QUOTE DOCUMENTS

FOR

Theatrical Lighting Equipment

Lincoln High School
2600 SW 9th Street
Des Moines, Iowa 50315

QUOTE #7482

Owner
Des Moines Independent Community School District
1917 Dean Ave
Des Moines, Iowa 50316

DOCUMENTS:

A. Instructions
B. Specification Sections: 116100 – Theatrical Lighting Equipment
C. Drawings: TH2, TH3, and TH4
   TH1 and TH5 Rigging is included for informational purposes
D. Overall Site Plan and Building Floor Plans
E. School District Acknowledgement and Certification Form
F. School District Insurance requirements
G. School District Bond forms (Payment and Performance)
H. Non Collusion and Targeted Small Business Forms
I. Quote Form

****You may visit the site at any time to view existing conditions - you may coordinate a site visit by emailing douglas.ohde@dmschools.org ****

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INSTRUCTIONS:

1. Submit quotes on enclosed form. Pricing to be submitted not later than 3:00 PM on 7/14/2016. Submit quote form to Des Moines Public Schools at 1915 Prospect Road Suite 1200 Des Moines, Iowa 50310 Fax or emailed copies of quote forms and accompanying documents are acceptable. Send quote forms to the attention of Mark Mattiussi (FAX 515-265-7550) or mark.mattiussi@dmschools.org
2. Execute and include the enclosed Non Collusion Affidavit, TSB forms and Acknowledgement with the quote.
3. Recognize any addenda on the quote form.
4. Questions regarding technical information shall be directed in writing to carl@peerbolte.com and to douglas.ohde@dmschools.org
5. Questions regarding the quotation process or requesting a full size copy of the bid documents shall be directed in writing to Mark Mattiussi @ mark.mattiussi@dmschools.org
6. The successful firm will be notified on 7/15/2016. A purchase order will be provided from the Des Moines Public Schools.
7. Upon receipt of the purchase order the contractor shall provide submittals on all materials and the equipment.
8. Quote shall exclude all sales and use taxes. The District will provide exemption certificates.
9. Employees, and subcontractors will be considered at all times employees and subcontractors of the Contractor, nothing in this solicitation will be construed as creating an employment relationship with the District.
10. The successful firm shall submit an insurance certificate meeting the insurance requirements of the attached summary document. (Full set of requirements can be found in the General Terms & Conditions online @ http://www.dmschools.org/
11. Quote security (bid bond) is not required.
12. 100% performance and payment bonds are required on the school district forms at the time of the purchase order from the successful contractor. Include the cost of these bonds in the quote price.
13. Payments will be made once a month based upon percentage of work completed. A 5% retainage will be withheld until acceptance of all work by the Owner and its Consultant.
14. Contractor shall fully clean up the project site of all debris from their work.
15. Contractor shall furnish and install barricades and other safety measures.
16. Contractor shall obtain and pay for all city permits required for the project.
17. The building will have school in session and activities in other areas of the building during the project timeline. Material deliveries and removal of debris shall happen during non-school hours as coordinated with the district.
18. The work shall begin onsite as soon as contract documents are received and materials are available. Work shall be substantially complete by September 19, 2016, fully completed by October 1,2016

DES MOINES INDEPENDENT COMMUNITY SCHOOL DISTRICT **QUOTE FORM**

QUOTES DUE NOT LATER THAN 3:00 PM ON JULY 14, 2016

PROPOSAL FOR: **Lincoln High School Theatrical Lighting Equipment**
2600 SW 9th Street - Des Moines, Iowa

TO: **Des Moines Independent Community School District**
1915 Prospect Road – Suite 1200
Des Moines, IA 50310
EMAIL: mark.mattiussi@dmschools.org (Emailed quotes permissible)
FAX: 515-242-7550 (Faxed quotes permissible)

SUBMITTED BY: _____
Name of Bidder

Des Moines Independent Community School District:

The undersigned has examined the quote documents and hereby proposes and agrees to furnish and provide all products, materials, transportation, and services as required for the expeditious completion of the Work required in conformity with this quote request.

The undersigned agrees that the quote, if accepted by the Owner, will be the basis for a purchase order with the Owner.

The quote includes the required school district bonds and insurance coverage.

The undersigned further acknowledges the following Addenda:

NO._____ DATE_____

NO._____ DATE_____

NO._____ DATE_____

****INCLUDE WITH THE QUOTE FULLY COMPLETED DOCUMENTS LISTED IN ITEM 2 OF THE INSTRUCTIONS SHEET – FORMS ARE IN THE QUOTE DOCUMENTS****

QUOTE FOR THEATRICAL LIGHTING EQUIPMENT – Q7482

The undersigned proposes to provide the scope of work as specified for the lump sum price of:

_____Dollars

($_____) **F.O.B. DESTINATION EXCLUDING ALL TAXES.** (Amount shall be shown in both words and figures. In case of discrepancy, the amount shown in words shall govern).

ALTERNATE – INSTALL LCD CONTROL PER DOCUMENTS

ADD_____Dollars

($_____) **F.O.B. DESTINATION EXCLUDING ALL TAXES.** (Amount shall be shown in both words and figures. In case of discrepancy, the amount shown in words shall govern).

DES MOINES INDEPENDENT COMMUNITY SCHOOL DISTRICT **QUOTE FORM**

SCHEDULE – In compliance with the scope of work.

The bidder is ☐ or is not ☐ an Iowa resident bidder as defined in Section 73A.21 of the Iowa code. If not a resident bidder, the bidder states that it is a non-resident bidder from the state of _____. This state does ☐ or does not ☐ provide for a bidder preference for resident bidders. This state does ☐ or does not ☐ provide a labor preference for resident labor. If the state in which your company is a resident allows for either a bidder preference or a labor preference, please provide the citation to the code section, and the details of each preference allowed in your resident state.

SUBMITTED BY: _____
Name of Bidder

Address: _____

Phone # _____ Fax # _____

Email address _____

_____
(Authorized Signature)

Contractor's License Number _____

Date of Expiration: _____

Targeted Small Business

If bidder did not contact any certified Targeted Small Businesses, then state why: The following TSB's were contacted and declined to participate: *(If more room is needed, supply same information on second sheet and attach to this form)*

Company One

TSB Company Name:_____
Address:_____

_____

_____

Contact Name:_____
Date Contacted:_____
Telephone Number:_____
E-mail Address:_____
Reason for declining participation:_____

_____

Company Two

TSB Company Name:_____
Address:_____

_____

_____

Contact Name:_____
Date Contacted:_____
Telephone Number:_____
E-mail Address:_____
Reason for declining participation:_____

_____

Company Three

TSB Company Name:_____
Address:_____

_____

_____

Contact Name:_____
Date Contacted:_____
Telephone Number:_____
E-mail Address:_____
Reason for declining participation:_____

_____

Company Four

TSB Company Name:_____
Address:_____

_____

_____

Contact Name:_____
Date Contacted:_____
Telephone Number:_____
E-mail Address:_____

Reason for declining participation:_____

Non-Collusion Affidavit

The Contractor and/or the sub-contractors, as applicable, shall provide this affidavit:

NON-COLLUSION AFFIDAVIT TO BE EXECUTED BY BIDDER AND SUBMITTED WITH QUOTE.

State of Iowa)
) ss.
County of Polk)

_____ Being first duly sworn, deposes and says that he or
(Name)
she is_____ of _____
(Title) (Contractor)

The party making the foregoing bid that the bid is not made in the interest of, or on the behalf of, any undisclosed person, partnership, company, association, organization, or corporation; that the bid is genuine and not collusive or sham; that the bidder has not directly or indirectly induced or solicited any other bidder to put in a false or sham bid, and has not directly or indirectly colluded, conspired, connived, or agreed with any bidder or anyone else to put in a sham bid, or that anyone shall refrain from bidding; that the bidder has not in any manner, directly or indirectly, sought by agreement, communication, or conference with anyone to fix the bid price of the bidder or any other bidder, or to fix any overhead, profit, or cost element of the bid price, or of that of any other bidder, or to secure any advantage against the public body awarding the contract of anyone interested in the proposed contract; that all statements contained in the bid are true; and, further, that the bidder has not, directly or indirectly, submitted his or her bid price or any breakdown thereof, or the contents thereof, or divulged information or data relative thereto, or paid, and will not pay, any fee to any corporation, partnership, company association, organization, bid depository, or to any member or agent thereto to effectuate a collusive or sham bid."
The undersigned certifies under penalty of perjury that the foregoing is true and correct;

THIS STATEMENT MUST BE NOTARIZED.

NAME OF CONTRACTOR: _____

By: _____
(Signature) (Title)

_____
(Type/Print Name) (Date)

STATE OF_____,_____COUNTY, ss:

Subscribed and sworn to before me by the said_____on this day of_____, 201_.

Notary Public in and for the State of_____

Notary Seal Here:

Acknowledgment & Certification

_____("Company") is providing services to the Des Moines Independent Community School District ("District") as a contractor, vendor, supplier, provider or sub-provider and/or is operating or managing the operations of a contractor, vendor, supplier or provider. The services provided by the Company may involve the presence of the Company's employees upon the real property of the District. The Company acknowledges that Iowa law prohibits a sex offender who has been convicted of a sex offense against a minor from being present upon the real property of the District. The Company further acknowledges that, pursuant to Iowa law, a sex offender who has been convicted of a sex offense against a minor shall not operate, manage, be employed by, or act as a contractor or volunteer at the District.

The Company hereby certifies that no one who is an owner, operator or manager of the Company has been convicted of a sex offense against a minor. The Company further certifies and agrees that it shall not permit any person who is a sex offender convicted of a sex offense against a minor to provide any services to the District in accordance with the prohibitions set forth above.

The Company further certifies that the Company has completed a satisfactory background check on the Company's employees. The Company hereby agrees to provide the District with the Company's background screening procedures including specific context and infractions that are reviewed by the Company. The District reserves the right to, but does not have the obligation to, conduct a District background check on Company employees as determined by the District in its sole discretion. The District reserves the right to restrict access of any Company employee upon the real property of the District if such employee does not clear the District's background check.

The District reserves the right, but does not have the obligation to, to audit the Company's background screening program at any time, whether announced or unannounced. The Company hereby agrees that the Company shall, upon request, permit an authorized District representative to review background screening records, including those of individual Company employees, in order to conduct a compliance review, audit or investigation, to the fullest extent permitted by law.

The Company shall ensure that the provisions of this Acknowledgement and Certification are extended to any and all subcontractors, consultants, or others the Company may engage if such engagement involves their presence upon the real property of the District.

The Company understands and agrees that violation of any of the provisions of this Acknowledgement and Certification shall constitute sufficient grounds for termination of any contract or subcontract without damages or penalty to the District.

This Acknowledgment and Certification is to be construed under the laws of the State of Iowa. If any portion hereof is held invalid, the balance of the document shall, notwithstanding, continue in full legal force and effect.

In signing this Acknowledgment and Certification, the person signing on behalf of the Company hereby acknowledges that he/she has read this entire document that he/she understands its terms, and that he/she not only has the authority to sign the document on behalf of the Company, but has signed it knowingly and voluntarily.

I acknowledge and accept:_____

(Sign) ***(Date)***

Summary Insurance Requirements *

Insurance by Contractor

The Contractor shall purchase and maintain such insurance as will protect it from claims set forth below which may arise out of or result from the Contractor's operations under the Contract, whether such operations be by himself or by any subcontractor or by anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable. All such insurance shall be subject to the approval of the District for adequacy of protection, and shall include a provision preventing cancellation without thirty (30) days' prior notice to the District in writing.

Commercial General Liability Insurance

Each Occurrence	$ 1,000,000
Damages to rented premises (each occurrence)	$ 200,000
Medical Expenses (any one person)	$ 10,000
Personal Injury	$ 1,000,000
General aggregate	$ 1,000,000
Products Complete Aggregate	$ 1,000,000

Automobile Insurance

Combined single limit	$ 1,000,000

Worker's Compensation Insurance

In accordance with the laws of the State of Iowa covering all employees who perform any obligations assumed under the contract.

Each accident – minimum	$ 500,000
Disease – minimum each employee	$ 500,000

Upon selection, contractor will present certificates of insurance to the Des Moines Independent Community School District showing compliance with the forgoing requirements.

***Please refer to the Terms & Conditions for a complete set of insurance requirements.**

Labor & Material Payment Bond

Bond No._____

(This Bond is issued simultaneously with a Performance Bond in favor of the Owner conditioned on the full and timely performance of the Contract.)

KNOW ALL MEN BY THESE PRESENTS that _____ _____as Principal (the "Principal"), and _____, a corporation organized and existing under the laws of the State of _____, and authorized to transact business in the State of Iowa, as Surety (the "Surety"), jointly and severally bind themselves, their heirs, personal representatives, successors, and assigns, to the DES MOINES INDEPENDENT COMMUNITY SCHOOL DISTRICT, 2323 Grand Avenue, Des Moines, Iowa 50312, as Obligee (the "Owner"), for the use and benefit of it and the claimants as defined below, in the principal amount of _____ ($_____) as adjusted by approved change orders (not to exceed 10 percent of the principal amount of this Bond unless expressly approved by the Surety, which approval shall not be unreasonably withheld) and interest as provided by law, for the payment of all amounts which become due under the Contract described below.

The Principal and the Owner have entered into a written Construction Agreement dated _____, 201_, together with related "Contract Documents" as defined therein (all of which are collectively referred to as the "Contract" and incorporated herein by this reference), for the following Project:

_____

_____

The condition of this obligation is such that, if the Principal shall at all times promptly make payment of all amounts, claims, or demands lawfully due to all persons, firms, associations, or corporations supplying or furnishing to the Principal or its subcontractors labor or materials, supplies, or equipment which are used, provided, or performed in the prosecution of the work provided for in the Contract and any and all duly authorized modifications of the Contract that may hereafter be made, then this obligation shall be null and void; otherwise, the Surety shall pay the full value of all such claims or demands and shall indemnify and hold the Owner harmless from all payments which the Owner may be required to make under the Contract or applicable law in excess of the Contract price not exceeding the amount of this obligation, together with interest as provided by law, as well as attorneys' fees and costs incurred by the Owner in the resolution of any claim. All such subcontractors, laborers, and materialmen shall have rights under the within Bond as are set forth in the statutes and laws of the State of Iowa.

Further, each and every claimant, who institutes a lawsuit for compensation or payment under the terms payment under the terms hereof, as part of any court award, shall be entitled to reasonable attorneys' fees and costs.

The undersigned Surety for value received hereby agrees that no extension of time, change in, addition to, or other modification of the terms of the Contract or work to be performed thereunder, or of the specifications, or of the Contract Documents, shall in any way affect its obligation on this Bond and the Surety hereby waives notice of any such extension of time, change, addition, or modification.

Any notice which any party desires or is required to provide another shall be in writing and shall be effective upon receipt when delivered or transmitted by personal delivery, certified (return receipt) mail, or express mail service to the addresses set forth herein.

Labor & Material Payment Bond

Bond No._____

IN WITNESS WHEREOF, said Principal and Surety have executed this Bond, this_____ day of_____, 20____.

ATTEST: _____

Principal

By:_____

Address: _____

_____

ATTEST: _____

(Surety)

By:_____

Address: _____

_____

(SEAL)

Claims Telephone Number: _____

Claims Fax Number: _____

The fully executed Bond form must be accompanied by a current Power of Attorney.

PERFORMANCE BOND

Bond No. _____

KNOW ALL MEN BY THESE PRESENTS That_____, as Principal (the "Principal"), and _____, a corporation organized and existing under the laws of the State of_____, and authorized to transact business in the State of Iowa, as Surety (the "Surety"), jointly and severally, bind themselves, their heirs, personal representatives, successors, and assigns to the DES MOINES INDEPENDENT COMMUNITY SCHOOL DISTRICT, 2323 Grand Avenue, Des Moines, Iowa 50312, as Obligee (the "Owner"), in the principal amount of _____ _____($_____) as adjusted by approved change orders (not to exceed 10 percent of the principal amount of this Bond unless expressly approved by the Surety, which approval shall not be unreasonably withheld) and interest as provided by law (collectively referred to herein as the "Penal Sum"), for the performance of the Construction Agreement between the Principal and the Owner, dated_____, 201___, for the following (Project):

_____

_____

together with the obligations of the Contract Documents, as defined in the Construction Agreement, all of which documents are collectively referred to herein as the "Contract" and are incorporated by this reference.

The condition of this obligation is such that, if the Principal shall at all times duly, promptly, and properly perform all the terms and conditions of the Contract and any authorized modifications thereof during the original term of the Contract, any extensions thereof that may be granted by the Owner, and during the term of any guarantee or warranty required under the Contract, the Principal and Surety shall have no obligation under this Bond, otherwise it shall remain in full force and effect.

The Surety for value received agrees that no extension of time, change in, addition to, or other alteration or modification of the terms of the Contract or work to be performed thereunder, or any other forbearance on the part of either the Owner or the Principal to the other shall in any way release or affect the Surety's liability or obligation on this Bond, and the Surety hereby waives notice of any such extension of time, change, addition, modification, alteration, or forbearance.

Whenever the Owner terminates the Contract in accordance with the terms thereof, the Surety shall, within fifteen (15) calendar days after written notice of such termination, notify the Owner in writing of its election to complete the Contract in accordance with its terms, or notify the Owner that the Surety elects not to complete the Contract. If the Surety fails to give the written notice so required within such fifteen (15) calendar day period, then it will be deemed to have elected not to complete the Contract. Should the Surety elect to complete the Contract, then it shall, within fifteen (15) additional calendar days following written notice of such election, obtain a contractor, subject to approval by the Owner in writing, to complete the original Contract in accordance with its terms and conditions and thereafter proceed with the work with due diligence and make available as the work progresses sufficient funds to pay the cost of completion less the balance of the Contract price. The Surety may not engage the Principal to complete the Contract, without the prior written consent of the Owner, which consent may be withheld in the Owner's sole discretion. If the Surety elects to complete the Contract, then it shall be entitled to receive the balance of the Contract price, less (i) any amounts paid by the Owner to the Principal; (ii) costs incurred by the Owner in correcting any defective work; (iii) any additional legal, design professional, and other costs incurred by the Owner resulting from the Principal's default; and (iv) liquidated damages caused by delayed performance or nonperformance of the Principal. Any progress payments, less retainage, due but not paid at the date of termination shall be paid to the Surety so long as the Surety has agreed to indemnify the Owner for the amount thereof and no other claims have been made to such funds by subcontractors or suppliers in accordance with the Contract or applicable law.

PERFORMANCE BOND

Bond No. _____

In the event the Surety elects not to complete the Contract, the Owner may then have the work completed by such means and in such manner, by contract with or without public bidding, or otherwise, as it may deem advisable. The Surety in such event shall at all times make available, as work progresses under the Contract between the Owner and its new contractor, sufficient funds, not to exceed the Penal Sum, to pay the cost of the completion of the Contract pursuant to its terms, together with the other amounts set forth in (i) through (iv) above, but in no event shall the Surety be responsible for the payment of any sums to the Owner until the Owner has paid in full its total obligation under the terms of the original Contract, plus change orders, less deductions and claims chargeable by law or by the Contract, if any, and less the retainage which will be disbursed as provided by the Contract Documents and applicable law.

The procedures set forth herein shall apply should there be a default and termination or a succession of defaults and terminations in fulfilling the terms and conditions of the work under the original Contract.

In the event there are negotiations between the Principal and/or the Surety and the Owner subsequent to the date of termination, each party shall appoint an authorized representative with authority to represent it during the negotiations. All written communications and official discussions between the parties shall be conducted by these authorized representatives. Any notice which any party desires or is required to provide another shall be in writing and shall be effective upon receipt when delivered or transmitted by personal delivery, certified (return receipt) mail, or express mail service to the addresses set forth herein.

Any proceeding, legal or equitable, under this Bond may be instituted in any court of competent jurisdiction in the location in which the work is located and shall be instituted before

the expiration of three (3) years from the date on which final payment under the contract is made; provided, however, that this period may be extended by one (1) additional year by the Owner's giving written notice to the Surety within the three (3) year period of a potential claim. Any judgment recovered hereunder by the Owner shall include interest at the legal rate, together with reasonable attorneys' fees and costs.

No right action shall accrue under this Bond to or for the use of any person or entity other than the Owner or its successors and assigns.

IN WITNESS WHEREOF, the Principal and Surety have signed this Performance Bond as of the _____ day of_____, 201___.

ATTEST: _____

Principal

By:_____

Address: _____

_____

ATTEST: _____

(Surety)

By:_____

Address: _____

_____

(SEAL)

Claims Telephone Number: _____

Claims Fax Number: _____

The fully executed Bond form must be accompanied by a current Power of Attorney.

SECTION 116100 – THEATRICAL LIGHTING EQUIPMENT

PART 1 GENERAL

1.1 REQUIREMENTS

A. As set forth in the headings of Division 0 and Division 1, General Conditions and General Requirements shall apply to this branch of the Work.

1.2 SUMMARY

A. This section includes the furnishing, delivery and installation of the following stage equipment:
   1. Stage Lighting System and Instrument Product Information.
   2. Dimming and Switching.
   3. Lighting Control Console and Accessories.
   4. Architectural Control.
   5. Theatrical Control Network.
   6. Lighting Instruments.
   7. Distribution Equipment.

B. Related work in other sections:
   1. Theatrical Lighting Equipment; Section 116133.
   2. The Owner, under separate contract, shall have electrical disconnects done on any pieces of equipment to be removed. In addition the separate contractor shall disconnect all outlets and other devices requiring removal. The Theatrical Lighting Contractor shall remove the exposed conduit, boxes and other items that will not be reused.
   3. The Theatrical Lighting Contractor shall provide and install specified equipment requiring electrical connections. The Owner under separate contract shall provide power to this equipment including conduit, boxes, wiring and other electrical components. The Theatrical Lighting contractor shall provide full information in the shop drawing stage indicating all items requiring connection including location and power requirements.

1.3 SUBMITTALS

A. Comply with the requirements of Des Moines Public Schools, Section 01300 and contract conditions.

B. Product Data: Submit manufacturer's material specifications with quantities on bill of materials and installation instructions. Include instruction for handling and maintenance.

C. Shop Drawings: Show layouts, construction methods, equipment and types, locations and materials.

D. Submittals: Show any equipment layouts and complete bill of materials.

E. Samples: If requested, submit samples of any equipment, hardware, light fixtures or accessories.

1.4 QUALITY ASSURANCE

A. Theatrical Contractor: All items of work included in this specification shall be furnished and installed by experienced stage technicians in the employ of a single contractor so that there will be no division of responsibility for the proper operation of the equipment after installation.
   1. Each Theatrical Contractor must furnish a written listing of at least five installations that are equal to or surpass the scope of this project and that have been installed within the last five years. This list shall be included with the bid documents.

B. If products are known to be discontinued or are introduced with technology advances or replaced with newer models, it is the responsibility of the manufacture to make these conditions known to the owner and consultant. Any equipment substitutions will be by the discretion of the owner and consultant and must be approved in writing by the owner and consultant before the substitution will be allowed.

1.5 DELIVERY, STORAGE AND HANDLING

A. Coordinate storage of all equipment, hardware, and accessories with Lincoln High School to assure that storage does not inhibit daily school activities.

B. The theatrical contractor shall be responsible for the handling of all equipment, hardware and accessories, including unloading and transport to the auditorium.

C. Deliver all lighting components, electrical equipment and their accessories to the job no sooner than two days prior to their installation in order to limit possible damage to the equipment while being stored.
   1. Deliver materials in manufacturer's original undamaged containers with identification labels intact.
   2. Remove packaging materials from site and dispose of at appropriate recycling facilities

1.6 SCOPE

A. The theatre lighting contractor will be responsible for all of the new and existing theatrical equipment outlined in this specification and accompanying documents as well as coordinating with the owner supplied electrician for the electrical materials and hook-up. All dimensions must be field-verified by the Theatrical Contractor. Field conditions which may not be covered in the specifications, shall determine actual equipment needs. The intention of the specification and drawings is to furnish and safely install existing equipment and new components that conform to building conditions.
   1. The Owner, under separate contract, shall have electrical disconnects done on any pieces of equipment to be removed. In addition the separate contractor shall disconnect all outlets and other devices requiring removal. The Theatrical Lighting Contractor shall remove the exposed conduit, boxes and other items that will not be reused.
   2. The Theatrical Lighting Contractor shall provide and install specified equipment requiring electrical connections. The Owner under separate contract shall provide power to this equipment including conduit, boxes, wiring and other electrical components. The Theatrical Lighting contractor shall provide full information in the shop drawing stage indicating all items requiring connection including location and power requirements.
   3. It is the theatrical lighting contractor's responsibility to remove the existing lighting control systems including the dimmer racks, distribution strips, control networks, controls, and equipment racks. Many pieces of in use theatrical equipment are to be reused. These items are to be stored and protected from damage during construction.
   4. All demolished pieces of equipment and other items that will not be reutilized in the updated systems are to be removed from the site and recycled or disposed of by the Theatrical Lighting Contractor.

PART 2 PRODUCTS

2.1 STAGE LIGHTING SYSTEM AND INSTRUMENT PRODUCT INFORMATION

A. Furnish and install lighting equipment as indicated in the bill of materials. The installation will conform to all applicable Building Codes.

B. The Theatrical Contractor shall instruct persons designated by the Owner in the operation and maintenance of the equipment. The contractor shall furnish such service within 14 days of the request.

C. Acceptable manufactures of Auditorium Dimming equipment:
   1. Electronic Theatre Controls, Sensor3.
   2. Strand Lighting, C21.

D. Acceptable manufactures of Relay equipment:
   1. Electronic Theatre Controls, Unison Echo.

E. Acceptable manufactures of Auditorium Control equipment:
   1. Electronic Theatre Controls, Element 60/500.
   2. Strand Lighting, Preset Palette II 48/96.

F. Acceptable manufactures of Theatrical Lighting Fixtures:
   1. LED Ellipsoidal Spotlights.
      a. Altman PHX LED Profile Spot.
      b. Electronic Theatre Controls, Color Source Spot.
      c. Selecon PLProfile4 MKII LED.

   2. LED Flood Lights (works).
      a. Altman LED Worklight.
      b. A to Z Lighting LED Worklight, 50w WW, Black. Two of these fixtures and one two-fer shall be supplied for each Altman LED Worklight specified.

G. Acceptable manufactures of Theatrical Distribution equipment:
   1. Electronic Theatre Controls.
   2. Performance Electric.
   3. SSRC, Inc.

H. Requests for substitution of other components shall include pertinent performance data; charts and drawings showing in what respect the equipment will function in accordance with the specifications. This information shall be mandatory as a basis for determining the intent in meeting the full requirements of the specification including time schedule.

I. If required by the Owner, provide working samples of substitute equipment, including lamps for any lighting fixtures, to be delivered as requested for the examination by the Consultant. Handling, shipping, delivery or removal of the samples shall be at the cost of the manufacturer. Substitutions will be accepted only by written addendum prior to the bid date.

J. It shall be understood that the cost of any additions or revisions required by the use of substitute equipment shall be the responsibility of the bidder making the substitution.

2.2 DIMMING AND SWITCHING

A. Power Control System.
   1. General.
      a. The installation rack shall be the Sensor3 120V as manufactured by Electronic Theatre Controls, Inc. The Power Control System enclosure shall consist of up to 24 module spaces.
   2. Electrical.
      a. Sensor3 racks shall operate at 120V, three phase, four wire + ground, 47-53 or to 57-63 Hz at 800 amps max. Other voltage and phase options are available upon request. Sensor

racks shall automatically compensate for frequency variations during operation. Provisions shall be made for optional amp trap devices for fault current protection. Standard SCCR fault current protection shall be 100,000A.

b. All load and neutral terminals shall accept up to #4 AWG (25mm^2) wire. Systems providing smaller terminals do not allow contractor wire sizing flexibility and shall be deemed unacceptable.

c. Load terminals shall be located at the front of the wiring cavity. Front access racks having terminals located at the back of the rack or on the side near the back of the rack such that adjacent load cabling may block terminal access shall not be acceptable.

3. Electronics.

a. Power control electronics, CEM3, shall be contained in a single module that can be plug-in capable without use of tools. Power control and dimming systems that require tools for removal of control electronics shall not be acceptable.

b. All data and power input for CEM3 control electronics shall be located on a separately removable/pluggable termination connector on the backplane such that backplane can be replaced without removal and discrete secondary conductor terminations. Systems that require discrete termination of DMX, Ethernet, power input, and dimmer control output directly on terminals on the control module or pluggable backplane shall not be permitted.

c. The power controller shall directly support the following network protocols:

1) Net3 protocol suite including ANSI E1.31 Streaming ACN (sACN).

2) ANSI E1.17 Architecture for Control Networks (ACN).

3) Systems that do not support the above listed industry standard ACN protocols for Ethernet setup, control and feedback integrated directly between the power system and control system shall not be deemed acceptable.

d. The power controller shall directly support 2 ports of control input using ANSI E1.11 USITT DMX512-A.

e. Control signals shall be sent between control module and dimmer/power modules using flat ribbon cables. Systems using cat5 cable and rj45 connections or discrete hand wired conductors as sole physical communication media between control module and dimmer/power modules shall be considered long term unreliable and shall be not be acceptable.

f. System shall provide an optional low voltage connection to maintain power of control electronics through brown out, instantaneous, and sustained power outages. Systems that do not provide optional low voltage backup power connection to the power controller shall not be acceptable.

g. Control electronics shall be housed in a formed steel body with cast-aluminum face panel.

4. Physical.

a. The Sensor3 rack shall be a free-standing, dead-front switchboard, substantially framed and enclosed with 16 gauge, formed steel panels. All rack components shall be properly treated, primed and finished. Exterior surfaces shall be finished in fine-texture, scratch-resistant, epoxy paint. Removable top and bottom panels shall facilitate conduit termination on the 48 module rack. Knockouts shall serve the same purpose on 12 and 24 module racks.

b. Sensor3 racks shall be the following dimensions.

1) SR3-24 (24 module) 45.8”H x 14.6”W x 16.8”D

c. Racks shall be designed for front access to allow back-to-back or side-by-side installation.

d. Racks shall be designed to allow easy insertion and removal of all modules without the use of tools. Supports shall be provided for precise alignment of modules into power and signal connector blocks. With modules removed, racks shall provide clear front access to all load, neutral and control terminations. Racks that require removable panels to access load, neutral or control terminations shall not be acceptable.

e. An optional bus bar kit shall be available from the factory to allow adjacent racks to be powered by a single line feed. No soft buss rack-to-rack wiring shall be required. Racks that require discrete cabling to connect adjacent racks shall not be acceptable.

f. Module spaces shall be mechanically keyed to accept only the 20A or below, 50A, or 100A module specified for that space. Racks that allow modules of varying wattages to plug into the same space shall not be acceptable. The rack shall be configurable to accept mixed dimmer types and sizes throughout the rack.

g. Each rack shall provide a lockable full-height door containing an integral electrostatic air filter that shall be removable for easy cleaning. A single low-noise fan shall be located at the top of each rack. Design of the rack and modules shall draw all cool air intake air through the integral electrostatic air filter at the front of the rack, discretely through each module housing and directly out the top of the rack such that exhausted hot air from adjacent modules does not heat the module(s) above, below, or to the side of each other. System designs that draw the same heated air through multiple modules shall not be acceptable.

h. The fan shall maintain the temperature of all components at proper operating levels with dimmers under full load, provided the ambient temperature of the dimmer room does not exceed 40°C/104°F. Racks that do not employ both locking doors and electrostatic air filters shall not be acceptable.

i. The fan shall turn on whenever any circuit in the system is activated. In the event of an over-temperature condition, only the affected dimmer module(s) shall shut down and a message shall appear on the control module LCD. The fan shall remain on during thermal shutdown of individual dimmer modules. Systems that do not include over-temperature sensing and preventative thermal shutdown shall not be acceptable.

j. A fan sensor shall be provided. In the event of momentary fan failure, error message will be displayed and sent remotely over Ethernet to optional logging systems. Systems that do not provide optional system event logging shall not be deemed acceptable.

k. If the ambient room temperature drops below 0°C/32°F or rises above 40°C/104°F, a warning shall appear on the dimmer rack LCD. If the temperature rises above 46°C/115°F, the rack shall shut down until the condition is corrected.

l. A 3 x .5-inch LED status indicator (beacon) shall be mounted in the rack door. The beacon shall be visible throughout a wide viewing angle. In normal operating conditions, this LED is illuminated. If the rack's control module senses an error condition, the beacon shall flash until the error is corrected. An optional indicator shall be available for remote locations. Racks have no external means of visually showing that an error is present shall not be acceptable.

B. Power Control Electronics.

1. General.

a. The dimmer rack electronics shall be contained in one plug-in CEM3 Power Controller. Each power controller shall plug into a dimming cabinet with no need for tools or discrete wire connections. A simple user interface shall be provided for group configuration, testing and diagnostics. Power control shall be UL/cUL Listed and CE marked. Power and dimming control that require tools for removal of control electronics shall not be acceptable.

2. Physical.

a. The control electronics shall be contained in one plug-in module, housed in a formed steel body with cast-aluminum face panel, and self-retaining ejection handles to ease removal from the rack.

b. The power control shall automatically compensate for frequency variations during operation.

3. Power Control Interface.

a. A backlit eight-line by 20-character graphical LCD shall be provided for system configuration, live control, and status display.
b. The following functional features shall be available in power control to reduce setup and tech times:
    1) Full number pad shall be provided for quick access to dimmers. Power Control that does not provide 0-9 number pad and logic keys for AND, THRU, and AT for fast access, selection, and control of circuit/dimmer numbers shall not be acceptable.
    2) Power control shall provide NEXT and LAST buttons to progress through circuits/dimmers during dimmer check operations such that only a single circuit is brought on to a level at a time during pre-show lighting checks for lamp burnouts.
    3) Shortcut buttons for Setup, About, and live control shall be provided separation of functionality such that a user intending to check status or settings does not accidentally render their system unusable. These buttons shall also serve to reduce maximum time to access any feature or setting on a single dimmer, range of dimmers, or entire rack.
c. The front panel shall have five status LED indicators: power, network activity, DMX A, DMX B, and panic state.
d. Power control that does not include the above buttons and features shall not be acceptable.

4. Control Signal and Communications.
    a. The power control shall be provided with an Ethernet control signal input. This input shall be fully configurable with a range of patching and priority programming capabilities. The Ethernet signal shall supply seamless integration between the dimmer racks and both the entertainment and architectural lighting control systems. The Ethernet signal shall also enable remote configuration, playback, file storage and monitoring features on a personal computer on the network. Dimming systems that require Ethernet to DMX translation devices for control of critical show lighting introduce a potential failure point and shall not be acceptable.
    b. All data and power input for CEM3 control electronics shall be located on a separately removable/pluggable termination connector on the backplane such that backplane can be replaced without removal and discrete secondary conductor terminations. Systems that do not support tool-less or that require removal of wires connected directly to the control electronics shall not be acceptable.
    c. DMX connections shall be available with option for pluggable screw or punch-down type terminal. Systems that do not allow this option do not support both DMX over CAT5 and multi-strand conductors shall not be acceptable.
    d. Ethernet connection shall be available via standard Cat5 RJ45 connection. System requiring punch down direct to rack or controller cannot be Cat5 system certified and shall not be acceptable.
    e. Dimming systems that require discrete termination of DMX, Ethernet, power input, and dimmer control output directly on terminals on the power control or pluggable backplane shall not be acceptable.
    f. The following options shall be available to backup all controller setup UL924 Panic configuration, and recorded presets:
        1) Automatic backup in non-volatile backplane memory.
        2) Automatic backup in non-volatile Controller memory.
        3) 3rd party FTP server.
        4) USB storage device pluggable on the controller face panel.
        5) Data shall also be transferable to and from library storage on a personal computer on a per-rack basis.
    g. The power controller shall directly support the following network protocols:
        1) Net3 protocol suite including ANSI E1.31 Streaming ACN (sACN).
        2) ANSI E1.17 Architecture for Control Networks (ACN).

h. The power control shall directly support 2 optically isolated ports of ANSI E1.11 USITT DMX512-A for control input. Minimum 2,500V of optical isolation shall be provided between the DMX512 inputs and the electronics. Systems that do not have optical isolation on a prewired factory plug-in device shall not be acceptable.

i. Systems that do not support the above listed industry standard ACN protocols for Ethernet setup, control, and feedback integrated directly between the power system and control system shall not be deemed acceptable.

5. Power Control Features.

a. Power Control shall have a dimmer update rate better than 16ms (60HZ) or 20 ms (50 Hz) average. Dimmer outputs shall exhibit no oscillating or hunting for levels. Dimmers with the same choke type set to the same level shall output within ±1V of each other, regardless of phase or input voltage.

b. Power control shall maintain proper dimming performance for all line feed frequencies from 47-53Hz and 57-63Hz without flicker or misfire. Shifts in frequencies up to 3 Hz shall not result in flicker or loss of dimming timing. Systems that cannot perform to these frequency tolerances and shifts shall not be acceptable.

c. Dimmer output levels shall be regulated for incoming line voltages. The regulation shall adjust for both RMS voltage changes and deformations in the incoming AC waveform. The power control shall monitor and adjust each dimmer's output to maintain a constant power to the load. Regulation shall maintain the desired output voltage ±1V for the entire operating range (91-139V and 181-259 VACS) with the exception that the maximum output will be no greater than the line voltage minus dimmer insulation loss. The regulation shall compensate for dips and anomalies in the AC waveform on a dimmer-by-dimmer basis. There shall be no interaction between dimmers in the system or any other equipment. The output shall be nominally regulated to 115V/230V appropriate for the market, but shall be field adjustable on a dimmer-by-dimmer basis to allow for varying cable length. Systems that cannot maintain perform to the above stated voltage regulation shall not be acceptable.

d. Power control shall support a rack filled with different types and sizes of dimmer modules. The properties of each dimmer shall be configurable, including dimmer name, output curve, dimmer firing mode, and scale voltage values.

1) The output curve selections shall include IES Modified Square, Square, Linear, Modified Linear and a Sensor v2.0 output curve. The power control shall also have the capability of storing up to three custom curves as well as an adjustable preheat level, assignable on a per-dimmer basis.

2) The dimmer firing modes shall include: Normal (Dimmed), Dimmer Doubled, Switched (unregulated on/off with adjustable on-at level), Fluorescent with adjustable threshold, and Off.

3) Dimmers set as Dimmer Doubled shall allow a single dimmer to set two different levels on one dimmer circuit by splitting the AC power into positive and negative half cycles with no resultant DC line current.

4) Power Control that does not support all above listed adjustments to dimmers on a per circuit basis shall not be deemed acceptable.

e. Controller shall support 2 methods of automatic configuration during controller replacement in a rack.

1) Use backplane configuration- The backplane shall retain full setup and preset data in. In this recovery mode, when a new power control is inserted, the controller shall automatically come on-line fully functional without any manual intervention.

2) Use controller configuration- override backplane configuration such that replacement modules automatically use the configuration resident in nonvolatile memory of the power control.

f. Controller shall be capable of changing rack setup for multiple shows for an entire system with a single update command from a remote PC. Show setup shall be saved in XML format and capable of being saved/uploaded from both USB and remote PC.

g. In the event of data loss each rack shall maintain the last level for a user programmable time of zero to five minutes or indefinitely, or may be programmed to fade out or to play a specific preset. Systems that do not offer this feature shall not be acceptable.

h. The power control shall contain diagnostic routines to allow the user to test and troubleshoot the system. The power control shall also contain a Test/Bypass switch to turn all dimmers on to full for testing. This switch shall bypass all electronics and shall force the fan on. Systems that do not include local control, “all on” control bypass, and diagnostic routines shall not be deemed acceptable.

i. The power control shall be able to record up to 64 presets in a rack. Presets shall be user programmable by recording a snapshot of current dimmer levels (as set by the all control sources), by entering dimmer levels on the power control directly, or a combination of both methods. The system shall have the ability to program and activate group-wide presets from the power control, remote station, console, networked computer, or handheld device. Presets shall be activated in the default fade time of 2 seconds, but shall be have a user-programmable fade time between 0 and 60 minutes.

j. A system-wide panic (emergency UL924) activation circuit shall be provided. Any dimmer in any rack may be assigned to the panic circuit. The panic shall be a maintained closure. Upon activation the system shall
   1) Force all circuits selected to be included in panic to a master level between 80 100%.
   2) Optionally force all non-panic dimmers to zero.
   3) Provide configurable fade time to and from “emergency” state.
   4) Provide configurable delay to and from “emergency” state.

k. DMX A and B as well as the Ethernet DMX (EDMX) data may be patched using a rack start address - assigned sequentially from a starting control channel or patched individually on a per-dimmer basis. Priority may be set per universe for the DMX inputs, and set per universe by the control source for Ethernet input. Each dimmer may have up to six network control inputs with either a highest takes precedence or priority patch. Each dimmer may also then be assigned to one of 16 spaces for additional specific preset control. Each preset shall have a separate priority for maximum flexibility of prioritization. Systems that do not support prioritization of multiple Ethernet sources beyond HTP shall not be deemed acceptable. Systems that do not support the above listed flexibility in control source prioritization shall not be deemed acceptable.

l. Power control shall provide the ability to set a single circuit, all circuits or a range of circuits to a level at the control interface in the rack. Systems that cannot locally control dimmers through local control override shall not be acceptable.

m. The power control shall be capable of monitoring and displaying incoming line voltage for all three phases on the LCD. With installed current sensors, the same display shall show amperage on each phase.

n. The power control shall support security protected access. The user shall to able to program passwords that restrict access, preventing unauthorized use of higher-level functions by unauthorized personnel. Systems that do not provide security protected access to features that can render the system unusable shall not be acceptable.

6. Standard Feedback.
   a. System and Rack messages shall include, but not be limited to, the following:
      1) DMX port A or B has an error or has failed.
      2) Network has an error or has failed.
      3) Phase A, B or C is below 90 volts.
      4) Phase A, B or C is above 140 volts.
      5) Phase A, B or C did not start because it was below 90V or above 140V at power up.

6) Phase A, B or C voltage headroom warning.
7) Frequency is not 50 or 60 Hz.
8) Rack shutting down due to air flow loss.
9) Ambient temperature is below 0°C/32°F.
10) Ambient temperature is above 40°C/104°F.
11) Rack shutting down - ambient temperature exceeds 46°C/115°F.
12) Configuration memory error.

b. About display shall allow monitoring of system, rack or dimmer status.
1) About System shall provide information about Panic circuits, Preset looks, and System name.
2) About Network shall provide IP address, gateway and net mask.
3) About Rack shall provide information about rack name, ambient temperature, air filters and rack type.
4) About Rack Power shall provide information about power type, rack voltages, current per phase (only with current transformers), under voltage warnings.
5) About Rack Data shall provide status for DMXA, DMXB, EDMX and Network activity.
6) About Dimmer shall provide information about dimmer type, location, output level, control source, scale voltage, mode and curve.

7. Advanced Feedback. (Not supplied as part of the base bid)
a. Sensor's Advanced Features (AF) option shall add an additional sensor in the individual dimmer modules. This option shall allow monitoring of current and output voltage on a dimmer-by-dimmer basis and provide information on lamp burnouts, dimmer status, and input voltages.
b. Power control shall allow the user to record the loads of all AF dimmers in the system. The power control shall, during operation, test each AF dimmer, determine its load, and compare it to the recorded load. Any change from recorded loads of configured tolerance shall display an error on the power control and any monitoring device on the network. If a dimmer is driven on with no load, an optional message shall be available to notify the console operator and electrician that there is no load.
c. Dimmer Specific messages shall include, but not be limited to, the following:
1) Load has dropped below recorded value.
2) Load has raised above recorded value.
3) DC detected on dimmer output.
4) One SCR has failed on/off.
5) Dimmer has failed off or circuit breaker has tripped.
6) Dimmer has been removed.
7) Dimmer load has failed.
8) Dimmer has shut down due to over temperature.
d. About Dimmer display shall provide additional information regarding the dimmer’s recorded load and current or actual load.

8. Network Interface.
a. The Ethernet network shall provide an integral link to connect all racks in the system for rack-to-console and rack-to-network device communication.
b. The network interface to the power controller shall provide a number of user-programmable control schemes between control sources, including architectural control.
c. Hardware settings for rack type, available module types, availability of AF features, and operating voltage shall be configurable at the factory or in the field, and shall not require secondary setup after system commissioning even in the event to power controller replacement.
d. User programmable parameters shall support onsite setup, via the local interface in the rack. These parameters shall include, but not be limited to, defining module type, scale

voltage for each dimmer, firing mode, curve, dimmer numbering and DMX512 or network port assignments. Systems requiring factory programming shall not be acceptable.

C. ThruPower Modules.
1. General.
a. The modules shall be Sensor3 ThruPower modules as manufactured by Electronic Theatre Controls, Inc., or equal. Sensor modules shall be designed for complete flexibility of choice for dimmed, non-dim, or hot power on each 20A branch circuit. A single ThruPower module shall provide:
1) Two dimmed outputs with choice of 500 or 350 µs rise times, controlled by DMX, or
2) Two air gap relay switched outputs controlled by DMX, or
3) Two manual bypass constant power circuits controlled manually.
b. The module may be configured to operate as two dimmers, two relays, or any combination of relay and dimmer from the CEM3 Power Control Module or from an ETC control console connected to a CEM3 system. Any single circuit may be set to bypass the dimmer using a switch on the front of the module.
2. Status Reporting.
a. The power control system shall report circuit specific errors via the rack control electronics and/or via a lighting control console.
b. Modules shall provide the following status reporting functions:
1) Load dropped below recorded value.
2) Load increased over recorded value.
3) DC on dimmer output.
4) SCR failed on/off.
5) Circuit breaker tripped.
6) Dimmer error.
7) ThruPower module removed.
8) Load absent.
3. Electrical.
a. Each ThruPower module shall contain.
1) Two circuit breakers.
2) SCR solid-state dimming.
3) Toroid filters.
4) Power and control connectors.
5) 120VAC remotely controllable mechanically latching air gap relay.
6) Low voltage dc manual bypass override switch.
7) 1 fuse per branch circuit for sufficient short circuit rating.
b. Modules that use Triac dimming shall not be acceptable. Modules which utilize an SCR or triac solid state switch as a dimmer bypass may void warranty of products they are powering and shall not be an acceptable means of bypass.
c. Modules shall not have any protruding pins subject to physical damage when the module is not installed.
d. Modules shall be keyed so that modules of different capacity shall not be interchangeable.
e. Circuit breakers shall be fully magnetic so the trip current is not affected by ambient temperature. Circuit breakers shall be rated for tungsten loads having an inrush rating of no less than 20 times normal current. Circuit breakers shall be rated for 100 percent switching duty applications. Dimmers that do not operate continuously at 100% load shall not be acceptable.
4. SCR Assembly.
a. Each module shall use a solid state module, SSM, consisting of two silicon-controlled rectifiers, SCRs, in an inverse parallel configuration, and all required gating circuitry on the

high voltage side of an integral, opto-coupled control voltage isolator. Rectifiers, copper leads and a ceramic substrate shall be reflow soldered to an integral heat sink for maximum heat dissipation. The SSM shall also contain a control LED, a thermistor for temperature sensing, and silver-plated control and load contacts. The SSM shall include an integral output LED, output voltage sensors and current sensors for feedback to the control module. The SSM shall provide a parallel output connection which completely bypasses all SCR dimming including toroid filters and shall intercept the output prior to connection of the load sensing circuit such that the advanced features are still active during bypass. The entire SSM shall be sealed in a plastic housing requiring only a screwdriver to replace. Dimmers employing triac power devices, pulse transformers, or other isolating devices not providing at least 2,500V RMS isolation, shall not be acceptable. Modules requiring disassembly, heat sink grease or additional tools for repair shall not be acceptable.

b. All electronic components (current/voltage sensors and indicators) shall be contained in a single, field-replaceable housing. Modules requiring discrete wiring of electronic components shall not be acceptable.

c. SCR power switching devices shall have the following minimum ratings:

Module Size:	20A	50A	100A
Single cycle: Peak surge current	625A	1,200A	2,300A
Half cycle: 12T	1,620	4,150	22,000
Transient over voltage	600V	600V	600V
Die size (in)	.257	.394	.570

5. Filtering.
   a. Modules shall include toroid filters to reduce the rate of current rise time resulting from switching the SCRs. The filter shall limit objectionable harmonics, reduce lamp filament sing and limit radio frequency interference on line and load conductors. Modules shall offer 350 or 500uS filter rise times. Rise time shall be measured at the worst case slew rate (approximately 50 percent) from 10 to 90 percent of the output wave form with the dimmer operating at full load.
   b. All dimmers shall maintain their published rise time and/or fall time regardless of duty cycle or rack temperatures. Dimmers that de-rate due to increased dimmer temperature caused by full load operation or high phase angles shall not be acceptable.
6. Performance.
   a. Power efficiency for standard dimmers shall be at least 97 percent at full load with a no-load loss of 3V RMS. The dimmer shall accept hot patching of a cold incandescent load up to the full rated capacity of the dimmer.
7. Physical.
   a. Modules shall be fully plug-in and factory wired. Modules shall consist of a heavy duty, die-cast aluminum chassis with integral face panel. No tools shall be required for module removal and insertion. All parts shall be properly treated, primed and finished in fine-texture, scratch resistant, gray epoxy powder coat. With the exception of the circuit breaker, the module shall contain no moving parts. Each module shall be labeled with the manufacturer's name, catalog number and rating. Modules constructed of molded plastic for structural support are not equivalent and are not acceptable. Modules shall be UL recognized.

D. Sensor Standard Dimmer Module.

1. General.
    a. The dimmer modules shall be the Sensor dimmer modules as manufactured by Electronic Theatre Controls, Inc., or equal. Sensor dimmer modules shall be designed for dependable, economical service in theatrical and video applications.
2. Electrical.
    a. Each dimmer module shall contain two single-pole circuit breakers, a solid-state switching module, associated toroidal filters, and power and control connectors.
    b. Modules shall not have any protruding pins subject to physical damage when the module is not installed.
    c. Modules shall be keyed so that dimmer modules of different capacity shall not be interchangeable.
    d. Circuit breakers shall be fully magnetic so the trip current is not affected by ambient temperature. Circuit breakers shall be rated for tungsten loads having an inrush rating of no less than 20 times normal current. Circuit breakers shall be rated for 100 percent switching duty applications. Dimmers that do not operate continuously at 100% load shall not be acceptable.
3. SCR Assembly.
    a. Each dimmer module shall use a solid state module (SSM) consisting of two silicon-controlled rectifiers (SCRs) in an inverse parallel configuration, and all required gating circuitry on the high voltage side of an integral, opto-coupled control voltage isolator. Rectifiers, copper leads and a ceramic substrate shall be reflow soldered to an integral heat sink for maximum heat dissipation. The SSM shall also contain a control LED, a thermistor for temperature sensing, and silver-plated control and load contacts. The entire SSM shall be sealed in a plastic housing requiring only a screwdriver to replace. Dimmers employing triac power devices, pulse transformers, or other isolating devices not providing at least 2,500V RMS isolation, shall not be acceptable. Dimmer modules requiring disassembly, heat sink grease or additional tools for repair shall not be acceptable.
    b. All electronic components (current/voltage sensors and indicators) shall be contained in a single, field-replaceable housing. Modules requiring discrete wiring of electronic components shall not be acceptable.
    c. SCR power switching devices shall have the following minimum ratings:

Module Size:	15 A	20A
Single cycle: Peak surge current	625A	625A
Half cycle: 12T	1,620	1,620
Transient over voltage	600V	600V
Die size (in)	.257	.257

4. Filtering.
    a. Dimmer modules shall include toroidal filters to reduce the rate of current rise time resulting from switching the SCRs. The filter shall limit objectionable harmonics, reduce lamp filament sing and limit radio frequency interference on line and load conductors. Modules shall offer 350 or 500 uS. filter rise times. Rise time shall be measured at the worst case slew rate (about 50 percent) from 10 to 90 percent of the output wave form with the dimmer operating at full load.

b. All dimmers shall maintain their published rise time and/or fall time regardless of duty cycle or rack temperatures. Dimmers that derate due to increased dimmer temperature caused by full load operation or high phase angles shall not be acceptable.

5. Performance.
   a. Power efficiency for standard dimmers shall be at least 97 percent at full load with a no-load loss of 3V RMS. The dimmer shall accept hot patching of a cold incandescent load up to the full rated capacity of the dimmer.
6. Physical.
   a. Dimmer modules shall be fully plug-in and factory wired. Dimmer modules shall consist of a heavy duty, die-cast aluminum chassis with integral face panel. No tools shall be required for module removal and insertion. All parts shall be properly treated, primed and finished in fine-texture, scratch resistant, gray epoxy powder coat. With the exception of the circuit breaker, the module shall contain no moving parts. Each module shall be labeled with the manufacturer's name, catalog number and rating. Modules constructed of molded plastic for structural support are not equivalent and are not acceptable. Dimmer modules shall be UL Recognized.

E. Sensor Relay Modules.
1. General.
   a. The Relay modules shall be the ETC Relay modules as manufactured by Electronic Theatre Controls, Inc., or equal. The relay modules shall be designed for dependable, economical service in theatrical, architectural, and video applications for use with theatrical and architectural lighting and motorized equipment.
      1) Relay modules shall be compatible with both Sensor Dimming Systems and Unison Dimming Systems.
   b. Relay module configuration shall be dual channel, 100/140V, 15A or 20A, as noted on the Electrical Drawings.
   c. Relay modules shall be fully plug-in and factory wired. The modules shall consist of a heavy duty, die-cast aluminum chassis with integral face panel. No tools shall be required for module removal and insertion. All parts shall be properly treated, primed and finished in fine-texture, scratch resistant, gray epoxy powder coat. With the exception of the circuit breaker, the module shall contain no moving parts. Each module shall be labeled with the manufacturer's name, catalog number and rating. Modules constructed of molded plastic for structural support are not equivalent and are not acceptable. Relay modules shall be UL and cUL listed power control devices with a minimum AIC rating of 10,000A.
   d. Modules shall have a fully magnetic circuit breaker for each channel. Relay modules shall be rated for a minimum of 100,000 full load activations.
   e. Modules shall have Signal and Load LED indicators for each channel.
   f. Relay modules shall be available with ETC Advanced Features providing load and status information.

F. Wall Mount Relay Panel
1. General
   a. The wall mount relay panel shall be the Unison Echo Relay Panel as manufactured by Electronic Theatre Controls, Inc., or equal. Unison Echo Relay Panels shall be UL508, UL67, and UL924 Listed, and shall be so labeled when delivered.
   b. The Unison Echo Relay Panel shall consist of a main enclosure with 30 pole breaker subpanel, Relay sub panel, integral control electronics, and a low voltage subpanel for data terminations and provision for up to three accessory cards
2. Mechanical
   a. It shall be constructed of 16-gauge steel. All panel components shall be properly treated, primed and finished in fine-textured, scratch resistant paint.

b. The 120V enclosure shall be 67.5” high by 14.36” wide and 4” deep and weigh no more than 80 pounds. The 277V panel shall be 67.5” high by 20” wide and 6” deep and weigh no more than 130 pounds.
c. The enclosure shall be capable of being mounted on the surface of a wall or recessed between standard width (16” on center) wall studs.
d. Choice of outer panels shall be available for flush or recess mount applications. This outer panel shall ship complete with a locking door to limit access to electronics, breakers, and local relay overrides.
    1) Optional center-pin reject security screws shall be available for all accessible screws.
    2) Flush mount door shall extend 1” beyond all panel edges to hide wall cut-out.
e. The unit shall provide interior cover to allow access only to class 2 wiring and prevent direct access to touch live components breakers and relays.
f. Relay subpanel may include up to twenty-four 20 amp single pole, up to twelve 20 amp double pole, or eight three pole relays as required in any combination up to capacity.
g. Relay override panel shall provide 24 button overrides which allow the user to directly change the state of any or all relays at the panel.
    1) Relay overrides shall be available for each relay which indicate current state of the relay by way of LED indicator.
    2) Numerical circuit number reference which matches the relay to its breaker.
    3) Removable load schedule label shall be provided which allows the customer to name each of the relay circuits.
h. Relay output lugs shall accept 6-14AWG copper wire.
i. Breaker subpanel may include up to twenty-four 20 amp single pole, up to twelve 20 amp double pole, or eight three pole breakers as required in any combination up to capacity.
j. The control wiring shall land on a removable header for easy contractor installation (On-board DMX, station, and Emergency Input terminations).

3. User Interface
    a. The user interface shall contain a graphical display with button pad to include 0-9 number entry, up, down back arrow navigation and enter.
    b. Test shortcut button shall be available for local activation of preset, sequence and set level overrides.
    c. The user interface shall have a power status LED indicator (Blue), a DMX status LED indicator (Green), a network status LED indicator (Green) and an LED indicator (red) for errors.
    d. USB memory stick interface for uploads of setup and software updates.
4. Functional
    a. Pack setup shall be user programmable. The control panel shall provide the following relay setup features (per circuit):
        1) Type (1 pole, 2 pole, or 3 pole)
        2) Name
        3) Circuit
        4) DMX address
        5) sACN address
        6) Space
        7) Circuit Modes
        a) Normal (priority and HTP based activation)
        b) Latch-lock
        c) Fluorescent
        d) DALI
        8) “On” threshold level
        9) “Off” threshold level
        10) Include in UL924 emergency activation

11) Allow Manual

b. The panel shall be capable of switching all relays on or off at once, or in a user-selectable delay period of 0.1 to 60 seconds, in 0.1 second increments, per relay.

c. Control electronics shall report the following information per branch circuit:
   1) Breaker state
   2) Relay state
   3) Current draw
   4) Voltage
   5) Energy usage over time

d. Built in Control shall include:
   1) From the control panel, stations, or timed events it shall be possible to record up to 16 presets per space for up to 8 spaces per panel.
      a) Presets shall be programmable by recording current levels (as set by DMX), by entering levels on the face panel directly, manually selecting relay state on each relay, or a combination of both methods.
   2) From the control panel, stations, or timed events it shall be possible to record up to 16 zones per space.
   3) Indication of an active preset shall be visible on the LCD display.
   4) One 16-step sequence per space for power up and power down routines.
   5) The panel shall have a UL924-listed contact input for use in Emergency Lighting systems. The panel shall respond to the contact input by setting relays to “on”, while setting non-emergency relays “off”. Each relay can be selected for activation upon contact input.
   6) Data lose behavior.

e. The control of lighting and associated systems via timed and Astronomical clock controls.
   1) System shall allow the activation of presets, sequence, and zone programming of time clock events.
   2) System time events shall be programmable via the face panel.
      a) Time clock events shall be assigned to system day types. Standard day types include: everyday, weekday, weekend, Sunday, Monday, Tuesday, Wednesday, Thursday, Friday and Saturday.
      b) Time clock events shall be activated based on sunrise, sunset, time of day or periodic event.
      c) System shall automatically compensate for regions using a fully configurable daylight saving time.
      d) Presets shall be assigned to events at the time clock.
   3) The time clock shall support event override.
      a) It shall be possible to override the timed event schedule form the facepanel of the time clock.
   4) The time clock shall support timed event hold.
      a) It shall be possible to hold a timed event from the facepanel of the processor.
      b) Timed event hold shall meet California Title 24 requirements.

f. The panel shall receive ESTA DMX512-A control protocol. Addressing shall be set via the user interface button keypad. Any switch may be patched to any DMX channel.
   1) 2,500V of optical isolation shall be provided between the DMX512 inputs and the control electronics as well as between control and power components.
   2) The relays shall respond to control changes (DMX or Stations) in less than 25 milliseconds. DMX512 update speed shall be 40Hz.
   3) Setting changes shall be able to be made across all, some, or just one selected relay in a single action from the face panel.
   4) Rack

a) Quick rack setup shall be available to apply address settings across all circuits for rack number, DMX Start Address, sACN universe, and sACN start address.
b) Emergency Setup Menu shall provide optional delays when emergency is activated or deactivated, and option to turn off non-emergency circuits shall be available. Record function shall allow circuits that are turned on to be added to the emergency setting.

g. Architectural Setup
1) DMX loss behavior
2) DMX priority
3) Station power (on/off)
4) Preset priority
5) Backlight timeout and shutoff mode
6) Contrast
7) Language
8) Spaces
9) Network settings

5. Electrical
a. Modules available to support:
1) ERP 120/208V three phase 4-wire plus ground
2) ERP-2 120/240V single phase 3-wire plus ground
3) ERPA 277/480V, 230/400V and 240/415V three phase. 4-wire plus ground
b. The individual relays shall be mechanically latching.
c. The relay shall be capable of switching 20A at up to 300V.
d. Max Feed size: 200 amp.
e. Main circuit breaker options:
1) Main breaker shall be optionally available for purchase.
2) Main breaker shall be field installable.
3) Main breakers options: 100 (150 amp at 277V) amp or 200 amp.

Operating Voltage	MCB Option	SCCR Rating	Input Lug Wire Sizing
120/208V	100A, 200A	10kA	3/0 – 300kcmil
	200A	22kA, 42kA	
277/480V	150A,200A	14kA	6AWG – 350kcmil
	200A	65kA	6AWG – 350kcmil
Ground Bar	NA	NA	14AWG – 2/0

6. Relay
a. Each relay shall have a manual override switch with on/off status indication.
b. 20A 277V Ballast (HID)
c. 16A Electronic Ballast up to 277V
d. 20A Tungsten up to 277V
e. 20FLA @ 120V Motor Load
f. 17 FLA @ 240V Motor Load
g .14 FLA @ 277V Motor Load
h. Isolation: 4000V RMS
i. State: Latching
j. Life:

1) 100,000 cycles at full resistive load
2) 30,000 cycles motor, inductive, or tungsten

k. Current reporting accuracy: 5%

7. SCCR
   a. System SCCR rating shall be a minimum of 10kA at 120V and 14kA at 277V when fitted with main lugs.
   b. System SCCR ratings shall be rated at:

operating voltage	mcb option	sccr rating
120/208V	None, 100A, 200A	10kA
	200A	22kA, 42kA

8. Accessories
   a. The following accessories shall be optionally available:
      1) Network Interface
      2) Low voltage 0-10V Dimming Control
      3) Ride-Thru Option
      4) Main Breakers as shown in Section G.2
9. Thermal
   a. The panel shall be convection cooled.
   b. The panel shall operate safely in an environment having an ambient temperature between 32ºF (0ºC) and 104ºF (40°C), and humidity between 5-95% (non-condensing).

G. The system shall consist of the following:
1. Provide One (1) SR3-24 Dimmer Rack.
   a. A lamicoid Sign shall be affixed to the front of DR1. The font on the sign shall be smaller than 1/2” in height and shall be Arial or similar: The sign shall contain the following information:

Lincoln High School
The Lincoln High District Logo
DR1
Circuits 1-48 - 200 amps maximum
Theatrical Consultants: Peerbolte Creative LLC
Manufactured by Electronic Theatre Controls, Inc
For service call: 1-800-688-4116

   b. Provide One (1) CEM3 Control Modules, 120V.
   c. Provide Twenty-two (22) D20 2.4KW Dual Dimmer Modules.
   d. Provide Two (2) R20 Dual Relay Module.

2. Provide One (1) Sensor IQ Relay Panel for 48 20 amp 120v single Pole Relays each. Panel shall be sized for One (1) 200 amp 120/208v 3-phase feed. The relay panel shall include a 200 amp main breaker, 0-10 dimming Control option, and a network option card. Mount to wall in location shown on drawings.
   a. A lamicoid sign shall be affixed to the front of RP1 The font on the sign shall be no smaller than 1/2” in height and shall be Arial or similar: The sign shall contain the following information:

1) The sign for RP1 shall read:

Lincoln High School
The Lincoln District Logo
RP1
Relay Circuits 49- 96
200 amps Max RP1
Theatrical Consultants: Peerbolte Creative LLC
Manufactured by Electronic Theatre Controls, Inc
For service call: 1-800-688-4116

2.3 LIGHTING CONTROL CONSOLE AND ACCESSORIES

A. General.

1. The lighting control console shall be a microprocessor-based system specifically designed to provide complete control of stage, studio, and entertainment lighting systems. The console shall be the Element as manufactured by Electronic Theatre Controls, Inc., or equal.
2. The control system shall be Net3 and ETCNet2 native, with both protocols output simultaneously over the network. The system shall also be able to control third party ACN devices directly. The system shall provide control of 1024 outputs on 500 channels.
3. A maximum of 10,000 cues, 1000 groups, 1000 Intensity Palettes, 1000 Color Palettes, 1000 Focus Palettes, 1000 Beam Palettes, 1000 effects, 1000 macros and 100 curves may be contained in non-volatile electronic memory and stored to an onboard hard disk or to any USB storage device.
4. The console may be placed in Tracking or Cue Only mode by the user as a system default and overridden on individual record actions as required.
5. A Master Playback fader pair and dedicated Grand Master/Blackout shall be provided.
6. The console shall provide 40 pageable faders and bump keys that may be operated in either LTP channel or HTP/LTP submaster mode. The console shall support a total of 300 submasters.
7. A high-resolution level wheel shall be provided to control intensity for selected channels and scrolling within selected displays. On demand moving light controls shall be provided for control of other non-intensity parameters. Non-intensity parameters shall be controllable via the on demand or keypad controls.
8. On demand moving light controls shall provide mouse-based tools for non-intensity parameters. The tools shall display the current value for each parameter and shall provide controls for adjusting each parameter.
9. Control and programming features for automated fixtures shall also include: a standard library of fixture profiles, the ability to copy and edit existing profiles and create new profiles, patch displays including channel and output addressing, 16-bit fade resolution, color characterization allowing color mixing and storing in Hue and Saturation or native device values.
10. System information, including playback status, live output and blind values for all record targets shall be displayed on a maximum of two external high resolution DVI monitors, or one SVGA monitor, which may also be touch-screen(s). Only one display shall be required for operation.
11. The system shall direct user input through on-screen dynamic prompts and integral LEDs on console keys indicating current operating mode. A context sensitive on-line Help feature shall explain and provide an example of the operation of each feature of the system.
12. An optional, fully-functioning, detachable alphanumeric keyboard shall be supported. The keyboard shall allow labeling of channels, cues, presets, groups, palettes, effects, macros, curves and the show. An integral electronic keyboard shall be provided.
13. A row of softkeys shall be provided, which change function based on the selection and context of the console. These softkeys shall be labeled on the connected external display.
14. Console software upgrades shall be made by the user via a USB port; changing internal components shall not be required.

15. The console operating software shall be loaded into program execution memory from the internal hard drive when the console is powered. In the event of an uncontrolled shutdown, the console shall return to its last output state when power is restored.
16. Show data may be created and modified on a personal computer, using Windows XP or newer operating systems, using a free offline editing application. The offline editor may also run natively on Macintosh platforms using OS X.
17. A PC, using Windows XP or newer running a client software application shall be able to connect to a control system via the network and view current show data in a mirrored display environment.
18. The system shall allow remote control from a purpose-built wireless remote focus unit (Radio Focus Remote). Systems without these remote control devices shall not be acceptable.
19. The system shall support a Telephone remote control that allows basic functions to be controlled from a standard wireless phone producing touch-tone signals. This allows the use of a standard telephone for a low cost remote control. Systems that do not allow this function shall not be acceptable.
20. The system shall support up to 16 individual Time Code Event lists.

B. Controls and Playback.
   1. Manual Control and Programming Section.
      a. The console keyboard shall be grouped by function. Major groupings shall be record target functions, numeric keys, level assignment functions, display navigation functions and controls.
      b. Non-intensity parameters may be set numerically or via the on demand moving light controls. This control shall be fully interactive. In either case the current parameter value shall be displayed on the console monitor.
      c. Only those parameters available for control in the active lighting system shall be displayed for control.
      d. Lamp controls provide direct access to luminare functions such as striking and dousing arc lamps and calibrating entire fixtures or individual mechanisms of fixtures, as provided by the luminaire manufacturer. User access to these features is normalized across all manufacturers for ease of use. Use of a “control channel” for accessing these functions shall not be required and systems requiring use of a control channel shall not be acceptable.
      e. Fixtures with CMY or RBG color mixing may be set with direct CMY or RBG controls, as well as the Hue and Saturation controls and/or color picker. Color may be set directly to a gel match, normalized to 3200K.
   2. Playback Section.
      a. The master fader shall consist of a 60mm Master Fader pair with associated Load, Go and Stop/Back buttons.
      b. It shall be possible to instantaneously halt an active cue, go back to the previous cue, manually override the intensity fade or manually override the entire fade.
   3. Integral Channel/Submaster Faders.
      a. Submaster and fader support shall be provided via 40 or 60 integral 45mm faders with bump leys. These faders shall be pageable and shall operate in LTP channel and LTP/HTP submaster modes.
      b. LTP channel mode shall allow the user access to intensity of the first 120 channels and shall operate with LTP logic. Faders that are not currently set to the same level as the corresponding channel shall have to be matched to that level before affecting said channel.
      c. Up to 240 proportional, fully overlapping additive or inhibitive submasters may be defined. Submasters shall have colored LEDs to indicate submaster status. Each submaster may have fade up, dwell and down fade times. Each has a bump and assert/channel

select button. Submasters may be set to independent, exclusive and proportional/intensity master control.

d. The submaster blind buffer shall be linked directly to live playback allowing live editing of live submaster content via the command line.

e. It shall be possible to set submaster values directly from the command line.

4. Grand Master.

a. A dedicated 60mm grand master and blackout button are provided.

b. The grand master shall proportionally fade intensity values to zero. Blackout shall send all intensity outputs to zero. Non-intensity outputs shall not be affected. No additional configuration shall be required to withhold non-intensity values from Grand Master and Blackout control.

C. Display Controls.

1. Format shall change the view of selected displays.
2. Channel views may be displayed either in a expanded table view combining conventional channel symbols with table views for multi-parameter devices, or in a channel summary view.
3. Flexichannel shall change which channels are viewed in selected displays, based on a variety of different criteria.
4. Expand shall extend the selected view sequentially across connected displays.
5. Data shall display absolute values of referenced data.

D. Operating Modes.

1. Live Mode channel lists may be constructed using the +, - and Thru keys.
2. Levels may be set with the keypad, level wheel and on demand moving light controls. “Selected” channels shall be those last addressed and under keypad control.
3. Sneak shall be used to restore specified channels to background states, default values, or to send them to specified values, in user specified or default times.
4. Selected channels may be set at a level or held to current values while all other channels are set to zero using Rem Dim. Toggling Rem Dim shall restore all unselected channels to original levels. The Rem Dim level shall be user definable.
5. Channels may be recorded into groups for fast recall of commonly used channels. 1000 groups shall be available. Groups shall store selection order. The Offset function supports rapid creation of ordered groups, including reverse and random order.
6. Parameter settings may be stored to Focus and Color Palettes. All referenced data may be stored to whole numbers or to up to 99 decimal places between each whole number. It shall be possible to store 1000 of each palette type.
7. Any collection of channel data, as determined by the use of “Record” or selective store commands may be stored to palettes (as appropriate to the type).
8. The following conditions may be placed on a channel or channel parameter to be included with a cue record action.
   a. Block flag.
   b. Note.
9. Cues may be recorded in any order. Up to 99 decimal cues may be inserted between any two whole number cues. Each cue may contain a maximum of twenty parts. Parameters may be automatically assigned to specific parts or assigned when the part is created.
10. It shall be possible to record cues and cue parts with the following information:
    a. Any collection of channel data, as determined by the use of “Record” or selective store commands.
    b. Cue Level timing and delays for Intensity Up and Intensity Down, Parameter moves shall follow the Intensity Up time.
    c. Follow or hang time.
    d. Link instruction.
    e. Loop value.

f. Block and/or preheat.
g. Curve.
h. Label and note.
i. Execute list to trigger other activity.

11. Non-intensity channel parameters may be marked (preset using Automark). Automark presets any parameter transitions in the cue just prior to intensity becoming active. Automark may be disabled on a cue or cue part basis, enabling a “live” move.
12. Any channel parameter may be stored with an effect instruction. These effects may contain relative offsets from current value, or absolute instructions. Effects may be progressive action or on/off states. Entry and exit behaviors shall modify the channel parameters activity when beginning and ending the effect.
13. Update may be used to selectively add modified parameter data quickly to that parameter’s current source. It shall be possible to update inactive record targets. It shall also be possible to update back to the current source of the move instruction without specifying that cue via Trace.
14. Recall From quickly pulls specified data from record targets into the current view.
15. Copy To quickly copies selected data to specified record targets.
16. Address and channel check functions shall be provided.
17. Channel parameters may be “parked” at levels. Output addresses may also be parted directly. Parked levels shall not be added to any live record operations, nor may they be changed until the parked element is “unparked”. Address park shall also be provided.
18. About shall provide detailed status of selected channels or specified record targets, including utilization information. About shall also access lamp control functions to calibrate devices, strike and douse arc sources. Use of a luminaire control channel for these functions shall not be acceptable.
19. Live data may be displayed in an expanded table view containing conventional symbols and table views for multi-parameter devices or in a summary view.
20. Undo shall be used to sequentially step back through manual operations, record, update and delete actions. Redo functions shall be provided. Multiple undo commands may be executed at once.
21. Home shall set selected channels non-intensity parameters to their default values.
22. Move shall allow all show data to move from one record target to another.
23. Blind.
    a. The Blind display allows viewing and modification of all record targets without affecting stage levels.
    b. Record target data may be displayed in an expanded table view containing conventional symbols and table views for multi-parameter devices, in a summary view or a spreadsheet view, which allows quick data comparisons, move and replace with functions.
    c. Changes made in blind displays shall be stored automatically.
    d. Blind editing shall be possible for all record targets.
    e. It shall be possible to show or hide parameter data in spreadsheet views for simplicity in viewing/editing.
24. Patch Display.
    a. Patch shall be used to display and modify the system control channels with their associated library data.
    b. Each channel may be provided with a proportional patch level, preheat, curve, label, swap and invert functions.
    c. Offset functions in patch shall allow selection of channel ranges and shall allow the user to establish a “custom” footprint for any device output.
    d. Custom color wheels, color scrolls and gobo wheels shall be defined in patch. These devices shall be created with a simple table and graphical user interface supported by images of major manufacturers.
    e. Copy to and Move functions shall be supported in patch.
25. Setup/Browser.

a. Setup shall access system, show and desk configurations.
b. The browser shall access show data storage, import, and export, print to PDF and clear functions, as well as show data utilities.

E. Interface Options.
1. The console shall support a variety of local interfaces.
a. AC input.
b. USB (a minimum of five ports shall be provided for connecting devices such as a Alphanumeric keyboard, mouse, touch screens, USB Flash drive, etc.) The desk shall provide at least four ports on the rear of the console and one on the control surface itself.
c. Ethernet (one port) 802.3af compliant.
d. Two DVI video output connectors, supporting a maximum of two DVI monitors at 1280x1024 resolution minimum.
e. One VGA output connector.

F. Accessories.
1. Net3 Radio Focus Remote.
2. Net3 Remote Video Interface.
3. Net 3 Gateways.
a. Net3/ETCNet2 to DMX/RDM Gateways (one to four ports).
b. MIDI/SMPTE Gateways.
c. I/O Gateway with 12 analog inputs, 12 SPDT contact outputs, RD232 interface.
4. Element Client Software Kit.

G. Physical.
1. All operator controls and console electronics for a standard system shall be housed in a single desktop console, not to exceed 32.9" wide, 17.9" deep, 5.1" high, weighing 30 pounds.
2. Console power shall be 95 – 240V AC at 50 or 60Hz, supplied via a detachable power cord.

H. Radio Focus Remote.
1. General.
a. The Net3 Radio Focus Remote (RFR) shall be a wireless remote control device that allows access to a variety of system functions. The hand-held transmitter unit shall provide access to frequently used commands for dimmer and channel checks as well as extended functions of the console via softkeys. The receiver unit shall plug directly into the console via USB or may connect to the lighting system via Ethernet.
b. The RFR shall be compatible with the ETC Eos and Congo lighting control systems and their associated consoles, Remote Processor Units (RPUs) and lighting playback controllers.
c. The system shall support multiple units on one receiver as well multiple systems operating separately in the same area.
d. The system equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules.
2. Handheld Device or Transmitter.
a. The transmitter unit shall have a slide switch (on/off), 24 keys for console commands, two rotary encoders with built-in switches and one backlit display. The unit shall also have a programmable “sleep” feature that helps to conserve battery life when the switch is left in the “on” position.
b. The keys of the transmitter unit shall be illuminated. The keys will be brightly lit while keys are pressed and the unit is transmitting. After the key is released, the keys will remain dimly lit for a period of time before the unit sleeps.
c. The transmitter shall have one dedicated command for each key on the unit with the exception of the six soft keys. Dedicated commands shall be displayed within each key.

Softkey functions shall be accessed via a “More SK/Mode” key and shall be indicated within the built-in display.

d. Functionality of the unit shall be determined by the control system it is connected to.

e. The transmitter unit shall be provided with rechargeable nickel metal hydride (NimH) batteries for power. These batteries should provide approximately two days of normal usage before requiring recharging.

f. The transmitter shall be a rugged steel unit, 2.7"(68mm) wide, 6.6"(168mm) high and 0.8"(20mm) deep, excluding the fixed helical antenna. The unit shall weigh 14 oz (400g), including antenna. The unit shall come complete with a hanging point for a wrist strap or lanyard.

g. The Radio Frequency Output for the transmitter shall be 2.410 GHz with 11 additional HF: channels available (2.410GHz - 2.465 GHz). 99 Network IDs available per channel.

h. The working range of the radio signal shall be 300’ (90m) in an indoor environment and 650’ (200m) in an outdoor, free field environment.

3. Receiver Unit.

a. The receiver unit shall be provided with a 6.6’ (2m) USB cable. The receiver may also be plugged into an available powered Ethernet port elsewhere in the system, however the maximum distance (cable length including cable inside the wall) from the power source shall be 330’ (100m).

b. The receiver unit shall be powered directly by the USB connection or by a Power-over-Ethernet connection.

c. A signal LED shall illuminate when the receiver is receiving radio signal from the transmitter.

d. The receiver shall be housed in a unit 2.8" (71mm) wide, 4.4" (112mm) high and 0.7" (45mm) deep, and shall weight 13 oz. (380g) including antenna.

I. Provide the following for the Auditorium:

1. Provide One (1) Element 60 lighting control console with 500 channels and 1024 outputs.
2. Provide One (1) keyboard and mouse.
3. Provide One (1) Dust cover for the console.
4. Provide One (1) Littlite (or equal) 18” Gooseneck Work light.
5. Provide Two (2) 19” wide screen DVI Flat Panel Monitors with appropriate cables.
6. Provide One (1) Net3 Radio RFR Kit complete with Transmitter and Receiver.
7. Provide an Uninterruptible power supply capable of powering console and monitors for 30 minutes.
8. Provide all necessary network, DMX, power cables, connectors and any other required items for a working system. Network and DMX cables shall be 25’ in length.

2.4 ARCHITECTURAL CONTROL

A. The Architectural Control Processor shall be the Unison Paradigm P-ACP Series Control Processor as manufactured by Electronic Theatre Controls, Inc.

B. Mechanical.

1. The Architectural Control Processor (ACP) assembly shall be designed for use in DRd Series Dimming Enclosures and ERn Series Control Enclosures.
2. The processor shall utilize microprocessor based, solid state technology to provide multi-scene lighting and building control.
3. ACP module electronics shall be contained in a plug-in assembly. The module shall be housed in a formed steel body and contain no discrete wire connections. No tools shall be required for module removal or insertion.
4. The ACP shall be convection cooled.

5. The ACP User Interface shall utilize a backlit liquid crystal display capable of graphics and eight lines of text. It shall also provide:
    a. The ACP shall provide an alpha-numeric keypad for data entry and navigation.
    b. The ACP shall provide a touch-sensitive control wheel for navigation.
    c. The ACP shall provide shortcut buttons to assist in navigation, selection, and data entry.
    d. The ACP keypad, buttons, and wheel shall be backlit for use in low-light conditions. The backlight shall have a user selectable time out, including no time out.
6. The ACP shall provide a front-panel RJ45 jack for Ethernet connection to the processor for configuration, live control, and web-browser-based system access. The Ethernet port shall be secured behind the locking door.
7. The ACP shall provide a Secure Digital (SD) Removable Media slot on the front panel for transfer of configuration data. The SD slot shall be secured behind the locking door.
8. The ACP shall provide a Universal Serial Bus (USB) port on the front panel for transfer of configuration data. The USB port shall be secured behind the locking door.
9. Architectural Lighting System configuration and program information shall be stored in flash memory, which does not require battery backup.
    a. The ACP shall provide a Compact Flash (CF) Card as backup flash memory and storage.
    b. The CF Card is stored in the back of the ACP, and can be accessed only by removing the ACP.
    c. The ACP data can be exchanged by inserting the CF card into another ACP.

C. Electrical.
1. The ACP shall require no discrete wiring connections; all wiring shall be terminated into Dimming or Control Enclosure.
2. The ACP shall require low-voltage power supplied by the Dimming or Control enclosure and shall be hot-swap capable.
3. The ACP shall support Echelon LinkPower communications with remote devices, including button stations, button/fader stations, Touchscreen stations, sensors, and third party LonMARK compliant products.
    a. The LinkPower network shall utilize polarity-independent, low-voltage Class II twisted pair wiring, type Belden 8471 (unshielded) or Belden 8719 (shielded) or equivalent. One # 14 AWG drain wire will be required for system not using grounded metal conduit. Touchscreen stations, interface stations and portable stations connectors will also require (2) #16 AWG wires.
    b. The LinkPower network shall be topology free. Network wiring may be bus, loop, home run, star or any combination of these.
    c. Link power wiring shall permit a total wire run of 1640 ft. (500m) without a repeater. Repeater option modules shall be available to increase wiring maximums in increments of 1640 ft. (500m).
    d. Link power wiring between stations shall not exceed 1313 ft. (400m).
4. The ACP shall support 10/100BaseTX, auto MDI/MDIX, 802.3af compliant Ethernet networking using TCP/IP, ESTA BSR E1.17 Advanced Control Networks (ACN) and ESTA BSR E1.31 (sACN) Protocols for internal communication and integration with third-party equipment.
5. The ACP shall support EIA-RS232 serial protocol for bi-directional command and communication with third-party equipment.
6. The ACP shall support two discrete ESTA DMX512A ports, configurable as input or output ports. When used in a Dimming Enclosure, the second port is always an output port.
7. The ACP shall provide four onboard dry contact closure inputs for integration with third-party products.
8. The ACP shall provide four onboard contact closure outputs, rated at 1A@30VDC, for integration with third-party equipment.

D. Functional Capacity.

1. Shall support 1024 channels of control.
2. Shall support 2 physical DMX ports, each of which may be configured as an input or output.

E. Functional System.
1. Runtime application shall utilize support Net3 system interoperability.
2. System shall support the use of Network Time Protocol for real time clock synchronization.
3. System shall support remote firmware upload an over Ethernet connection from a connected PC running the Light Designer software or another connected processor.
4. System shall support local firmware upload from removable media (SD Card, USB Flash Drive).

F. Functional Diagnostics.
1. Shall output an Event log.
2. Standard log shall store a fixed-length history of recent activity.
3. Separate critical log shall only store important messages (such as boot-up settings).

G. Functional Configuration Data.
1. Configuration Data can be uploaded over an Ethernet connection from a PC running Light Designer application.
2. Configuration Data can be retrieved from another Paradigm Processor.
3. A Paradigm Processor shall make its configuration data available for retrieval by another Processor as a backup/recovery mechanism.
4. Configuration Data shall be stored on solid-state media that can be removed to facilitate transfer between Processor units.
5. Configuration Data may be loaded to and from removable media access provided on front panel.
6. Configuration Data for the entire System shall be available for download from any single processor.
7. Shall store configuration data for Dimming enclosure processors and shall make available for download.

H. Functional Scalability.
1. Adding additional Processors to a System shall proportionately increase its overall capabilities up to a maximum System size.
2. The maximum number of Processors configured as a System shall be at least 12.
3. Multiple Processors shall utilize the Ethernet network to remain time synchronized and share control information.
4. Multiple Processors shall utilize the Ethernet network to maintain configuration data synchronization as modifications are made.
5. Failure of a single Processor shall not prohibit continuing operation of the remaining processors.
6. It shall be possible for multiple Systems to coexist on the same physical network with logical isolation between Systems.

I. Functional Local User Interface.
1. Shall provide access to Processor setup (IP address).
2. Shall provide access to Processor status and diagnostics.
3. Where the Processor is installed within a Dimming enclosure, shall provide access to dimming enclosure setup, status and diagnostics.
4. Shall provide control functionality for Control Channels, Zones, Fixtures, Groups, Presets, Macros, Walls and Sequences within the current configuration.
5. Shall provide functionality to schedule astronomical and real time events (add/edit/delete).
6. Shall allow for display of local DMX information.
7. Shall allow for transfer of log files to local removable media.
8. Shall allow to perform firmware upgrades for connected Dimming enclosures.
9. Shall allow for transfer of configuration to and from Dimming enclosures using removable media.

10. Shall allow for transfer of configuration to and from LCD Stations using removable media.
11. Shall allow for binding of Stations.

J. Functional Access Controls.
1. There shall be 2 user accounts - Administrator and User with separate password protection.
2. Account and password settings shall be local to each Processor.
3. Access Controls shall be applied to certain areas of the Paradigm Local Interface and Web Interface User.

K. Functional Web User Interface.
1. Shall be an internal web server accessible via Ethernet port.
2. Shall support common web browsers on Windows and Mac platforms.
3. Shall provide functionality to Activate and Deactivate Presets.
4. Shall provide functionality to schedule timed events (add/delete).
5. Shall display status information.
6. Shall display log files.
7. Shall allow for configuration of Processor settings (date, time).
8. Shall allow for upload and download of configuration data.
9. There shall be links to other web-enabled devices in the System, including other Paradigm Processors.

L. Functional Stations.
1. Stations shall be connected to a Paradigm Processor via a LinkPower network or Ethernet.
2. Station discovery and binding shall be accomplished from the Local User Interface or Light Designer.

M. Functional Net3 and ACN Devices.
1. Net3 Devices shall be connected to and controlled from Paradigm Processors via Ethernet.
2. Paradigm Processors shall provide DMX-Net3 gateway functionality.
3. It shall be possible to send and receive Macro triggers defined within the System configuration via Net3.
4. There shall be support for Streaming ACN on up to 24 universes per Processor.

N. Functional Operation.
1. When contained in a dimming enclosure, a snapshot of the dimming enclosure output data shall be stored in persistent memory so that hardware can access it for immediate output on boot.
2. DMX output refresh rate shall be configurable.
3. There shall be support for 16-bit DMX Attributes.
4. DMX inputs may be patched to DMX and Streaming ACN outputs as external sources.
5. Streaming ACN inputs shall be patched to DMX outputs (gateway) as external sources.
6. Where there are multiple external sources then priority and HTP shall be used to perform arbitration.
7. External and internal sources shall be arbitrated based on user-selection of standard or custom rules.
8. On Preset Record, the values of Attributes within the Preset shall be updated to reflect the current output.
9. The total output may be the combination of many different Presets running concurrently.
10. There shall be no hard limit on number of concurrent cross fades.
11. Multiple Presets controlling the same Attribute shall first interact based on priority and second based on Latest Takes Precedence (LTP) or Highest Takes Precedence (HTP).
12. LTP and HTP operation shall be supported simultaneously and interact (at the same priority) using HTP.
13. Settings due to LTP Presets may be automatically discarded from operation when overridden.

14. It shall be possible to specify that a Preset or Attribute Control will persist when overridden.
15. A Preset may be designated as an HTP Override and shall cause HTP values to be discarded.
16. It shall be possible to modify the rate of a Preset (Cross fades, Effects) from a Control within the System.
17. Each Preset shall have a status that can be Activated, Deactivated or Altered.
18. Preset status may be set based on matching levels in the current output as an option.
19. On startup the System shall be capable of automatically executing timed events within the previous 24 hours to synchronize its initial output state with the current time of day.

O. Serial Input/Output.
1. RS232 shall support 8-bit word length, parity selection and 1 or 2 stop bits.
2. RS232 shall support baud rates from 4800 to 115,200 bps.
3. Serial input and output messages are fully customizable.
4. Serial output messages can be generated by any Control or Event.

P. The Touchscreen Control Stations shall be the Unison Paradigm Touchscreen P-LCD Series Control Stations as manufactured by Electronic Theatre Controls, Inc.
1. All touchscreen stations shall support default and fully graphical control pages.
2. The Touchscreen station shall operate using graphic buttons, faders and other images on at least 30 separate programmable control pages.
3. Touchscreen stations shall also allow programming of page pass-code, lock out and visibility levels.

Q. Mechanical.
1. Touchscreen stations shall consist of a seven inch, backlit liquid crystal display (LCD) with a minimum resolution of 800 by 400 pixels and 12-bit color depth with a touch interface.
2. Touchscreen bezels shall be constructed of aluminum and shall have no visible means of attachment.
    a. The bezel shall install and remove without the use of tools.
    b. The bezel shall provide two working positions for the Touchscreen: service and operating.
3. The Touchscreen shall have a protective overlay over the display.
    a. The overlay shall reduce wear.
    b. The overlay shall reduce glare.
4. The manufacturer shall provide back boxes for all LCD stations.
    a. Flush back box dimensions shall be 7.94” wide x 5.33” high x 3.25” deep.
    b. Surface back box dimensions shall be 8.3” wide x 5.6” high x 2.55” deep.

R. Electrical.
1. Touchscreens shall be powered entirely by the System network.
2. Touchscreens shall connect to the System using an Ethernet network with Power over Ethernet (POE) or the Unison control station Echelon® Link power network. Ethernet network shall be 10/100BaseTX, auto MDI/MDIX, 802.3af compliant and shall utilize Unshielded Twisted Pair (UTP) Category 5 wiring.
3. Echelon® Link power network.
    a. Link power shall utilize low-voltage Class II unshielded twisted pair, type Belden 8471 or equivalent, and one #14 ESD drain wire (when not installed in grounded metal conduit).
    b. Touchscreen stations shall also require (2) #16 AWG stranded wires for 24Vdc operating power. 24Vdc wiring shall be topology free.
    c. Network wiring may be bus, loop, home run, star or any combination of these.
    d. Network insulation displacement connectors shall be provided with all stations.

S. Functional System.

1. The Touchscreen shall support configuration firmware upload from a Paradigm Processor as proxy.
2. The Touchscreen shall support configuration or firmware upload from local removable media.

T. Functional Setup Mode.
1. There shall be a setup display that is separate from any user-defined configuration.
    a. It shall be possible to view and modify connectivity settings.
    b. It shall be possible to view status information.
    c. It shall be possible to view and modify LCD screen settings.
    d. It shall be possible to perform Touchscreen calibration.
    e. It shall be possible to view and modify audio settings.
    f. The appearance of the setup display shall be standard and not editable.
    g. The setup display may be invoked from within the user-defined configuration and/or physical button on the Touchscreen.
    h. There shall be a default protected method to invoke the setup display.

U. Functional Configurations.
1. It shall be possible to have multiple configurations stored within an LCD Station.
2. Only one configuration may be active on the LCD Station.
3. It shall be possible for Touchscreen Stations connected via the Echelon® Link power network to select a configuration automatically based on the configuration of the physical connection.
4. Where multiple configurations are stored there shall be a boot menu to allow selection of a configuration.
5. Each configuration shall be identified as a different Station within the System.

V. Functional Operation.
1. The Unison Paradigm Control System shall be designed to allow control of lighting and associated systems via Touchscreen controls. System shall allow the control of presets, sequences, macros and time clock events.
2. System presets shall be programmable via Button, Button/Fader, Touchscreen, or LightDesigner software.
    a. Presets shall have a discrete fade time, programmable from zero to 84,600 seconds with a resolution of one hundred milliseconds.
    b. Presets shall be selectable via Touchscreen stations.
3. System macros and sequences shall be programmable via LightDesigner system software.
    a. Macro and sequence steps shall provide user selectable steps, and allow the application of conditional logic.
    b. Macro and sequences shall be activated by button, time clock event or LightDesigner software.
4. System time clock events shall be programmable via the Touchscreen, LightDesigner system software, the processor user interface, or the internal web server.
    a. Time clock events shall be assigned to system day types. Standard day types include: anyway, weekday, weekend, Sunday, Monday, Tuesday, Wednesday, Thursday, Friday and Saturday. System shall support programming of additional custom or special day types.
    b. Time clock events shall be activated based on sunrise, sunset, time of day or periodic event. System shall automatically compensate for regions using a fully configurable daylight saving time.
5. Touchscreen stations shall be designed to operate standard default or custom system functions. Components shall operate default functions unless re-assigned via LightDesigner, the Windows-based configuration program.
    a. Optional button functions include: preset selection, manual mode activation, record mode activation, station lockout, raise, lower, macro activation, and cue light, or room join/separate.

b. Optional fader functions include master control, individual channel control, fade rate control or preset master control.

6. Touchscreen stations shall allow programming of station and component electronic lockout levels via Light Designer.
7. It shall be possible to adjust LCD contrast and brightness.
8. It shall be possible to program the station to dim during periods of inactivity.

W. The system shall consist of the following:

1. Provide One (1) ERn2 Rack Mount Paradigm Control Enclosure with P-ACP processor, P-SPM Station Power Module, and ERn-RPS Redundant Power Supply. Enclosure to be mounted in the equipment rack. Refer to Networking section below for additional requirements.
2. Provide wall mount equipment rack, with front lock door, with a minimum of 16 rack units.
3. Provide One (1) Nine-preset and Off Pushbutton Station. Install stage right at stage manager location as the Base Bid. Delete this items as part of Alternate Bid 1.
4. Provide One (1) Wall Mounted LCD Station. Install stage right at the stage manager location as Alternate Bid 1.
5. Provide One (1) Portable LCD Control Station with 25'0" minimum control cable.
6. Provide One (1) Four-preset and Off Pushbutton Stations. Install upstage center.
7. Provide Three (3) Single-button Pushbutton Entry. Install one at House left floor and left balcony vom and balcony right vom.
8. Provide and install all custom back boxes required for the Architectural Control System unless previously noted.
9. Provide programming for the controls based on notes to be provided by the consultant.
10. Provide all cable required for the proper operation of the Architectural lighting control system including all low voltage cable, hook-up and pull.

2.5 THEATRICAL CONTROL NETWORK

A. The Electronic Theatre Controls Net3 network shall provide data distribution over a TCP/IP network. Data shall be layer 3 routable over the Ethernet network. Systems using proprietary formats or formats other than TCP/IP or non-layer 3 routable networks shall not be accepted.

B. Connections shall be made between consoles, face panels, architectural processors, computers, ETCNet2 nodes, Net3 gateways and devices over standard Ethernet distribution systems using 10/100BaseT wiring and/or 10/100BaseFL. All installations shall conform to established Ethernet wiring practice and installation shall be performed by contractors qualified to do this type of work. All wiring shall be tested at Category 5e for full bandwidth operation to the appropriate IEEE standard.

C. The network shall provide DMX routing and patching and prioritization for up to 32,767 DMX addresses and DMX data may be input or output from any port on any DMX node in the system. DMX input, routing and output shall be specifically supported on the system from multiple sources and locations up to the maximum number of nodes supported by the Ethernet topology.

D. The network shall support multiple consoles, computers, file servers, printers, and architectural processors with discrete command lines and control. The ETCNet3 network shall support multiple venues/systems on the same network.

E. Network configuration shall be via ETC Network Configuration Editor (NCE) software. The software shall permit complete user flexibility allowing the system operator to patch DMX data over Ethernet DMX (EDMX), assign node labels for easy identification, assign RFUs to specific systems in multi-system networks, assign DMX offsets and provide DMX port prioritization. Each node shall have a specific IP address provided automatically by the software. The user may edit this IP address. Systems that do not

support simple Windows configuration or systems that do not allow complete reconfiguration of the above mentioned features over Ethernet shall not be acceptable.

F. All configuration data for each network device shall be held at the device and system operation shall not require continuous on line operation of the network configuration software.

G. Architectural and Entertainment systems connected to the same ETCNet3 network shall be capable of arbitrating control over EDMX data. The system shall be capable of alternating control of individual dimmer data between architectural and entertainment systems without intervention by the user. The user shall dictate the conditions under which system shall automatically take control and the network shall allow user override of the user selected defaults. Systems which require direct user intervention to allocate control of dimmers between architectural and entertainment lighting systems shall not be allowed.

H. The ETCNet3 network shall allow multiple DMX inputs assigned to the same EDMX range to be set at different priorities. This shall allow the user to assign high or low priority to each DMX input port in the network on a port by port basis. The network shall require a valid DMX signal present at the input to initiate prioritization. Systems that do not allow for prioritization shall not be allowed.

I. Operational Features.
   1. The video monitor outputs at any remote video interface shall be able to monitor the video output of any ETCNet3 console connected to the network.
   2. Each Gateway shall control up to 2048 DMX addresses, within the confines of up to 64 DMX (32,767 EDMX address) “universes”. The specific DMX data input or output by the Node shall be freely configurable by the user. Duplicate outputs of DMX lines (DMX splitter) and discrete outputs shall be fully supported.
   3. Any number of DMX universes may be configured with any length up to 512 addresses as long as the total does not exceed 32,767. Any range of DMX addresses may be selected for each. Multiple sources may be combined and a priority may be assigned to each source. Each DMX line may have its own start address and offset for ease of use.
   4. DMX ports shall be configurable for either input or output. Multiple DMX signal routing patches and multiple facilities shall be specifically supported and limited only by the file storage capacity of the computer with ETC Network Configuration Editor software installed.
   5. File transmission, synchronization and access to File Servers using Microsoft NT server software shall be supported.
   6. All Network configuration information shall be available as a system printout.

J. DMX Gateway Two-Port.
   1. General.
      a. The ETC Two Port DMX Gateway shall distribute DMX over Ethernet to any input/output device.
      b. Compliant with IEE 802.3i for 10BASE-T, 802.3u for 100BASE-TX and 802.3af for Power over Ethernet.
      c. The unit shall be CE compliant and ETL Listed.
      d. The unit shall be RoHS Compliant (lead-free).
      e. The unit shall support ETCNet2 and Net3/ACN protocols.
      f. The unit meets RDM BSR E1.20 Standard.
      g. The unit is USITT DMX512 and ANSI E1.11 DMX512-A compliant.
   2. Mechanical.
      a. The housing shall be fabricated of 16-gauge steel.
      b. It shall be finished in fine-texture, scratch-resistant, black powder coat.
      c. There shall be an integral backlit LCD display for identification (soft-labeling) and status reporting. Reporting to list the following:

1) Gateway identification – Name, IP address, software version.
2) Network configuration.
3) DMX port configuration.
4) DMX port status.

d. There shall be a menu button for backlight/paging control.
e. Power (blue) and Network present/activity (green) LED indicators shall be on the front of the unit.
f. Reset button for hard reset/forced reboot shall be integrated into the housing of the unit.
g. The unit will utilize an industry standard two-gang back box (Raco 691 with min. 1/2" mud ring extender or Raco 696 deep box) when used in a recessed mount application.
h. When surface mounted, the unit shall utilize an ETC standard two-gang back box (4105A2002).
i. A hanging bracket and connectorized backbox shall be included with touring version (C-clamp and U-bolt hardware available).

3. Processor.
   a. The maximum delay time from input to output not greater than one packet time (minimum 22 mSec.).
   b. There shall be four selectable DMX output update rates with maximum setting not less than 40Hz.
4. Environmental.
   a. The ambient operating temperature shall be from 0° to 40°C (32° to 104°F).
   b. The safe storage temperature range shall be from -40° to 70°C (-40° to 158°F).
   c. The Operating humidity of the unit shall be from 5% - 95% non-condensing.
5. Power.
   a. Power Supply options shall include:
      1) 8 to 28Vdc external power supply.
      2) 48V IEE 802.3af Power over Ethernet.
   b. Maximum power consumption shall be 5 watts.
6. DMX Ports.
   a. 5-pin XLR connectors shall be female for output port, male for input port.
   b. The ports shall be software-configurable for input or output.
   c. The DMX ports shall be fully opto-isolated input from the gateway electronics.
   d. The ports shall be capable of withstanding fault voltages of up to 250VAC.
   e. A switch for DMX/RDM termination shall be incorporated for each port.
7. Configuration.
   a. ETCNet2 Mode configuration shall be accomplished using Network Configuration Editor (NCE) v4.1 or later.
   b. Net3 Mode configuration shall be provided by Gateway Configuration Editor (GCE).
   c. Each DMX Two-Port Gateway shall support up to 1024 DMX In or DMX Out channels.
   d. There shall be control of up to 512 DMX addresses per port, within the confines of up to 64 DMX "universes" (32,767 EDMX addresses) when using EDMX and up to 64,279 "universes" (32, 910,848 DMX addresses) when using Streaming ACN.
   e. There shall be user configurable labeling.
   f. Specific DMX data input or output shall be configurable by user.
   g. Duplicate outputs of DMX lines (DMX splitter) and discrete outputs shall be fully supported.
   h. Any number of DMX universes may be configured with any length up to 512 addresses as long as the total does not exceed 32,767.
   i. Multiple sources may be combined and a priority may be assigned to each source.
   j. Individual port start address and offset are required for ease of use.
8. Physical.
   a. The N32G-2F/2M wall mount gateway shall be a maximum of 4.85" high x 4.88" wide x 5.41" deep and shall weigh 2.0 lbs. The shipping weight shall be 4.5 lbs.

b. The N3T2G-2F/2M touring gateway shall be a maximum of 6.47” high x 4.88” wide x 5.41” deep and shall weigh 3.9 lbs. The shipping weight shall be 4.8 lbs.

K. Multi Box Plug In Stations.
1. The Multi Box Plug-in Stations shall consist of the appropriate connectors required for the system in use. These stations shall be available with DMX input or output, Remote Focus Unit, ETCNet, ETCLink or architectural control connectors. Custom control connectors shall be available.
2. The following standard components shall be available for Remote Plug-in Stations:
   a. 5-Pin male XLR connectors for DMX input.
   b. 5-Pin female XLR connectors for DMX output.
   c. 6-Pin female XLR connectors for RFU connections.
   d. RJ45 connectors for ETCNet connections - Twisted Pair.
   e. Unison Portable Station Connectors.
3. Station faceplates shall be .08” aluminum, finished in fine texture, scratch-resistant black powder coat. Silk-screened graphics shall be white.
4. The station panel shall mount into an industry standard back box, depending on size and quantity of connectors. A terminal block shall be supplied for contractor terminations.

L. Provide the following:
1. All of the rack mount networking and architectural control equipment. Provide blank plates as required to fill any unused slots in the reserved space.
2. Provide One (1) DELL Model # 3548P POE Ethernet Switch, which can be mounted in a 19" accessory rack. It shall allow for Forty-eight (48) ports.
3. Provide Four (4) 10'0" Ethernet Cables to be used with the portable Gateways.
4. Provide Two (2) ETC Wall mount Two-port Gateways with two (2) DMX outputs, install one stage left, and one stage right.
5. Provide Three (3) Wall mounted type 1 multi boxes, with one (1) net tap and one (1) LCD Plug-in Station. Install one Stage Left, stage right and at sound control position. The net tap shall be labeled “Lighting Network” above the jack; the maximum length of allowable extension cable shall be listed below the jack. The Plug-in Station shall be labeled Portable LCD.
6. Provide One (1) wall mounted type 3 multi box with two (2) net taps, and one (1) LCD Plug-in Station. The net taps shall be labeled “Lighting Network” above the jack; the maximum length of allowable extension cable shall be listed below the jack. The Plug-in Stations shall be labeled Portable. Install in Light Control location.
7. Provide One (1) wall mounted type 6 multi box with one (1) DMX 1 In, one (1) DMX 2 In,. Install in Light Control Booth. The DMX jacks shall be labeled “DMX-1 In”, “DMX-2 In”, Each label shall be three lines of text.
8. Provide One (1) Rack mount Uninterruptable Power Supply capable of powering the entire network and architectural control system for a period of not less than 90 minutes.
9. Provide all cable, patch bays, power supplies, brush panels, and patch cables for the correct wiring and operation of the Theatrical Control Network including all electrical components and hook-up.

2.6 LIGHTING INSTRUMENTS

A. All fixtures are manufactured as specified. Lamps are manufactured General Electric, Phillips, Sylvania, USHIO or approved equal.

B. All fixtures are to be delivered to the job site complete with pipe clamps and safety cables. Pattern holder, color frame, lamp, DMX and PowerCON cable when applicable. All lamps are to be correctly installed by the contractor and all fixtures are to be properly aligned.

C. Provide the following Fixtures and Accessories.

1. Provide Four (4) LED ETC Color Source Spot each complete with 10° lens, pipe clamp, color frame, safety cable, pattern holder, and male parallel blade U-Ground “Edison” connector. Hang circuit and focus in the FOH with shutters open or as directed by Consultant.
2. Provide Four (4) LED ETC Color Source Spot each complete with 14° lens, pipe clamp, color frame, safety cable, pattern holder, and male parallel blade U-Ground “Edison” connector. Hang circuit and focus in the FOH with shutters open or as directed by Consultant.
3. Provide Twelve (12) LED ETC Color Source Spot each complete with 19° lens, pipe clamp, color frame, safety cable, pattern holder, and male parallel blade U-Ground “Edison” connector. Hang circuit and focus in the FOH with shutters open or as directed by Consultant.
4. Provide the following theatrical lighting accessories:
    a. Provide 10% replacement for all lamp types.
    b. Provide Thirty (30) 5 pin DMX cables in the following lengths with male connector on one end and a female connector on the other.
        1) Provide Six (6) 5’ cables.
        2) Provide Twenty (20)10’ cables.
        3) Provide Four (4) 20’ cables.
    c. Provide Twenty (20) PowerCON cables in the following lengths with male connector on one end and a female connector on the other.
        1) Provide Six (6) 5’ cables.
        2) Provide Fourteen (14) 10’ cables.
5. Refurbish Twelve (12), 6” Fresnel Spotlights. Demo, store and reinstall each complete with pipe clamp, color frame, safety cable, male two pin and ground connector and new 750 watt BTN lamp. Hang circuit and focus straight down or as directed by Consultant.
6. Refurbish Twenty four (24), SourceFour Ellipsoidal Spotlights. Demo, store and reinstall each complete with male two pin and ground connector and new 575 watt HPL lamp. Hang circuit and focus or as directed by Consultant.
7. Refurbish Twelve (12), PAR 56. Demo, store and reinstall each complete with male two pin and ground connector and new lamp. Hang circuit and focus or as directed by Consultant.

2.7 DISTRIBUTION EQUIPMENT

A. Enclosures shall be code gauge steel with receptacles in place and ready for connection building wiring.

B. Wire receptacles in connector strips to terminal blocks. Identify wires and terminals with numbers corresponding to circuit schedule.

C. The terminal blocks shall be molded barrier type with tubular screw clamp suitable for connecting to multi-conductor feed or incoming wire. Two terminals per circuit shall be provided to accept 18-8 AWG (10/20/30A), 18-4 AWG (50A), or 10-1/0 AWG (60/100A) wire.

D. Identification of load receptacles: designate each receptacle with white characters in correspondence with the circuit schedule.
1. Connector strips: Number with 2" characters above receptacles on the upstage side except where noted otherwise.
2. Outlet Boxes: Number with 3/4” characters below receptacles.

E. Load receptacle devices - except where noted - shall be 20A stage pin receptacle/body/plug: 2 pole+ ground.

F. Connector Strips and outlet boxes shall be furnish with all necessary hardware; straps, U- bolts, etc., for mounting connector strips to rigged 1 1/2" pipe, wall or supporting steel as specified.
   1. Prime and paint all metal parts black enamel.
   2. Connector strip shall be code gauge steel with removable cover sections.

G. Provide the following:
   1. Provide Two (2) circuit boxes each with 1 circuits and 1 DMX 5 pin XLR jack. 1 relay circuit shall be wired into 1 flush mount female 20 Amp parallel blade U-Ground "Edison" connector. Provide with all hardware necessary to mount to pipe ladder, stage side of ladder, for use as the Vom Distribution. The Edison connectors shall be labeled 49 on house left and 50 on house right. The DMX jack shall be installed at the bottom of the circuit box and shall be labeled "DMX-1 OUT" above the jack. The Electrical Contractor shall provide the appropriate load wire from the dimmer rack.
   2. Provide Two (2) circuit boxes each with 2 circuits and 1 DMX 5 pin XLR jack. 2 relay circuit shall be wired into 2 flush mount female 20 Amp parallel blade U-Ground "Edison" connector. Provide with all hardware necessary to mount to ladder, on side rail away from column above top rung, for use as the Column Distribution. The Edison connectors shall be labeled 51-52 on house left and 53-54 on house right. The DMX jack shall be installed at the bottom of the circuit box and shall be labeled "DMX-1 OUT" above the jack. The Electrical Contractor shall provide the appropriate load wire from the dimmer rack.
   3. Provide Two (2) circuit boxes each with 9 circuits and 1 DMX 5 pin XLR jack. 3 dimmed circuits shall be wired into 3 evenly spaced flush 2-pin and ground "Stage Pin" connectors. 5 relay circuit shall be wired into 5 flush mount female 20 Amp parallel blade U-Ground "Edison" connector. 1 relay work light circuit shall be wired into 1 flush mount female 20 Amp parallel blade U-Ground "Edison" connector. Provide with all hardware necessary to mount inside of balcony rail within the ladder, for use as the Ladder Distribution. On the House Left Ladder, the dimmed circuits shall be labeled 1-3 and the House Right Ladder 4-6. Edison connectors shall be labeled 55-60 on house left and 61-66 on house right and the Work light circuit shall be labeled 96. The DMX jack shall be installed at the bottom of the circuit box and shall be labeled "DMX-1 OUT" above the jack. The Electrical Contractor shall provide the appropriate load wire from the dimmer rack.
   4. Provide One (1) 31' 0" raceway in one section to serve as the on-stage electrics with 19 circuits each,1 DMX 5-pin XLR jack and 2 RJ45 Network Connector. 14 dimmed circuits shall be wired into 14 evenly spaced 18" 12/3 SO pigtails with female 2-pin and ground "Stage Pin" connectors. 4 relay circuits shall be wired into 4 evenly spaced flush mount female 20 Amp parallel blade U-Ground "Edison" connectors. The pigtails shall be labeled 7-20 and the Relay labeled 67-70 and the work light circuit shall be labeled 96 for the 1st electric. The DMX 5 pin XLR jack shall be installed at stage left end of the raceway and shall be labeled "DMX-1 OUT" above the jack. The RJ-45 jacks shall be installed on the each end of the raceway and shall be labeled "LIGHTING NETWORK" above the jack. The labels shall be placed above the associated connector or pigtails on both sides of the raceway. Provide pipe brackets (ETC Type 22 or similar) to allow double batten configuration for use as the first electric on stage. Two 31' 0" long, 1-½" schedule 40 pipe batten shall be provided and installed for the electric, as part of section 116133, in order to hang the lights from the rigged electric. The Theatrical Lighting Contractor shall provide the appropriate gridiron junction boxes and the appropriate multi-wire feeder cable of correct length in one continuous piece with strain relief and support devices on both ends. The Electrical Contractor shall be responsible for all load wire termination and appropriate load wire from the dimmer rack.

5. Provide One (1) 31' 0" raceway in one section to serve as the on-stage electrics with 15 circuits each,1 DMX 5-pin XLR jack and 2 RJ45 Network Connector. 10 dimmed circuits shall be wired into 10 evenly spaced 18" 12/3 SO pigtails with female 2-pin and ground “Stage Pin” connectors. 4 relay circuits shall be wired into 4 evenly spaced flush mount female 20 Amp parallel blade U-Ground “Edison” connectors. The pigtails shall be labeled 21-30 and the Relay labeled 71-74 and the work light circuit shall be labeled 96 for the 2st electric. The DMX 5 pin XLR jack shall be installed at stage left end of the raceway and shall be labeled “DMX-1 OUT” above the jack. The RJ-45 jacks shall be installed on the each end of the raceway and shall be labeled “LIGHTING NETWORK” above the jack. The labels shall be placed above the associated connector or pigtails on both sides of the raceway. Provide pipe brackets (ETC Type 22 or similar) to allow double batten configuration for use as the second electric on stage. Two 31' 0" long, 1-½" schedule 40 pipe batten shall be provided and installed for the electric, as part of section 116133, in order to hang the lights from the rigged electric. The Theatrical Lighting Contractor shall provide the appropriate gridiron junction boxes and the appropriate multi-wire feeder cable of correct length in one continuous piece with strain relief and support devices on both ends. The Electrical Contractor shall be responsible for all load wire termination and appropriate load wire from the dimmer rack.
6. Provide One (1) 29' 6" raceway in one section to serve as the on-stage electrics with 7 circuits each,1 DMX 5-pin XLR jack and 2 RJ45 Network Connector. 2 dimmed circuits shall be wired into 4 evenly spaced 18" 12/3 SO pigtails with female 2-pin and ground “Stage Pin” connectors. 4 relay circuits shall be wired into 4 evenly spaced flush mount female 20 Amp parallel blade U-Ground “Edison” connectors. The pigtails shall be labeled 31-32 and the Relay labeled 75-78 and the work light circuit shall be labeled 96 for the 3rd electric. The DMX 5 pin XLR jack shall be installed at stage left end of the raceway and shall be labeled “DMX-1 OUT” above the jack. The RJ-45 jacks shall be installed on the each end of the raceway and shall be labeled “LIGHTING NETWORK” above the jack. The labels shall be placed above the associated connector or pigtails on both sides of the raceway. Provide pipe brackets (ETC Type 22 or similar) to allow double batten configuration for use as the third electric on stage. Two 29' 9" long, 1-½" schedule 40 pipe batten shall be provided and installed for the electric, as part of section 116133, in order to hang the lights from the rigged electric. The Theatrical Lighting Contractor shall provide the appropriate gridiron junction boxes and the appropriate multi-wire feeder cable of correct length in one continuous piece with strain relief and support devices on both ends. The Electrical Contractor shall be responsible for all load wire termination and appropriate load wire from the dimmer rack.
7. Provide Two (2), Wall Boxes with 6 circuits each. 3 dimmed circuits shall be wired into 3 evenly spaced flush 2-pin and ground “Stage Pin” connectors and 3 circuits shall be wired into 3 flush mount 20 amp Parallel Blade U-Ground “Edison” connectors. Install one box on the stage right proscenium wall and the other on the stage left proscenium wall. Label the Dimmed circuits in each box 33-35 and Label the Edison connectors 79-81 and 82-84. The Theatrical Contractor shall provide the wall boxes and the appropriate back boxes. The Electrical Contractor shall be responsible for all load wire termination and appropriate load wire from the dimmer rack.

PART 3 EXECUTION

3.1 PREPARATION

A. Inspect the areas and conditions where theatrical equipment will be installed. Notify the Owner of any conditions that would adversely affect the installation or subsequent utilization of the equipment. Do not proceed with the installation until unsatisfactory conditions are corrected.
   1. Coordinate work and work schedule with the owner. Provide items to be installed in sufficient time to meet owner's schedule.

3.2 GENERAL INSTALLATION

A. Install all theatrical equipment, hardware and accessories at locations indicated in the documents utilizing qualified stage technicians and licensed electrical contractor.
   1. Provide all tools, accessories, connecting and attaching devices as required for a complete and properly functioning installation.

B. Install equipment as indicated or to the owner's instruction.

C. Properly test and demonstrate all equipment after installation.

3.3 STAGE LIGHTING

A. Furnish all materials as indicated, including all necessary cables and accessories.

B. All system components shall arrive on the job site freight prepaid and completely pre-wired with all field connections clearly labeled. All equipment shall be UL listed and comply with National Electrical Code.

C. The lighting equipment shall be fully factory-tested prior to shipment and shall be guaranteed against defects in material and workmanship for two years from date of final delivery. The warranty shall be on a factory exchange or repair basis. No equipment having a shorter warranty will be considered and all equipment provided shall be covered by this warranty. Unspecified length warranty will not be acceptable.

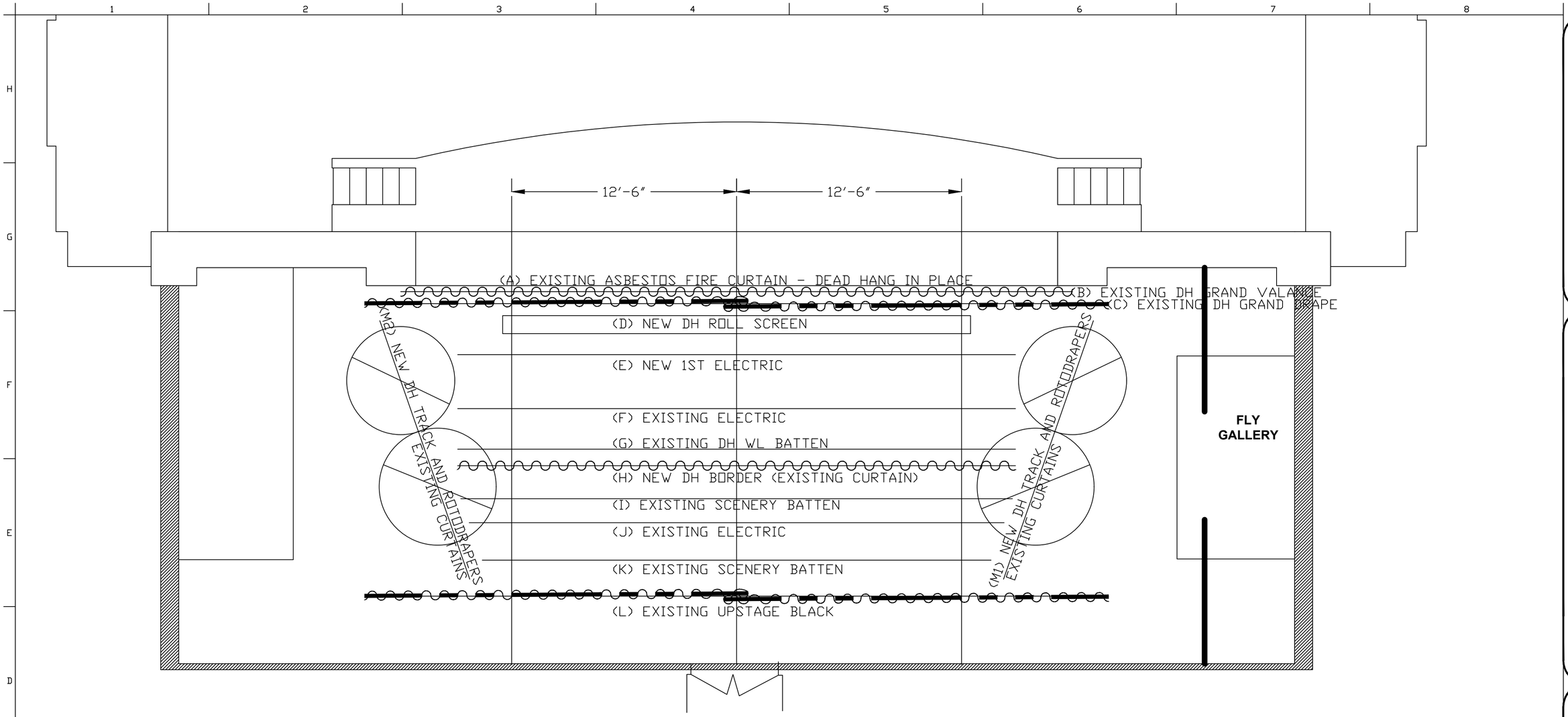
D. Furnish three sets of closeout documents and manuals in both printed and electronic formats. The document should include but not limited to; maintenance procedures, operation, and tutorials.

E. Provide the services of a qualified technician to instruct the owner's personnel in the proper operation of the specified equipment at a time acceptable to the owner after the final punch or two weeks after installation, whichever is later; training time not to exceed four hours.

3.4 CLEAN-UP

A. Upon completion of installation, remove all debris from the site. Leave work areas clean and ready for use.

END OF SECTION 116100



LINE #	DIST.	LINE SET NAME	BATTEN LENGTH	LOW TRIM	REMARKS	ACCESSORIES
A	0"	ASBESTOS FIRE CURTAIN	–	EXISTING	DEAD HANG IN PLACE DEMO EXISTING RIGGING	
B	4"	VALANCE	*38'	14'6"	REHANG EXISTING DEAD HUNG CURTAIN	REUSE EXISTING CURTAIN
C	1'0"	GRAND DRAPE	*41'6"	.75"	REHANG EXISTING DEAD HUNG TRACK AND CURTAIN	REUSE EXISTING TRACK AND CURTAINS
D	1'8"	PROJECTION SCREEN	–	20' TO CASE 3'0" TO SCREEN	NEW DEAD HUNG SET	133"x236" SCREEN
E	3'10"	1ST ELECTRIC	(2)31'	5'	REPLACE EXISTING TRUSS LINE SET	REUSE HEAD BLOCK NEW CABLE CRADLE
F	6'10"	2ND ELECTRIC	(2)31'	5'	REPLACE EXISTING ELECTRIC	REUSE HEAD BLOCK NEW CABLE CRADLE
G	9'1"	WORK LIGHT BATTEN	31'	EXISTING	EXISTING DEAD HUNG BATTEN – TO REMAIN AS IS	
H	10'0"	BORDER	31'	14'6'	NEW DEAD HUNG SET	REUSE BORDER FROM TRUSS LINE SET
I	11'10"	SCENERY	30'8"	5'	REPLACE EXISTING SCENERY LINE SET	REUSE HEAD BLOCK
J	13'2"	3RD ELECTRIC	(2)29'8"	5'	REPLACE EXISTING ELECTRIC	REUSE HEAD BLOCK NEW CABLE CRADLE
K	15'3"	SCENERY	28'3"	5'	REPLACE EXISTING SCENERY LINE SET	REUSE HEAD BLOCK
L	17'3"	UPSTAGE TRAVELER	41'4"	5'	REPLACE EXISTING TRAVELER LINE SET	REUSE HEAD BLOCK, TRACK, AND CURTAINS
M1	1'11"–16'4"	STAGE RIGHT SIDE MASKING	15'2"	.75'	NEW DEAD HUNG SET DS END 19'10" FROM CENTER US END 14'10" FROM CENTER	NEW CURTAIN TRACK NEW ROTODRAPER REUSE SIDE MASKING CURTAINS
M2	1'11"–16'4"	STAGE LEFT SIDE MASKING	15'2"	.75'	NEW DEAD HUNG SET DS END 19'10" FROM CENTER US END 14'10" FROM CENTER	NEW CURTAIN TRACK NEW ROTODRAPER REUSE SIDE MASKING CURTAINS

NOTE: STRUCTURAL AND ELECTRICAL DRAWINGS ARE FURNISHED BY PEERBOLTE CREATIVE FOR REFERENCE ONLY. PC IS NOT LICENSED TO PERFORM ANY ENGINEERING FOR STRUCTURAL OR ELECTRICAL POWER.

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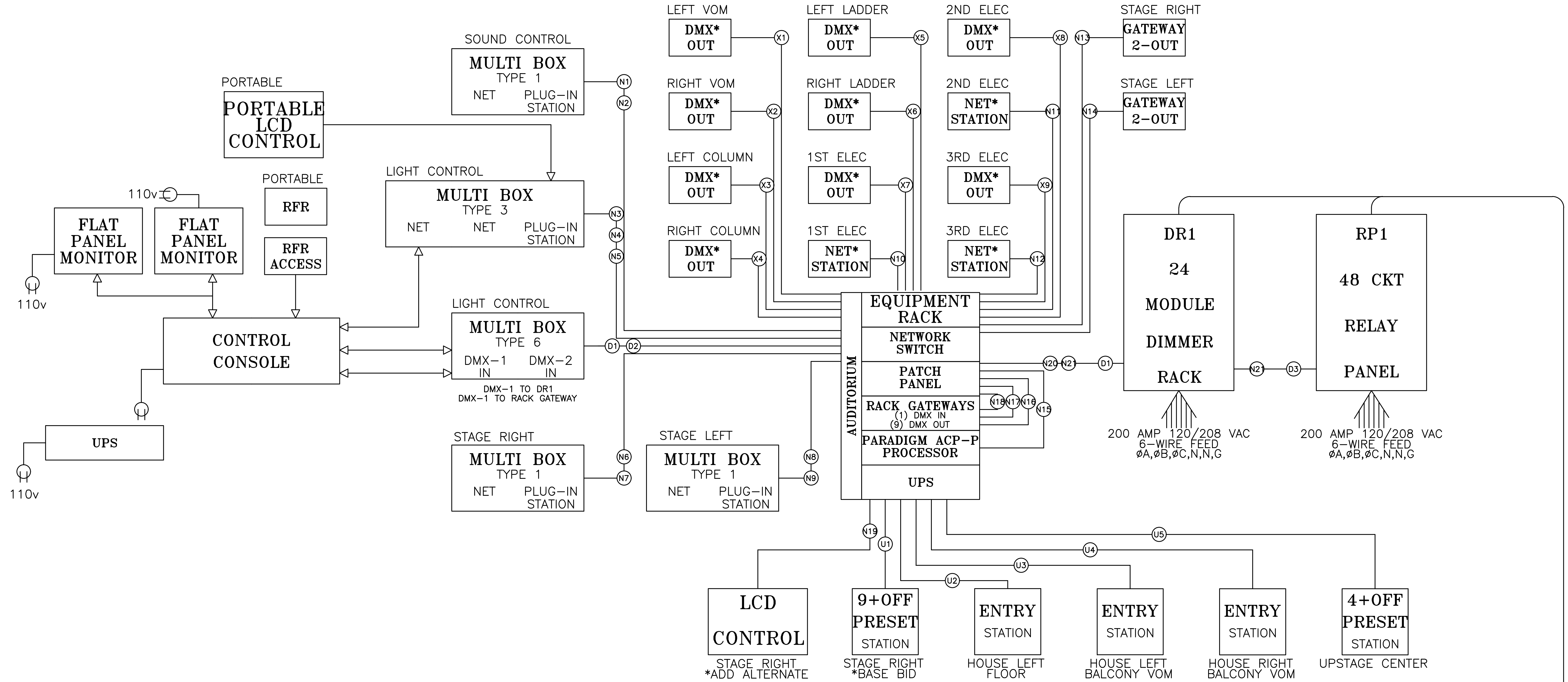
www.peerbolte.com
PO BOX 571
CEDAR FALLS
IOWA 50613

ABRAHAM LINCOLN HIGH SCHOOL
DES MOINES, IA

RIGGING PLAN
1/4" = 1'0"

DATE
June 8, 2016

SHEET
TH1
1 OF 5



WIRING TO THEATRICAL CIRCUITS BY ELECTRICAL CONTRACTOR

1	LEFT VOM 1 RELAY (49)
2	RIGHT VOM 1 RELAY (50)
3	LEFT COLUMN 2 RELAY (51,52)
4	RIGHT COLUMN 2 RELAY (53,54)
5	LEFT LADDER 3 DIM 5 RELAY 1 WL (1-3)(55-60)(96)
6	RIGHT LADDER 3 DIM 5 RELAY 1 WL (4-6)(61-66)(96)
7	1ST ELECTRIC 14 DIM 4 RELAY 1 WL (7-20)(67-70)(96)
8	2ND ELECTRIC 10 DIM 4 RELAY 1 WL (21-30)(71-74)(96)
9	3RD ELECTRIC 2 DIM 4 RELAY 1 WL (31-32)(75-78)(96)
10	2 WALL BOXES 3 DIM 6 RELAY (33-35)(79-84) 2 BOXES WITH 3 DIM & 3 RELAY EACH
11	HOUSE LIGHTS 13 DIM 1 RELAY (36-48)(95)

U# = (1) BELDEN 8471
UV# = (1) BELDEN 8471, (2) #16 AWG
N# = (1) BELDEN 1583A
LV# = (2) #16 AWG
D# = (1) BELDEN 9729
*=STATION IS MOUNTED IN RACEWAY
IS AN IDENTIFIER (NOT QUANTITY)

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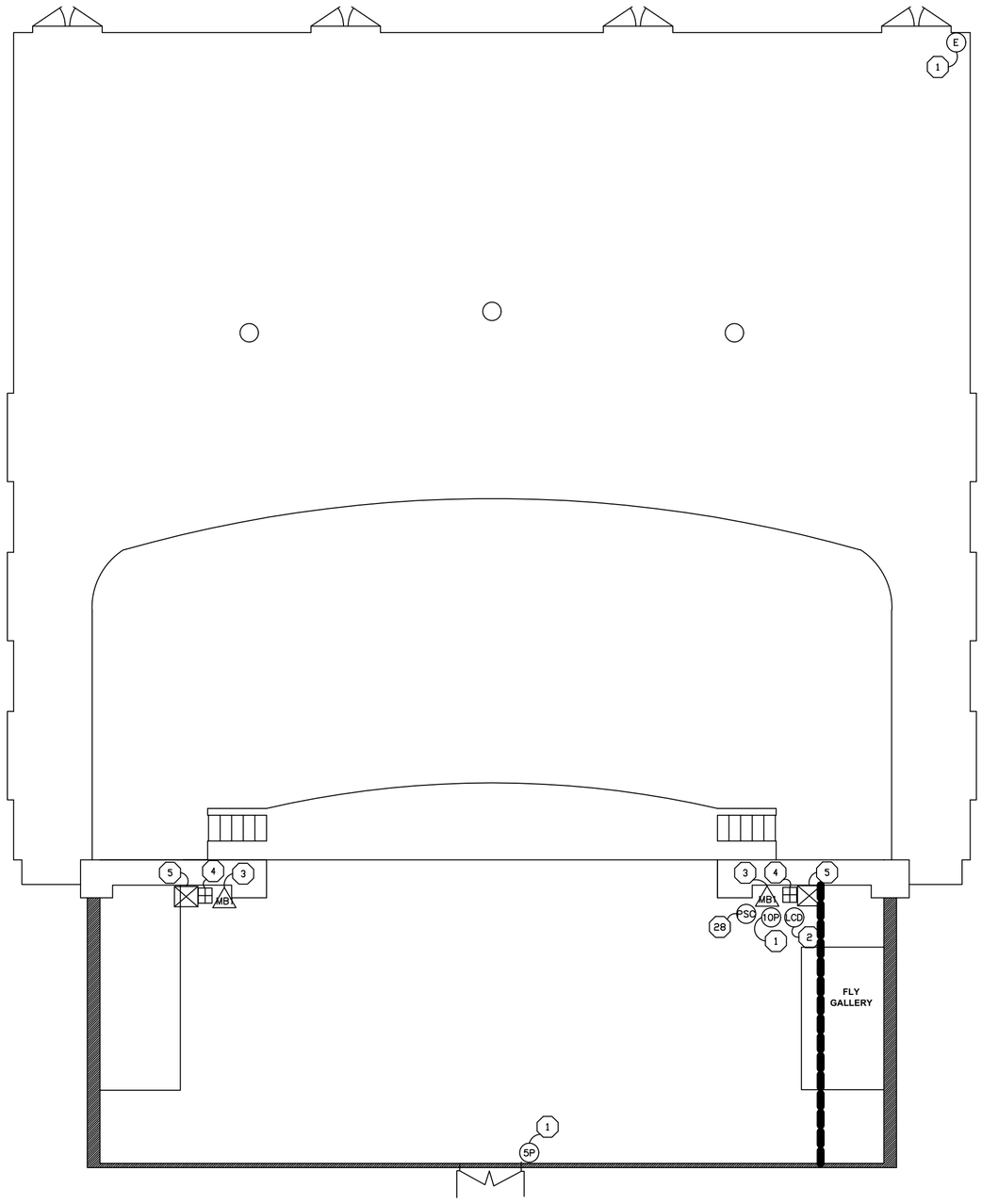
ABRAHAM LINCOLN HIGH SCHOOL
DES MOINES, IA

LIGHTING SYSTEM
RISER DIAGRAM
NO SCALE

DATE
June 8, 2016

SHEET
TH2
2 OF 5



1. 3/4" CONDUIT TO ACCESSORY RACK
   CONTAINS (1) BELDEN 8471
   MOUNT 3'9" AFF
2. 3/4" CONDUIT TO EQUIPMENT RACK
   CONTAINS (1) BELDEN 1583A
   ALTERNATE - INSTALL IN LIEU OF 10P STATION
   MOUNT 5'0" AFF
3. 1" CONDUIT TO EQUIPMENT RACK
   CONTAINS (3) BELDEN 1583A
   MOUNT 2'0" AFF
4. 3/4" CONDUIT TO NEAREST MULTIBOX
   CONTAINS (1) BELDEN 1583A
   MOUNT 2'0" AFF
5. CONDUIT TO DIMMER RACK
   CONTAINS (3) 20 AMP CIRCUITS
   6 WIRES + GND
   CONDUIT TO RELAY PANEL
   CONTAINS (3) 20 AMP CIRCUITS
   6 WIRES + GND
   MOUNT 3'0" AFF
28. PROJECTION SCREEN CONTROLLER
    CONDUIT TO PROJECTION SCREEN
    CONTAINS (3) #12 AWG
    MOUNT 3'9" AFF

EQUIPMENT AND INSTALLATION SCHEDULE

ITEM	CONTRACTOR		
	ELECTRICAL	THEATRICAL LIGHTING	THEATRICAL RIGGING
EXISTING ARCHITECTURAL LIGHTING CONTROL SYSTEM		D	
EXISITNG THEATRICAL LIGHTING CONTROL NETWORKS		D	
EXISTING THEATRICAL DISTRIBUTION AND PIPE MOUNT OUTLET BOXES	D	D	
EXISTING FLUSH/RECESSED THEATRICAL OUTLET BOXES OR POCKETS	D	D	
EXISTING DIMMER RACK	D		
EXISITNG GRID IRON JUNCTION BOXES	D		
EXISITNG MULTIWIRE FEEDER CABLES	D		
NEW ARCHITECTURAL LIGHTING CONTROL SYSTEM		P,I,H	
NEW THEATRICAL LIGHTING CONTROL NETWORKS		P,I,H	
LIGHTING CONTROL BOARDS AND MONITORS		P,I,H	
THEATRICAL LIGHTING FIXTURES		P,I,R,S,L	
THEATRICAL RIGGING (AS INDICATED IN SPECIFICATIONS)			D,R,S,L,P,I
NEW THEATRICAL DISTRIBUTION AND PIPE MOUNT OUTLET BOXES	H	P,I	
THEATRICAL DISTRIBUTION DOUBLE BATTEN BRACKETS		P	I
NEW FLUSH/RECESSED THEATRICAL OUTLET BOXES OR POCKETS	I,H	P	
NEW DIMMER RACK AND RELAY PANELS, DR1 AND RP1	H	P,I	
DIMMER RACK AND RELAY PANEL MAIN SWITCH GEAR	P,I,H		
LOW VOLTAGE CABLE FOR THEATRICAL CONTROL NETWORK	I	P,H	
GRID IRON JUNCTION BOXES	I,H	P	
MULTIWIRE FEEDER CABLES	I,H	P	
ALL CONDUIT	P,I		
ALL BACK BOXES	P,I		
LOAD CIRCUITS PULLED AND TERMINATED	P,I,H		
LOAD CIRCUIT BOXES AND COVER PLATES	P,I,H		
CURTAINS AND TRACKS (NEW & EXISTING)			P,I,R,S,L

P=PROVIDE I=INSTALL H=HOOK UP D=DEMO
R=REMOVE L=REINSTALL S=STORE

KEY TO THEATRE LIGHTING SYMBOLS

- (E) ENTRY STATION (SINGLE GANG BACK BOX)
- (5P) 5 BUTTON 4 PRESET+OFF STATION (SINGLE GANG BACK BOX)
- (10P) 10 BUTTON 9 PRESET+OFF STATION (SINGLE GANG BACK BOX)
- (LCD) LCD CONTROL STATION (MANUFACTURER SUPPLIED BACK BOX)
- (PSC) PROJECTION SCREEN CONTROLS (SINGLE GANG BACK BOX)
- 2-PORT GATEWAY (MANUFACTURER SUPPLIED BACK BOX)
- MB1 MULTI BOX TYPE 1 (TWO GANG BACK BOX)
- MB3 MULTI BOX TYPE 3 (THREE GANG BACK BOX)
- MB6 MULTI BOX TYPE 6 (TWO GANG BACK BOX)
- 120V DUPLEX CONVIENCE OUTLET
- 208V 50 AMP OUTLET
- THEATRICAL RACEWAY
- E# DROP BOX (E#= ELECTRIC, DB#=DROP BOX, N=NET DROP M#=MOTOR POWER, MC#=MOTOR CONTROL)
- FLOOR POCKET/WALL BOX
- DR# EQUIPMENT AND RACKS (DR#= DIMMER RACK, RP=RELAY PANEL EQ=EQUIPMENT RACK)

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GENERAL NOTES

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2. ALL VISIBLE CONDUIT SHALL BE PAINTED TO MATCH THE ADJACENT SURFACE.
3. ANY SURFACES DAMAGED DURING THIS PROJECT SHALL BE REPAIRED AND REPAINTED TO MATCH THE ADJACENT SURFACES.
4. ANY ABANDONED CONDUIT IN AUDIENCE VISIBLE AREAS SHALL BE REMOVED.
5. ANY ABANDONED BOXES SHALL HAVE BLANK COVER PLATES INSTALLED. COLOR TO BE CHOSEN BY THE OWNER.

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ABRAHAM LINCOLN HIGH SCHOOL
DES MOINES, IA

LOWER LEVEL BOXES
1/8" = 1'0"

DATE
June 8, 2016

SHEET
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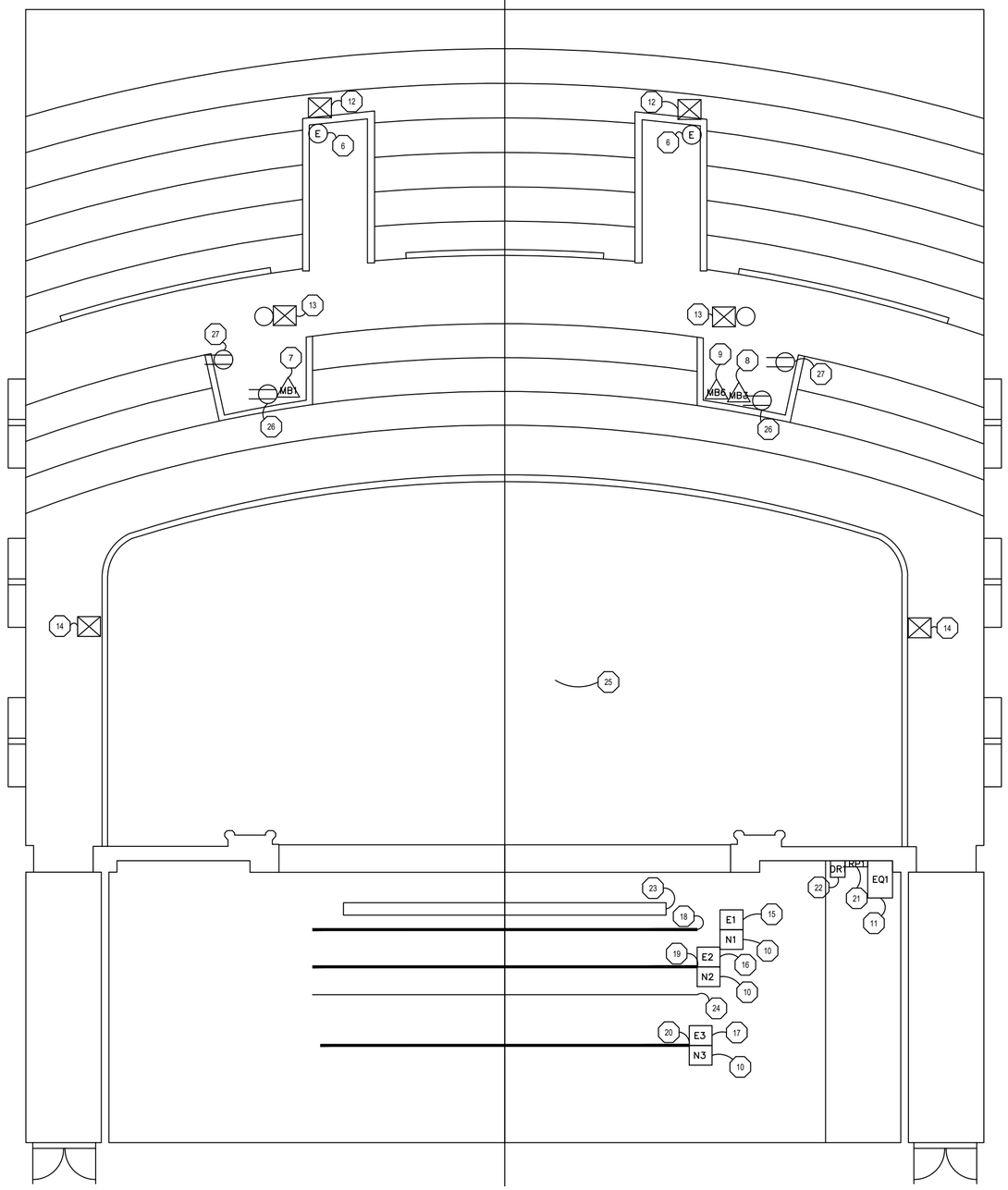
3 OF 5



KEY TO THEATRE LIGHTING SYMBOLS

- (E) ENTRY STATION (SINGLE GANG BACK BOX)
- (5P) 5 BUTTON 4 PRESET+OFF STATION (SINGLE GANG BACK BOX)
- (10P) 10 BUTTON 9 PRESET+OFF STATION (SINGLE GANG BACK BOX)
- (LCD) LCD CONTROL STATION (MANUFACTURER SUPPLIED BACK BOX)
- (PSC) PROJECTION SCREEN CONTROLS (SINGLE GANG BACK BOX)
- 2-PORT GATEWAY (MANUFACTURER SUPPLIED BACK BOX)
- (MB1) MULTI BOX TYPE 1 (TWO GANG BACK BOX)
- (MB3) MULTI BOX TYPE 3 (THREE GANG BACK BOX)
- (MB6) MULTI BOX TYPE 6 (TWO GANG BACK BOX)
- 120V DUPLEX CONVIENCE OUTLET
- 208V 50 AMP OUTLET
- THEATRICAL RACEWAY
- (E#) DROP BOX (E#= ELECTRIC, DB#=DROP BOX, N=NET DROP M#=MOTOR POWER, MC#=MOTOR CONTROL)
- FLOOR POCKET/WALL BOX
- (DR#) EQUIPMENT AND RACKS (DR#= DIMMER RACK, RP=RELAY PANEL EQ=EQUIPMENT RACK)

(6) 3/4" CONDUIT TO ACCESSORY RACK
CONTAINS (1) BELDEN 8471
MOUNT 3'9" AFF ADJACENT TO DOOR

(7) 3/4" CONDUIT TO EQUIPMENT RACK
CONTAINS (2) BELDEN 1583A
MOUNT 2'0" AFF

(8) 1" CONDUIT TO EQUIPMENT RACK
CONTAINS (3) BELDEN 1583A
MOUNT 2'0" AFF

(9) 3/4" CONDUIT TO DR1
CONTAINS (1) BELDEN 9729 FOR DMX-1
3/4" CONDUIT TO EQ1
CONTAINS (1) BELDEN 9729 FOR DMX-2
MOUNT 2'0" AFF

(10) 1" CONDUIT TO EQUIPMENT RACK
CONTAINS (1) BELDEN 1583A, (1) BELDEN 9729
MOUNT TO GRID ADJACENT TO ASSOCIATED GRID-IRON JUNCTION BOX

(11) EQUIPMENT RACK - EQ1
REQUIRES (2) 20 AMP DUPLEX OUTLETS WITH COMPUTER GRADE GROUND

(12) 3/4" CONDUIT TO EQUIPMENT RACK
CONTAINS (1) BELDEN 9729 FOR DMX-OUT
CONDUIT TO RP1
CONTAINS (1) 20 AMP CIRCUITS
2 WIRES + GND
MOUNT TO VOM PIPE LADDER

(13) 3/4" CONDUIT TO EQUIPMENT RACK
CONTAINS (1) BELDEN 9729 FOR DMX-OUT
CONDUIT TO RP1
CONTAINS (2) 20 AMP CIRCUITS
4 WIRES + GND
MOUNT TO COLUMN PIPE LADDER

(14) 3/4" CONDUIT TO EQUIPMENT RACK
CONTAINS (1) BELDEN 9729 FOR DMX-OUT
CONDUIT TO DR1
CONTAINS (3) 20 AMP CIRCUITS
6 WIRES + GND
CONDUIT TO RP1
CONTAINS (6) 20 AMP CIRCUITS
12 WIRES + GND
MOUNT TO BALCONY RAILING

(15) CONDUIT TO DIMMER RACK - DR1
CONTAINS (14) 20 AMP CIRCUITS
28 WIRES + GND
CONDUIT TO RELAY PANEL - RP1
CONTAINS (5) 20 AMP CIRCUITS
10 WIRES + GND
MOUNT TO BOTTOM OF ROOF DECK

(16) CONDUIT TO DIMMER RACK - DR1
CONTAINS (10) 20 AMP CIRCUITS
20 WIRES + GND
CONDUIT TO RELAY PANEL - RP1
CONTAINS (5) 20 AMP CIRCUITS
10 WIRES + GND
MOUNT TO BOTTOM OF ROOF DECK

(17) CONDUIT TO DIMMER RACK - DR1
CONTAINS (4) 20 AMP CIRCUITS
8 WIRES + GND
CONDUIT TO RELAY PANEL - RP1
CONTAINS (5) 20 AMP CIRCUITS
10 WIRES + GND
MOUNT TO BOTTOM OF ROOF DECK

(18) MULTICABLE TO GRID IRON JUNCTION BOX
(19) 20 AMP CIRCUITS
38 WIRES + GND
CABLE TO GRID IRON NET BOX
(1) BELDEN 1583A, (1) BELDEN 9729
BOTH ENDS OF ALL CABLES TO HAVE APPROPRIATE STRAIN RELIEF

(19) MULTICABLE TO GRID IRON JUNCTION BOX
(15) 20 AMP CIRCUITS
30 WIRES + GND
CABLE TO GRID IRON NET BOX
(1) BELDEN 1583A, (1) BELDEN 9729
BOTH ENDS OF ALL CABLES TO HAVE APPROPRIATE STRAIN RELIEF

(20) MULTICABLE TO GRID IRON JUNCTION BOX
(7) 20 AMP CIRCUITS
14 WIRES + GND
CABLE TO GRID IRON NET BOX
(1) BELDEN 1583A, (1) BELDEN 9729
BOTH ENDS OF ALL CABLES TO HAVE APPROPRIATE STRAIN RELIEF

(21) RELAY PANEL - RP1
REQUIRES A 200 AMP 3-PHASE 120/208 VAC 6-WIRE FEED
A, B, C, N, N, G WITH FULL LOAD RATED DISCONNECT OR LOCKING BREAKER
3/4" CONDUIT TO DR1
CONTAINS (1) BELDEN 1583A, (1) BELDEN 9729
MOUNT TO WALL

(22) DIMMER RACK - DR1
REQUIRES A 400 AMP 3-PHASE 120/208 VAC 6-WIRE FEED
A, B, C, N, N, G WITH FULL LOAD RATED DISCONNECT OR LOCKING BREAKER
1" CONDUIT FROM DR1 TO EQUIPMENT RACK
CONTAINS (2) BELDEN 1583A, (2) BELDEN 9729
MOUNT TO FLOOR

(23) NEW MOTORIZED PROJECTION SCREEN
CABLE SWAG FROM GRID TO SCREEN
CONTAINS (6) #12 AWG
REQUIRES (1) 20 AMP 120 VAC FEED
DEAD HANG SCREEN FROM GRID

(24) EXISTING WORK LIGHT BATTEN
TO REMAIN UNCHANGED

(25) EXISTING HOUSE LIGHTING
DELETE EXISTING METAL HALIDE FLOOD LIGHTS
ALL REMAINING HOUSE LIGHTS TO BE LANDED IN DIMMER RACK USING EXISTING WIRING. 12 DIMMING AND 1 RELAY CIRCUIT ARE RESERVED FOR HOUSE LIGHTS.

(26) CONDUIT TO BUILDING POWER
CONTAINS (1) 20 AMP CIRCUIT
WITH COMPUTER GRADE GROUND
MOUNT 1'9" AFF

(27) CONDUIT TO BUILDING POWER
CONTAINS (1) 20 AMP CIRCUIT
THIS OUTLET REQUIRES AN INDEPENDENT CIRCUIT
MOUNT 1'9" AFF

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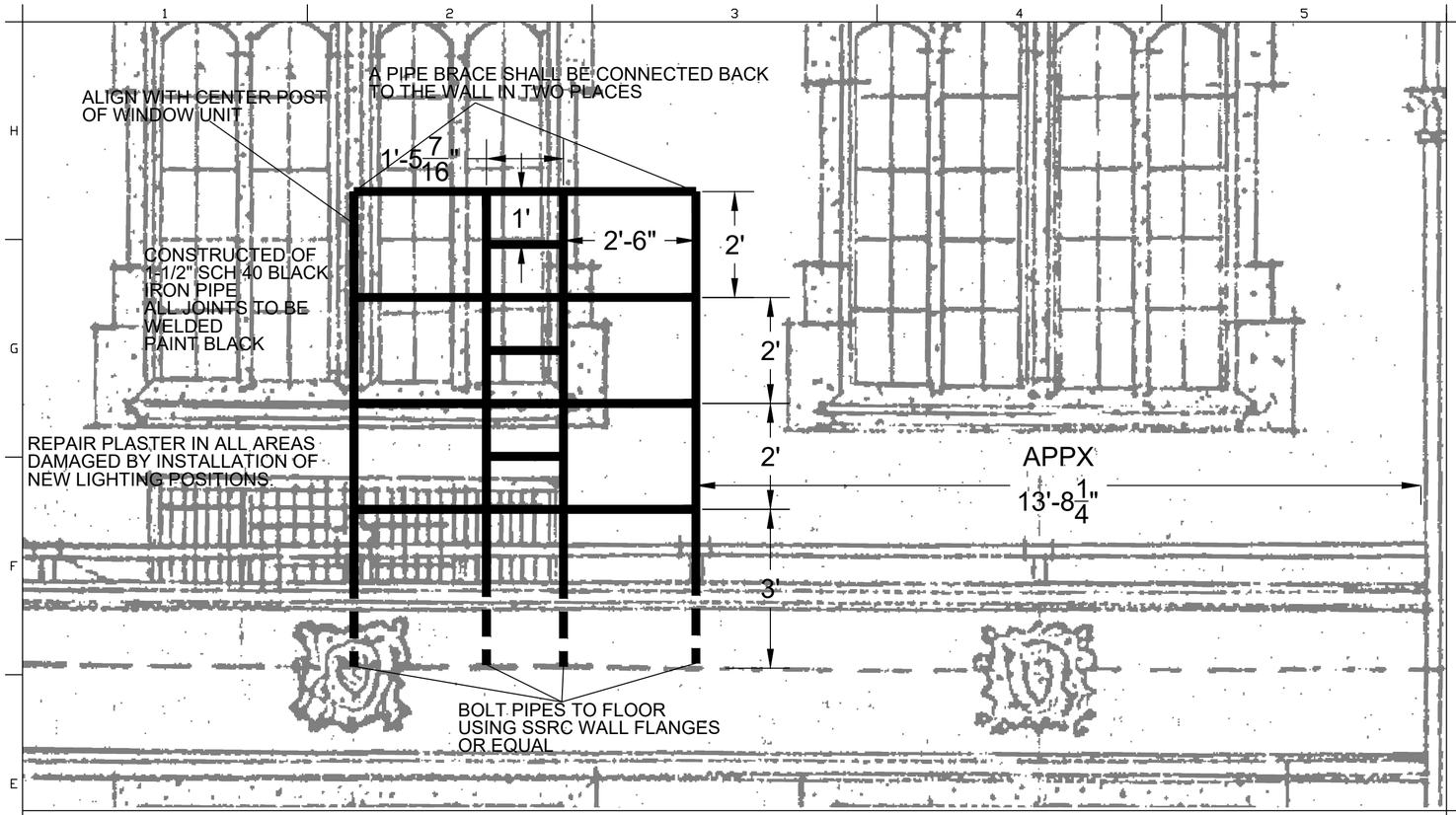
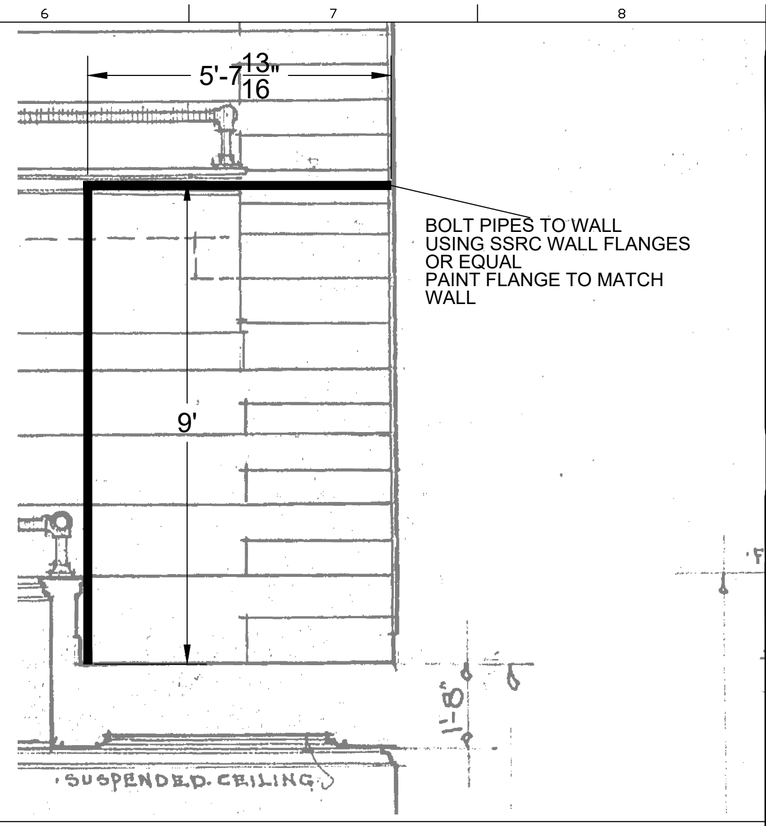
UPPER LEVEL BOXES
1/8" = 1'0"

DATE
June 8, 2016

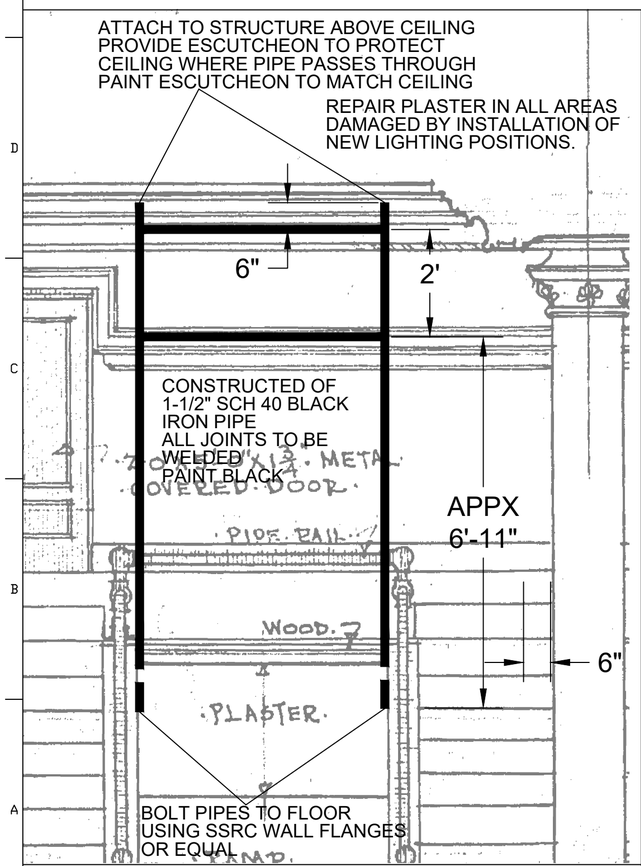
SHEET
TH4
4 OF 5



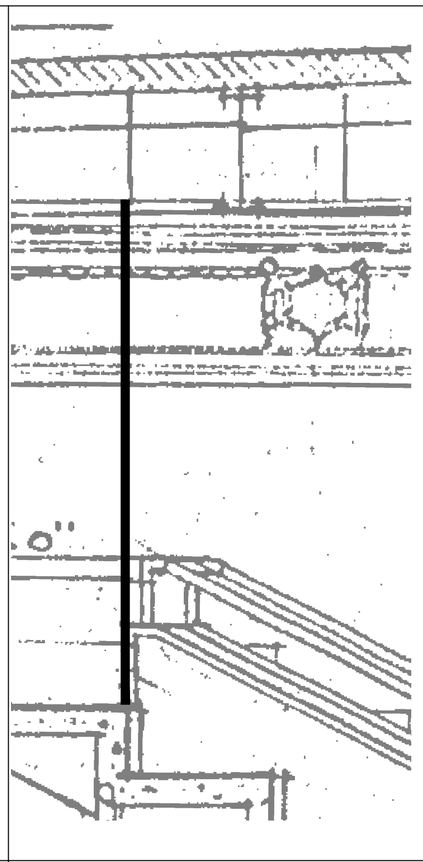
SIDE LADDER ELEVATION



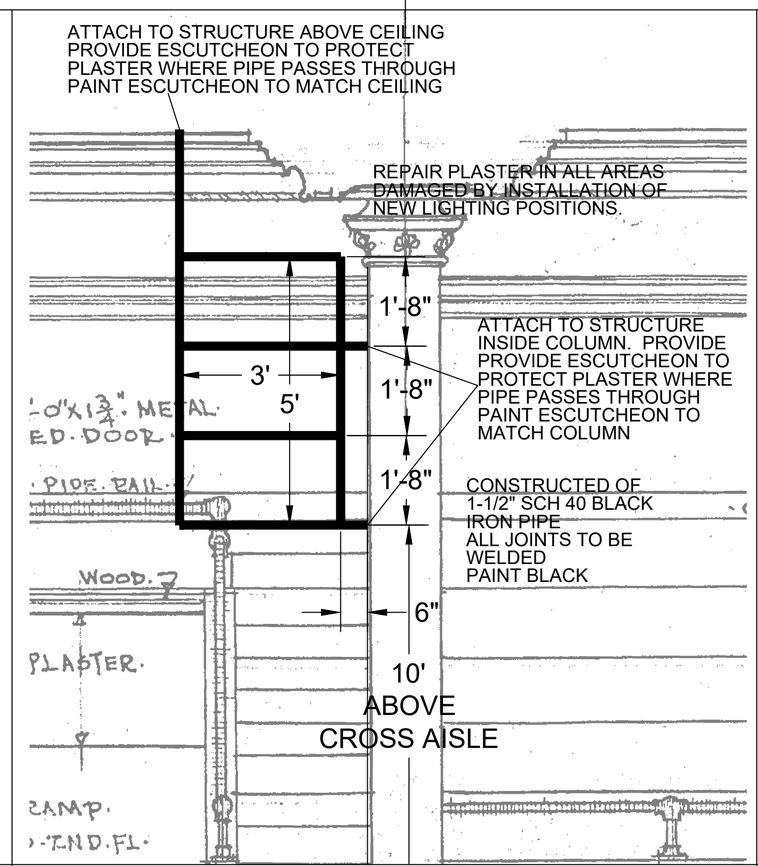
SIDE LADDER SECTION



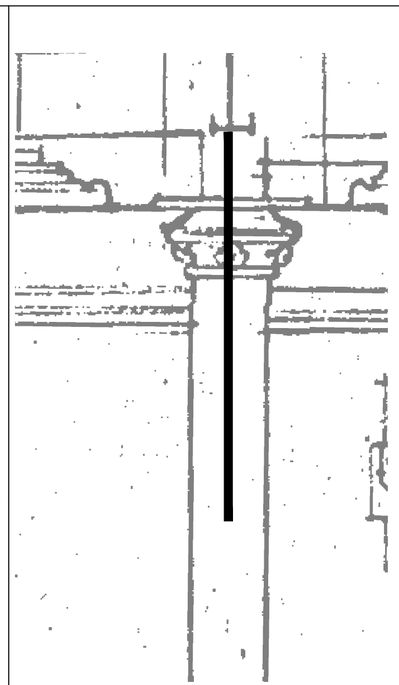
VOM LADDER ELEVATION



VOM LADDER SECTION



COLUMN LADDER ELEVATION



COLUMN LADDER SECTION

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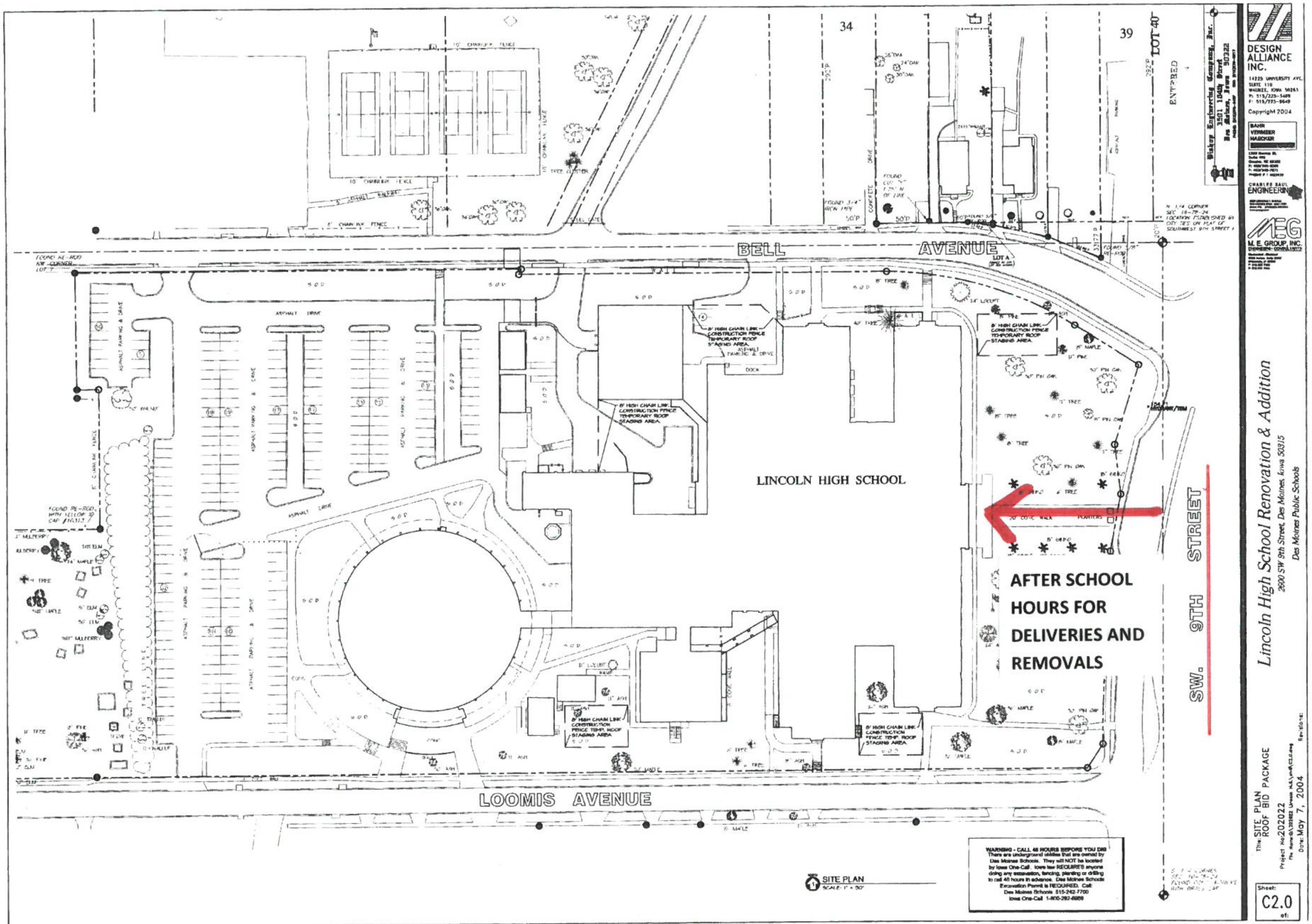
DES MOINES, IA

LIGHTING LADDER SECTIONS AND ELEVATIONS
1/8" = 1'0"

DATE
June 8, 2016

SHEET
TH5
5 OF 5


LINCOLN HIGH SCHOOL
AFTER SCHOOL HOURS FOR DELIVERIES AND REMOVALS
SW. 9TH STREET
BELL AVENUE
LOOMIS AVENUE
LOT 40
34
39
SITE PLAN
WARNING - CALL 48 HOURS BEFORE YOU DIG
There are underground utilities that are owned by Des Moines Schools. They will NOT be located by Iowa One-Call. Iowa law REQUIRES anyone doing any excavation, fencing, planting or drilling to call 48 hours in advance. Des Moines Schools Excavation Permit is REQUIRED. Call: Des Moines Schools 515-242-7700 Iowa One-Call 1-800-292-8989
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CHARLES SAUL ENGINEERING
M. E. GROUP INC.
Bishop Engineering Company, Inc.
Lincoln High School Renovation & Addition
2600 SW 9th Street, Des Moines, Iowa 50315
Des Moines Public Schools
SITE PLAN ROOF BID PACKAGE
Project No: 202022
Date: May 7, 2004
Sheet: C2.0

Lincoln High School
Second Floor
2600 SW 9th Street

REVISED: 10/28/2013

Building Occupied Hours:
- 7am to 4pm, Monday-Friday

Temperature Guidelines:
Classrooms and offices temperature setpoints:
- *Cooling Occupied: 76°*
- *Cooling Unoccupied: 78°*
- *Heating Occupied: 69°*
- *Heating Unoccupied: 65°*

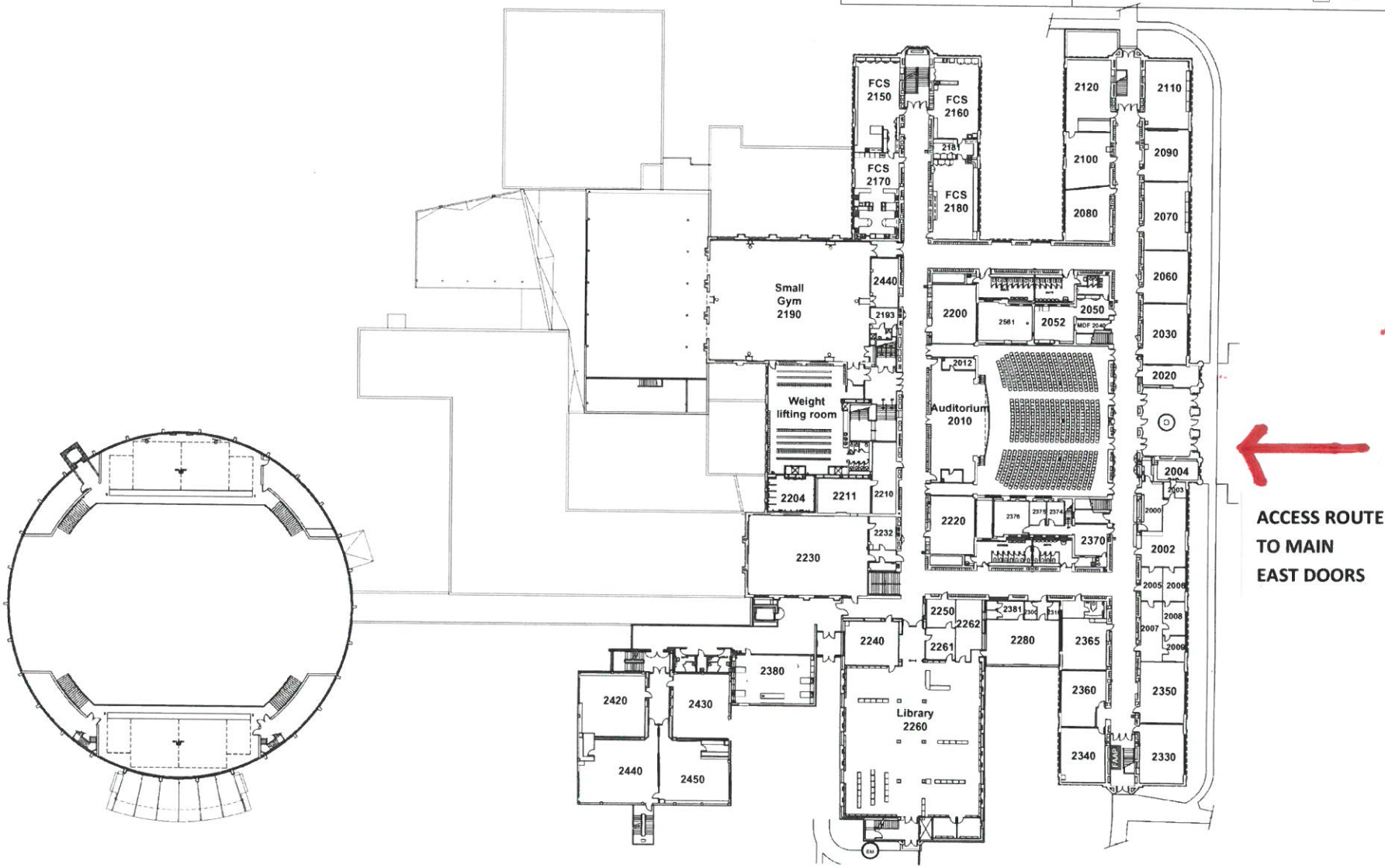
Windows and classroom doors need to remain closed for heating and cooling to work properly.

Key:

Security
- Card Reader
- Security Reader
- Sensor
- Camera-Fixed
- Camera-PTZ
- Camera-360°
- Camera-180°
- Camera-S14

Utility
- GM Gas Meter (geothermal)
- EM Electric Meter
- WM Water Meter
- BKS Boiler Kill Switch

Safety
- Fire Sprinkler Main
- Fire Alarm Panel
- FAAP Annunciator Panel
- Knox Box
- FDC FDC
- Craftsman Keybox
- Building Keybox
- Z Key



Lincoln High School
Third Floor
2600 SW 9th Street

REVISED: 10/28/2013

Building Occupied Hours:
- 7am to 4pm, Monday-Friday

Temperature Guidelines:
Classrooms and offices temperature setpoints:
- *Cooling Occupied: 76°*
- *Cooling Unoccupied: 78°*
- *Heating Occupied: 69°*
- *Heating Unoccupied: 65°*

Windows and classroom doors need to remain closed for heating and cooling to work properly.

Key:

Security
- Card Reader
- Security Reader
- Sensor
- Camera-Fixed
- Camera-PTZ
- Camera-360°
- Camera-180°
- Camera-S14

Utility
- GM Gas Meter (geothermal)
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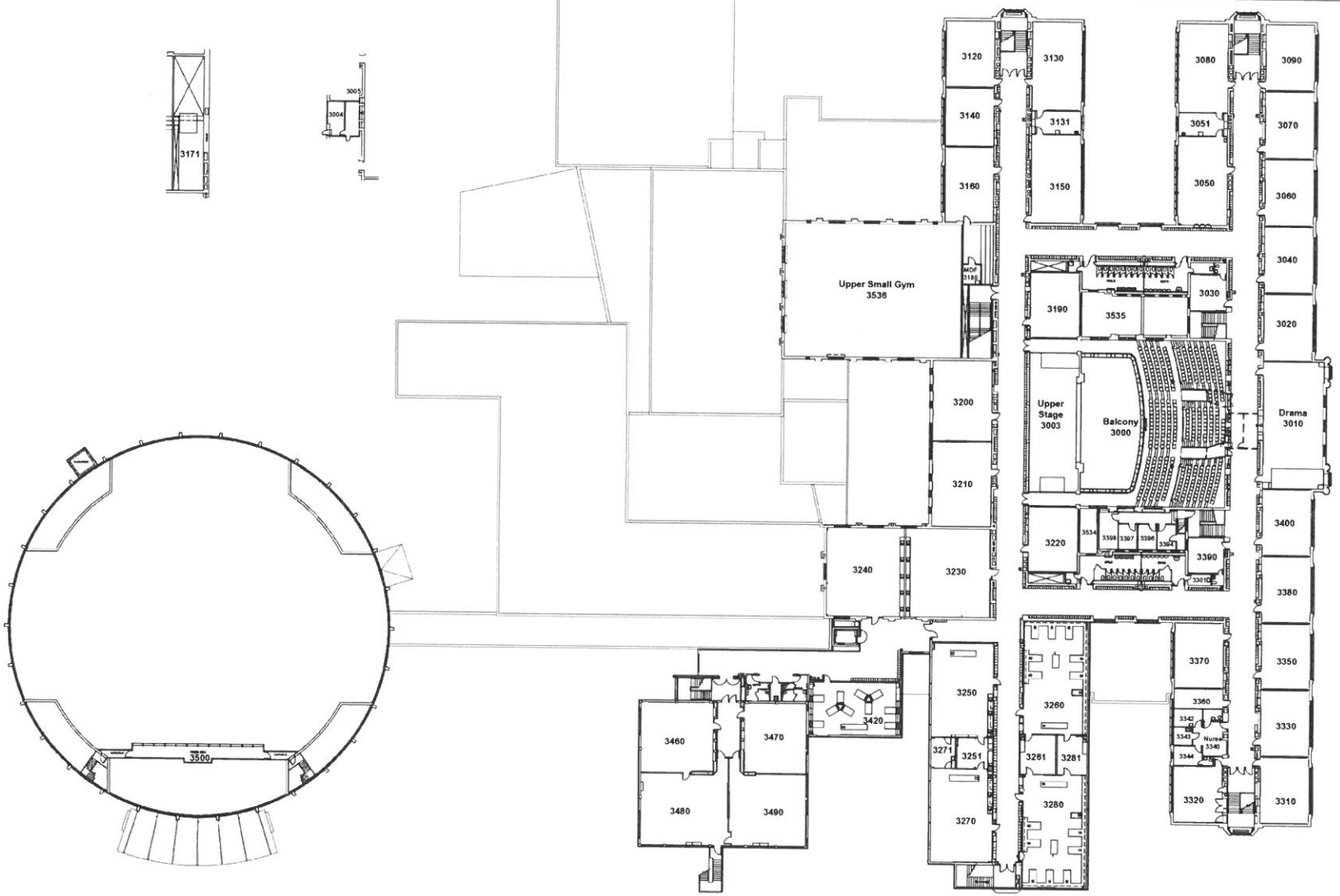

Des Moines Public Schools
Facility Improvement
General Terms & Conditions

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GC - 1.00 CONTRACT DOCUMENTS

The work shall be accomplished in accordance with the Contract Documents which shall be included in this Contract and shall consist of the Invitation to Bid, Instructions to Bidders, Bid Security, Proposal, Notice of Contract Award, Insurance Policies and Certificates, Notice to Proceed, Performance Bond, Labor and Material Payment Bond, Construction Agreement, the General Conditions of the Contract, Supplementary General Conditions, drawings and specifications, tests and engineering data, approved change orders, Contractor's Requests for Payment, Architect's Certificates, and all addenda issued by the Owner or Architect prior to the awarding of the Contract.

GC - 2.00 DEFINITIONS

Words, phrases, and other expressions used in these Contract Documents shall have meanings as follows:

2.1 "Contract" or "Contract Documents" shall include the items enumerated above under CONTRACT DOCUMENTS.

2.2 "Owner" shall mean the Des Moines Independent Community School District, named and designated as such in the Contract Documents acting through its duly authorized representatives.

2.3 "Contractor" shall mean the corporation, company, partnership, firm, entity, or individual named and designated as such in the Contract Documents which has entered directly into this Contract with the Owner for the performance of the work covered thereby, and any persons or entities acting on its behalf.

2.4 "Subcontractor" shall mean and refer to a corporation, partnership, entity, or individual having a direct contract with the Contractor or another subcontractor for performing work and/or furnishing labor or material which is incorporated into the work at the request of the Contractor or other subcontractor.

2.5 "Architect" shall mean the architects or engineers designated, appointed, or otherwise employed or delegated by the Owner, or its duly authorized representatives, acting within the scope of the particular duties entrusted to them in each case.

2.6 "Facility Manager" shall mean the person(s) designated by the District, to implement and manage the project as the Owner's representative.

2.7 "Notice to Proceed" shall be deemed to have been duly served if made in writing and delivered in person to the individual or to a member of the firm or to an officer of the corporation for whom it is intended, or if sent by registered or certified mail to the last known business address.

2.8 "The Work" shall mean the equipment, supplies, materials, labor, and services to be furnished under the Contract and the carrying out of all obligations imposed or required by the Contract Documents.

2.9 "The Project" is the total construction designed by the Architect of which the work performed under the Contract Documents may be the whole or a part.

2.10 All time limits stated in the Contract Documents are of the essence of the Contract.

2.11 The Contract shall be governed by the laws of the State of Iowa.

GC - 2.00 DEFINITIONS

2.12 The date of completion of a project is the date when construction is certified by the Architect to be finally completed in accordance with Contract Documents, as modified by any change orders agreed to by the parties and when the Owner has fully accepted the project for the use for which it was intended. Such date will be set forth on a Letter of Acceptance issued by the Owner.

2.13 "Drawings" or "plans" shall mean all (a) drawings furnished by the Owner as a basis for the award of Contract; (b) supplementary drawings furnished by the Owner to clarify and to define in greater detail the intent of the Contract drawings and specifications; (c) drawings furnished by the Owner to the Contractor during the progress of the work; and (d) engineering data and drawings submitted by the Contractor during the progress of the work, provided such drawings are acceptable to the Owner after review by the Architect.

2.14 "Specifications" are the written technical information concerning materials, components, systems, and equipment as indicated on the drawings or plans and which state the quality, performance, characteristics, and installations to be achieved by application of construction methods.

2.15 "Substantial Completion" is:

2.15.1 When the work is completed on or before the approved scheduled completion date and may be utilized for its intended purpose without any additional alterations to the physical plant or adjustments to the user's program.

2.15.2 As defined in Iowa Code Chapter 26.

GC - 3.00 ORAL STATEMENTS

It is understood and agreed that the written terms and provisions of the Contract Documents shall supersede all oral statements of representatives of the Owner, and oral statements shall not be effective or be construed as being a part of this Contract.

GC - 4.00 REFERENCE STANDARDS

Reference to the standards of any technical society, organization, or association, or to codes of local or state authorities, shall mean the latest standard, code, specification, or tentative standard adopted and published at the date of the Contract Documents unless specifically stated otherwise.

GC - 5.00 ITEMS COVERED BY CONTRACT PRICE

Unless otherwise specifically provided herein, the Contractor shall accept the compensation stated in the Construction Agreement as full payment for furnishing all materials, transportation, apparatus, temporary structures, equipment, services, fuel, energy, light, water, labor, tools and all risks and losses of every kind and description connected with the prosecution of the work, and all other things necessary for the complete and proper execution of the work contemplated by or reasonably implied from the Contract Documents, within the time limits indicated therein. http://www.dmschools.org/departments/operations/purchasing-central-

stores/purchasing/current-contracts/

GC – 6.00 EXECUTION, CORRELATION, INTENT, AND INTERPRETATION OF CONTRACT DOCUMENTS AND COMPLETION DATE

6.1 Execution. The Contract Documents shall be signed in multiple copies as directed by the Owner. Within ten (10) days of Notice of Contract Award, the Contractor shall submit to the Owner a minimum of five (5) fully executed original sets of the Construction Agreement; Performance Bond and Labor and Material Payment Bond with original Power of Attorney; and certificates of required insurance coverage's. The date of the Contract for purposes of these documents shall be the date of the Notice of Contract Award letter. The Owner will execute the Construction Agreement, assemble all copies, and distribute the Contract Documents. The Contractor shall not commence the work until he receives the Notice to Proceed.

6.2 Correlation. By submitting the bid, the Contractor represents that he has visited the site, familiarized himself with the local conditions under which the work is to be performed, and correlated his observations with the requirements of the Contract Documents.

6.3 Intent. The intention of the Contract Documents is to include all labor and materials, tools, equipment, construction equipment, water, heat, utilities, transportation, and other facilities and services necessary for the proper execution and completion of the work. Materials or work described in words which as applied have a well-known technical or trade meaning shall be held to refer to such recognized standards.

The organization of the specifications into divisions, sections, and articles, as the case may be, and the arrangement of drawings shall not control the Contractor in dividing the work among subcontractors or in establishing the extent of work to be performed by any trade.

It is intended that even though work is not covered under any heading, division, section, article, branch, class, or trade of the specifications, it shall nevertheless be supplied if it is required elsewhere in the Contract Documents or is reasonably inferable there from as being necessary to produce the intended results.

The specifications and drawings are intended to supplement but not necessarily duplicate each other/ any work exhibited in one and not the other shall be executed as if it had been set forth in both, so that the work will be constructed according to the complete design.

6.4 Interpretation. Should anything necessary for a clear understanding of the work be omitted from the specifications and drawings, or should the requirements appear to be in conflict, the Contractor shall secure written interpretations or instructions from the Facility Manger after a review and determination has been rendered by the Architect before proceeding with the work affected thereby. It is understood and agreed that the work shall be performed according to the true intent of the Contract Documents. Where a conflict occurs between or within standards, specifications, and drawings, the more stringent or higher quality requirements shall apply. The precedence of the Construction Documents is in the following sequence:

1. Addenda to the drawings and specifications take precedence over the original Construction Documents.

2. Specifications take precedence over drawings, except in cases of error.

6.4 Interpretation

3. In the drawings, the precedence shall be drawings of larger scale over those of smaller scale and noted materials over graphic indications.
4. Any work mentioned in the specifications and not shown on the drawings or shown on the drawings and not mentioned in the specifications shall be of like effect as if shown or mentioned in both. The Contractor shall examine the specifications and drawings and check all dimensions and notify the Owner of any discrepancies between the specifications and drawings and any deficiencies, omissions, or errors before any work is commenced.
5. All work on the Project shall be finally completed within the times indicated in the construction documents.

GC - 7.00 DRAWINGS AND SPECIFICATIONS

7.1 Copies. The Contractor will be provided direction to secure all copies of drawings and specifications and addenda reasonably necessary for the execution of the work.

7.2 Ownership of Drawings. All drawings, specifications, and copies thereof furnished by the Architect are the property of the Owner, whether the work for which they are made is executed or not, and are not to be used on other work except by written agreement with the Owner.

7.3 Drawings and Specifications Available on the Site. The Contractor shall maintain at the site for the Owner one copy of all drawings, specifications, addenda, approved shop drawings, change orders, and other modifications, in good order and marked to record all changes made during construction. The Contractor shall also keep on the site all applicable standards, codes, manufacturer's or other specifications referenced in the Contract Documents. The drawings, marked to record all changes made during construction, shall be delivered to the Owner upon completion of the work.

7.4 Figured Dimensions to Govern. Dimensions and elevations shown on the drawings shall be accurately followed. Where dimensions are not indicated, Contractor shall immediately request clarification from the Facility Manager, who will contact the Architect, so as not to delay the work and Contractor shall not proceed with such work until the necessary dimensions have been obtained from the Architect.

7.5 Contractor to Check Drawings and Schedules. The Contractor shall check all dimensions, elevations, and quantities shown on the drawings and furnished by the Architect, and shall notify the Facility Manager in a timely manner of any discrepancy between the drawings and the conditions on the ground, or any error or omission in drawings, or in the layout as given by stakes, points, or instructions, which he may discover. Before ordering any material or doing any work, the Contractor shall verify all measurements at the building and shall be responsible for the correctness of same. No extra charge or compensation will be allowed on account of difference between actual dimensions and measurements taken in the field. Contractor to Check Drawings and Schedules. Any difference which may be found shall be submitted to the Facility Manager in a timely manner for consideration before proceeding with the work.

7.5 Contractor to Check Drawings and Schedules. The Contractor will not be allowed to take advantage of any error or omission in the drawings or Contract Documents. Full instructions will be furnished by the Architect, by way of the Facility Manager, should such error or omission be discovered and the Contractor shall carry out such instructions as if originally specified.

7.6 Detail Drawings and Instructions. Upon the contractor's written report, the Facility Manager shall furnish, within 10 working days, additional instructions by means of drawings or otherwise, necessary for the proper execution of the work, as directed by the Architect. All such drawings and instructions shall be consistent with the Contract Documents, true developments thereof, and reasonably inferable there from. The work shall be executed in conformity therewith, and the Contractor shall do no work without proper drawings and instructions.

7.7 Project Record Drawings. The Contractor shall maintain a Contract set of drawings at the site with all changes or deviations from the original drawings neatly marked thereon in a contrasting color. The Contractor shall also maintain a Contract set of specifications at the site, noting therein by appropriate section, the names, models, and other distinguishing characteristics of the products actually incorporated into the work. This set of drawings and specifications shall be updated daily as the job progresses and shall be made available to the Facility Manger for inspection at all times. Upon completion of the work and before final payment, this Project Record set of drawings and specifications shall be delivered to the Facility Manager.

7.8 Contractors' Review of Drawings, Plans and Specifications. Contractor's review of drawings, plans and specifications developed by the Architect and/or the Design Team under this Agreement shall be made in Contractor's capacity as a contractor and not as a licensed design professional.

GC - 8.00 SHOP DRAWINGS AND SAMPLES

8.1 Shop Drawings. Shop drawings are drawings, diagrams, illustrations, schedules, performance charts, brochures, manufacturer's literature, product data, and any other information which are prepared by the Contractor or any subcontractor, manufacturer, supplier, or distributor, and which illustrate some portion of the work. Said drawings will be submitted in a format agreeable to the Facility Manager for review by the Architect.

8.2 Samples. Samples are physical examples furnished by the Contractor to illustrate materials, finishes, equipment, or workmanship, and to establish standards by which the work will be judged.

8.3 Subcontractor. The Contractor shall require each subcontractor to prepare, stamp with approval, and submit to the Contractor with reasonable promptness and in orderly sequence so as to cause no delay in the work or in the work of any other subcontractor, all shop drawings and samples on all shop fabricated items and on all matters, required by the Contract Documents or subsequently by the Architect as covered by modifications. Shop drawings and samples will properly identify specified items. At the time of submission, the subcontractor shall inform the Contractor, and the Facility Manager in writing of any deviation in the shop drawings or samples from the requirements of the Contract Documents.

8.4 Subcontractor. The Facility Manger will be responsible for insuring that any changes are communicated to the Architect. Substitutions will be allowed only in accordance with the provisions of Section 36.00 hereinafter. The Contractor shall also require each subcontractor to prepare and transmit sufficient sets of sepia transparencies, reverse printed, and prints of all shop drawings which are specially drawn for this project, including detailed fabrication and erection drawings, setting drawings, diagrammatic drawings, material schedules, and samples to the Contractor to meet the project construction schedule and the subcontractors' Contract schedule, or shall present, in writing, valid reasons for any delay. Sepias shall not be folded, but shall be rolled and transmitted in a tube suitable for mailing. All shop drawings for all equipment and/or materials in a given system shall be submitted at one time, each complete set in a separate brochure. Complete maintenance/warranty data are to be submitted to the Contractor for distribution to the Facility Manager for review by the Architect. Each sheet of shop drawings shall identify the project, subcontractor, and fabricator or manufacturer and t h e date of the drawings. All shop drawings shall be numbered in sequence and each sheet shall indicate the total number of sheets in the set. The shop drawings shall indicate types, gauges, and finish of all materials. Where a shop coat of paint is required, its brand name, manufacturer's identification number, and type shall be indicated. Sufficient data in each set of shop drawings shall be included to permit a detailed study of the system submitted and its conformance to the Contract Documents and design intent. The Contractor will review, approve, stamp, and then submit the sepia transparencies, prints, and samples to the Facility Manager for approval, after review by the Architect. After review, the Facility Manager will then return the sepia transparencies to the Contractor with the Facility Manager's and Architect's appropriate comments. Those returned for correction shall be corrected and resubmitted. Upon receiving the approved sepia sets from the Facility Manager, the Contractor will make requested sets of prints for distribution to appropriate subcontractors, fabricators, manufacturers, and suppliers who require them for coordination of their work.

8.5 Verification. By approving and submitting shop drawings and samples, the Contractor thereby represents that it has determined and verified all field measurements, field construction criteria, dimensions, elevations, quantities, materials, catalog numbers, and similar data, as shown on the drawings and specifications furnished by the Architect and that he has checked and coordinated each shop drawing and sample with the requirements of the work and of the Contract Documents.

8.6 Architect Review. The Architect will review and approve shop drawings and samples with reasonable promptness so as to cause no delay, but only for conformance with the design concept of the project and with the information given in the Contract Documents. The Architect's approval of a separate item shall not indicate approval of an assembly in which the item functions. On the completion of the work, the Facility Manager shall be furnished three corrected copies of all shop or setting drawings showing the as-built condition of the work. The Facility Manager, after the Architect's review, will retain one copy of these shop drawings or samples. Architect will also keep one copy.

8.7 Corrections. The Contractor shall make any corrections required by the Architect and shall resubmit the required number of corrected copy of shop drawings or new samples until approved. The Contractor shall direct specific attention in writing or on resubmitted shop drawings to revisions other than the corrections requested by the Architect on previous submissions.

8.8 Contractor's Responsibility. The Architect's approval of shop drawings or samples shall not relieve the Contractor of responsibility for any deviation from the requirements of the Contract Documents unless the Contractor has informed the Architect in writing in a separate letter attached to the submittal of such deviation at the time of submittal and the Architect has given written approval to the specific deviation, nor shall the Architect's approval relieve the Contractor from responsibility for errors or omissions in the shop drawings or samples.

8.9 Architect Approval Required. No portion of the work requiring the submission of a shop drawing or sample shall be commenced until such submittal has been approved by the Architect. All such portions of the work shall be in accordance with approved shop drawings and samples. All material finishes and samples will be approved at one time.

8.8 Architect Approval Required. The Contractor shall submit all items requiring approval of finishes, color, material, etc., with sufficient lead time to allow simultaneous consideration and preparation of complete finish Color Schedule. No approvals of single items will be considered.

GC - 9.00 MATERIALS, LABOR, FACILITIES, AND STORAGE

9.1 Contractor's Responsibility. Unless otherwise stipulated, the Contractor shall provide and pay for all materials, labor, tools, equipment, machinery, transportation, and other facilities necessary for the proper execution and completion of the work. The Contractor shall provide and pay for all the temporary facilities required to supply all the power, light, water, and heat needed by him and the subcontractors for their work and shall install and maintain all such facilities in such manner as to protect the public and workers and conform to any applicable laws and regulations. If temporary heat and/or protection are required for the expeditious prosecution of the work and before the permanent heating apparatus is available for use, the temporary heating apparatus shall be installed and operated in such a manner that the finish work and/or construction will not be damaged thereby. Unless otherwise specified, the Contractor shall pay for all the power, light, and water used by him and the subcontractors, without regard to whether such items are metered by temporary or permanent meters. The cutoff date on permanent meters shall be either the agreed date of full occupancy by the Owner or the date of final acceptance of the project, whichever shall be the earlier date. Upon completion of the work, the Contractor shall remove all such temporary facilities from the site.

9.2 Materials. Unless otherwise specified, all materials shall be new and both workmanship and materials shall be of the highest quality. The Contractor shall furnish satisfactory evidence as to the kind and quality of materials. Samples shall be furnished, when specified, and the work shall be in accordance with those samples

which have been approved.

9.3 Facilities and Storage. The Contractor shall provide and maintain, in a neat and sanitary condition, adequate temporary toilet facilities for the use of any and all employees engaged on the work, in strict compliance with the requirements of all applicable codes, regulations, laws, and ordinances. In no event may present toilet facilities of any existing building at the site of the work be used by employees of the Contractor or subcontractors. Upon completion of the work, he shall remove all such temporary facilities from the site and disinfect the premises. The Contractor shall provide suitable temporary facilities and quarters for workmen and shall maintain on premises water-tight storage shed or sheds, tool houses for storage of building materials and tools which may be damaged by weather. The Contractor shall allow space for the erection of sheds and provide similar facilities for storage by subcontractors of their materials and tools. Storage of materials shall be confined to the site. These facilities or quarters shall further provide for protection against theft and damage of building materials and tools. Upon completion of the work, the Contractor shall remove all such temporary facilities from the site. The Contractor shall provide adequate, weatherproofed, heated, and well-lighted office space at the site of the work, for the use of the, Facility Manager. The Contractor shall also provide telephone service at such office, which shall be available for the use of the Facility Manager, without charge, except for toll calls. Requirements of the office space are as listed in Section 01500 paragraph 1.26. All of the foregoing facilities shall be of a quality and placed in locations acceptable to the Facility Manager.

9.4 Salvage of Materials. Owner reserves the right to salvage any and all materials, equipment, furnishings, and other elements to be removed from the site regardless if such removal is indicated in the plans, specifications, drawings or other Contract Documents.

GC - 10.00 EMPLOYEES

a) Qualifications. The Contractor and his subcontractors shall at all times enforce strict discipline and good order among his employees, and shall not employ on the work any person considered by the Facility Manager to be unfit or not skilled in the work assigned. The Contractor shall also keep its employees and those of its subcontractor from socializing upon the site of the work after normal work hours and from fraternizing at any time with staff, students, parents, and other persons who are at the school or the site of the work.

b) No contractor shall allow any of its employees listed on the Iowa Sex Offender Registry to perform work on District projects. The District has interpreted an "unfit employee" for purposes of this contract to be any employee currently listed on the Iowa Sex Offender Registry.

10.1 Employee background checks are the responsibility of the Contractor and his subcontractors.

10.2 Drug-Free and Smoke-Free Zone. The Des Moines Independent Community School District is a drug-free and smoke-free zone. In furtherance of this standard, the Contractor shall establish and maintain a safe and efficient work environment for all

employees, free from the effects of smoke, alcohol, controlled substances, and illicit drugs.

10.2 Drug-Free and Smoke-Free Zone. Smoking shall be prohibited at all times on school property, including parking lots and inside of any private vehicles on school property. The manufacture, distribution, dispensing, possession, or use of alcohol, controlled substances, and illicit drugs is prohibited on or adjacent to the project site and all of the Owner's property at all times. Illicit drug use is the use of illegal drugs and the abuse of alcohol and other drugs, including anabolic steroids. Controlled substances are drugs specifically identified and regulated under state or federal law and include, but are not limited to, opiates, narcotics, cocaine, amphetamines and other stimulants, depressants, hallucinogenic substances, and marijuana. The Contractor will strictly enforce these prohibitions among its own employees and its subcontractors and their employees at all times. Employees who violate these prohibitions will be subject to disciplinary action by their employers up to and including termination and may be denied access to the site of the work. Violation of this provision shall also constitute sufficient grounds for termination of the Contract or any subcontract without damages or penalty to the Owner.

10.3 Equal Opportunity Policy. Because it is the desire of the Des Moines Independent Community School District to encourage equal employment policies, all contractors, including suppliers supplying goods or services to the School District, are expected to comply with the spirit of equal opportunity employment, as well as with the letter of all applicable statutes and regulations. Compliance shall require Contractor not to discriminate and, in addition, to take reasonable affirmative action to ensure that members of minority groups are effectively accorded equal employment opportunities.

10.4 Responsibility for Employees. The Contractor shall be responsible to the Owner for the acts and omissions of all its employees. The Contractor shall further be responsible for the acts and omissions of all subcontractors, their agents and employees, and all other persons acting on behalf of the Contractor or subcontractors as set forth herein.

GC - 11.00 ROYALTIES AND PATENTS

The Contractor shall pay all royalties and license fees. The Contractor shall defend all suits or claims for infringement of any patent rights and shall hold the Owner harmless from loss on account thereof. If the Contractor has information that the process or article specified is an infringement of a patent, it shall be responsible for such loss unless it promptly gives such information to the Facility Manager.

GC - 12.00 SURVEYS, PERMITS, LAWS, REGULATIONS, AND TAXES

12.1 Surveys. As provided by the Owner, the Contractor shall obtain from the Architect a copy of all surveys describing property lines, elevation benchmarks, physical characteristics, and utility locations.

12.2 Permits and Licenses. Any building permits and other permits, governmental fees, and licenses necessary for the proper execution and completion of the work shall be secured and paid for by the Contractor. Easements for permanent structures or permanent changes in existing facilities shall be secured and paid for by the Owner,

unless otherwise specified.

12.2 Permits and Licenses, The Owner will negotiate and provide for all electrical, gas, water, and sewer mains for Contractor's connections. The Contractor is to arrange with the utility company for actual connection, make necessary connections, and pay for all inspection fees and permits in connection therewith as required by any governmental agency. In addition, the Contractor will furnish any material or items as required to complete all connections. The Contractor shall call for all required government inspections on a timely basis.

12.3 Laws and Regulations. The Contractor shall give all notices and comply with all laws, ordinances, rules, and regulations bearing on the conduct of the work as drawn and specified. If the Contractor observes that the drawings and specifications are at variance therewith, it shall promptly notify the Facility Manager (who will notify the Architect) in writing and any necessary changes shall be adjusted as provided in the Contract for changes in the work. If the Contractor performs any work knowing it to be contrary to such laws, ordinances, rules, and regulations, and without such notice to the Facility Manager, it shall bear all costs arising there from and to correct same.

12.4 Taxes. The Des Moines Public Schools will furnish the Awarded Contractor with a State of Iowa Sales Tax I.D. Number for the Contractor to use for all new building materials to be permanently installed on the Project only. The Tax I.D. Number shall be furnished to the Contractor after the contracts are signed. All other taxes imposed by any taxing authority shall be included in the Contractors Bid, for temporary materials and equipment. The Contractor is subject to payment of Iowa income tax on income from this work in amounts prescribed by law. If the Contractor is a non-Iowa partnership, individual, association, or corporation, it shall furnish evidence prior to the execution of the Contract that bonds or securities have been posted with the Iowa State Department of Revenue in the amount required by law.

GC - 13.00 BENCHMARKS, MONUMENTS, STAKES, AND MEASUREMENTS

13.1 Benchmarks. The Contractor shall properly stake out the work and provide and rigidly set benchmarks and batter boards as necessary for the proper performance of the work. The Contractor shall remain responsible for their maintenance and their accuracy. A permanent benchmark, approved as to location and type by the Architect, from which all grades are to be taken, shall be established near the site of the work by the Contractor. From this benchmark the Contractor shall ascertain all grades and levels to the building as needed. The Contract Documents shall include all necessary information to establish the benchmark.

13.2 Preservation of Monuments and Stakes. The Contractor shall carefully preserve all monuments, benchmarks, property markers, reference points, and stakes. In case of his destruction thereof, the Contractor will be charged with the expense of replacement and shall be responsible for any mistake or loss of time that may be caused. Permanent monuments or benchmarks which must be removed or disturbed shall be protected until properly referenced for relocation. The Contractor shall

furnish materials and assistance for the proper replacement of such monuments or benchmarks.

13.3 Measurements. Before ordering any material or performing any work, the Contractor shall verify all measurements at the project and shall be responsible for the accuracy of same. No extra charge or compensation shall be allowed because of any difference between actual dimensions and the measurements indicated in the drawings or specifications. Any discrepancies shall be submitted to the Facility Manager and Architect for consideration before proceeding with the work.

GC - 14.00 PROTECTION OF WORK AND PROPERTY

The Contractor shall take all necessary precautions for the safety of, and shall provide all necessary protection to prevent damage, injury, or loss to all employees on the project and all other persons who may be affected thereby; all the work and all materials and equipment to be incorporated therein, whether in storage on or off the site, under the care, custody, or control of the Contractor or any of its subcontractors; and other property at the site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, and utilities not designated for removal, relocation, or replacement in the course of construction. The Contractor shall comply with all applicable provisions of the Occupational Safety and Health Administration (OSHA) and all laws, ordinances, rules, regulations, and orders of any public authority having jurisdiction for the safety of persons or property or to protect them from damage, injury, or loss. It shall erect and maintain all necessary safeguards for the safety and protection of workmen, owners, and users of adjacent facilities and the public and shall post danger signs and other warnings against hazards created by such features of construction as protruding nails, hoists, well holes, elevator shafts, hatchways, scaffolding, window openings, stairways, excavations, and falling materials; and shall designate a responsible member of his organization at the site whose duty shall be the prevention of accidents. This person shall be the Contractor's superintendent unless otherwise designated in writing by the Contractor to the Facility Manager. The Contractor is hereby notified that some or all of the buildings covered by this Construction Agreement may contain lead-based paint. Some or all of the buildings covered by this Construction Agreement may be considered "targeted housing" as that term is used by the United States Environmental Protection Agency ("EPA") and the Iowa Department of Public Health ("IDPH"). The scope of work described herein is not "lead abatement" as that term is used by the EPA and IDPH in that the activities included are not designed to permanently eliminate lead-based paint hazards, but are designed to repair, restore or remodel a structure even though the activities may incidentally result in a reduction or elimination of lead-based hazards. The Contractor is solely and fully responsible for the compliance with all applicable law and regulations regarding lead-based paint, including but not limited to those of EPA, IDPH and OSHA. The Contractor shall be liable for and shall promptly repair, remedy, indemnify, and pay for all damage or loss to any person or property caused in whole or in part by the Contractor, any subcontractor, or anyone directly or

indirectly employed by any of them, or by anyone for whose acts any of them may be liable, except damage or loss proximately caused by faulty drawings or specifications, or to the acts or omissions of the Owner, or Architect and not attributable to any fault or negligence of the Contractor.

GC - 14.00 PROTECTION OF WORK AND PROPERTY

In an emergency affecting the safety of life or of the work or of adjoining property, the Contractor, without special instruction or authorization from the Facility Manager, is hereby permitted to act, at his discretion, to prevent such threatened loss or injury; and he shall so act, without appeal, if so authorized or instructed. Any compensation, claimed by the Contractor on account of emergency work, shall be determined by agreement. Notification of and report of such emergencies shall be made immediately to the Facility Manager.

GC - 15.00 ACCESS TO WORK

15.1 Access. The Facility Manager shall at all times have access to the work wherever it is in preparation or progress, and the Contractor shall provide proper facilities for such access so that the Facility Manager may perform their functions under the Contract Documents.

15.2 Inspection. If the specifications, the Architect's instructions, laws, ordinances, or any public authority require any work to be specially tested or approved, the Contractor shall give the Facility Manager timely notice of its readiness for checking by the Architect or inspection by another authority, and if the inspection is by another authority, of the date fixed for such inspection. All required certificates of inspection shall be secured by the Contractor. If any work should be covered up without approval or consent of the Architect, it must, if required by the Architect, be uncovered for examination at the Contractor's expense. Re-examination of questioned work may be ordered by the Facility Manager, and if so ordered, the work must be uncovered by the Contractor. If work is found to be in accordance with the Contract Documents, the Owner shall pay the cost of re-examination and replacement. If such work is found not to be in accordance with the Contract Documents, the Contractor shall pay such cost.

15.3 Testing. Materials incorporated into the project will be subject to routine tests as required to ensure their compliance with the specifications. Such tests may include, but shall not necessarily be restricted to, the following: Concrete: primary mix design, slump tests, cylinder compressions tests, and air entrainment tests; steel: tensile tests; Welds: field inspection and x-ray examination; Soils: sub-soil investigation, physical analysis, and compaction tests; Asphalt pavement: physical analysis and compaction tests; and Roofing-Samples cut from in-place built-up roof. Any other basic materials for which standard laboratory test procedures have been established may also be included if doubt as to their quality should arise. Any testing of the above nature will be done at the discretion of the Owner who will bear all costs, unless otherwise provided in the Contract Documents. The Contractor shall be held responsible for providing samples of sufficient size for test purposes and for cooperating with the Owner or his representative in obtaining and preparing samples for tests. All tests will

be in accordance with standard test procedures and will be performed by persons or firms selected by the Owner.

GC - 16.00 CONTRACTOR'S SUPERINTENDENCE AND SUPERVISION

During the progress of the work, the Contractor shall ensure that a competent superintendent and any necessary assistants, all satisfactory to the Facility Manager, are on the project site at all times while work is in progress. The superintendent shall not be changed by the Contractor except with the consent of the Facility Manager, unless the superintendent proves to be unsatisfactory to the Contractor and ceases to be in its employ. The superintendent shall represent the Contractor in its absence, and all directions given to the superintendent shall be as binding as if given to the Contractor. The Owner shall not be responsible for the acts or omissions of the superintendent or the superintendent's assistants. The Contractor shall provide full-time, qualified, and efficient supervision of the work, using competent skill and attention. It shall direct, schedule, and coordinate the work. It is responsible for determining and supervising all temporary and permanent erection and construction sequences, techniques, means, or methods. It shall coordinate the work to ensure that all parts fit together properly and in accordance with the Contract Documents. It shall carefully study and compare all Contract Documents and other instructions and shall at once report to the Facility Manager any error, inconsistency, or omission which he may discover. The superintendent shall see that the work is carried out in accordance with the Contract Documents and in a thorough and first-class manner in every respect. The Contractor shall provide engineering, surveying, and coordination to accurately establish all lines, levels, and marks necessary to facilitate the operations of all concerned in the Contractor's work. It shall lay out the work in a manner satisfactory to the Facility Manager, as directed by t h e Architect, making permanent records of all lines and levels required for excavation, grading, and foundations, and for all other parts of the work. It shall determine the commencement and certify the proper completion of the various stages of construction. The Contractor shall arrange for the foreman of each subcontractor (mechanical, electrical, masonry, plastering, painting, etc.) on the job to meet with the Facility Manager at the job prior to any work being started by this particular subcontractor so that all phases of the subcontractor's work can be thoroughly discussed and the quality of materials and workmanship expected can be completely understood and agreed upon.

GC - 17.00 CHANGES IN THE WORK

17.1 Change Orders. The Facility Manager may, at any time, by a written change order, after review by the Architect and without notice to the sureties and without invalidating the Contract, authorize the Architect to make changes in the drawings and/or specifications of this Contract within the general scope thereof; order extra work; or make changes by altering, adding to, or deducting from the work. If such changes cause an increase or decrease of greater than fifteen percent (15%) of the

amount due under this Contract, or in the time required for its performance, an equitable adjustment shall be made on the change order, and the Contract shall be modified in writing accordingly. Any claim of the Contractor for adjustment under this clause must be asserted in writing within ten (10) days from the date of receipt by the Contractor of the notification of change.

17.1 Change Orders. No change order or other form of order or directive by the Facility Manager requiring additional compensable work to be performed, which causes the aggregate amount payable under the Contract Documents to exceed the amount appropriated for the original Construction Agreement shall be issued unless the Contractor is given written assurance by the Facility Manager that lawful appropriations to cover the costs of the additional work have been made. Change orders are to be approved by the Board of Directors of the Owner and the Architect. No work is to be done or started pursuant to a change order until the change order is approved by the Board in writing and reflects a complete breakdown of material, labor, overhead, and profit.

17.2 Field Orders. The Facility Manager may, at any time, by a written field order after the review by the Architect, without notice to the sureties and without invalidating the Contract, authorize the Architect to make changes in the drawings and/or specifications of this Contract within the general scope thereof; order extra work; or make changes by altering, adding to, or deducting from the work. If such changes cause an increase or decrease of fifteen percent (15%) or less in the amount due under this Contract or in the time required for its performance, an equitable adjustment shall be made on the field order, and the Contract shall be modified in writing accordingly. Any claim of the Contractor for adjustment under this clause must be asserted in writing within ten (10) days from the date of receipt by the Contractor of the notification of change. No field order or other form of order or directive by the Facility Manager requiring additional compensable work to be performed, which causes the aggregate amount payable under the Contract Documents to exceed the amount appropriated for the original Construction Agreement shall be issued unless the Contractor is given written assurance by the Facility Manager that lawful appropriations to cover the costs of the additional work have been made. Field orders are to be approved by the Executive Director of Facilities, and reviewed by the Architect. Refer to Section 01028 “Change Procedures” for the requirements associated with documenting Field Orders.

17.3 Minor Changes. In giving instructions, the Facility Manager shall have authority to make minor changes in the work, which do not involve extra cost, and which are not inconsistent with the purposes of the building or the Owner’s intent. Otherwise, except in an emergency endangering life or property, no extra work or change shall be made unless in pursuance of a written order from the Facility Manager signed or countersigned by the Architect. No claim for an addition to the Contract sum shall be valid unless ordered or authorized in the manner set forth in this section.

17.4 Price Differential. The cost or credit resulting from a change in the work shall be

determined in one or more of the following ways:

a. By estimate, with a detailed cost breakdown as set forth in subparagraph c. below, and acceptance in a lump sum, with a mark-up to the Owner, for the Contractor and all affected subcontractors as outlined in Section 01028 “Change Procedures”.

17.4 Price Differential

b. By unit prices named in the Contract or subsequently agreed upon.

c. If the parties are unable to agree on one of the above methods, then the amount shall be determined by force account under the following formula:

i. The actual cost of all direct labor performed (including forepersons employed continuously on the work, but not the salary, or any part thereof, of the Contractor’s superintendent) and the actual materials furnished for and used in such work, less all available cash, trade, or other discounts;

ii. Rental for the use of such items of equipment as have an individual value in excess of One Thousand Dollars ($1,000); provided that the amount of such rental charge and the length of time and probable cost of the use of such equipment shall have been authorized in writing by the Facility Manager;

iii. All proportionate sums paid for royalties, permits, and inspection fees;

iv. All proportionate premiums for Public Liability Insurance, Worker’s Compensation, and other proper and necessary insurance, as well as all applicable payroll taxes;

v. Either a predetermined lump sum, fixed fee, or a negotiated percentage fee which fee shall be applied to the total of paragraphs in i., ii., and iii. only, and shall constitute full compensation to the Contractor for all costs and expenses, including all overhead and profit, which are not otherwise enumerated above. Subcontractors, if employed by the Contractor on this part of the work, will receive such portion of the Contractor’s fee as may be agreed and paid to them by the Contractor.

vi. The Contractor shall keep and present, in such manner as the Facility Manager may direct, an accurate accounting of all of the foregoing costs, together with all supporting vouchers and other documentation, all subject to audit by the Owner.

GC - 18.00 CLAIMS FOR EXTRA COST OR ADDITIONAL TIME

18.1 Claims for Extra Cost or Time. If the Contractor claims that any instructions by drawings or otherwise, after the date of the Contract, involve extra costs under this Contract which were not included in the original bid, or requires an extension of the Contract time.

18.1 Claims for Extra Cost or Time. He shall give the Facility Manager written notice thereof no later than Seven (7) calendar days after the receipt of such instructions, and in any event before proceeding to execute the work, except in an emergency endangering life or property, and the procedure shall then be as provided for changes in the work. No such claim shall be valid unless so made. Any change in the Contract amount or Contract time must be authorized by change order. Contractor must list all claims on each Pay Application submitted.

18.2 Delays and Extensions of Time. If the Contractor is delayed at any time in the progress of the work by any act or neglect of the Facility Manager or the Architect, or by any employee of each, or by any separate contractor employed by the Owner, or by changes ordered in the work, or by unavoidable casualties, or by any cause which the Owner determines may justify the delay, then the completion date shall be extended in writing by the Facility Manager for such reasonable time as he/she may determine. Extension of the Contract completion time will be considered for delays due to weather conditions only when such conditions have had a material, adverse impact upon the critical path of the Construction Progress Schedule, are more severe and extended than could have reasonably been anticipated based upon normal conditions for the relevant period of time, and only if a request for such an extension of time is received within seven (7) days of the first date of each delay.

All requests for extension of time shall be subject to the Owner's approval and shall be made in writing to the Facility Manager no more than seven (7) days after the occurrence causing the delay; otherwise they shall be waived. Any request for extension of time for a change in the work or for any occurrence allegedly causing a delay as provided for herein must be substantiated by demonstrating the effect of the change or occurrence on the critical path of the Construction Progress Schedule. If no schedule or agreement is made stating the dates upon which written interpretations or detail drawings shall be furnished, then no claim for delay shall be allowed on account of failure to furnish such interpretations or drawings until fifteen (15) days after demand is made for them, and not then unless such claim is reasonable. Should the time for completion of the Contract be extended, the Owner reserves the right to occupy any part of the structure upon written notice to the Contractor from the Facility Manager, but only after the Architect and Facility Manager have made a thorough inspection accompanied by the Contractor's superintendent to note any defects in workmanship or materials which are the

responsibility of the Contractor. Any such partial occupancy shall not be deemed a waiver of any provision for liquidated damages for delay in final completion. When the whole or a portion of the work is suspended for any reason, each Contractor shall properly cover over, secure, and protect all work as may be susceptible to damage from any cause. This Article does not exclude the recovery of damages by the Owner for delay under other provisions of the Contract Documents.

GC - 19.00 CHANGED CONDITIONS.

The Contractor shall promptly, and before such conditions are disturbed, notify the Owner, Architect and Facility Manager in writing of: (1) sub-surface or latent physical conditions at the site differing materially from those indicated in the Contract Documents, or (2) unknown physical conditions at the site, of an unusual nature, differing materially from those ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract Documents. The Owner, Facility Manager and the Architect shall promptly investigate the conditions, and if the Owner finds that such conditions do so materially differ and cause an increase or decrease in the cost of, or the time required for, performance of the work, an equitable adjustment shall be made and the Contract modified in writing accordingly. Any claim of the Contractor for adjustment hereunder shall not be allowed unless it has given notice as above required.

19.1 Asbestos and Hazardous Materials. If the Contractor, Architect or Facility Manager encounter or otherwise identify or suspect asbestos, asbestos-containing material, hazardous materials, except for lead-based paint, which is addressed in GC Article 14.00, or other unusual or unexpected conditions, Contractor, Architect or Facility Manager shall immediately notify the Owner and shall not continue work on the Project until authorized by Owner in writing.

GC - 20.00 CORRECTION OF WORK

20.1 Correction of Work Before and After Completion. The Architect, Owner and Facility Manager have the authority to reject work which is defective or does not conform to the Contract Documents. The Contractor, following written demand from the Facility Manager, shall promptly correct all work rejected by the Architect, Facility Manager or Owner as defective or as failing to conform to the Contract Documents whether observed before or after final completion and whether or not fabricated, installed, or completed. The Contractor shall bear all costs of correcting such rejected work, including the cost of the Architect's, Facility Manager's and/or Owner's consultant's additional services. If the Contractor proceeds to build in or cover the item which has been rejected, it shall be totally responsible for the cost of removal and replacement of said item and removal and replacement of all necessary work surrounding or covering the item in order to produce a first-class job.

20.2 Tests to Determine Conformance. Whenever in the opinion of the Architect, Facility Manager or the Owner, tests are essential to assure the professional evaluation of the work which is subject to being rejected or condemned, the necessary number of tests will be performed by the consultants designated by the Owner. All parties to the Contract will comply with the methods and extent of the corrections submitted in writing to the Owner, Architect and the Facility Manager by the designated consultant. The cost of the tests will become the Contractor's responsibility when corrections of any nature are recommended by the consultant to the investigated work; otherwise, the Owner will pay for all tests performed.

20.2 Tests to Determine Conformance. Should such special testing, inspection, or approval be caused by the Contractor's failure to follow the requirements of the Contract Documents or of required tests under GC-15.03, Testing, indicating conditions not in conformance with the Contract Documents, the costs of such additional testing, inspection, or approval shall be borne by the Contractor, regardless of the results.

20.3 Removal of Rejected Work. The Contractor shall promptly remove from the premises all work rejected by the Architect, Facility Manager or Owner as failing to conform to the Contract Documents whether physically in place or not. Thereafter, the Contractor shall promptly replace and re-execute such work in accordance with the Contract and without expense to the Owner. The Contractor shall further bear the expense of making good all work of other subcontractors found to be defective or destroyed or damaged by such removal or replacement. If the Contractor does not remove such rejected work within a reasonable time, fixed by written notice from the Owner through the Facility Manager, the Owner may remove it and may store the material at the expense of the Contractor. If the Contractor does not pay the expenses of such removal within ten (10) days' time thereafter, the Owner may, upon ten (10) days' written notice, sell such materials at auction or at private sale. In such case, the Owner shall account to the Contractor for the net proceeds thereof, after deducting all the costs and expenses that should have been borne by the Contractor, including compensation for additional Architect or consultant services. If the net proceeds of sale do not cover all costs which the Contractor should have borne, the difference shall be charged to the Contractor and an appropriate change order shall be issued. If the payments then or thereafter due the Contractor are not sufficient to cover such amount, the Contractor shall pay the difference to the Owner.

20.4 Correction of Work After Final Payment. Neither the final estimate nor payment nor any provision in the Contract Documents shall relieve the Contractor of responsibility for faulty materials or workmanship and, unless otherwise specified, it shall remedy any defects due thereto and pay for any damage to other work or property resulting there from, which shall appear within a period of two (2) years from the date of final completion and acceptance. This warranty shall be in addition to and not in lieu of all other remedies available to the Owner.

20.5 Failure to Correct the Work. If the Contractor fails to correct such defective or

nonconforming work, the Owner may correct it and otherwise proceed against the Contractor for the cost thereof in accordance with the provisions of these General Conditions.

20.6 Deductions for Uncorrected Work. If the Owner deems it inexpedient to correct work that has been damaged or is defective or has not been completed in accordance with the Contract Documents, an appropriate deduction from the Contract price shall be made and reflected by a change order, or, if the amount is determined after final payment, it shall be paid by the Contractor.

20.7 Additional Obligations. The obligations of the Contractor to correct the work shall be in addition to, and not in limitation of, any other obligations imposed upon him by law, special guarantees, warranties, or other rights of the Owner.

GC - 21.00 OWNER'S RIGHT TO CARRY OUT WORK

If the Contractor should neglect to prosecute the work properly or fail to perform any provision of this Contract, the Owner, after three (3) working days' written notice to the Contractor, may, without prejudice to any other remedy it may have, make good such deficiencies and may deduct the reasonable cost thereof from the payment then or thereafter due the Contractor. In the event such work is performed by the Owner, the Owner's employees, or by persons other than the Contractor at the Owner's request, the Owner shall not be liable to the Contractor for inconvenience expense or subsequent cost of removal of such work. The amount to be deducted as cost of doing the work shall include the cost of the Architect's additional services made necessary by such default. If the payments then or thereafter due the Contractor are not sufficient to cover such amount, the Contractor shall pay the difference to the Owner.

GC - 22.00 OWNER'S RIGHT TO TERMINATE CONTRACT

22.1 With Cause. If the Contractor should be adjudged a bankrupt; or if it should make a general assignment for the benefit of his creditors without approval of the Owner; or if a receiver should be appointed on account of his insolvency; or if it should refuse or should fail, except in cases for which extension of time is provided, to supply enough properly skilled workers, competent supervision and superintendence of the work, proper materials, or competent management of the project; or if it should fail to make prompt payment to subcontractors or for material or labor; or disregard laws, ordinances, or the instructions of the Architect, Facility Manager or Owner; or otherwise be guilty of a material violation of any provision of the Contract; then the Owner, when in its sole opinion sufficient cause exists to justify such action, may, without prejudice to any other right or remedy and after giving the Contractor, and his surety, if any, seven (7) days' written notice, terminate the employment of the Contractor and take possession of the premises and of all materials, tools, and appliances thereon and finish the work by whatever method the Owner may deem expedient. In such case the Contractor shall not be entitled to receive any further

payment until the work is finally completed and accepted by the Owner. If the unpaid balance of the Contract sum shall exceed the expense of completing the work, including compensation for additional architectural, managerial, consultant, and administrative services, such excess shall be paid to the Contractor. If such expense shall exceed such unpaid balance, the Contractor shall pay the difference to the Owner. The expense incurred by the Owner, as herein provided, and the damages incurred through the Contractor's default, shall be determined by the Owner.

22.2 Without Cause. Should conditions arise which in the Owner's opinion make it necessary or advisable to discontinue work under the Contract Documents, the Owner may terminate the Contract in whole or in part without cause or fault by the Contractor by giving seven (7) calendar days' written notice to the Contractor. The notice shall specify the date and extent to which the Contract is terminated. Upon any such termination, the Owner shall take possession of the site and all or any part of the materials and equipment delivered or en route to the site. In the event of termination under this paragraph 22.02, the Contractor shall be equitably paid for all work properly completed, based upon the approved Schedules of Values.

GC - 23.00 PAYMENT

23.1 Schedule of Values. Payments will be made on the valuation of the work done. Before any Request for Payment will be considered, the Contractor shall submit to the Facility Manager a complete, itemized schedule of the values of the various parts of the work, aggregating the total sum of the Contract and separating material costs from other costs. Such schedule shall include as costs the material costs of all subcontractors under such Contractor and the costs of all materials to be taken from the Contractor's or subcontractors' own stocks of material. The schedule shall be submitted on forms supplied by the Facility Manager and supported by such evidence as to its correctness as the Facility Manager, or Architect may direct. A separate line item shall be included in the schedule of values for overhead and profit. This schedule will be used for the estimates and payments provided for in these General Conditions. Along with such schedule the Contractor shall submit a schedule of values of estimated monthly application amounts for the course of the work to assist the Owner in arranging payment.

23.2 Payments to Contractors. Payment to the Contractor will be made by the Owner from cash on hand from such sources as may be legally available, and from the proceeds of the local option sales and services tax for school infrastructure imposed in Polk County and authorized by the electors of Polk County on November 23, 1999, including proceeds of school infrastructure sales and service tax revenue bonds which may be issued pursuant to Iowa Code Section 422E.4. Payment shall be made to the Contractor based on monthly estimates in amounts equal to ninety-five

percent (95%) of the Contract value of the work completed, including materials and equipment delivered to the job during the preceding calendar month and will be based upon an Application for Payment prepared on the first day of each month by the Contractor, subject to the approval of the Architect. Seven copies of the Application for Payment shall be filed with the Facility Manager. The Architect and Facility Manager will certify for payment the accuracy of each approved Application for Payment on or before eleven days prior to a regularly scheduled board meeting and within 7 working days. Such monthly payments shall in no way be construed as an act of acceptance for any part of the work partially or totally completed.

23.2 Payments to Contractors. It is the policy of the Board of Directors of the Owner to schedule Certificates of Payment and accounting times to coincide with the regular meetings of the Board and to pay Contractor no more often than once per month. The Owner reserves the right to withhold payments at any time regardless of the Facility Manager's or Architect's recommendations. The Contractor warrants and guarantees that title to all work, materials, and equipment covered by an Application for Payment, whether incorporated in the project or not, will pass to the Owner upon the receipt of such payment by the Contractor, free and clear of all liens, claims, security interests, or encumbrances; and that no work, materials, or equipment covered by a Request for Payment will have been acquired by the Contractor or by any other person performing the work at the site or furnishing materials and equipment for the project, subject to an agreement under which an interest therein or an encumbrance thereon is retained by the seller or otherwise imposed by the Contractor or such other person. This provision shall not be construed as relieving the Contractor from the sole responsibility for all materials and work upon which payments have been made or the restoration of any damaged work or as a waiver of the right of the Owner to require the fulfillment of all the terms of the Contract.

23.3 Document Submission. Contractor shall be responsible for submitting all required Contract Documents and Applications for Payment in forms acceptable to the Owner, including but not limited to, electronic submission.

23.4 Applications for Payment. No Application for Payment will be submitted to the Owner until and unless the Facility Manager and Architect have certified it. No approval of a progress payment, nor any progress payment, nor any partial or entire use or occupancy of the project by the Owner shall constitute an acceptance of any work not completed in accordance with the Contract Documents.

23.5 Payments Withheld. The Owner may withhold payment or the Facility Manager or Architect may decline to approve an Application for Payment in whole or in part, or the Facility Manager or Architect may withhold or nullify the whole or any part of any Application previously issued, because of subsequently discovered evidence or subsequent inspections, for such an amount or to such extent as may be necessary in the opinion of either to protect the Owner from loss on account of:

a. Defective work not remedied;
b. A reasonable doubt that the Contract can be completed for the balance then unpaid;
c. Damage to another contractor;
d. Failure of the Contractor to prosecute any portion of the work in a timely manner or in compliance with any approved schedules;
e. Failure of the Contractor to submit on a timely basis any documentation required by the Contract Documents, including, without limitation, monthly progress reports, schedule of values, potential claims or request for approval of subcontractors.

GC - 24.00 CONSTRUCTION SCHEDULE AND PROGRESS REPORTS

All time limits stated in the Contract Documents are of the essence of the Contract.

All work on the Project shall be finally completed within the times indicated in the Construction Documents.

The Contractor shall submit, within ten (10) calendar days after the date of the Notice of Contract Award in a format acceptable to the Owner, a Preliminary Construction Schedule for the project. This schedule shall start with the date of the Notice of Contract Award, and the completion date shall be a date which will enable the Owner to accept the work on the date specified in the Construction Agreement.

Contractor shall submit a detailed Construction Progress Schedule prior to the first application for payment. The schedule shall portray fully a timetable representing the various elements in the schedule of values and shall provide for the expeditious and practicable execution of the work. The time shown between the starting and completion dates of the various elements within the schedule shall represent one hundred percent (100%) completion of each element. The detailed Construction Progress Schedule shall indicate the critical path of the work. This schedule shall be revised monthly during the progress of the work. Monthly updates of the schedule shall be required as a Condition of Approval for the Contractor's Application for Payment. Additional detailed schedules of separate elements of the work may be requested at the Owner's discretion. IN addition, the Contractor shall submit with the Request for Payment monthly progress reports. Basically, these reports shall reflect the Contractor's "work in place" progress and will be certified by the Contractor or its superintendent as to the date and contents of such "work in place" progress report. If requested by the Owner, the monthly progress reports shall also include representative photographs of the actual work in place. Such reports shall depict progress and percentage of completion, consistent with the values and amounts contained on the counterpart Request for Payment. The subcontractors shall be supplied copies of the Contractor's approved schedule. These subcontractors shall develop a similar schedule based on their respective work. Failure to submit an approved progress schedule or monthly progress report shall be deemed cause to

reject Requests for Payment.

The Contractor shall schedule all work so as to reduce to a minimum any disruption in the use of the existing facilities and interruptions of utility service of any type. Where electrical or mechanical work performed under this Contract will necessitate interruptions of service to existing facilities, the Contractor shall furnish and install temporary service to such facilities or perform such work at such times when said existing utilities are not in normal use. This Contractor shall bear the cost of all overtime or inconvenience resulting there from.

GC - 25.00 INSURANCE

The Contractor shall purchase and maintain such insurance as will protect it from claims set forth below which may arise out of or result from the Contractor's operations under the Contract, whether such operations be by himself or by any subcontractor or by anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable. All such insurance shall be subject to the approval of the Owner for adequacy of protection, and shall include a provision preventing cancellation without thirty (30) days' prior notice to the Owner in writing.

25.1 Liability Insurance Requirements. The Contractor shall procure and maintain, at its own expense, until final completion and acceptance by the Owner, liability insurance as hereinafter specified. The liability insurance required is as follows:

a. Commercial General Liability Insurance. Contractor's General Public Liability and Property Damage Insurance issued to the Contractor and protecting it from all claims for personal injury, including death and all claims for destruction of or damage to property arising out of or in connection with any operations under his Contract, whether such operations be by himself or by a subcontractor under him, or anyone directly or indirectly employed by the Contractor or by a subcontractor under him, or by anyone for whose acts any of them may be liable.

All such insurance shall be written with a limit of liability of not less than $1,000,000 for all damages arising out of one occurrence for bodily injury, including death, and property damage. The General Liability policy should have a general aggregate limit of $2,000,000 for all damages and a products completed aggregate of $2,000,000 for all damages. The policy should be endorsed to provide the designated construction project general aggregate endorsement showing the address of the project covered by this agreement.

All such insurance shall be written on a comprehensive policy form and shall specifically cover all blasting operations, elevators, products, completed operations, explosions, collapse, subsidence, and underground damage. Certificates evidencing the issuance of such insurance, addressed to the

Owner, shall be filed with the Owner within ten (10) days after the date of the Notice of Contract Award.

b. The policy shall include the Owner as an additional insured. The insurer shall give the Owner notification of any cancellation or termination by refusal to renew the policy or of any change in coverage of the policy in the manner provided by law. If no such notification is provided by law, the insurer shall give the Owner at least thirty (30) days' prior written notification of any cancellation or termination by refusal to renew the policy or of any change in coverage of the policy.

25.2 Worker's Compensation Insurance.

The Contractor shall maintain at his own expense, until completion of the work and final acceptance thereof by the Owner, Worker's Compensation Insurance, including occupational disease provisions, covering the obligations of the Contractor in accordance with the provisions of the laws of the State of Iowa. The Contractor shall furnish the Owner with a certificate giving evidence that the Contractor is covered by the Worker's Compensation Insurance herein required, each certificate specifically stating that such insurance includes occupational disease provisions. All such certificates shall be furnished within ten (10) days after the date of the Notice of Award. This policy should also include Employer's Liability Insurance with minimum limits of $500,000 each accident for bodily injury, $500,000 each accident for bodily injury by disease, and $500,000 policy limit for bodily injury by disease.

25.3 Property Insurance.

The Owner shall pay for and maintain Property Insurance, covering property of every kind and description to be incorporated into the work, including materials and supplies, used or to be used, as part of or incidental to the construction operations. The insurance shall exclude the Contractor's and its subcontractors' equipment, tools, and machinery that are not incorporated into the work. The Property insurance shall be written under a 'Special Cause of Loss Form' to include perils of fire, lightning, windstorm, vandalism, and theft, as well as other perils normally covered by the standard Insurance Service Office Special Cause of Loss Form.

A loss insured under the Owner's Property Insurance shall be adjusted by the Owner and made payable to the Owner on behalf of the Contractor and its subcontractors as their interests may appear. The Contractor shall pay subcontractors their just portions of any insurance proceeds received by the Owner and paid to the Contractor.

Unless the Owner agrees otherwise, in writing, all monies received shall be applied toward rebuilding or repairing the destroyed or damaged work.

The Owner, Contractor, its subcontractors and suppliers waive all rights against each other for damages caused by fire or other perils to the extent covered by the Property Insurance (for damages in excess of $100,000.00) obtained pursuant to this

section or other property insurance applicable to the work, except such rights as they may have to the proceeds of such insurance held by the Owner on their behalf. The Contractor shall require similar waivers of his subcontractors, sub-subcontractors, agents, and employees of any of them.

The deductible will be $100,000.00. Contractor is responsible for all losses and damages less than the deductible.

25.4 Installation Floater. The Contractor shall maintain an Installation Floater policy and Builder's Risk policy covering the Work and Materials not yet installed in the building or not otherwise covered by Builders Risk insurance. The Floater should have a minimum limit of $100,000. The Floater shall cover the following areas:

A. Property in transit; and
B. Property stored off-site at a temporary location.

25.5 Comprehensive Automobile Liability. The Contractor shall pay for and maintain Comprehensive Automobile Liability Insurance, including owned, non-owned, and hired vehicles in the following amounts:

Bodily Injury and Property Damage: $1,000,000 combined single limit

25.6 All liability policies which include the Owner as an additional insured shall include a Governmental Immunities Endorsement (See the Standard Endorsements Figure 1070.5), pursuant to Chapter 670.4 of the Iowa Code, which endorsement shall include the following provisions:

a. Nonwaiver of Government Immunity. The insurance carrier expressly agrees and states that the purchase of this policy and including the Owner as an Additional Insured does not waive any of the defenses of governmental immunity available to the Owner under Iowa Code Section 670.4 as it now exists and as it may be amended from time to time.

b. Claims Coverage. The insurance carrier further agrees that this policy of insurance shall cover only those claims not subject to the defenses of governmental immunity under Iowa Code Section 670.4 as it now exists and as it may be amended from time to time.

c. Assertion of Government Immunity. The Owner shall be responsible for asserting any defense of governmental immunity, and may do so at any time and shall do so upon the timely written request of the insurance carrier.

d. Non-Denial of Coverage. The insurance carrier shall not deny coverage or deny any of the rights and benefits accruing to the Owner under this policy for

reasons of governmental immunity unless and until a court of competent jurisdiction has ruled in favor of the defense(s) of governmental immunity asserted by the Owner.

This Government Immunities Endorsement shall be included on all Insurance policies which include the Owner as Additional Insured.

25.7 Cancellation and Insurance Companies. All policies of insurance carried by the contractor shall provide for 30 days advance written notice of cancellation, non-renewal, or material change in insurance coverage directed to the Des Moines Independent Community School District. The Owner will accept the policies written only by sureties legally authorized in the State of Iowa.

25.7 Cancellation and Insurance Companies. The contractor and its subcontractors, sub-subcontractors and their supplies are responsible for all damage to their own tools, equipment, and vehicles of every type. The contractors, its subcontractors, sub-subcontractors and their suppliers shall waive subrogation against the owner for any damage to such equipment, tools, and vehicles including any insurance in force to cover such equipment.

GC - 26.00 PERFORMANCE AND PAYMENT BONDS

The Contractor shall, within ten (10) days of the Notice of Contract Award, furnish bonds to the Owner in the full amount of the Contract price, covering both the faithful performance of the Contract and the payment of all obligations for labor and materials arising there under, on such forms as the Owner may prescribe and with such sureties as the Owner may approve. Such bonds shall be duly executed by a qualified surety, conditioned upon the true and faithful performance of the Contract, and shall provide that if the Contractor or his subcontractors fail to duly pay for any labor, materials, or other supplies used or consumed by such Contractor or his subcontractors in the performance of the work contracted to be done, the surety will pay the same in an amount not exceeding the sum specified in the bond, as adjusted by approved change orders, and together with interest as provided by law. The Performance Bond shall additionally guarantee that the Contractor shall remedy any omissions, correct any and all defects, and adjust and make operable all component parts of the work falling under the requirements of his Contract which may be called to his attention within a period of twenty-four (24) months following the date of the Letter of Acceptance.

The premium for all bonds shall be paid by the Contractor and included in the bid price in the Bid Proposal. The Owner will accept and approve bonds written by sureties legally authorized to write such bonds in the State of Iowa. If, at any time a surety on such a bond becomes irresponsible or loses its right to do business in the State of Iowa, the Owner may require another surety acceptable to the Owner, which the Contractor shall furnish within ten (10) days after receipt of written notice to do so.

GC - 27.00 SUBCONTRACTORS

The Contractor shall, within twenty-four (24) hours following the bid opening, provide to the Owner a completed List of Subcontractors and Suppliers of Labor and Material, which details whose quotations it has used in preparation of his bid. The Contractor shall, before awarding any subcontracts, re-verify to the Owner, Facility Manager and Architect in writing the names of subcontractors proposed for the project. Any deviation from the original subcontractor and supplier list will not be allowed unless justification is submitted in writing to the Owner and Facility Manager by the Contractor that the subcontractor or supplier is deemed unfit or unable to perform the specified work, is unwilling to enter into a subcontract, or is not in compliance with the Contract Documents.

GC - 27.00 SUBCONTRACTORS

The Contractor shall not employ any subcontractors that the Owner, Facility Manager or Architect may, within a reasonable time, object to as incompetent, unfit, or otherwise undesirable. Substitutions of subcontractors listed in the executed proposal form may not be made without written approval of the Owner.

The Owner shall, on request, furnish to a subcontractor, wherever practicable, evidence of the amounts certified on his account.

The Contractor agrees that it is as fully responsible to the Owner for the acts and omissions of his subcontractors and of persons either directly or indirectly employed by them, as it is for the acts and omissions of persons directly employed by it.

The Contractor, at the conclusion of the work and before final payment is made, shall furnish to the Owner a listing, giving names, contact persons, addresses, and telephone numbers of all subcontractors and material suppliers who furnished labor and materials on the project with identification of the services rendered and materials provided.

Nothing contained in the Contract Documents shall create any direct contractual relation between any subcontractor and the Owner.

GC - 28.00 RELATIONS OF CONTRACTOR AND SUBCONTRACTOR

The Contractor agrees to bind every subcontractor by a written agreement and require in his contracts that every subcontractor be bound by the terms of the Construction Agreement, the General Conditions of the Contract, the Supplementary

General Conditions, the drawings and specifications as far as applicable to his work, including the following provisions of this Article, unless specifically noted to the contrary in a subcontract approved in writing as adequate by the Owner.

The subcontractor agrees with the Contractor:

a. To be bound to the Contractor by the terms of the Construction Agreement, General Conditions of the Contract, the Supplementary General Conditions, the drawings and specifications, and any other Contract Documents, and to assume toward it all the obligations and responsibilities that it, by those documents, assumes toward the Owner;

b. To preserve and protect the rights of the Owner and the Architect under the Contract with respect to the work to be performed under the subcontract so that the subcontracting thereof will not prejudice such rights;

GC - 28.00 RELATIONS OF CONTRACTOR AND SUBCONTRACTOR

The subcontractor agrees with the Contractor:

c. To perform all work in accordance with the requirements of the Contract Documents;

d. To submit to the Contractor applications for payment in such reasonable time as to enable the Contractor to apply for payment as specified in the General Conditions;

e. To make all claims for extras, for extensions of time, and for damages for delays or otherwise, to the Contractor in the manner provided in the General Conditions of the Contract and the Supplementary General Conditions for like claims by the Contractor upon the Owner, except that the time for making claims for extra cost is one week.

The Contractor agrees:

f. To be bound to the subcontractor by all the obligations that the Owner assumes to the Contractor under the Agreement, General Conditions of the Contract, the Supplementary General Conditions, the drawings and specifications, and by all the provisions thereof affording remedies and redress to the Contractor from the Owner.

g. To pay the subcontractor not later than seven (7) calendar days immediately following the payment of each certificate issued under the schedule of values described in these General Conditions, the amount allowed to the Contractor on account of the subcontractor's work to the extent of the subcontractor's interest therein.

h. To pay the subcontractor, upon the payment of Certificates, if issued otherwise than as in g. above, so that at all times his total payments shall be

as large in proportion to the value of the work done by it as the total amount certified to the Contractor is to the value of the work done by it.

i. To pay the subcontractor to such extent as may be provided by the Contract Documents or the subcontract, if either of these provides for earlier or larger payments than the above.

j. To pay the subcontractor a just share of any insurance payment received by the Contractor, applicable to work performed by such subcontractor. If the Owner knows or has reason to know the Contractor is not making timely payments to the subcontractors and/or suppliers, the Owner may require the Contractor to submit verified documentation evidencing that full and timely payments have been made to the subcontractors and suppliers and/or that legal justification exists for withholding payments.

GC - 28.00 RELATIONS OF CONTRACTOR AND SUBCONTRACTOR

The Contractor agrees:

k. If the Owner knows or has reason to know the Contractor is not making timely payments to the subcontractors and/or suppliers, the Owner may require the Contractor to submit verified documentation evidencing that full and timely payments have been made to the subcontractors and suppliers and/or that legal justification exists for withholding payments.

l. In addition, the Owner may contact the subcontractors and suppliers directly to obtain verification those payments have been made as required by law or the Contract Documents.

Nothing in this Article shall create any obligation on the part of the Owner to pay or to see to the payment of any sums to any subcontractor, nor shall it form the basis for any action by the subcontractor against the Owner on any contractual theories.

GC - 29.00 ARCHITECT'S STATUS AND INSPECTIONS

29.1 Authority. The Architect's role in repair or maintenance construction is primarily the preparation of specifications, drawings, plans, and the approval of payments as detailed in state code for projects meeting the competitive bid threshold. The Architect will be considered a "consultant" on such projects directing the Facility Manager on technical aspects of the project. The Architect shall work through the Facility Manger to stop the work whenever such stoppage may be necessary in the Architect's reasonable opinion to ensure the proper execution of the Contract.

29.2 Decisions. The Architect shall be, in the first instance, the interpreter of the specifications, plans, or drawings, although the Owner shall retain the final authority

in decisions regarding such matters. The Architect shall, within a reasonable time, make recommendations to the Facility Manager on all claims of the Contractor and on all other matters relating to the execution and progress of the work. All such decisions shall be subject to review by the Facility Manager. The Architect's decisions in matters relating to artistic effect, after consultation with the Facility Manager, shall be final, if within the terms of the Contract Documents.

29.3 Observations. The Contractor shall provide timely notice to the Facility Manager and the Architect when observations are desirable or required by the terms of the Contract. Such notice shall be given in order to allow for the following reviews and inspections, among others:

a. Reviewing and approving shop drawings samples and other submissions for conformance with the design concept of the project and for compliance with the information given in the Contract Documents;

29.3 Observations.

b. Observation of bearing surfaces of excavations before footings is poured;
c. Observation of reinforcing steel after installation and before concrete is placed;
d. Observation of structural and architectural concrete before, during, and after pouring;
e. Observation of all laboratory reports;
f. Observation of structural steel after erection and prior to its being covered or enclosed;
g. Observation of mechanical work following its installation and prior to its being covered and enclosed;
h. Observation of electrical work following its installation and prior to its being covered or enclosed and observation of exposed surfaces for compliance with the Construction Documents.

GC – 30.00 FACILITY MANAGER'S STATUS AND INSPECTIONS

30.1 Authority. The Facility Manager shall be the District's principal agent and shall act on the Owner's behalf through the Program during construction and until the expiration of the warranty period. The Facility Manager shall have authority to stop the work whenever such stoppage may be necessary in the Facility Manager's reasonable opinion to ensure the proper execution of the Contract.

30.2 Administration. The Facility Manager shall establish and implement procedures for reviewing and processing requests, and making recommendations to the Architect with respect to clarifications and interpretations of the Contract Documents; shop drawings; samples and other submittals; contract schedule adjustments; change order and field order proposals; written proposals for substitutions; payment applications; and the maintenance of logs. The Facility Manager shall be the party to whom all such

information shall be submitted.

30.3 Inspections. The Contractor shall provide timely notice to the, Facility Manager and the Architect when inspections are desirable or required by the terms of the Contract. Such notice shall be given in order to allow for the following reviews and inspections, among others:

a. Reviewing and approving shop drawings samples, product data and other submissions for conformance with the design concept of the project and for compliance with the information given in the Contract Documents;

b. Inspection of bearing surfaces of excavations before footings is poured;

c. Inspection of reinforcing steel after installation and before concrete is placed;

d. Inspection of structural and architectural concrete before, during, and after pouring;

e. Evaluation of all laboratory reports;

30.3 Inspections

f. Inspection of structural steel after erection and prior to its being covered or enclosed;

g. Inspection of mechanical work following its installation and prior to its being covered and enclosed;

h. Inspection of electrical work following its installation and prior to its being covered or enclosed; and

i. Inspection of exposed surfaces for compliance with the Construction Documents.

j. Reviewing project schedules and schedule changes.

k. Reviewing requests for change in the contract including all change Orders and Field Orders.

l. Reviewing and making recommendations for pay requests.

m. Reviewing certificates and policies of insurance for compliance with the Contract Documents.

n. Inspecting the site for construction observations and supervision and preparing written and photographic documentation.

GC - 31.00 CASH ALLOWANCES

The Contractor shall include in the Contract sum all allowances stated in the Contract Documents. These allowances shall cover the net cost of the materials and equipment delivered and unloaded at the site, and all applicable taxes. The Contractor's handling costs on the site, labor, installation costs, overhead, profit, and other expenses contemplated for the original allowance shall be included in the Contract sum and not in the allowance. The Contractor shall cause the work covered by these allowances to be performed for such amounts and by such persons as directed through the Facility Manager, but it will not be required to employ persons against whom it makes a reasonable objection. If the cost, when determined, is more than or less than the allowance, the Contract sum shall be adjusted accordingly by

field order which will include additional handling costs on the site, labor, installation costs, overhead, profit, and other expenses resulting to the Contractor from any increase over the original allowance.

GC - 32.00 USE OF PREMISES

The Contractor shall confine its apparatus, the storage of materials, and the operations of its workers to limits indicated by law, ordinances, permits, and the Contract Documents, and shall not unreasonably encumber the premises with its materials. Contractor shall not place or store any materials, equipment, or other items or goods outside the construction area as designated in the Construction Documents, without prior written approval of the Facility Manager. The Contractor shall not load or permit any part of the structure to be loaded with a weight that will endanger its safety.

GC - 32.00 USE OF PREMISES

The Contractor shall enforce all Owner instructions and other regulations regarding signs, advertisements, fires, and smoking and shall not allow the possession or consumption of alcohol or drugs on the premises by his or any subcontractor's workers. The Contractor shall limit his construction activities, including material storage, to areas approved by the Facility Manager.

GC - 33.00 CUTTING, PATCHING, AND EXCAVATING

The Contractor shall do all cutting, fitting, or patching of his work that may be required to make its several parts come together properly and fit it to receive or be received by work of the subcontractors shown upon, or reasonably implied by, the drawings and specifications for the completed structure. Any cost caused by defective or improperly timed work shall be borne by the party responsible therefore. The Contractor shall not endanger any work by cutting, excavating, or otherwise altering the work and shall not cut or alter the work of any subcontractor except with the consent of the Facility Manager after consulting the Architect. The Contractor will ensure that each subcontractor leaves all chases, holes, or openings straight, true, and of proper size in its own work, or cut the same in existing work as may be necessary for the proper installation of its own or another subcontractor's work consulting with the Facility Manager and the Contractor regarding proper location and size of same. In case of its failure to leave or cut same in the proper place, it shall cut them afterward at its own expense. No piers or other structural members shall be cut or modified in the field without the written consent of the Facility Manager after consulting with the Architect. Any extensive cutting of non-structural elements shall also require the Facility Manager's and Architect's approval. After such work has been installed, it shall carefully fit around, close up, repair, patch, and point up same as directed to the entire satisfaction of the Facility Manager and Architect. Each section of this specification shall include all cutting, patching, and excavating for that trade

division unless specifically stated to the contrary.

GC - 34.00 CLEANING UP

The Contractor shall at all times keep the premises free from accumulations of waste material or rubbish caused by its employees or work.

The contractor shall remove all rubbish as often as is necessary or as directed by the Facility Manager, or as specified elsewhere in these documents. At the completion of the work, it shall remove all its rubbish from and about the building, and all its tools, scaffolding, and surplus materials and shall wash all glazing and window frames inside and outside throughout the building, removing all stains, paint, etc., on same. Care shall be taken not to scratch the glazing in this clean up.

GC - 34.00 CLEANING UP

All doors and wall coverings shall be left thoroughly clean and finished; all walls and ledges shall be dusted; all plumbing fixtures shall be cleaned; all hardware shall be free of all labels, paint, stains, dust, dirt, and the like; all marks, stains, fingerprints, other oil, and dirt shall be removed from painted, decorated, or natural finish work and the building will be ready for occupancy except for being further equipped by the Owner. In case of dispute, the Owner may perform such cleaning up as may be required and charge the cost to the Contractor.

GC - 35.00 STATUTES, ORDINANCES, AND REGULATIONS

The Contract shall be governed by the laws of the State of Iowa. The Contractor and all subcontractors shall comply with all applicable federal and state statutes, rules, regulations, and directives of any governmental body having jurisdiction over the work to be performed. Should any of the provisions of the Contract Documents be in conflict therewith, then that portion which is in conflict shall be considered stricken and the applicable statute, ordinance, regulation, or ruling substituted therefore. All such cases of apparent conflict coming to the attention of any party shall immediately be called to the attention of the Facility Manager. The Contractor shall strictly observe and comply with all federal and state laws pertaining to the employment and payment of labor.

GC - 36.00 APPROVAL OF SUBSTITUTIONS

The Contractor will be held to have used in his base proposal and to furnish under the Contract those items of equipment and/or materials which are specifically identified in the specifications by a manufacturer's name, model, or catalog number. Owner, in its sole discretion, may approve substitution of equipment and/or

materials of makes other than those specifically named in the Contract Documents so long as the equipment or material proposed for substitution in the opinion of the Owner is just as suitable as equipment and/or materials named in the specifications so far as performance, construction, efficiency, and utility are concerned.

All requests for substitutions must be submitted in writing at least seven (7) working days prior to the bid opening to the Owner for evaluation and final approval.

Contractor's request shall include a complete listing of the substitutions proposed, with drawings and other data required by Owner, supporting Contract price changes pertaining to each proposed substitution. Contractor shall also furnish drawings or other data required to indicate any modifications which would result from use of the proposed changes and shall furnish general arrangement drawings, full descriptive data, and any other information required to demonstrate that the proposed substitutions are equal to the product(s) specified.

GC - 36.00 APPROVAL OF SUBSTITUTIONS

The Owner will determine if the proposed substitutions are acceptable or unacceptable and will notify all potential bidders of its decisions no later than five (5) calendar days before bid opening. In the absence of the Owner's written acceptance, no substitution will be allowed for any items specified in the Contract Documents. Acceptance by the Owner of proposed substitutions shall not relieve Contractor of the responsibility for providing workmanship, materials and equipment meeting quality standards established for the project. No substitution may be made subsequent to the award of the contract, except upon Owner's written approval.

Contractor may offer alternate systems to the ones named in the specifications by submitting with the proposal and on the form provided, identifying data on the system proposed, together with a statement of the amount of addition or deduction from the base bid if the bidder's alternate is accepted. Prior approval by the Owner is not required on items submitted as alternate bids.

GC - 37.00 OCCUPANCY

The Contractor, upon the Owner's written request, shall allow the Owner to occupy portions of the work and to place and install, subject to reasonable restrictions, as much equipment and furnishings during the progress of the work as is possible without interfering with the progress of the work. Such occupancy and the placing or installing of equipment and furnishings shall not in any way evidence the completion of the work or signify the Owner's acceptance of the work, or any part of it. Equipment includes such things as kitchen equipment, etc. Furnishings include such things as lockers, benches, desks, etc. Prior to occupancy, the Facility Manager and Architect shall make a thorough inspection accompanied by the Contractor's superintendent to note any defects in workmanship or materials which are the

responsibility of the Contractor. The provisions of the Article shall not be in limitation of the Owner's rights set forth in Article 18.00.

GC- 38.00 DAMAGE TO UTILITIES

The Contractor shall take adequate precautions to protect existing utilities on and off the site and avoid damage thereto. The Contractor shall repair or replace or have repaired or replaced at his own expense any damage to streets, water, sewer, light, and power, cable, or telephone lines, damaged by reason of his work.

The location and extent of underground utilities and cables and conduit as indicated on the drawings are not guaranteed. This information is shown only for such use as bidders and Contractors may choose to make of it. All Contractors shall check with all public utilities companies for locations and shall comply with their regulations regarding their utilities in performing the work.

GC- 38.00 DAMAGE TO UTILITIES

Active underground utilities shall be adequately protected from damage and if damaged shall be immediately repaired. Removal or relocation of same shall be done only as indicated on the drawings. If they are in use, they shall be maintained in continuous service. If not indicated on the drawings or not known to exist, the Contractor shall report discovery of such lines to the Facility Manager and shall not proceed further until directed to do so. Inactive or abandoned utilities, whether or not they are indicated on the drawings, shall be recorded as to location and depth and shall be removed for a distance of not less that three (3) feet from outside line of all concrete work unless otherwise required by regulations. Ends shall be capped or plugged. There will be no adjustment of Contract amount for work due to inactive or abandoned utilities indicated on the drawings.

GC - 39.00 PROJECT SIGN

If required by the specifications, the Contractor shall provide a project sign in such form and size as may be approved by the Facility Manager. No other advertising is permitted on the project site.

GC - 40.00 BLASTING

No explosives of any nature except for those normally employed in powder actuated tools, .38 caliber or smaller, shall be employed or used on any site except with the express and specific prior written approval of the Facility Manager and any appropriate governmental authorities, in each instance. The Contractor shall notify the Facility Manger of need for such approval three (3) days prior to the proposed use of such explosives.

GC - 41.00 HISTORICAL DATA

In addition to warranties, guarantees, operating instructions, etc., elsewhere specified, the Contractor, at the conclusion of the work and before final payment is made, shall furnish a listing, giving principal's names, addresses, and telephone numbers of all subcontractors and material suppliers who furnished labor or materials on the job with identification of the services rendered. There shall be provided one (1) copy to the Facility Manager, one (1) copy to the Architect. All copies will be delivered to the Facility Manager for review and distribution.

GC - 42.00 TESTING OF BUILDING SYSTEMS (COMMISSIONING)

The Contractor shall submit a written plan prior to completion and acceptance, consistent with the Contract Documents and applicable codes, for the testing of all building systems.

GC - 42.00 TESTING OF BUILDING SYSTEMS (COMMISSIONING)

All testing shall be of the complete system, before covering, or of individually separable larger portions of the system and shall be performed in the presence of the appropriate consultant and representative of the Owner. A written report shall be filed in the office of Facility Management, Des Moines Independent Community School District, recording each test, and signed by such consultant.

GC - 43.00 TEMPORARY OR TRIAL USAGE

Temporary or trial usage by the Owner of any mechanical device, machinery, apparatus, equipment, or any work or material supplied under the Contract before final completion and written acceptance by the Architect and Facility Manager shall not be construed as evidence of the Owner's acceptance of same or the commencement of any warranty periods.

The Owner has the privilege of such temporary or trial usage, for such reasonable time as the Owner deems proper. The Contractor shall make no claim for damage or injury to or breaking of any parts of such work which may be caused by weakness or inaccuracy of structural parts or by defective materials or workmanship. If the Contractor so elects, it may, without cost to the Owner, make such trial usage. However, trials shall only be conducted with the Facility Manager's prior approval and under the Architect's observation.

When heating, air conditioning, ventilating, exhaust, or other items of electrical or other equipment are installed, it shall be the responsibility of the Contractor installing such equipment to operate it for a satisfactory period of time as required by the Facility Manager for proper testing of the equipment and instructing the Owner's operating personnel. All items of equipment, testing meters, testing

instruments, and incidentals required for proper testing and for instructing the Owner's operating personnel, shall be provided by the Contractor responsible for providing and installing the equipment.

GC - 44.00 ASSIGNMENT

Neither party to the Contract shall assign the Contract or sublet it as a whole without the written consent of the other, nor shall the Contractor assign any moneys due or to become due to him hereunder, without the previous written consent of the Owner.

GC - 45.00 SEPARATE CONTRACTS

The Owner reserves the right to let other contracts in connection with this work. The Contractor shall afford such other contractors reasonable opportunity for the introduction and storage of their materials and the execution of their work, and shall properly connect and coordinate its work with theirs.

GC - 45.00 SEPARATE CONTRACTS

If any part of the Contractor's work depends for proper execution or results upon the work of any other contractor, the Contractor shall inspect and promptly report to the Facility Manager any defects in such work that render it unsuitable for such proper execution and results. Its failure to inspect and report shall constitute an acceptance of the other contractor's work as fit and proper for the reception of his work, except as to defects which may develop in the other contractor's work after the execution of its work.

To ensure the proper execution of his subsequent work, the Contractor shall measure work already in place and shall at once report to the Facility Manager any discrepancy between the executed work and the drawings.

GC - 46.00 CONTRACTORS' MUTUAL RESPONSIBILITY

The entire project may be covered by more than one contract and in such case there will of necessity be a certain overlapping of contracts. Each contractor shall, therefore, take due notice of the work called for in contracts other than his own. Should the Contractor cause damage to any separate contractor on the work, the Contractor agrees, upon due notice, to settle with such other separate contractor by agreement, if it will so settle. If such other separate contractor sues the Owner on account of any damage alleged to have been so sustained, the Owner may notify the Contractor, who shall, at the Owner's option, defend such proceedings at the Contractor's expense or reimburse the Owner for the expenses incurred in defense, and, if any judgment against the Owner arises there from, the Contractor shall pay or satisfy it and pay all costs and expenses thereby incurred by the Owner.

GC - 47.00 LIENS

It is hereby mutually understood by and between the parties hereto that no Contractor, subcontractor, material man, vendee, laborer, mechanic, or other person, can or will contract for or in any other manner have or acquire any lien upon the building or works covered by this Contract, or the land upon which the same is situated.

GC - 48.00 WORK IN EXISTING BUILDING

In addition to all other requirements of the Contract Documents, if the work involves an addition to an existing building, the Contractor shall erect and maintain during the progress of the work, suitable dust-proof partitions to protect such building and the occupants thereof.

GC - 48.00 WORK IN EXISTING BUILDING

If necessary in the Facility Manager's or Contractor's judgment, or pursuant to manufacturer's directives or recommendations in order to protect occupants from noxious fumes, odors, or hazardous substances, the Contractor may be required to provide additional ventilation and/or work different or extended hours to avoid disruption to other activities within the existing building.

If any portions of an existing building are to be remodeled or repaired, such portions shall be adequately partitioned off with dust-proof partitions and well ventilated. Contractor's personnel shall not access areas still in use by the Owner without prior, written authorization. All remodeling work shall be scheduled and submitted to the Facility Manager for approval. The various contractors shall schedule their work jointly, in order that each may accomplish his work within such existing building in an orderly fashion during regular school vacation periods, where possible, or in such a manner as to permit full use of the building and without impairment of any existing facilities.

During the course of construction the Contractor shall maintain free and unimpeded all required exits from the building. Barricades shall be so erected that traffic is separated and protected from the construction. Such exits shall not be closed at any time for any reason while the building is occupied or at any time when the building is unoccupied except after written approval is given by the Owner and proper warning and directional signs are posted.

GC - 49.00 INDEMNIFICATION

The Contractor shall indemnify and hold the Owner and the Architect and their agents

and employees harmless from and against all claims, damages, losses, and expenses, including attorneys' fees arising out of or resulting from the performance of the work, provided that any such claim, damage, loss, or expense is attributable to bodily injury, sickness, disease, or death, or to injury to or destruction of tangible property, including the work itself and including the loss of use resulting there from but only to the extent caused by any negligent or intentional act or omission or breach of contract of the Contractor, any subcontractor, anyone directly or indirectly employed by any of them, or anyone for whose acts any of them may be liable, regardless of whether or not it is caused in part by a party indemnified hereunder. This specific indemnification by the Contractor is in addition to and not in lieu of other remedies which may be available to the Owner.

The obligations of the Contractor under this Article shall not extend to and will be reduced by the liability of the Architect or the Architect's Consultants to the extent directly attributable to and proximately caused by (A) the negligent preparation or approval of drawings or specifications, or (B) errors or omissions in written directions or instructions given by the Architect or the Architect's Consultants.

GC – 50.00 SUBSTANTIAL COMPLETION

When the Contractor considers that the Work, or a designated portion thereof which is acceptable to the Owner, is substantially complete, the Contractor shall prepare for the Owner a list of items to be completed or corrected and submit it to the Facility Manager. The list shall include written warranties and related documents required by the Contract and assembled by the Contractor. The failure to include any items on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents. When the Architect and the Facility Manager, on the basis of an inspection, jointly determine that the Work or designated portion thereof is substantially complete, the Architect and Facility Manager will then prepare a Statement of Responsibilities of the Contractor for security, maintenance, heat, utilities, damage to the Work and insurance, and fix the time within which the Contractor shall complete the items listed therein. Warranties required by the Contract Documents shall commence on the date of occupancy of the Work or designated portion thereof by the Owner unless otherwise provided in the Statement of Responsibilities. The Statement of Responsibilities shall be submitted to the Owner and the Contractor for his written acceptance of the responsibilities assigned in such Statement.

GC—51.00 REQUEST FOR EARLY RELEASE OF RETAINED FUNDS

Upon achieving Substantial Completion, the Contractor may formally request the release of all or part of the retained funds being held on the project. The Contractor's request for Release of Retained Funds shall be accompanied by the required sworn statement that ten (10) calendar days prior to filing the Request for Release of Retained Funds the required sworn statement was given to all known subcontractors,

sub-subcontractors and suppliers that the Contractor is requesting the early release of retained funds. If proper documentation is received from the Contractor, the Owner will release the requested funds at the next monthly Board meeting of within thirty (30)
days, whichever is less, except it may retain the following:

a) An amount equal to 200% of the value of labor and materials yet to be provided on the project, which will include the value of the itemized costs for closeout phase items of the project as listed in Section 01705 of the documents and other items as determined by the Owner and its authorized contract representative.

b) An amount equal to 200% of the value of any Chapter 573 claims currently on file at the time the Request for Release of Retainage Funds is approved. If the Owner withholds an amount from the retainage payment to the Contractor, the Owner will provide a reason the request is being denied the Contractor within thirty (30) calendar days of the receipt of the request. Approval of early release of retained funds will be made by Resolution of Owner's Board of Directors.

GC— 51.00 REQUEST FOR EARLY RELEASE OF RETAINED FUNDS

The Request will be presented to the Board of Directors for acceptance when:

1) All work, under the request has been certified as finally and satisfactorily completed;

2) All work, under the request has been inspected and approved by the Owner's representative;

3) The Contractor has certified to the Owner that the materials, labor, and services involved in each Application for Payment have been paid in accordance with the Contract Documents; and

4) Documents as outlined in Section 01705 "Early Release of Retained Funds" including, but not limited to, the following documents have been completed and received by the Owner:

Request for Release of Retained Funds - DMDSFM - Notice of Contractor's Request for Early Release of Retained Funds Consent of Surety to Early Release of Retained Funds

GC - 52.00 ACCEPTANCE AND FINAL PAYMENT

Within a reasonable time after final completion of the work and before final

acceptance thereof, a final inspection shall be made by the Architect to determine whether the work has been completed in accordance with the Contract Documents. A written Report of Inspection and detailed "punch list," certified as to contents and date of inspection, shall be completed by the Architect and delivered or mailed to the Contractor. All prior Requests for Payment shall be subject to correction in the final Request for Payment.

The balance remaining due the Contractor, if any, following Final Acceptance will be paid not earlier than thirty-one (31) days from the date of Final Acceptance of said work by the Owner, subject to the conditions and in accordance with the provision of Chapter 573 of the Code of Iowa.

Final Acceptance of the work will be made by Resolution of Owner's Board of Directors. The work will be presented to the Board of Directors for Final Acceptance when:

1) All work, including the punch list, has been certified as finally and satisfactorily completed;

2) All work, including the punch list, has been inspected and approved by the Owner's representative;

GC - 52.00 ACCEPTANCE AND FINAL PAYMENT

3) The Contractor has certified to the Owner that the materials, labor, and services involved in each Application for Payment have been paid in accordance with the Contract Documents; and

4) Documents as outlined in Section 01700 "Contract Closeout", including, but not limited to, the following documents have been received by the Owners:

Application for and Certification of Payment -
DMPSFM-600 Itemization Sheet for Final
Payment - DMPSFM-610 Certificate of
Completion - DMPSFM-620
Contractor's Affidavit of Payment of Debts & Claims -
DMPSFM-630 Contractor's Affidavit of Release of
Liens - DMPSFM-640
Consent of Surety Company to Final Payment -
DMPSFM-650 Architect's Certificate of
Specifications - DMPSFM-660
Lien Waivers
Tax Form 35-002 and Other Tax Refund Certificates or Required Guarantees

If any unpaid claim for such labor, materials, supplies, or equipment is filed with the Owner before payment in full of all sums due the Contractor, the

Owner shall withhold from the final payment sufficient funds, if available and in accordance with Iowa Code chapter 573, as amended, to provide for the payment of such claim, until the same shall have been paid or withdrawn. Such payment or withdrawal shall be evidenced by filing with the Owner a receipt in full or an order authorizing withdrawal signed by the claimant or his duly authorized agent or assignee. If a claim under Iowa Chapter 573 is filed against the Owner, the Contractor agrees to defend, indemnify, hold harmless and/or reimburse the Owner from, against and for any and all damages, settlements, payments or expenses, (including reasonable attorney's fees) incurred by the Owner on account of any and all claims filed against the project as a direct result of the Contractor. If any claim for such labor, materials, supplies, or equipment remains unsatisfied after all payments are made by the Owner to the Contractor, the Contractor shall refund to the Owner all sums which the latter may for any reason be compelled to pay to satisfy such claim, including all costs and attorneys' fees incurred by the Owner as a result of the Contractor's default in such respect.

The making and acceptance of the final payment shall not constitute a waiver of any claims by the Owner, including, among other things, those arising from unpaid claims, from faulty work which appears before or after final payment, or from any failure to comply with any requirements of the Contract Documents.

GC – 53.00 WARRANTIES ON PORTIONS OF THE WORK

The Contractor shall, in case of work performed or materials or equipment provided for which warranties are required by the Contract Documents, secure the required warranties and deliver copies thereof to the Facility Manager upon completion of the work. All such warranties shall commence from the date set forth in the Certificate of Substantial Completion and will not in any way reduce the Contractor's responsibilities under his Contract. Whenever guarantees or warranties are required by the specifications for a longer period than one year, such longer period shall govern.

Contractor shall provide Owner with an acceptable maintenance bond at the time of final acceptance. Maintenance guarantee shall run for one (1) year from the time of acceptance to protect Owner from faulty workmanship and materials as outlined in the preceding paragraph.

GC - 54.00 CONTRACTOR'S PROJECT GUARANTEE AFTER COMPLETION

The Contractor expressly warrants and guarantees that the project will be constructed in a good, firm, substantial workmanlike manner; free from structural and workmanship defects and defects in materials; and that the improvements will be fit for occupancy and built in strict compliance with contract documents.

Neither the Architect's approval of the final Request for Payment nor payment of any Request for Payment or of any sum previously withheld from the Contractor shall relieve the Contractor of responsibility for its warranty and guarantee hereunder or for faulty materials or workmanship, and, unless otherwise agreed.

It unconditionally agrees to remedy any defects due thereto, and pay for any damages resulting there from, which shall appear within a period of ONE (1) year from the date set forth in the Letter of Acceptance of his work. The Contractor shall repair or replace any defective workmanship and materials in a manner acceptable to the Owner, without expense to the Owner, within ten (10) days after written notification by the Owner of such defect. If said repairs or replacements or mutually satisfactory arrangements have not been made within ten (10) days, the Owner shall make said repairs or replacements and charge the cost to the Contractor.

The Facility Manager, the Architect, and the Contractor together shall make at least one (1) complete inspections of the work after the work has been accepted by the Architect and the Facility Manager. One such inspection shall be made approximately eleven (11) months after the acceptance of the work. The Architect shall make a written report of these inspections, certified as to contents and date of inspection, and forward these reports by mail to the Owner and the Contractor within seven (7) days after completion of the inspections.

GC - 54.00 CONTRACTOR'S PROJECT GUARANTEE AFTER COMPLETION

The Contractor shall immediately initiate such remedial work as may be necessary to correct any deficiencies or defective work shown by this report, and shall promptly complete all such remedial work in a satisfactory manner.

If the Contractor fails to promptly correct deficiencies and defects shown by the report within ten (10) days after notice thereof, the Owner may do so. The Owner shall be entitled to collect from the Contractor all costs and expenses incurred in correcting such deficiencies and defects, as well as all damages resulting from such deficiencies and defects. The guarantee and warranties of the Contractor provided for herein are in addition to and not in lieu of any other remedies available to the Owner.

GC - 55.00 SOIL TEST REPORT

The Owner has arranged for a separate consultant to conduct field and laboratory soil investigations on the site and to prepare a report of the findings. Such reports are included as an attachment to the specification. Such data is offered solely for reference and is not to be considered a part of the Contract Documents. The data contained in any such document prepared for the Owner by a separate consultant is believed to be reliable; however, the Owner and Architect do not guarantee its

accuracy or completeness. All applicable subcontractors shall be fully familiar with the contents of such reports, if prepared, and shall consider and evaluate them in the performance of their contracts.

GC - 56.00 EXPEDITING MATERIALS

The Contractor shall exercise due diligence in seeing that all equipment, materials, and supplies are ordered and delivered well in advance of the time they are needed on the job; and it shall properly store and protect same at his expense and in accordance with these General Conditions, either at the site or elsewhere as approved by the Architect.
It shall, when requested, submit to the Facility Manager evidence that such orders have been placed and/or received.

GC - 57.00 MISCELLANEOUS KEYS, SWITCHES, ETC.

Except as otherwise specifically required by the Technical Specifications at the completion of the project, all loose keys for hose bibs, adjustment keys and wrenches for door closers and panic hardware, keys for electric switches, electrical panels, and all other equipment shall be identified and accounted for and turned over to the Architect for transmittal to the Owner.