Name of Authorized Representative and Affiant

Date:_____Federal Employer Identification Number (FEIN):_____

Procurement Office
Harford Community College
401 Thomas Run Road, Bel Air, Maryland 21015

REFERENCES: IFB 24B-002 Amoss Theater Renovations/Repairs

Each firm must furnish at least three (3) references, for projects completed within last ten (10) years, that are similar in nature and scope and best represent the bidder's ability to perform the work and meet the specifications and requirements herein.

1. Firm Name_____

   Address_____

   _____

   Telephone: _____

   Contact_____

   Email:_____

   Project_____

   Dates performed_____

2. Firm Name_____

   Address_____

   _____

   Telephone: _____

   Contact_____

   Email:_____

   Project_____

   Dates performed_____

3. Firm Name_____

   Address_____

   _____

   Telephone: _____

   Contact_____

   Email:_____

   Project_____

   Dates performed_____

Bid of: _____
(Firm Name)

Section 116100 - Performance Machinery General Requirements

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. General Specification Sections apply to this Section.
B. This section applies to the following sections:

1. 116133 Performance Manual Rigging.

2. 116195 Stage Protection Nets.

1.2 DEFINITIONS

A. Manual Rigging refers to mechanical devices that are powered using human effort, power, or energy, to locate elements in horizontal or vertical planes.
B. Powered Rigging refers to mechanical devices that are operated via electro-mechanical devices to locate elements in horizontal or vertical planes.
C. Where measurements are provided, they are stated in Imperial units followed by SI units. Conversions are generally performed as soft conversions, unless a hard equivalent is readily available.

1.3 QUALIFICATIONS:

A. The Contractor shall have been an authorized representative of the manufacturer of not less than one of the specified equipment systems for a minimum of two (2) years.
B. Contractors shall have been involved in the type of work of that section for a period of five (5) years or more and shall have successfully completed at least ten (10) installations in the country in which the work is being performed of this type and scope, which have been in service successfully for not less than two (2) years. Project scope requirements include, but are not limited to, project complexity, project construction cost, and equipment contractor's construction costs.
C. The right is reserved to inspect previous equipment or systems as furnished or installed by this Contractor. In addition, the right is reserved to reject a Contractor who has failed in any respect to comply with the provisions of previous contracts.
D. No sub-contracting work is permissible, unless the Sub-Contractor is named and included as part of the bid. All terms and requirements herein apply to the Sub-Contractor. The right is reserved to reject the proposed Sub-Contractor based on the terms stated herein.
E. Regardless of whether a Sub-Contractor is accepted and used for installation, the Contractor shall have a person under the Contractor's Company's direct employ supervising the installation at all times.
F. Upon request, the contractor shall submit a list of projects of similar size and scope. The Architect is the final judge of suitability of experience.

G. Where overhead rigging is part of the Work, it shall be supervised on site at all times through the entirety of installation and system commissioning by an Entertainment Technician Certification Program (ETCP) Certified Rigger – Theatre, or a licensee of authority having jurisdiction.

1.4 SUBMITTALS

A. Coordination Drawings: Prepare and submit coordination Drawings where close and careful coordination is required for installation of products and materials fabricated off-site by separate entities.

1. Show the interrelationship of components shown on separate Shop Drawings.
2. Indicate required installation sequences.

B. Make changes in the submittals as required, consistent with the Contract Documents. When resubmitting, notify the Architect in writing of any revisions other than those required.

1. Action indicated is subject to the requirements of the Contract Documents.
2. Adjustments made on shop drawings are not intended to change the Contract Price. If adjustments affect the value of the Work, state such in writing prior to proceeding with the Work.

C. Interference Coordination

1. Participate in the creation of interference drawings with the construction team.
2. Provide input to the building modeler on the impact of the equipment systems on the building. Including, but not limited to:

    a. Models of major components for use by the modeler.
    b. Participation in collision detection sessions.
    c. Advise on conduit routing that complies with separation guidelines.
    d. Review of model for obstructions, both direct mechanical interference and obstructions the limit the use of the specified systems.

3. Assist the Electrical Contractor in coordinating the conduit routing.

D. Shop Drawings

1. Submit drawings depicting components, systems and assemblies, subject to static, dynamic or electrical loads affecting their safety and operational integrity, or as otherwise required by legislation, signed and sealed for the intended application, by a licensed Professional Engineer experienced in work of similar nature and scope and licensed in the State of installation.
2. Note and maintain one of the prints returned as a "Record Document".
3. Do not use Shop Drawings without an appropriate final stamp by the Architect indicating action taken in connection with construction.
4. Shop Drawings shall establish the actual detail of the Work, indicate proper relation to adjoining work, amplify design details of mechanical and electrical equipment in proper relation to physical spaces in the structure, and incorporate minor changes of design or construction to suit actual conditions.
5. Submit newly prepared information, drawn to accurate scale.

6. Highlight, encircle, or otherwise indicate deviations from the Contract Documents.
7. Do not reproduce Contract Documents or copy standard information as the basis of Shop Drawings. Standard information prepared without specific reference to the Project is not considered Shop Drawings.
8. Shop Drawings include fabrication and installation drawings, setting diagrams, schedules, patterns, templates and similar drawings.
9. Lettering on Shop Drawings is considered part of the Drawings.
10. Shop Drawings include the following plates and schedules:

    a. Assembly, installation and erection plans and diagrams depicting relative locations of various members and overall dimensions with reference to the preliminary drawings including auxiliary structure.
    b. Block schematics of all equipment internal wiring and system element interconnection.
    c. Component equipment drawings from Manufacturer's approved drawings or catalog cuts showing weight, dimensions, and capacities of mechanical components.
    d. Component Equipment Drawings.
    e. Details and assembly drawings.
    f. Dimensions.
    g. Erection Plans and diagrams.
    h. Finishes.
    i. Signage and identification systems.
    j. Identification of products and materials included.
    k. Layout of control consoles, racks and other associated equipment.
    l. Mechanical Assembly Drawings.
    m. Mechanical Detail Drawings.
    n. Miscellaneous details and assembly drawings depicting lengths, widths, and sizes of all members, connection details, location, type and size of bolts, rivets, welds, and other connections together with materials to be used.
    o. Notation of coordination requirements.
    p. Notation of dimensions established by field measurement.
    q. Program logic and relationship to input / output points, either in logic diagrams or ladder logic diagram, or other appropriate format.
    r. Riser diagrams showing quantities, coding and sizes of all interconnections between system components.
    s. System assemblies, major sub assemblies, components, cabinets and enclosures, including notation of type and manufacturer of switches, relays, locks and hardware.
    t. Templates and installation details.
    u. Test data on materials components and systems as available for the items specified herein.
    v. Wiring Diagrams showing system layout.
    w. LCD Screening for motor control systems.

E. Record Document Submittals (As Built Drawings)

1. General: Do not use record documents for construction purposes; protect from deterioration and loss in a secure, fire-resistive location; provide access to record documents for the Architect's reference during normal working hours.

2. On completion of Work and prior to final review, neatly transfer as-built notations to set of transparencies, stamp drawings in set "Certified As-Built Drawings" and submit record documents to the Architect.
3. Record Documents: Maintain a clean, undamaged set of Contract Documents, Shop Drawings and Product Data. Mark the set to show the actual installation where the installation varies substantially from the Work as originally shown. Mark whichever drawing is most capable of showing conditions fully and accurately; where Shop Drawings are used, record a cross-reference at the corresponding location on the Contract Drawings. Give particular attention to concealed elements that are concealed or cannot otherwise be readily discerned later by direct observation.
4. Include details on internal setting of components.
5. Mark record sets with red erasable pencil; use other colors to distinguish between variations in separate categories of the Work.
6. Mark new information that is important to the Owner, but was not shown on Contract Drawings or Shop Drawings.
7. Note related Change Order numbers where applicable.
8. Organize record drawing sheets into manageable sets, bind with durable paper cover sheets, and print suitable titles, dates and other identification on the cover of each set.
9. Testing Data - Include in record submittal documentation of performance tests as required in the contract documents.
10. Upon completion of the Work, submit Record Documents to the Architect for the Owner's records.
11. Record Sample Submitted: Immediately prior to the date or dates of Substantial Completion, the Contractor will meet at the site with the Architect and the Owner's personnel to determine which of the submitted Samples that have been maintained during progress of the Work are to be transmitted to the Owner for record purposes. Comply with delivery to the Owner's Sample storage area.
12. Miscellaneous Record Submittals: Refer to other Specification Sections for requirements of miscellaneous record-keeping and submittals in connection with actual performance of the Work. Immediately prior to the date or dates of Substantial Completion, complete miscellaneous records and place in good order, properly identified and bound or filed, ready for continued use and reference. Submit to the Architect for the Owner's records.

F. Maintenance Manuals

1. Organize operating and maintenance data into suitable sets of manageable size. Bind properly indexed data in individual heavy-duty 2-inch, 3-ring vinyl covered binders, with pocket folders for folded sheet information. Mark appropriate identification on front and spine of each binder.
2. Operating and Maintenance Instructions: Provide instruction manuals describing proper operation and maintenance. Include a detailed review of the following items:

    a. Maintenance and operation manuals for individual components.
    b. Cleaning.
    c. Control sequences.
    d. Copies of warranties.
    e. Emergency instructions.
    f. Fixture lamping schedule.
    g. Fuse list.
    h. Hazards.
    i. Identification systems.
    j. Inspection procedures.

k. Lubricants.
l. Recommended "turn around" cycles.
m. Spare parts list.
n. Specifications for expendables.
o. Tools.
p. Warranties and bonds.
q. Wiring diagrams reflecting actual labeling in the field.
r. Maintenance agreements and similar continuing commitments.
s. Product Data.
t. As Built drawings depicting actual locations and conditions of the system design, construction and arrangement.

3. As part of instruction for operating equipment, describe the following procedures:

a. Start-up.
b. Operation.
c. Shutdown.
d. Emergency operations.
e. Noise and vibration adjustments.
f. Safety procedures.
g. Economy and efficiency adjustments.
h. Effective energy use.
i. Complete Subcontractor List including names and telephone numbers of persons to contact.

4. Provide copies of documentation as required under Division 1.
5. Unless specified otherwise under Division 1, provide copies of the documentation distributed as follows:

a. Digital copy to the Architect in portable document format (pdf) prior to general distribution for review of conformance to intent of the Contract Documents.
b. Following modifications and corrections based on the review, distribute two (2) corrected hard copies and a digital copy to the Owner.

6. In addition to requirements under Division 1, provide a plan and section of performance machinery device locations in CAD format. Drawings should be saved in Drawing Interchange Format (DXF).

1.5 INTERFACE WITH ADJACENT SYSTEMS

A. Systems described shall in no way damage or adversely affect architectural, mechanical, electrical or structural systems, components or construction.
B. Coordinate the system installation with the requirements of adjacent and intersecting Work.

1. Delivery

a. Deliver materials within this contract to the project site.

2. Supervision Of Installation

a. Provide instruction and supervision to the Division 26 Contractor as it pertains to the installation of these systems. Provide the necessary qualified personnel for coordination meetings and site visits prior to installation of systems.

C. Follow Drawings in laying out work and checking drawings of other trades to verify spaces in which work is installed. Maintain maximum headroom and space conditions at all locations. Before proceeding with the work, notify Architect where conditions appear inadequate.

D. If directed by the Architect, without extra charge, execute reasonable modifications in the layout needed to prevent conflict with work of other trades or for proper execution of the work.

1.6 SYSTEM DESIGN AND PERFORMANCE REQUIREMENTS

A. Design Requirements:

1. The Contractor's engineer shall perform detailed analysis and design of each element as required to meet the performance and safety requirement expressed by regulation, standards and in the Contract Documents.
2. Operating Mechanisms: Provide operating devices, mechanisms and hardware in connection with this Work to operate smoothly, freely and without excessive noise or friction.
3. Built-In Work: Provide anchor bolts, inserts, plates and any other anchorage devices and all other items specified herein to be built into concrete, masonry or work of other trades, with necessary templates and instructions. Provide such devices in ample time to facilitate proper placing and installation.
4. Supplementary Parts: Provide as necessary to complete each item of work, even in the event that such supplementary parts are not specifically mentioned in the Contract Documents.
5. Design and perform the mechanical installations to possess the necessary properties to withstand stresses of tension, compression, flexure, shear, and torsion which may be anticipated being imposed on one or more of the components. Conform to the following priorities of installation: 1) safety, 2) ease of operation, 3) quietness of operation and 4) service life. The standards of quality and design covering the equipment and fabrication plus the installation technique required are established on this basis. The decision of the Architect in determining the acceptability of equipment items, installation technique and workmanship is final.
6. Systems provided in the Work shall in no way damage or adversely affect architectural, mechanical, electrical or structural systems, components or construction.
7. Where dimensions and loading capacities have been omitted from the Contract Documents, determine in accordance with the requirements and intent set forth in the Contract Documents.
8. Design, fabricate and erect steel structural components and fastenings shall be in accordance with the Specifications for Design, Fabrication and Erection of Structural Steel for Buildings, latest edition, by the AISC. Perform welding in accordance with the appropriate standards of the AWS.

B. Performance Requirements:

1. Materials, components, processes and workmanship for moveable systems shall comply to the current issues or revisions of the applicable legislation, references and standards.
2. Noise and Vibration:

a. Equipment shall operate quietly and without undue vibration. Provide isolation and damping as required to eliminate mechanical rattles, gearbox and coupling chatter and motor noise.

b. The noise produced in any area by any item shall not exceed the RC criteria referenced above, in any given octave band. Where the noise level of any 1/3 octave band is more than 3dB greater than the levels of both of its adjacent 1/3 octave bands, the criteria shall be taken to be 5 units lower. Where the noise is intermittent, the criteria shall be taken to be 5 units lower.

c. Noise levels for critical areas are specified elsewhere in the Contract Documents. Provide sound proofing where required; ensure that acoustical treatment does not cause overheating or inhibit the operation of systems.

d. The stiffness of all structures forming a part of the stage or acting surface shall provide a satisfactory natural frequency for setting scenery and acting. Configure such structures to prevent the vibration of moved elements. Unless specifically stated, the natural frequency shall be less than 12 HZ under full loading.

C. Provide systems designed to reflect safeguards and precautions related not only to normal use of the equipment under ideal operating and loading conditions but, additionally, to anticipate equipment misuse, human error, and misjudgment. Design and intent parameters set forth herein in no way relieve this Contractor from responsibility or liability arising from the Work.

1.7 IDENTIFICATION SYSTEMS

A. Design Requirements

1. Provide identification not related to the work area conforming to the Americans With Disabilities Act (ADA).
2. Based on a risk analysis performed by the Contractor's designated qualified analyst, provide equipment and systems with appropriate markings, warnings and instructions consistent with the manufacturer's and Contractor's duty to warn.
3. Provide signage and identification marking affecting safety in accordance with ANSI Z535.2 Environmental And Facility Safety Signs including annexes and 29 CFR 1910.144 Safety Color Code For Marking Physical Hazards, 29 CFR 1910.145 Specifications For Accident Prevention Signs And Tags.

a. Where required and as otherwise feasible, provide pictorial signs in addition to text. Pictographs shall always be accompanied with appropriate explanatory text. Pictorial symbols shall conform with international standards and the ADA.
b. Design signage to account for unfavorable viewing conditions.
c. Where wire rope is employed, locate at operating locations and at entry to maintenance points Wire Rope Technical Board Form Number 193 warning signs.

4. Mounting Location and Height:

a. Mount signage as required to provide effective direction and instruction.
b. Mount signage with center of the sign no higher than 60" (1500mm) above the finished floor, unless specifically required. Mounting location shall be so that a person may approach within 3" of the sign without encountering protruding objects or standing within the swing path of a door.

c. Mount hazard communication signage as to be plainly visible from a distance not less that 5’-0” (1500mm).

B. Equipment Identification

1. Nameplates: Except for required labels and operating data, do not attach or imprint manufacturer's or producer's nameplates or trademarks on exposed surfaces of products which will be exposed to view in occupied spaces or on the exterior.
2. Labels: Locate required product labels and stamps on a concealed surface or, where required for observation after installation, on an accessible surface that is not conspicuous.
3. Equipment Nameplates: Provide a permanent nameplate on each item of power-operated equipment. Locate on an easily accessible surface which is inconspicuous in occupied spaces. The nameplate shall contain the following information and other essential operating data:

   a. Name of product and manufacturer.
   b. Model and serial number.
   c. Capacity.
   d. Ratings.

4. Designate items fabricated by the system Manufacturer with the Manufacturer's name, model number and serial number on the chassis or a name plate securely attached to the item.

C. Electrical Component Identification:

1. Wiring devices, components and electrical systems shall be labeled and/or identified in compliance with the standards promulgated by NEMA and listed by Underwriters Laboratory or similar certified testing agency.

PART 2 - PRODUCTS

2.1 GENERAL

A. Commodities provided by the Contractor and the manners of installation shall comply with standards required pursuant to the provisions of the Federal Occupational Safety and Health Act, as amended.
B. General Product Requirements: Provide products that comply with the Contract Documents, that are undamaged and, unless otherwise indicated, unused at the time of installation.
C. Provide products complete with all accessories, trim, finish, safety guards and other devices and details needed for a complete installation and for the intended use and effect.
D. Standard Products: Where available, provide standard products of types that have been produced and used successfully in similar situations on other projects.
E. Product Selection Procedures: Product selection is governed by the Contract Documents and governing regulations, not by previous project experience. Procedures governing product selection include the following:

1. Where products or manufacturers are specified by name, accompanied by the term "or equal," or "or approved equal" comply with the Contract Document provisions concerning "substitutions" to obtain approval for use of an unnamed product.
2. Compliance with Standards, Codes and Regulations: Where the Specifications only require compliance with an imposed code, standard or regulation, select a product that complies with the most current and stringent standards, codes or regulations applicable.

F. Where no product available within the specified category matches satisfactorily and also complies with other specified requirements, comply with provisions of the Contract Documents concerning "substitutions" for selection of a matching product in another product category, or for noncompliance with specified requirements.

G. Visual Selection: Where specified product requirements include the phrase "...as selected from manufacturer's standard colors, patterns, textures..." or a similar phrase, select a product and manufacturer that complies with other specified requirements. The Architect will select the color, pattern and texture from the product line selected.

H. Visual Matching: Where Specifications require matching an established Sample, the Architect's decision will be final on whether a proposed product matches satisfactorily.

2.2 MATERIALS

A. Employ materials that are free of defects impairing strength, durability or appearance and of best commercial quality for the purpose specified. Employ materials with structural proportions to safely sustain and withstand stresses and strains to which they will be subjected. Fabricate true to detail, clean, straight with sharply defined profiles and, unless otherwise noted, with smooth finished surfaces.

B. Material Specifications:

1. Do not employ brittle materials or materials with unknown or unproven structural behavior in critical system components.
2. Steel items incorporated in the Work shall be produced or made in whole or substantial part in the United States, its territories or possessions.
3. Structural steel, plates and bars: A-36.
4. Malleable iron casting: A-47.
5. Steel pipe: A-53 Grade B (schedule as specified herein).
6. Galvanizing: A-153.
7. AISC Code of Standard Practice.
8. SSPC Steel Structures Painting Manual.

C. Allowable Stresses:

1. The following describes allowable stressed for normal design loads:

a. In employing structural steel members and elements, do not exceed the stress values established in the Manual of Steel Construction, latest edition, as published by the AISC.
b. In employing structural aluminum components, do not exceed the values established in the Specification of Aluminum Structures, latest edition, as published by the Aluminum Association.

c. In employing structural elements made of miscellaneous metals, plastics and composite materials, do not exceed the stress values established by the manufacturer's engineers for these specific materials, based on codes, standards and proven design practices for these materials.

2. Determine allowable stresses for normal design loads combined with special design loads as follows:

a. Allowable stresses shall not exceed the values, which would cause permanent distortion of structural or machinery components. Under certain circumstances as determined by the engineer, limited plastic distortion of moved object or moved support is permissible, provided that such distortion is intentionally designed to relieve the stresses without creating a dangerous condition.

2.3 MINIMUM STANDARDS OF SAFETY:

A. Minimum factor of safety for lifted loads: 10.
B. Increase the factor of safety for ropes where normal operating loads include cyclic dynamic loads, as determined by the Contractor's engineer, to suit the system operational requirements for required service life.
C. Minimum factor of safety for static loads: 8.
D. The factor of safety may be lowered, at the discretion and responsibility of the Contractor's engineer, if the static design loads are higher than the maximum lifted load.
E. Threaded Fasteners: ASTM Fastener Specifications as applicable to loading. Structural fasteners shall be traceable to materials, dimensions, processing and testing.
F. Cable and Cable Connections

1. Unless exceeded by other regulation or standard, select, inspect and employ wire rope, wire rope pulley, drums and connections in accordance with the current edition of the Wire Rope Users Manual published by the Wire Rope Technical Board.
2. Bending ratio: As identified by the Wire Rope Users Manual, no more than one reverse bend in six wire rope lays shall be permitted.
3. Connections shall be capable of developing at least 80 percent of the rated breaking strength of the wire rope. Compression sleeves shall comply with MS-51844
4. Each suspension rope shall have a "Design Factor" of at least 10. The "Design Factor" is the ratio of the rated strength of the suspension wire rope to the rated working load, and shall be calculated using the following formula: F=S(N)/W. Where: F = Design factor, S = Manufacturer's rated strength of one suspension rope, N = Number of suspension ropes under load and W = Rated working load on all ropes at any point of travel.
5. Manufacturers of wire rope, also identified as aircraft cable, employed in overhead lifting or suspension are required to be QPL certified pursuant to QPL-83420 as current. Provide preformed, galvanized unlubricated wire rope conforming to RRW-410 of the Type and Class commensurate with the diameter and construction determined appropriate by the Contractor’s engineer. Where the Contractor determines to substitute a non-QPL Certified manufacturer, the Contractor, at no additional cost to the Project, shall provide testing of each spool employed in accordance with ASTM A 931 as current. Certificates of conformance are not substitutions for certificates of testing.
6. Maximum Fleet Angle Typical: 1.5 Degrees.

G. Supplementary Parts: Provide as necessary to complete each item of work, even in the event that such supplementary parts are not specifically mentioned in the Contract Documents.

2.4 PERFORMANCE MANUAL AND POWERED MACHINERY COMPONENTS

A. Clips, Wire Rope: Size "U"-bolt wire rope clips (Crosby Clips) appropriately for the cable construction, diameter and lay of the cable with which they are employed.

1. Saddle material: Drop forged steel
2. "U" bolt and nut material: Steel
3. Finish: Hot dip galvanized
4. Federal Specification: FF-C-450 Type 1 Class 1

B. Compression Sleeves: Size compression sleeves appropriately for the cable construction and diameter of the cable with which they are employed.

1. Material: Copper
2. Cable connection sleeves: Oval pattern
3. Cable stop sleeves: Cylindrical pattern
4. Military Specification MIL-51844

C. Eyebolts: Size eyebolts for the intended application. Employ dropped forged steel shoulder pattern eyebolts.

D. Shackles: Size shackles appropriately for the intended application. Execute chain connections with chain shackles; other connections may employ anchor shackles.

1. Shackle Material: Forged Steel
2. Pin Material: Alloy Steel
3. Treatments: Heat Treat and Temper
4. Pin Type: Safety type bolt type pin or safety type round pin.
5. Federal Specification: RR-C-271D Type IV or IVB, Grade A or greater, Class 1.
6. Size the screw pin to ensure that the threads are not included in the bearing surface of the bolt.

E. Thimbles, Wire Rope: Size wire rope thimbles appropriately for the cable construction and diameter of the cable with which they are employed.

1. Material: Hot dipped galvanized carbon steel.
2. Finishing: Free of characteristics detrimental to the rope or adjacent elements.
3. Federal Specification: FF-T-276b., Type III.

F. Thimbles, Manila/Fibrous and Synthetic Rope: Size appropriately for the rope construction and diameter of the rope with which they are employed.

1. Material: Hot dipped galvanized carbon steel.
2. Finishing: Free of characteristics detrimental to the rope or adjacent elements.

G. Turnbuckles: Size turnbuckles appropriately for the cable construction and diameter of the cable with which they are employed.

1. Material: Drop forged carbon steel
2. Finish: Galvanized
3. Type: Employ Jaw - jaw type unless otherwise noted.
4. Pins: Round pins and cotter keys.

5. Designation: F 1145 – 92 (Reapproved 2001) An American National Standard Standard Specification for Turnbuckles, Swaged, Welded, Forged. Type 1, Class G.

H. Guide Systems:

1. Provide guide systems, as required, for guiding, stabilizing, stopping and holding the moved elements. Where guide systems are employed, provide continuous guiding throughout the entire length of travel.
2. Provide guide rails and shoes, including their supports, to support applied forces, including stabilizing forces, and braking forces if stabilizing, braking and holding functions as performed by the guide system.
3. Provide guide systems so as not to cause accidental jamming or binding.

I. Blocks:

1. Provide blocks with the appropriate sheave for the intended cable and rope.
2. Configure blocks to prevent the hoisting rope from leaving the sheave groove. Provide block design to prevent the hoisting rope to leave the housing in event of sheave shaft failure. Configure blocks to support sheave in event of sheave shaft failure. Provide blocks ensuring sheaves are centered in the housing and run plumb without rubbing or interference with the block housing. Distance between outer face of sheave and inner face of cheek plate shall be less than one cable diameter.
3. Center Pins: Unless otherwise specified, provide sheave center pins designed to transmit the sheave load to the block housing without rotating.
4. Provide side plates (cheeks) of materials and dimensions required for the anticipated load. Provide side plates enclosing the sheave sides. Secure side plates to each other with spacer assemblies to ensure parallel alignment. Arrange spacer assemblies in a configuration to permit anticipated movement of rigging while restraining running lines from escaping sheave grooves. Provide spacers with appropriate tapers and finishes to prevent damage to running lines. Arrange spacer assemblies to provide redundant support for the running lines and sheaves in the event of sheave center pin failure. Arrange side plates to result in a rigid parallel housing for the sheave. Align each sheave within the block so that the center and sides of the groove rotate in the same axis perpendicular to the axle and parallel to the side plates.
5. Provide block assembly with attachment systems designed and fabricated to transmit the block load to the mounting structure, while permitting adjustment, alignment and maintenance of the block. Unless specifically approved by the Architect, welded connections or connections employing cut side plates with draw bolts are not acceptable.
6. Configure the block so the cable is supported according to wire rope manufacturer's recommendations.
7. Provide blocks to be suitable for anticipated loading and required mounting.

J. Sheaves:

1. Provide sheaves designed and fabricated in to meet or exceed the current edition of ANSI A10.5 American National Standard Safety Requirements for Material Hoists, Section 14.5 and the Wire Rope Technical Board's Wire Rope User's Manual, except where exceeded herein.
2. Configure the depth of flare of the groove so that the hoisting rope does not rub against the flange of the sheave when entering and leaving the groove.

3. Provide bearings designed to operate under the anticipated loading conditions for the lifespan of the system. Bore the hub within the close tolerances established by manufacturers engineering data for proper press fit without need of further cup clamping devices. Boring tolerances of sheaves selected at random are subject to inspection. Provide bearings rated for the load and speed derived from the calculated batten load.
4. Properly lubricate bearings according to manufacturers' recommendation.
5. Machine grooves to be smooth and free of irregularities, tool marks and imperfections. Machine hubs to assure proper bearing alignment.
6. Metal Sheaves: Provide from machined cast blanks.
7. Synthetic Sheaves: Provide from either machined extrusion or injection molded shapes. Where applicable, machine sheave grooves and hubs according to wire rope manufacturers' recommendations.
8. The minimum sheave tread diameter for wire rope head blocks is the rope diameter x 48.
9. Provide Multiple grooved blocks, including head blocks, with grooves of equal pitch diameter. Where purchase lines are employed, provide the purchase line groove at the center of the block.
10. Finish metal sheaves as required to prevent rust without wear on wire rope.
11. Acceptable Loft Block Materials (Wire Rope)

    a. Machine grooved molybdenum disulphide filled nylon.
    b. Machine grooved steel

12. Acceptable Loft Block Materials (Natural or Synthetic Fiber)

    a. Machine grooved molybdenum disulphide filled nylon
    b. Machine grooved steel
    c. ASTM A48 Class 40 Grey Iron w/ Machined Grooves

13. Acceptable Head Block Materials

    a. Machine grooved molybdenum disulphide filled nylon
    b. Machine grooved steel
    c. ASTM A48 Class 40 Grey Iron w/ Machined Grooves

14. Acceptable Floor Block Materials

    a. Machine grooved steel
    b. ASTM A48 Class 40 Grey Iron w/ Machined Grooves

K. Guards:

1. Provide guarding and marking pursuant to OSHA 29 CFR 1910.219 Machinery and Machine Guarding, 1910.144 - Safety color code for marking physical hazards, 1910.145 - Specifications for accident prevention signs and tags and ASME B15.1 Safety Standard For Mechanical Power Transmission Apparatus.
2. Provide guards which do not interfere with the operation or of the machinery and which do not restrict proper ventilation. Configure guards to avoid generation or transmission of audible noise.

L. Lubrication Provisions:

1. Provide each component with adequate means of lubrication to ensure moving parts are lubricated. Self-sealed, self-lubricating, or dry bearings of a suitable design are acceptable. Provide oil lubricated gearboxes with a means of determining that the proper quantity of lubricant is contained in the gearbox.
2. Provide for proper lubrication of the system components. Self sealed, self lubricating and dry bearings of suitable design may be used at the discretion of the Contractor's engineer, unless specifically required otherwise.

2.5 FABRICATION

A. Shop Assembly:

1. Workmanship: Work shall be performed by an experienced fabricator or manufacturer and installed by experienced tradesmen. Materials, methods of fabrication, fitting, assembly, bracing, supporting, fastening, operating devices and erection shall be in accordance with the Contract Documents, reviewed shop drawings and best practices of the industry, using new and clean materials specified, having structural properties sufficient to safely sustain or withstand stresses and strains to which materials and assembled work will be subjected. Assemble, fabricate and erect all work in a neat and accurate fashion.
2. Employ materials that are free of defects impairing strength, durability or appearance and of best commercial quality for the purpose specified. Employ materials with structural proportions to safely sustain and withstand stresses and strains to which they will be subjected. Fabricate true to detail, clean, straight with sharply defined profiles and, unless otherwise noted, with smooth finished surfaces.
3. Built-In Work: Provide anchor bolts, inserts, plates, other anchorage devices and other items specified herein to be built into concrete, masonry or work of other trades, with necessary templates and instructions. Provide such devices in ample time to facilitate proper placing and installation.
4. Supplementary Parts: Provide as necessary to complete each item of work, even in the event that such supplementary parts are not specifically mentioned in the Contract Documents.
5. Coordination: Accurately cut, fit, drill and tap Work herein to accommodate and fit work of other trades. Provide or obtain templates and drawings to or from applicable trades for proper coordination of this Work.
6. Connections:

    a. Make connections with tight joints, capable of developing full strength of the members and flush unless indicated otherwise. Locate joints where least conspicuous. Unless indicated otherwise, weld or bolt shop connections; bolt or screw field connections. Provide control joints as required to accommodate environmental variations.
    b. Employ fastening systems of appropriates sizes, ratings and quantities for the application. Where rated fasteners are employed, Provide domestically manufactured fasteners rated for anticipated loads and with approved markings indicating their rating. Provide fastener system's components of the same manufacture and equal ratings.
    c. Holes: Drill or cleanly punch holes, do not burn.
    d. Clean and leave unpainted the contact surfaces of bolted and welded connections. Fabricate built-ups and joints from components that are straight and close fitting, free from twists, bends or open joints in the finished assembly.

e. Provide and assume responsibility for the location and maintenance in proper position of sleeves, inserts and anchor bolts required for the work. In the event that failure to do so requires cutting and patching of finished work, perform the work without additional cost to the Owner.
f. Bolted connections: Drive bolts accurately into the holes without damaging the thread. Set bolt heads and nuts to rest squarely against metal. Protect bolt heads from damage during driving. Where members having sloping flange faces, provide bolted connections with appropriate beveled washers to afford square seating of heads and nuts. Do not locate holes in steel members less than 5 bolt diameters from an edge.
g. Tighten fasteners to the torque specified by the AISC, SAE or applicable standard.
h. Size bolts to extend not less than 1/4" (6mm) beyond the nuts. Do not employ fasteners that may interfere with the operation or safety of the Work.
i. Employ high strength steel bolts in friction only.
j. In addition to all other requirements, install a hardened washer between bolt heads, nuts and materials having elongated holes.
k. Unless specifically noted, and excepting graded, rated or otherwise certified fasteners, use nylon locking type nuts in locations subject to vibration and loosening.
l. Unless otherwise noted, exposed bolt and screw heads shall be flat and countersunk.

7. Welded Connections:

a. Prior to welding pay particular attention to surface preparation, fit up and cleanliness of surfaces being welded.
b. Follow the American Welding Society Standard for Welding.
c. Perform welding in accordance with the American Welding Society's approved methods.

8. Insofar as practicable, perform fitting and assembly of the Work in the shop. Shop assemble the Work in the largest practical sizes to minimize field work. It is the responsibility of this Contractor to assure himself that shop fabricated items properly fit the field condition. In the event that shop fabricated items do not fit the field condition, return the item to the shop for correction.
9. Cutting:

a. Cut metal by sawing, shearing or blanking. Flame cutting is permitted only when edges are ground back to clean, smooth edges and no deformation or damage is caused to the metal by the process. Make cuts accurate, clean, sharp and free of burrs, without deforming adjacent surfaces or metals.

10. Where dimensions and characteristics have been omitted, furnish based on criteria set forth herein.

B. Shop / Factory Finishing:

1. Environmental Standards: Finish materials shall comply with the following:

a. Environmental Protection Agency (EPA) requirements for less than 350 grams per liter of Volatile Organic Compounds (VOC) for finishes applied to components.

2. General:

    a. Clean and shop paint, with one coat of primer, all ferrous metals. No shop primer paint is required on galvanized materials, copper, brass, bronze or aluminum materials.
    b. Protective Coatings: Whenever dissimilar metals are in contact and aluminum metals are in contact with or imbedded in concrete, cement, mortar, plaster or masonry, separate contact surfaces by coating each contact surface, prior to assembly or installation with one coat of protective coating in addition to the shop paint prime coat described herein. Mask off those surfaces not required to receive protective coatings.

3. Preparation:

    a. Clean steel in accordance with SSPC-SP2 Hand Tool Cleaning.
    b. Protect sheave grooves, bolt threads, and moving parts prior to painting.

4. After fabrication, all steel; apply a shop coat of paint except the following:

    a. Areas within 2" of field welds.
    b. Contact surfaces of high strength bolted friction connections.
    c. Milled surfaces.
    d. Sheave Grooves.

5. Application:

    a. Apply shop prime coat immediately after cleaning metal. Apply paint in dry weather or under cover. Metal surfaces shall be free from frost or moisture when painted. Paint all metal surfaces including edges, joints, holes and corners. Prior to assembly, paint surfaces that will be concealed after such assembly. Apply paint in accordance with approved paint manufacturer's printed instructions and use thinners, adulterants or admixtures only as stated in said instructions. Paint materials uniformly to completely cover the metal surfaces.
    b. Apply paint to dry surfaces, when temperatures are above dew point, thoroughly and evenly, strict accordance with manufacturer's, to provide dry film thickness of 0 -5 mils. Allow paint to dry before handling or loading steel for shipment.
    c. Apply a second coat of shop paint to surfaces inaccessible after assembly or erection.
    d. Protect machined surfaces by an accepted, neutral, rust inhibitive coating of a type not requiring removal and resistant to wear.
    e. Include painting details in the shop drawings.
    f. Sequence finishing of materials requiring anodized finishes to ensure that finished surface is not damaged during fabrication.

6. Field Touch-Up:

    a. After erection, clean all damaged areas in the shop coat, loosened scale, rust, exposed surfaces of bolts, nuts, and washers, all field welds and unpainted areas (except as mentioned) to the same standard as the shop coat and paint with the same paint used for the shop coat, at the same film thickness.

b. Shop prime ferrous metals with fast-curing, lead and chromate free universal modified-alkyd primer complying with the performance requirements of FS TT-P-664, selected for good resistance to normal atmospheric corrosion, compatibility with finish systems indicated and capability to provide a sound foundation for field-applied topcoats despite prolonged exposure.
c. Do not paint moving parts acting as bearing surfaces or subject to friction wear.

C. Factory Finishing Colors:

1. Finish ferrous metals visible from the audience chamber in flat black.
2. Finish grid or floor mounted blocks, loft blocks and headblocks yellow in accordance with OSHA 29 CFR 1910.144 and ANSI Z535.1
3. Do not paint sheave grooves, fasteners, aluminum or galvanized materials and products.
4. Treat timber products with clear penetrating stain.

2.6 SIGNAGE:

A. Provide signage in English.
B. Employ printed or stenciled characters. Handwritten characters are not acceptable.
C. Wall mount diagrams depicting the system layout and maximum load limitations (drawn not less than 1/4"=1'-0" – 1:50) in a protective transparent faced frame on the stage wall near the locking rail and near the loading gallery entrance as to be plainly visible, and as not to interfere with the operation of the system.
D. Clearly display the rated load capacity on each moved element together with restrictions for maximum load concentrations and load locations on the moved element and associated control.
E. The stroke “width-to-height” ratio shall be between 1:6 -1:8 Separate lines of by leading that is approximately 120% of the type point size. Unless specified by regulation or standard, calculate text height in inches based on unfavorable viewing conditions based on the viewing distance in feet multiplied by 0.084 (in mm based on meters x .0045).
F. Numbers and Labels: Employ UL listed, indelible adhesive backed coated polyester printed labels with adhesives designed for the surface energy of the mounting surface.
G. Manual and Powered Linesets

1. Number each arbor with characters located on the back bar or plate of the arbor 6" below the arbor top. Locate double digit numbers with one digit on either side of the tie rod, as to be clearly visible, or centered on the rear plate. Apply white characters on dark backgrounds Minimum height viewing distance: 5’-0” (1500mm).
2. Clearly mark each lineset number on the index strip of each lockrail at the appropriate spacing with black letters on a white background.. Minimum viewing distance:4’-0” (1200mm).
3. Clearly mark each lineset number on the kick plate at the loading gallery. Coordinate specific label locations with Architect.
4. For rod style arbors, mark the onstage side of each arbor tie bar at spreader plate locations with labels notifying the operator that a spreader plates are to be inserted at that position.
5. Paint the exposed faces of counterweights constituting pipe weight for each lineset with Safety Yellow enamel as defined by ANSI Z535.1. For those pipes with connector strips, pipe weight is to include the weight for those strips and associated hardware.
6. In locations agreed to by the Architect, provide signage at lock rail and loading gallery identifying the size and weight of each size and type of counterweight provided.

7. Number each batten, identically to its location on the index strip, on both ends as to be read from above and below with white characters on a dark background. Minimum viewing distance: 20’-0” (6000mm).
8. Except for linesets dedicated to potentially visually-sensitive locations, such as an orchestra shell, mark battens with a painted white stripe 1" wide running around the full circumference at the centerline of the proscenium in white and at 1'-0" (300mm) increments from the left and right of the centerline in white. Indicate the distance from the midpoint in 5'-0"(1500mm) increments. Mid line and ends excepted, increments may be marked with white indelible marker. Paint the end of each pipe and each extension with safety orange stripes 1'-0" (300mm) from the ends toward the midpoint. Mark the section of batten extension to remain in the batten with safety red stripes.
9. Number blocks as follows with white adhesive 36pt. sans serif numerals:

    a. Head Blocks: Consecutive set number s on each side plate 1” (25mm) from on-stage edges.
    b. Loft Blocks: Consecutive set numbers on the up-stage side plate followed by a stroke and the line number as counted from the arbor.
    c. Mule Blocks: Consecutive set numbers on the bottom side plate followed by a stroke and the line number as counted from the arbor.

10. Number each hoist with characters viewable from the adjacent walking surface Apply white characters on dark backgrounds Minimum height viewing distance: 5’-0” (1500mm).
11. In locations agreed to by the Architect, provide signage at control locations, loading gallery, grid iron identifying all pertinent hazards, avoidance procedures and consequences. In addition to safety requirement, list on the signage the standard size of system load capacities provided and their respective weights.

H. In locations agreed to by the Architect, provide signage identifying all pertinent hazards, avoidance procedures and consequences.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verification of Conditions:

1. Examine work prepared by others to receive work of this Section and report defects affecting installation to the Purchaser for correction. Commencement of the work shall be construed as complete acceptance of preparatory work by others. The sphere of inspection includes but is not limited to:

    a. Assurance mounting surfaces are ready to accept the Work.
    b. Verification of flatness, plumb and level of mounting conditions.
    c. Inspection of components of the Work to ensure no damage has occurred during shipping or storage.

2. Coordinate staging, sequencing and access.
3. Discrepancies:

a. In the event of discrepancies, immediately notify the Architect.
b. Do not proceed with the installation in areas of discrepancy until all such discrepancies have been fully resolved.

3.2 SITE CONDITIONS

A. Sequence delivery and installation of components to protect their long term viability. Of particular concern is protecting stage and acoustical draperies from abrasive construction dust and grit and protecting drapes from the accumulation of dust which can lead to an aesthetic finish concern, premature wear, and a combustion hazard due to fine dust particles.
B. Do not deliver stage or acoustic drapery to the site where the ambient relative humidity is greater than 65% for more than a 12-hour period.
C. If stage or acoustical drapery must be installed prior to room being clean, dry, and dust free, completely wrap and protect drapery from the infiltration of dust and thoroughly clean drapery prior to final testing. Drapery that shows wear or construction dust residue will be rejected.

3.3 PREPARATION

A. Verify field measurements at the site prior to installation and modify the system accordingly.

1. Deliver equipment to the site only after the building has been closed in. Coordinate storage at the site and ensure the materials and components are undamaged.
2. Do not install work until space is enclosed and weatherproof, wet-work in space is completed and nominally dry, work above is complete, and ambient conditions of temperature and humidity will be continuously maintained at values near those indicated for final occupancy.
3. Equipment and components that show wear or rusting due to excessive moisture will be rejected.
4. Protect the surrounding environment from damage by the Work.

B. Surface Preparation:

1. Clean surfaces as necessary prior to commencing the Work.

C. Inspection of Conditions: Require the Installer of each major component to inspect both the substrate and conditions under which Work is to be performed. Do not proceed until unsatisfactory conditions have been corrected in an acceptable manner. Commencement of the work shall be construed as complete acceptance of preparatory work by others.
D. Manufacturer's Instructions: Comply with manufacturer's installation instructions and recommendations, to the extent that those instructions and recommendations are more explicit or stringent than requirements contained in Contract Documents.
E. Inspect materials or equipment immediately upon delivery and again prior to installation. Reject damaged and defective items.
F. Provide attachment and connection devices and methods necessary for securing Work. Secure Work true to line and level. Allow for expansion and building movement.
G. Visual Effects: Provide uniform joint widths in exposed Work. Arrange joints in exposed Work to obtain the best visual effect. Refer questionable choices to the Architect for final decision.
H. Recheck measurements and dimensions, before starting each installation.
I. Install each component during environmental conditions and Project status that will ensure the best possible results.

J. Isolate each part of the completed construction from incompatible material as necessary to prevent deterioration.
K. Built-In Work: Provide anchor bolts, inserts, plates and any other anchorage devices and all other items specified herein to be built into concrete, masonry or work of other trades, with necessary templates and instructions. Provide such devices in ample time to facilitate proper placing and installation.
L. Coordinate temporary enclosures with required inspections and tests, to minimize the necessity of uncovering completed construction for that purpose.
M. Mounting Heights: Where mounting heights are not indicated, install individual components at standard mounting heights recognized within the industry for the particular application indicated. Refer questionable mounting height decisions to the Architect for final decision.

3.4 ERECTION, INSTALLATION AND APPLICATION:

A. Workmanship:

1. Workmanship shall be best quality; executed by workers skilled and experienced in the respective duties for which they are employed. Immediately notify the Architect if required Work is such as to make it impractical to produce required results.
2. Decisions as to the quality or fitness of workmanship in cases of dispute rest solely with the Architect, whose decision is final.

B. Install the system with care that the components are straight, plumb, true and aligned throughout. Tightly fit connections employing appropriate safety factors and arrange in an orderly manner.
C. Perform the Work in conformance with the best trade practices, fabricate and install items in accordance with manufacturers' recommendations and Architect's direction. Coordinate Work with trades doing adjoining work.
D. Install the system complete with all members and materials, and all bolts, nuts, washers, clips, fittings, supports, or other items required for attaching all equipment specified to the existing construction.
E. Perform required cutting, drilling, tapping and fitting to properly install and secure the Work in place. Cutting or drilling existing structural work shall have the prior review of the Architect. Perform the mechanical fabrication and workmanship in accordance with neat and mechanically acceptable practices such as clean drilled and punched holes without flash, hard smooth finish for sheared, machined, and cut edges, and proper fit of component and contiguous parts without irregularity where marching is intended. Welding shall meet qualifications of AISC manual and shall be without spatter and other evidence of poor practice. Welding of load bearing elements shall be performed by certified welders. Comply with AWS Code for procedures of manual shielded metalarc welding, appearance and quality of welds made and methods used in the correction of welding work. Moving parts shall have specified tolerances, shaft sizes, bearings, mounting, connections, and accessories coordinated into the work in a manner acceptable to the Architect. Do not incorporate wood construction or equipment into the Work except as set forth in the Specifications.
F. Erection:

1. Fastening:

a. Fastening to In-Place Construction: Provide anchorage devices and fasteners where necessary for securing metal fabrications to in-place construction. Such fasteners include, but are not limited to: threaded fasteners for concrete and masonry inserts, through bolts, lag bolts, wood screws and other connectors as required.
b. Provide metal fastenings and accessories in same texture, color and finish as adjacent materials, unless indicated otherwise.
c. Prevent electrolytic action between dissimilar metals and materials.
d. Space anchors within their load limit and shear capacity; ensure that they provide positive and permanent anchorage. Wood and other organic material plugs are not acceptable.
e. Keep fastenings to a minimum, space evenly and install neatly.
f. Fastenings which cause spalling or cracking of material to which anchorage is made are unacceptable.
g. Where turnbuckles are employed in the suspension of overhead loads provide positive safetying in accordance with MS 33591B(AS) and as to provide equivalent resistance and strength to an equivalent locking clip system as defined under MIL-DTL-8878H Turnbuckles Positive Safetying.

2. Cutting, fitting and placement: Perform cutting, drilling and fitting required for installation of fabrications. Set work accurately in location, alignment and elevation, plumb, level, true and free of rack, measured from established lines and levels. Provide temporary bracing or anchors in formwork for items which are to be built into concrete, masonry or similar construction.
3. Connection to Building Structure:

a. Provide supports from the structure above sized and placed to meet the loading requirements indicated herein.
b. Provide connections to building structure through engineered clamps or mechanical connections. The use of chain or slings wrapped around structure shall not be accepted.
c. Supports to the structure above shall fully enclose or encircle the member to which it is being attached. Clamping devices designed to pinch one side of a beam flange shall not be accepted.
d. Hanging devices employing chain are subject to approval by the Architect and at a minimum are required to employ chain and connection devices specifically designed for overhead lifting as defined to OSHA (29 CFR 1926.251).
e. Where required, employ wall flanges to control lateral movement.

1. Provide wall blocking as required.

G. Hoisting Rope Connections:

1. Employ rope fastenings which develop not less than 100% of the manufacturer's rated breaking strength of the rope employed.
2. Qualified personnel are responsible for installing fasteners.
3. Equalization of Hoisting Rope Tension:

a. Provide means to substantially equalize the tensions between ropes which are in close proximity to each other.

b. Where suspension rope equalizers are employed, provide those of the individual compression spring or bar type. The latter type, provide the attachment by means of an entrapment bar to prevent separation of the equalizer bar from the lifted element. Extension spring type equalizers are not acceptable.

4. Reeve typical linesets with the specified wire rope for the lift lines and 3/4" synthetic rope for the purchase lines on manual linesets.
5. Employ one continuous length of cable for each lift line. The lengthening, joining or repairing of two or more sections of wire rope is prohibited. Mid-line splices are unacceptable.
6. Cut cable and compress sleeves only by use of the appropriate tool and operation for the cable and application.
7. Wire Rope Eye Splices: Form an eye on both ends of the lift line around an appropriate thimble. Close eyes with a copper compression sleeve. Crimp the sleeve with the appropriate tool per manufacturer's instructions. After crimping, test the sleeve for compliance with manufactures requirements. In the event that the crimped sleeve does not comply with the specifications, cut the cable above the sleeve and form a new splice.
8. Secure the end of the lift line, at the appropriate trim to the batten connection device.
9. Other types of fasteners are permitted, provided that adequate tensile and fatigue tests have been made by a qualified testing agency and that the fasteners have been approved for the intended or similar use.
10. Align loads on pins via steel spacing washers to assure even loading. After closing the shackle, deform the cotter pin at the end to prevent unintentional loosening of the pin.
11. Secure the lift lines to the typical arbor tops by employing eyes and shackles. Form the eye as described herein.

H. Electrical Installation and Coordination

1. Provide racks, furniture, consoles, etc., required for the installation and needed to provide completed systems.
2. Furnish all low voltage cable to Division 26 contractor for installation. This includes standard and specialty cable.
3. Terminate and install low voltage faceplates.
4. Terminate control lines.
5. Terminate low voltage connections in motor control panels.
6. Interface:

a. Coordinate work with the Division 26 Contractor in accordance with the contract documents.
b. Contract documents are diagrammatic and indicate general arrangement of systems and work included.
c. Follow drawings in laying out work and check drawings of other trades relating to work to verify spaces in which work is installed.
d. Maintain headroom and space conditions at all points.

3.5 TESTING, DEMONSTRATION, AND INSTRUCTION

A. Testing shall be performed in two phases. The contractor shall perform their own tests to ensure the installed system conforms with the contract documents. Following contractor testing, the consultant or architect's designate shall witness and / or perform testing. There are many tests, including load tests, that will occur more than once.

B. Testing shall be performed separate and prior to Owner Training and Owner Demonstration.
C. Contractor testing and inspection:

1. Clearly record the date, time, personnel, details and results of all the following tests and demonstrations and any subsequent re-tests. This will form the start of a system log book to be handed over to the user after acceptance together with operation and maintenance manuals.
2. Inspect the completely assembled hoist system including all mechanisms, fittings, control panels, etc., and make good all deficiencies before certifying that the system is complete.
3. Certify compliance with tolerances specified in the Contract Documents.
4. Certify function of braking systems.
5. Certify speed, noise and stability compliance with the Contract Documents.
6. With hoist fully loaded, perform motor current checks. Test drive unit including the effect of a loss of one or more phases, of reduced voltage and of phase reversal. Test control stations and all indicators. record results of all tests.
7. Certify motion with full specified dynamic payload.
8. Test all hoists per testing procedures described in ANSI E1.6 – Powered Hoist Systems
9. Review full manual counterweight rigging system as describe in the Inspections procedures in ANSI E1.4 – Manual Counterweight Rigging Systems.
10. In case the need for further adjustments becomes evident during the demonstration and testing, continue the Work until the systems operate properly.
11. Provide demonstration and testing as required to obtain certification by the applicable legislative authority. This Contractor is solely responsible for obtaining such certification and all costs arising from the certification. Certification is a condition of substantial completion.
12. The Contractor is completely and solely responsible for any testing required by the Architect and authorities having jurisdiction to ensure compliance with the Contract Documents and applicable laws and regulations.

D. Architect / Consultant Review

1. Prior to testing and certification, coordinate with the Consultant the personnel required to be present during the events. Unless specifically designated by the Consultant, testing, certification and operation of equipment is to be performed solely by the Contractor. Where the Consultant or his designee deems it necessary to personally perform a test or operate equipment in order to determine compliance with the Contract, the Contractor shall coordinate the operation and provide the necessary approvals from authorities and organizations having jurisdiction over the Work.
2. The Contractor’s Project Manager, or a designee familiar with the engineering and installation of the system(s), will coordinate and be present at all certification and testing by the Architect and the Architect’s Consultant.
3. The contractor shall provide a minimum of two (2) weeks notice of readiness for inspection.
4. Counterweight Rigging Inspection

    a. Contractor shall operate, or allow the Consultant to operate each lineset a minimum of two times, or as much as necessary, to ensure smooth operation both at the guide wall and at the gridiron / support structure.
    b. Contractor shall provide lifts or other required access to visually inspect all rigging components.
    c. Contractor shall provide tools and other hardware to inspect terminations and connections.

5. In case the need for further adjustments becomes evident during the demonstration and testing, continue the Work until the systems operate properly.
6. If more than one (1) visit is required by the Architect's Consultant because the system does not fulfill this specification, pay for time and expenses of the Architect's Consultant during any extensions of the acceptance testing period.

E. Owner Demonstration and Instruction

1. In addition to requirements in Division 1, provide the quantity of hours training indicated in the contract documents.
2. Demonstrate the full capabilities of the system(s), demonstrating how it meets specification, and demonstrates areas in which it exceeds specification.
3. Provide Training on this equipment system to be scheduled at times mutually agreed upon with the owner. This training time is to be divided into the following sessions as a minimum:

    a. Initial training
    b. Follow-up training.

4. Video record the initial and subsequent training sessions. Provide the owner with five (5) copies of a DVD of that recording, in addition to other training materials.

F. Assurances:

1. At the time of the Architect's final review, provide a notarized affidavit stating compliance with the criteria of the Contract Documents and applicable standards, laws and regulations. Include certification that connections, including cable connections, have been made in accordance with applicable standards and manufacturer's recommendations. Where connection methods require specific torque, pressure, periodic tool calibration or measured dimension to ensure function, provide certification that such methods have been performed and record of activities.

3.6 PROJECT CREDIT

A. In publications where this project is mentioned give credit to:

1. Theatre Consultant: Theatre Consultants Collaborative, Inc.

END OF SECTION 116100

Section 116133 - Performance Manual Rigging

PART 1 - GENERAL

1.1 SUMMARY

A. Performance manual rigging includes manually operated equipment assemblies, systems and components required for locating scenic, acoustic, lighting and masking elements in variable vertical planes.

B. Section includes provision of materials, components, modifications, assemblies, equipment and services as specified herein. These include:

1. Provisions as required under Division 1.
2. Repairs, modifications, and updates to existing existing rigging equipment.
3. Verification of site dimensions and conditions.
4. Engineering of equipment and systems as required by the Contract Documents.
5. Manufacture of equipment and systems as required by the Contract Documents.
6. Scheduling, sequencing and coordination with owner and other trades.
7. Site supervision of equipment and systems installation specified herein and elsewhere in the Contract Documents.
8. Testing, demonstration, and certification of equipment and systems as specified herein and elsewhere in the Contract Documents.

C. Perform reapairs and provide systems including:

1. Overhung single purchase counterweight sets and pipe battens.
2. Locking rails, hardware, and accessories.
3. Complete battery of counterweight guide tracks as indicated on drawings.
4. Cable management equipment for connector strip(s), as well as any additional multicable devices..
5. Misc. Loose and Manual rigging components as detailed on schedule
6. Additional support structures as required to meet the intent of the Contract Documents.
7. Provide devices and components that are NEMA compliant and UL. approved for the applications. Wiring and electrical service shall be performed by a licensed electrician and conform to applicable codes.

D. Products Installed but Not Furnished Under This Section:

E. Related Sections:

1. Division 1: General and Supplementary Requirements.
2. Division 11: Equipment.
    a. 116100: Performance Machinery General Requirements.

b. 116137: Proscenium Safety Curtain.

3. Division 23: Mechanical.
4. Division 26: Electrical.

1.2 DEFINITIONS

A. Hemp Set- An adjustable rigging system consisting of synthetic rope, moveable, grid mounted, upright loft blocks and sandbag counterweights.
B. Provide-- Furnish and Install.

1.3 SYSTEM DESCRIPTION

A. Performance Requirements:

1. Section 116100 establishes minimum requirements for the system. Where Federal, State, Local Legislation and consensus standards address these topics, the more stringent requirements take precedence. The minimum standards for construction and installation shall meet or exceed the requirements of the Applicable Project Building Code (per project) and ANSI E1.4-1 (2016) except as exceeded by these specifications. Where standards requirements conflict, the construction shall conform to the following order: Federal, State, and Local Legislation; Applicable Project Building Code; ANSI E1.4-1; these specifications.
2. Factors listed below in no way relieve this Contractor from the sole responsibility of providing safe systems.

B. Provide assemblies, cable components, connections, equipment, hardware and linkages employed in supporting, in whole or in part, overhead loads that are rated and designed for that application. Base loading for each component on the maximum percentage of the capacity of the set in which the component is employed. Base the set capacity on the batten length multiplied by a thirty pound per linear foot (30 plf) load, in addition to self weight and associated impact factors.
C. Provide mule blocks, rollers and guides as required to provide proper alignment and maintain allowable fleet angles.

1.4 SUBMITTALS

A. In addition to submittals required under Division 1 and Section 116100, for items listed herein, provide manufacturer’s data and certification of compliance

1.5 WARRANTY

A. Special Warranty:

1. Warrant systems and equipment to be free of defective components, faulty workmanship and improper adjustment for a period of two years from the date of Final Acceptance. Paint and exterior finishes are excluded relative to failure due to unusual exposure. Replace items showing evidence of defective materials or workmanship (including installation workmanship) within thirty (30) days after notification. Make replacements without cost to the Owner. Rectify conditions that might present a hazard to human life, well-being, and or property within 48 hours of notification.
2. Designate warranties on manufactured equipment to the Owner on the date of Final Acceptance.

1.6 MAINTENANCE

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Provide the rigging systems from components (except where otherwise stated) that are the products of one of the following manufacturers. Additional manufacturers may be used if approved in writing by the Architect, or as defined in Division 1.

1. iWeiss, Fairview, NJ
2. J.R. Clancy, Inc., Syracuse, NY.
3. Thern Stage Equipment, Winona, MN
4. Texas Scenic Company, San Antonio, TX

B. Bearings:

1. Dodge/Reliance Electric Corp., Cleveland, OH
2. FAG Bearings Corp., Stamford, CT.
3. Timken Co., Canton, Ohio.

C. Cable and chain connection hardware:

1. Chicago Hardware and Fixture Company, Chicago, IL.
2. Columbus Mckinnon Corporation, Chain Division, Amherst, NY.
3. Cooper Industries, Campbell Chain Division, Inc., NC.
4. The Crosby Group, Inc., Tulsa, OK.
5. Loos & Co.Inc., Naples,FL.
6. J.R. Clancy, Inc., Syracuse, NY.

D. Compression sleeves:

1. Loos & Co.Inc., Naples,FL.
2. National Telephone Supply Company, Cleveland, OH.

E. Synthetic ropes:

1. All Line Inc. Naperville, IL.

2. American Manufacturing Company, Honesdale, PA.
3. Atlantic Cordage Corporation, Carteret, NJ.
4. New England Ropes, Inc. New Bedford, MA.

F. Wire Rope: Refer to Section 116100, Performance Machinery Basic Requirements.

2.2 MATERIALS

1. Pipe Battens: 1-1/2" nominal Schedule 40 Seamless Black Steel Pipe (ANSI B36.10-1970).
2. Pipe Battens: 1-1/2" nominal Schedule 80 Seamless Black Steel Pipe (ANSI B36.10-1970).

B. Guide Track and Hardware

1. Guide Tracks

a. Provide guide tracks of steel or aluminum with brackets, fishplates and clips of compatible materials.
b. Provide rails with a “T” section at the guide shoe connection point sized to allow adjacent guide shoes to pass each other without interference. Provide track sections with a sectional area and material properties to withstand the forces resulting from the fully loaded guided counterweight arbors.
c. Provide tracks sufficiently true and smooth to operate properly with the guiding members.

2. Brackets, Fastenings, Joints and Supports

a. Provide guide track brackets, fastenings and supports capable of resisting horizontal forces imposed by anticipated loading with the total deflection at the point of support not in excess of 1/8” (3.2mm).
b. Provide track joints so that they are equivalent to or greater strength than the track and adequately maintain the accuracy of the rail alignment.

2.3 MANUFACTURED UNITS

A. Blocks:

1. Refer to Section 116100, Performance Machinery Basic Requirements for performance criteria.
2. Single Purchase Headblocks, Upright:

a. Provide upright headblocks with sheave aligned to permit the purchase and lift lines to operate, within the tolerances specified herein, with the arbors, loftblocks, and rope locks.
b. Provide head blocks each with a single sheave of multiple grooves as specified herein.

3. Loftblocks, Upright:

a. Provide blocks that allow positioning of the cable to pass through the grid well at its center line.
b. Provide appropriate mounting hardware to allow attachment to the gridiron and well structure.
c. For the loft blocks closest to the headblocks, in lieu of idlers, provide each with a single sheave of multiple grooves of the quantity of lift lines required for the set.
d. Refer to Section 116100, Performance Machinery Basic Requirements for additional performance criteria.

4. Temporary Rope Loft Blocks

a. Provide blocks as required designed for electrical multi-cable management. Provide additional blocks of the quantity specified herein for temporary rigging points.
b. Provide blocks that allow positioning of ½" or ¾" synthetic rope to pass through the gridiron at either a grid well or through openings in the grid floor.
c. Refer to Section 116100, Performance Machinery Basic Requirements for additional performance criteria.

5. Tension Blocks:

a. Provide with appropriately sized side plates and a kick plate located at the upper on-stage corner.
b. Provide tension blocks of sufficient weight to maintain constant tension on purchase line.
c. Configure the block mounting to ride freely in the guide tracks on 2 sets of guide shoes of similar arrangement as the associated counterweight arbor. Ensure that the tension block properly engages track and remains in set location while purchase line is under tension.

B. Sheaves: Refer to Section 116100, Performance Machinery Basic Requirements for performance criteria.
C. Counterweight Arbors:

1. Provide each set with a counterweight arbor provided at a length sufficient to contain the counterweights required for balancing the load within fifty (50) pounds the weight of the batten loaded at twenty-five pounds per linear foot (25 plf) for general purpose battens, and thirty pounds per linear foot (30plf) for stage electrics, in addition to the batten weight. Weight dimensions as specified herein. Size length to permit the loading and unloading of weights when arbor is loaded to its capacity. Provide the arbor assembly to be of sufficient strength to safely support weight on the arbor, load on cables and operating pull.
2. Support the arbor from a cable clew arrangement mounted at the arbor top with a sufficient number of shackle attachment points to accommodate the total number of cables in addition to the purchase line. Support arbor such that the load is centered between all lift lines.

3. Secure the top and bottom of the arbor with two appropriately sized steel rods. Provide tie rods for counterweight arbor from appropriately sized rod with cut threads and double full nuts top and bottom as well as single full nuts on the inside. Provide washers between nuts and arbor tops and bottoms.

4. Space the rods to accommodate counterweights. Do not allow counterweights to rest on nuts.
5. Provide safety collars to lock the counterweights in place. Tap and fit safety collars with a thumb screw to allow adjustment on the tie rods. Secure the safety collars to the top spreader plate to permit storage during loading and to secure the weights.
6. Mount the top and bottom frames to the guide tracks via guide shoes on a vertical tie bar rigidly connecting the top and bottom of the arbor together.
7. Provide each arbor with adjustable diaphragms (spreader plates) to ensure tie rods remain parallel throughout their length under anticipated loading conditions and retain the counterweights. Provide diaphragms to be held captive in the horizontal planes by the tie rods. Provide plates to resist deformation of the arbor and evenly distribute the counterweights in a compact fashion. Provide quantity of plates required to retain weights in the arbor in the case of an impact event.

8. Incorporate an attachment point with fiber rope thimbles to the arbor top and bottom for the connection of the purchase line.
9. Secure an additional shouldered eye lug to the on stage side of the arbor bottom for potential attachment of an additional 3/4" fiber hauling line.
10. Configure guide arrangement to maintain arbor stability throughout travel and restrain arbor from lateral movement due to impact and lateral forces.
11. Where an out of balance condition exceeds 50# between batten travel at extreme conditions, provide a compensating chain attached to the arbor designed to compensate for aircraft cable weight. Provide catch device intended to contain chain when arbor is at low position. Design chain and catch device to maintain specified noise requirements during travel.

D. Locking Rails:

1. Provide the rail to withstand a five hundred pound per linear foot (500 plf). uplift, with a non-concurrent one thousand (1000) pound concentrated load at any location along the rail.
2. Provide locking rail(s) extending the full depth of the stage as indicated on the Drawings and as to accommodate the complete battery of counterweight guide tracks. Configure each rail with a top angle to accommodate rope locks at the appropriate corresponding position to the guide tracks and with brackets for 3" x 5" index card holders. Incorporate a tubular steel or rolled angle reaction bar on the bottom of the rail configured to engage a portable capstan winch.
3. Provide the complete length of the locking rail with a pair steel sections mounted so as to provide a positive top and bottom stop for arbor travel. Secure timber sections on the top of the steel stop sections to absorb impact. Cover the top of the timbers sections with ¼” thick neoprene sheet. Secure neoprene with a synthetic adhesive. Mount the stop batten assembly in a manner that does not interfere with arbor travel or system operation.
4. For stage level lock rail, Incorporate a 4.5" outside diameter pinrail with the top quadrant 2" below the bottom of the index strip and the offstage quadrant coplanar with the on stage edge of the index strip. Perforate through the rail 1.25" diameter holes to accommodate belaying pins. Stagger holes to center belaying pins between rope locks.

E. Rope Locks:

1. Provide the rope lock with a 9" encapsulated steel eccentric lever and steel, ductile or malleable iron cams to provide quick action locking. When locks are fully engaged handles shall be perpendicular to the floor. Provide a thumb screw with jam-nuts for pressure adjustment. Provide locks with nylon spacers between the locking dogs, levers and casting to reduce noise.
2. Bolt the rope locks to the locking rail with appropriate fasteners.
3. Provide locks with elliptical slip rings to prevent movement of lever by tensioning against the purchase line. Encapsulate slip rings in plastic of the same color as the handle.
4. Provide a synthetic rubber bumper on lock mounting angle to prevent noise from handle impact.
5. Encapsulate identified items in red poly-vinyl chloride, 25 mils thick and testing between fifty (50) and sixty (60) on a durometer scale.
6. Provide locks designed to comply with the control of hazardous energy plan in compliance with 29 CFR 1910.147 The control of hazardous energy (lockout/tagout).

F. Batten Hanging Devices:

1. Provide one type of batten hanging device within the system as described below.
2. Batten Clamps:

    a. Provide connections to each lift line turnbuckles by removable steel clamps which encircle the complete circumference of the batten and allow for direct connection to the jaw of the turnbuckle. Employ appropriately rated fasteners with locking devices for connections.
    b. Configure the devices to each resist the complete loads of both adjacent spans with the additional imposed impact factors. Configure the devices to resist rotation of the batten with a load of 30 pounds per linear foot of the longest adjacent span applied at 12 inches horizontally from the section’s centroid.
    c. Configure devices so that the bottom and sides do not exceed the diameter of the batten by more that one batten diameter. Configure devices so that no sharp edges or corners greater than 45 degrees are presented.

3. Trim Chain:

    a. Provide 36-inches long fabricated from ¼-inch alloy, specifically designed for overhead lifting applications. Provide chain that is rated to resist the complete loads of both adjacent spans with the additional imposed impact factors.
    b. Wrap chain 1 ½ times around the batten and terminate with appropriately rated and installed hardware. Provide appropriately rated fasteners and hardware with locking devices for connections.
    c. Provide chain that is compatible with industry-recognized chain hardware. Chain link size shall match the Welded Steel Chain Specifications for Grade 30 Proof Coil Chain as specified by the National Association of Chain Manufacturers.
    d. Provide chain that is stamped with the manufacturer’s identifying mark.
    e. Provide chain that is lot traceable, with a coded date stamp on each piece of trim chain.
    f. Provide chain and connection devices specifically designed for overhead lifting as defined to OSHA (29 CFR 1926.251).
    g. The use of hardware not designed for connections in overhead lifting, such as bolts used as safety devices, will not be accepted.
    h. Provide certification of compliance from the manufacturer for the intended application.

2.4 COMPONENTS

A. Clips, Wire Rope: Size "U"-bolt wire rope clips (Crosby Clips) appropriately for the cable construction, diameter and lay of the cable with which they are employed.

1. Saddle material: Drop forged steel
2. "U" bolt and nut material: Steel
3. Finish: Hot dip galvanized
4. Federal Specification: FF-C-450 Type 1 Class 1

B. Compression Sleeves: Size compression sleeves appropriately for the cable construction and diameter of the cable with which they are employed.

1. Material: Copper
2. Cable connection sleeves: Oval pattern
3. Cable stop sleeves: Cylindrical pattern
4. Military Specification MIL-51844

C. Eyebolts: Size eyebolts for the intended application. Employ dropped forged steel shoulder pattern eyebolts.

D. Shackles: Size shackles appropriately for the intended application. Execute chain connections with chain shackles; other connections may employ anchor shackles.

1. Shackle Material: Forged Steel
2. Pin Material: Alloy Steel
3. Treatments: Heat Treat and Temper
4. Pin Type: Safety type bolt type pin or safety type round pin.
5. Federal Specification: RR-C-271D Type IV or IVB, Grade A or greater, Class 1.
6. Size the screw pin to ensure that the threads are not included in the bearing surface of the bolt.

E. Thimbles, Wire Rope: Size wire rope thimbles appropriately for the cable construction and diameter of the cable with which they are employed.

1. Material: Hot dipped galvanized carbon steel.
2. Finishing: Free of characteristics detrimental to the rope or adjacent elements.
3. Federal Specification: FF-T-276b., Type III.

F. Thimbles, Manila/Fibrous and Synthetic Rope: Size appropriately for the rope construction and diameter of the rope with which they are employed.

1. Material: Hot dipped galvanized carbon steel.
2. Finishing: Free of characteristics detrimental to the rope or adjacent elements.

G. Turnbuckles: Size turnbuckles appropriately for the cable construction and diameter of the cable with which they are employed.

1. Material: Drop forged carbon steel
2. Finish: Galvanized
3. Type: Employ Jaw - jaw type unless otherwise noted.
4. Pins: Round pins and cotter keys.

5. Designation: F 1145 – 92 (Reapproved 2001) An American National Standard Standard Specification for Turnbuckles, Swaged, Welded, Forged. Type 1, Class G.

H. Rigging Lines:

1. Suspend lifted elements by wire ropes, unless specified otherwise herein. Determine the classification of wire rope construction to suit the system operational requirements. Unless specifically required in the Contract Documents, the Contractor's engineer shall determine the classification.
2. Employ continuous lines from the same spool/length, free of knots, splices or mechanical fasteners along their length unless specifically required otherwise in the Contract Documents. Do not employ damaged or deformed cables. Excluding prefabricated systems, cut cable at the site from the manufacturer's spool.
3. Wire Rope: Refer to Section 116100.
4. Synthetic Laid Rope:

a. Material: filament and staple/spun polyester wrapped around a polyolefin core.
b. Average tensile strength: 10,500 pounds ASTM D-4268 testing.
c. Melting point: 330oF.
d. Progressive strength loss occurring at: 200oF.
e. Resistant to: Chemical and limited ultraviolet corrosion, anticipated physical wear.
f. Diameter: 3/4"
g. Color: White
h. Acceptable: Multi-line II, New England Ropes, Inc.

I. Factory Finishing Colors: Refer to Section 116100 for finishing requirements.
J. Signage:

1. Refer to Section 116100 for signage requirements.

2.5 SOURCE QUALITY CONTROL

A. Work on the systems may be reviewed at the point of manufacture a minimum of one time during fabrication. This review will occur during the final factory checkout prior to shipping, unless the Manufacturer and Architect agree on a more advantageous inspection date.

2.6 SUPPLEMENTARY

A. Furnish equipment and hardware in addition to the items specified previously that are necessary to provide a fully working system in conformance with the intent of the Contract Documents.

PART 3 - EXECUTION

3.1 ERECTION, INSTALLATION AND APPLICATION

A. Refer to Section 116100 for execution requirements

B. Trim sets to provide horizontal track and batten set-up.
C. Align the center of each batten with the center line of the proscenium opening.
D. Counterweight Guide Tracks:

1. Locate a complete battery of guide tracks against the stage wall as indicated on the drawings. Extend tracks from the stage floor to the underside of the headblock beam and certify vertical.
2. Splice joints in proper alignment free of burrs and irregularities.
3. Align vertically and horizontally by means of slot holes punched in the fixtures at the mounting and adjusting locations. Achieve final rigid adjustment by use of lock washers.
4. Install guide track system to ensure compliance with the performance requirements of this Section and Section 116100.

E. Install the locking rail with appropriate connections and accessories. Install to conform with required loading conditions.

3.2 CONSTRUCTION/RIGGING

A. General:

1. Rig the counterweight system to allow battens to reach the maximum height above the stage floor based on arbor travel and an average low trim of 4'-0" above the finished floor. For sets with truss or multiple battens, the measurement shall be to the bottom or lowest batten
2. Rig arbors such that, unless otherwise indicated in the documents, the dead load of the arbor is even with the floor of the loading gallery.
3. Immediately inform the Architect of conflicts between trim height, obstructions, and arbor capacities.
4. Rig other loads as specified in the Contract Documents.

B. Block Connection:

1. Align blocks as required by the Drawings and accompanying schedules. Conform alignment to the requirements set forth herein.
2. Secure blocks as per accepted mounting design. Where connection device contact is not uniform, employ shims. Perform mounting to ensure blocks are securely attached to the support structure and are immobile except by intentional user action.
3. Configure underhung loft block alignment to use the idler sheaves in logical sequence.

C. Fiber Rope Connection and Reeving:

1. Purchase Line Employ rope fastenings which develop not less than 75% of the manufacturer's rated breaking strength of the rope employed.
2. Reeve typical linesets with the specified wire rope for the lift lines and 3/4" synthetic rope for the purchase lines.
3. Employ one continuous length of rope for each purchase line. The lengthening, joining or repairing of two or more sections of rope is prohibited. Mid-line splices are unacceptable.

4. Dead tie line with a thimble at the top of the arbor and two half hitches. Finish free end with two (2) serrated, self locking nylon cable ties, which should completely and neatly align rope dead end to live end. Trim ties after tightening. Whip the free end then cut. Pass the line up and over the headblock, down through the rope lock, under the tension block and tie off at the underside of the arbor, employing the same method of attachment as described above. Finish synthetic lines per manufacturer's recommendations.
5. Adjust the length of the line after initial stretch to ensure proper function of the tension block.

D. Counterweights: Balance battens hung with permanent attachments (connector strips, traveler tracks, etc.).

3.3 DRAPERY AND TRACK INSTALLATION

A. Install draperies as supervised by the 116143 Contractor.
B. Install drapery track and motors as supervised by the 116144 Contractor.

3.4 ADDITIONAL INSTALLATION

A. Cable Management: Install electrical cable management as specified herein, and/or as indicated on the drawings.

3.5 TESTING, DEMONSTRATION AND INSTRUCTION

A. Refer to Section 116100 for requirements.

3.6 MANUALS, DEMONSTRATION AND INSTRUCTION

A. Provide a total of twelve (12) hours of training on this equipment. Training may occur in conjunction with other systems under this contractor's scope over multiple days.
B. Training shall be scheduled at a time agreed upon by the owner, and may not be concurrent with system commissioning and testing.
C. Provide instruction and maintenance manuals pursuant to Section 116100

3.7 EQUIPMENT AND COMPONENT SCHEDULES

A. See Drawings

END OF SECTION 116133

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Section 116195 - STAGE PROTECTION NETS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General, Special Supplementary General Conditions, Supplementary Conditions, and General Specifications, apply to this Section.

1.2 SUMMARY

A. Pit safety net shall include horizontal netting and associated hardware complying with or exceeding OSHA standard 29 CFR 1926.502(c) and ANSI A10.11.

B. Section Includes:

1. Provision of materials, components, modifications, assemblies, equipment and services as specified herein. These include:

a. Provision of a complete Pit Net system as described here and indicated in the contract documents
b. Verification of site dimensions and conditions.
c. Submission of Shop Drawings signed and sealed by a licensed Professional Engineer experienced in work of similar nature and scope as required in the State of installation.
d. Engineering of equipment and systems as required by the Contract Documents.
e. Manufacture of equipment and systems as required by the Contract Documents.
f. Scheduling, sequencing and coordination with other trades.
g. Site supervision of equipment and systems installation specified herein and elsewhere in the Contract Documents.
h. Testing and demonstration of equipment and systems as specified herein and elsewhere in the Contract Documents.

C. Provide systems including:

1. Horizontal Pit Safety Net

D. Related Sections:

1. Division 1: General and Supplementary Requirements.

2. Division 11: Equipment.

a. 116100 Performance Machinery and Rigging General Requirements
b. 116133 Performance Manual Rigging

1.3 SYSTEM DESCRIPTION

A. Horizontal Orchestra Pit Safety Net

1. Provide net and associated hardware in a horizontal plane no more than 12” below the stage level.

2. Provide assemblies, cable components, connections, equipment, hardware and linkages employed in supporting, in whole or in part, overhead loads that are rated and designed for that application. Base loading for each component on the maximum percentage of the capacity of the set in which the component is employed.

B. Provide systems designed to reflect safeguards and precautions related not only to normal use of the equipment under ideal operating and loading conditions but, additionally, to anticipate equipment misuse, human error, and misjudgment. Design and intent parameters set forth herein in no way relieve this Contractor from responsibility or liability arising from the Work.

1.4 SUBMITTALS

A. In addition to submittals required under Division 1, provide manufacturer’s data and certification of compliance.

1.5 WARRANTY

A. Special Warranty:

1. Warrant systems and equipment to be free of defective components, faulty workmanship and improper adjustment for a period of two years from the date of Owner’s acceptance. Paint and exterior finishes are excluded relative to failure due to unusual exposure. Replace items showing evidence of defective materials or workmanship (including installation workmanship) within thirty (30) days after notification. Make replacements without cost to the Owner. Rectify conditions that might present a hazard to human life, well-being and or property within 48 hours of notification.
2. Designate warranties on manufactured equipment to the Owner on the date of system acceptance.

1.6 MAINTENANCE

A. Maintenance Service:

1. Provide maintenance service for a period of one year after Final Acceptance of the installation.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Cable and chain connection hardware:

1. Chicago Hardware and Fixture Company, Chicago, IL.
2. Columbus Mckinnon Corporation, Chain Division, Amherst, NY.
3. Cooper Industries, Campbel Chain Division, Inc., NC.
4. The Crosby Group, Inc., Tulsa, OK.

B. Wire Rope:

1. Refer to current QPL-83420 for qualification certified manufacturers.

C. Safety netting:

1. Leading Edge Safety Systems Div, Pucuda, Inc, Deep River, CT
2. Sterling Net and Twine Co, Inc, Montclair, NJ
3. InCord, Colchester, CT

2.2 MANUFACTURED UNITS

A. Horizontal Safety Net:

1. Provide net material that conforms to tests indicated under 29 CFR 1926.502(c)(4) and ANSI A10.11.
2. Provide net material and locate the net such that the net has sufficient sag to meet the abovementioned requirements but does not sag below 6’-6” AFF of the pit floor. Should these requirements conflict, the Contractor should notify the Ownert in writing.
3. In addition to personnel protection net material, provide webbed material to prevent objects or debris larger than 3/16” in diameter from falling through the net.
4. Provide material that is inherently black and requires no additional treatment on site.
5. Provide Net woven with a 2 ½” knotless mesh pattern
6. Provide with up to a 4’ x 4’ conductor opening when indicated. Confirm site with the end user.
7. The Basis of design shall be InCord N820H BK-HTPP knotless.
8. .

2.3 COMPONENTS

A. Fasteners:

1. Fasteners shall be rated for the anticipated loads.
2. Provide fasteners with approved markings indicating their rating.
3. Provide fastener system’s components of equal ratings.

B. Compression Sleeves: Size compression sleeves appropriately for the cable construction and diameter of the cable with which they are employed.

1. Material: Copper
2. Cable connection sleeves: Oval pattern
3. Cable stop sleeves: Cylindrical pattern
4. Military Specification MIL-51844

C. Eyebolts: Size eyebolts for the intended application. Employ dropped forged steel shoulder pattern eyebolts.

D. Shackles: Size shackles appropriately for the intended application. Execute chain connections with chain shackles; other connections may employ anchor shackles.

1. Shackle Material: Forged Steel
2. Pin Material: Alloy Steel
3. Treatments: Heat Treat and Temper
4. Pin Type: Safety type bolt type pin or safety type round pin.
5. Federal Specification: RR-C-271D Type IV or IVB, Grade A or greater, Class 1.
6. Size the screw pin to ensure that the threads are not included in the bearing surface of the bolt.

E. Thimbles, Wire Rope: Size wire rope thimbles appropriately for the cable construction and diameter of the cable with which they are employed.

1. Material: Hot dipped galvanized carbon steel.
2. Finishing: Free of characteristics detrimental to the rope or adjacent elements.
3. Federal Specification: FF-T-276b., Type III.

F. Support cables and components:

1. Provide net connection by wire ropes, unless specified otherwise herein.

   a. Determine the classification of wire rope construction to suit the system’s operational requirements.
   b. Unless specifically required in the Contract Documents, the Contractor’s engineer shall determine the classification.

2. Employ continuous lines from the same spool/length, free of knots, splices or mechanical fasteners along their length unless specifically required otherwise in the Contract Documents. Do not employ damaged or deformed cables. Excluding prefabricated systems excluded, cut cable at the site from the manufacturer’s spool.
3. Provide anchor connections set into concrete or welded to structure surrounding pit as indicated on the drawings. Anchors should be designed to resist required loading.

G. Signage:

1. Signage shall be legible both in construction and grammar. Sign surfaces and characters shall be textured or otherwise treated to minimize glare and veiling reflectance.

2.4 SOURCE QUALITY CONTROL

1. Work on the systems may be reviewed at the point of manufacture a minimum of one time during fabrication. This review will occur during the final factory checkout prior to shipping, unless the Manufacturer and Architect agree on a more advantageous inspection date.

2.5 SUPPLEMENTARY

A. Provide equipment and hardware in addition to the items specified previously that are necessary to provide a fully working system in conformance with the intent of the Contract Documents.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verification of Conditions:

1. Examine work prepared by others to receive work of this Section and report defects affecting installation to the Architect for correction. Commencement of the work shall be construed as complete acceptance of preparatory work by others. The sphere of inspection includes but is not limited to:

   a. Assurance mounting surfaces are ready to accept the Work.
   b. Verification of flatness, plumb and level of mounting conditions.
   c. Inspection of components of the Work to ensure no damage has occurred during shipping or storage.

2. Discrepancies:

   a. In the event of discrepancies, immediately notify the Architect.
   b. Do not proceed with the installation in areas of discrepancy until all such discrepancies have been fully resolved.

3.2 PREPARATION

A. Verify field measurements at the site prior to installation and modify the system accordingly.

1. Deliver equipment to the site only after the building has been closed in. Coordinate storage at the site and ensure the materials and components are undamaged.
2. Protect the surrounding environment from damage by the Work.

3.3 TESTING

A. Clearly record the date, time, details and results of all the following tests and demonstrations and any subsequent re-tests. This will form the start of a system log book to be handed over to the user after acceptance together with operation and maintenance manuals.
B. Inspect the completely assembled system including all hardware, fittings, net, etc, and make good all deficiencies before declaring that the system is complete.
C. Demonstrate compliance with tolerances specified in the Contract Documents.
D. Perform a drop-test as described in OSHA 1926.502(c)(4)(i). Contractor should then verify that there is no significant residual distortion in the net pattern or in the suspension system.
E. Measure and verify that sag in the net does not exceed the requirements in the contract documents.
F. Provide demonstration and testing as required to obtain certification by the applicable legislative authority. This Contractor is solely responsible for obtaining such certification and all costs arising therefrom. Certification is a condition of final payment.

3.4 FIELD QUALITY CONTROL

A. Reviews:

1. Final review will be made by the Architect or his appointed representative following receipt in writing or notification from this Contractor that the installation is completed. If review reveals details of construction, fabrication, or installation not in strict accord with the Contract Documents, approval will be withheld and Contractor shall be given thirty days to replace the rejected items with those conforming to specification requirements. In addition to the final review of various equipment components the right of review is reserved during the course of the installation. The Architect or his appointed representative and will be allowed access to materials at the site for eventual incorporation in the work. Preliminary visits shall not be construed as eliminating the possible rejection of various components during the final review detailed above.

END OF SECTION 116195

SECTION 260000 - BASIC ELECTRICAL REQUIREMENTS

PART 1 GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary Conditions, Division 1 Specification Sections, and Instructions to Bidders apply to this and the other sections of Division 26.

1.2 RULES AND REGULATIONS

A. Work and materials shall conform to and be executed, inspected, and tested in accordance with the latest edition of the National Electric Code and with the governing rules and regulations of federal and local governmental agencies.

B. Other codes which will apply to this installation include the current editions of:

1. ANSI C2 - National Electrical Safety Code
2. NEMA Standards
3. NFPA 101 - Life Safety Code
4. Underwriters Laboratories

C. Where governing codes indicate the Drawings and Specifications do not comply with the minimum requirements of applicable codes, be responsible for either notifying the Owner in writing during the bidding period of the revisions required to meet code requirements, or providing an installation which will comply with the code requirements.

1.3 SUMMARY

A. This Section includes general administrative, material, and procedural requirements for electrical installations. The following administrative and procedural requirements are included in this Section to expand the requirements specified in Division 1:

1. Electrical, product general requirements and accesses.
2. Submittals.
3. Coordination drawings.
4. Record documents.
5. Maintenance manuals.
6. Rough-ins.
7. Electrical installations.
8. Cutting and patching.

B. Related Sections: The following sections contain requirements that relate to this section:
1. Section 260001 - BASIC ELECTRICAL MATERIALS AND METHODS, for materials and methods common to the remainder of Division 26, plus general related specifications including:
    a. Access to electrical installations.

1.4 SUBMITTALS

A. Follow the procedures specified in Division 1 Section "Submittals."

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver products to the project properly identified with names, model numbers, types, grades, compliance labels, and other information needed for identification.

1.6 WARRANTIES

A. See Division 1 specifications for warranty information.

PART 2 PRODUCTS

2.1 MATERIALS

A. All materials, unless otherwise specified, shall be new and be the standard products of the manufacturer. Seconds, rejects, or damaged materials will be rejected.

B. The equipment to be provided under these Specifications shall be essentially the standard commercial grade product of the manufacturer. Where two or more units of the same class of equipment are required, these units shall be products of a single manufacturer.

C. The listing of a manufacturer for certain equipment and systems does not indicate acceptance of a standard or catalogued item of equipment. All equipment and systems shall conform to the Specifications.

2.2 U.L. LISTING

A. All equipment shall bear the Underwriter's Laboratories (UL), or other approved agency, listing label.

B. Wherein an item of equipment is specified to be U.L. Listed, the entire assembly shall be listed by Underwriters Laboratories, Inc. Any modifications to suit the intent of the Specifications shall be performed in accordance with the National Electrical Code and listed by U.L.

2.3 ACCESS

A. Install electrical systems, materials, and equipment and coordinate with all adjacent items so as to maintain the manufacturer’s recommended service clearance requirements. Indicate service clearance requirements on the coordination shop drawings. Advise the Engineer of any service clearance conflicts prior to installation. Remove, relocate, and revise conflicting items that have already been installed without additional cost to the Owner.

B. Minimum clearances in front of or around equipment shall conform to the latest applicable code requirements.

PART 3 EXECUTION

3.1 ROUGH-IN:

A. Verify final locations for rough-ins with field measurements and with the requirements of the actual equipment to be connected.

B. Refer to equipment specifications in Divisions 2 through 26 for rough-in requirements.

3.2 ELECTRICAL INSTALLATIONS

A. General: Sequence, coordinate, and integrate the various elements of electrical systems, materials, and equipment. Comply with the following requirements:

1. Coordinate electrical systems, equipment, and materials installation with other building components. Be responsible for any changes in openings and locations necessitated by the equipment installed.
2. Verify all dimensions by field measurements.
3. Arrange for chases, slots, and openings in other building components during progress of construction, to allow for electrical installations.
4. Installation shall include setting equipment to accurate line and grade, leveling equipment, aligning equipment components, providing and installing couplings, bolts, guards, and anchor bolts.
5. All tolerances in alignment and leveling, and the quality of workmanship for each class and stage of work shall be subject to manufacturer's installation instructions.
6. All manufacturers’ finished equipment surfaces damaged during construction shall be brought to an "as new" condition by touch up or repainting. Any rust shall be completely removed and the surface primed prior to repainting.
7. Workmanship shall conform to the "Standard of Installation" published by the National Electrical Contractors Association.
8. Provide all scaffolding, rigging, hoisting and services necessary for erection and delivery of equipment and apparatus furnished into the premises. These items shall be removed from the premises when no longer required.
9. No electrical equipment, raceways or other work of any kind shall be covered up or hidden from view before it has been examined and approved. Any unsatisfactory work or materials shall be removed and corrected immediately.
10. Install systems, materials, and equipment level and plumb, parallel, and perpendicular to other building systems and components, where installed exposed in finished spaces.
11. Install electrical equipment to facilitate servicing, maintenance, and repair or replacement of equipment components. As much as practical, connect equipment for ease of disconnecting, with minimum of interference with other installations.

3.3 TEST AND INSPECTION

A. Upon completion of the work, notify the Architect in writing, that the entire electrical installation has been examined, inspected, tested, calibrated or adjusted as specified and that it is ready for final inspection. Work to be connected prior to final inspection and also include all of the work specified for "Manufacturers' Directions and Supervision." Include specified testing and inspection of documentation.

B. Prior to each inspection, provide a written certification that each system or piece of equipment to be operated during that test has been tested and does meet design performance criteria of the Contract Documents.

C. On completion of the work, obtain Certificates of Compliance, and approval or acceptance from all authorities having jurisdiction over the work, and deliver these certificates to the Architect. The work shall not be deemed to have reached a state of completion until the certificates have been delivered.

3.4 SUBMITTALS AND SHOP DRAWINGS

A. Refer to Division 1 for quantities and types of submittals and shop drawings.

B. Submittals and shop drawings shall be submitted in groups by systems. For example, all lighting fixtures, lamps, ballasts, and accessories shall be submitted simultaneously in one package.

C. Where there are no specific submittal requirements in the specification section, provide manufacturer's standard literature showing the submittal items.

D. Shop Drawings and/or Submittals Required:

1. Boxes
2. Low voltage wire and cable
3. Nameplates and device markings
4. Raceway connectors and fittings
5. Raceways

3.5 OPERATION AND MAINTENANCE MANUALS

A. Prepare maintenance manuals in accordance with Division 1 Section "PROJECT CLOSEOUT." In addition to the requirements specified in Division 1, include the following information for equipment items:

1. Approved special construction details that differ from the details shown on Drawings.

3.6 RECORD DOCUMENTS

A. Prepare record documents in accordance with the requirements in Division 1 Section "PROJECT CLOSEOUT." In addition to the requirements specified in Division 1, indicate installed conditions for:

B. Equipment locations (exposed and concealed), dimensioned from prominent building lines.

C. Contract Modifications and actual equipment and materials installed.

3.7 CUTTING AND PATCHING

A. General: Perform cutting and patching in accordance with Division 1 Section "CUTTING AND PATCHING." In addition to the requirements specified in Division 1, the following requirements apply:

B. Perform cutting, fitting, and patching of electrical equipment and materials required to:

1. Uncover Work to provide for installation of ill-timed Work.
2. Remove and replace defective Work.
3. Remove and replace Work not conforming to requirements of the Contract Documents.
4. Remove samples of installed Work as specified for testing.
5. Install equipment and materials in existing structures.
6. Upon written instructions from the Architect, uncover and restore Work to provide for Architect observation of concealed Work.

C. Cut, remove, and legally dispose of selected electrical equipment, components, and materials as indicated, including but not limited to removal of electrical items indicated to be removed and items made obsolete by the new Work.

D. Protect the structure, furnishings, finishes, and adjacent materials not indicated or scheduled to be removed.

E. Provide and maintain temporary partitions or dust barriers adequate to prevent the spread of dust and dirt to adjacent areas.

F. Protection of Installed Work: During cutting and patching operations, protect adjacent installations.

G. Patch finished surfaces and building components using new materials specified for the original installation and experienced Installers. Installers' qualifications refer to the materials and methods required for the surface and building components being patched.

H. Refer to Division 1 Section "DEFINITIONS AND STANDARDS" for definition of experienced "Installer."

END OF SECTION 260000

SECTION 260001 - BASIC ELECTRICAL MATERIALS AND METHODS

PART 1 GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

B. Requirements specified in Section 260000 - Basic Electrical Requirements apply to this Section.

1.2 SUMMARY

A. This Section includes limited scope general construction materials and methods for application with electrical installations as follows:

1. Miscellaneous metals for support of electrical materials and equipment.
2. Wood grounds, nailers, blocking, fasteners, and anchorage for support of electrical materials and equipment.

1.3 SUBMITTALS

A. General: Submit the following in accordance with Conditions of Contract and Division 1 Specification Sections.

1. Product data for the following products:
   a. Shop drawings detailing fabrication and installation for metal fabrications, and wood supports and anchorage for electrical materials and equipment.
   b. Welder certificates, signed by Contractor, certifying that welders comply with requirements specified under "Quality Assurance" article of this Section.

1.4 QUALITY ASSURANCE

A. Qualify welding processes and welding operators in accordance with AWS D1.1 "Structural Welding Code - Steel."

B. Certify that each welder has satisfactorily passed AWS qualification tests for welding processes involved and, if pertinent, has undergone recertification.

C. Fire-Resistance Ratings: Where a fire-resistance classification is indicated, provide access door assembly with panel door, frame, hinge, and latch from manufacturer listed in the UL "Building Materials Directory" for rating shown.

PART 2 PRODUCTS

2.1 MISCELLANEOUS METALS

A. Steel plates, shapes, bars, and bar grating: ASTM A 36.

B. Cold-Formed Steel Tubing: ASTM A 500.

C. Hot-Rolled Steel Tubing: ASTM A 501.

D. Steel Pipe: ASTM A 53, Schedule 40, welded.

E. Non-shrink, Nonmetallic Grout: Premixed, factory-packaged, non-staining, noncorrosive, nongaseous grout, recommended for interior and exterior applications.

F. Fasteners: Zinc-coated, type, grade, and class as required.

PART 3 EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting installation and application of access panels. Do not proceed with installation until unsatisfactory conditions have been corrected.

END OF SECTION 260001

SECTION 260519 - LOW VOLTAGE WIRES AND CABLES (100-600 VOLTS)

PART 1 GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

B. Requirements of the following Division 26 Sections apply to this section:

1. Section 260000 Basic Electrical Requirements.
2. Section 260001 Basic Electrical Materials and Methods.

1.2 SUMMARY

A. This Section includes wires, cables, and connectors for power, lighting, signal, control and related systems rated 100 to 600 volts.

1.3 SUBMITTALS

A. Product Data for electrical wires, cables and connectors.

1.4 QUALITY ASSURANCE

A. Regulatory Requirements: Comply with provisions of the NFPA 70 National Electrical Code.

B. Conform to applicable codes and regulations regarding toxicity of combustion products of insulating materials.

C. UL Compliance: Provide components which are listed and labeled by UL under the UL Std. 1569 Metal-Clad Cable Standard.

D. NEMA/ICEA Compliance: Provide components which comply with the WC-5 Thermoplastic-Insulated Wire and Cable for the Transmission and Distribution of Electrical Energy Standard.

E. IEEE Compliance: Provide components which comply with the Std.82 Test procedures for Impulse Voltage Tests on Insulated Conductors.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Wire and Cable:
   a. Alflex Corp.
   b. American Flexible Conduit Co.
   c. Cablec Corp.
   d. Carol Cable Co. Inc.
   e. Cerro Wire and Cable Corp.
   f. General Cable Corp.
   g. Pirell Cable Corp.
   h. Pyrotenax USA Corp. (for type MI).
   i. Rome Cable Corp.
   j. Southwire Company.
   k. Triangle PWC, Inc.

2. Connectors for Wires and Cable Conductors:
   a. AMP
   b. Burndy Corporation
   c. General Electric Co.
   d. Gould, Inc.
   e. Ideal Industries, Inc.
   f. O-Z/Gedney Co.
   g. Pyrotenx USA Corp. (for type MI).
   h. Raychem Corporation
   i. Square D Company
   j. Thomas and Betts Corp.
   k. 3M Company

2.2 WIRES AND CABLES

A. General: Provide wire and cable suitable for the temperature, conditions and location where indicated.

B. Conductors: Provide solid conductors for power and lighting circuits no. 10 AWG and smaller. Provide stranded conductors for sizes no. 8 AWG and larger.

C. Conductor Material: copper for all wires and cables.

D. Insulation: Provide insulation type in accordance with Part 3 below.

E. Color Coding: 208/120 Volts

Phase	Color
A	Black
B	Red
C	Blue
Neutral	White
Ground	Green

F. Jackets: Factory-applied nylon or PVC external jacketed wires and cables for pulls in raceways over 100-feet in length, for pulls in raceways with more than three equivalent 90 deg. bends, for pulls in conduits underground or under slabs on grade, and where indicated.

G. Cables: Provide the following type(s) of cables in NEC approved locations and applications where indicated. Provide cable UL listed for Portable Cord: Type SOOW.

2.3 CONNECTORS FOR CONDUCTORS

A. Provide UL-listed factory-fabricated, solderless metal connectors of sizes, ampacity ratings, materials, types and classes for applications and for services indicated. Use connectors with temperature ratings equal to or greater than those of the wires upon which used.

PART 3 EXECUTION

3.1 INSTALLATION OF WIRES AND CABLES

A. General: Install electrical cables, wires and wiring connectors as indicated, in compliance with applicable requirements of NEC, NEMA, UL, and NECA's "Standard of Installation", and in accordance with recognized industry practices.

B. Coordinate wire/cable installation work including electrical raceway and equipment installation work, as necessary to properly interface installation of wires/cables with other work.

C. Install #12 AWG minimum for circuits 100 volts and above.

D. Increase conductor size as required due to availability. Minimum feeder conductor sizes are shown on Drawings. If increased, be responsible for associated feeder conduit size and increased ground conductor size per NEC.

E. Ground and continuously polarize systems properly throughout following the color coding specified.

F. Install UL Type UF cable with nonmetallic outer jacketing, for direct buried underground feeders.

G. Install UL Type THHN or THWN wiring in conduit, for branch circuits #10 and smaller.

H. Install UL Type XHHW or THHN wiring in conduit, for feeders and branch circuits #8 and larger.

I. Install UL TYPE XHHW or THWN wiring in conduit, for feeders and branch circuits installed outside of the building envelope, in raceway in contact with soil, or whenever raceway may be subject to moisture and/or condensation.

J. Pull conductors simultaneously where more than one is being installed in same raceway.

K. Use of pulling compound or lubricant is to be avoided unless absolutely necessary; compound used must not deteriorate conductor or insulation and be one of the following:

1. Ideal-Aqua-Gel
2. Polywater
3. Yellow 77

L. Use pulling means including fish tape, cable, rope and basket weave wire/cable grips which will not damage cables or raceway.

M. Install exposed cable, parallel and perpendicular to surfaces, or exposed structural members, and follow surface contours, where possible.

N. Provide conductors of the same size from the protective device to the last load.

O. Make conductor length identical for parallel feeders.

P. Install wiring in conduits buried in plaster or in poured concrete after the encasing medium is set and dry and then only after conduits have been swabbed out.

Q. Support conductor in vertical raceways. One cable support shall be provided at the top or as close to the top as practical, plus a support for each additional interval of spacing per table 300-19a of the NEC.

R. Provide slack wire for all future connections with ends of wires taped and blank box covers installed.

S. Do not bend cables, either permanently or temporarily during installation to radii less than that recommended by the manufacturer.

T. Keep conductor splices to a minimum.

U. Splices, Taps and Terminations

1. Make splices and taps in wiring #10 AWG and smaller mechanically and electrically Secure with mechanical pressure type splicing devices as manufactured by 3M Company, Buchanan, Panduit, or approved equal.
2. Make splices and taps of conductors #8 AWG or larger and all splices in more terminal boxes using compression connectors requiring the use of compression tools for securing the conductors in the connectors. Termination of conductors at all distribution equipment, except transformers, shall be made using mechanical lugs. Connectors shall be of high conductivity corrosion-resistant material and have actual contact area that shall provide at least the current carrying capacity of the wire or cable. For conductors #1/0 and larger, connector lugs shall be of the two-hole type. Connector lugs shall be bolted to bussing using Belleville washers in combination with flat washers and nuts. Compression connectors shall be as manufactured by Thomas and Betts, Burndy, or approved equal.
3. Provide insulated connectors for splices and taps with a self-fusing rubber insulating tape that is non-corrosive to the connector and the conductor. Insulation tape shall have a minimum of 350 volts per mil dielectric strength. Friction or vinyl tape shall be applied directly over rubber insulating tape equal to 3M switch 88 type.

V. Tighten electrical connectors and terminals, including screws and bolts, in accordance with manufacturer's published torque tightening valves. Where manufacturer's torquing requirements are not indicated, tighten connector and terminals to comply with tightening torques specified in UL Std. 486A and B.

3.2 EQUIPMENT CONNECTIONS

A. Follow homerun circuit numbers shown on Drawings in connecting circuits to panelboards. In the event that field observation shows that the indicated circuit numbers are not connected to the

corresponding panel overcurrent device, make all corrections necessary. Each branch circuit homerun containing two or more circuits with a common neutral shall be connected to the circuit breaker or switch in a three or four-wire branch circuit panelboard so that no two of the circuits will be fed from the same phase.

B. Provide all wiring to and between motors, starters, line voltage (120-600 volt) control devices, disconnect switches and other related electrical equipment, except where such items are factory wired.

C. Terminate power wiring for elevator systems at the respective controller, and be in compliance with the manufacturer's approved shop drawings.

D. Provide power and all wiring connections to the control devices for electrically operated overhead doors, door operators and control devices which will be provided under another division.

E. Cord Drops and Portable Appliance Connections: Type SOOW, hard service cord with stainless steel, wire-mesh, strain relief device at terminations to suit application.

3.3 MAXIMUM BRANCH CIRCUIT LENGTHS

A. The following indicates maximum installed length a circuit can have and still maintain an adequate voltage level at the last point of use. If the circuit length exceeds the length listed, used the next largest wire size. Multiple circuit runs in the same raceway shall have all conductors sized the same based on worst case circuit lengths. Double length is required for distance between 3-way switches.

Circuit Length (in feet)

Wire Size	120V.	2 Wire 277V.	1 Phase 208V	3 Phase 208V	
12	90	150	60		75
10	80	150	70		80
8	80	175	65	150	75
6	95	200	80	180	90

3.4 WIRE AND CABLE MARKING

A. Provide wire number labels (Brady or equal) at source, control, and device terminations corresponding to schematics or circuits used.

3.5 WIRING METHODS

A. The following wiring methods shall not be used:

1. MC cable.
2. AC cable.
3. Aluminum wire and cable.

3.6 FIELD QUALITY CONTROL

A. Prior to energization of circuitry, check installed wires and cables with megohm meter to determine insulation resistance levels to ensure requirements are fulfilled.

B. Prior to energization, test wires and cables for electrical continuity and for short-circuits.

C. Subsequent to wire and cable hook-ups, energize circuitry and demonstrate functioning in accordance with requirements. Where necessary, correct malfunctioning units, and then retest to demonstrate compliance.

END OF SECTION 260519

SECTION 260553 - ELECTRICAL IDENTIFICATION

PART 1 GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

B. Requirements of the following Division 26 Sections apply to this section:

1. Section 260000 - Basic Electrical Requirements.
2. Section 260001 - Basic Electrical Materials and Methods.

1.2 SUMMARY

A. This Section includes identification of electrical materials, equipment, and installations. It includes requirements for electrical identification components including but not limited to the following:

1. Identification labeling for conductors and cover plates.

B. Related Sections: The following Sections contain requirements that relate to this Section:

1. Refer to other Division 26 sections for additional specific electrical identification associated with specific items.

1.3 SUBMITTALS

A. Submit Product Data for each type of product specified in accordance with Conditions of Contract and Division 1 Specification Sections.

1.4 QUALITY ASSURANCE

A. Electrical Component Standard: Components and installation shall comply with NFPA 70 National Electrical Code.

B. ANSI Compliance: Comply with requirements of ANSI Standard A13.1, "Scheme for the Identification of Piping Systems," with regard to type and size of lettering for raceway and cable labels.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Subject to compliance with requirements, provide products by one of the following:

1. American Labelmark Co.
2. Calpico, Inc.
3. Cole-Flex Corp.
4. Emed Co., Inc.
5. George-Ingraham Corp.
6. Ideal Industries, Inc.
7. Kraftbilt
8. LEM Products, Inc.
9. Markal Corp.
10. National Band and Tag Co.
11. Panduit Corp.
12. Radar Engineers Div., EPIC Corp.
13. Seton Name Plate Co.
14. Standard Signs, Inc.
15. W.H. Brady Co.

2.2 ELECTRICAL IDENTIFICATION PRODUCTS

A. Adhesive Marking Labels for Raceway and Metal-clad Cable: Pre-printed, flexible, self-adhesive labels with legend indicating voltage and circuit.

2.3 COLOR: BLACK LEGEND ON WHITE BACKGROUND.

A. Colored Adhesive Marking Tape for junction boxes: Self-adhesive vinyl tape not less than 3 mils thick by 1 inch to 2 inches in width.

B. Wire/Cable Designation Tape Markers: Vinyl or vinyl-cloth, self-adhesive, wraparound, cable/conductor markers with preprinted numbers and letter.

C. Cable Ties: Fungus-inert, self-extinguishing, one-piece, self-locking nylon cable ties, 0.18-inch minimum width, 50-lb minimum tensile strength, and suitable for a temperature range from minus 50°F to 350°F. Provide ties in specified colors when used for color coding.

PART 3 EXECUTION

3.1 INSTALLATION

A. Lettering and Graphics: Coordinate names, abbreviations, colors, and other designations used in electrical identification work with corresponding designations specified or indicated. Install numbers, lettering, and colors as approved in submittals and as required by code.

B. Install identification devices in accordance with manufacturer's written instructions and requirements of NEC.

C. Sequence of Work: Where identification is to be applied to surfaces that require finish, install identification after completion of finish work.

1. Apply identification to areas as follows:

a. Clean surface of dust, loose material, and oily films before painting.
b. Prime surfaces: For galvanized metal, use single-component acrylic vehicle coating formulated for galvanized surfaces. For concrete masonry units, use heavy-duty acrylic resin block filler. For concrete surfaces, use clear alkali-resistant alkyd binder-type sealer.
c. Apply one intermediate and one finish coat of orange silicone alkyd enamel.
d. Apply primer and finish materials in accordance with manufacturer's instructions.

D. Install labels at locations indicated and at locations for best convenience of viewing without interference with operation and maintenance of equipment.

END OF SECTION 260553

WILLIAM H. AMOSS MOSS PERFORMING ARTS CENTER

PERFORMANCE RIGGING SYSTEM UPGRADES

OCTOBER 13, 2023

AMOSS CENTER FOR THE PERFORMING ARTS
Harford Technical High School
200 Thomas Run Road
Bel Air, MD 21015-1698

DRAWING INDEX:

ET-0.00	ELECTRICAL COVER SHEET
ET-1.10	PERFORMANCE RIGGING ELECTRICAL
-	
-	-

ELECTRICAL GENERAL NOTES:

1. WHEREVER THE WORD "PROVIDE" IS USED, IT SHALL MEAN TO "FURNISH AND INSTALL COMPLETE AND READY FOR USE." CONTRACTOR SHALL PROVIDE ALL TESTING AND INSTRUCTION REQUIRED FOR OPERATION AND MAINTENANCE OF EQUIPMENT AND SYSTEM TO THE OWNER.
2. APPLICABLE CODES AND STANDARDS: ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE CODES AND STANDARDS AND ANY REGULATIONS EFFECTIVE IN THE PROJECT JURISDICTION. ALL CODE CONFLICTS SHALL BE BROUGHT TO THE ATTENTION OF THE DESIGN PROFESSIONAL FOR RESOLUTION. APPLICABLE CODES AND STANDARDS ON THIS PROJECT INCLUDE, BUT ARE NOT LIMITED TO, THE FOLLOWING: ELECTRICAL CODE: 2020 NATIONAL ELECTRICAL CODE (NEC), MOST RECENT EDITION YEAR OF THE PUBLISHED CODE, AND ADDITIONAL LOCAL AMENDMENTS.
3. CONTRACTOR IS RESPONSIBLE FOR OBTAINING AND SHALL BEAR THE COST OF ALL NECESSARY PERMITS AND INSPECTIONS.
4. PROVIDE ALL MATERIALS, BRACING, HANGERS AND EQUIPMENT REQUIRED FOR A COMPLETE OPERATIONAL ELECTRICAL SYSTEM. EXISTING CONDUIT AND BOXES MAY BE REUSED IF IN GOOD CONDITION.
5. ALL WORKMANSHIP, MATERIALS AND EQUIPMENT SHALL BE GUARANTEED FOR A PERIOD OF ONE YEAR AFTER ACCEPTANCE BY THE OWNER.

DRAWINGS IN THIS SET ARE SCHEMATIC IN NATURE. WORK ASSOCIATED WITH THIS BID PACKAGE IS CONSIDERED DELEGATED DESIGN.

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10/13/2023
STATE OF MARYLAND
MICHAEL A. WEIGAND
No. 17366
REGISTERED
PROFESSIONAL ENGINEER
M. Weigand

MICHAEL A. WEIGAND
Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland. License No. 17366, Expiration Date: May 29, 2023

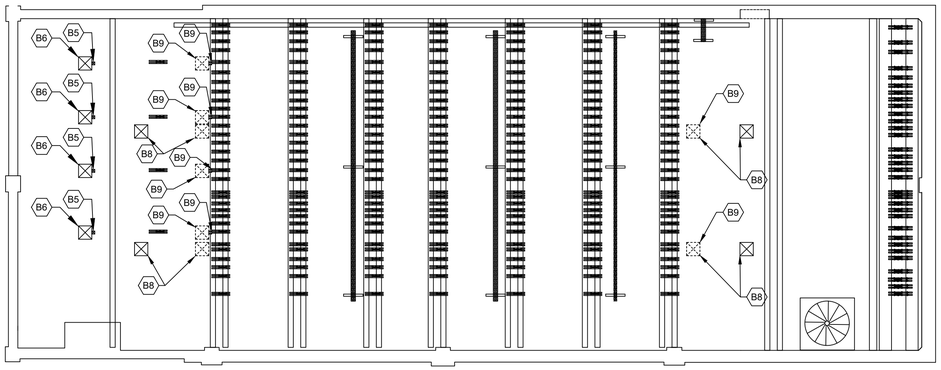
AMOSS THEATRE
STAGE EQUIPMENT UPGRADES

HARFORD COMMUNITY COLLEGE/
HARFORD TECHNICAL HS
401 Thomas Run Road
Bel Air, MD 21015

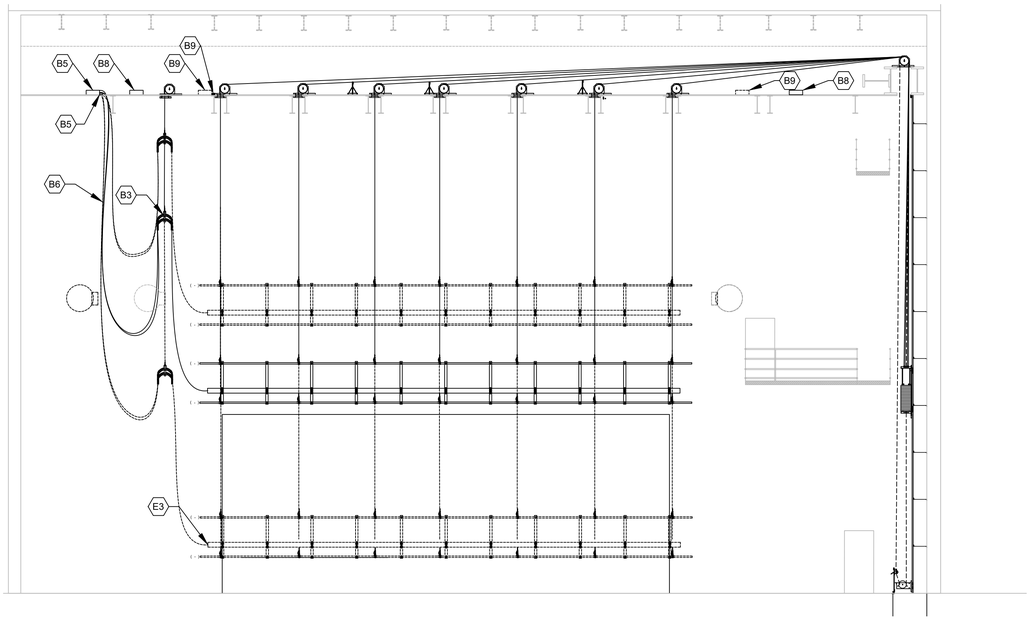
13 October 2023	100%CD
DATE:	ISSUE
PROJECT NUMBER:	HARFORDAMOSS-23
SCALE:	AS NOTED

ELECTRICAL COVER SHEET

ET 0.00



1 ET1.10 Grid Level Performance Rigging Layout
SCALE: 1/8" = 1'-0"



2 ET1.10 Loading Gallery Level Performance Rigging Layout
SCALE: 1/8" = 1'-0"

KEYNOTE

B 5 -RELOCATE 4 STAGE LEFT RACEWAYS JUNCTION BOX OFFSTAGE APPROXIMATELY 15' (FIELD VERIFY). INCLUDE RELOCATION OF CONDUIT AND CIRCUITS FEEDING BOTH PRIMARY STAGE AND SECONDARY WORK LIGHT CIRCUITS. PROVIDE NEW SO CABLES.

B6 - RELOCATE 4 STAGE LEFT RACEWAYS JUNCTION BOX OFFSTAGE APPROXIMATELY 15' (FIELD VERIFY). PROVIDE NEW SO CABLES TO FEED 4 LIGHTING RACEWAYS. LENGTH TO ALLOW FULL TRAVEL AS SHOWN IN DWGS. SIZE PER NEC W/ 1 HOT & 1 NEUTRAL FOR EACH PERFORMANCE CIRCUITS + 1 COMMON GROUND PER CODE. SUPPLY 1 EYE KELLUM STYLE CORD GRIP FASTENED TO THE GRID FLOORING FOR EACH SO CABLE IN ADDITION TO 2 BOX GRIP KELLUM FOR EACH CABLE TO CONNECT TO BOX.

B8 - RELOCATE 2 DROP BOX JUNCTION BOX STAGE LEFT, AND 2 DROP BOX JUNCTION BOX STAGE RIGHT OFFSTAGE AS SHOWN. PROVIDE NEW SO CABLES TO FEED 4 LIGHTING RACEWAYS. LENGTH TO ALLOW FULL TRAVEL AS SHOWN IN DWGS. SIZE PER NEC W/ 1 HOT & 1 NEUTRAL FOR EACH PERFORMANCE CIRCUITS + 1 COMMON GROUND PER CODE. SUPPLY 1 EYE KELLUM STYLE CORD GRIP FASTENED TO THE GRID FLOORING FOR EACH SO CABLE IN ADDITION TO 2 BOX GRIP KELLUM FOR EACH CABLE TO CONNECT TO BOX.

B9 - EXISTING LOCATION OF GRID JUNCTION BOX TO BE MOVED AS NOTED. VERIFY FINAL LOCATIONS WITH DESIGNER BEFORE INSTALLATION.

ELECTRICAL NOTES:

1. CIRCUITS TO BE VERIFIED, DE-ENERGIZED, LABELED, AND LOCKED OUT BEFORE ELECTRICAL WORK TO BE PERFORMED.
2. NOTE THAT THERE ARE APPROXIMATELY 17-25 CIRCUITS PER JUNCTION BOX TO EITHER CUT OR EXTEND TO NEW LOCATION. ALL CONNECTIONS TO BE RESTORED AS CURRENTLY INSTALLED.
3. NOTED BOXES (KEYNOTE B9) TO BE DISCONNECTED, RELOCATED, AND RECONNECTED TO LOCATIONS NOTED ON DRAWING. SO CABLE COMING FROM BOTTOM OF BOXES TO BE SUPPORTED BY NEW WIRE MANAGEMENT CORD GRIP. A SECOND EYE STYLE CORD GRIP TO BE USED TO SUPPORT THE CABLE FROM THE GRID FLOOR.
4. RE-ROUTE CONDUITS AND EXTEND CIRCUITS FOR ELECTRICAL SPOTLIGHT INSTALLATION FROM PANEL STAGE LIGHTING DIMMER RACK.
5. PROVIDE CONDUIT SUPPORTS MATCHING CURRENT INSTALLATION.
4. PROVIDE CONDUIT AND WIRE MATCHING CURRENT INSTALLATION AS NEEDED TO EXTEND ANY CIRCUITS REQUIRED.
5. EACH CIRCUIT TO HAVE ITS OWN NEUTRAL UNLESS INSTALLATION PERMITTED BY THE NEC.
6. PROVIDE LABEL FOR EACH JUNCTION BOX STATING THAT THE BOXES CONTAIN CIRCUITS FROM 2 SEPARATE POWER SOURCES.
7. ALL CIRCUIT TO BE RECONNECTED TO EXISTING LAYOUT MATCHING CIRCUIT CONTROL WITH RECEPTACLE LABEL ON RACEWAY.
8. INSTALLATION TO BE TESTED TO ENSURE ALL CIRCUITS ARE INSTALLED CORRECTLY.

PERFORMANCE LIGHTING CIRCUIT QUANTITY BY POSITION (FIELD VERIFY)

- 1ST ELECTRIC -24 PERFORMANCE+ 1 WORKLIGHT
- 2ND ELECTRIC -16 PERFORMANCE + 1 WORKLIGHT
- 3RD ELECTRIC -16 PERFORMANCE + 1 WORKLIGHT
- 4TH ELECTRIC -17 PERFORMANCE + 1 WORKLIGHT
- DSL DROP BOX - 3 CIRCUITS
- USL DROP BOX - 3 CIRCUITS
- DSR DROP BOX - 3 CIRCUITS
- DSL DROP BOX - 3 CIRCUITS.

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WAI MEP Consulting Engineers
WEIGAND ASSOCIATES, INC.
ISSUING OFFICE
20270 Goldenrod Lane, Suite 100
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10/13/2023
STATE OF MARYLAND
MICHAEL ANTHONY WEIGAND
No. 17366
REGISTERED
PROFESSIONAL ENGINEER

MICHAEL A. WEIGAND
Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland. License No. 17366, Expiration Date: May 29, 2023

AMOSS THEATRE
STAGE EQUIPMENT UPGRADES

HARFORD COMMUNITY COLLEGE/
HARFORD TECHNICAL HS
401 Thomas Run Road
Bel Air, MD 21015

13 October 2023	100%CD
DATE:	ISSUE
PROJECT NUMBER:	HARFORDAMOSS-23
SCALE:	AS NOTED

Performance Rigging Electrical

ET 1.10

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WILLIAM H. AMOSS PERFORMING ARTS CENTER

PERFORMANCE RIGGING SYSTEM UPGRADES

OCTOBER 13, 2023

AMOSS CENTER FOR THE PERFORMING ARTS
Harford Technical High School
200 Thomas Run Road
Bel Air, MD 21015-1698

DRAWING INDEX:

QT-0.00	COVER SHEET
QT-0.10	SCHEDULES AND NOTE
QT-1.10	PERF RIGGING LAYOUTS
QT-1.11	PERF RIGGING LAYOUTS
QT-1.30	PERF RIGGING ELEVATIONS
QT-2.30	ORCHESTRA PIT SAFETY NET
-	-
-	-

DRAWINGS IN THIS SET ARE SCHEMATIC IN NATURE. WORK ASSOCIATED WITH THIS BID PACKAGE IS CONSIDERED DELEGATED DESIGN. SYSTEM AND COMPONENTS TO BE DESIGNED AND ENGINEERED BY CONTRACTOR'S MD LICENSED DESIGN PROFESSIONAL PRIOR TO INSTALLATION AND ACCEPTANCE.

AMOSS THEATRE
STAGE EQUIPMENT UPGRADES

HARFORD COMMUNITY COLLEGE/
HARFORD TECHNICAL HS
401 Thomas Run Road
Bel Air, MD 21015

DATE: ISSUE

PROJECT NUMBER: HARFORDAMOSS-23
SCALE: AS NOTED

QT 0.00

William H Amoss PAC Performance Rigging Scope of Work

Bid Pkg	Quant		Details	Notes	
A.	21	Refurbish Single Purchase Line Sets, Each W/:			
		1	Adjust Existing Head Block		
		7	Adjust And Inspect Existing Loft Blocks	Align Block To Head Blocks And Tighten All Bolts To Spec	
		AN	1/4 GAC Lift Lines- Inspect	Allowance For Replacement Of Up To 30 Lines With Trim Chain And Terminations	
		AN	Cable End Terminations, Inspect And Adjust	Allowance For Replacement Of Up To 20 Trim Chain And Termination To Existing Cable	
		1	New Purchase Line- 3/4 Multiline II	Length As Necessary	
		1	Adjust Rope Lock		
		AN	New Oak Top Stop Block Rail Assembly.	Entire Length Of Guide Wall- Us To Ds	
		AN	New Oak Bottom Stop Block Rail Assembly.	Entire Length Of Guide Wall- Us To Ds	
		2	New Truss Batten Assembly	As Noted On Dwgs	
		Exist	Adjust Align Existing Guide Channels		
		Exist	Existing Arbor, Adjust And Replace Guide Shoes As Necessary		
		Exist	Tension Block Assembly- Inspect And Adjust As Necessary		
	3	Sag Bar Assemblies, Grid Mounted, Each With		Oak Bar- Full Depth of Stage	
		3	Grid Mount Stanchion Assembly With Oak Rail	Confirm Height As Necessary For Each Location.	
B.	4	Refurbish Performance Lighting Line Sets, Single Purchase Each W/:			
		1	Adjust Headblock- 8 Lines		
		8	New 8" Upright Loft Block	Custom Clips / 1 Block For Cable Management	
		8	1/4 GAC Lift Lines	Length As Necessary	
		AN	Cable End Terminations Per Spec	With Trim Device At Batten End	
		1	New Purchase Line- 3/4 Multiline II	Length As Necessary	
		1	Adjust Rope Lock		
		AN	Cable Cradle For Each So Cable Drop	Provide Yolk Assembly For Multiple Cradles	
		Exist	Adjust Align Existing Guide Channels		
		Exist	Existing Arbor, Adjust And Replace Guide Shoes As Necessary		
		Exist	Tension Block Assembly- Inspect And Adjust As Necessary		
	1	Performance Lighting Electrical Work			
		4	Relocate Existing Performance Grid J-Box Offstage Approx 15'	See Dwgs.	
		Lot	New So Cable For 4 Existing Electrics Including Work Light	Replace With Similar Gauge And Conductors- to Include Work light	
		Lot	Cable Strain Relief	2 Box And 1 Eye Grip Kellum per So Cable As Noted On Dwgs.	
		Lot	Termination Of Wiring At Each End Of So Cable	Ensure Wiring Matches Existing Circuit Layout And Labeling	
		4	Relocate Existing Drop Box J-Box Offstage	See Dwgs.	
		Lot	New So Cable For 4 Existing Drop Box Assembly	Replace With Similar Gauge And Conductors	
		Lot	Cable Strain Relief	2 Box And 1 Eye Grip Kellum per So Cable As Noted On Dwgs.	
		Lot	Termination Of Wiring At Each End Of So Cable	Ensure Wiring Matches Existing Circuit Layout And Labeling	
		Lot	Disconnect And Reterminate Drop Box Cable As Necessary		
C.	5	Convert Double Purchase Line Set To Single Purchase, Each W/:			
		1	8' Arbor- Single Purchase	Confirm Size prior to delivery	
		Exist	12" Headblock-	Reuse Existing	
		Exist	8" Upright Loft Block	Reuse Existing Loft Blocks	
		7	1/4 GAC Lift Lines-	Length As Necessary	
		AN	Cable End Terminations Per Spec	With Trim Device At Batten End	
		1	New Purchase Line	Length As Necessary	
		1	New Rope Lock		
		AN	J Bar Guide Wall System	W/ Battens And Wall Knees As Necessary.	
		AN	New Oak Bottom Stop Rail Assembly.	Set For High Trim As Shown In Dwgs.	
		Exist	Tension Block Assembly-Relocate To Floor Inspect And Adjust As Necessary		
D.	1	Replace Orchestra Pit Safety Net			
		1	Replace Existing With Unit Of Similar Size And Construction]		
		1	Inspect And Reset As Necessary Existing Anchor Points.		
		1	Add Additional Anchor Points Per Net Manufacture Recommendation		
		AN	=As Necessary		
		EXIST	=Use Existing Item		

1 QT0.10 Performance Equipment Package Scope
SCALE: NTS

KEYNOTE SUMMARY

REFURBISH SINGLE PURCHASE LINE SETS

A 1a -ADJUST EXISTING ROPE LOCK FOR CORRECT TENSIONS.
A 1b -STENCIL THE LINESET NUMBER FOR EACH SET ON THE LOCK RAIL.
A 1c -PROVIDE NEW WET ERASABLE LOCKING RAIL INDEX CARDS AND INDEX CARD HOLDERS. 1 CARD FOR EACH SET.
A 2 -REUSE EXISTING FLOATING FLOOR TENSION BLOCKS ALL SETS - ADJUST SHOES AND LUBRICATE AS NECESSARY
A 3 -PROVIDE NEW 3/4" SYNTHETIC MULTILINE II PURCHASE LINE AND ROPE THIMBLES FOR EACH EXISTING SINGLE PURCHASE CW ARBOR.
A 4 -PROVIDE NEW HARDWOOD 2X2 TO THE BOTTOM STOP ANGLE. MOUNT TO EXISTING STOP ANGLE
A 5 -REUSE EXISTING SINGLE PURCHASE ARBORS- INSPECT AND REPLACE ALL CONNECTION HARDWARE, ADD STICKERS BACKBONE TO NOTE PROPER SPREADER PLATE USE LOCATION.
A 6 -PROVIDE NEW TRUSS BATTEN FOR CURTAIN LINE SETS.
A 7 -PROVIDE NEW ANGLE IRON AND HARDWOOD UPPER ARBOR STOP (LOW TRIM) THE LENGTH OF THE GUIDE WALL
A 8 -PROVIDE NEW HARDWOOD SAG BAR AND SUPPORT FRAMES
A 9 -TYPICAL HEAD BLOCK- ADJUST AND ALIGN ALL FOR CORRECT AND PROPER FLEET ANGLE TO LOFT BLOCKS
A 10 -TYPICAL LOFT BLOCK- INSPECT, ADJUST, AND ALIGN ALL FOR PROPER FLEET ANGLE TO HEAD BLOCK
A 11 -REPLACE TRIM CHAINS ASSEMBLES SHOWING SIGNS OF CORROSION OR RUST. INCLUDE AN ALLOWANCE FOR THE REPLACEMENT OF UP TO 20 TRIM CHAIN ASSEMBLIES AND TERMINATIONS IN BASE BIDDING(IN ADDITION TO NEW LIFT LINE ASSEMBLIES NOTED BELOW). IMMEDIATELY UPON AWARD OF CONTACT, INSPECT THE SYSTEM AND MAKE THE OWNER AWARE OF ANY ADDITION TERMINATIONS ABOVE THE ALLOCATED AMOUNT THAT MAY REQUIRE REPLACEMENT.
A 12 -REMOVE ALL TRIM CHAIN SAFETY BOLTS
A 13 -INSPECT ALL LIFT LINES FOR WEAR, CORROSION, AND CORRECT CABLE TERMINATION. INCLUDE AN ALLOWANCE TO REPLACE UP TO 30 LIFT LINES AND TERMINATIONS IN THE BASE BID. IMMEDIATELY UPON AWARD OF THE CONTRACT, INSPECT THE SYSTEM AND MAKE THE OWNER AWARE OF ANY ADDITION CABLES ABOVE THE ALLOCATED AMOUNT THAT MAY REQUIRED REPLACEMENT.
A 14 -INSPECT ALL BATTENS. WIRE BRUSH, PRIME AND SPOT PAINT FLAT BLACK ALL RUST AREAS.
A 15 -LEVEL AND TRIM ALL EXISTING BATTENS
A 16- MOVE LINESETS 24 THROUGH 29 UP STAGE 6-9" TO ALLEVIATE FLEET ANGLE ISSUE- COORDINATE IN FIELD WITH OWNERS REPS.

REFURBISH PERFORMANCE LIGHTING LINESETS (4 TOTAL SETS)

B 1 -RELOCATE AND RECABLE EXISTING LOFT BLOCK FOR SO CABLE PICK OFFSTAGE AS SHOWN. IF NO BLOCK IS PRESENT, PROVIDE NEW BLOCK.
B 2 -ADJUST ALIGNMENT OF HEAD BLOCK AS NECESSARY TO ENSURE CORRECT FLEET ANGLES TO SHORT LIFT LINE
B 3 -PROVIDE NEW CABLE CRADLES, 1 CRADLE PER SO CABLE. PROVIDE YOKE ASSEMBLY TO SECURE AND HANG VERTICALLY STACKED TO SINGLE LIFT LINE IF MORE THAN 1 CRADLE IS REQUIRED.
B 4 -PROVIDE HIGH TRIM ARBOR STOP FOR EACH ELECTRICS ARBOR AT HIGH TRIM OF CABLE CRADLE ASSEMBLY
B 5 -RELOCATE 4 STAGE LEFT RACEWAYS JUNCTION BOX OFFSTAGE APPROX. 15' (FIELD VERIFY). INCLUDE RELOCATION OF CONDUIT AND CIRCUITS FEEDING BOTH PRIMARY STAGE AND SECONDARY WORK LIGHT CIRCUITS.
B 6 -PROVIDE NEW SO CABLES TO FEED 4 LIGHTING RACEWAYS. LENGTH TO ALLOW FULL TRAVEL AS SHOWN IN DWGS. SIZE PER NEC W/ 1 HOT & 1 NEUTRAL FOR EACH PERFORMANCE CIRCUITS + GROUND PER CODE. SUPPLY 1 EYE GRIP KELLUM FOR EACH SO CABLE IN ADDITION TO 2 BOX GRIP KELLUM NOTED BELOW.
B 7 -REMOVE EXISTING SO CABLE FROM RACEWAY. INSTALL EACH NEW SO CABLE PER NOTE XX WITH BOX GRIP KELLUM AT EACH END. RETERMINATE PER EXISTING CIRCUIT LAYOUT AND CONFIRM ADDRESS AND OPERATION OF EACH CIRCUIT IN RACEWAY.
B 8 -RELOCATE 2 DROP BOX JUNCTION BOX STAGE LEFT, AND 2 DROP BOX JUNCTION BOX STAGE RIGHT OFFSTAGE AS SHOWN. DISCONNECT AND RETERMINATE CABLE AS NECESSARY TO RELOCATE AND REFEED DROP CABLE THROUGH GRID
B 9 -EXISTING LOCATION OF GRID J BOX- TO BE MOVED AS NOTED
B 10 -REPLACE ALL 7X19 GAC LIFT LINES AND TERMINATIONS AT ARBOR AND BATTENS (5 LIGHTING ELECTRICS LINE SETS ONLY)

CONVERT DOUBLE PURCHASE LINESET TO SINGLE PURCHASE

C 1 -CONVERT 5 DOUBLE PURCHASE LINE SETS TO SINGLE PURCHASE PER BID PACKAGE SCOPE, RELOCATE OPERATION TO FLOOR LEVEL
C 2 -PROVIDE NEW J BAR GUIDE RAIL FROM STAGE LEVEL TO HEAD BEAM IN CORRECT RELATION OF PURCHASE LINE TO FLOOR LOCKING RAIL FOR SETS TO BE CONVERTED. EXISTING GUIDE RAIL CAN BE REUSED WITH NEW WALL KNEES IF INSTALLED WITH CLEAN AND SMOOTH ALIGNMENT AND TRANSITION BETWEEN NEW AND EXISTING RAILS.
C 3 -PROVIDE NEW PURCHASE LINE FOR EACH RELOCATED LINESET
C 4 -ADJUST EXISTING HEAD BLOCK ATTACHMENT AT BASE ANGLE, OR IF NECESSARY PROVIDE NEW HEAD BLOCK ASSEMBLY FOR PROPER ALIGNMENT OF PURCHASE LINE LIFT LINES TO FLOOR LEVEL LOCKING RAIL
C 5 -PROVIDE NEW 7' ARBOR WITH SHOES PER SPECIFICATIONS FOR EACH RELOCATED LINESET. REMOVE EXISTING ARBORS AND TURN OVER TO OWNER.
C 6 -PROVIDE NEW TENSION BLOCK OR IF POSSIBLE TO MODIFY EXISTING RELOCATE TO FLOOR LEVEL FOR USE WITH NEW LINESETS.
C 7 -RELOCATE EXISTING ROPE LOCKS TO STAGE LEVEL LOCKING RAIL. INDEX RAIL TO REMAIN AT GALLERY LEVEL
C 8 -TYPICAL LOFT BLOCK- INSPECT, ADJUST, AND ALIGN FOR PROPER FLEET ANGLE TO HEAD BLOCK

ORCHESTRA PIT SAFETY NET

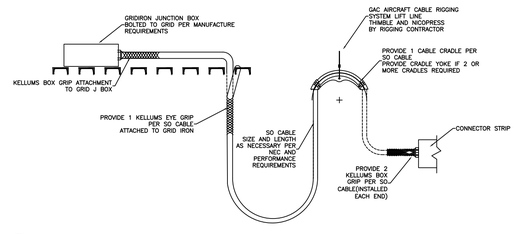
PN 1 -PROVIDE NEW PIT SAFETY NET TO WORK WITH EXITING WALL ANCHOR LAYOUTS
PN 2 -INSPECT, REPLACE, OR RESET ANY ATTACHMENT POINTS THAT ARE PULLING OUT OR DEFORMED.

GENERAL RIGGING NOTES

- FIELD VERIFY ALL EXISTING DIMENSIONS AND LOCATIONS OF EQUIPMENT TO BE REPLACED.
- SEE SPECIFICATIONS FOR HARDWARE AND EQUIPMENT REQUIREMENTS
- DEMO AND REMOVE ALL EXISTING HARDWARE AND EQUIPMENT SCHEDULED FOR REPLACEMENT. RETAIN ANY EQUIPMENT AS DIRECTED BY OWNER, DISPOSE OF REMAINING ITEMS
- THIS CONTRACTOR TO SUPPLY ALL ELECTRICAL WIRING, CONDUIT, AND TERMINATIONS AS NECESSARY FOR THE INDICATED SCOPE OF WORK.
- REMOVE AND STORE ALL CURTAIN TRACKS AND HARDWARE FOR REUSE. REINSTALL AT COMPLETION OF PROJECT.
- PROVIDE SHALL INCLUDE BOTH FURNISH AND INSTALL ITEMS INDICATED
- REFER TO ET DWGS FOR ADDITIONAL ELECTRICAL NOTES AND DETAILS

PERFORMANCE LIGHTING CIRCUIT QUANTITY BY POSITION

- 1ST ELECTRIC -24 PERFORMANCE+ 1 WORKLIGHT
- 2ND ELECTRIC -16 PERFORMANCE + 1 WORKLIGHT
- 3RD ELECTRIC -16 PERFORMANCE + 1 WORKLIGHT
- 4TH ELECTRIC -17 PERFORMANCE + 1 WORKLIGHT
- DSL DROP BOX - 3 CIRCUITS
- USL DROP BOX - 3 CIRCUITS
- DSR DROP BOX - 3 CIRCUITS
- DSL DROP BOX - 3 CIRCUITS.



A3 TYPICAL LIGHTING BATTEN CABLE PICK UP
NOTE SEE RIGGING DWG FOR LAYOUT OF CABLE DROP AND GRID BOX

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AMOSS THEATRE
STAGE EQUIPMENT UPGRADES

HARFORD COMMUNITY COLLEGE/
HARFORD TECHNICAL HS
401 Thomas Run Road
Bel Air, MD 21015

DATE: ISSUE

PROJECT NUMBER: HARFORDAMOSS-23
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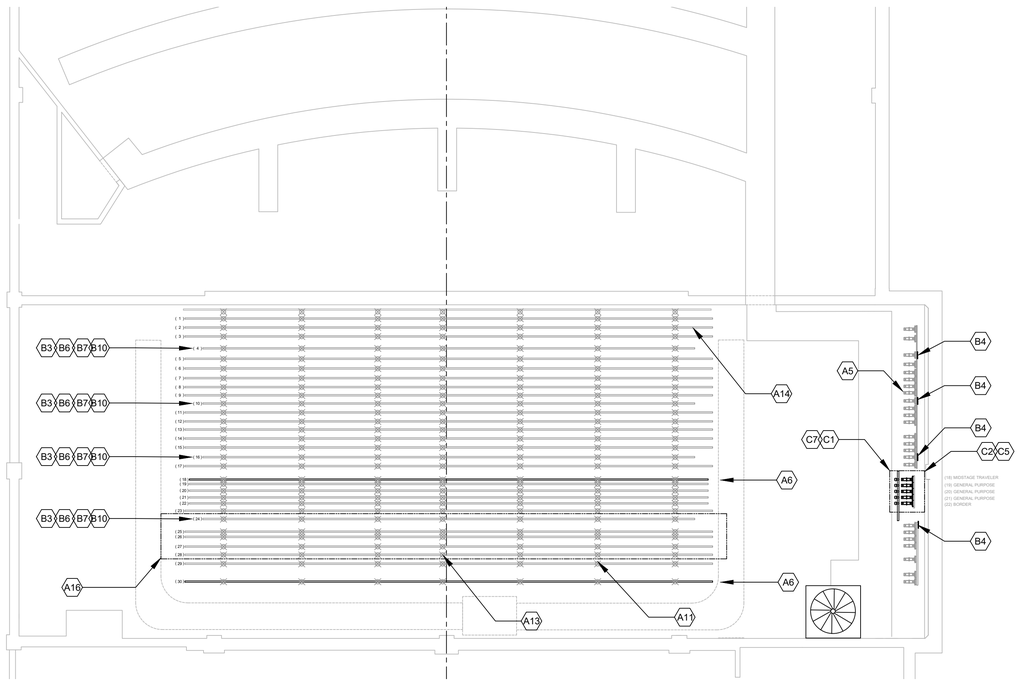
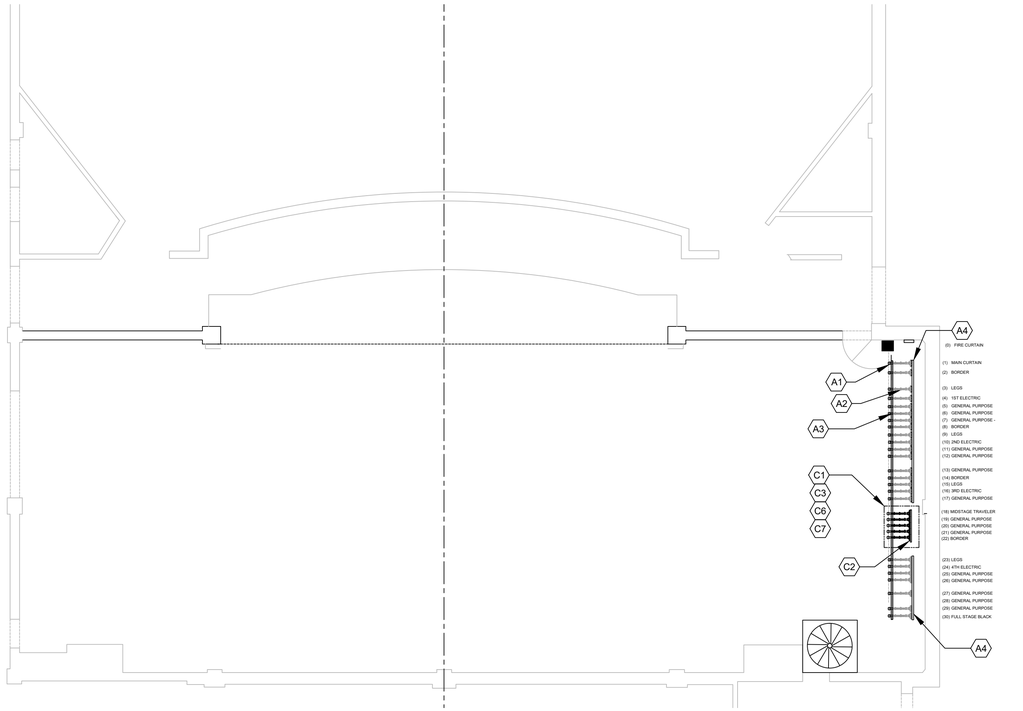
PERFORMANCE RIGGING
Schedules & Notes

QT 0.10



3 Gallery Level Performance Rigging Layout
SCALE: 1/8" = 1'-0"



2 Stage Level Performance Rigging Layout
SCALE: 1/8" = 1'-0"

KEYNOTE SUMMARY

REFURBISH SINGLE PURCHASE LINE SETS

A 1a -ADJUST EXISTING ROPE LOCK FOR CORRECT TENSIONS.
A 1b -STENCIL THE LINESET NUMBER FOR EACH SET ON THE LOCK RAIL.
A 1c -PROVIDE NEW WET ERASABLE LOCKING RAIL INDEX CARDS AND INDEX CARD HOLDERS. 1 CARD FOR EACH SET.

A 2 -REUSE EXISTING FLOATING FLOOR TENSION BLOCKS ALL SETS - ADJUST SHOES AND LUBRICATE AS NECESSARY
A 3 -PROVIDE NEW 3/4" SYNTHETIC MULTILINE II PURCHASE LINE AND ROPE THIMBLES FOR EACH EXISTING SINGLE PURCHASE CW ARBOR.
A 4 -PROVIDE NEW HARDWOOD 2X2 TO THE BOTTOM STOP ANGLE. MOUNT TO EXISTING STOP ANGLE
A 5 -REUSE EXISTING SINGLE PURCHASE ARBORS- INSPECT AND REPLACE ALL CONNECTION HARDWARE, ADD STICKERS BACKBONE TO NOTE PROPER SPREADER PLATE USE LOCATION.
A 6 -PROVIDE NEW TRUSS BATTEN FOR CURTAIN LINE SETS.
A 7 -PROVIDE NEW ANGLE IRON AND HARDWOOD UPPER ARBOR STOP (LOW TRIM) THE LENGTH OF THE GUIDE WALL
A 8 -PROVIDE NEW HARDWOOD SAG BAR AND SUPPORT FRAMES
A 9 -TYPICAL HEAD BLOCK- ADJUST AND ALIGN FOR CORRECT AND PROPER FLEET ANGLE TO LOFT BLOCKS
A 10 -TYPICAL LOFT BLOCK- INSPECT, ADJUST, AND ALIGN FOR PROPER FLEET ANGLE TO HEAD BLOCK
A 11 -REPLACE TRIM CHAINS ASSEMBLES SHOWING SIGNS OF CORROSION OR RUST. INCLUDE AN ALLOWANCE FOR THE REPLACEMENT OF UP TO 20 TRIM CHAIN ASSEMBLIES AND TERMINATIONS IN BASE BIDDING(IN ADDITION TO NEW LIFT LINE ASSEMBLIES NOTED BELOW). IMMEDIATELY UPON AWARD OF CONTACT, INSPECT THE SYSTEM AND MAKE THE OWNER AWARE OF ANY ADDITION TERMINATIONS ABOVE THE ALLOCATED AMOUNT THAT MAY REQUIRE REPLACEMENT.
A 12 -REMOVE ALL TRIM CHAIN SAFETY BOLTS
A 13 -INSPECT ALL LIFT LINES FOR WEAR, CORROSION, AND CORRECT CABLE TERMINATION. INCLUDE AN ALLOWANCE TO REPLACE UP TO 30 LIFT LINES AND TERMINATIONS IN THE BASE BID. IMMEDIATELY UPON AWARD OF THE CONTRACT, INSPECT THE SYSTEM AND MAKE THE OWNER AWARE OF ANY ADDITION CABLES ABOVE THE ALLOCATED AMOUNT THAT MAY REQUIRED REPLACEMENT.
A 14 -INSPECT ALL BATTENS. WIRE BRUSH, PRIME AND SPOT PAINT FLAT BLACK ALL RUST AREAS.
A 15 -LEVEL AND TRIM ALL EXISTING BATTENS
A 16- MOVE LINESETS 24 THROUGH 29 UP STAGE 6-9" TO ALLEVIATE FLEET ANGLE ISSUE- COORDINATE IN FIELD WITH OWNERS REPS.

REFURBISH PERFORMANCE LIGHTING LINESETS (4 TOTAL SETS)

B 3 -PROVIDE NEW CABLE CRADLES, 1 CRADLE PER SO CABLE. PROVIDE YOKE ASSEMBLY TO SECURE AND HANG VERTICALLY STACKED TO SINGLE LIFT LINE IF MORE THAN 1 CRADLE IS REQUIRED.
B 4 -PROVIDE HIGH TRIM ARBOR STOP FOR EACH ELECTRICS ARBOR AT HIGH TRIM OF CABLE CRADLE ASSEMBLY
B 6 -PROVIDE NEW SO CABLES TO FEED 4 LIGHTING RACEWAYS. LENGTH TO ALLOW FULL TRAVEL AS SHOWN IN DWGS. SIZE PER NEC W/ 1 HOT & 1 NEUTRAL FOR EACH PERFORMANCE CIRCUITS + GROUND PER CODE. SUPPLY 1 EYE GRIP KELLUM FOR EACH SO CABLE IN ADDITION TO 2 BOX GRIP KELLUM NOTED BELOW.
B 7 -REMOVE EXISTING SO CABLE FROM RACEWAY. INSTALL EACH NEW SO CABLE PER NOTE B6 WITH BOX GRIP KELLUM AT EACH END AND ONE EYE GRIP ATTACH TO GRID. RETERMINATE PER EXISTING CIRCUIT LAYOUT AND CONFIRM ADDRESS AND OPERATION OF EACH CIRCUIT IN RACEWAY.

B 10 -REPLACE ALL 7X19 GAC LIFT LINES AND TERMINATIONS AT ARBOR AND BATTENS (5 LIGHTING ELECTRICS LINE SETS ONLY)

CONVERT 5 DOUBLE PURCHASE LINESET TO SINGLE PURCHASE

C 1 -CONVERT 5 DOUBLE PURCHASE LINE SETS TO SINGLE PURCHASE PER BID PACKAGE SCOPE, RELOCATE OPERATION TO FLOOR LEVEL
C 2 -PROVIDE NEW J BAR GUIDE RAIL FROM STAGE LEVEL TO HEAD BEAM IN CORRECT RELATION OF PURCHASE LINE TO FLOOR LOCKING RAIL FOR SETS TO BE CONVERTED. EXISTING GUIDE RAIL CAN BE REUSED WITH NEW WALL KNEES IF INSTALLED WITH CLEAN AND SMOOTH ALIGNMENT AND TRANSITION BETWEEN NEW AND EXISTING RAILS.
C 3 -PROVIDE NEW PURCHASE LINE FOR EACH RELOCATED LINESET
C 4 -ADJUST EXISTING HEAD BLOCK ATTACHMENT AT BASE ANGLE, OR IF NECESSARY PROVIDE NEW HEAD BLOCK ASSEMBLY FOR PROPER ALIGNMENT OF PURCHASE LINE LIFT LINES TO FLOOR LEVEL LOCKING RAIL
C 5 -PROVIDE NEW 7' ARBOR WITH SHOES PER SPECIFICATIONS FOR EACH RELOCATED LINESET. REMOVE EXISTING ARBORS AND TURN OVER TO OWNER.
C 6 -PROVIDE NEW TENSION BLOCK OR IF POSSIBLE TO MODIFY EXISTING RELOCATE TO FLOOR LEVEL FOR USE WITH NEW LINESETS.
C 7 -RELOCATE EXISTING ROPE LOCKS TO STAGE LEVEL LOCKING RAIL. INDEX RAIL TO REMAIN AT GALLERY LEVEL

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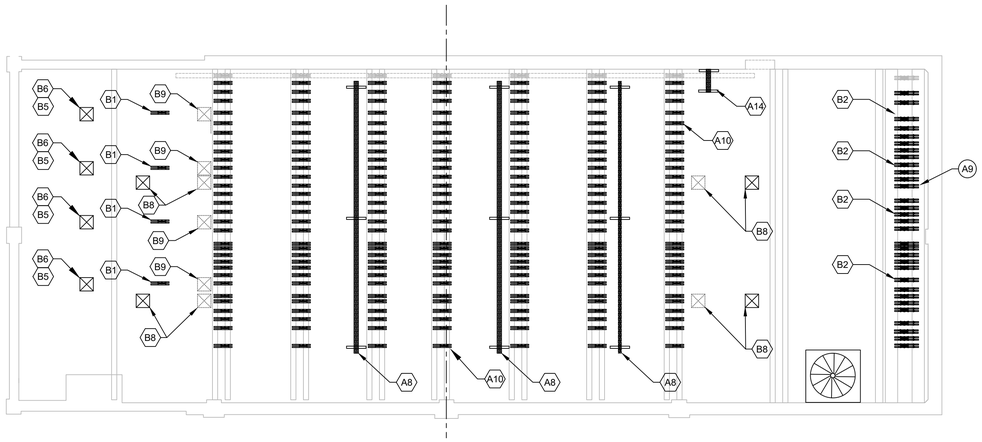
Performance Rigging Layouts

QT 1.10



2 Grid Level Performance Rigging Layout
QT1.11 SCALE: 1/8" = 1'-0"

1 Loading Gallery Level Performance Rigging Layout
QT1.11 SCALE: 1/8" = 1'-0"

KEYNOTE

REFURBISH SINGLE PURCHASE LINE SETS

A 7 -PROVIDE NEW ANGLE IRON AND HARDWOOD UPPER ARBOR STOP (LOW TRIM) THE LENGTH OF THE GUIDE WALL
A 8 -PROVIDE NEW HARDWOOD SAG BAR AND SUPPORT FRAMES
A 9 -TYPICAL HEAD BLOCK- ADJUST AND ALIGN ALL FOR CORRECT AND PROPER FLEET ANGLE TO LOFT BLOCKS
A 10 -TYPICAL LOFT BLOCK- INSPECT, ADJUST, AND ALIGN ALL FOR PROPER FLEET ANGLE TO HEAD BLOCK

REFURBISH PERFORMANCE LIGHTING LINESETS (4 TOTAL SETS)

B 1 -RELOCATE AND RECABLE EXISTING LOFT BLOCK FOR SO CABLE PICK OFFSTAGE AS SHOWN. IF NO BLOCK IS PRESENT, PROVIDE NEW BLOCK.
B 2 -ADJUST ALIGNMENT OF HEAD BLOCK AS NECESSARY TO ENSURE CORRECT FLEET ANGLES TO SHORT LIFT LINE
B 3 -PROVIDE NEW CABLE CRADLES, 1 CRADLE PER SO CABLE. PROVIDE YOKE ASSEMBLY TO SECURE AND HANG VERTICALLY STACKED TO SINGLE LIFT LINE IF MORE THAN 1 CRADLE IS REQUIRED.
B 4 -PROVIDE HIGH TRIM ARBOR STOP FOR EACH ELECTRICS ARBOR AT HIGH TRIM OF CABLE CRADLE ASSEMBLY
B 5 -RELOCATE 4 STAGE LEFT RACEWAYS JUNCTION BOX OFFSTAGE APPROX. 15' (FIELD VERIFY). INCLUDE RELOCATION OF CONDUIT AND CIRCUITS FEEDING BOTH PRIMARY STAGE AND SECONDARY WORK LIGHT CIRCUITS.
B 6 -PROVIDE NEW SO CABLES TO FEED 4 LIGHTING RACEWAYS. LENGTH TO ALLOW FULL TRAVEL AS SHOWN IN DWGS. SIZE PER NEC W/ 1 HOT & 1 NEUTRAL FOR EACH PERFORMANCE CIRCUITS + GROUND PER CODE. SUPPLY 1 EYE GRIP KELLUM FOR EACH SO CABLE IN ADDITION TO 2 BOX GRIP KELLUM NOTED BELOW.
B 7 -REMOVE EXISTING SO CABLE FROM RACEWAY. INSTALL EACH NEW SO CABLE PER NOTE B6 WITH NEW BOX GRIP KELLUM AT EACH END AND EYE GRIP KELLEM TO ATTACH CABLE TO GRID. RETERMINATE PER EXISTING CIRCUIT LAYOUT AND CONFIRM ADDRESS AND OPERATION OF EACH CIRCUIT IN RACEWAY.
B 8 -RELOCATE 2 DROP BOX JUNCTION BOX STAGE LEFT, AND 2 DROP BOX JUNCTION BOX STAGE RIGHT OFFSTAGE AS SHOWN. DISCONNECT AND RETERMINATE CABLE AS NECESSARY TO RELOCATE AND REFEED DROP CABLE THROUGH GRID
B 9 -EXISTING LOCATION OF GRID J BOX- TO BE MOVED AS NOTED
B 10 -REPLACE ALL 7X19 GAC LIFT LINES AND TERMINATIONS AT ARBOR AND BATTENS (5 LIGHTING ELECTRICS LINE SETS ONLY)

CONVERT DOUBLE PURCHASE LINESET TO SINGLE PURCHASE

C 1 -CONVERT 5 DOUBLE PURCHASE LINE SETS TO SINGLE PURCHASE PER BID PACKAGE SCOPE, RELOCATE OPERATION TO FLOOR LEVEL
C 2 -PROVIDE NEW J BAR GUIDE RAIL FROM STAGE LEVEL TO HEAD BEAM IN CORRECT RELATION OF PURCHASE LINE TO FLOOR LOCKING RAIL FOR SETS TO BE CONVERTED. EXISTING GUIDE RAIL CAN BE REUSED WITH NEW WALL KNEES IF INSTALLED WITH CLEAN AND SMOOTH ALIGNMENT AND TRANSITION BETWEEN NEW AND EXISTING RAILS.
C 3 -PROVIDE NEW PURCHASE LINE FOR EACH RELOCATED LINESET
C 4 -ADJUST EXISTING HEAD BLOCK ATTACHMENT AT BASE ANGLE, OR IF NECESSARY PROVIDE NEW HEAD BLOCK ASSEMBLY FOR PROPER ALIGNMENT OF PURCHASE LINE LIFT LINES TO FLOOR LEVEL LOCKING RAIL
C 5 -PROVIDE NEW 8' ARBOR WITH SHOES PER SPECIFICATIONS FOR EACH RELOCATED LINESET. REMOVE EXISTING ARBORS AND TURN OVER TO OWNER.
C 6 -PROVIDE NEW TENSION BLOCK OR IF POSSIBLE TO MODIFY EXISTING RELOCATE TO FLOOR LEVEL FOR USE WITH NEW LINESETS.
C 7 -RELOCATE EXISTING ROPE LOCKS TO STAGE LEVEL LOCKING RAIL. INDEX RAIL TO REMAIN AT GALLERY LEVEL
C 8 -NOT USED
C 9 -NOT USED
C 10 -NOT USED

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AMOSS THEATRE
STAGE EQUIPMENT UPGRADES

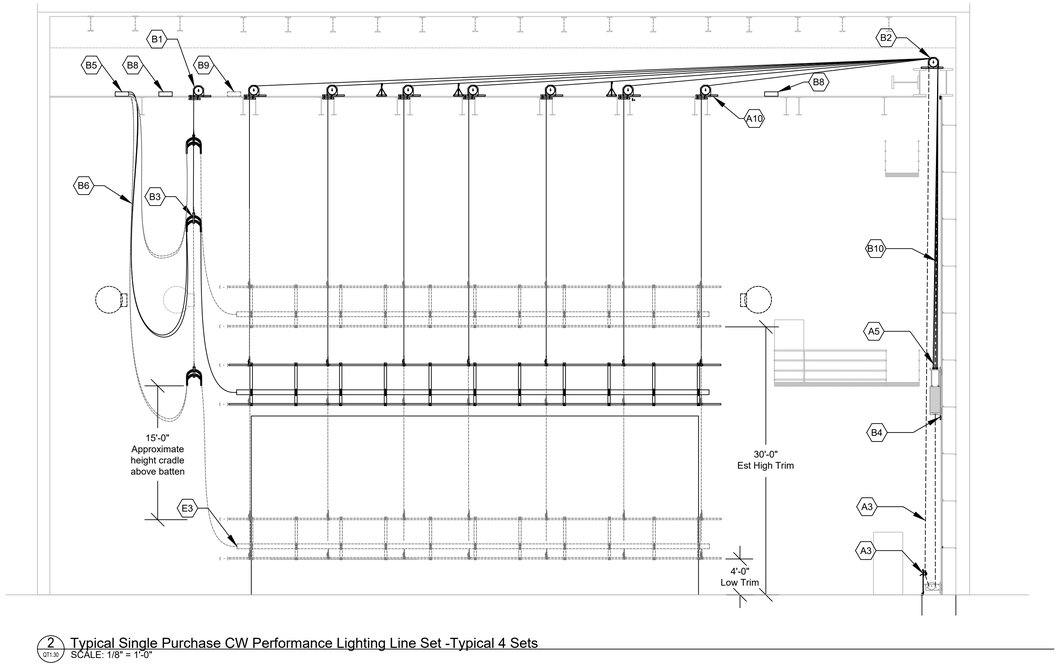
HARFORD COMMUNITY COLLEGE/
HARFORD TECHNICAL HS
401 Thomas Run Road
Bel Air, MD 21015

DATE: ISSUE

PROJECT NUMBER: HARFORDAMOSS-23
SCALE: AS NOTED

Performance Rigging Layouts

QT 1.11



2 QT1.30 Typical Single Purchase CW Performance Lighting Line Set -Typical 4 Sets
SCALE: 1/8" = 1'-0"

KEYNOTE SUMMARY

REFURBISH SINGLE PURCHASE LINE SETS

A 1a -ADJUST EXISTING ROPE LOCK FOR CORRECT TENSIONS.
A 1b -STENCIL THE LINESET NUMBER FOR EACH SET ON THE LOCK RAIL.
A 1c -PROVIDE NEW WET ERASABLE LOCKING RAIL INDEX CARDS AND INDEX CARD HOLDERS. 1 CARD FOR EACH SET.
A 2 -REUSE EXISTING FLOATING FLOOR TENSION BLOCKS ALL SETS - ADJUST SHOES AND LUBRICATE AS NECESSARY
A 3 -PROVIDE NEW 3/4" SYNTHETIC MULTILINE II PURCHASE LINE AND ROPE THIMBLES FOR EACH EXISTING SINGLE PURCHASE CW ARBOR.
A 4 -PROVIDE NEW HARDWOOD 2X2 TO THE BOTTOM STOP ANGLE. MOUNT TO EXISTING STOP ANGLE
A 5 -REUSE EXISTING SINGLE PURCHASE ARBORS- INSPECT AND REPLACE ALL CONNECTION HARDWARE, ADD STICKERS BACKBONE TO NOTE PROPER SPREADER PLATE USE LOCATION.
A 7 -PROVIDE NEW ANGLE IRON AND HARDWOOD UPPER ARBOR STOP (LOW TRIM) THE LENGTH OF THE GUIDE WALL
A 8 -PROVIDE NEW HARDWOOD SAG BAR AND SUPPORT FRAMES
A 9 -TYPICAL HEAD BLOCK- ADJUST AND ALIGN ALL FOR CORRECT AND PROPER FLEET ANGLE TO LOFT BLOCKS
A 10 -TYPICAL LOFT BLOCK- INSPECT, ADJUST, AND ALIGN ALL FOR PROPER FLEET ANGLE TO HEAD BLOCK
A 11 -REPLACE TRIM CHAINS ASSEMBLES SHOWING SIGNS OF CORROSION OR RUST. INCLUDE AN ALLOWANCE FOR THE REPLACEMENT OF UP TO 20 TRIM CHAIN ASSEMBLIES AND TERMINATIONS IN BASE BIDDING(IN ADDITION TO NEW LIFT LINE ASSEMBLIES NOTED BELOW). IMMEDIATELY UPON AWARD OF CONTACT, INSPECT THE SYSTEM AND MAKE THE OWNER AWARE OF ANY ADDITION TERMINATIONS ABOVE THE ALLOCATED AMOUNT THAT MAY REQUIRE REPLACEMENT.
A 12 -REMOVE ALL TRIM CHAIN SAFETY BOLTS
A 13 -INSPECT ALL LIFT LINES FOR WEAR, CORROSION, AND CORRECT CABLE TERMINATION. INCLUDE AN ALLOWANCE TO REPLACE UP TO 30 LIFT LINES AND TERMINATIONS IN THE BASE BID. IMMEDIATELY UPON AWARD OF THE CONTRACT, INSPECT THE SYSTEM AND MAKE THE OWNER AWARE OF ANY ADDITION CABLES ABOVE THE ALLOCATED AMOUNT THAT MAY REQUIRED REPLACEMENT.
A 14 -PROVIDE SHORT SAG BAR OR CABLE ROLLER ASSEMBLY TO PREVENT RUBBING OF LIFT LINES ON THE FIRE HOSE MAIN JUST ABOVE THE GRID. ???
A 15 -LEVEL AND TRIM ALL EXISTING BATTENS

REFURBISH PERFORMANCE LIGHTING LINESETS (4 TOTAL SETS)

B 1 -RELOCATE AND RECABLE EXISTING LOFT BLOCK FOR SO CABLE PICK OFFSTAGE AS SHOWN. IF NO BLOCK IS PRESENT, PROVIDE NEW BLOCK.
B 2 -ADJUST ALIGNMENT OF HEAD BLOCK AS NECESSARY TO ENSURE CORRECT FLEET ANGLES TO SHORT LIFT LINE
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B 7 -REMOVE EXISTING SO CABLE FROM RACEWAY. INSTALL EACH NEW SO CABLE PER NOTE XX WITH BOX GRIP KELLUM AT EACH END. RETERMINATE PER EXISTING CIRCUIT LAYOUT AND CONFIRM ADDRESS AND OPERATION OF EACH CIRCUIT IN RACEWAY.
B 8 -RELOCATE 2 DROP BOX JUNCTION BOX STAGE LEFT, AND 2 DROP BOX JUNCTION BOX STAGE RIGHT OFFSTAGE AS SHOWN. DISCONNECT AND RETERMINATE CABLE AS NECESSARY TO RELOCATE AND REFEED DROP CABLE THROUGH GRID
B 9 -EXISTING LOCATION OF GRID J BOX- TO BE MOVED AS NOTED
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B 11 X

CONVERT DOUBLE PURCHASE LINESET TO SINGLE PURCHASE

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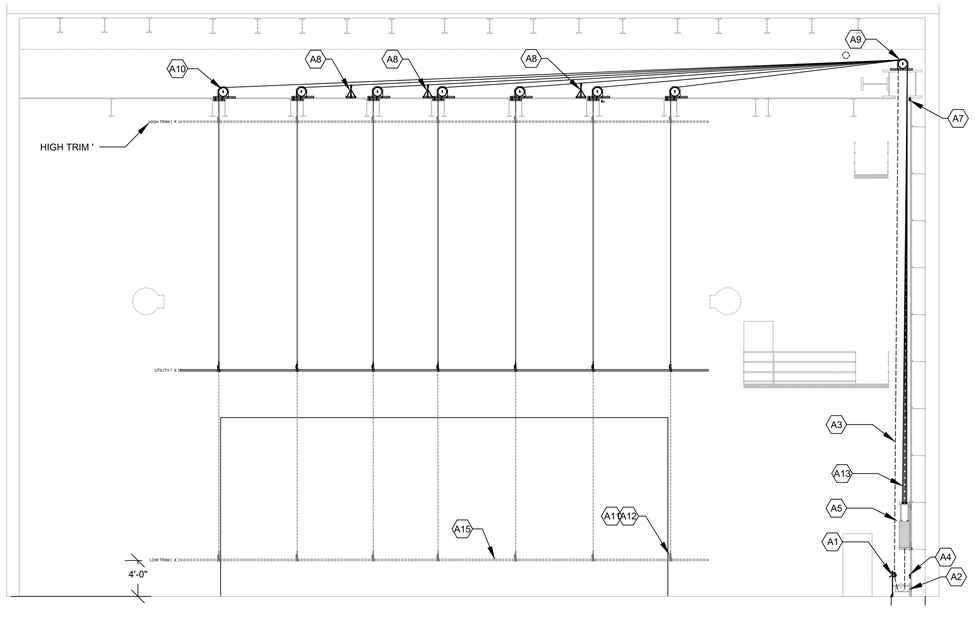
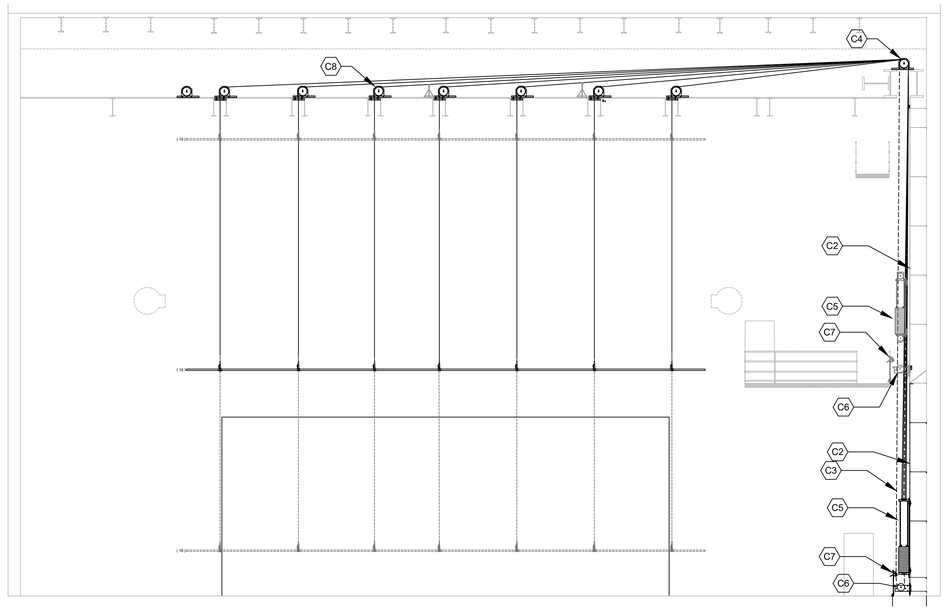
C 7 -RELOCATE EXISTING ROPE LOCKS TO STAGE LEVEL LOCKING RAIL. INDEX RAIL TO REMAIN AT GALLERY LEVEL
C 8 -TYPICAL LOFT BLOCK- INSPECT, ADJUST, AND ALIGN FOR PROPER FLEET ANGLE TO HEAD BLOCK



2 QT1.30 Typical Single Purchase CW Performance Utility Line Set -Typical All Sets
SCALE: 1/8" = 1'-0"



3 QT1.30 Double Purchase CW Utility Line Set Conversion to Single Purchase- Typ 5 Sets
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Performance Rigging Elevations

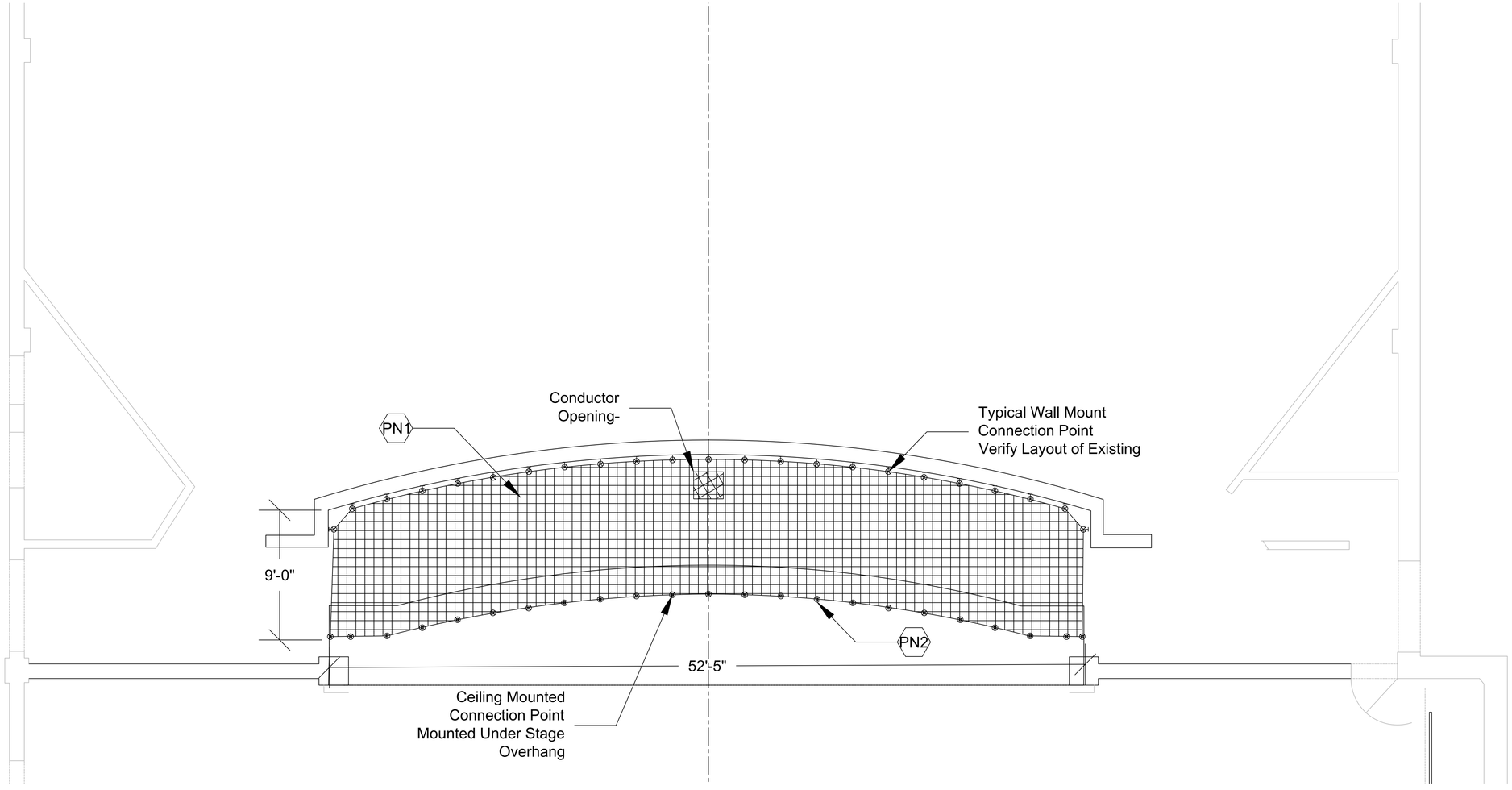
QT 1.30

KEYNOTE SUMMARY

ORCHESTRA PIT SAFETY NET

PN 1 -PROVIDE NEW PIT SAFETY NET TO WORK WITH EXITING WALL ANCHOR LAYOUTS

PN 2 -INSPECT, REPLACE, OR RESET ANY ATTACHMENT POINTS THAT ARE PULLING OUT OR DEFORMED.



1 PPS 10 Orchestra Pit Safety Net Layout
SCALE: 1/4" = 1'-0"

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Performance Rigging
Orchestra Pit Safety Net

QT 2.10