Project Manual

Volume 1 of 1

Rochester Schools Modernization Program – Phase 2B

EDISON TECHNICAL & OCCUPATIONAL EDUCATION CENTER:
TELEVISION STUDIO EQUIPMENT

SED Project Control No.: 26-16-00-01-0-111-032
DWT No.: 6-16-00-01-7-999-020

Issued for:
Bid Documents

Date:
May 1, 2018

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Rochester Schools Modernization Program – Phase 2B

Edison Technical & Occupational Education Center: Television Studio Equipment

SED Project Control No.: 26-16-00-01-0-111-032
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Project Manual

Volume 1 of 1

Issued for:
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Date:
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Owner:	Rochester Joint Schools Construction Board Rochester City School District City of Rochester
Program Manager:	Savin/Gilbane
Construction Manager:	Buffalo Construction Consultants
Architect:	LaBella Associates
TV Studio Equipment:	AVL Designs Inc.

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SECTION 00 00 50 CERTIFICATIONS

Architect/Engineer's Certification: The undersigned certifies that, to the best of his or her knowledge, information and belief, these plans and specifications are in accordance with applicable requirements of the New York State Fire Prevention and Building Code, the State Energy Conservation Code, and the Manual of Planning Standards of the Educations Department. This work is being performed in conjunction with a project with known or suspected ACBM, and will be done in accordance with Industrial Code Rule #56.

_____ _____
Signature Date

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SECTION 00 11 13 - ADVERTISEMENT FOR BIDS

Sealed bids will be received until **2:00 pm on May 24, 2018**, at the, Rochester Schools Modernization Program at 70 Carlson Road, Suite 200, Rochester NY, 14610 by the Rochester Joint Schools Construction Board ("RJSCB" or "Owner"), Attention: Pepin Accilien, Program Director, Tel. 585-512-3807, for the RCSD **Edison Technical School TV Studio Project** ("Project"), at which time and place said bids will be publicly opened and read aloud. Questions during the bidding period must be communicated as described in Section 00 21 13 – INSTRUCTIONS TO BIDDERS.

RCSD **Edison Technical School TV Studio Project** includes:

- Installation of television studio equipment and all associated wiring, conduit, electrical devices.

PLEASE NOTE THAT THE PROJECT DOES NOT INCLUDE A PROJECT LABOR AGREEMENT (PLA) AS A PART OF THE PROJECT DOCUMENTS/REQUIREMENTS.

Prime Contracts are as follows:

- **TV Studio – Contract #700**

The Contract Documents, including the Instruction to Bidders, Form of Contract and Bid Form, may be obtained at the following websites:

Dataflow/RSMP Project portal: www.goDataflow.com/RSMP
Dataflow Rochester Office, 320 North Goodman, Suite 200 (Village Gate), Rochester, NY 14607
(585) 271-5730 phone
(585) 271-3752 fax

Rochester Builders Exchange, 180 Linden Ave., Suite 100, Rochester, NY 14625
(585) 586-5460

McGraw Hill Construction / Dodge Reports: http://dodge.construction.com

Bidnet site: www.bidnet.com

Complete sets of the Bid Documents may be obtained at the office of Dataflow Rochester Office, 320 North Goodman, Suite 200 (Village Gate), Rochester, NY 14607, upon payment of a deposit of $100 for each set made payable to the RJSCB (or if not picking up in person, add $35 for shipping made payable to Dataflow which is non-refundable). Along with their deposit check, bidders are to provide an active email address, street address (no PO Box Numbers), phone number, fax number, and contact name. Any bidder upon returning such set in GOOD CONDITION to Dataflow Rochester Office within thirty (30) calendar days after the bid date set for the Bid opening will be refunded their deposit. No partial sets or sections of the Contract Documents will be distributed.

A pre-bid conference will be held on December 6th, 2017, at 3:00pm in the Edison Technical School Library at 655 Colfax Street, Rochester NY. Please register via e-mail with Brad Fisher at Buffalo Construction, email address bfisher@buffaloconstruct.com or phone number 716-983-9427.

The Owner is required to comply with New York State's public bidding and other laws pertaining to public works, to advertise for any and all public work contracts, and to incorporate New York prevailing wage schedules or federal Davis-Bacon wage rate schedules, as applicable, into any contracts which may involve the employment of laborers, workmen or mechanics, whether or not publicly bid.

Sincerely,

Allen Williams, Chair – RJSCB
Pepin Accilien, Program Director – Savin Engineers, P.C.

By order of the Rochester Joint Schools Construction Board

SECTION 00 21 13 - INSTRUCTIONS TO BIDDERS

1.01 RECEIPT AND OPENING OF BIDS: The Rochester Joint Schools Construction Board ("RJSCB"), herein referred to as "Owner," invites bids on the Bid Form attached hereto, all blanks of which must be appropriately filled in. Bids will be received at the time and place described in Section 00 11 13 ADVERTISEMENT FOR BIDS, and then at said time and place publicly opened and read aloud. The envelopes containing the bids must be sealed, addressed to Attention: **Pepin Accilien, Program Director, 70 Carlson Road, Suite 200, Rochester NY 14610**, and designated as:

- **Television Studio – Contract #700**

Bid for RCSD Edison Technical & Occupational Education Center: Television Studio Equipment, Phase 2B of the Rochester Schools Modernization Program ("RSMP")

SED Project Control No.:
S.E.D. No. 26-16-00-01-0-111-032

The contract entered into between the Owner and the successful bidder(s) shall be for work associated with Phase 2B of the RSMP implementing RCSD Edison Technical & Occupational Education Center - Phase 2B of the Rochester Schools Modernization Program ("RSMP")(herein, "Project"), which work shall be set forth in detail in the Contract Documents issued by the Owner.

PLEASE NOTE THAT THE PROJECT DOES NOT INCLUDE A PROJECT LABOR AGREEMENT ("PLA") AS A PART OF THE PROJECT DOCUMENTS/REQUIREMENTS.

1.02 BIDDING CONDITIONS:

1. Owner reserves the right to reject any or all bids received for the Project.

2. INFORMALITIES: The Owner may consider any bid not prepared and submitted in accordance with the provisions hereof to be informal, and may waive any informalities in or reject any and all such bids. Conditional bids will not be accepted. Any bid may be withdrawn prior to the above scheduled time for the opening of bids or authorized postponement thereof. No bidder may withdraw a bid within 45 calendar days after the actual date of the opening thereof.

3. BID INTERPRETATIONS: Bid amounts are required to be submitted both in writing and in figures. In the event of conflict, the written amount shall take precedence over the amount expressed in figures.

4. PRICE REGULATIONS; By placing a bid under these instructions, the bidder certifies that the prices therein are in accordance with all New York State and United States laws and regulations.

1.03 LATE BIDS: Formal bids, amendments thereto, or requests for withdrawal of bids received by the Owner after the time specified for bid opening will be date stamped as evidence of late arrival and returned to the bidder unopened. The bidder assumes the risk of any delay in the mail or in the handling of the mail by employees and Consultants of the Owner. Whether sent by mail or by personal delivery, the bidder assumes the responsibility for having the bid submitted on time. *The time clock located in the Executive Director's office is designated the official timepiece for submission of bids. BIDS MUST BE SUBMITTED at the location defined herein under section 1.01 as the location where sealed bids are to be received. Bids will not be taken or accepted at any other location.*

2.01 PREPARATION OF BIDS: Bids must be submitted on the prescribed form. All applicable blank spaces must be filled in, in ink. Unless otherwise noted, all bid prices must be expressed in both writing and in figures in the event of conflict, the written amount shall take precedent over the amount expressed in figures.

1. BID SUBMISSION: All bids must be submitted in sealed envelopes bearing, on the outside, the time bids are to be opened, the type of work, the name and SED Project Control Number of the job and building and the name and address of the bidder. Facsimile bids will not be accepted.

2. EXAMINATION OF PREMISES: The submission of a bid will be considered as evidence that the bidder has examined the premises and acquainted himself/herself with present conditions under which he/she will be obliged to operate and that will affect in any manner the work to be done. A pre-bid conference will be held as described in Section 00 11 13 – ADVERTISEMENT FOR BIDS. It is the bidder's responsibility to request examination of Rochester City School District ("RCSD") or Owner documents necessary to allow the Contractor to evaluate the premises, including as-built drawings and records showing known asbestos containing building material (ACBM). In accordance with Title 2 of the Toxic Substances Control Act ("TSCA") published at 15 U.S.C. § 2601 et. seq., known as the Asbestos Hazard Emergency Response (AHERA), a Management Plan is available for public review at the administrative office of every RCSD building. The expense for emergency cleaning and air testing shall be borne by the Contractor responsible for disturbing ACBM. All proposals shall take into consideration all conditions that may affect the work of the Contract. No allowance will be made subsequently on behalf of the Contractor for any error, omission or negligence on his/her part.

3. DE-SCOPE MEETINGS: There will be Prime Contractor de-scope meetings held for all the lowest prospective bidders on December 20th, and all contractors need to be available on this date. All prospective winning prime contractors will be required to bring to the de-scope meeting the labor hours they have estimated in their bid.

4. SCHEDULING: Please refer to the the milestones and dates as denoted in Section 00 43 83 "Schedules and Milestones." **Bidder shall submit a detailed construction schedule to include critical dates, activities, milestones, and other pertinent information consistent with the Milestone Schedule provided.** It is expected that these costs are included in the base bid.

5. The required DP-1 form, which must be submitted as part of this Bid, must be fully completed indicating that EBE participation, by category, meets the Project's requirements.

3.01 DISCREPANCIES: If any bidder should find any discrepancy, conflicts or omissions in the drawings and/or specifications, these shall be called to the attention of the Program Manager, in writing, not later than seven days before the bids are due. Such items will be reviewed, and if clarification is deemed to be necessary, appropriate addenda will be issued to all bidders. Neither the Owner nor the Owner's Representative(s) will be responsible for any oral instructions given during the bidding period. If inconsistencies and/or discrepancies are not brought to the attention of the Program Manager prior to bid, then the amount of work of greater value, or the product of greater quality, shall be considered applicable to determine the Project requirements at the time of the award of the contract, and thereafter.

4.01 ADDENDA AND INTERPRETATIONS: No interpretations of the meaning of the plans, specifications or other Contract Documents will be made to any bidder orally. Every request for such interpretation should be submitted in writing by e-mail to Brad Fisher at Edison@rjscb.org. To be given consideration, such requests must be received on/or before **4:00 p.m. on May 18, 2018.** Any and all such interpretations and all supplemental instructions will be in the form of written addenda to the Contract Documents and Addenda will be posted and hosted by www.dataflow.com, www.bidnet.com and lsqft. Any bidder who is preparing a bid based upon the Contract Documents available at various service agencies, is responsible for obtaining the addenda from the hosting service. Failure of any bidder to receive any such addendum or interpretation shall not relieve any bidder from any obligation under this bid as submitted. All addenda so issued shall become part of the Contract Documents.

5.01 CERTIFICATE OF NON-COLLUSION IN BIDDING: To comply with Section 103-d of the General Municipal Law of the State of New York, all bidders are required to sign a statement regarding non-collusive bidding. This statement has been made a part of the Bid Form (00 41 16).

1. DISCLOSURE: A bid shall not be considered for award nor shall any award be made where (.1), (.2) and (.3) in the Certification of Non-Collusion in Bidding have not been complied with; provided however, that in any case the Bidder cannot make this certification, the Bidder shall so state and shall furnish with the bid a signed statement which sets forth in detail the reasons therefore. Where (.1), (.2) and (.3) have not been complied with, the bid shall not be considered

for award nor shall any award be made unless the Owner determines that such disclosure was not made for the purpose of restricting competition.

2. PRICING INFORMATION: The fact that a bidder, (A) has published price lists, rates or tariffs coveting items being procured, (B) has informed prospective customers of proposed pending publication of new or revised price lists of such items being bid, does not constitute without more, a disclosure within the meaning of the required certification.

6.01 RESPONSIBLE BIDDER: The Owner has developed the following guidelines for the determination of public works contract responsibility consistent with the duties of contracting agencies and the court interpretations of State law and regulations governing competitive bidding in the belief that the public interest would be served by the uniform application of these guidelines on Owner public works contracts:

1. In determining the responsibility of a bidder for a public works contract, the Owner shall consider the following items;
   A. Lack of proper certification, adequate expertise, prior experience with comparable projects, or financial resources to perform the work of the contract in a timely, competent and acceptable manner. Evidence of such lack of ability to perform may include, but shall not be limited to, evidence of suspension or revocation for cause of a professional license of any director or officer, or any holder of five percent (5%) or more of the bidders stock or equity; failure to submit satisfactory evidence of insurance, surety bond or financial responsibility; the status of bankruptcy petitions; suspension or debarment by state or federal government; or a history of termination of prior contracts for cause.
   B. Criminal conduct in connection with government contracts or business activities. Evidence of such conduct may include a judgment of conviction or information obtained as a result of formal grant of immunity in connection with criminal prosecution of the bidder, and any director or officer, or holder of five percent (5%) or more of the shares or equity of the bidder, or any affiliate of the bidder.
   C. Violations of safety and/or training standards as evidence by a pattern of OSHA violations or the existence of willful OSHA violations.
   D. Willful non-compliance with the prevailing wage and supplements payment requirements of the Labor Law by the bidder or any affiliate of the bidder.
   E. Any other significant Labor Law violation, including, but not limited to, child labor law violations, failure to pay wages, or unemployment insurance tax delinquencies.
   F. Any significant violation of the Worker's Compensation Law, including, but not limited to the failure of a bidder to provide proof of worker's compensation or disability benefits coverage.
   G. Any criminal conduct involving violations of the Environmental Conservation Law or other federal or state environmental statutes or regulations.
   H. Any criminal conviction concerning formation of, or any business association with, an allegedly false or fraudulent Women's or Minority Business

Enterprise (W/MBE), or any denial, de-certification, revocation or forfeiture or W/MBE status by New York State.

I. Any adverse determinations or administrative rulings by the Equal Employment Opportunity Commission and/or the New York State Human Rights Division that the bidder engaged in unlawful or discriminatory conduct.

J. Any other cause of so serious or compelling a nature that it raises questions about the responsibility of a bidder, including, but not limited to submission to the Owner of a false or misleading statement on a sworn statement of bidder qualifications, or in some other form, in connection with a bid for or award of a contract.

K. In addition to the factors specified above, the Owner may also give due consideration to any other factors considered to bear upon bidder responsibility, including but not limited to, any mitigating factors brought to the Owner's attention by the bidder.

2. A sworn "Statement of Bidder Qualifications" form as attached in Section 00 45 13 shall be completed by all bidders. The Owner shall use the information contained in the response to the sworn statement in making a determination of bidder responsibility before awarding the contract. Any untrue representations made on the aforementioned form shall be grounds for immediate termination of the Contract.

6.02 QUALIFICATION OF BIDDERS: A bidder can be judged qualified only for the type of work in which he has demonstrated competence. The Owner will make such investigation it feels necessary to determine the competency of the bidder to perform the work for which he has submitted a bid. The bidder shall furnish promptly all information the Owner requests. The successful bidder will, at minimum, have successfully completed three (3) prior projects of similar size and scope to this Project, and shall respond and include all information set forth in the "Statement of Bidder Qualifications" form attached as Section 00 45 13, which must be signed and submitted with its bid.

6.03 REQUESTED BIDDER INFORMATION: Such information shall consist of the following and shall be included in each bidder's sworn "Statement of Bidder Qualifications" form (see Section 00 45 13), to be submitted with its bid.

1. PROJECTS: A list of a minimum of three completed projects involving work of a similar nature as that for which the bid has been submitted. List the most recent project first, continue with the next most recent and so on. For each project, include the name and address of the owner, the architect or engineer and the date of completion. Information concerning additional projects may be required by the Owner.

2. LOCATION: The address and description of the bidder's place of business; a list of major equipment owned by the bidder.

3. FINANCIAL STATEMENT: A certified or authenticated financial statement dated not more than thirty days prior to its submission. Include liquid assets,

bonding capabilities and the banks or financial institutions associated with the business.

4. NON-BANKRUPTCY: Certification that the bidder is not in bankruptcy and that its assets are not subject to receivership.

7.01 BID SECURITY: Each bid must be accompanied by the certified check or bank draft of the bidder made payable to the "Rochester Joint School Construction Board," or by a bid bond prepared in the form of Bid Bond attached in Section 00 43 00, duly executed by the bidder as principal, and having as surety thereon a surety company authorized to do business in the State of New York approved by the Owner in an amount not less than five percent (5%) of the amount of the bid. Such checks will be returned by certified mail to all except the three lowest formal bidders within seven (7) business days after the formal opening of bids. All remaining checks will be returned by certified mail to the three lowest bidders within seven (7) business days after the Owner and the accepted bidder have executed the Contract or if no Contract has been so executed, within 45 calendar days after the date of the opening of the bids, upon demand of the bidder at any time thereafter so long as he has not been notified of the acceptance of his bid. Bid bonds are retained in the Owner. Upon request, such bonds will be returned.

8.01 LIQUIDATED DAMAGES FOR FAILURE TO ENTER INTO CONTRACT: The successful bidder, upon his/her failure or refusal to execute and deliver the Contract, bond and/or insurance certificates required within 10 calendar days after he/she has received notice of the acceptance of his/her bid, shall forfeit to the Owner, as liquidated damages for such failure or refusal, the security deposited with his/her bid.

9.01 OBLIGATION OF BIDDER: At the time of the opening of bids, each bidder will be presumed to have inspected the Project site(s) and to have read and to be thoroughly familiar with the Contract Documents, including all addenda. The failure or omission of any bidder to receive or examine any form, instrument, or document shall in no way relieve any bidder from any obligation in respect to his bid.

10.01 AWARD OF CONTRACT: This contract will be awarded to that qualified bidder whose base bid and whose prices for the Alternates accepted by the Owner, if any, total the lowest number of dollars.

1. Notice of Award; Within twenty-four (24) hours after award is made by the Owner to the successful bidder, the Owner's Executive Director will mail to such bidder at the address given by him/her on his/her bid, a notice in writing to the effect that the award has been made to him/her, but the mailing or receipt of such notice shall not be a condition precedent to the right of the Owner to take such lawful action as it deems advisable.

11.01 CONDITIONS OF THE CONTRACT: The General Conditions of the Contract hereinafter fully set forth in Section 00 72 16 of the Project Manual and General Requirements set forth in Division 1 of the Project Manual, as well as all other terms and conditions set forth in the Contract Documents, will be rigidly enforced. The

Owner's failure to insist on Contractor's performance with regard to any particular term, condition, or requirement of the Contract shall not function as a waiver or preclude the Owner from enforcing such terms, conditions or requirements going forward.

11.02 LOCAL LABOR: The Project will be funded in part through the issuance of tax-exempt bonds by the County of Monroe Industrial Development Agency ("COMIDA"). Pursuant to the terms of the agreement between COMIDA and the Owner, COMIDA will require that the Project use only "Local Labor," subject to certain permitted exceptions and waivers. The term "Local Labor" is defined as laborers residing in Monroe, Genesee, Livingston, Orleans, Ontario, Seneca, Wayne, Wyoming and Yates counties. Further information on the COMIDA program requirement applicable to the RSMP is available online at http://www.growmonroe.org. For Information only - Non-union bidders are encouraged to contact Dan Kuntz of Laborer's Local 435, at 585-454-5800, to discuss participation in the Local's certified apprenticeship program, PRIOR to submitting a bid. Contractor's participation in a NYS certified apprenticeship program is a requirement of this Project.

11.03 Notwithstanding any other provision of the Contract Documents, Prime Contractor shall perform at least twenty-five percent (25%) of the field work by its own employees. For the purpose of the preceding sentence, any part of the work performed by supervisory personnel (persons above level of foreman) or by the office personnel shall not be considered part of the work performed by the Contractor's employees. Such items as bonds, certificates, shop drawings and similar items do not count towards the twenty-five percent (25%) requirements.

12.01 TAX EXEMPTION: Bidders shall not include in their bid the sales and compensating use taxes of the State of New York or of any City or County in the State of New York for any materials which are to be incorporated into the structures or landscape. The New York State Department of Taxation and Finance does not issue tax exemption numbers to government entities. Completion of any type of exempt organization certification form is, therefore, not required. An official Purchase Order issued to the vendor by a government entity is the only evidence required by the state to substantiate an exempt sale to a government purchaser.

12.02 WAGE RATES: The attention of bidders is called to the wage rates applicable to work performed under this Contract, as set forth in the Wage Rate Schedules referenced in Section 00 73 46. The Contractor and every subcontractor shall post in prominent and accessible places on the site of the work legible statements of all wage rates as specified in the Contract to be paid for the various classes of laborers, workmen and mechanics employed on the work.

12.03 STATE LAWS AND REGULATIONS: The bidder's attention is directed to the following instructions and information regarding construction operations, contracts and references to the provisions of law applicable in New York State.

1. COMPLIANCE: The Contractor and each and every subcontractor performing work at the site of the Project to which this Contract relates shall comply with

the applicable provisions of the Labor Law, as amended, of the State of New York. Section 222-A of the Labor Law regarding elimination of dust hazard must be observed.

2. HOURS OF WORK: First Shift will be from 7:00 a.m. to 3:30 p.m., and Second Shift will be from 2:00 p.m. to 10:30 p.m.

3. NON-DISCRIMINATION: Contractor must abide by all state, federal and local laws having jurisdiction over the work of this Contract. The Contract may be canceled or terminated by the Owner for cause upon a violation of the non-discrimination policy or for violation of any applicable laws.

4. EFFECT OF FAILURE TO TESTIFY BEFORE GRAND JURY: Pursuant to the requirements of Section 103-A of the General Municipal Law of the State of New York, the following clause is inserted herein and is made a part of the Contract:

   A. Upon the refusal of a person, when called before a grand jury to testify concerning any transaction or contract had with the state, any political subdivision thereof, or a public authority to sign a waiver of immunity against subsequent criminal prosecution or to answer any relevant question concerning such transaction or contract. Such person, and any firm, partnership, or corporation of which he is a member, partner, director of officer shall be disqualified from thereafter selling to, or submitting bids to, or receiving awards from, or entering into any contracts with any municipal corporation or any public department, agency, or official thereof, for goods, work, or services for a period of five years after such refusal; and any and all contracts made with any municipal corporation or any public department, agency or official thereof, since July 1, 1959, by such person, and by any form, partnership, or corporation of which he is a member, partner, director, or officer, may be cancelled or terminated by the municipal corporation without incurring any penalty or damages on account of such cancellation or termination; but any monies owing by the municipal corporation for goods delivered or work done prior to the cancellation or termination shall be paid.

12.04 WORKFORCE DIVERSITY AND EQUAL EMPLOYMENT OPPORTUNITIES: The Owner recognizes the need to take action to ensure that minority and women-owned business enterprises (W/MBE's), disadvantaged business enterprises (DBE's), small business enterprises (SBE's) and minority and women employees and principals are given the opportunity to participate in the performance of contracts entered into with the Owner. This opportunity for full participation in our free enterprise system by persons traditionally, socially and economically disadvantaged is essential to obtain social and economic equality. Accordingly, the Owner fosters and promotes the participation of such individuals and business firms in contracts with the Owner. Therefore, Contractor and all subcontractors and suppliers must fully comply with the requirements set forth in Section 00 43 31 ("MWBE/DBE/SBE Utilization and

Workforce Diversity"), and use good faith efforts to attain the diversity and workforce utilization goals stated therein. Owner reserves the right to revise, adjust and/or modify the stated goals for contracts awarded at a later date as part of the RSMP. Contractor compliance with the requirements of Section 00 43 31 and related obligations will be monitored by Owner's Independent Compliance Officer (ICO).

12.05 APPRENTICESHIP REQUIREMENTS – The Phase 2 legislation also requires that Contractors and Subcontractors with construction contract $1M or more "shall participate in NYS approved apprentice training programs in the trades it employs: a) approved by not less than 3 years; b) graduated at least 1 apprentice in last 3 years; c) at least 1 apprentice currently enrolled in such an apprentice program; d) demonstrate significant efforts to attract and retain minority apprentices.

13.01 PERFORMANCE AND LABOR & MATERIAL PAYMENT BONDS:

1. SECURITY FOR FAITHFUL PERFORMANCE: Simultaneously with his delivery of the executed Contract, the successful bidder must deliver to the Owner an executed bond in the amount of one hundred percent (100%) of the accepted bid as security for the faithful performance of the Contract, prepared in the form of Performance Bond attached hereto in Section 00 61 13 and having as surety thereof such surety company or companies as are acceptable on bonds approved by the Owner, and as are authorized to transact business in New York State.

2. SECURITY FOR LABOR & MATERIAL PAYMENT: Simultaneously with his delivery of the executed contract**,** the successful bidder must deliver to the Owner an executed bond in the amount of one hundred percent (100%) of the accepted bid as security for the payment of all persons performing labor or furnishing materials in connection therewith, prepared in the form of Payment Bond attached hereto in Section 00 61 13 and having as surety thereof such surety company or companies as are acceptable on bonds approved by the Owner, and as are authorized to transact business in this State.

3. POWER OF ATTORNEY: Attorneys in fact who sign Bid Bonds or Performance Bonds must file with each bond a certified copy of their Power of Attorney to sign said bonds.

13.02 COMMENCEMENT OF WORK: No Contractor or Subcontractor shall commence work under this Contract until the Owner has approved the Contractor's payment bond and performance bond offered as security for faithful performance and payment for labor and material on the Project in accordance with paragraph 13.01 hereinabove.

14.01 CONDITIONS OF WORK: Each bidder must inform himself fully of the conditions relating to the construction and labor under which the Work is now being or will be performed. Failure to do so will not relieve a successful bidder of his obligation to furnish all material and labor necessary to complete the contemplated Work for the

consideration set forth in his bid. In so far as possible, the Contractor in the carrying out of its Work must employ such methods or means as will not cause any interruption of, or interference with, the work of any other contractor. Contractor should undertake to perform the Contract in the shortest possible time consistent with good and workmanlike construction.

15.01 EQUIVALENTS: Where, in these specifications, certain kinds, types, brands, or manufacturers of materials are named, they shall be regarded as the required standard of quality. If two or more are named, these are presumed to be qualitatively equal, and the Contractor may select any one of the named items. If the bidder desires to use any kinds, types, brands, or manufacturers of materials other than those named in the specifications, it shall indicate in writing, when requested, the kind, type, brand or manufacturer presumed as an equivalent in its bid.

1. If proposing an equivalent product or material, the bidder must submit a Request for Equivalent Review Form (Section 00 63 19) when requested. The Architect will review the product or materials proposed as “equivalent” by the bidder and make a determination as to whether such product or materials are equivalent to those set forth in the Contract Documents. If not found to be equivalent by the Architect and if the requirement for equivalency is not waived by the Owner, the bidder must indicate in writing prior to the award of contract that it will provide the specified product or materials without any increase in compensation, or the Owner may reject its bid as non-responsive.

2. The burden of proof of the equivalency of the proposed equivalent products or material is upon the bidder. The Architect's decision to approve or disprove a proposed equivalent shall be final.

END OF SECTION 00 21 13

SECTION 004116 - BID FORM

1.1 To the Rochester Joint Schools Construction Board ("RJSCB" or "Owner"):

The undersigned proposes to do all the work and furnish all material necessary for RCSD Edison Technical & Occupational Education Center **– Phase 2B of the RSMP** (herein, "Project"). (Use only one bid form per contract being bid):

- **TV Studio Contract #700**

1.1.1 In accordance with drawings and specifications therefore and addenda comprising the Contract Documents, for the lump sum of:

_____Dollars
Amount in Writing

(_____), herein referred to as the "Base Bid."
Figures

1.2 ALLOWANCES

Refer to section 00 43 21 "Allowances" for description of Allowances, where used. **Allowances are to be included in base bid amount and are to be used for items not identified in the contract documents. Unit Price Costs will be used to add or delete scope from allowances when directed by the owner or construction manager.**

The total Base Bid, once accepted and awarded by Owner, shall be referred to as the "Contract Sum." The Contract Sum may be modified in accordance with the General Conditions (Section 007216).

1.4 UNIT PRICES

Refer to section 00 43 22 "Unit Prices", for description of Unit Prices. For Owner's information and for changing quantities of work items from those indicated by the Contract Drawings, upon written instruction from the Architect or Construction Manager, the Contractor shall submit unit prices (which must include all accessories, hangers, labor, materials, fire stopping, terminations, etc.). Unit prices include mark up, profit and overhead. Changes to the work shall be in accordance with the General Conditions (00 72 16).

TV Studio Contract #700

1. N/A

1.5 PROJECT PHASING AND MILESTONES

If awarded the Contract, the undersigned bidder agrees to complete the entire work on or before the milestones and dates as denoted in Section 00 43 83 "MILESTONE SCHEDULE & CRITICAL SUBMITTALS."

1.6 ADDENDA

Receipt of the following addenda to the Contract Documents are acknowledged:

Addendum No. _____ Date_____

Addendum No. _____ Date_____

Addendum No. _____ Date_____

Addendum No. _____ Date_____

1.7 Give the name of each person, firm or corporation interested in the above bid. If the undersigned bidder is:

1. An individual, give full name _____.
2. A partnership under an assumed name, give name of each principal: _____.
3. A corporation, give full legal name_____ _____.
4. Give the name of each person, firm or corporation other than the bidder having an interest in bids of the Contract proposed to be taken _____.

2.1 CERTIFICATION OF NON-COLLUSION IN BIDDING

1. By submission of this bid, each bidder and each person signing on behalf of any bidder certifies, and in the case of a joint bid, each party thereto certifies as to its own organization, under penalty of perjury that to the best knowledge and belief:
    1. The prices of this bid have been arrived at independently without collusion, consultation, communication, or agreement, for the purpose of restricting competition, as to any matter relating to such prices with any other bidder or with any competitor.

2. Unless otherwise required by law, the prices which have been quoted in this bid have not been knowingly disclosed by the bidder and will not knowingly be disclosed by the bidder prior to opening, directly or indirectly, to any other bidder or to any competitor; and

3. No attempt has been made or will be made by the bidder to induce any other person, partnership or corporation to submit or not to submit a bid for the purpose of restricting competition.

_____

BY_____

FULL LEGAL NAME OF FIRM OR CORPORATION

AUTHORIZED SIGNATURE

_____

_____

ADDRESS

TYPED NAME OF AUTHORIZED SIGNATURE/TITLE

_____

_____

CITY, STATE, ZIP CODE

TELEPHONE AND FACSIMILE NUMBERS

_____

_____

DATE

E-MAIL ADDRESS

NOTICE TO BIDDERS

3.1 All bid forms shall be signed by the name of the person, firm or corporation submitting the bid, indicating by long-hand signature the person duly authorized to sign in behalf of such person, firm, or corporation and shall contain the business address of the bidder.

3.2 Bidders are required to submit unit prices only if required by the specifications.

3.3 Owner reserves the right to award contract to include any of the Alternates. Accordingly, bidders are required to bid on all Alternates called for in the specifications. However, Owner reserves the right to waive this requirement.

3.4 No bids on different kinds of work may be combined, grouped or added together except to make the lump sum total of work called for under any one contract.

3.5 All items on the bid form shall be filled in as called for, and the completed bid form shall be without interlineation, alteration or erasure; and shall not contain a bid or bids, or form of bid or bids, other than called for.

END OF SECTION 004116

SECTION 004300 - SUPPLEMENTS TO BID FORM

The following attachments to these Supplements to Bid Form must be completed and submitted together with the Bid Form:

1. Form of Bid Bonds

2. Acknowledgement(s) of Principal and Surety

3. Additional Bid Forms:

   Appendix A: Offerer's Affirmation of Understanding of and Agreement Pursuant to State Finance Law §139-j(6)(b)

   Appendix B: Offerer Certification of Compliance with State Finance law §139-k(5)

   Appendix C: Offerer Disclosure of Prior Non-Responsibility Determination

   Appendix D: Certification of Compliance with Iran Divestment Act

The requirements of this Section shall not limit or abrogate the Contractor's responsibility to provide all other required forms and information as specified in the Contract Documents at the time of bidding.

FORM OF BID BONDS

KNOWN ALL MEN BY THESE PRESENTS, that we, the undersigned, _____(*) as Principal; and _____(**) As Surety, are hereby held and firmly bound unto _____ in the penal sum of _____ for the payment of which, well and truly to be made, we hereby jointly and severally bind ourselves, our heirs, executors, administrators, successors and assigns.

Signed, this ___ day of _____, 2016

The condition of the above obligation is such that whereas the Principal has submitted to the Rochester Joint Schools Construction Board "RJSCB" of the Rochester City School District and the City of Rochester, New York, a certain Bid, attached hereto and hereby made a party hereof, to enter into a contract in writing, for the

_____

_____

NOW THEREFORE,

(a) If said Bid shall be rejected, or, in the alternate

(b) If said Bid shall be accepted and the Principal shall execute and deliver a contract in the Form of Contract attached hereto (properly completed in accordance with said Bid) and shall furnish a bond for his faithful performance of said Contract, and for the payment of all persons performing labor or furnishing materials in connection therewith, and shall in all other respects perform the agreement created by the acceptance of said Bid,

Then, this obligation shall be void, otherwise the same shall remain in force and effect; it being expressly understood and agreed that the liability of the Surety for any and all claims hereunder shall, in no event, exceed the penal amount of this obligation as herein stated.

* Insert Bidder's Name
** Insert Name of Surety

The Surety, for value received, hereby stipulates and agrees that the obligations of said Surety and its bond shall be in no way impaired or affected by any extension of the time within which the Principal may accept such Bid; and said Surety does hereby waive notice of any such extension.

IN WITNESS WHEREOF, the Principal and the Surety have hereunto set their hands and seals, and such of them as are corporations have caused their corporate seals to be hereto affixed and these presents to be signed by their proper officers, the day and year first set forth above.

Typed Name of Principal

By: _____
Authorized Signature/Principal

Typed Name of Authorized Signatory

Typed Name of Surety

By: _____
Signature of Attorney-In-Fact

Typed Name of Surety

ACKNOWLEDGMENT OF PRINCIPAL, IF A CORPORATION

State of _____)

County of _____) ss.:

City of _____)

On this day ____ day of _____, 20___ before me personally came and appeared _____ to me known, who being by me duly sworn, did depose and say that he resides at _____; that he is the _____ of _____, the corporation described in and which executed the foregoing instrument; that he knows the seal of said corporation; that one of the seals affixed to said instrument is such seal; that it was so affixed by order of the directors of said corporation, and that he signed his name thereto by like order.

(SEAL)

_____
Notary Public

ACKNOWLEDGMENT OF PRINCIPAL, IF A FIRM

State of _____)

County of _____) ss.:

City of _____)

On this day ____ day of _____, 20___ before me personally came and appeared _____ to me known and known to me to be one of the members of the firm of _____ described in and who executed the foregoing instrument and he acknowledged to me that he executed the same as and for the act and deed of said firm.

(SEAL)

_____
Notary Public

ACKNOWLEDGMENT OF PRINCIPAL, IF AN INDIVIDUAL

State of _____)

County of _____) ss.:

City of _____)

On this day ____ day of _____, 20___ before me personally came and appeared _____ to me known and known to me to be the person described in and who executed the foregoing instrument and acknowledged that he executed the same.

(SEAL)

_____
Notary Public

SURETY ACKNOWLEDGMENT

State of _____)

County of _____) ss.:

On this day _____ day of _____, 20___, before me personally came _____ to me known, who, being by me duly sworn, did depose and say that he is an attorney-in-fact of _____ the corporation described in and which executed the within instrument; that he knows the corporate seal of said corporation; that the seal affixed to the within instrument is such corporate seal, and that he signed the said instrument and affixed the said seal as Attorney-in-Fact by authority of the Board of Directors of said corporation and by authority of this office under the Standing Resolutions thereof.

(SEAL)

_____
Notary Public

ADDITIONAL BID FORMS

APPENDIX A (FORM A)

Offerer's Affirmation of Understanding of and
Agreement Pursuant to State Finance Law §139-j(6)(b)

Background:

State Finance Law §139-j(6)(b) provides that:

> Every Governmental Entity (including, voluntarily, the Rochester Joint Schools Construction Board, the "Board") shall seek written affirmations from all Offerers as to the Offerer's understanding of and agreement to comply with the Board's procedures relating to permissible contracts during a Governmental Procurement pursuant to State Finance Law §139-j(3).

Instructions:

> In connection with all proposals, bids, RFP's, etc., the Board must obtain the following affirmation of understanding and agreement to comply with procedures on procurement lobbying restrictions regarding permissible contacts in the Restricted Period for a Procurement Contract in accordance with State Finance Law §139-j and §139-k:
>
> *Offerer affirms that it understands and agrees to comply with the Rochester Joint Schools Construction Board's Procurement Disclosure Policy, which Policy conforms to the requirements of State Finance Law §139-j (3) and §139-j(6)(b).*

BY

*LEGAL NAME OF FIRM OR CORPORATION	AUTHORIZED SIGNATURE
ADDRESS	TYPED NAME OF AUTHORIZED SIGNATURE/TITLE
CITY, STATE, ZIP CODE	TELEPHONE/DATE

*Indicate the complete legal name of your firm or corporation. Do not abbreviate. If a corporation, use name as it appears on corporate seal.

APPENDIX B (Form B)

Offerer Certification of Compliance with
State Finance law §139-k(5)

By signing below, I certify that all information provided to the Rochester Joint Schools Construction Board with respect to State Finance Law §139-k is complete, true and accurate.

BY

*LEGAL NAME OF FIRM OR CORPORATION	AUTHORIZED SIGNATURE
ADDRESS	TYPED NAME OF AUTHORIZED SIGNATURE/TITLE
CITY, STATE, ZIP CODE	TELEPHONE/DATE

*Indicate the complete legal name of your firm or corporation. Do not abbreviate. If a corporation, use name as it appears on corporate seal.

APPENDIX C (Form C)

Offerer Disclosure of
Prior Non-Responsibility Determination

Name of Individual or Entity Seeking to Enter into the Procurement Contract:

_____

Address: _____

Name and Title of Person Submitting this Form:_

Contract Procurement Number:_

Date: _____

1. Has any Government Entity made a finding of non-responsibility regarding the individual or entity seeking to enter into the Procurement Contract in the previous four years?
(Please circle):

No Yes

If yes, please answer the next questions:

2. Was the basis for the finding of non-responsibility due to a violation of State Finance Law §139-j? (Please circle):

No Yes

3. Was the basis for the finding of non-responsibility due to the intentional provision of false or incomplete information to a Government Entity? (Please circle):

No Yes

4. If you answered yes to any of the above questions, please provide details regarding the finding of non-responsibility below.

Governmental Entity: _____

Date of Finding of Non-Responsibility:_____

Basis of Finding of Non-Responsibility:_____

_____
_____
_____
_____
_____

(Add additional pages as necessary)

5. Has any Governmental Entity or other governmental agency terminated or withheld a Procurement Contract with the above-named individual or entity due to the intentional provision of false or incomplete information? (Please circle):

No Yes

6. If yes, please provide details below:

Governmental Entity: _____

Date of Termination or Withholding of Contract: _

Basis of Termination or Withholding: ___

_____
_____
_____
_____
_____
_____
_____

(Add additional pages as necessary)

Offerer certifies that all information provided to the Rochester Joint Schools Construction Board with respect to State Finance Law §139-k is complete, true and accurate.

By: _____ Date: _____

Signature _____

APPENDIX D (Form D)

PROPOSER'S CERTIFICATION OF COMPLIANCE WITH IRAN DIVESTMENT ACT

Pursuant to General Municipal Law §103-g, which generally prohibits the City and the School District from entering into contracts with persons engaged in investment activities in the energy sector of Iran, the proposer submits the following certification to Rochester Joint Schools Construction Board:

[Please Check One]

PROPOSER'S CERTIFICATION

☐ By submission of this proposal, each proposer and each person signing on behalf of any proposer certifies, and in the case of a joint bid each party thereto certifies as to its own organization, under penalty of perjury, that to the best of its knowledge and belief, that each proposer is not on the list created pursuant to paragraph (b) of subdivision 3 of Section 165-a of the State Finance Law.

☐ I am unable to certify that my name and the name of the proposer does not appear on the list created pursuant to paragraph (b) of subdivision 3 of Section 165-a of the State Finance Law. I have attached a signed statement setting forth in detail why I cannot so certify.

Dated: _____, 20___

_____
SIGNATURE

_____
PRINTED NAME

_____
TITLE

_____
FULL BUSINESS NAME

Sworn to before me this
_____ day of _____, 20____
Notary Public

SECTION 00 43 21 - ALLOWANCES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

Drawings and general provisions of the Contract, including General Conditions of the Contract for Construction, and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

This Section includes administrative requirements, procedural requirements, and information governing allowances.

a. Certain items are specified in the Contract Documents by allowances. In some cases, these allowances include installation. Allowances have been established in lieu of additional requirements and to defer selection of actual materials and equipment to a later date when additional information is available for evaluation. If necessary, additional requirements will be issued by Allowance Authorizations and/or Change Order.

b. **ALLOWANCES ARE TO BE INCLUDED IN THE APPROPRIATE CONTRACTOR'S BASE BID AND ONLY USED AS DIRECTED BY THE CONSTRUCTION MANAGER OR OWNER. UNIT PRICE COSTS WILL BE USED TO ADD OR DELETE SCOPE FROM ALLOWANCES.** (Reference 00 43 22 Unit Prices for additional information)

Types of allowances include the following:

a. Lump Sum allowances
b. Unit-cost allowances
c. Quantity allowances

1.3 SELECTION AND PURCHASE

Coordinate first paragraph below with Division 01 Section "Submittal Procedures." Indicate critical dates on both Contractor's Construction Schedule and Submittals Schedule.

At the earliest practical date after award of the Contract, advise the Construction Manager of the date when final selection and purchase of each product or system described by an allowance must be completed to avoid delaying the Work.

At Construction Manager's request, obtain proposals for each allowance for use in making final selections. Include recommendations that are relevant to performing the Work.

Purchase products and systems selected by the Owner's Representatives from the designated supplier.

Allowances do not include mark ups, overhead or profit.

1.4 SUBMITTALS

Submit proposals for purchase of products or systems included in allowances, in the form specified for Change Orders.

Submit invoices or delivery slips to show actual quantities of materials delivered to the site for use in fulfillment of each allowance.

Coordinate and process submittals for allowance items in same manner as for other portions of the Work.

1.5 COORDINATION

1. Coordinate allowance items with other portions of the Work. Furnish templates as required to coordinate installation.

1.6 LUMP SUM OR QUANTITY ALLOWANCES

Allowance shall include cost to Contractor of specific products and materials under allowance and shall include taxes, freight, and delivery to Project site.

a. All allowance material, equipment, and trucking costs will be verified with receipts and Invoices. Labor will be tracked with daily signed time sheets. Time sheets to be verified with Prime contractor foreman and Construction Manager Superintendent.
b. If a unit cost was submitted for an item listed below, the allowance will first be used. The cost of the work will be based on the unit price and the term of measurement associated with the unit price. Once the allowance is exhausted, the CM will direct the contractor to continue, if necessary, using the unit cost.
c. Request for payment draws on allowance line items must include: copies of purchase orders, sub contracts, invoices, etc. None of which will have added overhead and profit.
d. Unused allowance monies will be credited back to the owner via a deduct change order issued by the Owner.

1.7 UNUSED MATERIALS

Return unused materials purchased under an allowance to manufacturer or supplier for credit to Owner, after installation has been completed and accepted.

a. If requested by Construction Manager, prepare unused material for storage by the Owner when it is not economically practical to return the material for credit. Otherwise, disposal of unused material is Contractor's responsibility.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 EXAMINATION

Examine products covered by an allowance promptly on delivery for damage or defects. Return damaged or defective products to manufacturer for replacement.

3.2 PREPARATION

Coordinate materials and their installation for each allowance with related materials and installations to ensure that each allowance item is completely integrated and interfaced with related work.

3.3 SCHEDULE OF ALLOWANCES –

3.3.1 TV STUDIO CONTRACT #700

a. TV Studio Contract #700 shall include an allowance in their Base Bid of $25,000 for unforeseen conditions, and general installation issues.

END OF SECTION 00 43 21

SECTION 00 43 22 - UNIT PRICES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General Conditions of the Contract for Construction and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for unit prices.

1.3 DEFINITIONS

A. Unit price is an amount proposed by bidders, stated on the Bid Form, as a price per unit of measurement for materials or services added to or deducted from the Contract Sum by appropriate modification, if estimated quantities of Work required by the Contract Documents are increased or decreased.

B. Mobilization shall include all activities and associated costs for transportation of contractor's personnel, equipment, and operating supplies to the site; establishment of offices, buildings, and other necessary general facilities for the contractor's operations at the site; premiums paid for performance and payment bonds including coinsurance and reinsurance agreements as applicable; and other items specified in this specification. Mobilization does not include the start of work at a specific area on the project site while the contractor is present at other areas immediately prior to, during or following the work.

1.4 PROCEDURES

A. Unit prices include all necessary supervision, labor, materials, cost for delivery, installation, insurance, overhead and profit.

B. Measurement and Payment: Refer to individual Specification Sections for work that requires establishment of unit prices. Methods of measurement and payment for unit prices are specified in those Sections.

C. Owner reserves the right to reject Contractor's measurement of work-in-place that involves use of established unit prices and to have this work measured by the Owner's Representative.

D. List of Unit Prices: A list of unit prices is included in the Bid Form Section and paragraph 3.1 below. Specification Sections referenced in the schedule contain requirements for materials described under each unit price.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 00 43 22

SECTION 00 43 31 - MWBE/DBE/SBE UTILIZATION AND WORKFORCE DIVERSITY

I. POLICY STATEMENT

.1 The Rochester Joint Schools Construction Board ("RJSCB") recognizes that the opportunity for the participation in a free enterprise system by persons or groups traditionally, socially, and economically disadvantaged is essential to obtain social and economic equality. As such, the RJSCB acknowledges the need to promote participation by minority-owned and women-owned business enterprises ("M/WBE"), small business enterprises ("SBE") and disadvantaged business enterprises ("DBE") (collectively, "Eligible Business Enterprises" or "EBE") in contracts awarded as part of the Rochester Schools Modernization Program ("RSMP"). The RJSCB further acknowledges the diverse community of the City of Rochester, as reflected in its businesses and workforce labor. The RJSCB strives to support business development and workforce diversification opportunities that the RSMP may create, including the opportunity to encourage participation of these diverse individuals and groups in local projects. Accordingly, through the RSMP Diversity Program, the RJSCB fosters and promotes the participation of EBE's and women and minority laborers in all RSMP contracts.

.2 With respect to RSMP Construction Projects less than One Hundred Thousand dollars ($100,000.00), all contractors are strongly encouraged to meet the designated EBE and women and minority workforce utilization Goals set forth herein. Bidders on all RSMP Contracts to exceed $100,000.00 must adhere to the Goals and other requirements of this Section and submit Forms DP-1, DP-2, DP-3, and DP-3A, the Promise of Non-Discrimination, EBE Assurance Statement, "Good Faith Efforts Checklist," and such other forms as are attached hereto in Section 00 43 31-A, within the time period(s) set forth herein

.3 Contractors are also referred to the Phase II Diversity Plan for reference, a copy of which may be obtained at http://www.rcsdk12.org/rsmp. The Phase II Diversity Plan (the "Diversity Plan") is hereby incorporated by reference and Contractors must comply with all terms and requirements of the Diversity Plan, except as otherwise set forth in this Section 00 43 31.

II. DEFINITIONS: The below terms and phrases employed with respect to the RSMP, as used herein, shall have the meanings set forth in the Diversity Plan at Article 1.03 "Defintiions."

III. WORKFORCE DIVERSITY AND BUSINESS DEVELOPMENT GOALS

.1 The RJSCB is committed to provide women and minorities with equal opportunities to perform work on RSMP projects. All firms or other businesses providing goods or services under a Contract meeting the dollar amount threshold set forth in this Project Manual shall comply with the workforce diversity Goals set forth herein.

Percentage Goals for Workforce Participation: In order to achieve the workforce diversification goals of the Program, each firm or other business providing goods or services shall use its best efforts to ensure that the workforce it engages to perform work for the Program shall demonstrate, in terms of the percentage of actual hours worked under the Contract, and/or contract as amended, participation rates as follows:

- Minority Workforce: 22% of project personnel hours including skilled trades people, trainees, journeymen, apprentices, and supervisory staff.

- Female Workforce: 8% of project personnel hours including skilled trades people, trainees, journeymen, apprentices, and supervisory staff.

Each Contractor, supplier, professional service provider, or other business providing goods and services shall strive to maximize the use of Rochester-based labor, contractors, suppliers, and service providers in performing the Contract.

.2 **Contractors performing labor and services for RSMP projects may not count female or minority home office staff toward the Goals stated above**, and may only count participation of field staff. However, those performing professional services on RSMP projects may count minority and female office staff who perform the relevant professional services (as opposed to administrative or support services), whether performed in the field or in their home office, toward the workforce diversity Goals stated above.

.3 The RJSCB is also committed to the meaningful participation of certified EBE's on RSMP contracts. In order to meet this commitment, all Contractors or other businesses providing goods or services under a Contract meeting the dollar amount threshold set forth in the Diversity Plan shall comply with the business diversity Goals set forth herein.

Percentage Goals for EBE Participation (applicable to the total value of the project):

In order to achieve Diversity Program Goals for EBE business development, each Contractor, supplier, professional service firm or other business providing goods or services shall strive to and use Good Faith Efforts to engage minority-owned, woman-owned, disadvantaged business enterprises, and small business enterprises as follows:

a. MBE: 17% of each Contract or purchase order
b. WBE: 10% of each Contract or purchase order
c. DBE: 3% of each Contract or purchase order
d. SBE: 3% of each Contract or purchase order

.4 Only EBE firms that demonstrate proper Certification may be used to fulfill the above workforce diversity and business development Goals.

.5 COUNTING EBE PARTICIPATION TOWARD GOALS: All bidders, including EBE bidders, shall use Good Faith Efforts to achieve business development Goals through second tier participation (subcontractor work). Methods for counting EBE participation toward Goals of this Contract are set forth in the Diversity Plan at Article 2.02(e)

IV. FORMS AND PROCEDURES

.1 To count toward the RJSCB's Goals, an EBE must be Certified at the time a bid is submitted. The judgment as to whether or not an EBE has the qualifications and experience for the type of work required by the Contract rests with the Contractor, even as to any EBE's as may have been listed by Owner or its ICO as pre-approved or Certified. In addition to general Certification, all SBE's must complete and submit the Small Business Certification Form included in the Attachment to this Section.

.2 As an aid to bidders, the ICO may, as a courtesy, direct bidders to various websites, certifying entities and/or listings identifying Certified EBE firms working in relevant business categories. For any EBE firm proposed by the Bidder or Contractor, whether or not such firm is included in any courtesy information provided by the ICO, Bidder or Contractor must submit acceptable proof of the certification of each EBE firm for the ICO's review to determine whether to accept a proposed EBE Utilization Plan (Form DP-1). Certification does not imply the EBE firm's ability to perform the work required of the Contract, which shall be Contractor's obligation to determine.

.3 **Failure to adequately complete the forms required to be submitted with the bid may be grounds for the RJSCB upon recommendation of the ICO to reject a bid or disqualify a bidder.** The information required by this Section is to be provided on the forms attached as Section 00 43 31-A.

.4 The name, mailing address and title of the bidder's EBE liaison officer should be included along with the forms referenced above.

.5 Any agreement between a bidder/contractor and an EBE in which the EBE promises not to provide subcontracting quotations to another bidder/contractor is prohibited.

.6 The names, scope of work and dollar amounts submitted on the above-referenced forms constitute the bidder's proposed plan for fulfillment of the Goals.

.7 Neither Conduit nor Broker participation, as those terms are defined in the Diversity Plan, shall be counted toward EBE firm participation on this Contract.

8. The RJSCB, ICO or other RJSCB designee shall notify the bidder if one or more of the proposed EBE's do not qualify for the Project. The bidder will be requested, within five (5) days of notification, to provide new Certified EBE's or an alternate

plan for fulfilling the Goals. This does not imply that the bidder cannot utilize the proposed EBE, only that doing so will not count toward fulfilling the Goals.

9. It is understood that a Contractor/Bidder may make changes to its DP-1 Form for legitimate and necessary business reasons prior to award of contract. Any such changes must be submitted to the ICO for review and approval, if appropriate. The DP-1 change process does not relieve Contractor/Bidder from compliance with all other requirements of this Section, including contacting EBE firms to seek work proposals prior to submission of bid.

10. The ICO may request that the Bidder or Contractor supply additional information within a reasonable timeframe to perform a review and assess whether Goals have been adequately stated, met and/or maintained throughout Contract performance.

11. Once a Bidder submits a satisfactory DP-1 form (EBE Utilization Plan), DP-2 form (Letter of Intent to Perform), a signed Promise of Non-Discrimination, and signed EBE Assurance Statement, upon approval of the ICO, these documents will be incorporated into, and made a part of, the Contract. Goals will be considered provisionally met at the award stage, pending Contract completion, including satisfactory submission of Employment Utilization and EBE Utilization reports (Forms DP-3 and DP-3a) to verify that Goals have been adequately met and maintained throughout Contract performance.

    a. If the bid includes Allowances or Alternates, bidder may craft its EBE Utilization Plan (DP-1) to meet the Goals using only the “Base Bid” amount, based on the assumption that work Allowance or Alternate work included in the bid may not be performed as part of the Contract, depending on Project needs. However, should Owner select Alternates or direct contractor to perform work in an Allowance category during the Project, contractor must revise and re-submit its Utilization Plan (DP-1), as well as DP-3 and DP-3a forms, and make Good Faith Efforts to meet and maintain all Goals, in accordance with Parts VIII and IX of this Section.

V. GOOD FAITH EFFORT: RJSCB expects extreme diligence on the part of each Bidder and Contractor to meet and maintain Goals. Bidders must submit with their bids evidence of Good Faith Efforts on the “Good Faith Efforts Checklist” Form, attached in Section 00 43 34A. Good Faith Efforts are defined in the Diversity Plan and outlined therein at Article 2.02(c).

VI. CONTRACTUAL OBLIGATIONS:

.1 The ICO shall review the plan submitted by an apparent low bidder to determine if the bidder is compliant with the Goals set forth in this Section, and will strive to make such determination within 48 hours of notice to the apparent low bidder. In the event the ICO determines a bidder has not met or used Good Faith Efforts to meet the Goals, the ICO may reject the proposed EBE Utilization Plan, and the

contract may be awarded to the next lowest responsible bidder who complies with the requirements of this Section.

.2 Appeals of plan acceptance determinations must be made in writing and state the entire basis of the appeal. Appeals are to be delivered to the ICO within three (3) days of notification of decision, and should include sufficient supporting documentation to allow the ICO to perform a meaningful review.

.3 **The successful bidder's final EBE Utilization Plan (Form DP-1) as approved by the ICO shall be incorporated into the Contract upon the award thereof.** This will be referred to as the approved EBE Utilization Plan (DP-1), and will be operative unless and until revised, as set forth herein. If the DP-1 is revised at any time after bid submission, including during Contract performance, Contractor must provide a written rationale to the ICO for the revision, and obtain ICO approval thereof. The subcontractors listed on approved EBE Utilization Plan (DP-1), the dollar amounts shown, and any other relevant documentation will become part of the Contract. Failure to comply with an approved EBE Utilization Plan shall be a material breach of Contractor's obligations under this Section.

.4 **BUSINESS OPPORTUNITY PROGRAM (BOP)**:
The RJSCB expects each Prime Contractor to participate in the RSMP's Business Opportunity Program (BOP).

The (BOP) is a partnership designed to assist Greater Rochester EBEs through outreach, training, education and growth potential in the City of Rochester. The BOP is also intended to increase the number of certified M/W/S/DBEs capable of bidding successfully on capacity-appropriate construction contracts, and improve the small contractors' management, organization and skills by teaching them new strategic tools to speed the growth of their businesses.

The BOP will sponsor and facilitate a series of training presentations to expand the opportunities and assist M/W/D/SBE subcontractors beyond what was formerly available to them. Additionally, a revolving loan program was developed through the BOP specifically for assisting EBE subcontractors with Phase 2 contract awards. Bidders interested in the program can fill out a pre-qualification application for submission to the Program Manager, which will admister the loan program. If approved, the loan funds available to EBEs can be used to cover payroll, rent equipment or purchase supplies when accompanied by an invoice. The RJSCB will not administer the loan program or approve loans. Additional information will be provided upon request of interested bidders.

VII. PRIOR TO THE COMMENCEMENT OF WORK

.1 Prior to the commencement of any work by an EBE, and no later than ten (10) days after notice of Contract award, the contractor must submit the DP-2 Form "Letter of Intent to Perform." Contractor shall exercise best efforts to execute and submit copies of all EBE subcontracts to the ICO no later than 90 days after the notice of

contract award. This will provide evidence that a written contract is in place, but in no way implies the RJSCB's approval or disapproval of the subcontracts. The RJSCB reserves the right to request a copy of an executed EBE subcontract prior to 90 days if it so chooses or at any time during the Project. If the Contractor fails to provide the executed EBE subcontracts within the 90 day period or upon request as indicated above, the ICO can proceed to request an explanation from the Contractor and request a meeting with the Contractor to review the status and reasons for not submitting the subcontracts. Non-compliance by the Contractor with this section may give the RJSCB cause to withhold payments to the Contractor.

.2 If requested by the RJSCB or ICO, the contractor must attach a construction schedule to the EBE subcontract describing the anticipated time periods that the EBE subcontractor will be utilized on the Project. A copy of the construction schedule, with modifications, should accompany each Form DP-3A.

.3 Failure to submit a written subcontract agreement with a construction schedule upon request may give the RJSCB cause to withhold payments. Any work performed by an EBE without a written subcontract made available to the RJSCB may not be counted toward fulfillment of the Goals.

.4 All subcontractors should be made aware of all modifications to the construction schedule and must be given reasonable opportunity to mobilize their workforces to perform. Notification of less than five (5) days will not be considered reasonable and will not be a basis for determining that the subcontractor was not available to perform on the Project.

VIII. DURING PROGRESS OF WORK: contractor must maintain the Goals at the percentage levels stated above throughout performance of the Contract.

.1 If a contract modification (e.g., a Change Order, Field Order or Construction Change Directive) issues after the ICO's approval of the EBE Utilization Plan, the Contractor must adjust the Utilization Plan accordingly to maintain the appropriate percentage Goals. For example, if a Change Order increases the Contract Sum, the Goals will increase in proportion to the Contract Sum. Similarly, performance of approved Allowance work will increase the Contract Sum for purposes of compliance with EBE Goals. Forms DP-3 and DP 3-A must be submitted monthly and should reflect changes to the Contract Sum due to authorized contract modifications or Allowance work, as well as the resulting increases in EBE, women and minority participation.

.2 Contractors must demonstrate, to the ICO's satisfaction, Good Faith Efforts to meet the modified Goals in the event of a change to the Contract Sum during the progress of Work, including but not limited to retaining additional EBE subcontractors for the work affected by an Allowance or contract modification that increases the Contract Sum.

.3 The ICO may, in its discretion and upon contractor's written request, consider the following factors in determining whether contractor has used Good Faith Efforts to

meet the required Goals:

a. If the contract change or Allowance requires contractor to provide additional materials and/or supplies, as opposed to performing additional labor;

b. If the change Allowance work is the same type of work currently being performed by the contractor under contract with a non-EBE Supplier or subcontractor on the Project;

c. If EBE subcontractors are not capable or available to do the work required by contract change or Allowance;

d. Any other factor impacting contractor's ability to adjust the Goals in accordance with the increased Contract Sum.

.4 The ICO in its discretion may waive the requirement to meet modified Goals if approved contract modifications or authorization to perform Allowance work results in a minor net increase in the Contract Sum (less than $50,000) such that restructuring contracts would be impractical or unduly burdensome to contractor. However, the contractor must otherwise demonstrate compliance with modified percentage Goals to the satisfaction of the ICO.

.5 Should ICO determine that the performance of approved Allowance or change order work, or any other factor during performance of the Contract, has caused contractor to fall out of compliance with applicable percentage Goals, the ICO may call a meeting with contractor to address the issue and discuss steps for the contractor to achieve and maintain compliance with the applicable Goals.

IX. REPORTING AND RECORD-KEEPING: The contractor must keep records and documents to substantiate compliance with the EBE business development and workforce diversity Goals and requirements for three (3) years following completion of this Contract. These records and documents must be made available to the ICO or other authorized RJSCB officials upon request during that time.

.1 All apparent successful bidders who plan to utilize an EBE subcontractor or engage in a Joint Venture with an EBE shall submit to the ICO by the end of the tenth business day following notice of award of contract a "Letter of Intent to Perform" (Form DP-2) in the format attached hereto, signed by both the EBE and bidder.

.2 The contractor must furnish the ICO with Monthly Employment and EBE Utilization Reports (Forms DP-3 and DP-3A) with each monthly request for payment, including but not limited to worforce census and other employment and certified payroll records necessary to verify achievement of the workforce diversity goals. Employee zip code information must be listed on monthly EEO report. Failure to submit the DP-3 and DP-3A Forms with each request for payment will give the RJSCB cause to withhold that payment and the EBE's or workforce utilized shall

not be counted toward fulfillment of the Goals.

.3 Records of payment (e.g., copies of checks) for subcontract work, if requested by RJSCB, as well as payrolls and other documents required by any other terms of this contract, must be submitted to the ICO with each monthly request for payment unless otherwise indicated. Attainment of the Goals will be based on actual payment records and not solely on the stated subcontract amount. Amounts claimed to be attributable to EBE's, but that are not substantiated by actual payment records, will not be counted toward the final Goal. All contractors must provide a certified accounting statement setting forth the total amounts paid to all subcontractors to enable the RJSCB and ICO to verify that percentage Goals were ultimately met.

.4 The contractor must notify the ICO immediately in writing if the contractor changes or cancels an EBE subcontractor or Joint Venture including an EBE whose participation has already been approved as counting toward the applicable Goal.

.5 The ICO or other RJSCB designee shall follow up during the term of Project to evaluate the successful employment of the EBE firms and of women and minorities through review of Forms DP-3 and DP-3A (Monthly Employment and EBE Utilization Reports). This review may be done monthly or when the ICO deems it appropriate.

a. Successful utilization and meeting of Goals will be noted and approved by the ICO.

b. In cases where the contractor fails to meet workforce diversity and business development Goals, the ICO or other RJSCB designee shall obtain from the contractor in writing the reason for the delay and his/her plan to achieve the Goals by project completion.

c. It is the contractor's responsibility to monitor the progress of the EBE and women and minority participation on the Project.

d. In cases where the contractor does not anticipate meeting the Goal or where the contractor wishes to add an EBE firm to those originally designated as contributing toward a business development Goal, the contractor should request a new EBE Utilization Plan (DP-1 form) and inform the ICO thereof. The updated EBE Utilization Plan (DP-1) shall be submitted to the ICO within (3) days of giving notice to the ICO.

e. This revised EBE Utilization Plan (DP-1) shall be approved or rejected by the ICO or other RJSCB designee in accordance with the Goals.

f. Appeals of revised EBE Utilization Plan acceptance determinations shall be made in writing, stating the full basis of the appeal, to the ICO within three (3) days of notification of the initial decision.

X. RETAINAGE: The RJSCB reserves the right to retain, at any time, an amount up to but not exceeding the amount cited in an approved EBE Utilization Plan (DP-1) that has not been paid to any EBE in accordance with the approved EBE Utilization Plan. The RJSCB may retain such amounts as in its reasonable discretion may be necessary to ensure payment to the applicable EBE firm listed in the EBE Utilization Plan.

XI. COMPLIANCE MONITORING: In order to achieve development and diversification in its workforce, and to meet the required EBE utilization Goals set forth herein, each contractor, supplier, professional service firm or other business providing goods or services must:

1. Provide the ICO with a monthly workforce census and other employment and certified payroll records necessary to verify achievement of the workforce diversity Goals and demonstrate compliance with the minimum standards.

2. Provide on-demand access and cooperation to the ICO to review records on-site and/or at work-site premises to validate workforce participation. This may include unannounced visits and on-the-spot interviews that the ICO and its inspectors may hold with workers at the job site or at off-site work premises to verify their work status and claimed job classifications.

3. Submit all other information required on the forms specified herein and attached as Section 00 43 31-A, or such further information as is required at the reasonable request of ICO, at the time of bidding or throughout the Project to ensure compliance with the requirements of this Section.

4. In addition, contractor is strongly encouraged to do the following:

   a. With bid submission, present a proposed written recruiting program directed at attracting candidates to fill positions of employment in order to meet such requirements.

   b. With bid submission, provide a statement committing to training or participation in training programs provided by third parties to train new employees in meaningful ways to succeed in their employment opportunities and to promote long-term employment within the industry or profession.

5. In the event the contractor, supplier, professional service firm or other business providing goods or services fails to maintain minority/women workforce or EBE utilization Goals through the duration of the Project on their Contract or purchase order, the ICO can and shall exercise in a timely manner one or more of the remedies set forth in the Diversity Plan at Article VI at section 6.01.

XII. ENFORCEMENT: In evaluating bids and during performance of the Contract, the Owner and ICO will consider responsive and responsible bidders who can provide the quality goods and services reasonably required for the contract. All bidders must make Good Faith Efforts in seeking to maximize the use of available EBE's for RSMP Projects. The failure of a bidder to demonstrate the mandatory Good Faith Efforts outlined in the Diversity Plan to include EBE's in the procurement process or to maintain percentage Goals throughout the Project will be considered in awarding RSMP Contracts. The RJSCB, through the action of the ICO, shall have the authority and power to enforce the provisions of this Section 00 43 31.

Violations of this Section shall constitute a material breach of contract, and the ICO and/or RJSCB may undtake the measures outlined in the Diversity Plan at Article VI, section 6.03 thereof, to enforce the requirements of this Section 00 43 31.

XIII. ATTACHMENTS: Information required by this Section must be submitted on the forms or in the formats specified in the following Attachments, included as Section 00 43 31-A of the Contract Documents.

ATTACHMENTS TO FOLLOW AS SECTION 00 43 31A

END OF SECTION 00 43 31

SECTION 00 43 31A: DIVERSITY PROGRAM ("DP") FORMS

The attached Diversity Program (DP) Forms will be used by the ICO and Board to monitor Contractor compliance with the Goals of the Diversity Plan. The Board or ICO may modify these forms as appropriate or require additional forms as needed to implement Diversity Plan requirements, in which case, new or updated forms will be provided to Bidder/Contractor.

INSTRUCTIONS FOR USE OF THE ATTACHED DP FORMS:

1. **DP -1: SCHEDULE OF EBE PARTICIPATION** (*Submit with bid*):
   This form is to be completed and submitted with the response to the RFP or Bid. The selected bidder or respondent shall be required to resubmit its final version, signed by the bidder/respondent, showing all those contractors and or vendors it has entered into agreement with to meet the goals for participation by Eligible Business Enterprises ("EBE's"), defined within the RSMP Diversity Plan (e.g., MBE's, WBE's, DBE's and SBE's).

2. **DP -2: EBE LETTER OF INTENT TO PERFORM** (*Submit within 10 days' notice of award of Contract*):
   This form is required of the selected contractor. The contractor must fill these out and secure signatures from all EBE firms proposed as subcontractors on contractor's approved DP-1 form.

3. **DP – 3: MONTHLY EMPLOYMENT UTILIZATION REPORT** (*Submit monthly*):
   This form provides a monthly summary of employment workforce utilization. It is used to track the diversity of a particular contractor's workforce and its responsiveness to the objectives required by the Diversity Plan. The contractor is required to submit this form on a monthly basis.

4. **DP – 3: MONTHLY EBE UTILIZATION REPORT** (*Submit monthly*):
   This form provides a monthly summary of work provided by EBE's listed in the Utilization Plan (DP-1). The contractor is required to submit this form on a monthly basis.

5. **PROMISE OF NON-DISCRIMINATION** (*Submit with bid*)
   Must include signed certification from bidder.

6. **EBE ASSURANCE STATEMENT** (*Submit with bid*).
   This form is to be completed and submitted with the response to the RFP or Bid.

7. **GOOD FAITH EFFORTS CHECKLIST** (*Submit with bid*):

1. This checklist must be completed to indicate the efforts that Bidder/ Proposer undertook in attempting to meet Diversity Program Goals.Promise of Non-Discrimination
2. Good Faith Efforts Checklist
3. EBE Letter of Intent to Perform (DP-2)

4. Monthly Employment Utilization Form (DP-3) and Instructions
5. Monthly EBE Utilization Report Form (DP-3a/RSMP) and Instructions
6. Certification of Small Business Enterprise (SBE) Financial Status - *applicable to firms asserting qualification as SBE only*

All forms attached as part of this Section 00 43 31-A are to be completed by bidders or contractors at the time of bid, or such other time as is set forth in the Contract Documents at Section 00 43 31, "MWBE/DBE/SBE Utilization and Workforce Diversity."

EBE UTILIZATION PLAN (DP-1)	Rochester Schools Modernization Program
1. Project :	**2. Bidding on Contract No./Contract Name:**
3. Bidding contractor Name / Address / Phone No. / Fax No. / FEIN	**4. Bid Submittal Date (MM/DD/YYYY)** ☐ **Original DP-1** ☐ **Revised DP-1** **Rev. Date: _____, 20__**

Project Goals: MBE - 17% WBE - 10% DBE - 3% SBE - 3%

6. Name/Address/Phone No. and FEIN of Proposed M/WBE, DBE or SBE	7. Certified as EBE	8. Performance Category	9. Scope of Services to be provided	10. Proposed Dollar Amount

The undersigned, being an authorized representative of the bidding company, hereby certifies that the above information is accurate, and that bidder has received a proposal from, or discussed with, each of the M/WBE, SBE or DBE firms listed herein prior to the submission of the accompanying bid.

[Bidding Company's Official Printed Name and Title]:

_____

Authorized Signature: _____ Print Name: _____ Title: _____

The ICO may follow up with the EBE firms listed herein to verify that each either submitted a proposal to, or discussed with, the bidder submitting this form the amounts indicated above.

EBE ASSURANCE STATEMENT

To be submitted with the bid on bidding company's letterhead and signed and dated by bidder's authorized representative. Bidder must submit a separate EBE Assurance Statements for each EBE.

Subject Proposal for_____

The undersigned bidder, having submitted a proposal for the referenced project, if awarded the Contract, agrees that the EBE Utilization Plan (DP-1) submitted with the bid or as thereafter modified and approved by the ICO will be incorporated into the Contract upon submission of the EBE Letter of Intent to Perform. We are committed to ensure EBE participation in the manner indicated below as subcontractors, supplier or in joint venture partnership as follows:

Representation of EBE Status
Name: _____
Address: _____
_____
_____
Phone #: _____
Fax#: _____
Email: _____
FEIN: _____

Work to be performed:
_____
_____
_____
_____.

Dollar amount: _____
Percentage of the Total Bid amount: _____

This subcontractor represents that it *is / is not* a certified MBE/DBE/WBE/SBE (circle the appropriate status).

This subcontractor is a (circle one): Sole proprietorship / individual / corporation / partnership / a joint venture

Contractor/Bidder acknowledgement:
The undersigned contractor/bidder represents that the above information is true and correct to the best of its knowledge:

Name of Contractor/Bidder firm: _____
Authorized representative: _____
Authorized signature: _____ Date: _____, 20__

EBE Assurance Statements must be submitted on bidder's letterhead and signed and dated by bidder.

PROMISE OF NON-DISCRIMINATION

KNOW ALL MEN BY THESE PRESENTS, that I/we, _____, Title(s) _____, Name of Company _____ _____ (hereinafter "Company"), in consideration of the privilege to submit Proposals on contracts funded, in whole or in part, by the Rochester Joint Schools Construction Board (herein, "RJSCB" or "Owner"), hereby consents, covenants and agrees as follows:

(1) No person shall be excluded from participation in, denied the benefit of, or otherwise be discriminated against on the basis of race, color, national origin or gender in connection with any bid submitted to Owner or the performance of any contract resulting from;

(2) That it is and shall be the policy of this Company to provide equal opportunity to all business persons seeking to contract or otherwise interested in contracting with this Company, including various local small business enterprises;

(3) In connection herewith, I/We acknowledge and warrant that this Company has been made aware of, understands and agrees to make Good Faith Efforts to solicit EBE's to do business with this Company;

(4) That the promise of non-discrimination as made and set forth herein shall be continuing in nature and shall remain in full force and effect without interruption;

(5) That the promises of non-discrimination as made and set forth herein shall be and are hereby deemed to be made a part of, and incorporated by reference into, any contract or portion thereof which this Company may hereafter obtain;

(6) That the failure of this Company to satisfactorily discharge any of the promises of non-discrimination or Good Faith Efforts to attain the EBE utilization Goals and reporting requirements, as made and set forth in this Section 00 43 31, shall constitute a material breach of contract entitling the Owner to declare the Contract in default and to exercise any and all applicable rights and remedies, including but not limited to, cancellation of the contract, termination of the contract, suspension and debarment from future contracting opportunities, and withholding and/or forfeiture of compensation due and owing on a contract.

Dated: _____, 20___ By: _____
(Authorized Company Representative Signature)

GOOD FAITH EFFORTS CHECKLIST

The Rochester Joint School's Board (RJSCB) welcomes your participation in the Rochester School's Modernization Program (RSMP). Your participation and support in complying with the goals for diversity set forth in the Diversity Plan is critical to the success of the Program. Pursuant to the requirements set forth in this Section and in consideration of the privilege to submit Proposals on contracts funded, in whole or in part, by RJSCB, WE,_____ by Owner/Principal _____

Attest that we have exercised the following Good Faith Efforts in addition to my /our regular and customary solicitation process:

I/We have delivered written notice to three available certified EBE's for each potential subcontracting or supply category in the Contract AND all potential subcontractors or vendors which requested information on the Contract.

I/We have provided all potential subcontractors or vendors with adequate information as to plans, specifications, relevant terms and conditions of the Contract, bonding requirements, and the last date and time for receipt of price quotations.

I/We have attended a special meeting called to inform business and individuals of subcontracting or supply opportunities.

I/We have, in accordance with normal industry practices, divided the contract into economically feasible segments that can be performed by an EBE.

I/We have provided a written explanation for rejection of any potential subcontractor or vendor to the EBE/, including the name of the firm proposed to be awarded the subcontract or supply agreement, where price competitiveness is not the reason for rejection.

I/We have actively solicited, through sending letters or initiating personal contact, EBE's in all feasible and appropriate categories providing subcontracting opportunities for the contract under consideration.

I/We have utilized the services of available community organizations and associations, contractors' groups, and trade associations known to publicize contracting and procurement opportunities, for the purpose of obtaining assistance in the contacting and recruitment of EBE's for the RJSCB's contract under consideration.

I/We have advertised in publications of general circulation in the Rochester MSA trade publications and other media owned by, or otherwise focused or marketed to EBE's, and the advertisement identifies and describes the specific subcontracting or other opportunity in reasonable detail.

I/We have conducted discussions with interested EBE's in good faith, and provided the same willingness to assist EBE's as has been extended to any other similarly situated subcontractor.

(GOOD FAITH EFFORTS CHECKLIST continued on following page):

(*GOOD FAITH EFFORTS CHECKLIST, page 2*):

I/We have taken steps to ensure that all labor supervisors, superintendents, and other on-site supervisory personnel are aware of and carry out the obligation to maintain a non-discriminatory work environment, free of harassment, intimidation and coercion at all construction sites, offices and other facilities to which employees are assigned to work.

Please identify below all subcontractors, suppliers, or a joint venture partner you invited to participate that declined.

1. Name of subcontractor/Vendor: _____
Phone #: _____
Address:_____
Date of Offer to Participate:_____
Date Offer was declined: _____
Reasons Given for Declining:
_____

Please note all categories of ownership that apply:
____ African American Business Enterprise
____Asian American Business Enterprise
____Hispanic American Business Enterprise
____Majority Enterprise
____ Native American Business Enterprise
____Small Business Enterprise
____ Women-Owned Business Enterprise

2. Name of subcontractor/Vendor: _____
Phone #: _____
Address:_____
Date of Offer to Participate:_____
Date Offer was Declined:_____
Reasons Given for Declining:
_____

Please note all categories of ownership that apply:
____ African American Business Enterprise
____Asian American Business Enterprise
____ Hispanic American Business Enterprise
____Majority Enterprise
____ Native American Business Enterprise
____Small Business Enterprise
____ Women-Owned Business Enterprise

(GOOD FAITH EFFORTS CHECKLIST continued on following page):

(*GOOD FAITH EFFORTS CHECKLIST, page 3*):

3. Name of subcontractor/Vendor: _____
Phone #: _____
Address_____
Date of Offer to Participate:_____
Date Offer was Declined :_____

Reasons Given for Declining:
_____

Please note all categories of ownership that apply:
____ African American Business Enterprise
____Asian American Business Enterprise
____Hispanic American Business Enterprise
____Majority Enterprise
____ Native American Business Enterprise
____Small Business Enterprise
____ Women-Owned Business Enterprise Name of subcontractor/Vendor

4. Name of subcontractor/Vendor: _____
Phone #: _____
Address_____
Date of Offer to Participate: _____
Date Offer was Declined:_____
Reasons Given for Declining:
_____

Please note all categories of ownership that apply:
____ African American Business Enterprise
____Asian American Business Enterprise
____ Hispanic American Business Enterprise
____Majority Enterprise
____ Native American Business Enterprise
____Small Business Enterprise
____ Women-Owned Business Enterprise Name of subcontractor/Vendor

END OF GOOD FAITH EFFORTS CHECKLIST

This form is to be completed and submitted to the ICO by the apparent successful bidder by the end of the tenth day following notice of award of contract.

RSMP PROJECT: _____
PARTICIPANT: _____

The undersigned has agreed to perform work in connection with the above project as:
_____sole proprietorship (individual)
_____a partnership
_____a corporation
_____a joint venture

Detailed description of work items to be performed by EBE:
_____ (indicate labor, supplier, broker, etc.) at the following price: $ _____.

Please note all categories of the subcontractor/joint venture that apply:

____ Disadvantaged Business Enterprise
____ Minority-Owned Business Enterprise
____ Small Business Enterprise
____ Women-Owned Business Enterprise

The total value of EBE participation under this Joint Venture Agreement is $_____.; which is ____% of the total Proposal.

(Type or Print Name of subcontractor/Joint Venture) _____
By: _____ _____
Printed Name: _____
Title: _____
Date: _____

This EBE is currently certified as a MBE, WBE, DBE or SBE in the above-indicated performance category. **As evidence of this fact, attached is a certification letter from the appropriate certifying authority confirming the current MBE, WBE, DBE or SBE status and the applicable performance category. Failure to include said certification letter(s) to the satisfaction of the ICO is grounds for rejection of the proposed EBE.**

Should any revisions to this pending agreement be necessary after the submission of this form, the bidding contractor shall immediately resubmit the necessary revised forms to the attention of the ICO for consideration.

DP-2 Form continued on the following page…

DP-2 Form, page 2:

The undersigned will enter into a written agreement for the work described upon the approval of the ICO and award and execution of a contract with RJSCB to the bidder.

_____	_____
Bidding contractor Company Name	Proposed EBE Company Name
_____	_____
Address	Address
_____	_____
Phone Number	Phone Number
_____	_____
Company Officer Name & Title (Print)	Company Officer Name & Title (Print)
_____ ___ /___ / ___	_____ ___ /___ / ___
Company Officer Signature Date	Company Officer Signature Date

---

For RJSCB Use Only

_____ _____

Owner Signature Date

_____ _____

ICO Signature Date

Instructions on Completion of the
Monthly Employment Utilization Form (DP-3)

1. *Project:* - name of Project that this form submission is applicable to.

2. *Reporting Period (MMM/YYYY) ____/_____:* indicate the monthly period reporting on, i.e. JUL 2012. Hours reported on this report shall include all hours on the first day of the month through and including the last day of the applicable month.

3. *Reporting contractor Name/Address/Phone No./Fax No.* – name/address/phone/fax of reporting entity.

4a. *Reporting contractor is a ( )1st Tier -or- ( ) Lower Tier contractor:* the reporting entity is to either.

4b. *Only if a lower tier contractor, indicate to whom you are a subcontractor:* only if the reporting entity is other then a first tier contractor, indicate what company/firm you have a direct contractual agreement with relative to this 1st tier Project contract. If you are a first tier contractor leave blank or indicate N/A.

5. *Construction Trade Class.* – indicate in the space(s) provided below this title, the applicable trade classification group, i.e. Electrician, Carpenter, Mason, Laborer, etc, which the reporting entity utilized during this reporting period.

6. *(a) Total All Hours by Trade M (Male) F (Female)* – under the 6a. M - column, infill the total number of
male hours for each trade/grade classification listed, subtotaling at after each trade, for this reporting period. Under the 6a. F - column, infill the total number of female hours for each trade/grade classification listed, subtotaling at after each trade, for this reporting period.

(b – e) Minority Hours by Trade M (Male) F (Female) – under each M – column, infill the total number of male hours for each trade/grade classification and each minority category listed, subtotaling at after each trade, for this reporting period. Under each F – column, infill the total number of female hours for each trade/grade classification and each minority category listed, subtotaling at after each trade, for this reporting period.

7. *Minority % of Total Hours – the percentage of total minority hours of all hours worked, the sum of columns 6b.- 6e. divided by the sum of column 6a. Only one figure for each trade classification. ie ((6b.M + 6b.F + 6c.M +6c.F + 6d.M + 6d.F + 6e.M + 6e.F) / (6a.M + 6a.F)).*

8. *Female % of Total Hours – the percentage of total female hours of all hours worked, the total number reported in 6a.F divided by the sum of total numbers reported in 6a. M and 6a.F. Only one figure for each trade classification. ie (6a.F/(6a.M + 6a.F))*

DP-3 Instructions continued on the following page…

Individuals that qualify in both a minority category and the female category should not be counted in both the minority and female percentage figures, as the above percentage calculation will generate (items 9. & 10.)

9. *Total Number of Employees* – total number of male and total number of female employees utilized in each trade and grade classification, subtotaling at after each trade, for this reporting period.

10. *Total Number of Minority Employees* – total number of male minority and total number of female minority employees utilized in each trade and grade classification, subtotaling at after each trade, for this reporting period.

11. *Reporting Company Official's Printed Name and Title* - reporting company official's printed name/ title.

12. *Reporting Company Official's Signature* – reporting company official's original signature. By signing this form, this individual is certifying that the information provided on the MWP-3 has been reviewed prior to its submission and is accurate to the best of his/her knowledge.

13. *Date Signed:* - indicate date signed by reporting company official.

14. *Page:* - indicate page number and total number of pages submitted. Attached as many pages as necessary.

End of Instructions on Completion of the
Monthly Employment Utilization Form (DP-3)

MONTHLY EMPLOYMENT UTILIZATION REPORT - DP-3/RSMP	ROCHESTER SCHOOLS MODERNIZATION PROGRAM
1. Project :	2. Reporting Period (MMM / YYYY) _____ / _____/ _____
3. Reporting contractor Name / Address / Phone No. / Fax No.	4a. Reporting contractor is a ( ) 1st - or - ( ) Lower Tier contractor 4b. If lower tier, indicate hiring contractor: _____

Project Goals : Minority - 22% Women - 8 %

5. **POSITION**	**EMPLOYEE**	6a. **Total All Hours by Service**		6b. **Black** *not of Hispanic Origin* (Hours)		6c. **Hispanic** (Hours)		6d. **Asian or Pacific Islander** (Hours)		6e. **American Indian or Alaskan Native** (Hours)		7. **Minority % of Total Hours**	8. **Female % of Total Hours**	9. **Total Number of Employees**		10. **Total Number of Minority Employees**	
		M	**F**	**M**	**F**	**M**	**F**	**M**	**F**	**M**	**F**			**M**	**F**	**M**	**F**
Grand Total																	

Certification Statement - the below signed, being an authorized representative of the reporting company, hereby certifies that the above information above represents all the hours worked by the reporting company's employees on the above noted Project site during the above noted month.

11. Reporting Company Official's Printed Name and Title	12. Reporting Company Official's Signature	13. Date Signed	14. Page
Name: _____ Title: _____	By: _____	_____, 20___	____ of ____

INSTRUCTIONS FOR COMPLETING
MONTHLY EBE UTILIZATION REPORT (DP-3a/RSMP) FORM

This form must be submitted on a monthly basis. For the month under consideration, this form must be completed by every contractor/entity providing on-site labor engaged in work associated with the 1st tier contract scope.

For the purposes of completing this form, "on-site labor" is considered to include only labor hours consumed on the Project site in the production of physical work and direct supervision of such on-site work. This would specifically exclude any hours involved in hauling material/equipment deliveries to/from the Project site. The hours involved in the off/on loading of said deliveries would be included only if the personnel involved were not employees of the trucking company.

Example – ABC Contracting is receiving an on-site material delivery from Acme Trucking. Acme's truck driver's hours would not be included on this form, but ABC's personnel who are responsible to unload this delivery would be included. If Acme personnel were responsible to unload this delivery, these hours would be excluded.

For the month under consideration, each 1st tier contractor must submit a completed DP-3/RSMP form for each entity that has provided on-site labor engaged in work associated with the scope of the 1st tier contract. This submission shall be made as part of the monthly payment requisition package and to the ICO. If after the start and prior to the completion of the 1st tier contractor's scope, the 1st tier contractor does not submit a monthly payment requisition package, the 1st tier contractor shall either 1) forward a ("No-Labor") notice advising that there was no on-site labor utilized under its contract scope for the month under consideration or 2) shall forward completed DP-3/RSMP forms for the month under consideration. Whether submitting a monthly payment requisition package or not, DP-3/RSMP forms or "No-Labor" notice must be forwarded to the ICO.

In addition to required submissions noted above, the same submissions must be made by the 1st tier contractor directly to the ICO no later than the 5th day of the following month. (i.e. October 2016DP-3's/RSMP or No-Labor Notice(s) must be received by November 5, 2016.)

END OF INSTRUCTIONS FOR COMPLETION DP-3A

DP-3A
MBE/WBE/DBE/SBE MONTHLY UTILIZATION REPORT
Rochester Schools Modernization Program

_____/_____
Month Year

Project Name: _____
Contract No.: _____
Contractor Name: _____
Address: _____
Phone No.: _____
Fax No.: _____
Change Orders to Date: _____

Original Contract:_____
Current Contract: _____
MBE % of Current Contract:_____
WBE % of Current Contract:_____
DBE % of Current Contract:_____
SBE % of Current Contract:_____

Subcontractor Name	1. MWBE DBE/ SBE	Original Subcontract	Change Orders to Date	Total Current Subcontract to MWBE/DBE/SBE	Amount Paid to Date to MWBE/DBE/SBE	Total Amnt of Invoices Submitted to Date	Cancelled Checks Submitted to Date

1. DP-3A is to be submitted monthly.
2. List all M/WBE/DBE/SBE subcontractors, even after their work is substantially complete.
3. When adding a subcontractor, attach a revised DP-1 and DP-2 to this form.
4. Attach invoices and cancelled checks to this form, if requested.

By: _____
Contractor Representative Signature

Print: _____

Rochester Schools Modernization Program
Certification of Small Business Enterprise (SBE) Financial Status

This Certification must be completed in full by any business intending to qualify as a certified "Small Business Enterprise" or "SBE" to provide labor, services and/or materials for any contract awarded under the Rochester Schools Modernization Program ("RSMP"), and submitted with the bid or at such other time as permitted by the contract documents. Failure to timely provide a complete Certification, or to provide any back-up documentation as the Rochester Joint Schools Construction Board ("RJSCB") may reasonably require, may be grounds for disqualification from award of RSMP contracts.

I hereby certify that _____ ("Company")

Company Name and Address (print)

meets the requirements of the Rochester Schools Modernization Program (RSMP) definition of Small Business Enterprise (SBE) as listed below (please check the box):

☐ "Small Business Enterprise (SBE)" shall mean a business concern which, together with its affiliates, has no more than fifteen (15) employees and average annual receipts that do not exceed $2 million. Annual receipts shall be calculated in accord with the standard established under 13 CFR 121.104. Number of employees shall be calculated in accord with the standards established under 13 CFR 121.106. Affiliates shall be determined in accord with the standards set forth under 13 CFR' 121.103.

I further certify as follows as to the Company, including affiliates (*please check <u>one</u> of the boxes below*):

☐ Annual receipts over the last three (3) years were ***<u>under</u>*** $1,000,000.00.

☐ Annual receipts over the last three (3) years were $1,000,000.00 or greater, but not exceeding $2,000,000.00.

I further certify as follows (*please check the appropriate boxes below. If Company has been in business for three years or more, leave the following blank*):

☐ Company has been in business less than three (3) complete fiscal years and total receipts for the period Company has been in business divided by the number of weeks Company has been in business, multiplied by 52, yields the following amount of total receipts (check <u>one</u> box):

☐ Less than $1,000,000.000; <u>or</u>
☐ Between $1,000,000.000 and $2,000,000.00.

By signing below, I certify that I am an owner, principal, or other authorized agent of Company. I further certify that, if the Company is awarded any RSMP contract, it will adhere to the hiring practices set forth in the Project Labor Agreement ("PLA") covering the RSMP, as well as the "Side Letter of Agreement" to the PLA entered into on or about _____, 2016, each of which I have had the opportunity to review.

(*SBE CERTIFICATION FORM continued on following page)…*

(*SBE CERTIFICATION FORM, page 2):*

I hereby agree to notify Rochester Schools Modernization Program's Independent Compliance Officer (ICO) if there are any changes to the Company that would alter the content of this Certification, within thirty (30) days of such change, and submit such documentation as may be reasonably required by Owner to evaluate the same.

By: _____
(Sign)

Name: _____
(Print)

Title: _____
(Print)

Sworn to before me this _____ day of _____, 20___

Notary Public: _____
State: _____
Registration Number: _____
My commission expires: _____

END OF "SBE CERTIFICATION FORM"

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END OF SECTION 00 43 31A

SECTION 00 43 83 - MILESTONE SCHEDULE AND CRITICAL SUBMITTALS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

B. Related Work Described Elsewhere:

1. Agreement, Section CA, General Conditions

1.2 SUMMARY

A. The work specified in this section includes the requirement to prepare, maintain, and update all detailed schedules as described in this section using the Critical Path Method (CPM). The CPM Schedules shall be prepared in such a manner as to permit the orderly planning, organization, and execution of the Work and be sufficiently detailed to accurately depict all the Work required by the Contract, including all Milestones as described in other sections of the Specifications, or elsewhere in the Contract Documents.

1.3 DEFINITIONS

A. Contract Float: The number of working days between Contractor's anticipated completion date for early completion of the Work and the corresponding Contract Time.

B. Expanded Project Schedule Update: expanded detail of a Project Schedule Update in order to further explain the construction sequence or other details.

C. Look-Ahead Schedule: A schedule that shows planned Work over the next six weeks.

D. Original Baseline Schedule: The first approved revision 0, Project Schedule.

E. Guideline Schedule: The schedule included with the contract documents is intended as a guide for bidding purposes. Schedule durations may change from this schedule to depict the actual work flow, but the start, finish and milestone dates will remain the same.

F. Preliminary Schedule: The Contractor's construction schedule showing the planned Work over the first 120 days following Notice to Proceed.

G. Project Schedule: The Project Schedule shall represent the Contractor's best judgment and intended plan for the completion of the Work in compliance with the Contract Documents. It represents the Contractor's first schedule covering the complete duration of Contract Time submitted for review and approval of the CM. Upon approval by the CM, the Project Schedule shall become the Original Baseline Schedule. Subsequent revisions of the Project Schedule shall be Revised Baseline Schedules.

H. Total Float: The number of working days by which a part of the Work in the Baseline Schedule may be delayed from its early finish dates without extending the Contract Time.

I. Project Schedule Update: The latest Baseline Schedule updated monthly to reflect actual Work performed, but not logic changes in the Baseline Schedule.

J. Revised Baseline Schedule: The latest approved Baseline Schedule that reflects logic changes and all approved change orders.

1.4 SUBMITTALS

A. Project Schedule: Discuss with and obtain the Construction Managers acceptance of the proposed coding, activity-numbering system, screen layout, graphics used to generate the networks and bar charts, and exceptions to the size of the network printed sheets, all prior to submitting the Project Schedule.

1. Submit to the Construction Manager a detailed Project Schedule within 14 calendar days after receipt of the Notice to Proceed using the CPM format, and in both hard copy and electronic format.

2. The Project Schedule shall supersede the Preliminary Schedule upon the Construction Manager acceptance of the Project Schedule.

3. The Project Schedule shall include a written narrative that explains all Work activity durations and describes the plan and approach for meeting interim and final completion milestones. Include as a minimum all: bases and assumptions used in preparing submittals, crew sizes, equipment requirements, anticipated delivery dates, restraints, critical path activities, production rates, production and maintenance shifts, time contingencies to account for weather conditions, permits, long-lead

time items, and coordination issues with Construction Manager, Owner, utilities, other contractors or other third-parties. The narrative shall discuss the Contractor's plan for management of the site (e.g., laydown, staging, traffic, etc), and buildup of trade labor.

4. A meeting will be held with all prime contractors upon receipt of the individual Project schedules to coordinate each schedule into one combined Project Schedule.

5. Contractors are required to include on their Schedule of Values costs allocated for second shift, and this will align in detail with the milestone schedule which must be approved by the Construction Manager and Program Manager prior to first billing.

6. A separate superintendent must be assigned for all 2nd shift work, and each prime contractor is required to provide a resume to be reviewed and approved by the Construction Manager and Program Manager prior to that person starting work.

7. All prospective winning prime contractors will be required to bring to the de-scope meeting the labor hours they have estimated in their bid.

8. Work force plan must be provided as a submittal and as a part of each prime contractor's first application for payment.

B. Project Schedule Update and Progress Report: Submit the following on the first working day of each month, updated as of the 25th calendar day of the previous month:

1. Project Schedule Update
2. Monthly-to-date Progress Report Comprising:
   a. A narrative of all Work performed that includes the following.
   b. Work completed since the last update.
   c. Description of the current critical path, including any changes to the critical path since the last update and an identification of the reasons for the changes.
   d. Description of problem areas.
   e. Current and anticipated delays. Include causes thereof and impacts to other activities, milestones, and completion dates. Identify all activities where progress has slipped more than 5 working days since the last schedule update and discuss the cause of the delay or interruption.
   f. Pending items, such as permits, change orders, and time adjustments, and status.

3. Contract completion date status. Include the number of days ahead of, or behind all milestone dates and the contract completion date, and the reason(s) for any change(s).

C. Submit a Project Schedule Update and month-to-date Progress Report in accordance with the foregoing requirements upon submitting any proposed Revised Baseline Schedule. Use a cut-off date for the Project Schedule Update that corresponds to the effective date for the proposed Revised Baseline Schedule.

D. Look-Ahead Schedule: Submit the two-week look-ahead schedule at least 24 hours prior to the progress meetings, with number of copies submitted, layout, and format acceptable to the Construction Manager.

E. Time Impact Analysis: Submit in accordance with, and when required by the General Conditions of the Agreement.

F. All submittals, within the time provided herein and in a form acceptable to the Construction Manager, of schedules, monthly progress reports, schedule updates, and revisions of the Project Schedule are conditions precedent for the Contractor to receive the full amount of each progress payment, less retention and other adjustments. Should the Contractor fail to submit timely, acceptable reports, schedules, updates, or revisions, the Construction Manager may withhold the amount designated in the Schedule of Values from each monthly partial payment estimate. Should the Contractor continue to fail to submit the above mentioned submittals the Construction Manager may, in addition to other retentions or remedies provided by the Contract or by applicable law, withhold 25 percent of each monthly partial payment estimate until acceptable submittals have been received.

1.5 QUALIFICATIONS

A. The Contractor shall perform the work covered in this section with personnel having at least three (3) years experience in using computer based scheduling on construction projects of the magnitude and complexity of this project.

PART 2 - PRODUCTS (Not Used)

PART 3 – EXECUTION

3.1 SUMMARY

A. The Schedule shall be constructed and the work performed in accordance with the milestone dates set forth and the coordinated project schedule. Any additional costs for overtime, shift work and/or additional manpower, required to maintain these milestones, will be at each Contractor's expense.

3.2 PROJECT SCHEDULE

A. Furnish a Project Schedule and participate with the Construction Manager in its review, evaluation and coordination. Such joint review and coordination shall not relieve the Contractor of the sole responsibility for scheduling the Work. Furnish a Project Schedule demonstrating adequate planning and execution of all phases of the Work and which enables the Construction Manager to evaluate progress of the Work. Maintain such Project Schedule so that it shall, at all times, represent the Contractor's planned means, methods, and sequences for performing the Work required under this Contract within the Contract Time specified. Show the following schedule elements in detail:

1. The start and completion of all items of the Work, their major components and milestone completion dates, including Contract milestones.

2. Mobilization

3. Submittals and approval of submittals including shop drawings, permits and steps required to obtain permits, safety plans, temporary facilities and utilities, record documents, and operators and maintenance manuals.

   a. Critical submittals shall be tracked independently and include but are not limited to the following: N/A

   All construction activities, including the fabrication and delivery of materials or equipment incorporated into the Work, adjacent Work done by others and Work area changes.

4. The number of working days required for completion of each activity and all the Work.

5. Commissioning, punch list and close out.

B. The Contractor’s key personnel involved in preparing the Project Schedule shall initiate and attend one or more meetings upon direction of the Construction Manager to present to, and coordinate with the other prime contractors. Personnel shall be competent and prepared to discuss:

1. The planned logic, content, form, and layout of the activity table (spreadsheet).

2. The bar chart format.

3. Activity identification and coding. Number the initial activity identifications (IDs) by 10s or 100s to allow for the insertion of any future required activities that enhance detail.

4. Presentation and printouts of the Project Schedule.

C. The Construction Manager will review the proposed Project Schedule and meet with the Contractor's key personnel performing the scheduling to discuss the proposed construction schedule within 21 calendar days of its submission.

D. The Construction Manager acceptance of the Project Schedule shall not:

1. Imply that the Construction Manager has conducted an exhaustive review or evaluation of the sequencing, logic, or duration of all activities contained therein.

2. Constitute a warranty of its feasibility, suitability, reasonableness, or completeness.

3. Provide a basis for claims occasioned by any future revisions required in the schedule to conform to the Contract requirements.

4. Relieve the Contractor of the sole responsibility for scheduling and performing the work.

5. Relieve the Contractor of sole responsibility for means, methods, and techniques of construction employed.

E. The Project Schedule initially accepted by the Construction Manager shall be designated as the Original Baseline Schedule. The accepted Original Baseline Schedule shall not be updated, revised, or changed over the Project duration, but shall be used for comparison with the current updated schedule, until a Revised Baseline Schedule is accepted by the Construction Manager.

F. An activity shall be defined as an element of Work that is measurable and definable and that is necessary to accomplish in order to incrementally achieve progress of the Work as a whole. At any time, the Construction Manager may require additional detail to that previously provided. Float shall not be an activity.

1. Carefully analyze activities comprising the Project Schedule to determine activity durations in units of project working days. Base durations on the labor crews, crafts, equipment, and materials required to perform each activity. Unless supplemented with a detailed linear schedule to indicate production progress, split activities with durations greater than 30 working days into activities

no longer than 20 working days, except for summary activities and non-construction activities such as submittal preparation and review, material procurement, and equipment delivery, or as allowed by the Construction Manager.

2. Clearly identify the critical path on the Project Schedule.

3. Identify the following as lag activities and include full lag time associated therewith in the duration of the activity. Do not schedule negative lag time.

a. Start-to-start and finish-to-finish lag times greater than 1 working day.

b. Finish-to-start lag times greater than 1 day.

c. Start-to- finish lag times of any kind.

3.3 LIQUIDATED DAMAGES

A. Critical submittals shall carry liquidated damages of the value listed in 00 72 16 General Conditions.

3.4 DEFINITIONS OF CONTRACT MILESTONES

A. SUBSTANTIAL COMPLETION:

As determined by the Construction Manager, all work and systems are complete, operational, tested and ready for facility operations and certificate of occupancy. All closeout documentation required by the "Closeout Procedures," including warranties, certifications, record or 'as-built' documents, and operation and maintenance manuals, etc., must be submitted and satisfactory. Substantial Completion will not be recognized by Owner until all Closeout Documents and Submittals are received in full and are satisfactory to Owner's Representatives.

B. FINAL COMPLETION:

As determined by the Construction Manager, all punch list work is complete; and closeout documentation, warranties, certifications, record

documents, and operation and maintenance manuals are approved.
MILESTONE SCHEDULE

C. In order to meet the Substantial Completion dates, all overtime costs for extended work hours, Saturdays (and Sundays when required) must be included in the contractor's bid; no special consideration will be given to any contractor that fails to include said costs in his/her bid. Extended work days and/or hours will be required to make up lost time due to weather and other unforeseen occurrences.

D. A guideline schedule is included in herein as an illustration setting forth goals for milestone activities for the Project and anticipated completion dates. The annexed guideline is for bidding purposes only and may be modified during the course of the Contract. Contractors must complete all Work in a coordinated manner to achieve timely completion. Failure to act in accordance with coordination requirements of the Contract shall subject the responsible Contractor to liquidated damages as specified in the General Conditions and sustained failure to perform as required may be grounds for termination of its Contract.

The following schedule reflects anticipated milestones for the Bid Period:

Advertisement for Bid:	November 20, 2017
Contractor's Prebid RFI Submission Period:	November 20th-December 11th, 2017
Bids Received:	December 19, 2017, by 2:00 p.m.
Descope Meetings:	December 20, 2017
Bid Award:	January 24, 2018

The following schedule reflects anticipated milestones before Mobilization:

List of Subcontractors (inc. Sub Tier) Submitted by:	January 31, 2018
Acquire Approved Prime Contractor Bonds and Insurances by:	February 7, 2018
Acquire Approved Subcontractor Insurances by:	February 14, 2018

The following schedule reflects anticipated milestones for Critical Submittals:

TBD TBD

The following schedule reflects anticipated milestone dates (date task to be completed by) for the construction period

Mobilize to Site: February 19, 2018

Substantial Completion Date for Prime Contracts Phase A: September 1, 2018

Substantial Completion Date for Prime Contracts Phase B: July 16, 2019

Final Completion Date for Prime Contracts: October 8, 2019

END OF SECTION 00 43 83

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SECTION 00 43 93 - BID SUBMITTAL CHECKLIST

This "Bid Submittal Checklist" is provided only as a general overview, and shall not relieve bidders of their obligation to provide all information, forms and certifications required to be submitted with their bids as set forth more fully in the Contract Documents.

A. Bid Form completed (Section 00 41 16) with Base Bid amount (*and allowances, if applicable*)
   1) Addenda acknowledged on Bid Form
   2) Certification of Non-Collusion in Bidding – on Bid Form
   3) Completed alternates –on Bid Form

B. Supplementary Bid Information (00 43 00):
   1) Form of Bid Bond, with completed acknowledgements
   2) Appendices A, B, C and, D signed and acknowledged:
      a) Offeror's Affirmation of Understanding and Agreement Pursuant to State Finance Law § 139-j(6)(b)
      b) Offeror Certification of Compliance with State Finance Law § 139-k(5)
      c) Offeror Disclosure of Prior Non-Responsibility Determination
      d) Iran Divestment Act Compliance Certification

C. Statement of Bidder's Qualifications (Section 00 45 13) including:
   1) Certified financial statement
   2) Completed certification (including non-bankruptcy certification)
   3) List of prior projects and references, attached to Statement

D. All documentation required under Section 00 43 31, "MWBE/DBE/SBE Utilization and Workforce Diversity"
   1) EBE Utilization Plan (DP-1)
   2) EBE Assurance Statement
   3) Promise of Non-Discrimination
   4) Good Faith Effort Checklist
   5) EBE Letter of Intent to Perform (DP-2) (*within 10 days of notice of award)*
   6) Small Business Enterprise (SBE) Certification Form, *if applicable*

E. Equivalent Review Form (Section 00 63 19), *if applicable*

F. Unit Prices (Section 00 43 22), *only if requested on Bid Form*

END OF SECTION 00 43 93

STATEMENT OF BIDDER QUALIFICATIONS

Bidders may be judged qualified only for the type of work in which they demonstrate competence. Owner will make such investigation it feels necessary to determine the competency of the Bidder to perform the Work. The Bidder shall furnish promptly all information the Owner requests for Owner to investigate as it deems appropriate. Bidders must have, at minimum, successfully completed three (3) prior projects of similar size and scope to the Work of the Contract.

The Bidder bears the sole responsibility for any subcontractors it may employ for any part of the Work. Bidder is advised to utilize similar qualification standards against which it will be judged when using the services of any subcontractors or suppliers. Bidders must verify that any subcontractor or suppliers are in good standing and have not been previously debarred or found not to be qualified for performance of any RSMP Contract.

1. *Name of Bidder:* _____

2. *Type of Business:* (e.g. corporation, partnership, etc.)

   : Date of formation:: _____
   Place of formation: _____

3. *How many years has the Bidder done business under its present name?* _____years

4. *List the names of the persons who are directors, officers, owners, managerial employees or partners in the Bidder's business:*

_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

5. *Have any of the persons in No. 4 owned, operated, or been shareholders in any other companies?*

   Yes No

If Yes, list the names of said persons and the names of their previous affiliations:

Names	Names
_____	_____
_____	_____
_____	_____

6. *Has any director, officer, owner or managerial employee had any professional license suspended or revoked?*

Yes No

If Yes, please indicate their names, license previously held, whether it was revoked or suspended and the date:

Name	License Held	Revoked	Suspended	Date

7. *Please list in reverse chronological order all projects completed in the past five years involving work of a similar nature to this Contract, including a minimum of three projects. For each, provide the project name, date, location, dollar amount, brief description, and references with names and telephone numbers, and the name(s) of the architect/engineer.* ***Attach additional sheets as needed.***

Project: Location/Owner: Date: Price: Description:
_____
_____
_____

8. *During the five-year period preceding the submission of this Bid, has the Bidder been found guilty of any OSHA violations?*

Yes No

If Yes, please describe the nature of the OSHA violation(s) and indicate the remediation or other steps taken regarding such violations(s):

Violation	Remediation

9. *During the five-year period preceding the submission of this Bid, has the Bidder been charged with any claims pertaining to unlawful intimidation or discrimination against any employee by reason of race, creed, color, disability, sex or national origins and/or violations of an employee's civil rights or equal employment opportunities?*

Yes No

If Yes, please list the names of persons making such claim, a description of the claim, the status of the claim and what disposition, if any, has been made regarding such claim:

Name	Claim	Status	Disposition

10. *During the five-year period preceding the submission of this Bid, has the Bidder been named as a party in any lawsuit in an action involving a claim for personal injury or wrongful death arising from performance of work related to any project in which it has been engaged?*

Yes No

Lawsuit	Index Number	Disposition

11. *During the five-year period preceding the submission of this Bid, has the Bidder been the subject of proceedings before the Department of Labor for alleged violations of the Labor Law as it relates to the payment of prevailing wages and/or supplemental payment requirements?*

Yes No

If Yes, please list each instance of the commencement of a Department of Labor proceeding, the project to which it related, and the status or resolution thereof through Bid submission:

Proceeding	Project	Disposition

12. *During the five-year period preceding the submission of this Bid, has the Bidder been the subject of proceedings involving allegation that it violated the Workers' Compensation Law including but not limited to the failure to provide proof of worker's compensation or disability coverage and/or any lapses thereof?*

Yes No

If Yes, please list each instance of the claimed violation and the status of the claim at the time of submission of this Bid:

Violation	Remediation

13. *During the five-year period preceding the submission of this Bid, has the Bidder been the subject of proceedings before the Department of Labor for alleged violations of the Labor Law as it relates to the payment of prevailing wages and/or supplemental payment requirements?*

Yes No

If Yes, please list each instance of the commencement of a Department of Labor proceeding, the project for which it was commenced, and the status of the proceeding at the time of submission of this Bid:

Proceeding	Project	Disposition

14. *During the five-year period preceding the submission of this Bid, have the Bidder, its officers, directors, owner, and/or managerial employees been the subject of a criminal indictment?*

Yes No

If Yes, please list the name of the person(s) indicted or convicted, the charge against the individual and the disposition of the charge:

Name	Charge	Disposition

15. *During the five-year period preceding the submission of this Bid, has the Bidder been charged with and/or found guilty of any violations of federal, state, municipal, environmental, and/or health laws, codes, rules and/or regulations?*

Yes *No*

If Yes, please list the charge against the Bidder, the date of the charge, and the status of the charge at the time of submission of this Bid:

16. *Has the Bidder submitted bids on any other projects or contracts aside from the instant Bid?*

Yes No

If Yes, please list the projects bid upon, the expected or actual date of commencement of work and, if no award has been made, whether the Bidder was the lowest monetary Bidder:

Project Bid	Start Date	Low Bidder

17. *Does the Bidder have any projects ongoing at the time of submission of this Bid?*

Yes No

If Yes, please list the projects (or attach) on which the Bidder is currently working, the percentage complete, and the expected date of completion of the work:

Project	Construction Cost	Percent Complete	Completion Date

18. *Has the Bidder, or any company sharing a director, officer, shareholder or principal or Bidder, ever been terminated from a contract or project by any owner?*

Yes No

If Yes, please list the projects on which the Bidder was terminated, the reason for termination (convenience, suspension, for cause), and the date of termination:

Project Bid	Reason	Date

19. *Has the Bidder completed and attached the list of at* ***least three (3) references****?* Bidders must indicate at minimum: job name, location, brief description, dollar amount, and reference names with telephone numbers of the Owner and the Engineer or Architect. This Statement must be signed and submitted with the Bid to be considered responsive

Yes No

SWORN STATEMENT OF BIDDER:

By signing below, the Bidder named above acknowledges that all information supplied in response to this Statement of Bidder's Qualifications, including all attachments, is complete and accurate to the best of Bidder's knowledge. Bidder further represents that it has not filed and does not presently anticipate filing for bankruptcy, and that Bidder's assets are not in receivership. Bidder further certifies that it is not, nor are any of its Subcontractors included in its Bid, a party that has been previously debarred, suspended or found non-responsive or ineligible to participate in RSMP projects, nor does Bidder or any Subcontractor share one or more officers, directors, shareholders or principals with a debarred, suspended, or otherwise ineligible party.

By:
Authorized Name (print): _____
Title (print): _____
Authorized Signature: _____

Sworn to before me this Day of 2017

_____
Notary Public

END OF SECTION 00 45 13

SECTION 00 52 12 – FORM OF CONTRACT

This Contract made and executed in duplicate the ___ day of _____ in the year **2017**, by and between the Rochester Joint Schools Construction Board ("RJSCB"), hereinafter called the "Owner", party of the first part, and (Early Demo Prime Contractor), hereinafter designated as the "Contractor," party of the second part.

WITNESSETH that in consideration of the mutual covenants and Contracts, herein contained the parties hereto covenant, promise and agree, each with the other, as follows:

1.1 WORK TO BE DONE: The Contractor shall and will make and construct and sufficiently perform and finish in a good substantial, and workmanlike manner, under the direction and to the satisfaction of the Owner, acting as agent to the Rochester City School District and the City of Rochester, and the Owner's Representatives, all the work included in the plans, specifications, addenda, and other items forming the Contract Documents for

List of Contract Package

TV Studio Contract #700

Bid for Edison Technical & Occupational Education Center Project Phase 2a of the Rochester Schools Modernization Program ("RSMP")

SED Project Control No. 26-16-00-01-0-111-032
SED DWT No. 26-16-00-01-7-999-019

Addendum No. 1 – Dated _____
Addendum No. 2 – Dated _____

in all respects according thereto and in conformity with the Contract, and to furnish and provide for such work and materials of suitable and workmanlike quality as is set forth in the Contract Documents.

2.1 CONTRACT AND CONTRACT DOCUMENTS: The Contract Documents consist of this Contract, the Plans, Specifications, Drawings, and other documents included in the Project Manual setting forth the Work and requirements for performing same, as well as the Addenda hereinbefore enumerated and any written document executed or amended after execution of this Contract, all of which form the Contract and are as fully part of the Contract as if attached to this Contract or repeated herein. The Contract represents the entire and integrated Contract between the parties hereto and supersedes prior negotiations, representations or Contracts, either written or oral. The table of contents, titles, headings, headlines, and marginal notes contained herein and in the Contract Documents are solely to facilitate reference to various provisions thereof and in no way affect, limit, or dictate the interpretation of the provisions to which they may

refer. In case of any conflict or inconsistency between the provisions of this Contract and those of the other Contract Documents, the provisions of this Contract shall govern.

2.2 All obligations of the Owner and the Contractor are fully set forth and described in the Contract Documents. All parts of the Contract Documents are correlative and complementary, and any work required, or reasonably inferable, by one part and not mentioned in another shall be performed to the same extent and purposes as required by all parts. The Contractor is to provide for the Work enumerated in the Contract Documents, and all Work that is reasonably inferable from the Contract Documents, to be fully completed in every detail for the purpose designed, and the Contractor agrees to furnish anything and everything necessary for such purpose and the misplacement, addition or omission of any word or character shall not change the intent or any part of the Contract Documents from that set forth by the Contract Documents as interpreted by the Owner.

2.3 Local Labor; The Project will be funded in part through the issuance of tax-exempt bonds by the County of Monroe Industrial Development Agency ("COMIDA"). Pursuant to the terms of the Contract between COMIDA and the Owner, COMIDA will require that the Project use only "Local Labor", subject to certain permitted exceptions and waivers. The term "Local Labor" is defined as laborers residing in Monroe, Genesee, Livingston, Orleans, Ontario, Seneca, Wayne, Wyoming, and Yates counties. Those providing labor to the Project must use best efforts to achieve compliance with the COMIDA Local Labor requirement. Further information on the COMIDA program requirements applicable to the RSMP is available online at http://www.growmonroe.org.

2.4 Notwithstanding any other provision of the Contract Documents, Prime Contractor shall perform at least twenty-five percent (25%) of the field work by its own employees. For the purpose of the preceding sentence, any part of the work performed by supervisory personnel (persons above level of foreman) or by the office personnel shall not be considered part of the work performed by the Contractor's employees. Such items as bonds, certificates, shop drawings and similar items do not count towards the twenty-five percent (25%) requirements.

3.1 TERMS

3.1.1 WORK; as used herein, refers to work at the site of the Project as described in the Contract Documents, and includes all plant, labor, materials, supplies, equipment and other facilities and things necessary or proper for or incidental to the carrying out and completion of the terms of this Contract, including Contractor's provision of material delivered to and suitably stored at the site of the Project with approval of the Owner's Representative.

3.1.2 EXTRA WORK; as used herein, refers to and includes work required

by the Owner that in the judgment of the Owner's Representative(s) involves changes in or additions to that required by the Contract Documents.

3.1.3 CONTRACTOR, SUBCONTRACTOR; The terms "Contractor," "Subcontractor," as used herein, means a person, firm or corporation supplying labor and materials or labor for work at the site of the Project.

3.1.4 OWNER'S REPRESENTATIVE; The Owner's Program Manager (Savin Engineers P.C. and Gilbane Building Company "Savin/Gilbane"), in conjunction with Owner's Architect (SWBR Architects), and Owner's Construction Manager (Buffalo Construction Consultants) shall be designated the "Owner's Representative" for the purpose of this Contract.

3.1.5 NOTICE; as used herein, shall mean and include written notice. Written notice shall be deemed to have been duly served when delivered to or at the last known address of the person, or entity for whom intended, or to his, their, or its duly authorized agent, representative or officer; or when enclosed in a postage prepaid wrapper or envelope addressed to such person or entity at his, their, or its known business address and deposited in a United States mail box.

3.1.6 DIRECTED/REQUIRED/APPROVED/ACCEPTABLE; Whenever they refer to the Work or its performance, "directed", "required", "permitted", "ordered", "designated", "prescribed", and words of like import shall imply the direction, requirement, permission, order, designation, or prescription of the Owner's Representative(s); and "approved", "acceptable", "satisfactory", "in the judgment of" and words of like import shall mean approved by or acceptable to or satisfactory to or in the judgment of the Owner's Representative(s).

3.1.7 PROJECT, refers to RCSD Edison Technical and Occupational Education Center Phase 2B of the Rochester Schools Modernization Program, and all required Work and other obligations under the Contract relating thereto.

3.1.8 PROJECT MANUAL, refers to the document of that name issued for the Project at the time of bidding by the Owner or Owner's Representative(s) and includes all specifications, drawings, bidding requirements, forms, closeout documents, general and special conditions, and all other documents included therein, together with any Addenda thereto. The Project Manual is incorporated by reference into this Contract, constitutes a Contract Document and is binding upon the parties hereto.

4.1 SCOPE OF THE WORK: The Contractor will furnish all plant, labor,

materials, supplies, equipment and other facilities and things necessary or proper for or incidental to the Work contemplated by the Contract as required by and in strict accordance with the Contract Documents, and/or as required by and in strict accordance with such changes as are ordered and approved pursuant to the Contract, and will perform all other obligations imposed by the Contract.

4.2 WORK PROGRESS AND REPAIRS. Under the Contract, the Contractor shall fully execute the Work as is enumerated under the Contract Documents or reasonably inferable by the Contractor as necessary to produce the results intended by the Contract Documents. In addition thereto, the Contractor shall protect all the adjoining property and to repair and replace any such properties damaged or destroyed by it or its employees through construction operations at or near the Project site. The Contractor shall have the sole continuing responsibility to install materials, protect them, maintain them in proper condition and forthwith repair, replace or make good any damages thereto without cost to the Owner until such time as the Work covered by the Contract is fully accepted by the Owner.

5.1 COMPENSATION TO BE PAID TO THE CONTRACTOR

5.1.1 The Owner shall pay the Contractor in current funds for the Contractor's performance of the Contract the Contract Sum of _____Dollars and _____Cents ($_____.__), subject to additions and deductions as provided in the Contract Documents.

5.1.2 The Contract Sum is based upon the following alternates, if any, which are described in the Contract Documents and are hereby accepted by the Owner:

No Alternates were associated with this Contract.

5.1.3 The Contractor shall pay all laborers and mechanics providing services to the Project in accordance with the appropriate New York State Prevailing Wage Rate or federal Davis-Bacon Wage Rate Schedule, as applicable, pursuant to Section 00 73 46 of the Project Manual.

5.1.4 Unit prices, as set forth in Section 00 43 22 of the Project Manual, are as follows:

Unit Price _____.

5.1.5 The Owner is exempt from payment of sales and compensating use taxes of the State of New York and of cities and counties on all materials pursuant to this Contract. This exemption does not, however, apply to tools, machinery, equipment or other property purchased by, leased by or to the Contractor or a subcontractor or to

supplies or materials not incorporated into the completed Project. The Contractor and its subcontractors shall be responsible for and to pay any and all applicable taxes, including sales and compensating use taxes, on such tools, machinery, equipment or other property or such unincorporated supplies and materials.

6.1 TIME OF ESSENCE: The provisions of the Contract relating to the time for performance and completion of the Work are of the essence of the Contract. Accordingly, time is of the essence respecting the Contract Documents and all obligations thereunder. The Owner will be entitled to seek liquidated damages for failure to timely achieve Substantial Completion as set forth in the General Conditions.

7.1 COMMENCEMENT OF WORK: The dates of commencement of and Substantial Completion of the Work of the Contract shall be in accordance with the "Schedules and Milestones" Section of the Project Manual (00 43 83). As such, the Contractor will commence Work on the date therein specified for commencement of the Work, and shall fully complete the Work by the dates specified in, or calculated by reference to, Section 00 43 83 (herein, the "Contract Time") as the time for completion of the Contract, unless such period shall be extended as provided in the Contract Documents.

8.1 WARRANTIES. The Contractor represents and warrants the following to the Owner (in addition to any other representations and warranties contained in the Contract Documents) as an inducement to the Owner to execute the Contract, which representations and warranties shall survive the execution and delivery of the Contract, any termination of the Contract and the final completion of the Work that:

1. it and its Subcontractors are financially solvent, able to pay all debts as they mature and possessed of sufficient working capital to complete the Work and perform all obligations hereunder;

2. it is capable of furnishing the tools, materials, supplies, equipment and labor required to complete the Work and perform its obligations hereunder;

3. it is authorized to do business in the State of New York and the United States and properly qualified and licensed by all necessary governmental and public authorities having jurisdiction over it, the Work and the Project; its execution of the Contract and its performance thereof is within its duly authorized powers;

4. its duly authorized representative has visited the site of the Project, is familiar with the local and special conditions under which the Work is to be performed and has correlated on-site observations with the requirements of the Contact Documents; and

5. it possesses a suitable level of experience and expertise in the business administration, construction, construction management and superintendence of projects of the size, complexity and nature of this particular Project to complete the Project successfully and on schedule, and that it will perform all Work with the care, skill and diligence of a contractor of reasonable skill and experience in performing the obligations of the Contract.

The foregoing warranties are in addition to, and not in lieu of, any and all other liability imposed upon the Contractor by law with respect to the Contractor's duties, obligations and performance hereunder. The Contractor's liability hereunder shall survive the Owner's final acceptance of and payment for the Work. All representations and warranties set forth in the Contract, including without limitation, this Paragraph 8.1, shall survive the final completion of the Work or the earlier termination of the Contract. The Contractor acknowledges that the Owner is relying upon the Contractor's skill and experience in connection with the Work called for hereunder.

Upon the execution of this Contract, the Contractor shall, upon request, provide the Owner with copies of all contracts entered into between the Contractor and subcontractors or material suppliers. The Contractor's obligation to provide the Owner with said contracts shall continue for the duration of the Project.

9.1 LIST OF EXHIBITS

Refer to the Table of Contents to the Project Manual for enumeration of all Sections of the Contract Documents (Specifications and Drawings List), which are incorporated herein.

10.1 INSURANCE AND BONDS

The Contractor shall purchase and maintain insurance and provide bonds in accordance with the requirements of the Contract Documents, including Sections 00 61 13 and 00 73 16 of the Project Manual and the General Conditions.

11.1 AUTHORIZED SIGNATURES

This Contract is entered into as of the day and year first written.

FOR CONTRACTOR:

(COMPANY SEAL) ("Contractor")

_____ _____
Witness Print legal name of firm or corporation

By_____

Title_____

FOR OWNER:

_____ Rochester Joint Schools Construction Board ("Owner")
Witness

By_____
Allen K. Williams, Chair of the RJSCB

Accepted as to form only By_____
Ed Hourihan, Partner - Bond Schoeneck and King,
RJSCB General Counsel

SECTION 00 61 13: BONDS AND CERTIFICATES

Prior to execution of the Contract, the successful bidder shall furnish bonds covering the faithful performance of the Contract ("Performance Bond") and the prompt payment of moneys that are due to all persons furnishing labor and materials under the Contract ("Labor and Material Payment Bond"). The Performance Bond and Labor and Material Payment Bond (herein, "Bonds") shall conform to the provisions of section 103-f of the New York General Municipal Law and must be delivered prior to the commencement of the work. A copy of such performance and payment bonds shall be kept by the Owner at is offices, and shall be open to public inspection. See Section 00 61 31 "Bonds and Certificates" for acceptable forms for the Bonds.

Bond premiums will be paid by the Contractor and are included as part of the Contract Sum. Each Bond shall be in a sum equal to one-hundred (100%) percent of the Lump Sum Value of the work to be performed in a form satisfactory to the Owner and the Architect and shall be underwritten by a surety company authorized to do business in the State of New York with a minimum AM Best rating of "A-" or "Secure". For this Project, the bonded amount shall be the full Contract Sum.

The Performance Bond shall extend and remain in effect two (2) years after Substantial Completion of the Project. However, the period of time required for the Contractor to perform warranty Work may be longer, as set forth in the General Conditions or elsewhere in the Contract Documents (Manufacturers warranties may exceed a one-year warranty period for various Project components, e.g.. roofs, boilers, major equipment and systems).

The Bonds shall include a rider with the following provisions/modifications:

Surety hereby agrees that it consents to and waives notice of any addition, alteration, omission, change, extension of time or other modification of the Contract Documents. Any addition, alteration, omission, change, extension of or other modification of the Contract Documents, or a forbearance on the part of either the Owner or the Contractor to the other, shall not release the Surety from its obligations hereunder and notice to the Surety of such matters is hereby waived.

The Surety and Contractor shall be liable for the additional costs and expenses incurred by the Owner in relation to the default of the Contractor, i.e., architectural, engineering and/or consultants' fees and disbursements.

Surety also agrees that it is obligated under the Bonds to any successor, grantee or assignee of the Owner. The Surety shall promptly provide the Owner with a copy of any notice it receives from a claimant, pursuant to section four of the Payment Bond.

All provisions of the laws of the State of New York applicable to public improvement projects by the Owner and claims relating thereto shall apply to the Project, the Contract and the Bonds.

Acceptable forms of PERFORMANCE BOND and PAYMENT BOND for the Project are included on the following pages.

PERFORMANCE BOND

Bond #_____

KNOW ALL MEN BY THESE PRESENTS, That we _____ of _____, as Principal (hereinafter called the "Contractor"), and _____ a corporation created and existing under the laws of the State of _____ and authorized to do business in the State of New York and having its principal office at _____, as "Surety," are held and firmly bound unto the Rochester Joint Schools Construction Board "RJSCB," as Obligee (hereinafter, the "Owner"), in the penal sum of _____ dollars, _____ cents ($_____) lawful money of the United States of America, for the payment whereof Principal and Surety bind themselves, their heirs, executors, administrators, successors and assigns, all jointly and severally, firmly by these presents.

WHEREAS, said Contractor has entered into a certain written contract with said Owner dated as of the _____ day of _____ 20_____, (hereinafter called the "Contract") for Work to be performed on the Project of the Obligee, described as follows: _____. A copy of the Contract is hereto annexed and hereby made a part of this performance bond (hereinafter, the "Bond") as if herein set forth in full.

NOW, THEREFORE, the Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to the Owner for the performance of the Contract, including any subsequent written modification thereof entered into by the Contractor and Owner that does not materially change the fundamental nature of the initial Contract work, which shall be become part of the Contract, which Contract is incorporated herein by reference. The nature and scope of this obligation under the Bond is further described as follows:

1. If the Contractor performs the Contract, including any modifications made in writing thereto, the Surety and Contractor shall have no obligation under this Bond, except when applicable to participate in a conference provided in Section 2.

2. If there is no Owner Default under the Contract, the Surety's obligation under this Bond shall arise after:

2.1. The Owner first provides notice to the Contractor and the Surety that the Owner is considering declaring a Contractor Default, which notice shall indicate whether the Owner is requesting a conference among the Principal, Owner and Surety to discuss the Contractor's performance. If the Owner does not request a conference the Surety may, within five (5) business days after receipt of the Owner's notice, request such a conference. If the Surety timely requests a conference, the Owner shall attend. Unless the Owner agrees otherwise, any conference requested under this Section 2.1 shall be held within ten (10) business days of the Surety's receipt of the Owner's notice. If the Owner, the Contractor and the Surety agree, the Contractor shall be allowed a reasonable time to perform the Contract, but such an agreement shall not waive the Owner's right, if any, subsequently to declare a Contractor Default;

2.2. the Owner declares a Contractor Default, terminates the Contract and notifies the Surety; and

2.3. the Owner has agreed to pay the Balance of the Contract Price in accordance with the terms of the Contract to the Surety or to a contractor selected to perform the Contract.

3. Failure on the part of the Owner to comply with the notice requirement in Section 2.1 shall not constitute a failure to comply with a condition precedent to the Surety's obligations, or release the Surety from its obligations, except to the extent the Surety demonstrates actual prejudice.

4. When the Owner has satisfied the conditions of Section 2, the Surety shall promptly and at the Surety's expense take one of the following actions:

4.1. Arrange for the Contractor, with the consent of the Owner, to perform and complete the Contract;

4.2. Undertake to perform and complete the Contract itself, through its agents or independent contractors;

4.3. Obtain bids or negotiated proposals from qualified contractors acceptable to the Owner for a contract for performance and completion of the Contract, arrange for a contract to be prepared for execution by the Owner and a contractor selected with the Owner's concurrence, to be secured with performance and payment bonds executed by a qualified surety equivalent to the bonds issued on the Contract, and pay to the Owner the amount of damages as described in Section 6 in excess of the Balance of the Contract Price incurred by the Owner as a result of the Contractor Default; or

4.4. Waive its right to perform and complete, arrange for completion, or obtain a new contractor and with reasonable promptness under the circumstances:

4.4.1. After investigation, determine the amount for which it may be liable to the Owner and, as soon as practicable after the amount is determined, make payment to the Owner; or

4.4.2. Deny liability in whole or in part and notify the Owner, citing the reasons for denial.

5. If the Surety does not proceed as provided in Section 4 with reasonable promptness, the Surety shall be deemed to be in default on this Bond seven days after receipt of an additional written notice from the Owner to the Surety demanding that the Surety perform its obligations under this Bond, and the Owner shall be entitled to enforce any remedy available to the Owner. If the Surety proceeds as provided in Section 4.4, and the Owner refuses the payment or the Surety has denied liability, in whole or in part, without further notice the Owner shall be entitled to enforce any remedy available to the Owner.

6. If the Surety elects to act under Section 4.1, 4.2 or 4.3, then the responsibilities of the Surety to the Owner shall not be greater than those of the Contractor under the Contract, and the responsibilities of the Owner to the Surety shall not be greater than those of the Owner under the Contract. Subject to the commitment by the Owner to pay the Balance of the Contract Price, the Surety is obligated, without duplication, for

6.1. the responsibilities of the Contractor for correction of defective work and completion of the Contract;

6.2. additional legal, design professional and delay costs resulting from the Contractor's Default, and resulting from the actions or failure to act of the Surety under Section 4; and

6.3. liquidated damages, or if no liquidated damages are specified in the Contract, actual damages caused by delayed performance or non-performance of the Contractor.

7. If the Surety elects to act under Section 4.1, 4.3 or 4.4, the Surety's liability is limited to the amount of this Bond.

8. The Surety shall not be liable to the Owner or others for obligations of the Contractor that are unrelated to the Contract, and the Balance of the Contract Price shall not be reduced or set off on account of any such unrelated obligations. No right of action shall accrue on this Bond to any person or entity other than the Owner or its heirs, executors, administrators, successors and assigns.

9. The Surety hereby waives notice of any change, including changes of time, to the Contract or to related subcontracts, purchase orders and other obligations.

10. Any proceeding, legal or equitable, under this Bond may be instituted in any court of competent jurisdiction in the location in which the work or part of the work is located and shall be instituted within two years after a declaration of Contractor Default or within two years after the Contractor ceased working or within two years after the Surety refuses or fails to perform its obligations under this Bond, whichever occurs first. If the provisions of this Paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.

11. Notice to the Surety, the Owner or the Contractor shall be mailed or delivered to the address shown on the page on which their signature appears.

12. When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted here from and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so furnished, the intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

13. Definitions

13.1. Balance of the Contract Price. The total amount payable by the Owner to the Contractor under the Contract after all proper adjustments have been made, including allowance to the Contractor of any amounts received or to be received by the Owner in settlement of insurance or other claims for damages to which the Contractor is entitled, reduced by all valid and proper payments made to or on behalf of the Contractor under the Contract.

13.2. Contract. The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and changes made to the agreement and the Contract Documents.

13.3. Contractor Default. Failure of the Contractor, which has not been remedied or waived, to perform or otherwise to comply with a material term of the Contract.

13.4. Owner Default. Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Contract or to perform and complete or comply with the other material terms of the Contract.

13.5. Contract Documents**.** All the documents that comprise the agreement between the Owner and Contractor.

14. If this Bond is issued for an agreement between a Contractor and subcontractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.

15. Modifications to this bond are as follows:

15.1. Surety hereby agrees that it consents to and waives notice of any addition, alteration, omission, change, extension of time or other modification of the Contract Documents. Any addition, alteration, omission, change, extension of or other modification of the Contract Documents, or a forbearance on the part of either the Owner or the Contractor to the other, shall not release the Surety from its obligations hereunder and notice to the Surety of such matters is hereby waived.

15.2. Surety further agrees that, in the event of any claimed default by the Owner in the performance of the Owner's obligations to the Contractor under the Contract, the Contractor or Surety shall cause written notice of such default (specifying said default in detail) to be given to the Owner and the Owner shall have thirty (30) days from the date of the receipt of such notice within which to cure such default, or such additional reasonable period of time as may be required if the nature of such default is such that it cannot be cured within thirty (30) days.

15.3. Notice of Default shall be sent by the Owner by certified or registered U.S. mail, return receipt requested, postage prepaid. Any provision or condition in the Bonds to the contrary notwithstanding, the time period for the Owner to commence any action or proceeding, legal or equitable, under the Bonds, in a Court of competent jurisdiction in the jurisdiction in which the Project is located, shall be two (2) years from the date on which the Owner receives specific written notice that the Surety declines to perform any of its obligations or denies any claim made by the Owner, pursuant to the Bonds.

15.4. The Surety and Contractor shall be liable for the additional costs and expenses incurred by the Owner in relation to the Contractor Default, i.e., architectural, engineering and/or Consultants fees and disbursements.

15.5. Surety also agrees that it is obligated under the Bonds to any successor, grantee or assignee of the Owner. The Surety shall promptly provide the Owner with a copy of any notice it receives from a claimant, pursuant to section six of the Payment Bond.

15.6. All provisions of the laws of the State of New York applicable to public improvement projects, claims against subdivisions of the state of New York and Bonds shall apply to the Project, the Contract and the Bonds

Signed and sealed this _____ day of _____, 20____

(SEAL)

_____
Principal

By_____

_____
Title

(SEAL)

_____
Surety

By_____

_____
Title

If the Contractor (Principal) is a partnership, the bond should be signed by one of the individuals who are partners.

If the Contractor (Principal) is a corporation, the bond should be signed in its correct corporate name by a duly authorized officer, agent, or attorney-in-fact.

Each executed bond should be accompanied by (a) appropriate acknowledgements of the respective parties; (b) appropriate duly certified copy of Power of Attorney or other certificate of authority where bond is executed by agent, officer or other representative of Principal or Surety; (c) a duly certified extract from By-Laws or resolutions of Surety under which Power of Attorney or other certificate of authority of its agent, officer or representative was issued, and (d) duly certified copy of latest published financial statement of assets and liabilities of Surety.

ACKNOWLEDGMENT OF CONTRACTOR, IF AN INDIVIDUAL

State of _____

County of _____ ss.:

City of _____

On this _____ day of _____, 20___, before me personally came and appeared _____, to me known and known to me to be the person described in and who executed the foregoing instrument and acknowledged that he executed the same.

[SEAL]

_____
Notary Public

ACKNOWLEDGMENT OF CONTRACTOR, IF A FIRM

State of _____
County of _____ ss.:
City of _____

On this _____day of _____, 20___,
before me personally came and appeared_____, to me known and known to me to be one of the members of the firm of

_____, described in and who executed the foregoing instrument and he acknowledged to me that he executed the same as and for the act and deed of said firm.

[SEAL] _____
Notary Public

ACKNOWLEDGMENT OF CONTRACTOR, IF A CORPORATION

State of _____
County of _____ ss.:
City of _____

On this _____day of _____, 20___,
before me personally came and appeared_____, to me known, who, being by me duly sworn, did depose and say that he resides at
_____; that
he is the _____ of _____
_____, the corporation described in and which executed the foregoing instrument; that he knows the seal of said corporation; that one of the seals affixed to said instrument is such seal; that it was so affixed by order of the directors of said corporation, and that he signed his/her name thereto by like order.

[SEAL] _____
Notary Public

SURETY ACKNOWLEDGMENT

State of _____

ss.:

County of _____

On this _____ day of _____, 20_____, before me personally came and appeared_____, to me known, who, being by me duly sworn, did depose and say that he is an attorney-in-fact of _____, the corporation described in and which executed the within instrument; that he knows the corporate seal of said corporation; that the seal affixed to the within instrument is such corporate seal, and that he signed the said instrument and affixed the said seal as Attorney-in-Fact by authority of the Board of Directors of said corporation and by authority of this office under the Standing Resolutions thereof.

[SEAL]

_____
Notary Public

LABOR AND MATERIAL PAYMENT BOND

Bond #_____

KNOW ALL MEN BY THESE PRESENTS:

That _____ as Principal, hereinafter called "Contractor," and _____, a corporation organized and existing under the laws of the state of _____ and authorized to do business in the State of New York, as Surety, hereinafter called "Surety," are held and firmly bound unto Rochester Joint Schools Construction Board as Obligee, hereinafter called "Owner," for the use and benefit of claimants as herein defined, in the amount of _____dollars, _____cents ($_____), for the payment whereof Contractor and Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, Contractor has by written agreement dated the _____ day of _____ 20_____, entered into a contract with Owner for (hereinafter called the "Contract") for Work to be performed in favor of the Owner, and particularly described as follows:_____ in accordance with drawings and specifications prepared by the Owner of its consultants, as may be supplemented, modified or otherwise amended in writing by Contractor and Owner, which Contract is by reference made a part hereof, and is hereinafter referred to as the "Contract."

NOW, THEREFORE, the Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to the Owner to pay for labor, materials and equipment furnished for use in the performance of the Contract, which is incorporated herein by reference, subject, however, to the following terms and conditions:

1. If the Contractor promptly makes payment of all sums due to Claimants (as herein defined), and defends, indemnifies and holds harmless the Owner from claims, demands, liens or suits by any person or entity seeking payment for labor, materials or equipment furnished for use in the performance of the Contract, then the Surety and Contractor shall have no obligation under this Bond.

2. If there is no Owner Default under the Contract, the Surety's obligation to the Owner under this Bond shall arise after the Owner has promptly notified the Contractor and the Surety (at the address described in Section 12) of claims, demands, liens or suits against the Owner or the Owner's property by any person or entity seeking payment for labor, materials or equipment furnished for use in the performance of the Contract and tendered defense of such claims, demands, liens or suits to the Contractor and the Surety.

3. When the Owner has satisfied the conditions in Section 2, the Surety shall promptly and at the Surety's expense defend, indemnify and hold harmless the Owner against a duly tendered claim, demand, lien or suit.

4. The Surety's obligations to a Claimant under this Bond shall arise after the following:

4.1. Claimants, who do not have a direct contract with the Contractor,

4.1.1. have furnished a written notice of non-payment to the Contractor, stating with substantial accuracy the amount claimed and the name of the party to whom the materials were, or equipment was, furnished or supplied or for whom the labor was done or performed, within one hundred twenty (120) days after having last performed labor or last furnished materials or equipment included in the Claim; and

4.1.2. have sent a Claim to the Surety (at the address described in Section 12).

4.2. Claimants, who are employed by or have a direct contract with the Contractor, have sent a Claim to the Surety (at the address described in Section 12).

5. If a notice of non-payment required by Section 4.1.1 is given by the Owner to the Contractor, that is sufficient to satisfy a Claimant's obligation to furnish a written notice of non-payment under Section 4.1.1.

6. When a Claimant has satisfied the conditions of Sections 4.1 or 4.2, whichever is applicable, the Surety shall promptly and at the Surety's expense take the following actions:

6.1. Send an answer to the Claimant, with a copy to the Owner, within sixty (60) days after receipt of the Claim, stating the amounts that are undisputed and the basis for challenging any amounts that are disputed; and

6.2. Pay or arrange for payment of any undisputed amounts.

6.3. The Surety's failure to discharge its obligations under Section 6.1 or Section 6.2 shall not be deemed to constitute a waiver of defenses the Surety or Contractor may have or acquire as to a Claim, except as to undisputed amounts for which the Surety and Claimant have reached agreement. If, however, the Surety fails to discharge its obligations under Section 6.1 or Section 6.2, the Surety shall indemnify the Claimant for the reasonable attorney's fees the Claimant incurs thereafter to recover any sums found to be due and owing to the Claimant.

7. The Surety's total obligation shall not exceed the amount of this Bond, plus the amount of reasonable attorney's fees provided under Section 6.3, and the amount of this Bond shall be credited for any payments made in good faith by the Surety.

8. Amounts owed by the Owner to the Contractor under the Contract shall be used for the performance of the Contract and to satisfy claims, if any, under any construction performance bond. By the Contractor furnishing and the Owner accepting this Bond, they agree that all funds earned by the Contractor in the performance of the Contract are dedicated to satisfy obligations of the Contractor and Surety under this Bond, subject to the Owner's priority to use the funds for the completion of the work.

9. The Surety shall not be liable to the Owner, Claimants or others for obligations of the Contractor that are unrelated to the Contract. The Owner shall not be liable for the payment of any costs or expenses of any Claimant under this Bond, and shall have under this Bond no

obligation to make payments to, or give notice on behalf of, Claimants or otherwise have any obligations to Claimants under this Bond.

10. The Surety hereby consents to and waives notice of any addition, alteration, omission, change, extension of time or other modification of the Contract or Contract Documents, including any related subcontracts or purchase orders. Any addition, alteration, omission, change, extension of or other modification of the Contract Documents, or a forbearance on the part of either the Owner or the Contractor to the other, shall not release the Surety from its obligations hereunder and notice to the Surety of such matters is hereby waived.

11. No suit or action shall be commenced by a Claimant under this Bond other than in a court of competent jurisdiction in the State of New York, County of Monroe or after the expiration of one year from the date final payment on Claimant's subcontract became due, provided Claimants not in direct contract with the Contractor furnishing the Bond have furnished the notice required in paragraph 4. If the provisions of this Paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.

12. Notice and Claims to the Surety, the Owner or the Contractor shall be mailed or delivered to the address shown on the page on which their signature appears. Actual receipt of notice or Claims, however accomplished, shall be sufficient compliance as of the date received.

13. When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so furnished, the intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

14. Upon request by any person or entity appearing to be a potential beneficiary of this Bond, the Contractor and Owner shall promptly furnish a copy of this Bond or shall permit a copy to be made.

15. **Definitions**

15.1. **Claim.** A written statement by the Claimant including at a minimum:

15.1.1. the name of the Claimant;

15.1.2. the name of the person for whom the labor was done, or materials or equipment furnished;

15.1.3. a copy of the agreement or purchase order pursuant to which labor, materials or equipment was furnished for use in the performance of the Contract;

15.1.4. a brief description of the labor, materials or equipment furnished;

15.1.5. the date on which the Claimant last performed labor or last furnished materials or equipment for use in the performance of the Contract;

15.1.6. the total amount earned by the Claimant for labor, materials or equipment furnished as of the date of the Claim;

15.1.7. the total amount of previous payments received by the Claimant; and

15.1.8. the total amount due and unpaid to the Claimant for labor, materials or equipment furnished as of the date of the Claim.

15.2. **Claimant.** An individual or entity having a direct contract with the Contractor or with a subcontractor of the Contractor to furnish labor, materials or equipment for use in the performance of the Contract and who has not been paid in full therefor before the expiration of ninety (90) days after the day the last of the labor was performed or material was furnished by him for which a Claim is made. The term Claimant also includes any individual or entity that has rightfully asserted a claim under an applicable mechanic's lien or similar statute against the real property upon which the Project is located. The intent of this Bond shall be to include without limitation in the terms "labor, materials or equipment" that part of water, gas, power, light, heat, oil, gasoline, telephone service or rental equipment used in the Contract, architectural and engineering services required for performance of the work of the Contractor and the Contractor's subcontractors, and all other items for which a mechanic's lien may be asserted in the jurisdiction where the labor, materials or equipment were furnished.

15.3. **Contract.** The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and all changes made to the agreement and the Contract Documents.

15.4. **Owner Default.** Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Contract or to perform and complete or comply with the other material terms of the Contract.

15.5. **Contract Documents.** All the documents that comprise the agreement between the Owner and Contractor.

16. If this Bond is issued for an agreement between a Contractor and subcontractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.

Signed and sealed this _____ day of_____, 20_____.

(SEAL) _____
Principal

By_____

_____
Title

(SEAL) _____
Surety

By_____

_____
Title

INDIVIDUAL ACKNOWLEDGMENT

State of_____
County of_____ ss.:
City of_____

On this _____ day of _____, 20__,
before me personally appeared the within named _____,
to me known to be the individual described in, and who executed the same.

[SEAL] _____
Notary Public

1.

2. PARTNERSHIP ACKNOWLEDGMENT

State of_____
County of_____ ss.:
City of_____

On this _____ day of _____, 20__,
personally came _____ to me known and known to me to be a
member of the firm of_____, the firm described in, and
which executed the foregoing instrument and said
_____acknowledged that
he executed the foregoing instrument for and in behalf of said firm.

[SEAL] _____
Notary Public

CORPORATE ACKNOWLEDGMENT

State of_____
County of_____ ss.:
City of_____

On this _____ day of _____, 20__,
before me personally came and appeared_____, to me known,
who, being by me duly sworn, did depose and say that he resides in
_____, that he is the
_____ of _____
_____, the corporation described in and which
executed the above instrument; that he knows the seal of said corporation; that the seal affixed to said instrument is such corporate seal; that it was so affixed by order of the Board of Directors of said corporation, and that
he signed his/her name thereto by like order.

[SEAL]

_____
Notary Public

SURETY ACKNOWLEDGMENT

State of_____

ss:

County of_____

On this _____ day of _____, 20__,
before me personally came and appeared_____, to me known,
who, being by me duly sworn, did depose and say that he is an
attorney-in-fact of _____, the
corporation described in and which executed the within instrument; that he knows the corporate seal of said corporation; that the seal affixed to the within instrument is said corporate seal, and that he signed the said instrument and affixed the said seal as Attorney-In-Fact by authority of the Board of Directors of said corporation and by authority of this office under the Standing Resolutions thereof.

[SEAL]

_____
Notary Public

SECTION 00 62 11 – SUBMITTAL COVER SHEET

SUBMITTAL COVER SHEET

PROJECT: EDISON TECHNICAL SCHOOL TELEVISION STUDIO EQUIPMENT **ARCHITECT:** LABELLA ASSOCIATES	**ARCHITECT'S PROJECT NO. 2170218**
SUBMITTAL NAME:	**SUBMITTAL NO.:**
	DATE:

SUBMITTAL TYPE

ACTION SUBMITTAL:	☐ PRODUCT DATA	☐ SHOP DRAWING	☐ SAMPLE
INFORMATIONAL SUBMITTAL:	☐ COORDINATION DRAWING	☐ QUALIFICATION DATA	☐ CERTIFICATES
☐ TEST REPORTS	☐ MAINTENANCE DATA	☐ OTHER _____	

SPECIFICATION SECTION NUMBER AND TITLE:

DRAWING NUMBER AND DETAIL REFERENCES:

☐ NAMED PRODUCT	**DEVIATIONS:** ☐ EQUIVALENT (PRIOR TO AWARD)	☐ SUBSTITUTION (AFTER AWARD)

CONTRACTOR:

SUB-CONTRACTOR:

SUPPLIER:

MANUFACTURER:

CONTRACTORS REVIEW & APPROVAL **This submittal has been reviewed, checked and approved for compliance with the Contract Documents.** **CONTRACTOR:** **BY:** **DATE:**	**ARCHITECT'S REVIEW STAMP**

SUBMITTAL COVER SHEET

PROJECT: EDISON TECHNICAL SCHOOL TELEVISION STUDIO EQUIPMENT **ARCHITECT:** LABELLA ASSOCIATES	**ARCHITECT'S PROJECT NO.** 2170218
SUBMITTAL NAME:	**SUBMITTAL NO.:**
	DATE:

SUBMITTAL TYPE

ACTION SUBMITTAL:	☐ **PRODUCT DATA**	☐ **SHOP DRAWING**	☐ **SAMPLE**
INFORMATIONAL SUBMITTAL:	☐ **COORDINATION DRAWING**	☐ **QUALIFICATION DATA**	☐ **CERTIFICATES**
☐ **TEST REPORTS**	☐ **MAINTENANCE DATA**	☐ **OTHER** _____	

SPECIFICATION SECTION NUMBER AND TITLE:

DRAWING NUMBER AND DETAIL REFERENCES:

☐ **NAMED PRODUCT**	**DEVIATIONS:** ☐ **EQUIVALENT** (PRIOR TO AWARD)	☐ **SUBSTITUTION** (AFTER AWARD)

CONTRACTOR:

SUB-CONTRACTOR:

SUPPLIER:

MANUFACTURER:

CONTRACTORS REVIEW & APPROVAL **This submittal has been reviewed, checked and approved for compliance with the Contract Documents.** **CONTRACTOR:** **BY:** **DATE:**	**ARCHITECT'S REVIEW STAMP**

SECTION 00 63 19 - REQUEST FOR EQUIVALENT REVIEW FORM

Note: Use separate form for each material, product or equipment item submitted for review.

Date: _____ Request No.: _____

Project:

_____

Location:_____

_____

Name of material, product or equipment item submitted as an equivalent:

_____

Name of material, product or equipment item specified:

_____

Specification Section_____, Article_____, Paragraph_____

Qualities that differ from specified product or system, if any:

_____

_____

_____

_____

_____

Name of Manufacturer / Fabricator

_____

Address

_____

City State Zip Code

Phone: _____ E-mail: _____

_____

Name of Vendor / Supplier

_____

Address

_____

_____

City State Zip Code

Phone: _____ E-mail: _____

Reason for requesting consideration of proposed equivalent:

_____

_____

_____

_____

Proposed equivalent will affect other materials or systems, such as dimensional revisions, redesign of structure, or modifications to other work:

_____No

_____Yes, describe requirements:

_____

_____

_____

_____

Savings or credit to Contract Sum for accepting proposed equivalent, if any:

_____

_____ ($_____)
Dollars Amount in words Amount in Figures

The attached data is furnished herewith for evaluation of the proposed equivalent:

Product Data _____, Drawings _____, Samples _____, Tests _____, Reports _____

Other Information:

_____

_____

_____

The undersigned hereby certifies:

1. The proposed equivalent has been fully investigated and is considered equal or superior to specified brand, material, product or equipment item.

2. The same or better warranty will be furnished for proposed equivalent as for specified brand, material, product or equipment.

3. All changes in the work resulting from the use of this equivalent, if approved, will be coordinated and completed in all respects and all costs, including, but not limited to, those for additional services rendered by the Architect are the responsibility of this Contractor at no additional compensation under the Contract.

_____ _____
Contractor Signed by

_____
Address

_____
City State Zip Code

Phone: _____ E-mail: _____

END OF SECTION 00 63 19

SECTION 00 72 16 – GENERAL CONDITIONS

1. INDEX TO GENERAL CONDITIONS:

24. Additional or Substitute Bond
25. Plans and Specifications
26. Additional Instructions and Detail Drawings
27. Submittals
28. Subsurface Conditions
29. Contractor's Title to Materials
30. Superintendence by Contractor
31. Representations of Contractor
32. Separate Contracts
33. Patent Rights
34. Surveys, Permits and Regulations
35. Correction of Work
36. Delivery of Statements Required by Owner
37. Owner's Right to Withhold Payment
38. Contractor's Obligation to Complete Contract
39. Owner's Right Terminate Contract for Cause or Stop Work
40. Owner's Right to Terminate or Suspend Contract for Convenience
41. Contractor's Right to Stop Work or Terminate Contract
42. Uses of Premises and Removal of Debris
43. Weather Conditions
44. Architect Discretion
45. Owner's Representatives' Discretion
46. Provisions Required by Law Deemed Inserted
47. Subletting, Successor and Assigns
48. Guarantee

49. Liquidated Damages

50. Record Documents and Audits

51. Governing Law

52. Claims and Disputes

53. Apprenticeship Requirements

ATTACHMENT A: Part 5 of Title 29 of the U.S. Code of Federal Regulations. The terms of "Attachment A" are incorporated by reference into these General Condtiions, where applicable.

2. DEFINITIONS: The following terms as used in this Contract are respectively defined as follows:

1. "ADDENDA": Written or graphic instruments issued prior to the execution of the Contract which modify or interpret the bidding documents, including the drawings and Specifications, by additions, deletions, clarification, corrections, or supplementary information.

2. "ALTERNATE": Variation in Contract requirements on which a separate price is to be received by the Owner as part of the bid. If the Alternate is accepted in writing by the Owner, the variation is then a part of the Contract and the amount of money quoted be added to or deleted from the base bid is taken into account in determining the Contract Sum."

3. "ARCHITECT/ENGINEER": The design professional appointed by the Owner who prepared or contributed to the Contract Documents for the particular Project site at issue. The term "Architect" as used in the Contract Documents is interchangeable with the term "Engineer," unless otherwise specified. They will bear similar responsibilities, and their authorized representatives will have equal authority relative to any duties or activities when referred to in the Contract Documents or in executing any field responsibilities.

4. "CHANGE ORDER": A written order or directive to the Contractor from Owner's Representative requiring or approving a change to the Work, including any resulting adjustment to the Contract Sum or Contract Time, as further described in Section 4, "Changes."

5. "COMIDA": County of Monroe Industrial Development Agency, created under Article 18A of the General Municipal Law of New York State for the purpose of promoting local workforce development in Monroe County and the surrounding areas.

6. "CONSTRUCTION MANAGER": The Construction Manager designated by the Owner for the Project shall serve as the Contractor's primary contact for, and Owner's authorized agent on, the Project.

7. "CONTRACT DOCUMENTS": The plans, Specifications, drawings, Form of Contract, and other documents included in the "Project Manual" issued for bid on this Project, setting forth the Work of the Project and requirements for performing same, as well as any Addenda issued in accordance with the procedures provided for in the Contract.

8. "CONTRACT SUM": The price for which Contractor agrees to perform the Work and denominated by the Contract as such. The Contract Sum shall include Owner-approved Alternates.

9. "CONTRACT TIME": The time in which Contractor must perform all obligations under the Contract as set forth in the Contract Documents "Schedule and Milestones" and as may be modified from time to time as provided for in these General Conditions.

10. "CONTRACTOR": The contractor named as such having entered into this Contract with the Owner. The term "Contractor" shall also include the Contractor, its officers, employees, agents, contractees, and Subcontractors of any tier.

11. "DISTRICT" or "RCSD": The Rochester City School District.

12. "EXTRA WORK": Work not included in the Contract Documents that is nonetheless required to be completed to achieve the purpose of the Project. Contractor must notify Construction manager of such "Extra Work " and follow procedures in Section 4 prior to performing same.

13. "FURNISH": shall mean purchasing and/or fabricate and deliver to the Project site or other location when so designated.

14. "INSTALL": shall mean build-in, mount in position, connect or apply the specified object(s) and, where applicable, adjust and start-in operation.

15. "KNOWLEDGE," and similar terms used in reference to the Contractor, shall mean that which the Contractor knows, recognizes or discovers (or should reasonably know, recognize, or discover) in exercising the care, skill, and diligence required by the Contract Documents or by applicable law, including anything reasonably inferable by Contractor.

16. "OWNER": Owner means Rochester Joint Schools Construction Board" and "RJSCB," as the legally authorized agent of the Rochester City School District ("RCSD") and the City of Rochester.

17. "OWNER'S REPRESENTATIVE": Owner's Representative may refer herein to the Architect/Engineer, Construction Manager or Program Manager, the relative roles of which are defined more specifically in the Contract Documents.

18. "PROGRAM MANAGER": Owner's Representative and authorized agent of Owner for the Project, Savin Engineers P.C. and Gilbane Building Company ("Savin/Gilbane").

19. "PROJECT": the John Walton Spencer School No. 16 (Phase 2A) of the Rochester Schools Modernization Program (RSMP), and all required Work and other obligations under this Contract relating thereto.

20. "PROVIDE": When the word "provide" (including derivatives thereof) is used, it shall mean to properly fabricate, complete, transport, deliver, install, erect, construct, test and furnish all labor, materials, equipment, apparatus, appurtenances, and all items and expenses necessary to properly complete in place ready for operation or use under the terms of the Contract Documents."

21. "RCSD DESIGN GROUP": the Rochester City School District Facilities Department.

22. "ROCHESTER JOINT SCHOOLS CONSTRUCTION BOARD" or "RJSCB": See definition of "Owner," *supra*.

23. "SPECIFICATIONS": This term refers to the written Specifications of the Project as identified by number in the Project Manual issued at the time of bidding for this Contract, as may be amended from time to time in accordance herewith. When used in the singular or with reference to a particular number, this term shall refer to the particular Specification so referenced.

24. "SUBCONTRACTOR": A person, firm or corporation supplying labor and materials or labor for work at the site of the Project by agreement with the Contractor. This term may be used to refer to "Subcontractors" of any tier, unless specified otherwise herein.

25. "TECHNOLOGY CONSULTANT": Authorized agent of Owner for technology and networking components of the Owner's District-Wide Technology ("DWT") Project.

26. "TRUSTEE": The bank or financial agency serving as trustee under the Indenture of Trust entered into with the Owner relating to financing of the Project.

27. "WORK": Work to be performed, including work normally done, at the location of the Project, pursuant to the Contract Documents.

3. EXTENSION OF CONTRACT TIME: If the Contractor is delayed in the completion of its Work by reason of unforeseeable causes beyond its control and without its fault or negligence, including, but not restricted to, acts of God or of the public enemy, active Owner interference, acts of neglect of any other Contractor, fires, floods, epidemics, quarantines, strikes, riots, civil commotion, or freight embargoes, the period herein specified for completion of the Work (herein, the "Contract Time") shall be extended by such time as shall be fixed by the Owner. Other extensions of time requested by Contractor shall be addressed in accordance with Section 4 of these General Conditions and Section 01 26 39 of the Contract Documents ("Change Order Procedures").

    1. NO WAIVER: No such extension of the Contract Time shall be deemed a waiver by the Owner of its right to terminate the Contract for abandonment or delay by the Contractor as herein provided or relieve the Contractor from full responsibility for performance of its obligations of the Contract.

4. CHANGES:

1. EXTRA WORK: If Contractor identifies any work or material not required under the Contract Documents, but for which it will seek to perform and request payment, it must immediately notify the Construction Manager and follow the procedures for Change Orders as set forth in Section 01 26 39 of the Contract Documents (”Change Order Procedures”). No payment shall issue for performance of “Extra Work” before it is approved by authorized Change Order.

2. CHANGE ORDERS: The Owner shall have the right to require by written order of the Architect, Construction Manager or Program Manager (“Change Order”), and without written notice to the Contractor’s sureties, changes in, additions to, or deductions from Work; provided that if changes, additions, or deductions are made, the general character of the Work as a whole is not substantially changed thereby. Adjustment in the Contract Sum, if any, because of any Change Order shall be determined as provided in this Section, and any claim for extension of Contract Time shall be adjusted at the time of issuing the Change Order. No claim for change, addition, or deduction, or adjustment of the Contract Sum, or extension of Contract Time, shall be made or allowed unless done pursuant to an authorized Change Order. Plans without an authorized Change Order shall not be construed as authorizing a particular change to the Work or extension of Contract Time. The Contractor shall give written notice of any claims arising from a proposed Change Order to the Construction Manager before the commencement of the work required by such Change Order. The Construction Manager shall inform the Program Manager of such written notice received from the Contractor. No course of conduct or dealings between the parties, nor express or implied acceptance of conduct or dealings between the parties, nor express or implied acceptance of alterations or additions to the Work, and no claim that the Owner has been unjustly enriched by any alteration or addition to the Work, whether or not there is, in fact, any unjust enrichment owing to the Work, shall be the basis of any claim to an increase in any amounts due under the Contract Documents or a change in any time period provided for in the Contract Documents. Where an authorized Change Order diminishes the quantity of Work to be done, it shall not constitute a basis for a claim for damages or anticipated profits on Work that may be dispensed with.

    1. EFFECT OF CHANGE: It shall be understood and agreed that authorized Change Orders shall in no way invalidate the Contract and shall not affect or discharge the bond furnished by the Contractor.

    2. NECESSARY ADJUSTMENTS: The Contractor, without charge, shall make such slight alterations to the site or equipment, fixtures or machinery thereupon located as may be necessary to make adjustable parts fit to fixed parts, leaving all complete and in proper order when done.

3. DETERMINING CHANGES IN COST OF THE WORK: Adjustments, if any, in the Contract Sum by reason of an authorized Change Order shall be limited to the amount specified therein. Adjustments to the Contract Sum, if any, shall be determined by one of the following methods, the Owner reserving the right to select the method or methods at the time the written Change Order is issued.

1. UNIT PRICES: The unit prices are those fixed by the Contract as set forth in the Schedule of Unit Prices at Section 00 43 22 of the Project Manual, or as may be submitted and approved by the Construction Manager upon issuance of a written Change Order. If the deletion, addition or alteration implicates Work that is measured by a Unit Price, as determined by the Construction Manager, the Contract Sum shall be increased or decreased in accordance with the appropriate Unit Price.

2. COST-PLUS or "TIME AND MATERIALS": As herein used, cost refers to the actual and necessary costs incurred by the Contractor by reasons of the change in the Work for:

    1. LABOR: Labor costs shall be the amount shown on the Contractor's payrolls in compliance with the Wage Rate Schedule (Section 00 73 46), or time sheets attributable to the particular work required by the Change Order. Contractor is obligated to keep time sheets sufficient for Owner's Representative to accurately determine labor costs arising from a Change Order.

    2. MATERIALS: Material cost shall be the net price paid for material delivered to the Project. The Contractor must keep tickets for all materials and equipment used in a form acceptable to the Owner's Representative when performing Change Order work. If any material previously required is deleted by the written order of the Owner after it has been delivered or tendered by the Contractor and consequently will not retain its full value for other uses, the Contractor shall be allowed the actual cost of the omitted material less a fair market value of material, as determined by the Architect and Owner's Representatives.

    3. EQUIPMENT RENTAL: Equipment rental shall be the actual additional cost incurred for necessary equipment to perform the Work. Contractor must document its equipment costs in a form acceptable to Owner's Representative to receive payment for Change Order work, and shall not duplicate costs for equipment already on site or required to be on site for performance of ongoing Project Work. Costs shall not be allowed in excess of usual rentals charged in the Rochester area for similar equipment of like size and condition as determined by the Construction Manager, including the costs of necessary supplies and repairs for operating the equipment.

3. "PLUS": As herein used is defined as a percentage to be added to the above "cost" items to cover project management, superintendence, use of ordinary tools, bond, warranty, insurance premiums (other than Worker's Compensation Insurance), overhead expenses, and profit. This percentage shall be mutually agreed upon but not more than fifteen percentum (15%) of the cost items set forth above.

4. RECORDS: The Contractor shall keep complete and accurate daily records of all costs for performance of Change Order work, and shall present such information in

such form and at such time as the Owner's Representatives may direct. Refer to Section 01 26 39, "Change Order Procedures," for further information regarding procedures for Changes in the Work.

5. PERFORMANCE AND LABOR AND MATERIAL PAYMENT BONDS: The Contractor shall furnish surety bonds in the forms set forth in the Contract Documents (Section 00 61 13) in an amount at least equal to one hundred percent (100%) of the Contract Sum as security for faithful performance of this Contract ("Performance Bond") and for the payment of all persons performing labor and furnishing materials in connection with this Contract ("Labor and Material Payment Bond"). No Contractor may commence Work under this Contract unless and until the tendered Performance Bond and Labor and Material Payment Bond have been approved by Owner.

6. **CONTRACTOR'S INSURANCE: Before commencing Work under the Contract, the Contractor shall obtain at its own expense and cost all the insurance required by and specified in Section 00 73 16, and shall provide to the Owner, for the Owner's approval, certificates of insurance evidencing that the coverage, coverage extensions, policy endorsements and waivers of subrogation required by and specified in Section 00 73 16 are maintained in force.**

7. INDEMNIFICATION: The Rochester Joint Schools Construction Board ("RJSCB" or "Owner") is an entity created by special authorizing legislation of the State of New York to serve as an agent for the Rochester City School District ("RCSD") and the City of Rochester ("City'") for purposes of administering the Rochester School Modernization Program ("RSMP"). RSMP Projects are funded in part through bonds available through COMIDA, and governed by the Indenture of Trust from the Trustee bank, U.S. Bank National Association (the "Trustee").

   1. To the fullest extent permitted by law, regardless of whether or not a lawsuit has actually commenced, upon initial notice of any claim or potential claim received by Contractor, RJSCB, RCSD or the City, Contractor agrees to indemnify, defend and hold harmless the Owner (RJSCB), the RCSD, the City, COMIDA, the Trustee, Program Manager, Architect/Engineer(s), Technology Consultant (if any), Construction Manager(s), and each of such parties' respective affiliates, subsidiaries, directors, trustees, officers, board members, employees and agents (collectively, the "Indemnitees"), from and against any and all liabilities, obligations, claims, damages, demands, causes of action, losses and expenses (including, without limitation, reasonable attorneys' fees and costs of suit) directly or indirectly relating to, arising from or in connection with: (a) any actual or alleged negligent act or omission or willful misconduct of Contractor or any of its agents, employees or subcontractors, or anyone directly or indirectly employed by them or anyone for whose acts they may be liable; (b) any breach by Contractor of any of its representations, warranties, covenants or obligations set forth in this Contract; (c) injury to person or property (including death) to the extent arising out of or resulting from violation of any state, federal, or local law, rule or regulation by Contractor or any of its agents, employees or subcontractors, or anyone directly or indirectly employed by them or anyone for whose acts they may be liable; or (d) any actual or alleged injuries to person or property (including death) suffered by any of Contractor's agents, employees or subcontractors, or any

employees or agents of Contractor's agents or subcontractors in the course of their performance or completion of any Work or other obligations arising under or pursuant to the Contract, or upon any premises owned, leased or controlled by the Indemnitees, or any Project site. Nothing herein shall be construed as requiring the Contractor to indemnify the Indemnitees or any of them for any claim for damage or loss of any kind to the extent such loss or damage is caused by the negligence or willful misconduct of the Indemnitees or any of them. Contractor shall include in each Subcontractor agreement for the Project a provision substantially similar to this indemnification provision.

2. In claims against any person or entity to be indemnified under the above Section 7.1 by an employee of the Contractor, a Subcontractor, anyone directly or indirectly employed by them, or anyone for whose acts they may be liable, the indemnification obligations set forth in Section 7.1 shall not be limited by any limitation on amount or type of damages, compensation or benefits payable by or for the Contractor or a Subcontractor under any applicable worker's compensation laws, disability benefit laws, or other employee benefit laws or regulations.

8. CONTRACT BENEFICIARIES: No obligation of the Architect/Engineer and/or Owner's Representatives to the Owner, whether expressed by agreement or implied by law, shall be construed as intended for the benefit of the Contractor. Nothing in the Contract Documents nor in any aspect of the Architect/Engineer/Owner's representatives' relationship with the Owner shall create or give rise to any duty whatsoever on the part of the Architect/Engineer/Owner's Representatives to the Contractor.

9. QUALIFICATIONS FOR EMPLOYMENT: Qualifications for employment of persons performing Work under this Contract shall comply with applicable federal and New York State laws and regulations.

10. HOURS OF WORK: First Shift is to be from 7:00 a.m. to 3:30 p.m., and Second Shift is to be from 2:00 p.m. to 10:30 p.m.

11. WAGE RATES: Each employee engaged in work on the Project shall be compensated as set forth in accordance with the wage rates required by New York State and federal laws and regulations as set forth in the Wage Rate Schedule (Section 00 73 46).

    1. To the extent that Contractor may be required by state or federal law or regulation to pay at a higher rate than that payable at the time of Contract award due to post-award changes to the published U.S. Davis-Bacon or New York State prevailing wage rates, such rate increase(s) shall not constitute a basis for an increase in the Contract Sum.

    2. The Contractor shall post at conspicuous points on the site of the Project a schedule showing all current wage rates and all authorized deductions, if any, from unpaid wages actually earned.

12. LOCAL LABOR: The Project will be funded in part through the issuance of tax-exempt bonds by the County of Monroe Industrial Development Agency ("COMIDA"). Pursuant to the terms of the agreement between COMIDA and the Owner, COMIDA requires that the Project use only "Local Labor," subject to certain permitted exceptions and waivers. The

term “Local Labor” is defined as laborers residing in Monroe, Genesee, Livingston, Orleans, Ontario, Seneca, Wayne, Wyoming and Yates counties. Those providing labor to the Project must use best efforts to achieve compliance with the Local Labor requirement. Further information on the COMIDA program requirements applicable to the RSMP is available online at http://www.growmonroe.org.

13. CONTRACTOR SELF-PERFORMANCE REQUIREMENTS: Notwithstanding any other provision of the Contract Documents, at least five percent (5%) of the direct labor, materials, systems or equipment shall be provided by the Contractor. The Contractor shall subcontract **no more than 95%** of the total contract value. Contractors are required to certify, prior to award, that they can and will comply with this subcontracting limitation requirements. The unit measure (dollar value, unit price, schedule of value) utilized to determine the quantities of work, labor and material furnished by the Contractor shall be determined by the Construction Manager and the Architect and shall be appropriate for the scope of work involved. For the purpose of this Section, work performed by supervisory personnel, persons above the level of foreman, or office personnel, all overhead costs, including bonds and certificates, shop drawings and similar items shall not count towards the percentage of Work provided by the Contractor.

14. PAYMENT OF EMPLOYEES: The Contractor and each Subcontractor shall pay each of their employees engaged in work on the Project under this Contract according to the terms of the NYS Department of Labor.

15. SAFETY AND CONTRACTOR CONTROL:

    1. The Contractor shall be responsible for compliance with all state and federal laws, rules and regulations as may be applicable to the Work or Project, as well as for initiating and adhering to all safety precautions and programs in connection with the performance of the Work as more fully set forth in Section 01 35 23, “Project Safety Standards.”

    2. Contractor shall supervise and direct the Work using its best skill and attention, and shall be solely responsible for, and have control over, all construction means, methods, techniques, sequences and procedures and for coordinating the Work. Should the Contract Documents give specific instructions as to any of the foregoing categories, Contractor shall be solely responsible for the safety thereof unless it shall give timely written notice to Owner’s Representative that such instructions are not sufficiently safe, in which event Contractor shall await specific instructions from Owner’s Representative before proceeding with the Work. If Contractor is instructed to proceed with the instructions of the Contract Documents or other method prescribed by Owner over Contractor’s objection, Contractor shall not be liable for any resulting loss or damage arising solely from said instructions.

    3. Contractor shall immediately notify the Construction Manager in writing, with a copy of such notice being sent simultaneously to the Owner, of any accident or other occurrence impacting the health or safety of any laborer working on the Project, or resulting in personal injury, death, or property damage arising from the Work. Such notice shall be provided within twenty-four (24) hours of the accident or occurrence to which it relates and shall reasonably identify and describe the laborer(s) affected, by

whom such person(s) were employed or hired, the date, time, location and circumstances of the accident or occurrence, the action taken to address the accident or occurrence, and names and contact information for any witnesses or observers thereof. Contractor's failure to timely report accidents and incidents as set forth herein may be grounds for termination or suspension of the Contract, or grounds for deeming Contractor ineligible for the award of any future RSMP contracts.

16. REQUISITION FOR PAYMENT:

1. Prior to submission of first application for payment, the Contractor shall submit to the Construction Manager a schedule of values of the various portions of its Work. The schedule of values approved by the Construction Manager shall be the basis for all requests for payment as determined from the progress of Work to be verified and approved by the Architect.

2. All applications for monthly and/or final payment shall be submitted in triplicate on forms furnished by the Owner's Representative.

3. All applications for monthly and/or final payment must include certified payroll records for each week included in that payment period. Contractors, and subcontractors of every tier, must maintain the full social security number and current addresses of each person performing any part of the Project Work. Contractor, and every subcontractor, shall submit this information to Owner prior to commencement of any Work, and shall update this information in writing to the Owner as changes are made (e.g., upon the hiring of an additional laborer or change to existing addresses). Contractors and subcontractors must include the full address for each laborer with each weekly certified payroll application, and at least the last four digits of that laborers' social security number. Providing complete certified payroll information is a condition of processing monthly payment requisitions, and failure to do so could delay payment. Contractor shall provide, and require its subcontractors to provide, such additional information as Owner may reasonably request to ensure that the requirements of certified payroll records are met.

4. In addition to the above, forms required in accordance with Section 00 43 31 ("MWBE/DBE/SBE Utilization and Workforce Diversity") shall also be included with each payment application. In addition, Owner shall require submission of an Interim Lien Waiver, included in the Project Manual at Section 01 29 76 ("Progress Payment Procedures") with each payment application, together with such additional forms or information as Owner may reasonably require. Failure to submit required forms or information may result in non-payment or delayed payment to the Contractor. Contractors and Subcontractors are required to keep original payroll records or transcripts for a period of three years from date of final payment.

17. PAYMENT AND RETAINAGE BY OWNER:

1. The Owner will make payment to the Contractor based upon a duly certified and approved estimate of the work performed by the Contractor, but the Owner will retain five percent (5%) of the amount of each such estimate until final completion and acceptance of all Work covered by this Contract.

2. The Contractor shall pay:

    1. for all transportation and utility services not later than the 15th day of the calendar month following that in which such services were rendered;

    2. for all materials, tools and other expendable equipment to the extent of 95 percent of the cost thereof, not later than the 15th day of the calendar month following that in which such materials, tools and equipment are delivered at the site the Project, and the balance of the cost thereof not later than the 30th day following the completion of that part of the work in or on which such materials, tools and equipment are incorporated or used;

    3. to each Subcontractor, not later than the 15th day following each payment to the Contractor, the respective amounts allowed the Contractor on account of the work performed by its Subcontractors, to the extent of each such Subcontractor's interest therein; and

    4. in accordance with all state and federal laws, rules and regulations as may apply to the Work and payment for same.

18. SUBSTITUTIONS:

1. SUBSTITUTIONS: After award of the Contract, the Owner at its option may permit substitutions of material or products named in the Contract Documents. If Contractor proposs to use products or material differing from the brand, type, kind or manufacturer listed in the Contract Documents, a list of proposed substitutions must be submitted to the Construction Manager on the Equivalent Review Form (Section 00 63 19) under a Submittal Cover Form (Section 00 62 11) within three days of the award of Contract, or in such time as will permit review by the Architect without impacting the Project schedule.

2. The Contractor must submit all required back-up data for each proposed substitution through the Construction Manager, including such additional back-up as may be requested by Architect. All requests for substution shall be posted to the Submittal Exchange web site.

3. No additional substitutions will be considered after this initial process unless substitution is required due to a specified material, product or equipment being unavailable in the market place, or if the Owner may realize a credit or reduction in the Contract Sum. Upon such circumstances, additional substitutions will be considered by the Architect if submitted in accordance with the above requirements.

4. Substitutions shall comply with the following requirements:

    i) The materials, products and equipment described in the Contract Documents establish the standard of required quality, function, dimension and appearance expected. Substitution requests will be considered only if these standards are

met, or exceeded, and the Architect and Owner subsequently approve the substitutions.

ii) Each request for substitution shall include:
   i. The name of the material, product or equipment item for which substitution is requested and a complete description of the proposed substitute, including drawings, cuts, performance and test data, and any other information necessary for a complete evaluation.
   ii. A statement setting, forth any changes in other materials, products, equipment or other Work that incorporation of the substitution would require.

5. The burden of proof of the merit of the proposed substitution is upon the proposer. The Architect's decision of approval or disapproval of a proposed substitution shall be final and will be set forth in writing.

6. If any of the following conditions occur due to substitutions, the Contractor making the substitution shall bear the cost of such conditions, including payment for services rendered by the Architect:

   a. Redesign required for any of the Work.
   b. Material or quantity changes for any of the Work.
   c. Delays in any of the Work.
   d. Requests for Information (RFI's) required due to substitutions or substitution requests.

7. All material and workmanship shall, in every respect, be in accordance with what, in the opinion of the Owner's Representative, is in conformity with approved modern practice.

8. In all cases, new materials shall be used unless this provision is waived by written notice from the Owner's Representative.

19. INSPECTION AND TESTS: All material and workmanship (if not otherwise designated by the Contract Documents) shall be subject to inspection, examination and test by the Construction Manager or other Owner's Representatives, at any and all times during manufacture and/or construction and at any and all places where such manufacture and/or construction are carried on.

1. Without additional charge, the Contractor shall furnish promptly all reasonable facilities, labor and materials necessary to make tests so required safe and convenient.

2. Special, full-size and performance tests shall be as described in the Specifications.

3. If at any time before final acceptance of the entire Work, the Construction Manager considers necessary or advisable an examination of any portion of the Work already

completed by removing or tearing out the same, the Contractor shall upon request furnish promptly all necessary facilities, labor and materials.

4. If such work is found to be defective in any material respect, due to fault of the Contractor or any Subcontractor, or if any work shall be covered over without the approval or consent of the Architect or Construction Manager (whether or not the same shall be defective), the Contractor shall be liable for the expenses of such examination and of satisfactory reconstruction.

5. If, however, such approval and consent shall have been given and such work is found to meet the requirements of the Contract, the Contractor shall be recompensed for the expenses of such examination and reconstruction in a manner herein provided for the payment of Change Orders.

6. The selection of bureaus, laboratories and/or agencies for the inspection and tests of supplies, materials or equipment, where required by the Contract Documents, shall be subject to the approval of the Owner. Satisfactory documentary evidence that the material has passed the required inspection and tests must be furnished to the Owner by the Contractor prior to the incorporation of the material into the Project.

7. Rejected work shall be removed from the site of the Project.

20. PROTECTION OF WORK AND PROPERTY. The Contractor shall at all times safely guard the Owner's property from injury or loss in connection with this Contract. Contractor shall at all times safely guard and protect its own Work; and any adjacent property or work provided by others thereupon, from damage. The Contractor shall replace or make good any such damage, loss or injury unless such be caused directly by errors contained in the Contract Documents or by the Owner or Owner's Representatives. All passageways, guard fences, lights or other facilities required for protection by local authorities, local conditions, or by local, state or federal law or regulation must be provided and properly maintained. In carrying out the foregoing obligations, Contractor shall comply with the Project Safety Standards set forth in Section 01 35 23.

21. PROTECTION OF PERSONS AND PROPERTY: In the event of a situation that threatens loss or injury of property, and/or safety of life, the Contractor shall notify the Construction Manager immediately and shall comply with the Project Safety Standards set forth in Section 01 35 23. Accidents or occurrences on the Project that have or may have resulted in personal injury, property damage or death must be reported immediately, as set forth in paragraph 14 hereinabove.

22. FINAL PAYMENT: Within thirty (30) days after the filing of a certificate of completion and delivery of all close-out materials required by the Contract Documents, and upon approval of the Owner's Representatives, Owner shall pay to the Contractor the balance of the Contract Sum as set forth in Contractor's final payment application. All prior estimates and payments including those relating to Change Orders shall be subject to correction by this payment, referred to herein as the "Final Payment."

23. ACCEPTANCE OF FINAL PAYMENTS CONSTITUTES RELEASE: The acceptance by the Contractor of the Final Payment shall operate as a release to the Owner of all claims

and of all liability to the Contractor for all things done or furnished in connection with this Work and for every act and neglect of the Owner and others relating to or arising out of this Work, excepting the Contractor's claim for interest upon the Final Payment, if this payment be improperly delayed. No payment, final or otherwise, shall operate to release the Contractor or its sureties from any obligations under this Contract or any bonds issued in compliance herewith.

24. ADDITIONAL OR SUBSTITUTE BOND: If at any time the Owner shall be or become dissatisfied with any surety or sureties then upon the Contractor's Performance Bond or Labor and Material Payment Bond provided in accordance with Contract Documents, Section 00 61 13 "Bond and Certificates," or if for any other reason such Bonds shall cease to be adequate security to the Owner, the Contractor shall within five (5) days after notice from the Owner so to do, substitute an acceptable bond in such form and sum signed by such other sureties as may be satisfactory to the Owner. The premiums on such bond shall be paid by the Contractor. No further payments shall be deemed due nor shall be made until the new sureties shall have qualified.

25. PLANS AND SPECIFICATIONS: The Contractor shall keep at the site of the Work one copy of the Contract Documents and shall, at all times, give the Architect and Owner's Representatives access thereto. Anything shown on the plans or drawings and not mentioned in the specifications, or mentioned in the specifications and not shown on the plans or drawings, shall have the same effect as if shown or mentioned, respectively, in both. In case of any conflict or inconsistency between the plans/drawings and specifications, Contractor shall notify Construction Manager using the procedures set forth with in other Sections of these specification. Any decision or response to Request for Information ("RFI") by the Architect as to such conflict or inconsistency shall be conclusive.

26. ADDITIONAL INSTRUCTIONS AND DETAIL DRAWINGS: The Contractor may be furnished additional instructions and detail drawings to carry out the Work. The additional drawings and instructions thus supplied will become part of the Contract Documents. Unless the Contractor promptly objects in writing to the additional drawings due to an inconsistency or alleged change in the Work, the determination of which shall be made by the Architect, the Contractor shall carry out the Work in accordance with the additional detail drawings and instructions.

    1. Contractor and the Construction Manager will jointly prepare, with other contractors providing labor or material to the Project: (i) a schedule, fixing the dates at which special detail drawings will be required and by whom they will be made, such drawings, if any, to be furnished by the Construction Manager in accordance with said schedule, and (ii) a schedule fixing the respective dates for the submission of shop or required submittals, the beginning of manufacture, testing and installation of materials, supplies and equipment and the completion of the various parts of the Work, each such schedule to be subject to change from time to time in accordance with the progress of the Work.

27. SUBMITTALS: Submittals consist of shop drawings, samples and manuals. Submittals of shop drawings and samples are required to establish conformance of selected portions of the Work with the Contract Documents and are either approved by the Architect/Engineer

or not approved. Regardless of such approval, the responsibility for correct dimensions, installation and performance remains with the Contractor.

1. Shop drawings include drawings, diagrams, illustrations, schedules, charts and other product data prepared to show how specific portions of the work shall be fabricated and/or installed.

2. Samples are physical examples of materials, products or units of work.

3. Manuals are operating or maintenance instructions relating to certain portions of the work.

4. Submittal procedures are described in Section 01 32 19. Items for which submittals are required are listed in the various technical sections of the Project Manual in which they occur.

28. SUBSURFACE CONDITIONS: Should the Contractor encounter subsurface and/or latent conditions at the site materially differing from those shown on or referenced in the Contract Documents, Contractor shall immediately give written notice to the Construction Manager of such conditions, before they are disturbed. Should Contractor disturb such conditions prior to notifying the Construction Manager, Contractor (or Subcontractors) shall not be entitled to an adjustment to the Contract Sum or Contract Time.

29. CONTRACTOR'S TITLE TO MATERIALS: No materials or supplies for the Work shall be purchased by the Contractor or by any subcontractor subject to any chattel mortgage or under a conditional sale or other agreement by which an interest is retained by the seller. The Contractor warrants that it has good title to all materials and supplies it plans to use in the Work on the Project.

30. SUPERINTENDENCE BY CONTRACTOR: At the site of the Work, the Contractor shall employ a full time Construction Superintendent, who shall be present any time work is being performed, and have full authority to act for the Contractor. Such Superintendent shall be reasonably acceptable to the Construction Manager. The Superintendent shall be present at all progress meetings and shall continue in its capacity as Superintendent for the duration of the Project.

31. REPRESENTATIONS OF CONTRACTOR: The Contractor represents and warrants that:

1. it is financially solvent and is experienced in and competent to perform the type of labor or to furnish the plant, materials, supplies or equipment, to be so performed or furnished under the Contract;

2. it is familiar with all federal, state, and local laws, ordinances, rules and regulations, which may in any way affect the Work or those employed therein, including but not limited to, any special acts relating to the Work or to the Project of which it is a part;

3. such temporary and permanent Work required by the Contract Documents can be satisfactorily constructed and used for the purpose for which it is intended, and that such construction will not injure any person or damage any property; and

4. it has carefully examined the Contract Documents and the site of the Work, has confirmed all relevant dimensions, and that from its own investigations, it is satisfied as to the nature and location of the Work, the character, quality and quantity of surface and sub-surface materials likely to be encountered, the character of equipment and other facilities needed for the performance of the Work, the general and local conditions, and all other factors which may in any way affect its Work or its performance under this Contract.

32. SEPARATE CONTRACTS: The Owner plans to award other contracts for portions of the RSMP, which will proceed simultaneously with this Contract. The Contractor shall coordinate its operations and cooperate with those of other contractors performing work on the Project or site thereof. Cooperation will be required in the arrangement for the storage of materials and in the detailed execution of the Work. The Contractor shall remain informed of the progress and the detail work of other contractors and shall notify the Construction Manager immediately of lack of progress or defective workmanship on the part of other contractors, where such delay or such defective workmanship will interfere with Contractor's own operations. Failure of the Contractor to keep informed of the work progressing on the site or to give notice of lack of progress or defective workmanship by others shall be construed as acceptance of the progress of work and coordination with Contractor's own Work. Contractor shall cooperate with the Owner, Program Manager, Architect, Engineer, Construction Manager, and other Contractors on the Project, making every reasonable effort to reduce the Contract Time.

33. PATENT RIGHTS: Contractor, without any additional compensation or adjustment in the Contract Sum, will pay for all patent fees or royalties required in respect of the Work or any part thereof and will fully indemnify the Owner for any loss on account of infringement of any patent rights unless, prior to using a particular process or a product of a particular manufacturer for the Work, Contractor notifies the Owner in writing that such process or product is an infringement of a patent.

34. SURVEYS, PERMITS AND REGULATIONS: Unless otherwise expressly provided for in the Contract Documents, the Owner will furnish to the Contractor all surveys necessary for the execution of the Work.

1. The Contractor shall procure and pay for all permits and licenses necessary for the execution of its Work and the use of such Work when completed.

2. Owner or Owner's Representative will obtain the building permits or approvals required by the New York State Department of Education. Contractor shall procure and maintain such permits, licenses, or approvals as are required to conduct its operations.

3. The Contractor shall comply with all federal, state and local laws, ordinances, rules and regulations relating to the performance of the Work, the protection of adjacent property, and the maintenance of passageways, guard fences or other protective facilities in place or required to be in place at the site of the Project.

35. CORRECTION OF WORK: All labor and materials, and processes of manufacture to be incorporated in the Project shall be at all times subject to the inspection by the Architect and Construction Manager. The Architect shall be the final judge of the quality and

suitability of the labor, materials, processes of manufacture, for the purposes for which they are to be used and, should they fail to meet Architect's approval, they shall be forthwith reconstructed, made good, replaced and/or corrected, as the case may be, by the Contractor at its own expense, in accordance with the Architect's direction. Contractor shall also be responsible for any resulting costs for additional services required by the Architect/Engineer, additional third-party inspection costs required to ensure conformity to the Contract Documents, or other direct costs incurred by the Owner resulting from rejected Work, which shall be charged to the Contractor by a Change Order or Construction Change Directive. Rejected Work shall immediately be removed from the site. Acceptance of material and workmanship by the Architect and the Construction Manager shall not relieve the Contractor from its obligation to adhere to the requirements for material and workmanship set forth in the Contract Documents.

1. If in the opinion of the Architect and the Construction Manager it is undesirable to replace any defective or damaged materials or to reconstruct or correct any portion of the Work injured or not performed in accordance with the Contract Documents, the compensation to be paid to the Contractor hereunder shall be reduced by such amount as in the judgment of the Architect and the Construction Manager will appropriately compensate Owner.

2. Neither the acceptance of the completed work nor payment therefor shall operate to release the Contractor or its sureties from any obligations under or upon this Contract or the performance or payment bonds, or other security provided in accordance with this Contract.

36. DELIVERY OF STATEMENTS REQUIRED BY OWNER: Prior to commencement of work, or anytime during Contractor's performance thereof, Owner may require submission of information as in the Owner's reasonable judgment is necessary to ensure compliance with the terms of this Contract. Such information may include, but is not limited to, copies of all subcontract agreements held by any Contractor for any part of the Project work; certified payroll forms; forms required to satisfy the workforce diversity goals set forth in Section 00 43 31 of the Project Manual; Interim Lien Waivers (Section 01 29 76), and other forms or information. Neither Final Payment nor any retained percentages shall become due until Contractor submits to Owner's Representative: (1) an affidavit that payrolls, bills for materials and equipment, and other indebtedness connected with the Work for which Owner or Owner's property might be responsible or encumbered (less amounts withheld by Owner) have been paid or otherwise satisfied; (2) a certificate that insurance required by the Contract Documents to remain in force after final payment is currently in effect and will not be canceled or allowed to expire until at least 30 days' prior written notice has been given to Owner; (3) a written statement that Contractor knows or no substantial reasons that the insurance will not be renewable to cover the period required by the Contract Documents; (4) consent of surety, if any, to final payment; and (5) if required by Owner, other data establishing payment or satisfaction of obligations, such as receipts, releases and waivers of liens, claims, security interests or encumbrances arising out of the Contract, to the extent and in such form as may be designated by Owner. If a Subcontractor refuses to furnish a release or waiver required by Owner, the Contractor may furnish a bond satisfactory to Owner to indemnify the Owner against such lien. If such lien remains unsatisfied after payments are made, Contractor shall refund to Owner

all money that Owner may be compelled to pay discharging such lien, including all costs and reasonable attorneys' fees.

37. OWNER'S RIGHT TO WITHHOLD PAYMENTS: The Owner may withhold from the Contractor so much of any approved payments due as may in the judgment of the Owner be necessary so as to:

    1. assure the payment of just claims then due and unpaid of any persons supplying labor or materials for the Work;

    2. protect the Owner from loss due to defective work not remedied;

    3. protect the Owner from loss due to delay or delays in performance of Work; or

    4. protect the Owner from loss due to injury to persons or damage to the work or property of other contractors, subcontractors, or others caused by the act or neglect of the Contractor of any of its Subcontractors. The Owner shall have the right to apply any such amounts so withheld in such manner as the Owner may deem proper to satisfy such claims or to secure such protection. Such application of money shall be deemed payments for the account of the Contractor.

    5. ensure timely and complete submission of all forms and information required by this Contract.

38. CONTRACTOR'S OBLIGATION TO COMPLETE CONTRACT: The Contractor shall start and complete this Contract on the dates specified in the Construction Schedule of Section 00 43 83, with any permitted adjustments thereto as are made in accordance with these General Conditions. Failure to complete Work in such time period shall entitle the Owner to damages as provided herein.

39. OWNER'S RIGHT TO TERMINATE CONTRACT FOR CAUSE OR STOP WORK: Subject to the terms of any Performance Bond and Labor or Material Payment Bond provided by Contractor under Section 00 61 13 *("Bonds and Certificates"), once accepted by the Owner, the Owner may exercise any of the following rights upon providing such notice as is set forth herein:

    1. If the Contractor shall refuse or fail, after being notified by the Construction Manager, to supply enough properly skilled workmen or proper materials; or

    2. the Contractor shall refuse or fail to prosecute the Work or any part thereof with such diligence as will insure its completion within the period herein specified (or any duly authorized extension thereof) or shall fail to complete the Work within said period; or

    3. the Contractor shall fail to make prompt payment to persons supplying labor or materials for the Work; or

    4. the Contractor shall fail or refuse to regard laws, ordinances, rules, or regulations of any local, state or federal governmental authority or administrative body having jurisdiction over the Project or Work, or the instructions of the Owner's

Representatives, or otherwise be guilty of a substantial violation of any provision of this Contract;

5. when any of the above reasons exist, the Owner, without prejudice to any other rights or remedy it may have, may by three days' written notice mailed or delivered to the Contractor, exclude Contractor from the Project site and take possession of all materials, equipment, tools, and machinery thereupon owned by Contractor and provide any such Work or part thereof, and deduct the cost thereof from any money then due or thereafter to become due to the Contractor under this Contract, or the Owner may by seven days' written notice mailed or delivered to the Contractor, and any notice required to Contractor's Surety by the terms of Contractor's Performance Bond, if any, terminate the employment of the Contractor and his right to proceed, either as to the entire Work or (at the option of the Owner) as to any portion thereof as to which delay shall have occurred and may take possession of the Work and complete the Work as the Owner may deem expedient.

6. In case of termination for any reasons set forth in this Section, the Contractor shall not be entitled to receive any further payment until the Work is finished. If the unpaid balance of the compensation to be paid the Contractor hereunder shall exceed the expense of so completing the work (including compensation for additional managerial administrative, inspection services and any damages resulting from a Contractor-caused delay), such excess shall be paid to the Contractor. If such expense shall exceed such unpaid balance, the Contractor and/or its sureties shall be liable to the Owner for such excess. If the right of the Contractor to proceed with the Work is so terminated, the Owner may take possession of and utilize in completing the Work such materials, appliances, supplies, plant and equipment as may be on the site of the Work and necessary therefor.

40. OWNER'S RIGHT TO TERMINATE OR SUSPEND CONTRACT FOR CONVENIENCE:

1. The Owner may, with or without cause, order Contractor in writing to suspend, delay or interrupt its Work in whole or part for such period of time as the Owner may determine, provided that should such period of delay, suspension or interruption exceed ninety days, Contractor may terminate Contract in accordance with Section 41 herein. No adjustment to the Contract Sum shall be given for any delay, suspension of interruption which would have arisen by another cause for which Contractor was responsible. Any adjustment to the Contract Sum or time for completion of Work arising from Owner's suspension of the Work shall be made in accordance with Section 4 herein, "Changes." Contractor shall not be entitled to damages for lost profits or earning opportunity, or for consequential damages arising from such suspension or delay.

2. The Owner may at any time terminate the Contract for Owner's convenience and without cause. Upon receipt of written notice from Owner of such termination, Contractor shall (i) cease operations as directed by Owner in the notice; (ii) take actions necessary, or that Owner may direct, for protection and preservation of the Work; and (iii) except for Work to be performed prior to the effective date of termination of the Contract, terminate all existing subcontracts, purchase orders, and like commitments, and enter into no further commitments with respect to ordering or

supplying labor, material, machinery, equipment, supplies or fixtures for performance of the Work. In the event of such termination for convenience, Contractor shall be entitled to receive payment for Work executed and costs incurred by reason of such termination, with reasonable overhead and profit on such Work executed. However, Contractor shall not be entitled to receive overhead or profit on any Work not executed, nor shall termination or suspension under this paragraph entitle Contractor to any other compensation or claim for damages including, without limitation, consequential damages, lost opportunity costs, impact costs, or similar claims.

41. CONTRACTOR'S RIGHT TO STOP WORK OR TERMINATE CONTRACT: If the Work shall be stopped by a suspension by the Owner as set forth in Section 40, or by order of a court of law or any other legal authority having jurisdiction over the Project or parties to the Contract for a period of three months, without act or fault of the Contractor or any of his agents, servants, employees, or Subcontractors, the Contractor may, upon ten days' written notice to the Owner, discontinue its performance of the Work and/or terminate the Contract, in which event the liability of the Owner to the Contractor shall be determined as provided in the paragraphs immediately preceding, except that the Contractor shall not be obligated to pay to the Owner any excess of the expense of completing the Work over the unpaid balance of the compensation to be paid the Contractor hereunder.

42. USES OF PREMISES AND REMOVAL OF DEBRIS: The Contractor expressly undertakes at its own expense to:

1. take every precaution against injuries to persons or damages to property;

2. store its apparatus, materials, supplies, and equipment in such orderly fashion at the Project site as will not unduly interfere with the progress of its Work or the work of any other contractor;

3. to place upon the Work or any part thereof only such loads as are consistent with the safety of that portion of the Work;

4. clean up all refuse, rubbish, scrap materials, and debris caused by its operations, to the end that at all times the site of the Work shall present a neat, orderly, and workman-like appearance;

5. remove all surplus material, temporary structures, including foundations thereof, plant of any description, and debris of every nature resulting from its operation and to put the site in a neat orderly condition prior to issuance of final payment; and

6. effect all cutting, fitting, or patching of its Work required to make the same conform to the Contract Documents, and, except with the consent of the Construction Manager, not to cut or otherwise alter the work of any other contractor.

43. WEATHER CONDITIONS: In the event of inclement weather or whenever the Construction Manager shall direct a temporary delay in the Work, the Contractor will and will cause its Subcontractors to protect carefully all Work, or materials or implements used to perform same, against damage or injury from the weather. If, in the opinion of the Construction Manager any Work or materials shall have been damaged or injured by

reason of failure on the part of the Contractor or of any Subcontractor to provide adequate protections, such Work and materials shall be removed and replaced at the expense of the Contractor. This paragraph shall not affect Contractor's obligations with regard to acquiring insurance as specified in Section 00 73 16.

44. ARCHITECT DISCRETION: The Contractor shall employ no plant, equipment, materials, methods or laborers to which the Architect reasonably objects, and shall remove no plant, materials, equipment or other facilities from the site of the Work without Architect's permission. Upon request, the Architect through the Construction Manager shall confirm in writing any oral order, direction, requirement, or determination.

45. OWNER'S REPRESENTATIVES' DISCRETION: The discretion of the Owner's Representatives shall not be limited by the enumeration herein or elsewhere in the Contract Documents of particular instances in which the opinion, judgment, discretion or determination of such parties is permitted or required.

46. PROVISIONS REQUIRED BY LAW DEEMED INSERTED: Each and every provision of law and clause required by law to be inserted in this Contract shall be deemed to be inserted herein and the Contract shall be read and enforced as though it were included herein, and if through mistake or otherwise any such provision is not inserted or is not correctly inserted, then upon the application of either party, the Contract shall forthwith be physically amended to make such insertion. Those terms and provisions set forth in Part 5 of Title 29 of the U.S. Code of Federal Regulations, attached to these General Conditions as "Attachment A," are expressly incorporated into the Contract.

47. SUBLETTING, SUCCESSOR AND ASSIGNS: The Contractor shall not sublet or assign any part of the Work under this Contract, nor assign any monies due hereunder, without first obtaining the written consent of the Owner. This Contract shall inure to the benefit of and shall be binding upon the parties hereto and upon their respective successors and assigns; but neither party hereto shall assign or transfer its interest herein in whole or in part without the consent of the other.

48. GUARANTEE:

    1. All Work to be done under this Contract, including all work required by authorized Change Orders, shall be guaranteed for a period of **two years**, unless stated otherwise in any specialty warranty required by the Contract Documents, from the date of Final Payment, exclusive of reserves or retained percentages, to serve the purpose for which it is made or constructed, and forthwith on written notice the Contractor must make any repairs, replacement or service required by the Owner without extra charge when such repairs, replacement or service are made necessary, in the judgment of the Architect and the Construction Manager, by reason of any faulty or defective workmanship or materials.

    2. Neither Final Payment nor any provisions in the Contract Documents nor partial or entire occupancy of Project site by the Owner shall constitute acceptance of Work not performed in accordance with the Contract Documents or relieve the Contractor of liability in respect to any express warranties or responsibility for faulty materials or workmanship. Work not conforming to these requirements, including substitutions not

properly approved and authorized may be considered defective. Upon written notice from the Construction Manager, the Contractor shall remedy any faults or defects in the Work, and pay for any damage to other Work resulting therefrom, which shall appear within a period of one year, unless a longer period is specified in the Contract Documents, from date of Final Payment.

3. Except as otherwise noted below, the Contractor agrees to provide for all necessary repairs, replacement or service within three (3) days after receipt of notification of such faults or defects from the Construction Manager. The Contractor further agrees, at its own expense, to provide all necessary repairs, replacement or service within twenty four (24) hours after receipt of notification from the Construction Manager that Contractor caused disruption to any of critical systems or services, including but not limited to the following: Telephone Systems, Direct Digital Control Systems, Elevators, Fire Suppression; Fire Alarm; Security Alarm, Public Address System, Heating/Ventilating/Air Conditioning Systems, Boilers, Roofing (leaks), and any other defects that would in the opinion of the Owner's Representatives or Architect, or by operation of law or regulation, interfere with the standard operation of the building, result in a threat to the health and safety of the occupants, cause further non-repairable damage to property, or specifically requiring immediate repair, replacement or service elsewhere in the Contract Documents. If the Contractor does not respond within the allocated timeframe, the Owner may, without waiving any rights, remedies or implied warranties, provide the repairs, replacement or services or to hire third parties to do so, and to charge the Contractor for the cost thereof.

49. LIQUIDATED DAMAGES: It is critical to Owner's operations that Contractor achieve Substantial Completion in the time set forth in Section 00 43 83 "Schedules and Milestones," adjusting for approved extensions of Contract Time (if any). Owner's losses resulting from Contractor failure to achieve on time Substantial Completion are difficult to ascertain. Owner may charge liquidated damages in the amounts shown below depending on the Contract Sum, after adjusting for any increases by authorized Change Orders. The below schedule of liquidated damages are reasonable approximations of Owner's losses and are not intended as penalties.

Contract Sum			**Liquidated Damages Per Calendar Day**
$0	-	$499,999	$2,000/Day
$500,000	-	$15,000,000	$5,000/Day
Over $15,000,000			$10,000/Day

Contracts over $15,000,000 shall be assessed liquidated damages at the rate of $10,000 per day.

50. RECORD DOCUMENTS & AUDITS: Refer to Close-Out Procedures at Section 01 77 00.

51. GOVERNING LAW: The Contract shall be governed by the laws of the State of New York and the laws and regulations of the United States, where applicable.

52. CLAIMS AND DISPUTES:

1. CLAIMS: A “Claim” is a demand or assertion that payment, money, or other relief is due with respect to the terms of the Contract, as well as any other disputes arising between Owner and Contractor out of or relating to the Contract.

2. NOTICE OF CLAIMS: Claims by the Contractor must be initiated by written notice to the Owner’s Representative. The Architect shall serve as the initial decision maker with respect to such Claim. Notice of Claims must be given in this manner within 21 days after the occurrence giving rise to a Claim, or within 21 days after the claimant first recognizes or should have recognized the condition giving rise to the Claim, whichever is later. The Architect shall render an initial decision within thirty days of submission of the Claim, or after submission by the parties of any supporting documentation requested in connection therewith.

3. CONTINUING PERFORMANCE: Pending final resolution of a Claim, except as otherwise agreed in writing or upon termination or suspension of the Contract as provided for herein, Contractor shall proceed diligently with its Work and Owner shall make payments in accordance with the Contract Documents. The Architect/Engineer will prepare change orders in accordance with the Architect’s decision.

4. MEDIATION: If either party disagrees with the decision reached by the Architect with respect to any given Claim, the parties may by mutual assent agree to attend a non-binding mediated settlement conference before a neutral of their mutual selection, with each party contributing 50% of the neutral’s fee. Absent agreement to conduct mediation or in the event that mediation fails to settle the Claim or dispute, either party may upon ten (10) days’ written notice to the other party commence an action in a court of appropriate jurisdiction.

5. VENUE: Venue for mediation or for litigation any Claims or other disputes arising under this Contract shall be in the City of Rochester, County of Monroe, State of New York and must be brought within the statutory limitations period, or such shorter period as is prescribed herein, and before a court of competent jurisdiction to hear such Claim or dispute.

6. LABOR HARMONY: The Contractor shall be responsible for labor peace on the Project and shall at all times exert its best efforts and judgement as an experienced contractor to adopt and implement policies and practices designed to avoid work stoppages, slowdowns, disputes or strikes where reasonably possible and practical under the circumstances and shall, at all times, maintain Project wide labor harmony. The Contractor shall be liable to the Owner for all damages suffered by the Owner occurring as a result of work stoppages, slowdowns, disputes or strikes except as specifically provided for elsewhere in these General Conditions.

53. APPRENTICESHIP REQUIREMENTS: The Phase 2 legislation also requires that Contractors and Subcontractors with construction contracts in excess of one million dollars ($1,000,000) “shall participate in apprentice training programs in the trades it employs that: have been approved for not less than three years by the state department of labor; have graduated at least one apprentice in the last 3 years; have at least one apprentice

currently enrolled in such apprentice training program; and have demonstrated that the program has made significant efforts to attract and retain minority apprentices."

ATTACHMENT A

Part 5 of Title 29 of the U.S. Code of Federal Regulations

§ 5.5 Contract provisions and related matters.

(a) The Agency head shall cause or require the contracting officer to insert in full in any contract in excess of $2,000 which is entered into for the actual construction, alteration and/or repair, including painting and decorating, of a public building or public work, or building or work financed in whole or in part from Federal funds or in accordance with guarantees of a Federal agency or financed from funds obtained by pledge of any contract of a Federal agency to make a loan, grant or annual contribution (except where a different meaning is expressly indicated), and which is subject to the labor standards provisions of any of the acts listed in §5.1, the following clauses (or any modifications thereof to meet the particular needs of the agency, *Provided,* That such modifications are first approved by the Department of Labor):

(1) *Minimum wages.* (i) All laborers and mechanics employed or working upon the site of the work (or under the United States Housing Act of 1937 or under the Housing Act of 1949 in the construction or development of the project), will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by regulations issued by the Secretary of Labor under the Copeland Act (29 CFR part 3)), the full amount of wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment computed at rates not less than those contained in the wage determination of the Secretary of Labor which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the contractor and such laborers and mechanics.

Contributions made or costs reasonably anticipated for bona fide fringe benefits under section 1(b)(2) of the Davis-Bacon Act on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of paragraph (a)(1)(iv) of this section; also, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period. Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in §5.5(a)(4). Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein: *Provided,* That the employer's payroll records accurately set forth the time spent in each classification in which work is performed. The wage determination (including any additional classification and wage rates conformed under paragraph (a)(1)(ii) of this section) and the Davis-Bacon poster (WH–1321) shall be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible place where it can be easily seen by the workers.

(ii)(A) The contracting officer shall require that any class of laborers or mechanics, including helpers, which is not listed in the wage determination and which is to be employed under the contract shall be classified in conformance with the wage determination. The contracting officer

shall approve an additional classification and wage rate and fringe benefits therefore only when the following criteria have been met:

(*1*) The work to be performed by the classification requested is not performed by a classification in the wage determination; and

(*2*) The classification is utilized in the area by the construction industry; and

(*3*) The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.

(B) If the contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and the contracting officer agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken shall be sent by the contracting officer to the Administrator of the Wage and Hour Division, Employment Standards Administration, U.S. Department of Labor, Washington, DC 20210. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

(C) In the event the contractor, the laborers or mechanics to be employed in the classification or their representatives, and the contracting officer do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), the contracting officer shall refer the questions, including the views of all interested parties and the recommendation of the contracting officer, to the Administrator for determination. The Administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

(D) The wage rate (including fringe benefits where appropriate) determined pursuant to paragraphs (a)(1)(ii) (B) or (C) of this section, shall be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the classification.

(iii) Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the contractor shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly cash equivalent thereof.

(iv) If the contractor does not make payments to a trustee or other third person, the contractor may consider as part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program, *Provided,* That the Secretary of Labor has found, upon the written request of the contractor, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the contractor to set aside in a separate account assets for the meeting of obligations under the plan or program.

(2) *Withholding.* The (write in name of Federal Agency or the loan or grant recipient) shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld from the contractor under this contract or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to Davis-Bacon prevailing wage requirements, which is held by the same prime contractor, so much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees, and helpers, employed by the contractor or any subcontractor the full amount of wages required by the contract. In the event of failure to pay any laborer or mechanic, including any apprentice, trainee, or helper, employed or working on the site of the work (or under the United States Housing Act of 1937 or under the Housing Act of 1949 in the construction or development of the project), all or part of the wages required by the contract, the (Agency) may, after written notice to the contractor, sponsor, applicant, or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased.

(3) *Payrolls and basic records.* (i) Payrolls and basic records relating thereto shall be maintained by the contractor during the course of the work and preserved for a period of three years thereafter for all laborers and mechanics working at the site of the work (or under the United States Housing Act of 1937, or under the Housing Act of 1949, in the construction or development of the project). Such records shall contain the name, address, and social security number of each such worker, his or her correct classification, hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in section 1(b)(2)(B) of the Davis-Bacon Act), daily and weekly number of hours worked, deductions made and actual wages paid. Whenever the Secretary of Labor has found under 29 CFR 5.5(a)(1)(iv) that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in section 1(b)(2)(B) of the Davis-Bacon Act, the contractor shall maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, and that the plan or program has been communicated in writing to the laborers or mechanics affected, and records which show the costs anticipated or the actual cost incurred in providing such benefits. Contractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprenticeship programs and certification of trainee programs, the registration of the apprentices and trainees, and the ratios and wage rates prescribed in the applicable programs.

(ii)(A) The contractor shall submit weekly for each week in which any contract work is performed a copy of all payrolls to the (write in name of appropriate federal agency) if the agency is a party to the contract, but if the agency is not such a party, the contractor will submit the payrolls to the applicant, sponsor, or owner, as the case may be, for transmission to the (write in name of agency). The payrolls submitted shall set out accurately and completely all of the information required to be maintained under 29 CFR 5.5(a)(3)(i), except that full social security numbers and home addresses shall not be included on weekly transmittals. Instead the payrolls shall only need to include an individually identifying number for each employee (*e.g.* , the last four digits of the employee's social security number). The required weekly payroll information may be submitted in any form desired. Optional Form WH–347 is available for this purpose from the Wage and Hour Division Web site at *http://www.dol.gov/esa/whd/forms/wh347instr.htm* or its successor site. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors. Contractors and subcontractors shall maintain the full social security number and current address

of each covered worker, and shall provide them upon request to the (write in name of appropriate federal agency) if the agency is a party to the contract, but if the agency is not such a party, the contractor will submit them to the applicant, sponsor, or owner, as the case may be, for transmission to the (write in name of agency), the contractor, or the Wage and Hour Division of the Department of Labor for purposes of an investigation or audit of compliance with prevailing wage requirements. It is not a violation of this section for a prime contractor to require a subcontractor to provide addresses and social security numbers to the prime contractor for its own records, without weekly submission to the sponsoring government agency (or the applicant, sponsor, or owner).

(B) Each payroll submitted shall be accompanied by a "Statement of Compliance," signed by the contractor or subcontractor or his or her agent who pays or supervises the payment of the persons employed under the contract and shall certify the following:

(*1*) That the payroll for the payroll period contains the information required to be provided under §5.5 (a)(3)(ii) of Regulations, 29 CFR part 5, the appropriate information is being maintained under §5.5 (a)(3)(i) of Regulations, 29 CFR part 5, and that such information is correct and complete;

(*2*) That each laborer or mechanic (including each helper, apprentice, and trainee) employed on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in Regulations, 29 CFR part 3;

(*3*) That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification of work performed, as specified in the applicable wage determination incorporated into the contract.

(C) The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH–347 shall satisfy the requirement for submission of the "Statement of Compliance" required by paragraph (a)(3)(ii)(B) of this section.

(D) The falsification of any of the above certifications may subject the contractor or subcontractor to civil or criminal prosecution under section 1001 of title 18 and section 231 of title 31 of the United States Code.

(iii) The contractor or subcontractor shall make the records required under paragraph (a)(3)(i) of this section available for inspection, copying, or transcription by authorized representatives of the (write the name of the agency) or the Department of Labor, and shall permit such representatives to interview employees during working hours on the job. If the contractor or subcontractor fails to submit the required records or to make them available, the Federal agency may, after written notice to the contractor, sponsor, applicant, or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR 5.12.

(4) *Apprentices and trainees* —(i) *Apprentices.* Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Employment and Training Administration, Office of Apprenticeship Training, Employer and Labor Services, or with a State Apprenticeship Agency recognized by the Office, or if a person is employed in his or her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Office of Apprenticeship Training, Employer and Labor Services or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice. The allowable ratio of apprentices to journeymen on the job site in any craft classification shall not be greater than the ratio permitted to the contractor as to the entire work force under the registered program. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated above, shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman's hourly rate) specified in the contractor's or subcontractor's registered program shall be observed. Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeymen hourly rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination. In the event the Office of Apprenticeship Training, Employer and Labor Services, or a State Apprenticeship Agency recognized by the Office, withdraws approval of an apprenticeship program, the contractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(ii) *Trainees.* Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the U.S. Department of Labor, Employment and Training Administration. The ratio of trainees to journeymen on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration. Every trainee must be paid at not less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journeyman hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman wage rate on the wage determination which provides for less than full fringe benefits for apprentices. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the classification of

work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. In the event the Employment and Training Administration withdraws approval of a training program, the contractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(iii) *Equal employment opportunity.* The utilization of apprentices, trainees and journeymen under this part shall be in conformity with the equal employment opportunity requirements of Executive Order 11246, as amended, and 29 CFR part 30.

(5) *Compliance with Copeland Act requirements.* The contractor shall comply with the requirements of 29 CFR part 3, which are incorporated by reference in this contract.

(6) *Subcontracts.* The contractor or subcontractor shall insert in any subcontracts the clauses contained in 29 CFR 5.5(a)(1) through (10) and such other clauses as the (write in the name of the Federal agency) may by appropriate instructions require, and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in 29 CFR 5.5.

(7) *Contract termination: debarment.* A breach of the contract clauses in 29 CFR 5.5 may be grounds for termination of the contract, and for debarment as a contractor and a subcontractor as provided in 29 CFR 5.12.

(8) *Compliance with Davis-Bacon and Related Act requirements.* All rulings and interpretations of the Davis-Bacon and Related Acts contained in 29 CFR parts 1, 3, and 5 are herein incorporated by reference in this contract.

(9) *Disputes concerning labor standards.* Disputes arising out of the labor standards provisions of this contract shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the Department of Labor set forth in 29 CFR parts 5, 6, and 7. Disputes within the meaning of this clause include disputes between the contractor (or any of its subcontractors) and the contracting agency, the U.S. Department of Labor, or the employees or their representatives.

(10) *Certification of eligibility.* (i) By entering into this contract, the contractor certifies that neither it (nor he or she) nor any person or firm who has an interest in the contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

(ii) No part of this contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

(iii) The penalty for making false statements is prescribed in the U.S. Criminal Code, 18 U.S.C. 1001.

(b) *Contract Work Hours and Safety Standards Act.* The Agency Head shall cause or require the contracting officer to insert the following clauses set forth in paragraphs (b)(1), (2), (3), and (4) of this section in full in any contract in an amount in excess of $100,000 and subject to the overtime provisions of the Contract Work Hours and Safety Standards Act. These clauses shall be inserted in addition to the clauses required by §5.5(a) or 4.6 of part 4 of this title. As used in this paragraph, the terms *laborers* and *mechanics* include watchmen and guards.

(1) *Overtime requirements.* No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any such laborer or mechanic in any workweek in which he or she is employed on such work to work in excess of forty hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of forty hours in such workweek.

(2) *Violation; liability for unpaid wages; liquidated damages.* In the event of any violation of the clause set forth in paragraph (b)(1) of this section the contractor and any subcontractor responsible therefor shall be liable for the unpaid wages. In addition, such contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violation of the clause set forth in paragraph (b)(1) of this section, in the sum of $10 for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of forty hours without payment of the overtime wages required by the clause set forth in paragraph (b)(1) of this section.

(3) *Withholding for unpaid wages and liquidated damages.* The (write in the name of the Federal agency or the loan or grant recipient) shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld, from any moneys payable on account of work performed by the contractor or subcontractor under any such contract or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime contractor, such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in paragraph (b)(2) of this section.

(4) *Subcontracts.* The contractor or subcontractor shall insert in any subcontracts the clauses set forth in paragraph (b)(1) through (4) of this section and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in paragraphs (b)(1) through (4) of this section.

(c) In addition to the clauses contained in paragraph (b), in any contract subject only to the Contract Work Hours and Safety Standards Act and not to any of the other statutes cited in §5.1, the Agency Head shall cause or require the contracting officer to insert a clause requiring that the contractor or subcontractor shall maintain payrolls and basic payroll records during the course of the work and shall preserve them for a period of three years from the completion of the contract for all laborers and mechanics, including guards and watchmen, working on the contract. Such records shall contain the name and address of each such employee, social security number,

correct classifications, hourly rates of wages paid, daily and weekly number of hours worked, deductions made, and actual wages paid. Further, the Agency Head shall cause or require the contracting officer to insert in any such contract a clause providing that the records to be maintained under this paragraph shall be made available by the contractor or subcontractor for inspection, copying, or transcription by authorized representatives of the (write the name of agency) and the Department of Labor, and the contractor or subcontractor will permit such representatives to interview employees during working hours on the job.

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SECTION 00 73 16 - INSURANCE REQUIREMENTS

Contractor shall obtain at its own cost and expense all the insurance described below (the "Required Insurance") that will protect Contractor from claims that may arise out of or result from Contractor's operations and completed operations under the Contract and for which Contractor may be legally liable, whether such operations be by Contractor or by a Subcontractor or by anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable. Before commencing the Work under the Contract, Contractor shall provide to Owner, for Owner's approval, Contractor's certificate of insurance provided in accordance with this Section and thereafter upon renewal or replacement of each policy of Required Insurance. The Required Insurance must be purchased from an insurer that is licensed, admitted, and authorized to write insurance in New York State, and is A.M. Best Rated "A-" or "Better". The provision by Contractor of the insurance coverage and limits required in this Section shall not limit Contractor's liability in any way.

The Rochester Joint Schools Construction Board ("RJSCB" or "Owner") is an entity created by special authorizing legislation of the State of New York to serve as an agent for the Rochester City School District ("RCSD") and City of Rochester ("City") for purposes of administering the Rochester School Modernization Program ("RSMP"). RSMP projects are funded in part through bonds made available by the County of Monroe Industrial Development Agency ("COMIDA" or "Agency"). Each of the RJSCB, RCSD, City, COMIDA, U.S. Bank National Association, the Trustee under the Indenture of Trust relating to the financing of the Project ("Trustee"), Savin Engineers, P.C., Gilbane Building Company, Buffalo Construction Consultants ("Construction Manager"), and LaBella Associates, D.P.C. ("Architect") (collectively, the "Additional Insureds") shall be named as **Additional Insureds on a Primary and Non-Contributory basis** for all Required Insurance (other than Workers' Compensation and Employer's Liability Insurance). Contractor shall require each of its Subcontractors, in any written agreements with its Subcontractors, to add the foregoing Additional Insureds on a Primary and Non-Contributory basis for all Required Insurance (other than Workers' Compensation, Employer's Liability and Umbrella (Excess) Liability Insurance policies). Contractor shall provide proof of additional insured status through ISO endorsement CG 2010 11 85 or an equivalent endorsement acceptable to Owner; provided, however, that if endorsement CG 2010 11 85 is not available, then GC 20-37 07 04 shall also be required.

Required Insurance shall be written on an occurrence basis and maintained without interruption from the date of commencement of the Work until the date of final payment or such longer period for which any Required Insurance is required to be maintained under the Contract.

General Liability coverage is to remain in place for one (1) year after the Certificate of Occupancy is issued by the New York State Education Department.

Each of the policies or binders evidencing the Required Insurance shall:

(i) provide that there shall be no recourse against the Additional Insureds for the payment of premiums or commissions or (if such policies or binders provide for the payment thereof) additional premiums or assessments;

(ii) provide that in respect of the interests of the Additional Insureds in such policies, the insurance shall not be invalidated by any action or inaction of the Additional Insureds and shall insure the Additional Insureds regardless of, and any losses shall be payable notwithstanding, any such action or inaction;

(iii) provide that such insurance shall be primary insurance without any right of contribution from any other insurance carried by or provided to the Additional Insureds to the extent that such other insurance provides any Additional Insured with contingent and/or excess liability insurance with respect to its interest as such in the facility;

(iv) provide that if the insurers cancel such insurance for any reason whatsoever, including the insured's failure to pay any accrued premium, or the same is allowed to lapse or expire, or there be any reduction in amount, or any material change is made in the coverage, such cancellation, lapse, expiration, reduction or change shall not be effective as to the Additional Insureds until at least thirty (30) days after receipt by the Additional Insureds of written notice by such insurers of such cancellation, lapse, expiration, reduction or change; and

(v) waive any right of subrogation of the insurers thereunder against any person insured under such policy, and waive any right of the insurers to any setoff or counterclaim or any other deduction, whether by attachment or otherwise, in respect of any liability of any person insured under such policy.

Prior to the commencement of any Work (and at such other times as Owner may request), Contractor shall deliver or cause to be delivered to Owner duplicate copies of insurance policies, with all endorsements or exclusions, that are obtained by Contractor hereunder, and/or binders evidencing compliance with the insurance requirements set forth herein. In addition, Contractor shall provide Owner with copies of CG2010 and CG2037 and of any endorsements subsequently issued amending coverage or limits. If any change shall be made in any such insurance, a description and written notice of such change shall be furnished to Owner thirty (30) days in advance of such change. At least thirty (30) days prior to the expiration of any insurance policy required hereunder, Contractor shall furnish Owner with evidence that such policy has been renewed or replaced or is no longer required hereunder. In the event Contractor fails to timely renew or pay any of the renewal premiums for any expiring Required Insurance policies, Owner shall have the right (but not the obligation) to (i) make such payments; and/or (ii) acquire replacement coverage, and thereafter set off the amount(s) or costs thereof against the next payment(s) coming due to Contractor under the Contract. Owner may withhold any payments due to Contractor from this Project unless certificates for current insurance are on file.

The Required Insurance is as follows:

1. Workers' Compensation, New York State Disability and Employer's Liability Insurance:

Contractor shall maintain workers' compensation insurance and employer's liability insurance and such other forms of insurance which Contractor is required by law to provide covering loss resulting from injury, sickness, disability or death of the employees of Contractor. Contractor

shall require each of its Subcontractors of any tier to maintain workers' compensation insurance, employer's liability insurance and such other forms of insurance which Subcontractor is required by law to provide covering loss resulting from injury, sickness, disability or death of the employees of Subcontractor. Contractor must maintain proof that each Subcontractor performing work under this Contract secured and maintains such coverage.

2. Commercial General Liability (including Products & Completed Operations, Personal Liability, and damages to rented premises on a per project basis): Contractor shall maintain commercial public general liability insurance with coverage amounts of no less than the following:

Contractor required minimum policy limits:
$1,000,000 per occurrence / $2,000,000 general aggregate (per project)
$1,000,000 per occurrence / $2,000,000 Products & Completed Operations Aggregate
$1,000,000 per occurrence for personal liability
$50,000 Fire Damage Legal Liability
$5,000 Medical Expense Limit

a. Coverage must include but shall not be limited to: premises/operations; explosion, collapse and underground coverage; products and completed operations; contractual liability; independent contractors; broad form property damage; personal injury; and elevators.

b. Products and Complete Operations Aggregate shall be maintained for a period of two years after final acceptance of Owner.

c. The General Aggregate must apply on a per project basis.

d. Coverage must be written on CG0001 form or its equivalent and must not contain any endorsements reducing or excluding coverage for contractual liability or injuries to employees or independent contractors.

e. No coverage exclusion or limitation for work performed on your behalf by a Subcontractor.

f. Coverage must include ISO CG 00 01 12 07 Contractual Liability coverage or its equivalent, with no exclusion or limitation to the Separation of Insureds clause contained in Section V – Commercial General Liability policy conditions.

g. Coverage must contain a waiver of subrogation in favor of the Additional Insureds.

3. Automobile Insurance:

Contractor shall maintain Comprehensive Automobile Liability Insurance on owned, hired, or non-owned vehicle in amounts not less than $1,000,000 Combined Single Limit each occurrence. If hauling of hazardous waste is part of the Work, Contractor shall maintain Automobile Liability Insurance with a $1,000,000 combined single limit each occurrence for bodily injury and property damage applicable to all hazardous waste hauling vehicles, and

including MCS 90 endorsement and the ISO Form CA 99 48.

4. Pollution Liability Insurance (required when asbestos or other hazardous material abatement is included in the Contract): Contractor shall maintain Pollution Liability Insurance for services rendered to Owner, including but not limited to, removal, replacement enclosure, encapsulation and/or disposal of asbestos, or any other hazardous material, along with any related pollution events, including coverage for third-party liability claims for bodily injury, property damage and clean-up costs. The Pollution Liability Insurance shall have a minimum limit per occurrence of $5,000,000 and a minimum aggregate specific to the project of $5,000,000. In the event Contractor elects to engage a Subcontractor to perform any abatement, said Subcontractor must timely obtain and maintain the same Pollution Liability insurance coverage as set forth above.

5. Umbrella (Excess) Liability: Contractor shall maintain Umbrella or Excess Liability Insurance, providing coverage in excess of the amounts covered by the Comprehensive General Liability, Automobile Liability, Employer's Liability policies, with limits of not less than $5,000,000 per occurrence and $5,000,000 aggregate (per project). Self-Insured retention limit is $10,000 per occurrence. Contractor acknowledges that it shall provide Umbrella Liability coverage on behalf of the Additional Insureds, that such insurance shall be as broad as that provided for the named insured Contractor, and that such insurance shall be primary and noncontributory and will be subject to vertical exhaustion before any other primary, umbrella or any other insurance obtained by the Additional Insureds will be triggered.

6. Contractor's Contingent Liability: Contractor shall procure and maintain such insurance as will protect Contractor from its contingent liability for damages and for injury to the person or property of another which may arise from the operations of all Subcontractors under this Contract.

7. Contractor's and Employee's Equipment: Contractor assumes responsibility for all injury or destruction of Contractor's materials, tools, machinery, equipment, appliances, shoring, scaffolding, false and form work, and personal property of Contractor's employees, from whatever causes. Any policy of insurance secured by Contractor or any Subcontractor and insuring Contractor or any Subcontractor against physical loss or damage to such property shall include an endorsement waiving the right of subrogation against Owner for any loss or damage to such property.

8. Subcontractors: Contractor shall include all Subcontractors as insureds under its policies OR shall be responsible for verifying and maintaining the certificates of insurance provided by each Subcontractor. Subcontractors shall be subject to all of the requirements stated herein, except as those requirements are modified below:

Workers' Compensation and Employer's Liability:	Statutory
Commercial General Liability:	General Aggregate: $2,000,000 (per project); Products/Completed Operations Aggregate $2,000,000; and each occurrence $1,000,000 per claim.

Business Automobile Liability	$1,000,000 Combined Single Limit each occurrence
Umbrella Liability:	In excess of Employer's Liability, Commercial General Liability and Automobile Liability with limits of $2,000,000 per occurrence and in the aggregate.

Contractor shall require each of its Subcontractors to name the Additional Insureds as additional insureds on a primary noncontributory basis on all insurance policies required of such Subcontractor. Owner reserves the right to request copies of Subcontractors' certificates of insurance at any time. If Contractor does not verify Subcontractors' insurance as described above, Owner has the right to withhold payments to Contractor until the requirements have been met. Contractor shall require that its Subcontractors of any tier waive any right of subrogation of the insurers thereunder against the Additional Insureds, and waive any right of the insurers to any setoff or counterclaim or any other deduction, whether by attachment or otherwise, in respect of any liability of the Additional Insureds.

9. Builder's Risk Insurance: Owner has purchased and shall maintain during the performance of the Work property insurance written on a builder's risk "all risk" or equivalent policy form. This insurance includes the interests of Owner, Contractor and Subcontractors of any tier on the Project.

10. Indemnity for Failure to Comply with Insurance Requirements: To the fullest extent permitted by law, Contractor agrees to fully defend, indemnify and hold harmless Owner and the other Additional Insureds from and against any and all claims, losses, expenses, costs, liabilities and damages of any nature whatsoever, including reasonable attorney's fees actually incurred, arising out of and/or relating to any failure of Contractor to obtain, furnish and maintain as required herein insurance complying with the provisions of this Section or any other failure of Contractor to comply with the provisions of this Section.

END OF SECTION 00 73 16

SECTION 00 73 20 – HEALTH AND SAFETY REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes provisions as required by the Regulations of the Commissioner of Education, Part 155.5 “Uniform Safety Standards for School Construction and Maintenance Projects” (8 NYCRR 155).

1.3 UNIFORM SAFETY STANDARDS FOR SCHOOL CONSTRUCTION AND MAINTENANCE PROJECTS

A. Each contractor shall fully comply with all project specific safety and loss prevention procedures, and appoint a full time Safety Representative for the project to implement and coordinate safety efforts, provide appropriate employee safety training and protective equipment, and fully cooperate with the Architect, the Owner, and other project contractors.

1. This Safety Representative shall participate, upon request, in the Owner's Health and Safety Committee to monitor the safety of the school at all times during the construction project.

B. Certificate of Occupancy:

1. 8 NYCCR 155.5(a): The occupied portion of any school building shall always comply with the minimum requirements necessary to maintain a certificate of occupancy.
    a. Do not obstruct required exitways unless alternative exitways satisfactory to the authority having jurisdiction are available. Contractor shall propose any necessary plans detailing affected exiting and ventilation

C. General safety and security standards for construction projects:

1. 8 NYCCR 155.5(e)(1): All construction materials shall be stored in a safe and secure manner.

2. 8 NYCCR 155.5(e)(2): Fences around construction supplies or debris shall be maintained.
3. 8 NYCCR 155.5(e)(3): Gates shall always be locked unless a worker is in attendance to prevent unauthorized entry.
4. 8 NYCCR 155.5(e)(4): During exterior renovation work, overhead protection shall be provided for any sidewalks or areas immediately beneath the work site or such areas shall be fenced off and provided with warning signs to prevent entry.
5. 8 NYCCR 155.5(e)(5): Workers shall be required to wear photo identification badges at all times for identification and security purposes while working at occupied sites.

D. Separation of construction areas from occupied spaces. Construction areas which are under the control of a contractor and therefore not occupied by district staff or students shall be separated from occupied areas. Provisions shall be made to prevent the passage of dust and contaminants into occupied parts of the building. Periodic inspection and repairs of the containment barriers must be made to prevent exposure to dust or contaminants. Gypsum board must be used in exit ways or other areas that require fire rated separation. Heavy duty plastic sheeting may be used only for a vapor, fine dust or air infiltration barrier, and shall not be used to separate occupied spaces from construction areas.

1. 8 NYCCR 155.5(f)(1): A specific stairwell and/or elevator should be assigned for construction worker use during work hours. In general, workers may not use corridors, stairs or elevators designated for students or school staff.
2. 8 NYCCR 155.5(f)(2): Large amounts of debris must be removed by using enclosed chutes or a similar sealed system. There shall be no movement of debris through halls of occupied spaces of the building. No material shall be dropped or thrown outside the walls of the building.
3. 8 NYCCR 155.5(f)(3): All occupied parts of the building affected by renovation activity shall be cleaned at the close of each workday. School buildings occupied during a construction project shall maintain required health, safety and educational capabilities at all times that classes are in session.

E. Maintaining exiting and ventilation during school construction projects.

1. 8 NYCCR 155.5(g)(1): Contractor shall provide a plan detailing how exiting required by the applicable building code will be maintained during construction. The plan shall indicate temporary construction required isolating construction equipment, materials, people, dust, fumes, odors, and noise during the construction period. Temporary construction details shall meet code-required fire ratings for separation and corridor enclosure. At a minimum, required exits, temporary stairs, ramps, exit signs, and door hardware shall be provided at all times.

2. 8 NYCCR 155.5(g)(2): Contractor shall provide a plan detailing how adequate ventilation will be maintained during construction. The plan shall indicate ductwork which must be rerouted, disconnected, or capped in order to prevent contaminants from the construction area from entering the occupied areas of the building. The plan shall also indicate how required ventilation to occupied spaces affected by construction will be maintained during the project.

F. Fire and hazard prevention. Areas of buildings under construction that are to remain occupied shall maintain a certificate of occupancy. In addition, the following shall be strictly enforced:

1. 8 NYCCR 155.5(h)(1): No smoking is allowed on public school property, including construction areas.
2. 8 NYCCR 155.5(h)(2): During construction daily inspections of district occupied areas shall be conducted by school district personnel to assure that construction materials, equipment or debris not block fire exits or emergency egress windows.
3. 8 NYCCR 155.5(h)(3): Proper operation of fire extinguishers, fire alarm, and smoke/fire detection systems shall be maintained throughout the project.

G. Noise abatement during construction and maintenance activities.

1. 8 NYCCR 155.5(i): Construction and maintenance operations shall not produce noise in excess of 60 dba in occupied spaces or shall be scheduled for times when the building or affected building spaces are not occupied or acoustical abatement measures shall be taken. Noise level measurements (dba) shall be taken with a type 2 sound level meter in the occupied space in a location closest to the source of the noise. Complaints regarding excessive noise shall be addressed through the health and safety committee. The district should anticipate those times when construction noise is unacceptable and incorporate "no work" periods into the bid specifications.

H. Control of chemical fumes, gases, and other contaminants during construction and maintenance projects.

1. 8 NYCCR 155.5(j)(1): Building materials or furnishings which off-gas chemical fumes, gases, or other contaminants shall be aired out in a well ventilated heated warehouse before it is brought to the project for installation or the manufacturer's recommended off-gassing periods must be scheduled between installation and use of the space. If the work will generate toxic gases that cannot be contained in an isolated area, the work must be done when school classes and programs are not in session. The building must be properly ventilated and the material must be given proper time to cure or off-gas before re-occupancy.
2. 8 NYCCR 155.5(j)(2): Manufacturer's material safety data sheets (MSD) shall be maintained at the site for all products used in the project. MSDS must be provided to anyone who requests them. MSDS indicate chemicals used in the product, product toxicity, typical side effects of exposure to the product and safe procedures for use of the product.

3. The contractor shall be responsible to ensure that activities and materials which result in "offgassing" of volatile organic compounds such as glues, paints, furniture, carpeting, wall covering, drapery, etc. are scheduled, cured, or ventilated in accordance with manufacturer's recommendations before a space can be occupied.

    a. For all product to be incorporated into the finished work containing volatile organic compounds(VOC's), the contractor shall submit written statements from the manufacturers of such materials defining the precautions to be taken, including, if required, a period of time for off-gassing of these materials prior to safe occupancy of all spaces incorporating these materials. The manufacturer shall define the specific criteria used in making their recommendations, including actual testing for residual volatility that may negatively affect the health of the public. This shall be presented for review with the initial product/system submittal.

    b. This shall include all products with field or factory applied materials containing VOCs, including: Paint, wall covering and adhesive; carpeting and vinyl composition floor tile and all associated adhesives; cabinets, countertops (all particle boards and adhesives); glues; furniture and draperies; and any duct lining material and associated adhesives.

I. Asbestos abatement protocols.

1. 8 NYCCR 155.5(k): All asbestos abatement projects shall comply with all applicable Federal and State laws including but not limited to the New York State Department of Labor industrial code rule 56 (12 NYCRR 56), and the Federal Asbestos Hazard Emergency Response Act (AHERA), 40 CFR part 763 (Code of Federal Regulations, 1998 Edition, Superintendent of Public Documents, U.S. Government Printing Office, Washington, DC 20402; 1998; available at the Office of Facilities Planning, Education Building Annex, Room 1060, State Education Department, Albany, NY 12234).

    a. Large and small asbestos projects as defined by 12 NYCRR 56 shall not be performed while the building is occupied.

        1) The term "building", as referenced in this section, means a wing or major section of a building that can be completely isolated from the rest of the building and sealed non combustible construction. The isolated portion of the building must contain exits that do not pass through the occupied portion and ventilation systems must be physically separated and sealed at the isolation barrier.

    b. Minor asbestos projects defined by 12 NYCRR 56 as an asbestos project involving the removal, disturbance, repair, encapsulation, enclosure or handling of 10 square feet or less of asbestos or asbestos

material, or 25 linear feet or less of asbestos or asbestos material may be performed in unoccupied areas of an occupied building in accordance with the above referenced regulations.

c. Exterior work such as roofing, flashing, siding, or soffit work may be performed on occupied buildings provided proper variances are in place as required, and complete isolation of ventilation systems and at windows is provided. Care must be taken to schedule work so that classes are not disrupted by noise or visual distraction.

J. Lead paint.

1. 8 NYCCR 155.5(l): Any construction or maintenance operations which will disturb lead based paint will require abatement of those areas pursuant to protocols detailed in the "Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing" (June 1995; U.S. Department of Housing and Urban Development, Washington, D.C. 20410; available at the Office of Facilities Planning, Education Building Annex, Room 1060, State Education Department, Albany, NY 12234). All areas scheduled for construction as well as areas of flaking and peeling paint shall be tested for the presence of lead and abated or encapsulated in accordance with the above noted guidelines.

a. Prime Contractor is advised that lead and lead-containing materials are not required to be disturbed or removed as part of this project.

b. If materials suspected to contain lead above 1.0 mg/sq.cm. or above 0.5% that are not included in Project or identified in Contract Documents are encountered during construction, Prime Contractor shall immediately notify Owner and take applicable precautions to avoid disturbing materials until directed by Owner.

K. There is no smoking on any School property.

1. 8 NYCCR 155.5(m):

L. Pre-construction testing and planning for construction projects.

1. 8 NYCCR 155.5(c)(1): All school areas to be disturbed during renovation or demolition shall be tested for lead and asbestos.

a. Asbestos and Asbestos-Containing Materials (ACBM)

1) Prime Contractor is advised that asbestos and asbestos-containing materials are not required to be abated as part of this project.

a) The extent of asbestos to be abated as part of the Project is clearly indicated on drawings included in the Contract Documents.

b) Prior to beginning Work of their Prime Contract, Prime Contractor shall review Owner's "Asbestos Management Plan" to ensure asbestos or asbestos-containing materials identified in that document are not disturbed. Contact

Owner's Representative identified in Instructions to Bidders for access to Owner's "Asbestos Management Plan".

2) Prime Contractor is advised that if materials suspected to be asbestos, or to contain asbestos, that are not included in the Project and not identified in the Contract Documents are encountered during construction, he shall immediately notify Owner and take precautions as required to avoid disturbing materials until directed by Owner.

3) Transmission Electron Microscopy (TEM): All asbestos abatement work that requires clearance air sampling in accordance with NYS Industrial Code Rule 56 shall have clearance air samples collected and analyzed using Transmission Electron Microscopy as per the Asbestos Hazard Emergency Response Act (40 CFR 763).

M. Lead and Lead-Containing Materials

1. Contractors are advised that a lead inspection has been performed as required by New York State Education Department and a copy of the lead inspection report is available at the Owner's offices.

2. Disposal of Lead Abatement Waste

a. Test all debris from lead abatement activities to determine whether it is hazardous or nonhazardous waste.

b. Transport and dispose of debris determined to be hazardous waste in accordance with applicable regulations.

c. Package, label, and mark all hazardous waste materials in accordance with applicable requirements of 49 CFR 173, 178 and 179.

d. Maintain hazardous waste manifest from date of transport until date of disposal, destruction or recycling.

e. Return fully executed hazardous waste manifests to Owner within 60 days after date waste accepted by initial transporter.

f. Dispose of material determined to be construction and demolition debris in accordance with 6 NYCRR 360 and 364. Provide trip tickets or other documentation clearly identifying generating site, Owner, transporter, disposal site and amount of material removed from site, transported to and disposed of at disposal site.

PART 2 - PRODUCTS

Not Used.

PART 3 - EXECUTION

Not Used.

END OF SECTION 00 73 20

SECTION 00 73 46 - PREVAILING WAGE RATES

PART 1 – GENERAL

1.1 Both the New York State Prevailing Wage and the Davis-Bacon Wage schedules apply to this Project.

1.2 The wage schedule can be obtained from the New York State Department of Labor prior to bid.

1.3 The Davis-Bacon wage rate schedule can be obtained online at http://www.wdol.gov/wdol/scafiles/davisbacon/ny10.dvb.

1.4 The NYS prevailing wage rate schedule for this project can be obtained at the following WEB link:
http://wpp.labor.state.ny.us/wpp/publicViewProject.do?method=showIt&id=799439

The Prevailing Rate Case number is PRC# 2017005606

PART 2 – PRODUCTS (Not Used)

PART 3 – EXECUTION

3.1 Contractor is required to pay wages that are equal to or greater than the higher of either NY State Prevailing Wages or Davis-Bacon Rate.

3.2 Contractor is responsible to track modifications or changes to the NY State Prevailing Wage and/or Davis-Bacon Rate, and modify wages accordingly.

3.3 Any changes to either wage rate between bid submission and project closeout is the responsibility of the contractor and will not result in a change to the Contract Sum, nor will Owner be required to pay difference.

END OF SECTION 00 73 46

SECTION 008300 - SED COMMISSION'S 155.5 REGULATIONS

PART 1 - GENERAL

1.01 Uniform Safety Standards for School Construction and Maintenance Projects:

A. The occupied portion of any school building shall always comply with the minimum requirements necessary to maintain a Certificate of Occupancy.

B. All school areas to be disturbed during renovation or demolition have been tested for lead and asbestos by the School District. Contractors may obtain a copy of test results from the School District.

C. All construction materials shall be stored in a safe and secure manner. Coordinate locations with the School District's project representative.

D. Fences around construction supplies or debris shall be maintained.

E. Gates shall always be locked unless a worker is in attendance to prevent unauthorized entry.

F. During exterior renovation work, overhead protection shall be provided for any sidewalks or areas immediately beneath the work site or such areas shall be fenced off and provided with warning signs to prevent entry.

G. Workers shall be required to wear photo-identification badges at all times for identification and security purposes while working at occupied sites. Contractors shall provide each worker in their employ with photo-identification badges approved by the School District.

H. Separation of construction areas from occupied spaces: Construction areas which are under the control of a contractor and therefore not occupied by District Staff or students shall be separated from occupied areas. Provisions shall be made to prevent the passage of dust and contaminants into occupied parts of the building. Periodic inspection and repairs of the containment barriers must be made to prevent exposure to dust or contaminants. Gypsum board must be used in exit ways or other areas that require fire rated separation. Heavy-duty plastic sheeting may be used only for a vapor, fine dust or air infiltration barrier, and shall not be used to separate occupied spaces from construction areas.

1. A specific stairwell and/or elevator should be assigned for construction worker use during work hours. In general, workers may not use corridors, stairs or elevators designated for students or school staff.

2. Large amounts of debris must be removed by using enclosed chutes or a similar sealed system. There shall be no movement of debris through halls of occupied

spaces of the building. No material shall be dropped or thrown outside the walls of the building.

3. All occupied parts of the building affected by renovation activity shall be cleaned by each contractor working in that area at the close of each workday. School buildings occupied during a construction project shall maintain required health, safety, and educational capabilities at all times that classes are in session.

I. All existing exits shall be maintained throughout the project.

J. All existing ventilation systems shall be maintained throughout the project.

K. Construction and maintenance operations shall not produce noise in excess of 60 DBA in occupied spaces or shall be scheduled for times when the building or affected building spaces are not occupied or acoustical abatement measures shall be taken.

L. Each contractor shall be responsible for the control of chemical fumes, gases, and other contaminates produced by welding, gasoline or diesel engines, roofing, paving, painting, etc. to ensure they do not enter occupied portions of the building or air intakes.

M. Each contractor shall be responsible to ensure that activities and materials which result in "off-gassing" of volatile organic compounds such as glues, paints, furniture, carpeting, wall covering, drapery, etc. are scheduled. Cured or ventilated in accordance with manufacturers recommendations before a space can be occupied.

N. Large and small asbestos abatement projects as defined by 12NYCRR56 shall not be performed while the building is occupied. The term "building", as referenced in this section, means a wing or section of a building that can be completely isolated from the rest of the building, including exits and ventilation systems, with sealed non-combustible construction.

O. All asbestos abatement projects shall comply with all applicable Federal and State laws including but not limited to New York State Department of Labor Industrial Code Rule 56 (12NYCRR56) and the Federal Asbestos Hazard Emergency Response Act (AHERA), 90 CFR Part 763 1998 Edition. Final clearance shall be by T.E.M. air monitoring.

P. All lead based paint abatement shall comply with protocols detailed in the guidelines for evaluation and control of lead based paint hazards in housing (June 1995, U.S. Department of Housing and Urban Development, Washington, DC 20410).

END OF SECTION 008300

SECTION 00 95 00 – TAX EXEMPT LETTER FROM NYS COVERSHEET

New York State Department of
TAXATION and FINANCE
OTPA Sales Tax Exempt Organizations Unit
Building 9 Room 154
W.A. Harriman Campus
Albany, NY 12227

January 26, 2012

Rochester Joint Schools Construction Board
175 Martin Street, Suite 421
Rochester, New York 14605

Dear Sir or Madam:

The Tax Law exempts New York State governmental entities such as your organization, Rochester Joint Schools Construction Board, from the payment of New York State sales and use taxes on their purchases. In order to make tax exempt purchases, a New York State governmental entity must present vendors with the entity's official purchase order or other documentation (e.g., payment voucher, contract of sale, Form AC 946, *Tax Exemption Certificate*, Form ST-129, *Exemption Certificate - Tax on occupancy of hotel rooms*, etc.) which indicates that the purchaser is a New York State governmental entity.

Tax exemption numbers and Form ST-119.1, *Exempt Organization Exempt Purchase Certificate*, are not issued to New York State governmental entities. If a vendor requests a tax exemption number or Form ST-119.1, *Exempt Organization Exempt Purchase Certificate* from you, the Rochester Joint Schools Construction Board may give the vendor a copy of this letter. This will assure the vendor that a governmental purchase order, or other evidence that the Rochester Joint Schools Construction Board is the purchaser, is the only documentation the vendor needs in order to not collect sales tax.

For additional information, please refer to Publication 843, *A Guide to Sales Tax in New York State for Exempt Organizations*, which is available on the New York State Tax Department website at nystax.gov

New York State Department of Taxation and Finance
OTPA-Taxpayer Guidance Division
Sales Tax Exempt Organizations Unit
Building 9 Room 154
W A Harriman Campus
Albany NY 12227

SECTION 010010 - REFERENCE STANDARDS

PART 1 – GENERAL

1.1 "Reference Standards" are documents or publications, which include requirements, set by authority, custom or general consent and establishes accepted criterion.

1.2 "Reference Standards" are incorporated into the Contract Documents by reference and each reference shall mean the latest edition at date of the Project Manual, including amendments and supplements. Each entity engaged in construction on Project should be familiar with industry standards applicable to its construction activity. Copies of applicable standards are not bound with the Contract Documents. Where copies of standards are needed to perform a required construction activity, obtain copies directly from publication source.

1.3 When requested, deliver to the Owner's Representative, an affidavit or certificate properly signed by manufacturer or supplier indicating that the material furnished conforms to the specified standards.

1.4 Reference to manufacturer's printed Specifications for specified products shall mean most current Specification on date of this Project Manual. Unless the Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied directly into the Contract Documents to the extent referenced. Such standards are made a part of the Contract Documents by reference.

Part 2 - PRODUCTS (Not Used)

Part 3 - EXECUTION (Not Used)

END OF SECTION 010010

SECTION 010020 - ABBREVIATIONS AND ACRONYMS

1.1 ABBREVIATIONS AND ACRONYMS

A. Industry Organizations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. Names, telephone numbers, and Web sites are subject to change and are believed to be accurate and up-to-date as of the date of the Contract Documents.

AA	Aluminum Association, Inc. (The) www.aluminum.org	(703) 358-2960
AAADM	American Association of Automatic Door Manufacturers www.aaadm.com	(216) 241-7333
AABC	Associated Air Balance Council www.aabc.com	(202) 737-0202
AAMA	American Architectural Manufacturers Association www.aamanet.org	(847) 303-5664
AASHTO	American Association of State Highway and Transportation Officials www.transportation.org	(202) 624-5800
AATCC	American Association of Textile Chemists and Colorists (The) www.aatcc.org	(919) 549-8141
ABAA	Air Barrier Association of America www.airbarrier.org	(866) 956-5888
ABMA	American Bearing Manufacturers Association www.abma-dc.org	(202) 367-1155
ACI	American Concrete Institute www.concrete.org	(248) 848-3700
ACPA	American Concrete Pipe Association www.concrete-pipe.org	(972) 506-7216

AEIC	Association of Edison Illuminating Companies, Inc. (The) www.aeic.org	(205) 257-2530
AF&PA	American Forest & Paper Association www.afandpa.org	(800) 878-8878 (202) 463-2700
AGA	American Gas Association www.aga.org	(202) 824-7000
AGC	Associated General Contractors of America (The) www.agc.org	(703) 548-3118
AHA	American Hardboard Association www.domensino.com/AHA	(847) 934-8800
AHAM	Association of Home Appliance Manufacturers www.aham.org	(202) 872-5955
AI	Asphalt Institute www.asphaltinstitute.org	(859) 288-4960
AIA	American Institute of Architects (The) www.aia.org	(800) 242-3837 (202) 626-7300
AISC	American Institute of Steel Construction www.aisc.org	(800) 644-2400 (312) 670-2400
AISI	American Iron and Steel Institute www.steel.org	(202) 452-7100
AITC	American Institute of Timber Construction www.aitc-glulam.org	(303) 792-9559
ALCA	Associated Landscape Contractors of America (Now PLANET - Professional Landcare Network)	
ALSC	American Lumber Standard Committee, Incorporated www.alsc.org	(301) 972-1700
AMCA	Air Movement and Control Association International, Inc. www.amca.org	(847) 394-0150
ANSI	American National Standards Institute www.ansi.org	(202) 293-8020

AOSA	Association of Official Seed Analysts, Inc. www.aosaseed.com	(607) 256-3313
APA	Architectural Precast Association www.archprecast.org	(239) 454-6989
APA	APA - The Engineered Wood Association www.apawood.org	(253) 565-6600
APA EWS	APA - The Engineered Wood Association; Engineered Wood Systems (See APA - The Engineered Wood Association)	
API	American Petroleum Institute www.api.org	(202) 682-8000
ARHI	Air-Conditioning, Heating & Refrigeration Institute www.arhinet.org	(703) 524-8800
ARMA	Asphalt Roofing Manufacturers Association www.asphaltroofing.org	(202) 207-0917
ASCE	American Society of Civil Engineers www.asce.org	(800) 548-2723 (703) 295-6300
ASCE/SEI	American Society of Civil Engineers/Structural Engineering Institute (See ASCE)	
ASHRAE	American Society of Heating, Refrigerating and Air-Conditioning Engineers www.ashrae.org	(800) 527-4723 (404) 636-8400
ASME	ASME International (The American Society of Mechanical Engineers International) www.asme.org	(800) 843-2763 (973) 882-1170
ASSE	American Society of Sanitary Engineering www.asse-plumbing.org	(440) 835-3040

ASTM	ASTM International (American Society for Testing and Materials International) www.astm.org	(610) 832-9500
AWCI	AWCI International (Association of the Wall and Ceiling Industry International) www.awci.org	(703) 538-1600
AWCMA	American Window Covering Manufacturers Association (Now WCSC)	
AWI	Architectural Woodwork Institute www.awinet.org	(571) 323-3636
AWPA	American Wood Protection Association www.awpa.com	(205) 733-4077
AWS	American Welding Society www.aws.org	(800) 443-9353 (305) 443-9353
AWWA	American Water Works Association www.awwa.org	(800) 926-7337 (303) 794-7711
BHMA	Builders Hardware Manufacturers Association www.buildershardware.com	(212) 297-2122
BIA	Brick Industry Association (The) www.bia.org	(703) 620-0010
BICSI	Building Industry Consulting Service International www.bicsi.org	(800) 242-7405 (813) 979-1991
BIFMA	BIFMA International (Business and Institutional Furniture Manufacturer's Association International) www.bifma.org	(616) 285-3963
BISSC	Baking Industry Sanitation Standards Committee www.bissc.org	(866) 342-4772

CCC	Carpet Cushion Council www.carpetcushion.org	(610) 527-3880
CDA	Copper Development Association www.copper.org	(800) 232-3282 (212) 251-7200
CFFA	Chemical Fabrics & Film Association, Inc. www.chemicalfabricsandfilm.com	(216) 241-7333
CGA	Compressed Gas Association www.cganet.com	(703) 788-2700
CIMA	Cellulose Insulation Manufacturers Association www.cellulose.org	(888) 881-2462 (937) 222-2462
CISCA	Ceilings & Interior Systems Construction Association www.cisca.org	(630) 584-1919
CISPI	Cast Iron Soil Pipe Institute www.cispi.org	(423) 892-0137
CLFMI	Chain Link Fence Manufacturers Institute www.chainlinkinfo.org	(301) 596-2583
CRRC	Cool Roof Rating Council www.coolroofs.org	(866) 465-2523 (510) 485-7175
CPA	Composite Panel Association www.pbmdf.com	(866) 426-6767 (703) 724-1128
CPPA	Corrugated Polyethylene Pipe Association (See PPI – Plastics Pipe Institute)	
CRI	Carpet & Rug Institute (The) www.carpet-rug.com	(800) 882-8846 (706) 278-3176
CRSI	Concrete Reinforcing Steel Institute www.crsi.org	(847) 517-1200
CSA	Canadian Standards Association www.csa.ca	(800) 463-6727 (416) 747-4000

CSA	CSA International (Formerly: IAS - International Approval Services) www.csa-international.org	(866) 797-4272 (416) 747-2661
CSI	Cast Stone Institute www.caststone.org	(717) 272-3744
CSI	Construction Specifications Institute (The) www.csinet.org	(800) 689-2900 (703) 684-0300
CSSB	Cedar Shake & Shingle Bureau www.cedarbureau.org	(604) 820-7700
CTI	Cooling Technology Institute (Formerly: Cooling Tower Institute) www.cti.org	(281) 583-4087
DHI	Door and Hardware Institute www.dhi.org	(703) 222-2010
EIA	Electronic Industries Alliance www.eia.org	(703) 907-7500
EIMA	EIFS Industry Members Association www.eima.com	(800) 294-3462
EJCDC	Engineers Joint Contract Documents Committee www.ejcdc.org	
EJMA	Expansion Joint Manufacturers Association, Inc. www.ejma.org	(914) 332-0040
E-rate	Education Rate (Universal Service Fund) www.universalservice.org/sl	
ESD	Electrostatic Discharge Association www.esda.org	(315) 339-6937
FIBA	Federation Internationale de Basketball (The International Basketball Federation) www.fiba.com	41 22 545 00 00
FM Approvals	FM Approvals www.fmglobal.com	(781) 762-4300
FM Global	FM Global (Formerly: FMG - FM Global)	(401) 275-3000

	www.fmglobal.com	
FMRC	Factory Mutual Research (Now FM Global)	
FRSA	Florida Roofing, Sheet Metal & Air Conditioning Contractors Association, Inc. www.floridaroof.com	(407) 671-3772
FSA	Fluid Sealing Association www.fluidsealing.com	(610) 971-4850
FSC	Forest Stewardship Council www.fsc.org	49 228 367 66 0
GA	Gypsum Association www.gypsum.org	(301) 277-8686
GANA	Glass Association of North America www.glasswebsite.com	(785) 271-0208
GRI	(Now GSI)	
GS	Green Seal www.greenseal.org	(202) 872-6400
GSI	Geosynthetic Institute www.geosynthetic-institute.org	(610) 522-8440
HI	Hydraulic Institute www.pumps.org	(888) 786-7744 (973) 267-9700
HI	Hydronics Institute (Now Part of AHRI)	
HMMA	Hollow Metal Manufacturers Association (Part of NAAMM)	
HPVA	Hardwood Plywood & Veneer Association www.hpva.org	(703) 435-2900

HPW	H. P. White Laboratory, Inc. www.hpwhite.com	(410) 838-6550
IAS	International Approval Services (Now CSA International)	
IBF	International Badminton Federation www.internationalbadminton.org	(603) 9283-7155
ICEA	Insulated Cable Engineers Association, Inc. www.icea.net	(770) 830-0369
ICRI	International Concrete Repair Institute, Inc. www.icri.org	(847) 827-0830
IEC	International Electrical Congress www.iec.ch	41 22 919 02 11
IEEE	Institute of Electrical and Electronics Engineers, Inc. (The) www.ieee.org	(212) 419-7900
IESNA	Illuminating Engineering Society of North America www.iesna.org	(212) 248-5000
IEST	Institute of Environmental Sciences and Technology www.iest.org	(847) 981-0100
IGCC	Insulating Glass Certification Council www.igcc.org	(315) 646-2234
IGMA	Insulating Glass Manufacturers Alliance www.igmaonline.org	(613) 233-1510
ILI	Indiana Limestone Institute of America, Inc. www.iliai.com	(812) 275-4426
ISO	International Organization for Standardization www.iso.ch	41 22 749 01 11
ISFA	International Surface Fabricators Association www.isfanow.org	(877) 464-7732 (801) 341-7360

ITS	Intertek Testing Service NA www.intertek.com	(800) 967-5352
ITU	International Telecommunication Union www.itu.int/home	41 22 730 51 11
KCMA	Kitchen Cabinet Manufacturers Association www.kcma.org	(703) 264-1690
LMA	Laminating Materials Association	
LPI	Lightning Protection Institute www.lightning.org	(800) 488-6864
MBMA	Metal Building Manufacturers Association www.mbma.com	(216) 241-7333
MFMA	Maple Flooring Manufacturers Association, Inc. www.maplefloor.org	(847) 480-9138
MFMA	Metal Framing Manufacturers Association, Inc. www.metalframingmfg.org	(312) 644-6610
MH	Material Handling (Now MHIA)	
MHIA	Material Handling Industry of America www.mhia.org	(800) 345-1815 (704) 676-1190
MIA	Marble Institute of America www.marble-institute.com	(440) 250-9222
MPI	Master Painters Institute www.paintinfo.com	(888) 674-8937 (604) 298-7578
MSS	Manufacturers Standardization Society of The Valve and Fittings Industry Inc. www.mss-hq.com	(703) 281-6613
NAAMM	National Association of Architectural Metal Manufacturers www.naamm.org	(630) 942-6591
NACE	NACE International (National Association of Corrosion Engineers International)	(800) 797-6623 (281) 228-6200

	www.nace.org	
NADCA	National Air Duct Cleaners Association www.nadca.com	(202) 737-2926
NAGWS	National Association for Girls and Women in Sport www.aahperd.org/nagws/	(703) 476-3452
NAIMA	North American Insulation Manufacturers Association www.naima.org	(703) 684-0084
NBGQA	National Building Granite Quarries Association, Inc. www.nbgqa.com	(800) 557-2848
NCAA	National Collegiate Athletic Association (The) www.ncaa.org	(317) 917-6222
NCMA	National Concrete Masonry Association www.ncma.org	(703) 713-1900
NCPI	National Clay Pipe Institute www.ncpi.org	(262) 248-9094
NCTA	National Cable & Telecommunications Association www.ncta.com	(202) 222-2300
NEBB	National Environmental Balancing Bureau www.nebb.org	(301) 977-3698
NECA	National Electrical Contractors Association www.necanet.org	(301) 657-3110
NeLMA	Northeastern Lumber Manufacturers' Association www.nelma.org	(207) 829-6901
NEMA	National Electrical Manufacturers Association www.nema.org	(703) 841-3200
NETA	InterNational Electrical Testing Association www.netaworld.org	(888) 300-6382 (269) 488-6382

NFHS	National Federation of State High School Associations www.nfhs.org	(317) 972-6900
NFPA	National Fire Protection Association www.nfpa.org	(800) 344-3555 (617) 770-3000
NFRC	National Fenestration Rating Council www.nfrc.org	(301) 589-1776
NGA	National Glass Association www.glass.org	(866) 342-5642 (703) 442-4890
NHLA	National Hardwood Lumber Association www.natlhardwood.org	(800) 933-0318 (901) 377-1818
NLGA	National Lumber Grades Authority www.nlga.org	(604) 524-2393
NOFMA	National Oak Flooring Manufacturers Association (Now NWFA)	
NRCA	National Roofing Contractors Association www.nrca.net	(800) 323-9545 (847) 299-9070
NRMCA	National Ready Mixed Concrete Association www.nrmca.org	(888) 846-7622 (301) 587-1400
NSF	National Sanitation Foundation International www.nsf.org	(800) 673-6275 (734) 769-8010
NSSGA	National Stone, Sand & Gravel Association www.nssga.org	(800) 342-1415 (703) 525-8788
NTMA	National Terrazzo & Mosaic Association, Inc. (The) www.ntma.com	(800) 323-9736 (540) 751-0930
NTRMA	National Tile Roofing Manufacturers Association (Now TRI)	
NWFA	National Wood Flooring Association www.nwfa.org	(800) 422-4556 (636) 519-9663
NWWDA	National Wood Window and Door Association (Now WDMA)	
OPL	Omega Point Laboratories, Inc.	

	(Now ITS)	
PCI	Precast/Prestressed Concrete Institute www.pci.org	(312) 786-0300
PDCA	Painting & Decorating Contractors of America www.pdca.com	(800) 332-7322 (314) 514-7322
PDI	Plumbing & Drainage Institute www.pdionline.org	(800) 589-8956 (978) 557-0720
PGI	PVC Geomembrane Institute http://pgi-tp.cee.uiuc.edu	(217) 333-3929
PLANET	Professional Landcare Network (Formerly: ACLA - Associated Landscape Contractors of America) www.landcarenetwork.org	(800) 395-2522 (703) 736-9666
PTI	Post-Tensioning Institute www.post-tensioning.org	(248) 848-3180
RCSC	Research Council on Structural Connections www.boltcouncil.org	
RFCI	Resilient Floor Covering Institute www.rfci.com	(706) 882-3833
RIS	Redwood Inspection Service www.calredwood.org	(888) 225-7339 (415) 382-0662
SAE	SAE International www.sae.org	(877) 606-7323 (724) 776-4841
SDI	Steel Deck Institute www.sdi.org	(847) 458-4647
SDI	Steel Door Institute www.steeldoor.org	(440) 899-0010
SEFA	Scientific Equipment and Furniture Association www.sefalabs.com	(877) 294-5424 (516) 294-5424
SEI/ASCE	Structural Engineering Institute/American Society of Civil Engineers (See ASCE)	

SGCC	Safety Glazing Certification Council www.sgcc.org	(315) 646-2234
SIA	Security Industry Association www.siaonline.org	(866) 817-8888 (703) 683-2075
SIGMA	Sealed Insulating Glass Manufacturers Association (Now IGMA)	
SJI	Steel Joist Institute www.steeljoist.org	(843) 293-1995
SMA	Screen Manufacturers Association www.smainfo.org	(561) 533-0991
SMACNA	Sheet Metal and Air Conditioning Contractors' National Association www.smacna.org	(703) 803-2980
SPFA	Spray Polyurethane Foam Alliance (Formerly: SPI/SPFD - The Society of the Plastics Industry, Inc.; Spray Polyurethane Foam Division) www.sprayfoam.org	(800) 523-6154
SPIB	Southern Pine Inspection Bureau (The) www.spib.org	(850) 434-2611
SPRI	Single Ply Roofing Industry www.spri.org	(781) 647-7026
SSINA	Specialty Steel Industry of North America www.ssina.com	(800) 982-0355 (202) 342-8630
SSPC	SSPC: The Society for Protective Coatings www.sspc.org	(877) 281-7772 (412) 281-2331
STI/SPFA	Steel Tank Institute/Steel Plate Fabricators Association www.steeltank.com	(847) 438-8265

SWRI	Sealant, Waterproofing, & Restoration Institute www.swrionline.org	(816) 472-7974
TCA	Tile Council of America, Inc. www.tileusa.com	(864) 646-8453
TIA/EIA	Telecommunications Industry Association/Electronic Industries Alliance www.tiaonline.org	(703) 907-7700
TMS	The Masonry Society www.masonrysociety.org	(303) 939-9700
TPI	Truss Plate Institute, Inc.	(703) 683-1010
TPI	Turfgrass Producers International www.turfgrasssod.org	(800) 405-8873 (847) 649-5555
TRI	Tile Roofing Institute www.tileroofing.org	(312) 670-4177
UL	Underwriters Laboratories Inc. www.ul.com	(877) 854-3577 (847) 272-8800
UNI	Uni-Bell PVC Pipe Association www.uni-bell.org	(972) 243-3902
USGBC	U.S. Green Building Council www.usgbc.org	(800) 795-1747 (202) 742-3792
USITT	United States Institute for Theatre Technology, Inc. www.usitt.org	(800) 938-7488 (315) 463-6463
WASTEC	Waste Equipment Technology Association www.wastec.org	(800) 424-2869 (202) 244-4700
WCLIB	West Coast Lumber Inspection Bureau www.wclib.org	(800) 283-1486 (503) 639-0651
WCMA	Window Covering Manufacturers Association (Now WCSC)	
WCSC	Window Covering Safety Council (Formerly: WCMA) www.windowcoverings.org	(800) 506-4636 (212) 297-2100

WDMA	Window & Door Manufacturers Association (Formerly: NWWDA) www.wdma.com	(800) 223-2301 (312) 321-6802
WMMPA	Wood Moulding & Millwork Producers Association www.wmmpa.com	(800) 550-7889 (530) 661-9591
WWPA	Western Wood Products Association www.wwpa.org	(503) 224-3930

B. Code Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. Names, telephone numbers, and Web sites are subject to change and are believed to be accurate and up-to-date as of the date of the Contract Documents.

IAPMO	International Association of Plumbing and Mechanical Officials www.iapmo.org	(909) 472-4100
ICC	International Code Council www.iccsafe.org	(888) 422-7233 (703) 931-4533
ICC-ES	ICC Evaluation Service, Inc. www.icc-es.org	(800) 423-6587 (562) 699-0543
NEC	National Electric Code www.nec.com	

C. Federal Government Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. Names, telephone numbers, and Web sites are subject to change and are believed to be accurate and up-to-date as of the date of the Contract Documents.

CE	Army Corps of Engineers www.usace.army.mil	(202) 761-0011
CPSC	Consumer Product Safety Commission www.cpsc.gov	(800) 638-2772 (301) 504-7923

DOC	US Department of Commerce www.commerce.gov	(202) 482-2000
DOD	US Department of Defense www.defense.gov	(703) 571-5131
DOE	US Department of Energy www.energy.gov	(202) 586-5000
EPA	US Environmental Protection Agency www.epa.gov	(202) 272-0167
FAA	Federal Aviation Administration www.faa.gov	(866) 835-5322
FCC	Federal Communications Commission www.fcc.gov	(888) 225-5322
FDA	US Food and Drug Administration www.fda.gov	(888) 463-6332
GSA	US General Services Administration www.gsa.gov	(800) 488-3111
HUD	Department of Housing and Urban Development www.hud.gov	(202) 708-1112
LBL	Lawrence Berkeley National Laboratory www.lbl.gov	(510) 486-4000
NCHRP	National Cooperative Highway Research Program (See TRB)	
NIST	National Institute of Standards and Technology www.nist.gov	(301) 975-6478
OSHA	US Department of Labor; Occupational Safety & Health Administration www.osha.gov	(800) 321-6742 (202) 693-1999
PBS	Public Building Service (See GSA)	
PHS	US Department of Health & Human Services; Office of Public Health and Science	(202) 690-7694

	www.hhs.gov/ophs/	
RUS	Rural Utilities Service (See USDA)	(202) 720-9540
SD	US Department of State www.state.gov	(202) 647-4000
TRB	Transportation Research Board http://gulliver.trb.org	(202) 334-2934
USDA	US Department of Agriculture www.usda.gov	(202) 720-2791
USPS	US Postal Service	(800) 275-8777
	www.usps.com	(202) 268-2000

D. Standards and Regulations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the standards and regulations in the following list. Names, telephone numbers, and Web sites are subject to change and are believed to be accurate and up-to-date as of the date of the Contract Documents.

ADAAG	Americans with Disabilities Act (ADA) Architectural Barriers Act (ABA) Accessibility Guidelines for Buildings and Facilities Available from United States Access Board www.access-board.gov	(800) 872-2253 (202) 272-0080
CFR	Code of Federal Regulations Available from Government Printing Office www.gpoaccess.gov/cfr/index.html	(866) 512-1800 (202) 512-1800
FED-STD	Federal Standard (See FS)	
FS	Federal Specification Available from Department of Defense Single Stock Point http://dodssp.daps.dla.mil	(215) 697-2664
	Available from Defense Standardization Program www.dsp.dla.mil	
	Available from General Services Administration www.gsa.gov	(202) 619-8925

	Available from National Institute of Building Sciences www.wbdg.org/ccb	(202) 289-7800
FTMS	Federal Test Method Standard (See FS)	
UFAS	Uniform Federal Accessibility Standards Available from Access Board www.access-board.gov	(800) 872-2253 (202) 272-0080

E. State Government Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. Names, telephone numbers, and Web sites are subject to change and are believed to be accurate and up-to-date as of the date of the Contract Documents.

NYBFU	New York Board of Fire Underwriters www.nybfuinstitute.org	(212) 227-3700 1-800-227-2761
NYSDEC	New York State Department of Environmental Conservation www.dec..ny.gov	(518) 402-8651
SPDES	NYSDEC – State Pollution Discharge Elimination System http://www.dec.ny.gov/permits/6054.html	(518) 402-8109
NYSDOL	New York State Department of Labor www.labor.state.ny.us	(518) 457-9000
NYSDOS	New York Department of State Division of Code Enforcement and Administration www.dos.state.ny.us	(518) 474-4073
NYSDOT	New York State Department of Transportation www.nysdot.gov	(518) 457-6195
NYSDOH	New York State Department of Health www.health.state.ny.us	
NYSED	New York State Education Department Office of Facilities Planning http://www.emsc.nysed.gov/facplan/	(518) 474-3906
NYSUFPBC	New York State Uniform Fire Protection and Building Code 1. BCNYS – Building Code of New York State 2. ECNYS – Energy Conservation Construction Code of New York State 3. FCNYS – Fire Code of New York State	

4. FGNYS – Fuel Gas Code of New York State
5. MCNYS – Mechanical Code of New York State
6. PCNYS – Plumbing Code of NEW York State
7. PMCNYS – Property Maintenance Code of New York State
8. RCNYS – Residential Code of New York State

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 00 20

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SECTION 010030 - DEFINITIONS

Project-specific definitions are included in the General Conditions of the Contract for Construction (Section 00 72 16). Additional terms that may be applicable to the Project are included herein. In the event of a conflict, definitions set forth in the General Conditions shall govern.

1.1 PROVIDE:

A. Where the term "provide" is used it shall be understood to mean "furnish" and "install."

1.2 PROJECT MANUAL:

A. The term "Project Manual" describes the written document, of one or more volumes, which includes the Instructions to Bidders, Form of Contract, General Conditions, List of Drawings, Amendments, Supplements, Sample Forms, and the Technical Specifications as set forth more specifically in the Table of Contents.

1.3 PRODUCT:

A. The term "product" shall be deemed to mean all natural and manufactured materials, fixtures, equipment, devices and furnishings to be incorporated into the Work.

1.4 LANGUAGE OF PROJECT MANUAL:

A. The language of the Project Manual is of the abbreviated or streamlines type and includes incomplete sentences.

B. Omitted words or phrases shall be supplied by inference in the same manner as they are when a "note" occurs on the Drawings, the words "shall be" or "shall", will be supplied by inference.

C. Wherever the words "approved," "satisfactory", "directed", "submitted", "inspected" or similar words, or phases, are used; it shall be assured that the word "Architect" or "Owner's Representative" follows the verb as the object of the clause, such as "approved by the Architect," or the appropriate party as may be inferred from the context thereof.

1.5 CONSTRUCTION SCHEDULE

A. Wherever the words "work schedule," "work plan," or similar words or phrases are used, it shall be deemed to mean "construction schedule" as specified in Section 00 43 83 "Schedules and Milestones."

1.6 DEMOLITION

A. The systematic destruction of the existing building(s) including every element within such structure to include trees, pavers, glass, mechanical components, plumbing fixtures, electrical fixtures, cables, concrete, foundation, roofing, lockers, asbestos removal, etc., and disposed of in a lawful manner.

1.7 TERMS

A. General: Basic Contract definitions are included in the Conditions of the Contract.

B. "Approved": When used to convey Architect's action on Contractor's submittals, applications, and requests, "approved" is limited to Architect's duties and responsibilities as stated in the Conditions of the Contract.

C. "Directed": Terms such as "directed," 'accepted,' 'deleted,' 'permitted,' 'requested,' 'required,' and 'selected' mean, unless otherwise explained, 'accepted by the Architect,' 'directed by the Architect,' 'permitted by the Architect, 'requested by the Architect,' 'required by the Architect,' and 'selected by the Architect.' However, no such implied meaning will be interpreted to extend the Architect's responsibility into the Contractor's area of construction supervision.

D. "Indicated": The term "indicated" refers to graphic representations, notes, or schedules on Drawings; or to other paragraphs or schedules in Specifications and similar requirements in the Contract Documents. Terms such as "shown," "noted," "scheduled," and "specified" are used to help the user locate the reference.

E. "Regulations": The term "regulations" includes laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, as well as rules, conventions, and agreements within the construction industry that control performance of the Work form of incorporation into the Project, and maintained ready for use. Supply and deliver products requiring additional or supplemental fitting, assembly, fabrication, or incorporation into other elements of the Project directly to the fabricator, installer or manufacturer as required.

F. "Furnish": The term "furnish" means to supply and deliver to Project site, or other designated location ready for unloading, unpacking, storing assembly, installation, application, erection, or other form of incorporation into the Project, and maintained ready for use. Supply and deliver products requiring additional or supplemental fitting, assembly, fabrication or incorporation into other elements of the Project directly to the fabricator, installer or manufacturer as required.

G. "Install": Operations at Project site including unloading, temporarily storing, unpacking, assembling, erecting, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, and similar operations required to properly incorporate work into the project.

H. "Provide": Furnish and install, complete and ready for the intended use. Note: the lack of a modifier in any technical note is to have the inferred meaning of "provide"

I. "Project Site": is the space available for performing construction activities, either exclusively or in conjunction with others performing other work as part of Project. The extent of Project site is shown on the Drawings and may or may not be identical with the description of the land on which Project is to be built.

J. "Installer": An installer is Contractor or another entity engaged by Contractor, as an employee, subcontractor, or contractor of lower tier, to perform a particular construction operation, including installation, erection, application, and similar operations.

K. The term "experienced," when used with the term "installer," means having successfully completed a minimum of five previous projects similar in size and scope to this Project; being familiar with the special requirements indicated; and having complied with requirements of authorities having jurisdiction.

L. The term 'replace' means remove designated, damaged, rejected, defective, unacceptable, or nonconforming work from the Project and provide new work meeting the requirements of the Contract Documents in place thereof.

M. "Include": The words 'include,' in any form other than inclusive,' is non-limiting and is not intended to mean all-inclusive."

N. "Custom Color" is a special color that is not available from the manufactures standard colors and will require a once in a lifetime color match as selected by the Architect.

O. "Standard color" is a minimum of 8 standard colors that the manufacture commonly offers for their product.

P. "Match existing" is to match the existing material system including but not limited to: color, texture, size, and edge treatment (including the systems grout/mortar color, texture, size, shape and reveal)

Q. "Concealed" where used in connection with insulation, painting of piping, piping, conduit, ducts, and accessories shall mean that they are hidden from sight as in trenches, chases, shafts, furred spaces, walls, slabs, or hung ceilings; also where they are not hidden from sight in the following locations: in partly excavated spaces or crawl spaces, or in service tunnels and used solely for repairs or maintenance.

R. "Exposed" where used in connection with insulation, painting of piping, piping, conduit, ducts, accessories shall mean that they are not "concealed" as defined herein above.

S. "Piping" includes in addition to pipe, also fittings, valves, hangers, and other accessories that comprise system.

T. "Below Grade" includes all areas below the finished grade line and below the finished floor, where the finished floor system is supported on earth and gravel systems.

U. Remove: Detach items from existing construction and legally dispose of them off-site, unless indicated to be removed and salvaged or removed and reinstalled.

V. Salvage: Detach items from existing construction and deliver them to Owner ready for reuse or safely store in a controlled environment and reinstall where indicated.

W. Reinstall: Prepare for reuse, clean, replace missing or damaged accessories, and reinstall them where indicated.

X. Existing: Existing items of construction that are not to be removed and that are not otherwise indicated to be removed, salvaged, or removed and reinstalled.

END OF SECTION 01 00 30

SECTION 011200 - PRIME CONTRACT SUMMARY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.
B. Section 00 73 46 – Wage Rates PRC No. 2017005606 from http://wpp.labor.state.ny.us. Davis Bacon Wage Determination updated at the time of award. Post-award changes to published New York State Prevailing Wage Rate or Davis Bacon Wage Rate shall not constitute basis for Contract Sum increase.

1.2 DESCRIPTION OF WORK

A. The Contractor shall submit lump sum information prices attached to Bid Form Section 00 41 16. The Work of this Project is described more completely elsewhere in the Contract Documents and compliments the following list. Contractors shall attend all meetings and comply fully with the detailed specifications and drawings that are part of this Contract. See Unit Price Section 00 43 22 for Unit Price items.

B. The Work includes all labor, materials, equipment and transportation necessary to complete the project as specified and as indicated in the Contract Documents.

1.3 WORK COVERED BY CONTRACT DOCUMENTS

A. Project Information

1. **Project Location**: 655 Colfax Street, Rochester, New York 14606

2. **Project Description**: The project consists of GC, Mechanical, Electrical, and Plumbing work at the Edison Technical & Occupational Education Center School.

   a. The Work of this contract generally includes, but is not limited to General Construction, Mechanical, Electrical, and Plumbing.

3. **Owner Identification:** Rochester Joint Schools Construction Board (RJSCB) (herein, “Owner”) as represented by its Executive Director. Owner is agent for; Rochester City School District (RCSD); and City of Rochester for purposes of the Rochester School Modernization Program (RSMP).

4. **Program Manager Identification:** The Owner has engaged Savin Engineers P.C. as Program Manager for this Project to serve as an advisor to Owner and to provide assistance in administering the Contracts for Design and Construction between Owner and each Consultant/Contractor, according to a separate contract between Owner and Program Manager.

5. **Construction Manager Identification**: The Owner has engaged Buffalo Construction Consultants, as Construction Managers. The particular Construction Manager designated by contract with the Owner for that particular Project site shall serve as the Contractor's primary contact for, and Owner's authorized agent of, the Project with regard to that site to serve as an advisor to Owner and the Program Manager to provide assistance in administering the Contract for Construction between Owner and each Contractor, according to its separate contract with Owner.

6. **Architect/Engineer Identification:** Owner has engaged LaBella Associates, D.P.C., as the Architect of record. LaBella Associates has engaged various professional engineers and/or consultants as part of their design team. LaBella is retained under separate agreement with Owner, and shall be identified as the Architect/Engineer for the Project.

B. Contract Documents dated May 1, 2018, prepared by LaBella Associates, D.P.C., 300 State Street, Rochester, NY 14614.

C. Protection of existing utilities under the existing structures and site is considered part of this Work scope.

D. Work will be constructed under a Single Prime Contract.

E. Prime Contracts are separate contracts between the Owner and separate contractors, representing significant construction activities. These Prime contracts are performed concurrently with, and closely related to other construction activities being performed on the project. This contract will be closely coordinated with construction activities performed on the project under other prime contracts that have been previously bid. The Prime Contract for this project is:

1. Prime Contract: **Television Studio Equipment Contract #700**

RELATED CONTRACTS PREVIOUSLY BID:

2. *Prime Contract: GC Contract #300*
3. *Prime Contract: HVAC Contract #400*
4. *Prime Contract: Electrical Contract #500*
5. *Prime Contract: Plumbing Contract # 600*

1.4 CONTRACT METHOD

A. Construct the Work under a Lump Sum fixed price Contract for each Prime Contract.

B. Construction Work is being accomplished by utilizing a sequentially phased, Multiple Prime Contract procedure.

1.5 SUMMARY

A. General note: The work descriptions in this section are presented for general guidance only and do not necessarily cover the entire requirements of the project as shown on the drawings, details, and/or as specified hereinafter. Contractors shall provide a complete system.

1.6 WORK SEQUENCE

A. The work will be conducted in accordance with the milestone dates set forth and the coordinated project schedule.
B. PROJECT SCHEDULE - Refer to Section 00 43 83
C. Each Contractor is responsible to submit, within three weeks of contract award, a complete schedule of all activities necessary to complete the contract work. Including but not limited to: submittal schedule, manpower loading schedule and project cash flow projection.
   1. Each Prime contractor shall participate with developing an overall schedule integrating their activities with the other prime contractors, while meeting the parameters of the contract schedule
   2. Weekly updates of a three-week look-ahead schedule are also required.
D. Activity and access shall be confined to the designated staging and construction areas. All exits and escape windows, for occupied areas, shall be maintained at all times.
E. All additional costs for overtime or second or third shift Work required by any Contractor to ensure Work completion in accordance with the project completion schedule will be the responsibility of the Contractor unless otherwise specified.
F. Each Contractor shall plan labor, materials (including long lead items), equipment and Subcontractors as needed to complete Work in accordance with the project schedule, including punch list completion. Note however that any graphical representation of phased work for the Project constitutes an approximation and shall not provide a defense to any Contractor that fails to achieve timely Substantial Completion of its Work.
G. All Contactors understand that time is of the essence and will adequately staff the job to successfully complete the contract work in accordance with the project phasing plans and milestone dates.

H. All Contractors are specifically forewarned that any delays caused directly or indirectly by their acts, omissions, and/or failure to perform will result in the Owner, or its agents, completing the Prime Contractor's Work by whatever means are needed to complete the Work. The Prime Contractor causing the delay will be responsible for any and all costs associated with such issues including, but not limited to, Owner, RCSD, Program Manager, Architectural, Construction Management, Legal, and Inspections costs, plus costs submitted by Contractors hired to complete the Prime Contractor's Work-in specific areas.

1.7 SECURITY REQUIREMENTS

A. Work zones and material / equipment staging zones shall remain locked at all times, except when a Worker is present to prevent unauthorized entry.

B. All construction Workers are required to wear photo identification badges at all times while on the project site. Each Contractor is responsible for control, maintenance and updating of badges worn by their personnel. Contractors are to contact Rochester City School District, 131 W. Broad Street, Rochester NY 14612 to obtain the Contractor ID Badge.

C. Contractors are reminded that all Workers will be required to act in a manner consistent with a school environment. Each Contractor will be responsible to ensure that all Workers act appropriately. Any individual acting in a manner not acceptable to any school representative, the Owner or Construction Manager, will be directed to surrender his/her badge and to leave the premises immediately. The offending individual will be prohibited from future Work on this Project.

D. The City of Rochester Police Department reserves the right to inspect any packages or deliveries throughout the course of the Project.

E. The City of Rochester Police Department, at their discretion, reserves the right to inspect the Work areas.

1.8 PROTECTION OF NEW AND EXISTING WORK

A. Each Contractor shall be wholly responsible for the protection of their finish Work as well as that of others.

B. All finished surfaces shall be protected if there is any possibility of damage resulting from the Work of other trades. This includes protection of the jambs and soffits of all openings used as passageways, or through which materials will be handled.

C. All finished surfaces, including factory finished surfaces, shall be cleaned and not marked upon delivery to the project. The Contractor shall, without extra compensation, refinish and/or replace all damaged surfaces to the satisfaction of the Architect/Engineer.

D. The finishes sequence of all areas will be as follows:

1. Prime coat and first finish coat on walls.

2. Install ceiling grid, ceiling tile border (i.e., cuts and specials), and ceiling tiles required for the installation of items listed in Item “c” below.
3. Install ceiling mounted electrical devices, light fixtures, diffusers, grilles, registers, and specialties.
4. Install casework, millwork, and ceramic tile.
5. Install resilient flooring, carpet, toilet fixtures and accessories.
6. Paint second finish coat on walls.
7. Install wall base, ceiling tile, and wall-mounted electrical devices and cover plates.
8.. Apply final finish coat of paint to door frames after installation of FF&E.
9. Contractors will use this sequence to reduce minor damages to finishes at the end of each completed phase.

E. Each Contractor shall be responsible for the protection of all existing finished surfaces, i.e., walls, doors, window and door frames, casework, jambs, soffits, etc., called out to remain. Contractors shall, without extra compensation, refinish and /or replace all existing surfaces damaged, during construction, to the satisfaction of the Architect/Engineer.

F. Prior to any materials being stored on finished floor surfaces, the Contractor shall obtain approval from the Construction Manager. If required, the Contractor shall install a protective barrier over these finished surfaces. Wheelbarrow, carts, dollies, etc., if used in such areas, shall be non-marking rubber tires.

G. Roof surfaces, gymnasium floors, and stage floors shall not be subjected to construction traffic or used for the storage of materials. Where activity must take place in order to carry out the Work of the Contract, the Contractor shall provide the Construction Manager with a protection plan, including but not limited to the following:

1. The type of Work to be performed.
2. The area where the Work will be performed.
3. Traffic patterns to be used for access/egress to/from the Work area.
4. Material and methods to be used as protection.

H. The plan shall be submitted to the Construction Manager no less than two (2) weeks prior to performing the Work to allow time for review of the plan.

I. Costs for protection of gym floors, stage floors, and roof surfaces shall be included in the Base Bid for the project.

J. Under no condition shall any Work take place in these areas without the Construction Manager’s prior authorization. Damage to the aforementioned surfaces shall be repaired at the expense of the Contractor who is deemed responsible for such damage, in the sole judgment of the Construction Manager.

1.9 COORDINATION

A. All Contractors shall cooperate with and coordinate with other Contractors, including those who will under separate Contract with the Owner provide certain equipment and materials. All Contractors shall schedule their work in conjunction with the other Contractors to avoid any delays in the overall completion of the schedule that may result from the inability of the other Contractors or Suppliers to access the building or site to properly install their equipment within the time frame of the Construction Schedule.

B. All Contractors Maintain access to existing walkways, corridors, and other adjacent occupied or used facilities. Do not close or obstruct walkways, corridors, or other occupied or used facilities without written permission from the construction manager and approval of authorities having jurisdiction.

C. Owner will retain the services of an independent materials testing and inspection consultant for; concrete, asphalt, compaction and gradation at a minimum. Testing and inspection of other forms of work will be at the discretion of the Owner. All Contractors are forewarned that the Owners inspection and testing is complimentary and does not relieve the Contractor from their obligations to construct per the contract documents, including any testing and inspections that may be required under contract. All required testing associated with each Contractor's scope of work shall be the responsibility of each Contractor.

1.10 SCOPE OF WORK - ALL CONTRACTS

Each Contractor shall provide all labor, material, plant, tools, equipment, and supervision, including safety supervision, related to or necessarily involved with the performance of the Work, as defined in this section, as indicated on any drawing in the Enumeration of Contract Documents, and as described in the following sections from the Project Manual:

A. DIVISION 00 – PROCUREMENT AND CONTRACTING REQUIREMENTS

Each Contractor shall include all Work and comply with all provisions of each of the following Specification Sections, complete:

1. **00 01 10 Table of Contents – Project Manual**
2. **00 01 15 List of Drawings**
3. **00 11 13 Advertisement for Bids**
4. **00 21 13 Instructions to Bidders**
5. **00 25 00 Hazardous Material Information Coversheet**
6. **00 25 00A Hazardous Material Information Attachments**

a. The Asbestos Inspection Report, Lead Based Paint Inspection and PCB Caulking Testing Reports are included in the Contract Documents for reference only.

b. Each Contractor shall assess the data provided in this Section, and shall be responsible for performing the Work of their Contract according to the data provided in Section 00 25 00A and the requirements of Section 02 83 00 Working with Lead Containing Materials. Each Contractor that disturbs existing building materials that contain lead paint shall take the necessary measures specified in Section 02 83 00 Working with Lead Containing Materials.

c. EPA has issued a rule requiring the use of lead safe practices and other actions aimed at preventing lead poisoning. Under the rule, beginning in April2010, contractors performing renovation, repair and painting projects that disturb lead-based paint in homes, child care facilities and schools built before1978 must be certified and must follow specific Work practices to prevent lead contamination. Information from EPA 40 CFR Part 745.8 Subpart E has been incorporated into Section 02 83 00. All Contractors are responsible for understanding and following all the requirements set forth in this regulation as it relates to their Work.

d. Any suspected material uncovered during construction shall be immediately reported to the Construction Manager. Removal of any material found to contain asbestos shall be only be performed by a NYSDOL licensed firm with certified Workers.

e. Any suspect mold uncovered during construction shall be immediately reported to the Construction Manager. Removal of any mold shall only be performed by a Contractor licensed to remediate mold.

7. **00 26 00 Geotechnical Information**

8. **00 41 16 Bid Form**

9. **00 43 00 Supplements to Bid Form**

10. **00 43 21 Allowances**

11. **00 43 22 Unit Prices**

12. **00 43 23 Alternates**

13. **00 43 31 MWBE/DBE/SBE Utilization and Workforce Diversity**

14. **00 43 31A Attachment to MWBE/DBE/SBE Utilization and Workforce Diversity**

15. **00 43 83 Milestone Schedule and Critical Submittals**

16. **00 43 93 Bid Submittal Checklist**

17. 00 45 13 Statement of Bidder Qualifications

18. 00 52 12 Form of Contract

19. 00 61 13 Bonds and Certificates

20. 00 62 11 Submittal Cover Sheet

21. 00 62 11A Submittal Cover Attachment

22. 00 63 19 Request for Equivalent Review Form

23. 00 72 16 General Conditions

24. 00 73 16 Insurance Requirements

25. 00 73 20 Health and Safety Requirements

26. 00 73 46 Prevailing Wage Rates

27. 00 83 00 SED Commission's Regulations

29. 00 95 00 Tax Exempt Letter from New York State Coversheet

30. 00 95 00A Tax Exempt Letter from New York State Attachment

B. DIVISION 01 – GENERAL REQUIREMENTS

Each Contractor shall include all Work and comply with all provisions of each of the following Specification Sections, complete:

1. 01 00 10 Reference Standards

2. 01 00 20 Abbreviations and Acronyms

3. 01 00 30 Definitions

4. 01 10 00 Summary of Work

5. 01 10 00.A Construction Manager Office Requirements

6. 01 12 00 Multiple Contract Summary

7. 01 14 00 NYSED 155.5 Regulations

8. 01 14 19 Use of Site

9. 01 25 00 Substitution Procedures

10. 01 25 10 RFI Form

11. 01 26 39 Field Orders

12. 01 26 43 Change Order Requests

a. Each Prime Contractor and their Sub-contractors are required to submit labor rate breakdown sheets for each trade within 10 days of contract award. Labor rates are to be broken out as outlined in specification section 01 26 53A. Refer to specification section 01 26 43A for cost proposal breakdown sheets to be used as backup breakdown on all cost proposals for this project. No cost proposals will be reviewed unless submitted on these forms.

13. 01 26 43A RCSD Change Order Form with formulas

14. 01 26 53 Labor Rate Worksheet Coversheet

15. 01 26 53A Labor Rate Worksheet

16. 01 29 75 Revolving Loan Program

17. 01 29 76 Progress Payment Procedures

18. 01 29 76B Payment Application Checklist

19. 01 29 76C Interim Waiver of Lien and Claim

20. 01 29 76D Final Waiver of Lien and Claim

21. 01 30 00 Construction Procedures and Controls and as further clarified:

a. Owner will retain the services of an independent testing laboratory for asbestos, concrete testing, compaction and gradation for the use of backfill/site fill, asphalt, fireproofing, steel and masonry testing. All other required testing associated with their scope of Work shall be the responsibility of each Prime Contractor.

b. The Construction Manager will receive copies of all Prime Contractors daily reports no later than noon the following Work day, listing daily activities and listing daily manpower by trade, failure to do so will result in payment applications being withheld until compliance is fulfilled.

c. **TV Studio Contract #700** shall provide full time, non-Working, on-site supervision from commencement of their Work and their Subcontractors Work activities until such time all Work activities have been completed or as determined by the Construction Manager. Furnishing items for job site does not constitute the commencement of Work activities. If supervision is reduced or terminated without consent of the Construction Manager, the Construction Manager will appoint an individual to manage Work under this a Prime Contract with all associated cost borne by the Prime Contractor. The Prime

Contractor shall assume all responsibilities for the individuals and Work of this Contract.

22. 01 31 13 Contract Coordination

23. 01 32 16 Contractor's Construction Schedule

a. All Contractors shall have a project manager and foreman participate in weekly work planning sessions starting the week before their Work commences and continuing through to substantial completion of their Contract. These meetings are intended to give each participating Contractor a voice in the project sequencing. Following these weekly sessions, the Construction Manager will issue a Weekly Work Plan (WWP) that documents the meeting.

b. All Contractors shall submit a constraint identification sheet prior to or during the Pull Planning session. The constraint identification sheet shall list any item that will prevent work from advancing as originally planned, who is responsible for resolving these items, and when the responsible party has committed to resolution of each item. Contractors shall come prepared to all planning meetings with a full understanding of their work plan and details of their manpower, equipment and material requirements.

c. All Contractors shall have a foreman participate in "daily huddles", which will be held from 7:00 am – 7:30 am each work day (or another time as agreed). These meetings are intended to quickly recap the Weekly Work Plan (WWP) schedules, adjust to circumstances, review the day ahead, and discuss opportunities to help each other as needed.

24. 01 32 19 Submittal Procedures and as further clarified:

a. A submittal schedule will be created by the Construction Manager. The required submittal dates established by the Construction Manager shall be reviewed by the Contractor and confirmed within 2 weeks after award of bid. It will be required by each Prime Contractor to incorporate the submittal dates into the project schedule relating to delivery of materials in relationship to the scheduling of Work. All submittals shall be provided for review based on the approved submittal schedule.

25. 01 32 26 Construction Progress Reports

26. 01 35 00 Electronic Document Transfer

27. 01 35 00A Electronic File Transfer Agreement

28. 01 35 23 Project Safety Standards, and as further clarified:

a. Each contractor should note that it is a requirement that <u>ALL employees of a contractor who are Working on a public project MUST have taken at least the OSHA ten (10) hour course</u>, prior to being accepted onto the Work site. A copy of each contractor's employee's

OSHA ten (10) hour course card will be requested, and will be kept on file with the construction manager.

b. Proof of OSHA 10/30 hour training within five (5) years of signing Contract. Ensure employees have completed OSHA required training, including but not limited to OSHA 10/30 Construction Industry Training. Proof of additional training may be required by OSHA relative to the Contractors scope of Work.

c. Contractor/Subcontractor tools, PPE, etc. involved in an accident/incident / near miss shall become the property of Construction Manager. Written notice of replacement is required from the respective Contractor/Subcontractor. Heavy equipment, motor vehicles, ATV's etc. involved in an accident / incident /near miss may be required, at the sole discretion of Construction Manager, to be inspected by a qualified 3rd party provided by the affected Contractor/Subcontractor 3rd party inspector must be approved by Construction Manager and the Contractor/Subcontractor shall bear all costs associated with any/all third party inspections and repairs.

d. One hundred (100) percent Ground Fault Circuit Interrupter (GFCI) use is mandatory throughout the Project. Assured grounding program cannot be used in the lieu of GFCI protection. Contractors/Subcontractors are to provide portable GFCI "pigtails" for use with extension cords plugged into permanent/existing outlets.

e. Contractors/Subcontractors that are working off a ladder at a height of ten feet or greater shall be required to utilize a self-retracting lanyard.

f. No wooden, metal or "job built" ladders are permitted on this project. Fiberglass ladders will be the only type of ladder allowed to be used on site.

g. A 3rd party (non-hydraulic crane) inspection is required to be performed by the Contractors/Subcontractors and/or Owner/Operator after crane assembly at the cost of the Contractors/Subcontractors and/or Owner/Operator. 3rd party inspectors are required on any/all cranes involved in an accident, incident or near miss caused by human error or mechanical failure at the cost of the Contractor/Subcontractor owning, operating, renting or leasing the crane at the time of the aforementioned incident.

29. 01 35 23A Project Safety Forms

30. 01 35 46 Indoor Air Quality Requirements

31. 01 43 39 Mock Up Requirements

32. 01 45 00 Quality Control

33. 01 50 00 Temporary Construction

34. 01 51 10 Temporary Power and Electricity, and as further clarified

a. Prime contracts shall provide and maintain the temporary power system and construction lighting per NEC and OSHA regulations in respective construction areas as indicated and as clarified as follows:

1) Provide all permits and inspections as required by the local authority having jurisdiction prior to energizing the systems. Submit a copy of the inspection certificate to the Construction Manager.

2) Site / Security Lighting

a) Electrical Contract #500 shall provide all Work as required to maintain all existing exterior lighting including all wall packs that are mounted on the exterior of the building and all site lighting that is located within the project limit lines in operation from Notice to Proceed through to Substantial Completion of their Contract.

3) The Owner shall pay for all electrical usage charges for the temporary power system.

4) All temporary power, lights, fire detection, access control and CCTV systems shall be reviewed by the engineer and the Construction Manager to ensure the systems are in full operation at which time maintenance of the systems will be turned over to the owner.

b. All Contractors shall include provisions in their bids for temporary electric power system as follows:

1) Contractors requiring power for their office trailers shall arrange for a separate electrical service. All costs associated with their temporary electric connection shall be included in their bid.

2) Each Contractor shall provide their own extension cords required for the performance of their Work. Extension cords shall be OSHA compliant.

3) Connection of electric resistive heating to the temporary electrical system will not be permitted.

4) Any Contractor, who requires power or lighting in excess of what is existing shall bear all costs associated with same.

5) Any Contractor requiring temporary power and lights to be energized outside of the normal Work hours shall bear all costs associated with same.

6) Each Contractor shall provide the necessary generators to complete their Work prior to completion of temporary power.

7) Temporary power and light standby requirements, before and

after hours described above will be at expense of the respective Contractor who requires same.

35. 01 51 50 Temporary Water and as further clarified:

a. Each Contractor that requires water for the Work of their Contract shall provide and maintain sufficient back flow devices, hoses, with shut-off nozzles as required by local code and as required for conveying water to the Work sites. All hoses shall be maintained on a daily basis to prevent leakage and wasteful usage. Each Contractor shall be responsible to insure that the water service to their hoses is turned off at the end of each Work day. Contractors shall be responsible for all damage and/or additional water usage costs resulting from not maintaining hoses and/or leaving the water service on after hours.

b. Temporary Drinking Water

1) Each Contractor shall provide drinking water for their Workforce.

36. 01 51 60 Temporary Sanitary and as further clarified:

a. GC Contract #300 shall provide portable chemical toilets for the duration of all Work of their Contract for use by all contractors on the site. Contractors shall not use toilet rooms in the existing School facilities at any time. At a minimum GC Contract # shall provide a minimum of one (1) portable chemical toilet for every ten (10) Workers or more as directed by the Construction Manager or as required for women Workers. The portable toilets shall be cleaned a minimum of three (3) times a week.

37. 01 51 90 Temporary Construction, and as further clarified:

a. Each Contractor shall provide, maintain and remove barricades and excavation protection, including OSHA compliant access and egress, warning signs and lights, etc. as required for the Work of their Contract and as directed by the Construction Manager.

b. Each Contractor who creates a fall hazard by the installation of the Work of their Contract shall install OSHA-compliant fall protection for the safety of all construction employees. Each Contractor who removes fall protection for the installation of Work of their Contract shall immediately re-install OSHA-compliant fall protection for the safety of all construction employees. Note: Prior to removing fall protection each Contractor shall ensure alternate fall measures are available and used by their employees.

c. If the Work of a Contractor requires the removal of temporary barricades as defined above the Contractor shall provide all Work as required to maintain an OSHA compliant Work area and provide all Work as required to restore he temporary barricades to its original condition.

d. Contractors shall reference Section 01 35 23 – Project Safety Standards for additional project safety guidelines.

e. Temporary Telephone Service

1) Contractors will not be permitted to use the phone, fax and data lines of the Owner, or Construction Manager. Each Contractor shall be responsible for providing and maintaining their own phone and data services.

f. Temporary Offices, Storage and Fabrication Sheds

1) Each Contractor shall provide his or her own temporary offices and storage sheds. Each trailer must be properly secured to the ground. Quantity and location of the Contractors' field offices shall be subject to approval of the Construction Manager. Each Contractor who requires power, water, sanitary, gas, phone, data etc., shall provide their own for their temporary offices at their sole expense. Location of temporary office is to be approved by Construction Manager.

2) Each Contractor shall be responsible for providing adequate protection of their material and/or equipment furnished for this project. All deliveries of material and/or equipment will be scheduled with the Construction Manager, and specific locations with time restrictions are allocated for staging, storage trailers, materials, equipment, etc. Each Contractor shall obtain the necessary approval, permits and fees for temporary offices, if required by the authority having jurisdiction. Contractors are advised that there is minimum on site storage space and all cost of off-site material storage, if required, shall be included in the Contractor's price. Contractors are advised that at various times during the project, storage trailers or stored materials within the building or on site may require relocation or removal as directed by the Construction Manager. If any material and/or equipment stored at the project, with or without consent of the Construction Manager at any time obstruct the performance of any portion of this project, these materials shall be removed and relocated by the Contractor at no additional cost. In the event a Contractor fails or refuses to comply with this Article within a reasonable time, but not more than twenty-four (24) hours, the Construction Manager will reserve the right to have those materials and/or equipment removed, and all costs will be charged against the Contractor involved.

g. Construction Manager's Field Office (Not in this Contract)
(PREVIOUSLY BID BY GC CONTRACT #300)

1) GC Contract #300 shall provide and maintain a leased new commercial field office, double wide 24'x60' with 4 offices and a bathroom. Refer to attached Section 01 10 00.1 for trailer, office furniture, office equipment and office supply requirements. **GC Contract #300** shall provide and maintain all office furniture, office equipment and office supplies, complete, as listed in Section 01 12 00.2.A.

2) Cleaning of the Construction Manager trailer
   a) GC Contract #300 shall provide all Work, complete, as required to clean the Construction Managers field trailer a minimum of one (1) day a week from Notice to Proceed through to October 1, 2019. Cleaning shall include but not be limited to general broom clean prior to washing of the floors; wet mopping of all floors; cleaning and vacuuming of all walk – off mats; comprehensive cleaning of toilet facilities; emptying of trash cans and removal of same to the dumpster. GC Contract #300 shall provide all supplies and equipment required for cleaning the trailer and to keep paper towels, liquid soap, hand sanitizer and toilet paper stocked for the toilet rooms. The type of paper towels and toilet paper to be provided shall be as directed by the Construction Manager.

h. Enclosure Fence (Not in this Contract)
PREVIOUSLY BID BY GC CONTRACT #300)

1) Before Work begins GC Contract #300 shall provide and maintain an enclosure fence for staging with lockable entrance gates. Fence and gates shall be installed as indicated on Section 01 55 00.A Site Logistics Plan LPC SK-01.

   a) Temporary Fences: All temporary fences shall be new chain link security fencing that extends six feet (6') above existing grade and shall be self-supporting.

   b) Temporary Gates: GC Contract #300 shall provide a length of heavy duty chain and padlock sufficient to secure the existing gate and the construction entrance. A quantity of ten (10) keys shall be provided to the Construction Manager.

   b) GC Contract #300 shall removal temporary fencing at the completion of their Contract.

2) **ALL Contracts, including this Contract #700,** shall provide, maintain and remove fencing and barricades as required to maintain a safe Work site when any danger is created by the Work of their Contract.

3) Where Work occurs along or within the public roads, the Contractor shall provide temporary fencing, barricades, lighting, signage, shoring, road plates, flagmen, and related protection in accordance with OSHA regulations and as required for protecting the public from the Work.

i. First-Aid Equipment
   1) Each Contractor shall provide OSHA-compliant first-aid kits for use by their employees and their lower tier Contractor's employees.

j. Protection of Adjacent Property
   1) Each Contractor shall prevent any damage to surrounding property and if any damage occurs the Contractor that caused the damage shall provide all necessary repairs immediately upon notification by the Construction Manager.

38. 01 52 10 Temporary Material and Hoisting and as further clarified:

a. Ladders: Each Contractor shall provide sufficient ladders as required to enable their employees to access the Work. The Contractor providing the ladders shall be fully responsible for OSHA compliance of the ladders.

b. Hoisting – Contractors shall be responsible for all hoisting as required for the Work of their Contract.

39. 01 52 20 Temporary Enclosures, Partitions and Separations

a. Waste Disposal Facilities

   1) Each Contractor shall provide Dumpsters/Waste Disposal Facilities as required for the Work of their Contract.
   2) Each Contractor is responsible for the removal and disposal of any hazardous or toxic wastes, removal must comply with any regulation governing the disposal of that waste.

   3) Each Contract shall provide and maintain their own concrete washout area(s) as required for the Work of their Contract including collection, retention, removal and treatment of all wash out water and solids in leak proof containers to prevent any wash out water or solids from reaching solid surfaces and/or surface / ground water. This system shall include the treatment of washout water prior to discharge and the recycling of concrete solids. Each Contractor required to provide a concrete wash out area shall provide the Construction Manager a detailed plan for Manager of the concrete washout including but not limited to design, treatment, solid recycling, discharge, permits and proposed location(s). Each Contractor shall be responsible to remove their washout areas in its entirety and restore the site at the completion of their Work.

b. Temporary Fire Protection

   1) Each Contractor shall provide and maintain fire extinguishers as required by OSHA for the Work of their Contract.

Contractors shall be aware that all "spark-producing" activities require a Hot Work permit (reference Project Safety Plan for permit requirements) as well as fully charged fire extinguishers within ten (10) feet of the "spark-producing" activity. A fire watch must continue for a minimum of thirty (30) minutes after the Hot Work operation is complete.

2) All Contractors shall maintain and provide clear unobstructed access routes for emergency vehicles to access the site and Work areas.

40. 01 55 00 Access Roads, Parking, and Staging Areas, and as further clarified:

a. Each Contractor shall provide and maintain safe and suitable access to the site. If the entrance to the site crosses a sidewalk it shall be maintained and cleaned as needed. If the sidewalk is damaged from construction activities, it will be fixed at all contractors cost.

b. Cleaning of Trucks

1) Each Contractor shall provide all Work as required to clean all trucks related to the Work of their Contract prior to them leaving the site to prevent the tracking of mud, stones etc. onto the public roads and sidewalks. Contractors who fail to clean their trucks shall be responsible for all costs associated with, but not limited to, cleaning the public roads, DEC fines, etc.

41. 01 55 00.A Site Logistics Plan

42. 01 56 10 Noise Control

a. All prime contractors working while school is in session must keep noise below 65dBa or work must take place during an off shift.

43. 01 56 90 Construction Cleaning

a. All prime contractors are responsible for their own dumpsters and disposal of any waste material. Each shift is responsible for cleaning there work area at the end of the shift. No extension cords will be allowed to stay out during off shifts.

44. 01 60 00 Product Requirements

45. 01 71 16 Acceptance of Existing Conditions

46. 01 72 00 Execution

a. All Prime Contractors performing sub grade Work shall request public utility underground location stakeout immediately upon award of Contract. A private Underground Utility Locating Contractor shall be hired by the Prime Contractor performing sub grade Work to locate private underground utilities within the Work area. Contractors shall be responsible for maintaining these stakeout location marks throughout construction, and submitting an as-built drawing showing location of all located underground utilities, whether public or private, at the end of

construction. Backfilling and compaction of excavations required to perform subgrade Work shall be the responsibility of the Contractor requiring the excavation. Coordinate backfilling and compaction with testing agent to assure proper scheduling of required testing.

b. Construction Layout
   1) Each Contractor, Working from the established control points, shall provide all survey and layout Work required for the Work of their Contract.

c. Progress Cleaning

   1) All prime contractors are responsible for removing their own material scraps, debris, packing materials, trash, etc. from the site and building on a daily basis and placing it in the dumpsters. Each Contractor shall be responsible for providing all Work as required to broom clean their Work areas on a daily basis. Sweeping compound must be used whenever sweeping. An ample supply of sweeping compound must be available on site at all times.

   2) All prime contractors shall provide dust control at the dumpsters and for the work of their respective Contract as required and as directed by the Construction Manager. The dumpster areas shall be kept in a clean and orderly fashion.

   3) All prime contractors shall provide a fifty (50) gallon covered trash receptacle at their Workers lunch and break areas and empty same into the dumpsters on a daily basis. Lunch and break areas shall only be allowed in areas designated by the Construction Manager.

   4) Waste Disposal: Burying or burning of waste materials on site is prohibited. Washing waste materials into sewers or into waterways is prohibited.

   5) All prime contractors shall provide, while onsite, a comprehensive cleanup of all debris from the site on a weekly basis and as directed by the Construction Manager for the duration of their contract.

   6) (Not in Contract, Previously bid by GC Contract #300)
      a) GC Contract #300 shall provide cleaning of parking lots, roadways (public or private), driveways and sidewalks of mud, dust, stone and debris resulting from construction activities on a daily basis or more often as required and as directed by the Construction Manager.

      b) GC Contract #300 shall provide Two (2) final site cleaning, one prior to their Contract Substantial

Completion and one after completion. All trash and debris shall be deposited in the dumpster.

d. Protection of Installed Construction
   1) Each Contractor shall be responsible to protect the Work of their Contract through substantial completion/turnover to the Owner.

47. 01 73 29 Cutting and Patching

a. All prime contracts shall include all patching of existing materials resulting from the Work of their Contract.

48. 01 74 19 Construction Waste Management and Disposal

49. 01 74 23 Final Cleaning

a. GC Contract #300 is responsible for (2) two final cleans. One final clean is to be done prior to turn over. The second final clean is to be done (1) one week after turnover.

50. 01 77 00 Closeout Procedures

a. Contractors are required to turn in O&M, warranties, guarantees, as - built drawings, training sign-in sheets and test reports (as per Contract) within fifteen (15) Working days of substantial completion or the Construction Manager reserves the right to refuse to review pencil copies and withhold payment. In addition to the 3 Ring Binders, these closeout documents are to be submitted electronically.

b. Any original deficiency list or punch list distributed by the Construction Manager or the Architect must be returned showing completion of each item within 15 Working days of receipt of such list. Any deficiency or punch list re-distributed due to incompletion or not done to owner's satisfaction must be corrected and returned with 10 Working days or the Construction Manager reserves the right to refuse to review pencil copies and withhold payment.

51. 01 78 23 O & M Manuals and Data

52. 01 78 39 Project Record Documentation

a. Record Drawings
   1) Each Contractor shall submit Project Record Documents to the Construction Manager for review at 75% and 90% completion for interim approval. Contractors whose Project Record Documents are not maintained in accordance with Specification Section 01 78 39 may have their monthly progress payments withheld until such time as the record documents are brought into conformance.

END OF SCOPE OF WORK – ALL CONTRACTS

C. **Scope of Work – TV Studio Contract #700**

TV Studio Contract #700 shall provide labor, material, plant, tools, equipment and supervision related to and/or necessarily involved with the performance of the Work, as indicated on all the Drawings, Specifications and/or Project Manual, and as set forth below. Work for Contract #700 is generally described as the TV Studio and more specifically described in this Scope of Work.

1. DIVISION 00 – PROCUREMENT AND CONTRACTING REQUIREMENTS

   This Contractor shall include all Work in Division 00 as assigned in the SCOPE OF WORK – ALL CONTRACTS in this Summary of Work.

2. DIVISION 01 – GENERAL REQUIREMENTS

   This Contractor shall include all Work in Division 01 as assigned in the SCOPE OF WORK – ALL CONTRACTS in this Summary of Work.

3. **TV Studio Contract #700** shall provide all Work, complete, as specified in the following Specification Sections:

   a. 19 10 00 - TV Studio Video and Controls
   b. 19 20 00 - TV Studio Lighting and Controls
   c. 19 30 00 - TV Studio Pipe Grid, Tracks, and Curtains

4. OTHER WORK OF GC CONTRACT #300
   a. Reference all Contract Drawings:
      1) TV Studio Contract #700 shall provide all Work complete as indicated and as further clarified:
         a) The TV Studio Contract #700 shall visit the site to verify and review existing conditions before estimating the cost of the project.
         b) All demolition shall be performed by Subcontractors licensed in each of the respective disciplines.
         c) TV Studio Contract #700 shall provide all work complete as required on contract documents that apply to this scope.
         f) TV Studio Contract #700 is responsible for creating and patching any vertical or horizontal penetrations that pertain to this contracts scope of work.
         h) TV Studio Contract #700 shall patch any fireproofing or firestopping that is removed specific to this contract after those scopes are complete.
         j) GC Contract #300 is responsible for any coring over 9”.

END OF SCOPE OF WORK TV STUDIO CONTRACT #700

End of Section 01 12 00

SECTION 011400 - NYSED 155.5 REGULATIONS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General Conditions of the Contract for Construction, and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section specifies requirements of 8NYCRR155.5, Uniform Safety Standards for School Construction and Maintenance Projects that are required in construction documents. The Contractor shall comply with these requirements in addition to any and all similar requirements in the Contract Documents.

1. Occupied portions of the building.
2. General safety and security standards.
3. Separation of construction areas from occupied spaces.
4. Control of noise.
5. Control of contaminates.
6. Control of volatile organic compounds.
7. Asbestos abatement projects.
8. Lead remediation projects
9. Temporary heat of occupied spaces
10. Polychlorinated Biphenyls (PCBs)

B. These are requirements of section 155.5 of the Commissioner of Education's regulations to protect the health and safety of occupants of the building during construction. This is not the text of the regulations

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 OCCUPIED PORTIONS OF THE BUILDING

A. The occupied portion of any school building shall always comply with the minimum requirements necessary to maintain a certificate of occupancy. In addition, the following shall be strictly enforced and cooperated with:

1. No smoking is allowed on public school property, including construction areas.
2. During construction daily inspections of district-occupied areas shall be conducted by Owner or RCSD personnel to assure that construction materials, equipment or debris do not block fire exits or emergency egress windows.
3. Proper operation of fire extinguishers, fire alarm, and smoke/fire detection systems shall be maintained throughout the project.

3.2 GENERAL SAFETY AND SECURITY STANDARDS FOR CONSTRUCTION PROJECTS

A. All construction materials shall be stored in a safe and secure manner.

B. Fences around construction supplies or debris shall be maintained.

C. Gates shall always be locked unless a worker is in attendance to prevent unauthorized entry.

D. During exterior renovation work, overhead protection shall be provided for any sidewalks or areas immediately beneath the work site or such areas shall be fenced off and provided with warning signs to prevent entry.

E. Workers shall be required to wear photo-identification badges at all times for identification and security purposes while working at occupied sites."

3.3 SEPARATION OF CONSTRUCTION AREAS FROM OCCUPIED SPACES

A. Separation of construction areas from occupied spaces. Construction areas which are under the control of a contractor and therefore not occupied by Owner or RCSD staff or students shall be separated from occupied areas. Provisions shall be made to prevent the passage of dust and contaminants into occupied parts of the building. Periodic inspection and repairs of the containment barriers must be made to prevent exposure to dust or contaminants. Gypsum board must be used in exit ways or other areas that require fire rated separation. Heavy duty plastic sheeting may be used only for a vapor, fine dust or air infiltration barrier, and shall not be used to separate occupied spaces from construction areas.

1. A specific stairwell and/or elevator should be assigned for construction worker use during work hours. In general, workers may not use corridors, stairs or elevators designated for students or school staff.

2. Large amounts of debris must be removed by using enclosed chutes or a similar sealed system. There shall be no movement of debris through halls of occupied spaces of the building. No material shall be dropped or thrown outside the walls of the building.
3. All occupied parts of the building affected by renovation activity shall be cleaned at the close of each workday. School buildings occupied during a construction project shall maintain required health, safety and educational capabilities at all times that classes are in session.

B. Temporary partitions for the separation of construction areas from occupied spaces are shown on the Construction Phasing drawings.

3.4 CONTROL OF NOISE

A. Construction and maintenance operations shall not produce noise in excess of 60 dba in occupied spaces or shall be scheduled for times when the building or affected building spaces are not occupied or acoustical abatement measures shall be taken

3.5 CONTROL OF CONTAMINATES

A. The contractor shall be responsible for the control of chemical fumes, gases, and other contaminates produced by welding, gasoline or diesel engines, roofing, paving, painting, etc. to ensure they do not enter occupied portions of the building or air intakes.

3.6 CONTROL OF VOLATILE ORGANIC COMPOUNDS

A. The contractor shall be responsible to ensure that activities and materials which result in "off-gassing" of volatile organic compounds such as glues, paints, furniture, carpeting, wall covering, drapery, etc. are scheduled, cured or ventilated in accordance with manufacturers recommendations before a space can be occupied.

3.7 HAZARDOUS MATERIALS

A. Verify that all school areas to be disturbed during renovation or demolition have been or will be tested for lead and for asbestos. For any project work that disturbs surfaces that contain lead or asbestos, follow the plans and specifications prepared by a certified Lead Risk Assessor or Supervisor which details provisions for occupant protection, worksite preparation, work methods, cleaning, and clearance testing; which are in general accordance with HUD Guidelines.

1. All asbestos abatement projects shall comply with all applicable federal and State laws including but not limited to the New York State Department of Labor industrial code rule 56(12NYCRR56), and the federal Asbestos Hazard Emergency Response Act (AHERA), 40 CFR Part 763 (Code of Federal Regulations, 1998 Edition); available at the Office of Facilities Planning, Education Building Annex, Room 1060, State Education Department, Albany, NY 12234.

2. Any construction or maintenance operations which will disturb lead-based paint will require abatement of those areas pursuant to protocols detailed in the "Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing", June 1995; U.S. Department of Housing and Urban Development (HUD), Washington, D.C. 20410; available at the Office of Facilities Planning, Education Building Annex, Room 1060, State Education Department, Albany, NY 12234.

B. Asbestos abatement projects

1. All school areas to be disturbed during renovation or demolition have been or will be tested for lead and asbestos.
2. Large and small asbestos abatement projects as defined by 12NYCRR56 shall not be performed while the building is occupied. Note: It is our interpretation that the term "building", as referenced in this section, means a wing or major section of a building that can be completely isolated from the rest of the building with sealed noncombustible construction. The isolated portion of the building must contain exits that do not pass through the occupied portion and ventilation systems must be physically separated and sealed at the isolation barrier.
3. Exterior work such as roofing, flashing, siding, or soffit work may be performed on occupied buildings provided proper variances are in place as required and complete isolation of ventilation systems and at windows is provided. Care must be taken to schedule work so that classes are not disrupted by noise or visual distraction.

C. Lead Remediation projects

1. Surfaces that will be disturbed by reconstruction must have a determination made as to the presence of lead. Projects which disturb surfaces that contain lead shall have in the specifications a plan prepared by a certified Lead Risk Assessor or Supervisor which details provisions for occupant protection, worksite preparation, work methods, cleaning and clearance testing which are in general accordance with the HUD Guidelines.

D. POLYCHLORINATED BIPHENYLS (PCBs)

1. ALL PCB abatement projects shall comply with all applicable federal and NY State laws. Cleanup and disposal of PCB remediation and bulk product waste is subject to U.S. EPA regulations under the Toxic Substances Control Act (40 CFR 761). Disposal of contaminated materials from abatement activities (soil or caulk) is regulated by the NYSDEC solid waste regulations (6NYCRRPart 360) if concentrations are <50 ppm and by the hazardous waste regulations (6NYCRR370-373) if PCB concentrations are 50 ppm or greater.

3.8 EXITING

A. All prime contractors shall prepare and maintain a plan detailing how exiting, required by the applicable building code, shall be maintained during construction.

1. The plan shall indicate temporary construction required to isolate construction equipment, materials, people, dust, fumes, odors, and noise during the construction period.
2. Temporary construction details shall meet code-required fire ratings for separation and corridor enclosure.
3. At a minimum, required exits, temporary stairs, ramps, exit signs, and door hardware shall be provided at all times.
4. The fire exiting plan shall be reviewed and approved by the Architect.

3.9 VENTILATION

A. Prepare a plan detailing how adequate ventilation will be maintained during construction.

1. The plan shall indicate ductwork which must be rerouted, disconnected, or capped in order to prevent contaminants from the construction area from entering the occupied areas of the building.
2. The plan shall also indicate how required ventilation to occupied spaces affected by construction will be maintained during the project.

3.10 HEAT

A. The contractor shall maintain a minimum temperature of 65° in all occupied interior spaces from **Insert time frame**. Direct fired fuel-burning heating units shall not be used in any space of pupil occupancy.

3.11 PESTICIDE USE

A. Pesticide applications may only be performed by individuals currently certified by the State Department of Environmental Conservation (DEC) per DEC Part 325.7 as a pesticide applicator or by a certified pesticide technician or an apprentice working under the direct on-site supervision of a certified applicator. It is illegal for any individual other than those noted above to apply any pesticide products in a school building or on school grounds.

END OF SECTION 01 14 00

SECTION 011419 - USE OF SITE

PART 1 - GENERAL

1.01. START OF THE WORK

1. The work of this Project shall be started when notified to proceed by the Owner. The Contractor shall inform the Construction Manager as to the actual date he/she will start to work at the site.

1.02. CONSTRUCTION SCHEDULE AND COMPLETION

1. All work on this project shall be completed in accordance with the Section 00 43 83 “Schedules and Milestones.” The Contractor shall be required to take all measures to minimize the duration of the Project. It is of the utmost importance to adhere to the construction schedule for this project and meet the date set for Substantial and Final Completion. If additional staff or shifts are required to meet any schedule item, the Contractor shall include this work at no additional cost to the Owner. It is the responsibility of the Contractor to enforce the schedule with their subcontractors.
2. The Contractor shall confirm in writing that they will be able to complete their work as indicated on the schedule. Work operations and scheduling other than those indicated, must be approved by the Project Construction Manager prior to commencement of such work.
3. Coordination with other trades and contracts shall be a consideration to determine anticipated construction schedules. Construction schedule bar charts shall be submitted for approval one week after the pre-construction meeting.
4. In the event that any of the work to be completed falls behind schedule, based on the Owner’s discretion, the responsible Contractor shall within two (2) working days start a full second shift of work until such time that the Project is back on schedule. All additional security/custodial costs and approved extra work claims by other Contractors arising from a delay shall be chargeable to the responsible Contractor. Contractors shall hold the Owner and Owner’s Representatives harmless against all losses or damages due to delays of a third party.
5. If lack of workers, equipment, materials, etc., at necessary stages, delays or slows the schedule or usability of a space, the applicable Contractor will be responsible for additional temporary or final work (or other costs) necessary to continue the work so that the schedule is maintained. The Owner reserves the right to postpone work not capable of being completed on time. All costs of delays incurred shall be borne by the Contractor causing the delay.
6. Final Completion; All work scheduled shall be substantially completed in its entirety or in a usable, safe manner on or before the completion dates listed in Section 00 43 83 “Schedules and Milestones.”

7. On-Site Work Hours: Limit work in the building to normal business working hours of 7:00a.m. To 3:30p.m., Monday through Friday, unless otherwise indicated.

   a. Weekend Hours: Only with Owners prior approval coordinated through the Construction Manager.

   b. Early Morning Hours: Please reference code regulations for the City of Rochester having jurisdiction for restrictions on noisy work "No person shall engage in or permit any person to be engaged in construction activities which creates excessive noise at the property limits of the construction site between the hours of 10:00 p.m. of one day and 7:00 a.m. of the following day on any day of the week".

   c. Hours for Utility Shutdowns: 7:00a.m. To 3:30p.m., Monday through Friday coordinated with the Construction Manager with Owners approval.

8. Work of any contract that includes burn-off, system start-up system cut-over or staff training shall not be done one week prior to and one week after the commencement of school except upon approval by the Construction Manager.

1.03. WORK IN OCCUPIED SCHOOL BUILDINGS

1. The school will be occupied until June 22nd 2018. For the following school year, the building will be occupied again on September 4th 2018. While the school is occupied work hours are from 2:30PM-10PM and 10PM-5:30AM.

1.04 PROGRESS MEETINGS

1. Refer to Section 01 31 13 "Contract Coordination" In addition, each entity involved in planning, coordination or performance of work shall be properly represented at each meeting.

1.05 CONFIRMED DELIVERY DATES

1. Within thirty calendar days after the execution of the Contract, the Contractors shall submit to the Construction Manager a copy of the confirmed delivery date for each required material or product.

END OF SECTION 01 14 19

SECTION 012500 - SUBSTITUTION PROCEDURES

PART 1 – GENERAL

1.1 RELATED DOCUMENTS:

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

1.2 SUMMARY:

A. This Section includes:
1. Procedures for handling requests for substitutions made after award of the Contract.

B. Related Sections include the following:

1. Division 01 Section "Construction Waste Management and Disposal."
2. Division 01 Section "Indoor Air Quality (IAQ) Requirements"

1.3 DEFINITIONS:

A. Definitions used below are not intended to change or modify the meaning of other terms used in the Contract Documents.

B. Substitutions: Requests for changes in products, materials, equipment, and methods of construction required by Contract Documents proposed by the Contractor after award of the Contract are considered requests for "substitutions". The following are not considered substitutions:
1. Substitutions requested by Bidders during the bidding period, and accepted prior to award of Contract, are considered as included in the Contract Documents and are not subject to requirements specified in this Section for substitutions.
2. Revisions to Contract Documents requested by the Owner or Architect.
3. Specified options of products and construction methods included in Contract Documents.
4. The Contractor's determination of and compliance with governing regulations and orders issued by governing authorities.

1.4 SUBMITTALS:

A. Substitution Request Submittal:
1. Requests for substitution will be considered if received within 60 days after commencement of the Work. Requests received more than 60 days after commencement of the Work may be considered or rejected at the discretion of the Architect.
2. Submit 3 copies of each request for substitution for consideration. Submit requests on the “Request for Equivalent Review Form” located in Division 00, section 006319.
3. Identify the product, or the fabrication or installation method to be replaced in each request. Include related Specification Section and Drawings numbers.

4. Provide complete documentation showing compliance with the requirements for substitutions, and the following information, as appropriate:
    a. Statement indication why specified material or product cannot be provided.
    b. Product data, including Drawings and descriptions of products, fabrication and installation procedures.
    c. Samples, where applicable or requested.
    d. A detailed comparison of significant qualities of the proposed substitution with those of the Work specified. Significant qualities may include elements such as performance, size, weight, durability, visual effect, specific features and requirements indicated.
    e. Coordination information, including a list of changes or modifications needed to other parts of the Work and to construction performed by the Owner and separate Contractors, that will become necessary to accommodate the proposed substitution.
    f. List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners.
    g. Material test reports from a qualified testing agency indicating and interpreting test results for compliance with requirements indicated.
    h. Research/evaluation reports evidencing compliance with building code in effect for Project, from a model code organization acceptable to authorities having jurisdiction.
    i. Detailed comparison of Contractor's Construction Schedule using proposed substitution with products specified for the Work, including effect on the overall Contract Time. If specified product or method of construction cannot be provided within the Contract Time, include letter from manufacturer, on manufacturer's letterhead, stating lack of availability or delays in delivery.
    j. Cost information, including a proposal of the net change, if any in the Contract Sum.
    k. Contractor's certification that proposed substitution complies with requirements in the Contract Documents and is appropriate for applications indicated.
    l. Include the Contractor's waiver of rights to additional payment or extension of time, that may subsequently become necessary because of the failure of the substitution to perform adequately.

B. Architect's Action:
1. Within one week of receipt of the request for substitution, the Architect will request additional information or documentation necessary for evaluation of the request.
2. Within 2 weeks of receipt of the request, or one week of receipt of the additional information or documentation, whichever is later, the Architect will notify the Contractor of acceptance or rejection of the proposed substitution.
3. Comply with requirements in Division 1 Section 013219 "Submittal Procedures." Show compliance with requirements.

4. If a decision on use of a proposed substitute cannot be made or obtained within the time allocated, use the product specified by name.
5. Acceptance will be in the form of a Change Order.

1.5 REIMBURSEMENT OF ARCHITECT'S COSTS:

A. In the event substitutions are proposed to the Architect after the Contract has been awarded, the Architect will record time used by the Architect and the Architect's consultants in evaluating each such proposed substitution.
B. Whether or not the Architect approves a proposed substitution, the Architect will invoice the Owner for time spent in evaluating the proposed substitution. The Owner will, in turn, pass this cost on to the Contractor and require a "deduct" Change Order due to the Owner.

PART 2 – PRODUCTS

2.1 SUBSTITUTIONS:

A. Timing: Architect will consider requests for substitution if received within 60 days after the Notice to Proceed. Requests received after that time may be considered or rejected at discretion of Architect.
B. The Contractor's substitution request will be received and considered by the Architect when one or more of the following conditions are satisfied, as determined by the Architect, otherwise requests will be returned without action except to record noncompliance with these requirements.
    1. Extensive revisions to Contract Documents are not required.
    2. Proposed changes are in keeping with the general intent of Contract Documents.
    3. The request is timely, fully documented and properly submitted.
    4. The request is directly related to an "or equal" clause or similar language in the Contract Documents.
    5. The specified product or method of construction cannot be provided within the Contract Time.
        a. The request will not be considered if the product or method cannot be
        provided as a result of failure to pursue the Work promptly or coordinate activities properly.
    6. The specified product or method of construction cannot receive necessary approval by a governing authority, and the requested substitution can be approved.
    7. A substantial advantage is offered the Owner, in terms of cost, time, energy
    conservation or other considerations of merit, after deducting offsetting responsibilities the Owner may be required to bear.
        a. Additional responsibilities for the Owner may include additional compensation to the Architect for redesign and evaluation services, increased cost of other construction by the Owner or separate contractors, and similar considerations.
    8. The specified product or method of construction cannot be provided in a manner that is compatible with other materials, and where the Contractor certifies that the substitution will overcome the incompatibility.

9. The specified product or method of construction cannot be coordinated with other materials, and where the Contractor certifies that the proposed substitution can be coordinated.
10. The specified product or method of construction cannot provide a warranty required by the Contract Documents and where the Contractor certifies that the proposed substitution provides the required warranty.

C. The Substitution request shall comply with the following requirements are met:
   1. Detailed comparison of significant qualities of proposed product with those named in the Specifications. Significant qualities include attributes such as performance, weight, size, durability, visual effect, and specific features and requirements indicated.
   2. Evidence that proposed product provides specified warranty.
   3. List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners, if requested.
   4. Samples, if requested.

D. The Contractor's submittal and Architect's acceptance of Shop Drawings, Product Data or Samples that relate to construction activities not complying with the Contract Documents does not constitute an acceptable or valid request for substitution, nor does it constitute approval.

PART 3 - EXECUTION (Not Used)

END OF SECTION 012500

REQUEST FOR INFORMATION FORM

DATE: _____ **PROJECT RFI#** _____

PROJECT: Edison Tech. – TV Studio Equipment

TO: LaBella Associates, P.C.

RE/SUBJECT: _____

PRIME CONTRACTOR: _____ **RFI#** _____

REQUESTED BY/SUBCONTRACTOR: _____

DRAWING/DETAIL #: _____ **SPECIFICATION #:** _____

URGENCY: € **High (1 day)** € **Med. (2-4 days)** € **Low (5 days or more)**

QUESTION / REQUEST:

_____

_____

_____

_____

SIGNED: _____

SUGGESTIONS:

_____

_____

_____

_____

SIGNED: _____

ANSWER:

_____

_____

_____

_____

SIGNED: _____

SECTION 012639 – FIELD ORDERS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Field Orders/Change Issues are an interpretation of the Contract Documents or an order to do minor changes in the Work. Architect will issue through the Construction Manager supplemental instructions authorizing Minor Changes in the Work, not involving adjustment to the Contract Sum or the Contract Time. Since time is of the essence, Contractor shall promptly complete the Work directed in the Field Order/Change Issue.

1.3 CHANGE ORDER PROCEDURES

A. No changes in work will be allowed without prior approval from the Owner and Architect. No additional costs will be accepted or authorized without prior written approval from the Owner and Architect. Failure to acquire approval will not entitle the Prime Contractor to reimbursement or payment for unauthorized changes. Likewise changes in work, without written approval, are subject to rejection and removal.

B. Upon the Owner's approval of a Contractor’s Cost Proposal, as initiated by the Proposal Request, the Construction Manager will issue a Change Order for signatures of the Owner, Construction Manager, Architect and the Contractor on AIA Form G701/CM.

1.4 MINOR CHANGES IN THE WORK

A. Architect will issue through the Construction Manager, supplemental instructions authorizing Minor Changes in the Work, not involving adjustment to the Contract Sum or the Contract Time, on AIA Document G710, "Architect's Supplemental Instructions." If a Contractor determines that an “Architect’s Supplemental Instructions” will impact the Contract Sum or the Contract Time, that Contractor shall notify the Construction Manager immediately with a written explanation to substantiate the claim and a complete and detailed cost breakdown as required under paragraph 1.4 Proposal Requests.

1.5 PROPOSAL REQUESTS

A. Architect-Initiated Proposal Requests: The Architect through the Construction Manager will issue a detailed description of proposed changes in the Work that may require adjustment to the Contract Sum or the Contract Time. If necessary, the description will include supplemental or revised Drawings and Specifications.

1. Proposal Requests issued by the Architect through the Construction Manager are for information only. Do not consider them instructions either to stop work in progress or to execute the proposed change, unless specifically indicated to do so by the Architect and the Construction Manager.
2. Within the time specified in Proposal Request after receipt of Proposal Request, submit a quotation estimating cost adjustments to the Contract Sum and the Contract Time necessary to execute the change.

    a. Include a complete detailed material, equipment, and labor break down to substantiate the proposed costs.
    b. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
    c. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
    d. Include an updated Contractor's Construction Schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.

B. Contractor-Initiated Proposals: If latent or unforeseen conditions require modifications to the Contract, Contractor may propose changes by submitting a request for a change to the Construction Manager.

1. Include a statement outlining reasons for the change and the effect of the change on the Work. Provide a complete description of the proposed change. Indicate the effect of the proposed change on the Contract Sum and the Contract Time.
2. Include a complete detailed material, equipment, and labor breakdown to substantiate the claim.
3. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
4. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
5. Include an updated Contractor's Construction Schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.

6. Comply with requirements in Division 1 Section "Product Requirements" if the proposed change requires substitution of one product or system for product or system specified

C. Proposal Request Form: Use AIA Document G709 for Proposal Requests.

1.6 CHANGE ORDER PROCEDURES

Upon approval of a Proposal, the Construction Manager will issue a Change Order for signatures of the Contractor and Construction Manager.

1.7 CONSTRUCTION CHANGE DIRECTIVE

A. Construction Change Directive: A Construction Change Directive (CCD)is a written order to be used in the field to expedite work in advance of an agreement between the owner and contractor in regards to an approved change order. The Construction Change Directive instructs the Contractor to proceed with a change in the Work, pending subsequent final determination of a Change Order by the Architect, Construction Manager, and Program Manager. The Construction Change Directive may be issued by the Construction Manager or Architect, without invalidating the Contract, to order changes in the Work consisting of additions, deletions or other revisions. The Executive Director of the RJSCB is authorized to approve work done under Construction Change Directives (CCD). Such approval by the Executive Director is subject to prior CCD approval by the CM, Architect, and PM.

1. The Construction Change Directive (CCD) contains a complete description of change in the Work. It also designates the method to be followed to determine the change in the Contract Sum. Once a CCD is approved, Owner is obligated to pay for work done under a CCD. However, billing and payment for the CCD work must be done following Owner approval of the Change Order that includes the work authorized by the CCD.

B. Documentation: Maintain detailed records on a time and material basis or Contractor's Cost Proposal of work required by the Construction Change Directive.

1. After completion of change, submit an itemized account and supporting data necessary to substantiate cost adjustments to the Contract.

2. Construction Change Directives are not change orders. No acceptance in whole, or in part, is implied by construction change directives.

Markups:

Prime Contractor Overhead = 15%

On Subcontractor work:
Prime Contractor Overhead = 5%
Sub Contractor = 10%

A maximum of 15% Overhead and Profit is allowed regardless of the amount of tiers of sub-contractors under the Prime Contract

Prime Contractor Bond = 2%

- The bond rate of 2% will be applied to both added work and credited work.

END OF SECTION 01 26 39

SECTION 012643 - CHANGE ORDER REQUESTS

Refer to the General Conditions (00 72 16) and Field Orders (01 26 39) for any and all provisions governing additional work and/or changes to the work.

In order to facilitate checking of quotations for extras or credits, all proposals, shall be accompanied by a complete itemization of costs including labor, materials, equipment and sub-contracts. All proposals without such itemization will be returned to the Contractor for resubmission, and Owner may issue a Construction Change Directive in lieu thereof.

All Prime Contractor and subcontractors labor rates are to be broken down on the attached labor rate breakdown sheet.

Submission of Change Orders will go through the Construction Manager.

Markups:

Prime Contractor Overhead = 15%

On Subcontractor work:
Prime Contractor Overhead = 5%
Sub Contractor = 10%

A maximum of 15% Overhead and Profit is allowed regardless of the amount of sub-contractors under the Prime Contract

Prime Contractor Bond = 2%

- The bond rate of 2% will be applied to both added work and credited work.

END OF SECTION 012643

CHANGE ORDER REQUESTS

Project Name: Edison Tech. - TV Studio Equipment
Contractor Name:

Refer to the General Conditions for any and all provisions governing additional work and/or changes to the work.

In order to facilitate checking of quotations for extras or credits, all proposals, shall be accompanied by a complete itemization of costs including labor, materials and sub-contracts. Labor and materials shall be itemized in the manner prescribed below. Where major cost items are sub-contracts, they shall be itemized also. All proposals without such itemization will be returned to the Contractor for resubmission, and Owner may issue a Construction Change Directive in lieu thereof.

1	**Materials (Itemized Breakdown)**	
2	**Rental of Equipment (Itemized Breakdown)**	
3	**Subtotal (Add Lines 1-2)**	
4	**Overhead & Profit (15% x line 3)**	
5	**Subtotal (Add lines 3-4)**	
6	**Labor (Itemized Breakdown)**	
7	**Insurance on Labor (Worker's Comp., etc.)**	
8	**Subtotal (Add lines 6 and 7)**	
9	**Overhead and Profit (15% x line 8)**	
10	**Subtotal (Add lines 8 and 9)**	
11	**Sub-Contract Work (Include Itemized Breakdown. Sub-contractor's overhead and profit allowed is 10%).**	
12	**Prime Contractor Overhead and Profit (5% x line 11)**	
13	**Subtotal (Add lines 11 and 12)**	
14	**Subtotal (Add line 5, 10 and 13)**	
15	**Bond charges (2% x line 14)**	
16	**TOTAL CHANGE ORDER PROPOSED (Add lines 14 and 15)**	

SECTION 012653 – LABOR RATE WORKSHEET COVERSHEET

LABOR RATE WORKSHEET

Contractor _____ Project : _____

Address _____

_____

Telephone _____

Trade Classification _____

Local Union # _____

Effective Date: From _____ To _____

	(%)	($) Straight Time	($) Over Time	($) Premium Time
Base Rate				
F.I.C.A.				
Federal Unemployment Tax				
State Unemployment Tax				
Welfare Fund				
Pension Fund				
Vaction Fund				
Association Dues				
Paid Holidays				
Workman's Compensation				
Liability (Bodily Injury Ins.)				
Property Damage Insurance				
Other _____				
_____				
_____				
Total Charge per hour				

_____

Signature

SECTION 01 29 75 – REVOLVING LOAN PROGRAM AND PROCEDURES

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

1. Drawings, General Conditions, Divisions 00 and 01 Specification sections, apply to this section.

2. Section 01 29 76 – Progress Payment Procedures

3. Section 01 29 75A – Application for RSMP Revolving Loan Fund

4. Section 01 29 75B – Revolving Loan Program Procedure

1.02 SUBCONTRACTOR REVOLVING LOAN FUND

1. The Rochester Joint Schools Construction Board ("RJSCB") has established a Revolving Loan Program ("RLP") to provide financial assistance to eligible Subcontractors that cannot wait for a full pay cycle to meet certain obligations. The intent of the RLP is to elevate the quality of life for Rochester residents, students, businesses, and Eligible Business Enterprise (EBE) participants in the Rochester Schools Modernization Program ("RSMP"). The program supports the RJSCB's effort to remove barriers and promote business growth in the City of Rochester.

2. Loans up to $10,000 will be made available to applicants who perform work, or provide materials in connection with Phase 2 of the Rochester Schools Modernization Program ("RSMP"). Loans are subject to discretionary approval of a loan committee, qualifications of the borrower, and availability of funds.

3. A fully completed Revolving Loan Program (RLP) short-form application (Section 01 29 75a) is required in order to provide a loan assistance to RSMP Subcontractors with working capital for job related payroll, supplies, and job related machinery and equipment costs.

4. The Executive Director or RJSCB Designee, after receiving an approved application from the Loan Committee, will issue a Loan Voucher authorizing the release of a loan check to the applicant. This Loan Voucher will be signed by a Loan Committee member and the Executive Director or RJSCB Designee. The Loan Voucher will include the following: the name of the Prime, the name of the loan recipient, the exact amount and the payee for the loan check, the date the loan check is required, the project(s) the applicant is working on, the total amount of the Prime contract, the nature of the subcontract (scope of work), and the expected repayment time frame by the Subcontractor/applicant (not to exceed ninety (90) days).

1.03 LOAN REPAYMENT

1. Two separate checks will be issued at the time the next monthly payment to the Prime contractor is processed encompassing the work performed by the subcontractor related to the work covered by an outstanding loan. A Payment Voucher will be initiated and signed by the individual designated by the Executive Director or the Board's designate to authorize the split payment. The Payment Voucher will include: the name of the Prime contractor, the name of the subcontractor, the exact amount of the loan being repaid by the split payment.

2. Program Manager will notify the Prime contractor and the Construction Manager of the split payment. One check from the RJSCB Trustee will be issued directly to the Prime contractor for all items not related to the loan provided to the subcontractor (this may include some portion of payment to the subcontractor not associated with the loan amount which will be paid to the subcontractor by the Prime). A second, two-party check will be issued by the RJSCB Trustee for the amount of the Loan taken by the subcontractor. This dual-party check will be sent directly to the Program office and must be signed by the Prime and the Subcontractor prior to deposit into the Account holding the Revolving Loan Fund.

END OF SECTION 01 29 76

SECTION 01 29 76 - PROGRESS PAYMENT PROCEDURES

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

1. Drawings and general provisions of Contract, including General Conditions and Division 01 Specification sections, apply to work of this section.

2. Section 01 29 75 - Revolving Loan Program

1.02 REQUIRED SCHEDULE OF VALUES

1. The Contract shall submit a schedule of values prior to his/her first application. Refer to Section 00 72 16 - General Conditions. Itemize schedule of values per separate school locations, and by Additions and Reconstruction when applicable.

2. The schedule of values (updated and revised) shall be submitted on AIA Cma732 forms. The Contractor and each Subcontractor shall prepare a trade payment breakdown for the Work for which each is responsible, such breakdown shall be divided in detail sufficient to exhibit areas, floors and/or sections of the Work, and/or by convenient units and shall be updated as required by either the Owner or the Architect as necessary to reflect (1) description of Work (listing labor and material separately in some instances), (2) total value, (3) percent of the Work completed to date, (4) value of Work completed to date, (5) percent of previous amount billed, (6) previous amount billed, (7) current percent completed and (8) value of work completed to date. Any trade breakdown which fails to include sufficient detail, is unbalanced or exhibits “front loading” of the value of the Work shall be rejected. If trade breakdown had been initially approved and subsequently used, but later found improper for any reason, sufficient funds shall be withheld from future Applications for Payment to ensure an adequate reserve (exclusive of normal retainage) to complete the Work. Breakdown shall include multiple construction site, multiple locations within each site, additions versus renovation work, etc. as required to satisfy NY State Education Department requirements.

1.03 PAYMENTS

1. All applications for partial or final payment shall be submitted, through the Construction Manager to RJSCB in triplicate, on AIA CMa 732 and other forms furnished by the RJSCB and the Independent Compliance Officer, and submission schedule provided by the Program Manager, and in compliance with forms acceptable to the Owner, Owner’s lender, and Architect. Contractor shall supply such additional documentation

and information as Owner's lender or the Construction Manager shall request in connection with each disbursement to Contractor.

2. All applications for monthly and/or final payment must include certified payroll records for each week included in that payment period for all contractors and subcontractors. M/WBE forms required by Section 00 43 31 of the project Manual shall also be included with each payment application and must be approved by the ICO as set forth in that Section. Contractors and subcontractors are required to keep original payroll records or transcripts for a period of three years from date of final payment, or as required by New York State and U.S. Departments of Labor.

3. All applications for partial payment submitted for approval that include stored materials shall include a Certificate of Stored Materials indicating an itemized value of the materials stored, the location the materials are stored at and referring to the project name and date of inventory. Materials stored off site must be either in a bonded warehouse or a storage facility owned by the Contractor. A rider from the Contractor's insurance company to cover off-site material is also required. Submit along with the payment request evidence of adequate insurance. Refer also to Section 007216 "General Conditions," the terms of which shall prevail in the event they conflict with the provisions set forth in this Section 01 29 76.

4. Payments by Owner and Contractor shall be in accordance with Section 00 72 16 - General Conditions. Contractors must include an Interim Lien Waiver in the form included in this Section, or such updated form as may from time to time be provided by the Owner or Construction Manager.

5. Initial Application for Payment: Approved administrative actions and approved submittals that must precede or coincide with submittal of first Application of Payment as a condition of payment include but are not necessarily limited to the following:

    1. List of Subcontractors.
    2. Schedule of Values.
    3. Contractor's Construction Schedule.
    4. Submittal Schedule.
    5. List of long lead time material.
    6. Certificates of insurance (Contractor and Subcontractors)
    7. Performance and payment bonds.
    8. Log of Tradesmen's OSHA 10 certificates.
    9. M/WBE Section 00 43 31 DP-1, Letter of Intent to Perform, and forms cited therein.

6. Progress Application for Payment: Administrative actions and submittals that must be included with submittal of initial or subsequent Progress Applications for Payment include, but are not limited to the following:

    1. M/WBE Section 00 43 31 monthly progress reporting forms.
    2. Certified Payroll Reports.
    3. Monthly Safety Report.
    4. Construction Progress Reports.
    5. Progress Construction Schedule (original schedule versus actual).
    6. Submittal Schedule.
    7. Interim Lien Waivers (from Prime, sub, sub-subs, suppliers).
    8. Subcontractor back-up invoices.
    9. Stored material documentation (Bill of lading, photos, insurance)
    10. Updated Log of Tradesmen's OSHA 10 certificates
    11. Updated Log of Hot Work permits

7. Submit along with the final payment request all required documentation as set forth above, including Final Lien Waivers and Releases, Warranty Agreements, No-Asbestos Statement, Operating and Maintenance Manuals, Consent of Surety, Contractor's Certification and Subcontractor's Certifications, and all other close-out documentation reasonably requested by Owner.

END OF SECTION 01 29 76

CONTRACTOR PAYMENT APPLICATION CHECKLIST

MONTH: _____

PROJECT: Ezison Tech: TV Studio Equipment Contract #700

PRIME CONTRACTOR: _____

PAY APP: _____

CONSTRUCTION MANAGER: Buffalo Construction Consulting

1 ☐ **CMa 732**

2 ☐ **Interim Waiver of Lien and Claim (Use Standard RSMP Form)**

3 ☐ **Payment Request for Stored Materials**

Certificate of Insurance

☐ - CM Submits to District's Insurance Consultant

☐ - Insurance Consultant Approved/Unapproved form

☐ - Certificate of Stored Materials (per section 01 29 76) showing clearly Identified Materials are for RSMP With School Name, with Insurance Consultant Approved Insurance Rider for Materials Stored off-site (Per section 01 29 76)

Photographs

☐ - Photographs of Stored Material

Material Bill of Lading

☐ **-** Material Bill of Lading

8 ☐ **Two (2) Complete Sets of Payment Application Submitted**

CM Signature - _____

Savin/Gilbane Signature - _____

Savin/Gilbane

* All Compliance paperwork should be sent directly to the District's Insurance Consultant going forward. If you have any questions or issues, please use one of the following contact methods.

INTERIM WAIVER OF LIEN AND CLAIM

To: _____
(Owner)

From: _____
(Name of Contractor or Supplier Company)

_____
(Address of Contractor or Supplier Company)

Project: _____
(the "Project")

The undersigned Subcontractor or Supplier company (hereinafter "Contractor"), for and in consideration of the sum of $_____, such amount being payment for all work performed, services rendered and/or materials furnished by Contractor to Owner on the Project during the time period covered from Contractor's prior submitted payment requisition (or if the first, from the date of commencement of its work on the Project), through the following date:_____, 20___ ("Current Period") under all contracts, orders and instructions, including extras, change orders, construction change directives, and other directives whether written or verbal, and for other goods and valuable consideration paid by Owner, the sufficiency of which is hereby acknowledged, hereby covenants and warrants:

1. Contractor hereby waives, releases, and relinquishes all claims, demands and rights of lien ("Liens and Claims") to the extent of the amount shown hereon immediately upon receipt of the payment amount set forth above for all work, labor, materials, machinery or other goods, equipment or services done, performed or furnished for the Project (the "Work") and represents that all subcontractors, suppliers, or other parties performing any part of the Work will be paid out of the above amount once received as payment for the Current Period.

2. Contractor warrants that it has not been delayed in the performance of its Work to date and that it has incurred no extra costs in connection therewith. Contractor specifically waives, relinquishes, and releases any and all Liens and Claims incurred or alleged in connection with its Work to date except only those claims, if any, previously denominated as claims. Contractor further warrants and represents that any and all valid labor and/or materials and equipment bills, now due and payable, on the Project have been paid in full to the date of this waiver, including amounts covered in any prior payment applications. Contractor unconditionally waives all Liens and Claims for Work performed and payment applications submitted prior to the Current Period, receipt of payment for which is hereby acknowledged.

3. Contractor hereby agrees to indemnify and defend the Owner, Program Manager and Construction Manager, and to hold them free and harmless from any and all losses, claims, damages, costs and expenses, including but not limited to attorney's fees whether arising directly or indirectly from any inaccuracy recited in the facts herein, and from any failure of the Contractor to pay in full all sums due its laborers, subcontractors, materialmen, and suppliers on the Project, or from any liens against the Project property or Project monies filed by any such laborers, subcontractors, materialmen, or suppliers of Contractor.

Total Contract: $_____

Due on Total Contract after above payment: $_____

Contractor:_____ Sworn to before me this ____Day of _____, 20__.

By: _____ Notary Public: _____

Signature:_____ My Commission Expires: _____

Title: _____

FINAL WAIVER OF LIEN AND CLAIM

To: _____
(Owner)

From: _____
(Name of Contractor or Supplier Company)

_____
(Address of Contractor or Supplier Company)

Project: _____
(the "Project")

The undersigned Subcontractor or Supplier company (hereinafter "Contractor"), for and in consideration of the sum of $_____, such amount being payment for all work performed, services rendered and/or materials furnished by Contractor to Owner on the Project during the time period covered from Contractor's prior submitted payment requisition (or if the first, from the date of commencement of its work on the Project), through the following date: _____, 20___ ("Current Period") under all contracts, orders and instructions, including extras, change orders, construction change directives, and other directives whether written or verbal, and for other goods and valuable consideration paid by Owner, the sufficiency of which is hereby acknowledged, hereby covenants and warrants:

1. Contractor hereby waives, releases, and relinquishes all claims, demands and rights of lien ("Liens and Claims") to the extent of the amount shown hereon immediately upon receipt of the payment amount set forth above for all work, labor, materials, machinery or other goods, equipment or services done, performed or furnished for the Project (the "Work") and represents that all subcontractors, suppliers, or other parties performing any part of the Work will be paid out of the above amount once received as payment for the Current Period.

2. Contractor warrants that it has not been delayed in the performance of its Work to date and that it has incurred no extra costs in connection therewith. Contractor specifically waives, relinquishes, and releases any and all Liens and Claims incurred or alleged in connection with its Work to date except only those claims, if any, previously denominated as claims. Contractor further warrants and represents that any and all valid labor and/or materials and equipment bills, now due and payable, on the Project have been paid in full to the date of this waiver, including amounts covered in any prior payment applications. Contractor unconditionally waives all Liens and Claims for Work performed and payment applications submitted prior to the Current Period, receipt of payment for which is hereby acknowledged.

3. Contractor hereby agrees to indemnify and defend the Owner, Program Manager and Construction Manager, and to hold them free and harmless from any and all losses, claims, damages, costs and expenses, including but not limited to attorney's fees whether arising directly or indirectly from any inaccuracy recited in the facts herein, and from any failure of the Contractor to pay in full all sums due its laborers, subcontractors, materialmen, and suppliers on the Project, or from any liens against the Project property or Project monies filed by any such laborers, subcontractors, materialmen, or suppliers of Contractor.

Total Contract: $_____

Due on Total Contract after above payment: $_____

Contractor:_____ Sworn to before me this ____Day of _____, 20__.

By: _____ Notary Public: _____
Signature:_____ My Commission Expires: _____
Title: _____

SECTION 013000 - CONSTRUCTION PROCEDURES AND CONTROLS

PART 1 – GENERAL

Where the requirements of this Section 01 30 00 differ from the requirements set forth in Section 01 35 23, Contractor is to comply with the more stringent requirement in performance of the Work.

1.01 RELATED DOCUMENTS

1. Drawings and general provisions of the Contract, including General Conditions and Division 1 Specifications sections, apply to work of this section.

1.02 QUALITY OF MATERIALS AND WORKMANSHIP

1. Applicable industry standards are made part of the Contract Documents by reference and have the same force and effect as if the actual standards were physically bound into the Contract Documents.

1.03 REFERENCED STANDARDS

1. Referenced standards, those standards either referenced directly in the Contract Documents or referenced in governing regulations, have precedence over non-referenced standards which are recognized in the construction industry as being applicable to the work.

1.04 NON-REFERENCED STANDARDS

1. Non-referenced standards are those standards not directly referenced in the Contract Documents nor referenced in governing regulations, but are recognized in the construction industry, except as otherwise limited in the Contract Documents, as having direct application to the work and will be so enforced.

1.05 DATES OF STANDARDS

1. Where compliance with a standard is required, comply with that standard in effect on the date the Contract Documents are issued, unless otherwise indicated.

PART 2 - PRODUCTS

2.01 SOURCE OF INDUSTRY STANDARDS

1. The following is a partial list of organizations that have established standards of quality and workmanship.

   ANSI - American National Standards Institute
   ASTM - American Society of Testing Materials
   FMS - Factory Mutual System
   NEC - National Electric Code
   NFPA - National Fire Protection Association
   UL - Underwriters Laboratories Inc.

2.02 SYSTEMS AND RATED CONSTRUCTION IDENTIFICATION

1. Generally mechanical/electrical equipment systems shall be minimally labeled by each trade for identification and future maintenance use to minimally identify: Type of system (i.e. fire alarm, power, steam, H.W., etc.); and specific sub branch (i.e. circuits 12, 14, 16 – LP-2/7; dishwasher steam; etc.); direction of energy/signal flow with arrows, and operating directions (i.e. start up of dishwasher, HVAC operation, elevator emergency alarms, etc).

2. Terminal units/major equipment (electric panels, control panels, fan units, pumps, etc.) shall be minimally labeled with permanent, engraved, dual colored rigid plastic plates, mechanically attached.

3. Distribution systems shall be minimally labeled (so each sub system can be identified within 50') as follows:
   1. Insulated/un-insulated pipe/ducts/etc. (plumbing, HVAC, fire systems) shall have taped marker systems per applicable specification division (or at least painted (stenciled) labels, if not otherwise specified.
   2. Conduit/wiring distribution systems shall be minimally marked at each junction/distribution box with neat, ½" high hand lettered, permanent wide tip magic markers. Indication shall be on inside of box where box is in finished space or concealed/ buried, and on the outside where box semi-concealed such as above lay-in ceilings, or mechanical spaces such as crawl spaces.
   3. Distribution systems with receptacle type terminations at each end or flexible connection possibilities such as telephone or computer distribution systems shall have each receptacle and/or tie-in point labeled with specific distribution I.D. such as "Room No." plus additional I.D. breakdown as required (i.e. room number "101" plus #3 computer line = "101-3c").
   4. Existing systems disturbed by this contract shall be labeled/ relabeled similar to new work, by the Contractor responsible for that type of system.
4. Each new (or renovated existing) "Rated" wall construction shall be labeled. Labels to be "2 Hour Rated Wall" (or 1 hour, or ¾ hour), and shall be on each side. In mechanical spaces locate about 8' A.F.F. and mid point of

length of wall unless a more visible location is possible. In “finished” rooms with suspended ceilings, locate just above ceiling level, in location most likely to be seen by maintenance personnel. Labels to be painted stencils 3” to 6” high applied after all finish painting is done, in a contrasting color. For existing walls in renovated areas, the applicable contractor shall also label these applicable walls.

2.03 MISCELLANEOUS DEFINITIONS

1. The term "product" as used herein in term contractions and unless specifically noted otherwise is to mean materials, systems and equipment.

2. The term "Project Manual" is used herein in term contractions and unless specifically noted otherwise is to mean the bidding requirements, Contract, Drawings and the Specifications.

3. The term "install" or "furnish all labor" are used herein as term contractions and unless specifically noted otherwise are to mean perform all operations connected with installation of work including unloading materials to be installed, supplying all necessary equipment and rigs to do the work, test, place in operation and service.

4. The terms "furnish" or "furnish all material" are used herein as term contractions and unless specifically noted otherwise are to mean "supply and deliver to the job site all materials and/or equipment so specified".

5. The word "provide" is used herein as a term contraction and unless otherwise specifically noted is to mean "furnish, install, connect up complete, test, place in operation and service".

6. The terms "approved", "equal", "proper" and words of similar meaning are understood to mean "in the opinion of the RCSD Design Group".

7. The word "replace" is used herein as a term contraction and unless otherwise specifically noted is to mean "remove any existing and provide new".

8. The word “relocate” is used herein to mean “disassemble, disconnect, transport to new location, store during process, clean, test and install, ready for use similar to new work including providing any misc. adjustments, accessories, etc. required. It includes removing all materials, equipment, etc. made obsolete by this relocation and patching original remaining area. It does not include repairing any not functioning equipment.

9. The terms “finished area” or “finished room” is a normally finished (painted) and occupied/used space such as classrooms, offices and related storage space, corridors, stairways, etc. Generally it does not include mechanical

spaces/rooms, plenum spaces, drawl spaces, etc. unless those spaces are specifically indicated to be painted.

10. The term “repair” (in reference to construction assemblies, not to repair of equipment) is essentially the same as “patching” a system.

11. The terms “general scope”, “diagrammatic”, and “schematic” are used to establish overall sizes, quantities, scope, etc. of a particular system, or sub-system as set out by the drawings. The intent is to establish the required work to which a “nominal” quantity of additions/deletions or work may be necessary to fit to existing as built conditions and/or field conditions.

12. The term “nominal” is used to define an additional or lesser amount of work that is expected to be part of the scope of work with no change in cost.

13. The term “applicable contractor” (or similar wording) is to mean the contractor which has responsibility under his contract for the items/ trades involved in that particular use of the term. (i.e. it is the “Plumbing Contractor” if the discussion involved work related to “gas” piping. It is the Electrical Contractor if the discussion involves electric device boxes).

PART 3 - EXECUTION

3.01 PRESENT BUILDING OPERATION

1. The particular attention of the Contractor is directed to the requirement that the school must continue to function during the normal school year. Occupants and related personnel must have safe access, at all times, to those portions of the present school building being used by the school. Close cooperation with the occupants of the school is essential. The use of roofs, corridors, stair towers or exits as work areas or as storage areas for material, equipment or tools is prohibited.

3.02 LAYING OUT WORK

1. The Contractor employed on this project shall lay out all work included in his Contract as shown on the drawings and/or called for in these specifications. Take all required measurements and order all materials promptly. The Contractor will be held responsible for all damage or expense caused by inaccuracy on his part in laying out work.

2. Installer of each major unit of work is required to inspect substrate to receive work and to report in writing to the Contractor, Construction Manager and Architect/ Engineer unsatisfactory conditions. Do not proceed with work until unsatisfactory conditions have been corrected in a manner acceptable to the installer.

3.03 COORDINATION AND COOPERATION

1. Contractor Contact; The Contractor and all of the Contractor's workers will be prohibited from any contact with the school's student or staff population. Contact with the Owner will primarily be made through the Construction Manager. In case of emergency, notification shall be made to the school principal and head custodian in addition to the Construction Manager.

2. Coordination and Cooperation; The Contractor shall be responsible for the work of this project among his employees and subcontractors and for the coordination and cooperation between his employees, all other Contractors that are engaged on this project, their employees, subcontractors and the Owner.

3. Supervision: A full time superintendent is required when contract amount exceeds $50,000. Supervision includes coordination of work with the Owner and other contractors as well as providing direction to the contractor's workers, sub-contractors and suppliers. The superintendent shall be present at all project progress meetings. A change in supervisory personnel after the commencement of work shall be permitted only upon approval of the Inspector.

3.04 EXISTING ALARM SYSTEMS

1. All systems are slated for demolition. Setup and maintenance of a temporary fire alarm system is required utilizing the existing fire alarm panel.

3.05 EMERGENCY PROCEDURES

1. Emergencies requiring the evacuation of the school building are indicated by the ringing of the fire alarm bells. The Contractor and all his workmen, subcontractors and vendors must leave the building promptly and in an orderly manner. Do not re-enter the building until permission is given by the Principal. The Contractor shall enforce the strict compliance of these required emergency procedures by all his workmen, subcontractors and vendors.

3.06 SMOKING

1. Smoking shall be prohibited in school buildings, school grounds, public areas and work sites of all Owner’s and RCSD’s property, as well as any area immediately outside building entrances in accordance with Article 13-E of the New York State Public Health Law, as amended and Article VII of the Monroe County Sanitary Code. The Contractor will be held responsible for all damage resulting from failure on his part to enforce this ruling among all his respective employees and vendors.

3.07 PROTECTION OF BUILDINGS AND GROUNDS

1. The Contractor shall take all necessary steps to protect the grounds, the building and its equipment. Where materials are brought into the building and wherever the work is done in the building, protect all finished surfaces. Any damage resulting from the work of the Contract shall be repaired at no cost to the Owner.

2. The Contractor shall provide secure barriers at all the work areas and staging areas. The Owner, RCSD, or Owner's Representatives shall not be responsible for theft or vandalism of materials, equipment, or work in progress until completion of project. The Contractor shall be responsible to provide security of site and all work. Barriers shall be located in such a manner that all egress and exits are maintained.

3. The Contractor shall provide temporary enclosures of the building at all locations where either new or existing openings are required. Enclosures shall be secure, weather tight and provide the least disturbance of the existing construction that is to remain. Upon removal of enclosures, restore all work to existing or new conditions. Submit data for approval by the Construction Manager and the Architect/ Engineer prior to commencement of work. Work that involves temporary removal of building openings for purposes of work area exhaust or to facilitate work in progress shall necessitate temporary security to prevent damage to building from theft or vandalism.

4. Parking on playing fields and in staff parking areas while school is in session is not permitted. During the last week of August, all paved parking areas shall be turned over to the Owner.

5. Prior to commencement of work and in the presence of the Construction Manager, complete the attached Building Systems Status form. This form shall be submitted prior to the first application for payment. At the completion of the project, a walk-through with the Inspector will be done, verifying building system status after construction. If the contractor fails to perform pre and post inspections, and building systems are found to be damaged or defective at completion of construction, the Owner will assume that the Contractor is responsible for all cost required to restore system(s).

3.08 STAGING AREAS FOR DEMOLITION AND CONSTRUCTION

1. Staging areas for demolition and construction shall be approved by the Construction Manager and the Architect/Engineer prior to start of work. The use of roofs, corridors, stair towers or exits as work areas or as storage areas is prohibited.

2. Store all flammable and combustible materials in a locked fire rated enclosure. Paint shall be stored in a paint locker.

3.09 WORKING WITH AN OPEN FLAME

1. The Contractor shall comply with the City of Rochester Fire Department – Fire Safety Division's requirements for open flame use such as welding, asphalt kettle burners, etc., and shall acquire a permit for such use from the Permits Clerk of the Fire Safety Office, 150 Plymouth Avenue, "Public Safety Building" Room 300 (phone 585-428-7037). A copy of this permit is to be provided to the Owner. The following is a brief listing of the minimum requirements during use of an open flame. Additionally, all policies established by the City Fire Department shall be complied with.
    1. Any combustible materials near the work area that may be accessible to spark, flame, heat or hot metal, that may cause ignition, are to be protected by non-combustible shields or covers.
    2. A minimum of two (2) 20 pound dry chemical or carbon dioxide fire extinguishers shall be provided by the contractor, immediately available at the work area.
    3. A fire watch shall be provided to watch for fires, make use of portable fire extinguishers and perform similar fire prevention and protection duties. The fire watch shall remain for at least 30 minutes after the use of any flame to insure no fire exists.
    4. Fuel gas tanks (oxygen, acetylene, liquid petroleum, hydrogen, natural gas, etc.) shall be securely held upright, away from all exits, windows and combustible materials, provide full air circulation to prevent exposure to high heat, and removed from premise at end of each day.
    5. The building is not to be occupied by students or staff during any open flame tasks.

3.10 Lockout/Tagout Procedure

1. The contractor must adhere and strictly follow either the Project Lockout and Tagout requirements, the owner's requirements or the contractors own requirements, whichever is the most stringent.
2. Electrical work (e.g. tie-ins, panel maintenance) shall be conducted only on de-energized (locked out and tagged out) systems.
3. All circuit disconnects must be locked in the open position or otherwise appropriately identified with affixed tags stating "DANGER - DO NOT ENERGIZE" or other equivalent wording prior to working on the system or equipment.
4. Employees are not permitted to work on any energized circuits unless conditions mandate and written approval is obtained from the Regional Safety Manager.
5. The pre-task planning for all work on energized systems must be submitted for review.

6. Work practices must conform to all applicable owner, state and federal requirements including the NEC and the most recent version of NFPA 70E.

Lockout Devices

1. Only individually keyed padlocks shall be used. Padlocks are to be painted per the craft color code for easier detection and craft identification.
2. A lockout device of the standard scissor type that will allow the placing of more than one padlock is required, when more than one individual is working on a circuit or mechanical process.
3. A piece of chain or cable may be necessary to complete a lockout on some valves or controls and shall be used wherever needed.

Danger Tags

1. 'Danger Tags' are not 'Danger Signs', and shall not be used where a sign is needed.
2. Two standardized Danger Tags shall be used on this project. They are described as follows:
    a. "DANGER - DO NOT USE": This tag must be attached to each padlock on a lockout.
    b. "UNSAFE - DO NOT USE": This tag does not require an attachment to a padlock, but may be used if needed. This tag shall be used to identify tools, equipment, vehicles, etc.

Procedure

1. If device, valve, switch, or piece of equipment is locked out, a "Danger Tag" shall be attached.
2. No device, valve, switch or piece of equipment shall be operated with a "Danger Tag" and/or lockout attached regardless of circumstances! ! !
3. Systems consisting of electrical components will be checked, locked and tagged first by electrical craft employee working on the circuit.
4. The electrical craft will be the first lock on, and the last lock off.
5. Where placing of lock is not feasible, the circuit conductor will be disconnected from the breaker and tagged out.
6. The panel cover must be of the type that will cover all breakers when closed and must be equipped with a hasp in order to secure a lock to prevent the panel door from being opened.
7. If panel cover is of a type that cannot be locked closed, a cover must be secured over the panel cover and be locked closed and tagged while any work is being performed on any of those circuits.

8. If the above cannot be accomplished, each circuit will be tagged out as prescribed and an electrician will stand by the panel board to prevent breakers from being tampered with. This physical presence will continue daily until the work is complete.
9. All "Danger Tags" must be dated and signed. Also on tag, must be the intended work and equipment for which tag has been placed.
10. If employees of more than one craft or crew are to work on a system, circuit, machinery, or component, the supervisor from that craft shall place his individual lock and tag; and verify that the system, circuit, machinery or component being tagged, is indeed the system that is to be worked on.
11. Only the person that placed the lock and tag shall remove it without special authorization from the Project Manager, Construction Manager or Craft Superintendent.
12. Padlocks, Lockout Devices and "Danger Tags" shall be made available as specified above.
13. Padlocks shall be color coded for craft identification and shall only be used by that craft for lockout purposes, i.e. valves, switches, electrical components, etc.
14. Padlocks shall be issued from the contractor responsible where a sign in/out log will be maintained. Locks and tags shall be issued to the foremen or supervisor responsible for the craft performing the work.
15. The contractor of each craft discipline will be responsible for assuring all padlocks are personally identified, that will be used for lock and tag purposes.
16. The Contractor Superintendent(s) will be responsible for ordering their own craft's padlock. A master key will also be provided.
17. Any employee(s) or person(s) found to have removed another's lock and/or tag will be subject to disciplinary action up to and including dismissal from the project.

Special Situations

1. When due to the nature of work, a supervisor who has employees assigned to work on systems that are between construction and client turnover that is to be locked and tagged out in order to perform work, the below shall be applied:
2. Prior to the electrical foreman de-energizing the system, the foreman will ascertain whether system or device has been turned over and accepted by the client; If system is signed off, the client shall assume responsibility for de-energizing system and becoming the tagging authority.
3. Contractor Electrical foreman/craft journeyman places lock and tag and tries to engage the equipment.
4. The electrical journeyman or lead man will meter the tagged equipment to verify that it is de-energized.

3.11 HOT WORK

1. Before engaging in hot work i.e. gas welding/cutting, soldering, grinding, utility shutdowns and crossovers submit Hot Work Permit Forms for approval and use.

Electric Arc Welding

1. A suitable, approved fire extinguisher shall be ready for instant use in any location where welding is done.
2. Screens, shields, or other safeguards should be provided for the protection of men or materials, below or otherwise exposed to sparks, slab, falling objects, or the direct rays of the arc.
3. A dedicated fire watch shall be present at all welding operations and remain for at least 1 hour after the hot work has halted.
4. The welder shall wear approved eye and head protection.
5. Trades assisting the welder shall also wear protective glasses, head protection and protective clothing.
6. Adequate exhaust ventilation shall be maintained at all welding and cutting work areas.
7. Electric welding equipment, including cables, shall meet the requirements of the National Electric Code.
8. All arc welding and cutting cables shall be of the completely insulated flexible type capable of handling the maximum current requirements of the work.
9. Cables in need of repair shall not be used.
10. The frames of all arc welding and cutting machines shall be grounded either through a third wire in the cable connecting the circuit connector or through a separate wire which is grounded at the source of the current.
11. All ground connections shall be inspected to insure that they are mechanically strong and electrically adequate for the required current.
12. Welding practices shall comply with all applicable regulations.

Gas Welding or Cutting

1. When gas cylinders are stored, moved, or transported, the valve protection cap shall be in place.
2. When cylinders are hoisted, they shall be secured in an approved cage or basket. The valve cap shall never be used for hoisting.
3. All cylinders shall be stored, transported, and used in an upright position. If the cylinder is not equipped with a valve wheel, a key shall be kept on the valve stem

while in use.

4. At the end of each work day or if work is suspended for a substantial period of time, compressed gas cylinder valves must be closed, regulators removed and properly stored.
5. Cylinders containing oxygen or acetylene or other fuel gas shall not be taken into confined spaces.
6. Cylinders containing oxygen or acetylene or other fuel gas shall be stored in designated areas outside the structure as approved by the CM.
7. No one shall use a cylinder's contents for purposes other than those intended by the supplier.
8. All hose used for carrying acetylene, oxygen or other fuel gas shall be inspected at the beginning of each working shift.
9. Defective hose shall be removed from service.
10. Oxygen cylinders and fittings shall be kept away from oil and grease.
11. Oxygen shall not be directed at oily surfaces, greasy clothes or hands.
12. Regulators, gauges, backflow check valves, and torches shall be kept in proper working order.
13. An approved fire extinguisher shall be readily available.
14. Flash arrestors are required on the oxygen and acetylene hoses, at the regulators.
15. Appropriate personal protective equipment, such as burning glasses, shields, and/or gloves shall be used.
16. Adequate exhaust ventilation shall be maintained at all welding and cutting work areas.
17. Work permits shall be obtained daily, prior to any burning or cutting operations on the site.

Work Permit Procedures

General Procedures

1. A copy of this section of the Project Safety Plan will be issued to all Contractors, and will serve as notice by the CM that a work permit as specified by the CM is necessary before starting any hazardous work activity.
2. The work permit shall be obtained from the CM before starting each day's work.
3. The procedures for initiating a hazardous work permit are listed on the permit application appropriate to the type of work.
4. Hazardous work Permits include, but are not limited to the following activities: Hot

Work, Confined space entry, Guardrail removal, Line Breaks, after Hours work, Trenching and excavation, Crane use and Barricade installation.

5. Additional job-specific hazardous work permits may be required, due to special project conditions, to be incorporated into the project safety plan. These will also be considered as a contract commitment.

Hot Work

1. Hot work is defined as a process or procedure, which could result in a fire if not properly controlled. Common types of hot work are welding, burning, cutting, brazing, soldering.
2. Hot work will usually be permitted only during normal working hours.
3. Permits will be issued the day before work is to be accomplished, and the work area will be inspected to verify that adequate control has been established.
4. A copy of the permit will be available at the point of work.
5. An adequate number of fire extinguishers will be available within 50-feet of the point of work for which a permit is issued.
6. The Contractor will take the necessary precautions when welding or burning above walls to assure that protection is maintained on both sides of the wall and areas below are protected on multilevel buildings.

END OF SECTION 01 30 00

SECTION 013113 – CONTRACT COORDINATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General Conditions of the Contract for Construction, and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative provisions for coordinating construction operations on Project including, but not limited to, the following:

1. Coordination Drawings.
2. Administrative and supervisory personnel.
3. Project meetings.
4. Requests for Information (RFIs).

B. Each contractor shall participate in coordination requirements. Certain areas of responsibility will be assigned to a specific contractor.

C. Related Sections include the following:

1. Division 01 Section "Summary of Work" for a description of the division of Work and responsibility for coordination activities not in this Section.
2. Division 01 Section "Milestone Schedule and Critical Submittals" for preparing and submitting Contractor's Construction Schedule.
3. Division 01 Section "Use of Site" for procedures for coordinating general installation and field-engineering services, including establishment of benchmarks and control points.
4. Division 01 Section "Closeout Procedures" for coordinating closeout of the Contract.

1.3 DEFINITIONS

A. RFI: Request for information from Contractor seeking interpretation or clarification of the Contract Documents.

1.4 COORDINATION

A. Coordination: Coordinate construction operations included in different Sections of the Specifications to ensure efficient and orderly installation of each part of the Work.

Coordinate construction operations included in different Sections that depend on each other for proper installation, connection, and operation.

B. Coordination: Each contractor shall coordinate its construction operations with those of other contractors and entities to ensure efficient and orderly installation of each part of the Work. Each contractor shall coordinate its operations with operations included in different Sections that depend on each other for proper installation, connection, and operation.

1. Schedule construction operations in sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.
2. Coordinate installation of different components with other contractors to ensure maximum accessibility for required maintenance, service, and repair.
3. Make adequate provisions to accommodate items scheduled for later installation.
4. Where availability of space is limited, coordinate installation of different components to ensure maximum performance and accessibility for maintenance, service and repair.

C. Prepare memoranda for distribution to each party involved, outlining special procedures required for coordination. Include such items as required notices, reports, and list of attendees at meetings.

1. Prepare similar memoranda for Owner and separate contractors if coordination of their Work is required.

D. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities and activities of other contractors to avoid conflicts and to ensure orderly progress of the Work. Such administrative activities of each Contract include, but are not limited to, the following:

1. Preparation of Contractor's Construction Schedule.

   a.) Contractor for Abatement Demolition to prepare initial Construction Schedule, get durations and finalize for submission to Architect and Construction Manager.

2. Preparation of the Schedule of Values.
3. Installation and removal of temporary facilities and controls.
4. Delivery and processing of submittals.
5. Progress meetings.
6. Pre-installation conferences.
7. Project closeout activities.
8. Startup and adjustment of systems.
9. Training

E. Conservation: Coordinate construction activities to ensure that operations are carried out with consideration given to conservation of energy, water, and materials.

1. Salvage materials and equipment involved in performance of, but not actually incorporated into, the Work. Refer to other Sections for disposition of salvaged materials that are designated as Owner's property.

1.5 SUBMITTALS

A. Product Data, Shop Drawings, Coordination Drawings, Color Samples, etc. will all be submitted for Architect Approval.

B. Coordination Drawings: Separate prime Contracts to coordinate and prepare Coordination Drawings for efficient installation of different components or if coordination is required for installation of products and materials fabricated by separate entities.

1. DRAWINGS FOR MECHANICAL, PLUMBING FIRE PROTECTION AND ELECTRICAL WORK

a. Drawings contain diagrammatic layouts and indicate general arrangement of systems, piping conduit, etc.
b. Prior to installation of material and equipment, review and coordinate work with Architectural and Structural Drawings for exact space conditions, where not readily discernible request information from Architect before proceeding.
c. Check Drawings of all other trades to verify extent of material and equipment to be installed in spaces available and consider layout alternatives so that all requirements can be accommodated.
d. Maintain maximum headroom at all locations without finished ceilings.
e. Maintain finished ceiling heights as indicated.
f. Coordinate installations with other trades to prevent conflict with work of other trades and cooperate in making reasonable modifications in layout as needed.
g. Where conflicts occur with placement of mechanical and electrical materials as they relate to placement of other building materials, the Field Architect and Construction Manager shall be consulted for assistance in coordination of the available space to accommodate all trades.

2. BIM MODEL COORDINATOR

A. Mechanical Prime Contractor (MC-4) will have the responsibility of providing a dedicated project team member who is verse in Autodesk Revit (Current Version) to manage a clash detection model which will be current throughout the construction process.
B. BIM Model Coordinator (MC-4) will be responsible for the following:
   a. Coordination with the Architect and Engineers for updates to the model throughout coordination process.
   b. Provide updated model to contractor involved in the clash detection process for the project.

c. Conduct weekly coordination meetings with Mechanical, Plumbing, Electrical, Fire Protection, Fire Alarm, Communications, Security, Telecom, and Audio Video to address the development of shop drawings for clash detection. Construction Manager shall be present at this meeting but shall be there for informational purposes only. Coordinator shall provide the following after each meeting:
    i. Meeting minutes
    ii. Clash detection report.
d. BIM Model Coordinator (MC-4) shall be responsible for master model throughout the process including the insertion of the Structural Steel Contractor's Model to begin the process.
e. BIM Model Coordinator (MC-4) to receive all other Prime Contractors models and shall insert them into one model during the coordination efforts and provide clash detection report to all contractors involved in clash detection models coordination.
f. BIM Model Coordinator (MC-4) shall turn over the final coordinated model at substantial completion to Construction Manager.

3. COORDINATION DURING EXECUTION

A. All Contractors shall coordinate with other trades so as to facilitate the general progress of the Work. Each trade shall afford all other trades every reasonable opportunity for the installation of their Work and for the storage of their material and equipment.

B. Drawings for the mechanical and electrical trades have been prepared with the intent to assign locations for piping and equipment for each trade, which will not interfere with each other. However, this will not relieve the individual Contractors from the responsibility of field coordination to the extent required to assure clearances.

C. Prime Contractors responsible for the following items of work located in or above ceilings shall participate in preparation of coordination drawings. Coordination drawings shall be prepared for the remodeled areas.

1. Recessed light fixtures

2. Plumbing waste and roof drainage

3. Ductwork and appurtenances

4. Fire protection (sprinkler system)

5. HVAC piping

6. Plumbing vent, supply and medical gas piping

7. Electrical conduit

8. Acoustical ceilings

The above list, in descending order, is the precedence assigned work items for space priority. Recessed light fixtures and space for their installation has first priority, plumbing waste and roof drainage has second priority, etc.

a. After award of Prime Contractors and prior to start of construction, the Construction Manager will schedule a meeting with the Prime Contractors responsible for their work items listed above. The purpose of the meeting is to introduce the coordination program and to determine its implementation in relation to the progress schedule.

b. During the initial coordination phase of the Mechanical Contractor (MC-4) will produce 3/8 inch scale drawings showing column center lines, interior partition locations, and ceiling heights. The Mechanical Contractor (MC-4), with reference and consideration to all existing ductwork, piping, conduits, structural slabs and beams as well as the mechanical, electrical, fire protection, plumbing and reflected ceiling plans, will draw on the plans, his proposed installation showing duct sizes, equipment layouts, and dimensions from column lines to the center lines of ducts and from finished floors to bottom of ducts. Ductwork will be maintained as tight as possible to the underside of floor slab and/or beams.

   In congested areas, the Mechanical Contractor (MC-4) will, in addition prepare drawings in section view. During this phase, it will be the Electrical Contractor's (EC-5) responsibility to furnish the Mechanical Contractor (MC-4) with recessed lighting installation and clearance requirements.

c. The ductwork layout will be produced in sequence as mandated by the project schedule. The earliest area indicated in the schedule will receive the first effort, etc.

d. When the ductwork drawings for the earliest scheduled area have been completed (time limitation as determined at the initial coordination meeting), the Mechanical Contractor (MC-4) will provide the Contractor with one (1) set of sepias for each participant in the effort. The Contractor will distribute the sepias to the participating Contractors for their use in drawing thereon the major components of their proposed installations using the general scheme shown on the contract drawings as a guide.

   The major components to be indicated include (but are not limited to):

   1. Roof drain leaders
   2. Waste piping
   3. Sprinkler mains and branches
   4. Heating and cooling water mains
   5. Chilled water mains
   6. Significant conduit runs
   7. Cable trays

8. Hot and cold water
9. Medical gases
10. Lighting fixtures
11. Acoustical ceilings

Information delineated will be distance from column center lines, pipe/equipment size and distance from finished floor to bottom of pipe/equipment.

e. Within a period of not to exceed two (2) weeks after distribution of the sepias, the Construction Manager will schedule a meeting with the participating Contractors at which time, the sepias will be over-laid on a light table to identify areas of conflict. All parties will then cooperate in resolving the conflicts. Records of the agreements will be entered on the various Contractors drawings, acknowledged by all participants by signature in a space provided for this purpose, and two (2) blue-line copies distributed to all involved parties. All drawing reproduction costs will be borne by the Mechanical Contractor (MC-4). The above drawing, review and coordination process will be repeated until all areas on the Project have been coordinated.

f. In the event a Contractor fails to cooperate in the Coordination Program, he will be held responsible for all costs incurred for adjustments to the work of others made necessary to accommodate the uncooperative Subcontractor's installations.

g. When a change is issued, the affected Contractors shall review the coordination drawings and bring to the attention of the Construction Manager any revisions necessary to the work of others not directly affected by the change.

C. Key Personnel Names: Within fifteen (15) business days before starting construction operations, submit a list of key personnel assignments, including superintendent and other personnel in attendance at Project site. Identify individuals and their duties and responsibilities; list addresses and telephone numbers, including home and office telephone numbers. Provide names, addresses, and telephone numbers of individuals assigned as standbys in the absence of individuals assigned to Project.

1. Post copies of list in Project meeting room, in temporary field office, and by each temporary telephone. Keep list current at all times.

1.6 ADMINISTRATIVE AND SUPERVISORY PERSONNEL

A. General: In addition to Project superintendent, provide other administrative and supervisory personnel as required for proper performance of the Work.

1. Include special personnel required for coordination of operations with other contractors.

1.7 CONTRACTOR'S MEETINGS

A. General: Schedule and conduct meetings and conferences at Project site, unless otherwise indicated. If attendance by the Architect, Construction Manager, Program Manager, Technology Consultant, or Owner is necessary or desired then coordinate the time and location of the meeting with the appropriate parties.

1. Attendees: Inform participants and others involved, and individuals whose presence is required, of date and time of each meeting. Notify Construction Manager and Architect of scheduled meeting dates and times, even if attendance by same is not required.
2. Agenda: Prepare the meeting agenda. Distribute the agenda to all invited attendees.
3. Minutes: Record significant discussions and agreements achieved. Distribute the meeting minutes to everyone concerned, including Owner and Architect, within three (3) business days of the meeting.

B. Preconstruction Conference: Schedule a preconstruction conference before starting construction, at a time convenient to Owner, Architect and Construction Manager, but no later than fifteen (15) business days after execution of the Agreement. Hold the conference at Project site or another convenient location. Conduct the meeting to review responsibilities and personnel assignments.

1. Attendees: Authorized representatives of Owner, Architect, Construction Manager and their consultants (Technology Consultant/Program Manager); prime Contractors and their superintendents; major subcontractors; suppliers; and other concerned parties shall attend the conference. All participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
2. Agenda: Discuss items of significance that could affect progress, including the following:

a. Tentative construction schedule.
b. Phasing.
c. Critical work sequencing and long-lead items.
d. Designation of key personnel and their duties.
e. Procedures for processing field decisions and Change Orders.
f. Procedures for RFIs.
g. Procedures for testing and inspecting.
h. Procedures for processing Applications for Payment.
i. Distribution of the Contract Documents.
j. Submittal procedures.
k. Preparation of Record Documents.
l. Use of the premises and existing building.
m. Work restrictions.
n. Owner's occupancy requirements.
o. Responsibility for temporary facilities and controls.
p. Construction waste management and recycling.

q. Parking availability.
r. Office, work, and storage areas.
s. Equipment deliveries and priorities.
t. First aid.
u. Security.
v. Progress cleaning.
w. Working hours.
x. Owner's health and safety requirements.
y. Agree upon a schedule for regular meetings.

3. Minutes: Construction Manager will record and distribute meeting minutes.

C. Pre-installation Conferences: Conduct a pre-installation conference at Project site before each construction activity that requires coordination with other construction.

1. Attendees: Installer and representatives of manufacturers and fabricators involved in or affected by the installation and its coordination or integration with other materials and installations that have preceded or will follow, shall attend the meeting. Advise Architect and Construction Manager of scheduled meeting dates.
2. Agenda: Review progress of other construction activities and preparations for the particular activity under consideration, including requirements for the following:

a. The Contract Documents.
b. Options.
c. Related RFIs.
d. Related Change Orders.
e. Purchases.
f. Deliveries.
g. Submittals.
h. Review of mockups.
i. Possible conflicts.
j. Compatibility problems.
k. Time schedules.
l. Weather limitations.
m. Manufacturer's written recommendations.
n. Warranty requirements.
o. Compatibility of materials.
p. Acceptability of substrates.
q. Temporary facilities and controls.
r. Space and access limitations.
s. Regulations of authorities having jurisdiction.
t. Testing and inspecting requirements.
u. Installation procedures.
v. Coordination with other work.
w. Required performance results.
x. Protection of adjacent work.
y. Protection of construction and personnel.

3. Minutes: Construction Manager will record and distribute meeting minutes.
   a. Record significant conference discussions, agreements, and disagreements, including required corrective measures and actions.
   b. Reporting: Distribute minutes of the meeting to each party present and to parties who should have been present.

4. Do not proceed with installation if the conference cannot be successfully concluded. Initiate whatever actions are necessary to resolve impediments to performance of the Work and reconvene the conference at earliest feasible date.

D. Progress Meetings: The Construction Manager shall conduct progress meetings at weekly or bi-weekly intervals. Coordinate dates of meetings with preparation of payment requests.

1. Attendees: In addition to representatives of Owner,, Construction Manager, and Architect each contractor, subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
2. Agenda: Review and correct or approve minutes of previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.

   a. Contractor's Construction Schedule: Review progress since the last meeting. Determine whether each activity is on time, ahead of schedule, or behind schedule, in relation to Contractor's Construction Schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.

      1) Review schedule for next period.

   b. Review present and future needs of each entity present, including the following:

      1) Interface requirements.
      2) Sequence of operations.
      3) Status of submittals.
      4) Deliveries.
      5) Off-site fabrication.
      6) Access.
      7) Site utilization.
      8) Temporary facilities and controls.
      9) Work hours.
      10) Hazards and risks.

11) Progress cleaning.
12) Quality and work standards.
13) Status of correction of deficient items.
14) Field observations.
15) RFIs.
16) Status of proposal requests.
17) Pending changes.
18) Status of Change Orders.
19) Pending claims and disputes.
20) Documentation of information for payment requests.

3. Minutes: Construction Manager will record and distribute the meeting minutes to Owner, Architect, and Contractors.
4. Reporting: Distribute minutes of the meeting to each party present and to parties who should have been present.

a. Schedule Updating: Revise Contractor's Construction Schedule after each progress meeting where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with the report of each meeting.

1.8 REQUESTS FOR INFORMATION (RFIs)

A. Procedure: Immediately on discovery of the need for interpretation of the Contract Documents, and if not possible to request interpretation at Project meeting, prepare and submit an RFI using the form specified.

1. RFIs shall originate with the Prime Contractor. RFIs submitted by entities other than the Prime Contractor will not be responded to.

2. Coordinate and submit RFIs in a prompt manner so as to avoid delays in Contractor's work or work of subcontractors.

3. RFIs will be processed via the submittal submission procedures established for this project. Owner’s Representative to determine method of submittal (e.g. Master Library, Master Library, Submittal Exchange, Expedition, or Gilbane’s I-Build).

4. Prime Contractor will fill in all applicable fields of the Request for Information form established for this Project and is available for Contractors’ use from the submittal procedures established for this project. A copy of this form is included in this Project Manual in Division 00 “Request of Information”

5. The format for naming the electronic version of the RFI shall be:
   a. Contract Number – RFI number
      1) The Contract number is the same as the number on the Bid Form.
      2) The RFI number shall be sequential starting with #001.

6. RFIs shall be prepared electronically using a computer program capable of reading, field filling, and saving the completed form as a PDF (Portable Document Format) computer file:
   a. Internet Service and Equipment Requirements:
      1) Email address and Internet access at Contractor's main office.
      2) *Adobe Acrobat* (www.adobe.com), or other similar PDF review software for applying electronic stamps and form filling.

7. Contractor shall upload the RFI to the appropriate category on the project website established for this project, or other submission procedures established.

8. The Contractor shall be notified by the Construction Manager via e-mail once the response from the Architect has been made available.

9. Contractor shall bear responsibility for the Architect/Engineer's time for unnecessary or frivolous RFI's.

B. Content of the RFI: Include a detailed, legible description of item needing interpretation and the following on the project form established for this Project:

1. Project name.
2. Date.
3. Name of Contractor.
4. Name of Architect.
5. Contract Number.
6. RFI number, numbered sequentially.
7. Name/Location of Project Work Site (if Contract involves multiple addresses).
8. Specification Section number and title and related paragraphs, as appropriate.
9. Drawing number and detail references, as appropriate.
10. Field dimensions and conditions, as appropriate.
11. Contractor's suggested solution(s). If Contractor's solution(s) impact the Contract Time or the Contract Sum, Contractor shall state impact in the RFI.
12. Contractor's signature.
13. Attachments: Include drawings, descriptions, measurements, photos, Product Data, Shop Drawings, and other information necessary to fully describe items needing interpretation.

    a. Supplementary drawings prepared by Contractor shall include dimensions, thicknesses, structural grid references, and details of affected materials, assemblies, and attachments.

C. Hard-Copy RFIs: RFI Form is attached in Project Manual.

1. Identify each page of attachments with the RFI number and sequential page number.

D. Software-Generated RFIs: Software-generated form with substantially the same content as indicated above.

1. Attachments shall be electronic files in Adobe Acrobat PDF format.

E. Architect's Action: Architect will review each RFI, determine action required, and return it. Allow seven working days for Architect's response for each RFI. RFIs received after 3:00 p.m. will be considered as received the following working day.

1. The following RFIs will be returned without action:

a. Requests for approval of submittals.
b. Requests for approval of substitutions.
c. Requests for coordination information already indicated in the Contract Documents.
d. Requests for adjustments in the Contract Time or the Contract Sum.
e. Requests for interpretation of Architect's actions on submittals.
f. Incomplete RFIs or RFIs with numerous errors.

2. Architect's action may include a request for additional information, in which case Architect's time for response will start again.
3. Architect's action on RFIs that may result in a change to the Contract Time or the Contract Sum may be eligible for Contractor to submit Change Proposal according to Section 01 26 43 "Change Order Requests."

a. If Contractor believes the RFI response warrants change in the Contract Time or the Contract Sum, notify Architect in writing within five (5) business days of receipt of the RFI response.

F. On receipt of Architect's action, update the RFI log and immediately distribute the RFI response to affected parties. Review response and notify Architect and Construction Manager within five (5) business days if Contractor disagrees with response.

G. RFI Log: Each Contract to prepare, maintain, and submit a tabular log of RFIs organized by the RFI number bi-weekly; log to include the following:

1. Project name.
2. Name and address of Contractor.
3. Name and address of Architect.
4. RFI number including RFIs that were dropped and not submitted.
5. RFI description.
6. Date the RFI was submitted.
7. Date Architect's response was received.
8. Identification of related Minor Change in the Work, Construction Change Directive, and Proposal Request, as appropriate.
9. Identification of related Field Order, Work Change Directive, and Proposal Request, as appropriate.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 MAINTENANCE OF ON-SITE DOCUMENTS

A. Contractor shall maintain all Construction Documents, and changes to them, in an orderly manner at each Work Site and shall immediately make them accessible to the Owner, Architect, or Construction Manager upon request. Documents of this type include, but are not limited to:

1. Construction drawings with posted addenda.
2. Project Manual with posted addenda.
3. Construction Progress Drawings (As-builts).
4. Approved submittals.
5. Updated construction schedules.
6. Requests for Information.
7. Changes to the work.
8. Architect's Supplementary Instructions
9. Insurances and Bonds.
10. MSDS sheets.

END OF SECTION 01 31 13

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SECTION 013216 - CONTRACTOR'S CONSTRUCTION SCHEDULE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General Conditions of the Contract for Construction and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for documenting the progress of construction during performance of the Work, including the following:

1. Preliminary Construction Schedule.
2. Contractor's Construction Schedule.
3. Submittals Schedule.

B. Related Sections include the following:

1. Division 01 Section "Summary of Work" for preparing a combined Contractor's Construction Schedule.
2. Division 01 Section "Submittal Procedures" for submitting schedules and reports.
3. Division 01 Section "Quality Controls" for submitting a schedule of tests and inspections.
4. Division 00 Section "Milestone Schedule and Critical Submittals"

1.3 DEFINITIONS

A. Refer to Section 00 43 83 Milestone Schedule and Critical Submittals

1.4 SUBMITTALS

A. Refer to Section 00 43 83 Milestone Schedule and Critical Submittals

1.5 QUALITY ASSURANCE

A. Refer to Section 00 43 83 Milestone Schedule and Critical Submittals

1.6 SUBMITTALS SCHEDULE

A. Preparation: Refer to Division 01 Section “Submittal Procedures”.

B. Refer to Section 00 43 83 Milestone Schedule and Critical Submittals

1.7 PRELIMINARY CONSTRUCTION SCHEDULE

A. Refer to Section 00 43 83 Milestone Schedule and Critical Submittals

1.8 CONTRACTOR'S CONSTRUCTION SCHEDULE (CPM SCHEDULE)

A. Refer to Section 00 43 83 Milestone Schedule and Critical Submittals

1.9 MASTER BASELINE SCHEDULE PREPARED BY CM

A. Refer to 01 32 16a Master Schedule Revised

END OF SECTION 01 32 16

SECTION 013219 - SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

1. Drawings and general provisions of Contract apply to work of this section.

1.02 CERTIFICATE OF CAPITAL IMPROVEMENT

1. A Certificate of Capital Improvement will be supplied to the Contractors by the School District.

1.03 PERFORMANCE AND LABOR AND MATERIALS PAYMENT BOND

1. Simultaneously with his delivery of the executed contract, the successful bidder must deliver to the Board all Performance and Labor and Materials Payment Bonds and Insurances in accordance with Section 00 73 16 “Insurance and Bonds Requirements.”

1.04 ADDITIONAL SURETY

1. The Contractor shall furnish an additional surety bond in an amount at least equal to one hundred percentum (100%) of the cost of any adjustment in the contract price, by reason of an authorized change in the work, as security for faithful performance of the additional work and for the additional payment of all persons performing labor and furnishing materials in connection with this contract.

PART 2 - PRODUCTS

2.01 SUBMITTALS – (All to be submitted through Submittal Exchange.)

1. Permits and Certificates

    1. Provide the District with a copy of all required permits such as “Right-of-Way Permits”, “Plumbing Permits”, “Open Flame Permits”, “Highway Work Permits”, “Electrical Underwriters Certificate”, “Department of Health Permit and Certificates”, etc. if such permits are required for the specific tasks on the project. (Typically “Building Permit” is issued to the District directly by the New York State Education Department and is not the responsibility of the Contractor to acquire).

2. Shop Drawings

    1. The Prime Contractor shall submit via Submittal Exchange all submittals including product data, shop drawings and samples. Detailed requirements for shop drawings relating to certain portions of the work are

stated in the drawings and various sections of these specifications. Refer to individual sections. Shop drawings furnished by sub-contractors or material vendors shall be submitted only by the Prime Contractor via Submittal Exchange. All manufactured products shall be identified by the name of the manufacturer and catalog number. Each copy of shop drawings shall be clearly marked with the title of the job and the Contractor's name. The Contractor shall indicate on the shop drawing submittal the factory delivery date and/or lead time. Refer to Section 00 72 16 - General Conditions.

2. Equipment layout shop drawings shall indicate dimensioned layout, rough-in and connection data for mechanical/electrical. Each roughing-in location shall be dimensioned accurately from the building walls.

3. Shop drawings of custom-fabricated and/or field installed material/equipment/systems, etc. shall show equipment under this contract, indicating all reinforcement, as well as details for the installation and relation to adjoining and related work which requires cutting and close fitting, anchoring, etc. Layouts shall provide the fine tuned coordination with other systems, equipment, structure, ceiling layouts, heights, existing conditions, etc. and shall include necessary adjustments so work can be properly installed.

4. All shop drawings and product submittals shall minimally reference equipment, materials, etc. to identification system used in specifications and/or drawings, dates, project field dimensions, applicable standards, etc..

5. All shop drawings shall coordinate with existing/new adjacent conditions and make adjustments in the work within the general intent of the project.

6. By submitting shop drawings, the Contractor represents that he/she has determined and verified materials, field measurements, field conditions and has checked/coordinated that information within such submittals with the requirements of the work and the contract documents.

3. Manufacturer's Affidavit

1. The Contractor, if requested, shall furnish affidavit from manufacturer, certifying that materials or products delivered to the job meet requirements specified. However, such certifications shall not relieve Contractor from responsibility of complying with any added requirements specified herein.

4. Samples and Mock Ups

1. The Contractor shall submit a sufficient number of samples for approval and per the Architect/Engineer's request plus one for retention by the Construction Manager for each item requiring sample submission. When it is necessary to retain a sample at the construction site for comparative purposes such as a workmanship sample, the Contractor shall submit one additional sample. Refer to individual sections and Section 00 72 16 - General Conditions. When mock-ups ("constructed on site" samples) are required, the complete requirements are specified in the individual section involved.
2. A pre-installation meeting will be required to review mock up and to certify the installation will be acceptable.
3. Mock ups will be required on this project. At a minimum, the Contractor will expect to provide mock ups for:
    a. The Cable Rail system
    b. Exterior Tile
    c. Curtain wall

5. Substitutions/Equivalents

    1. All requests for equivalents must be submitted prior to award of contract in conformance with the “Equivalents” procedures set forth in the Instructions to Bidders (Section 00 21 13). Any request for substitutions the Contractor wishes to make after contract award shall be governed by the “Substitution” procedures in the General Conditions (Section 00 72 16).

6. Operating and Maintenance Manuals (Also refer to Closeout Submission Requirements of Section 01 77 00 and to O and M Manuals and Data of Section 01 78 23).

    1. Detailed requirements for operating and maintenance manuals relating to certain portions of the work are stated in the various sections of these specifications. The Contractor shall submit ten (10) complete copies of each required manual to the Architect/Engineer on flash drive, along with two (2) hard copies, for review prior to final payment. Once approved, manual will be submitted to the Construction Manager for recordkeeping. The operating manual shall list all products and assemblies, warranties and manufacturer’s instructions. It shall also include all diagnostics, schematics and software passwords necessary for service and maintenance. Detailed requirements for operating and maintenance manuals relating to certain portions of the work are stated in the various sections of these specifications. Refer to individual sections and Section 00 72 16 - General Conditions.

    2. Organize operating and maintenance manual information into suitable sets of manageable size, and bind into individual binders properly

identified and indexed (thumb tabbed). Include emergency instructions, spare parts listing, copies of warranties, wiring diagrams, recommended “turn-around” cycles, inspection procedures, shop drawings, product data and similar applicable information. Bind each manual of each set in a heavy-duty 3-ring binder and include pocket folders for folded sheet information. Mark identification on both front and spine of each binder, including identification of school and dates of work.

7. Warranties Manual

    1. All Contractors shall submit to the Architect/Engineer two copies of a manual of all manufacturer's and builder's warranties and bonds, as required by the contract documents. Include in this manual the project title, an index of warranties and the initial warranty date. Refer to Article 2.1.6 of this section. All warranties shall be effective, unless stated otherwise, from the date of final payment. Refer to Section 00 72 16 - General Conditions.

8. No ACBM Statement

    1. No Asbestos Containing Building Material (ACBM) shall be used on this project. Prior to the application of final payment, the Contractor shall submit to the Construction Manager, a signed statement on the Contractor's corporate letterhead identifying the project name, date of project issue and contract number, to the effect that no work of this project involved the application, installation or provision of known or suspected asbestos containing building material (ACBM).

9. As-Built Documents

    1. The Contractor shall maintain at the site one record copy of the drawings, specifications, addenda, approved shop drawings, product data, samples, change orders, etc. in good order and clearly marked to record field changes and selections made during construction that are not otherwise documented.
    2. As-Built Documents shall include but not be limited to;
        1. Building Construction; All wall relocations, detail changes, structural changes, etc.
        2. In-Ground Buried Work; All distribution line locations, dimensioned from prominent building lines, so as to completely locate line including jogs, direction changes, etc.
        3. Concealed Building Construction Work; All horizontal and vertical distribution lines. This includes all systems distribution even if small sizes (i.e. fire alarm conduits, small gas distribution lines, hot water re-circulation loops, etc.). Where work is concealed locate

by dimension. If exposed (includes within ceiling plenums) only generate scalable locations as necessary.

4. Locations of Equipment; All valves, unions, dampers, equipment requiring maintenance, etc. if different form original drawings, or not indicated.
5. Existing Distribution Systems; All encountered as it relates to this contract's work.
6. General Sizes and Materials; If not otherwise indicated on contract drawings.
7. Where the original drawing is substantially correct the Contractor shall indicate so by clearly marked check (□) over each distribution and branch point, equipment location, etc. Where original drawing incorrectly locates installed work, the Contractor shall erase or 'neatly' "X" out continuously those lines.
8. Prior to application for final payment, the Contractor shall submit ten (10) flash drives, each containing a full set of as-built documents, drawn to scale, in PDF format, indicating actual installed conditions, including change order work, to the Construction Manager for approval as record documents.
9. The Contractor shall bear all expenses incurred to record and reproduce record documents that reflect drawing corrections and clarifications relative to found field conditions, and field changes that were induced by, or as a result of the Contractor. Change Order requests, and drawing changes prepared by the Architect/Engineer, shall be so documented on the original drawing by the Architect/Engineer.

10. Receipts and Invoices

    1. Provide prompt submittal of itemized invoices and/or receipts for the purchase and installation of all devices, fixtures and equipment, at the Construction Manager's request. Provide a complete description of items indicated on submittal.

11. Energy Rebate Items

    1. For all equipment proposed for installation that will result in a decreased electrical demand, i.e. high efficiency lighting, ballasts, motors, etc., the Contractor shall submit two (2) copies of sales receipts or purchase orders to the Construction Manager. Such documentation shall state date of purchase, dealer's name and address, equipment or product manufacturer, model numbers, quantity purchased and cost per item. Submittal of documentation shall be made to the Construction Manager within 30 days of purchase.

PART 3 – SUBMITTAL SCHEDULE

Submittal Schedule: Each Contractor shall input the date that each submittal to be uploaded onto the Submittal Exchange web site. Include time required for review, ordering, manufacturing, fabrication, and delivery when establishing dates. Include additional time required for making corrections or revisions to submittals noted by Architect and additional time for handling and reviewing submittals required by those corrections.

1. Coordinate submittal schedule with list of subcontracts, the schedule of values, and Contractor's construction schedule.

2. Initial Submittal Schedule: Submit concurrently with startup construction schedule. Include submittals required during the first thirty (30) days of construction. List those submittals required to maintain orderly progress of the Work and those required early because of long lead time for manufacture or fabrication.

    a. All curtain wall, window, door submittals, etc. will be due within 20 days of award of contract or as needed in order to get work completed per the schedule.

3. Format: Arrange the following information in a tabular format:

    a. Scheduled date for first submittal.
    b. Specification Section number and title.
    c. Submittal category: Action; informational.
    d. Name of subcontractor.
    e. Description of the Work covered.
    f. Scheduled date for Architect's final release or approval.
    g. Scheduled date of fabrication.
    h. Scheduled dates for purchasing.
    i. Scheduled dates for installation.
    j. Activity or event number.

4. The submittal schedule shall indicate that all action submittals are to be sent to the Architect within thirty (30) days after the execution of the Owner/Contractor Agreement.

    a. If a submittal cannot be sent to the Architect within the specified time period, then the Contractor shall provide an explanation for the additional time.

5. Within thirty (30) calendar days after the execution of the Contract, the Contractors shall submit, to the Project Construction Manager, a copy of the confirmed delivery date for each required material or product.

6. See below chart for a sample submittal schedule:

	DATA		DRAWINGS		WARRANTY
ITEM/SECTION	RECEIVED	APPROVED	RECEIVED	APPROVED	PERIOD
	DATE	DATE	DATE	DATE	
Bonds and Insurance					
Project Schedule					
Submittal Schedule					
Schedule of Values					
Coordination Schedule					
Other					
Other					
Other					
Other					
Other					
Other					
Preliminary Punch List					
Test Reports					
O & M Manuals					
Other Closeouts					

PART 4 – ADMINISTRATIVE REQUIREMENTS

B. Architect's Digital Data Files: Electronic digital data files of the Contract Drawings will not be provided by Architect for Contractor's use in preparing submittals.

A. Electronic Submittal Requirement: All action and informational submittals shall be submitted as PDF formatted.

1. Use a submittal number assigned by the Architect or Construction Manager.

2. All submittals will be returned to the prime contractors.

3. Internet Service and Equipment Requirements:
   a. Email address and Internet access at Contractor’s main office.
   b. *Adobe Acrobat* (www.adobe.com), or other similar PDF review software for applying electronic stamps and comments.

B. Submittal package: Assemble each submittal and re-submittal individually and appropriately for transmittal and handling.

1. Provide a completed “Submittal Cover” form with each submittal, found in Section 00 62 11, as the first page of every submittal.
   a. Every submittal shall be accompanied by a fully executed copy of the Submittal Cover sheet and set forth the following:
      1) Contract number.

2) Contract for East High School #261 and SED Project Control Number.
3) Contractors' name.
4) Sub-contractor and suppliers name.
5) Submission number and the date for each initial submittal and re-submittal.
6) Shop drawings name and number.
7) Contents.
8) Name of manufacturer.
9) Specification section paragraph number(s) showing product being submitted on.
10) Signature of contractor indicating approval of the submittal with date of approval and all applicable check boxes marked.

C. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.

1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
2. Submit all submittal items required for each Specification Section concurrently unless partial submittals for portions of the Work are indicated on approved submittal schedule.
3. Submit action submittals and informational submittals required by the same Specification Section as separate packages under separate transmittals.
4. Coordinate transmittal of different types of submittals for related parts of the Work so processing will not be delayed because of need to review submittals concurrently for coordination.

    a. Architect reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.

D. Processing Time: Allow time for submittal review, including time for re-submittals, as follows. Time for review shall commence upon Architect's receipt of submittal. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including re-submittals.

1. It is the Contractor's responsibility to provide required submittals complete with enough information to show conformance with the construction documents in a time frame that will not affect the construction schedule. The construction schedule will not be extended due to the Architects' "RETURNED WITHOUT ACTION", "REJECTED" or "REVISE AND RESUBMIT" action on a submittal when the submittal is found to be lacking adequate information showing conformance with the contract documents and/or does not conform to the contract document requirements.
2. The Architect will review a maximum of two submittals for any single item requiring a submission at no cost to the Contractor. Upon request by the

Architect, the Contractor will compensate the Owner, via back charge for all further submissions to the Architect and/or Owner due to submissions that do not provided enough data to prove compliance with the specifications, or that in the opinion of the Architect do not meet the project specifications. Compensation will be computed by the additional hours needed to perform the review and correspondence multiplied by the Architect's normal billing rate.

3. Initial Review: Allow five (5) working days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. Architect will advise Contractor when a submittal being processed must be delayed for coordination.

4. Re-submittal Review: Allow five (5) working days for review of each re-submittal.

E. Options: Identify options requiring selection by Architect.

F. Deviations and Additional Information: On an attached separate sheet, prepared on Contractor's letterhead, record relevant information, requests for data, revisions other than those requested by Architect on previous submittals, and deviations from requirements in the Contract Documents, including minor variations and limitations. Include same identification information as related submittal.

G. Re-submittals: Make re-submittals in same form and number of copies as initial submittal.

1. Note date and content of previous submittal.

2. Note date and content of revision in label or title block and clearly indicate extent of revision.

3. Resubmit submittals until they are marked with approval notation from Architect's action stamp that indicates "NO EXCEPTION TAKEN", or "MAKE CORRECTIONS NOTED".

H. Distribution: Furnish copies of final submittals to manufacturers, subcontractors, suppliers, fabricators, installers, authorities having jurisdiction, and others as necessary for performance of construction activities. Show distribution on transmittal forms.

I. Use for Construction: Retain complete printed copies of all approved action submittals on Project site. Use only final action submittals that are marked with approval notation from Architect's action stamp.

J. Inspection of Documents: Construction progress drawings (as-builts), approved submittals, updated construction schedule.

1.2 EXECUTION SUBMITTAL PROCEDURES

A. General Submittal Procedure Requirements: Prepare and submit submittals required by individual Specification Sections. Types of submittals are indicated in individual Specification Sections.

1. Submit electronic submittals as PDF electronic files.

   a. After their review, the Architect will post the annotated file to the Project's website. The Contractor will then be notified via e-mail that the submittal has been reviewed, and may download the submittal file.
   b. The Contractor is responsible for printing hard copies of electronic submittals for their own use.

2. Certificates and Certifications Submittals: Provide a statement that includes signature of entity responsible for preparing certification. Certificates and certifications shall be signed by an officer or other individual authorized to sign documents on behalf of that entity.

   a. Provide a digital signature with digital certificate on electronically submitted certificates and certifications where indicated.
   b. Provide a notarized statement on original paper copy certificates and certifications where indicated.

B. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.

1. Clearly mark each copy of each submittal in bold marking of contrasting color to show which products and options are applicable.

2. Include the following information, as applicable:

   a. Manufacturer's catalog cuts.
   b. Manufacturer's product specifications.
   c. Color charts.
   d. Statement of compliance with specified referenced standards.
   e. Testing by recognized testing agency.
   f. Application of testing agency labels and seals.
   g. Notation of coordination requirements.
   h. Availability and delivery time information.

3. For equipment, include the following in addition to the above, as applicable:

   a. Wiring diagrams showing factory-installed wiring.
   b. Printed performance curves.
   c. Operational range diagrams.
   d. Clearances required to other construction, if not indicated on accompanying Shop Drawings.

4. Submit Product Data before or concurrent with Samples.

5. Submit Product Data in the following format:

   a. PDF electronic file.

C. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data.

1. Preparation: Fully illustrate requirements in the Contract Documents. Include the following information, as applicable:

   a. Identification of products.
   b. Schedules.
   c. Compliance with specified standards.
   d. Notation of coordination requirements.
   e. Notation of dimensions established by field measurement.
   f. Relationship and attachment to adjoining construction clearly indicated.
   g. Seal and signature of professional engineer if specified.

2. PDF Format Sheet Size: Except for templates, patterns, and similar full-size drawings, submit Shop Drawings on sheets at least 8-1/2 by 11 inches (215 by 280 mm), but no larger than *24 by 36* inches (750 by 1067 mm).

3. Submit Shop Drawings in the following format:

   a. PDF electronic file.

D. Samples: Submit Samples for review of kind, color, pattern, and texture for a check of these characteristics with other elements and for a comparison of these characteristics between submittal and actual component as delivered and installed.

1. Transmit Samples that contain multiple, related components such as accessories together in one submittal package.

   a. Transmit samples via hand delivery, currier, or mail service to the Architect's Office.
   b. Forward a copy of the transmittal to the Construction Manager.

2. Identification: Attach label on unexposed side of Samples that includes the following:

   a. Project name and site name, if Project involves multiple site locations.
   b. Submittal number assigned per submittal schedule.
   c. Generic description of Sample.
   d. Product name and name of manufacturer.
   e. Sample source.
   f. Number and title of applicable Specification Section.
   g. Specification paragraph number and generic name of each item.

3. For projects where electronic submittals are required, also provide corresponding electronic submittal of the completed Submittal Cover, a digital

image file illustrating the Sample's characteristics, and identification information for record.

a. Transmit printed copies of the above along with the physical Sample in the same quantity as required for the Samples.

4. Disposition: Sample sets may be used to determine final acceptance of construction associated with each set.

a. Samples that may be incorporated into the Work are indicated in individual Specification Sections. Such Samples must be in an undamaged condition at time of use.
b. Samples not incorporated into the Work, or otherwise designated as Owner's property, are the property of Contractor.

5. Samples for Initial Selection: Submit manufacturer's color charts consisting of units or sections of units showing the full range of colors, textures, and patterns available.

a. Number of Samples: Submit three (3) full set(s) of available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer's product line. Architect, through Construction Manager, will return one (1) submittal with options selected.

6. Samples for Verification: Submit full-size units or Samples of size indicated, prepared from same material to be used for the Work, cured and finished in manner specified, and physically identical with material or product proposed for use, and that show full range of color and texture variations expected. Samples include, but are not limited to, the following: partial sections of manufactured or fabricated components; small cuts or containers of materials; complete units of repetitively used materials; swatches showing color, texture, and pattern; color range sets; and components used for independent testing and inspection.

a. Number of Samples: Submit minimum Four (4) sets of Samples. Architect and Construction Manager will retain Three (3) Sample sets; remainder will be returned.

1) Submit a single Sample where assembly details, workmanship, fabrication techniques, connections, operation, and other similar characteristics are to be demonstrated.
2) If variation in color, pattern, texture, or other characteristic is inherent in material or product represented by a Sample, submit at least three (3) sets of paired units that show approximate limits of variations.

E. Product Schedule: As required in individual Specification Sections, prepare a written summary indicating types of products required for the Work and their intended location. Include the following information in tabular form:

1. Type of product. Include unique identifier for each product indicated in the Contract Documents or assigned by Contractor if none is indicated.

2. Manufacturer and product name, and model number if applicable.

3. Number and name of room or space.
4. Location within room or space.
5. Submit product schedule in the following format:
   a. PDF electronic file.

F. Contractor's Construction Schedule: Comply with requirements specified in Division 01 Section "Construction Progress Reports."

G. Application for Payment and Schedule of Values: Comply with requirements specified in the General Conditions of the Contract.

H. Test and Inspection Reports and Schedule of Tests and Inspections Submittals: Comply with requirements specified in Division 01 Section "Quality Control."

I. Closeout Submittals and Maintenance Material Submittals: Comply with requirements specified in Division 01 Section "Closeout Procedures."

J. Maintenance Data: Comply with requirements specified in Division 01 Section "Operation and Maintenance Data."

K. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, contact information of architects and owners, and other information specified.

L. Welding Certificates: Prepare written certification that welding procedures and personnel comply with requirements in the Contract Documents. Submit record of Welding Procedure Specification and Procedure Qualification Record on AWS forms. Include names of firms and personnel certified.

M. Installer Certificates: Submit written statements on manufacturer's letterhead certifying that Installer complies with requirements in the Contract Documents and, where required, is authorized by manufacturer for this specific Project.

N. Manufacturer Certificates: Submit written statements on manufacturer's letterhead certifying that manufacturer complies with requirements in the Contract Documents. Include evidence of manufacturing experience where required.

O. Product Certificates: Submit written statements on manufacturer's letterhead certifying that product complies with requirements in the Contract Documents.

P. Material Certificates: Submit written statements on manufacturer's letterhead certifying that material complies with requirements in the Contract Documents.

Q. Material Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements in the Contract Documents.

R. Product Test Reports: Submit written reports indicating that current product produced by manufacturer complies with requirements in the Contract Documents. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.

S. Research Reports: Submit written evidence, from a model code organization acceptable to authorities having jurisdiction, that product complies with building code in effect for Project. Include the following information:

1. Name of evaluation organization.
2. Date of evaluation.
3. Time period when report is in effect.
4. Product and manufacturers' names.
5. Description of product.
6. Test procedures and results.
7. Limitations of use.

T. Preconstruction Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of tests performed before installation of product, for compliance with performance requirements in the Contract Documents.

U. Compatibility Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of compatibility tests performed before installation of product. Include written recommendations for primers and substrate preparation needed for adhesion.

V. Field Test Reports: Submit written reports indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements in the Contract Documents.

W. Design Data: Prepare and submit written and graphic information, including, but not limited to, performance and design criteria, list of applicable codes and regulations, and calculations. Include list of assumptions and other performance and design criteria and a summary of loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Include page numbers.

X. Construction Photographs: Provide photos of progress on a weekly or monthly basis for each phase and area of work. Any areas of conflict will be documented with photos as well as air tests and other monitored activities. All underground and “to be concealed” areas will be documented with photos as required to properly document as build conditions.

Y. Material Safety Data Sheets (MSDS): Contractor shall provide and maintain a hard copy of all MSDS sheets at each Project Site as per OSHA requirements. Do not submit MSDS sheets to the Architect or Construction Manager.

1.3 DELEGATED-DESIGN SERVICES

A. Performance and Design Criteria: Where professional design services or certifications by a design professional are specifically required of Contractor by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated.

1. If criteria indicated are not sufficient to perform services or certification required, submit a written request for additional information to Architect.

B. Delegated-Design Services Certification: In addition to Shop Drawings, Product Data, and other required submittals, submit digitally signed PDF electronic file and three (3) paper copies of certificate, signed and sealed by the responsible design professional, for each product and system specifically assigned to Contractor to be designed or certified by a design professional.

1. Indicate that products and systems comply with performance and design criteria in the Contract Documents. Include list of codes, loads, and other factors used in performing these services.

1.4 CONTRACTOR'S REVIEW

A. Action and Informational Submittals: Review each submittal and check for coordination with other Work of the Contract and for compliance with the Contract Documents. Note corrections and field dimensions. Mark with approval stamp before submitting to Architect.

B. Approval Stamp: Stamp each submittal with a uniform, approval stamp. Include Project name and location, submittal number, Specification Section title and number, name of reviewer, date of Contractor's approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.

1.5 ARCHITECT'S ACTION

A. Action Submittals: Architect will review each submittal, make marks to indicate corrections or revisions required, and return it. Architect will stamp each submittal with an action stamp and will mark stamp appropriately to indicate action, as follows:

1. No Exception Taken – Submittal is approved and released for fabrication and can be incorporated into the work.

2. Make Corrections Noted - Submittal is approved and released for fabrication and can be incorporated into the work with the modifications as noted.

3. Revise & Resubmit – Submittal is not approved and resubmission is required per the Architect’s comments. Such products cannot be purchased nor incorporated into the work.

4. Rejected – Submittal is not approved and submission does not meet requirements of the Project. Resubmit products that conform to the Contract Documents.

B. Informational Submittals: Architect will review each submittal and will not return it, or will return it if it does not comply with requirements. Architect will forward each submittal to appropriate party.

C. Partial submittals prepared for a portion of the Work will be reviewed when use of partial submittals has received prior approval from Architect.

D. Submittals not required by the Contract Documents may be returned by the Architect without action.

E. Submittals that do not follow the protocol that is outlined in the applicable Specification Section, or this Section, of the Project Manual may be returned to the Contractor without action by the Architect.

F. Submittal packages received from sources other than the Contractor, or other than from the Contractor via the Construction Manager, will be discarded by the Architect.

END OF SECTION 01 32 19

SECTION 013226 - CONSTRUCTION PROGRESS REPORTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General Conditions of the Contract for Construction and other Division 00 and 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for documenting the progress of construction during performance of the Work, including the following:
   1. Submittals Schedule.
   2. Daily construction reports.
   3. Field condition reports.

B. Related Sections include the following:
   1. Division 01 Section "Construction Procedures and Control" for submitting and distributing meeting and conference minutes.
   2. Division 01 Section "Submittal Procedures" for submitting schedules and reports.
   3. Division 01 Section "Quality Requirements" for submitting a schedule of tests and inspections.

1.3 SUBMITTALS

A. Submittals Schedule: Refer to “Submittal Procedures” section of Project Manual.

B. Construction Reports: Submit one (1) copy daily. Reports need to be submitted by 9:00 a.m. of the day following the day of the report.

C. Field Condition Reports: Submit two (2) copies at time of discovery of differing conditions.

1.4 QUALITY ASSURANCE

A. Pre-scheduling Conference: Conduct conference at Project site to comply with requirements in Division 01 Section "Construction Procedures and Control."
   1. Review time required for review of submittals and re-submittals.
   2. Review requirements for tests and inspections by independent testing and inspecting agencies.
   3. Review time required for completion and startup procedures.

1.5 COORDINATION

A. Coordinate preparation and processing of schedules and reports with performance of construction activities and with scheduling and reporting of separate contractors.

B. Coordinate Contractor's Construction Schedule with the Schedule of Values, list of subcontracts, Submittals Schedule, progress reports, payment requests, and other required schedules and reports.

1. Secure time commitments for performing critical elements of the Work from parties involved.
2. Coordinate each construction activity in the network with other activities and schedule them in proper sequence.

PART 2 - PRODUCTS

2.1 SUBMITTALS SCHEDULE

A. Preparation: Refer to Division 01 Section “Submittal Procedures”.

2.2 REPORTS

A. Construction Reports: Prepare a daily construction report recording the following information concerning events at Project site:

1. List of subcontractors at Project site.
2. List of separate contractors at Project site.
3. Approximate count of personnel at Project site.
4. Equipment at Project site.
5. Material deliveries.
6. High and low temperatures and general weather conditions.
7. Accidents.
8. Meetings and significant decisions.
9. Unusual events (refer to special reports).
10. Stoppages, delays, shortages, and losses.
11. Meter readings and similar recordings.
12. Emergency procedures.
13. Orders and requests of authorities having jurisdiction.
14. Change Orders received and implemented.
15. Construction Change Directives received and implemented.
16. Services connected and disconnected.
17. Equipment or system tests and startups.
18. Partial Completions and occupancies.
19. Substantial Completions authorized.

B. Field Condition Reports: Immediately on discovery of a difference between field conditions and the Contract Documents, prepare and submit a detailed report. Submit with a request for interpretation. Include a detailed description of the differing conditions, together with recommendations for changing the Contract Documents.

END OF SECTION 01 32 26

SECTION 013500 - ELECTRONIC DOCUMENT TRANSFER

PART 1 - GENERAL

1.1 SCOPE OF WORK

A. Work of this Section shall be performed in accordance with the requirements of the Contract Documents, including but not limited to Instructions to Bidders, Agreement and General Conditions and General Requirements

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for the request and transfer of electronic documents from the Architect/Engineer to the Contractor, Subcontractors and the associated Equipment Vendors.

B. Electronic Documents include, but are not limited to, the following:
   1. Floor Plan drawings.
   2. Detail drawings.
   3. Tables and charts.
   4. Specifications and printed documents.

C. Transfer of documents includes, but is limited to, the following:
   1. Computer disks and CDs.
   2. E-mail attachments.
   3. SEI Design Group's FTP site.

D. All drawings, specifications or other documents of any kind prepared by the Architect/Engineer or its subconsultants, whether in hard copy or any electronic or machine readable format, including Electronic Documents are, and shall remain, instruments of their services. These Instruments of Services were prepared solely for use in connection with this Project. The Architect/Engineer and its subconsultants retain all common law, statutory and other reserved rights, including the copyright.

E. The Electronic Documents are provided as a convenience to the Contractor for informational purposes only in connection with the Contractor's performance of its responsibilities and obligations relating to the Project. The Electronic Documents do not replace or supplement the paper copies of the Drawings and Specifications which are, and remain, the Contract Documents for the Project or the paper copies of any other document prepared by the Architect/Engineer or its subconsultants.

F. If any differences exist between printed Instruments of Services and the Electronic Documents, the information contained in the printed documents shall be presumed to be correct and shall take precedence over the Electronic Documents.

G. Contractor agrees and understands that field conditions may alter or modify the configuration, products, materials, and installation of the information shown on the electronic documents. Contractor shall be fully responsible to verify all field

conditions and if applicable to modify the electronic documents to the actual conditions prior to use of the documents. These documents are provided as a convenience only, and do not change the responsibility of the Contractor as outlined in the Drawings and Specifications.

H. Architect/Engineer will not be responsible for, or required to provide assistance to the Contractor in the plotting or printing of any documents.

1.3 ELECTRONIC DOCUMENT TRANSFER PROCEDURES

A. Coordination: Coordinate transfer requests with performance of construction activities. Transmit each request to the CM and A/E sufficiently in advance of scheduled needs to avoid delay.
   1. Processing: To avoid the need to delay installation as a result of the time required to process document transfers:
      a. Allow 10 working days for the A/E's processing of each request, after receipt of a written request and the required processing fee.
      b. The A/E will not authorize an extension of time because of the Contractor's failure to transmit requests and fees to the A/E sufficiently in advance of the Work to permit processing.

B. Electronic Document Transfer Requests: Contractor shall submit a written request for any transfer consisting of the following:
   1. Signed, completed copy of the attached "Electronic Document Transfer Agreement".
   2. List of drawing numbers and titles requested.
   3. A check in the proper amount for each drawing and or each specification section to cover the cost of processing the request.

END OF SECTION 013500

SECTION 013500 -ELECTRONIC DOCUMENT TRANSFER AGREEMENT

In connection with the Edison Technical & Occupational Education Center – Rochester Joint School Construction Board Phase 2B, for which LaBella Associates, D.P.C. has been retained to provide services, the Rochester Joint School Construction Board has requested that LaBella Associates provide recipient with certain instruments of services prepared by LaBella Associates in electronic machine readable format. These documents, in such format, shall hereinafter be referred to as the "Electronic Documents". In consideration of LaBella Associates agreement to release electronic documents, the recipient agrees as follows:

1. It is understood and agreed that all drawings, specifications, data, or other documents of any kind prepared by LaBella Associates or its Subconsultants, whether in hard copy or any electronic or machine readable format, including electronic documents (collectively "Electronic Documents") are, and shall remain, instruments of their services. These Electronic Documents were prepared solely for use in connection with this project. This agreement is not intended in any way to alter the respective interests of the parties in the instruments of services as set forth in any agreement for services between recipient and LaBella Associates, notwithstanding LaBella Associates' agreement to release the Electronic Documents to recipient.

2. The Electronic Documents are provided as a convenience to the recipient for informational purposes only in connection with the recipient's performance of its responsibilities and obligations relating to the project. The Electronic Documents do not replace or supplement the paper copies of the drawings and specifications which are, and remain, the contract documents for the project or the paper copies of any other document prepared by LaBella Associates or its Subconsultants.

3. The parties agree that the Electronic Documents are not, nor shall they be construed to be a product. It is expressly agreed by the recipient that there are no warranties of any kind in such Electronic Documents or in the media in which they are contained, either expressed or implied.

4. It is further understood and agreed that no Electronic Documents shall be signed or sealed.

5. If any differences exist between printed instruments of services and the Electronic Documents, the information contained in the printed documents shall take precedence over the Electronic Documents.

6. Recipient assumes all liability that results from any interpretation of, or modification or alteration in any way, to the Electronic Documents.

7. ``

8. It is understood by recipient that the media in which any Electronic Documents are transmitted can deteriorate over time and under various conditions. LaBella Associates is not responsible for such deterioration. In addition, any conversion of the format is solely the responsibility of the recipient. Recipient understands that the conversion of paper copies of instruments of services into electronic or machine readable format, or the conversion of Electronic Documents from the machine readable format used by LaBella Associates, to some other format may introduce errors or other inaccuracies and agrees to release LaBella Associates and its Subconsultants from any liability or claims for recovery of damages or expenses arising as the result of such errors or inaccuracies.

9. Where the recipient has received specific permission to use the Electronic Documents in connection with recipient's obligation to prepare certain documents for the project, recipient shall, in addition to the other obligations set forth herein, be obligated to remove LaBella Associates' or the Subconsultant's title block from the copy of the Electronic Documents used by recipient.

10. Recipient further agrees that LaBella Associates' documents were prepared for use in connection with this project only, and that the Electronic Documents are supplied to recipient for the limited purpose stated above only. Recipient agrees not to use, or allow others to use, the Electronic Documents, in whole or in part, for any purpose or project other than as stated above without the expressed prior written permission of LaBella Associates.

11. Recipient agrees to waive any and all claims and liability against LaBella Associates and its Subconsultants resulting in any way from any failure by recipient to comply with the requirements of this agreement for the delivery of documents in electronic format.

12. Recipient further agrees to indemnify and hold harmless LaBella Associates and its Subconsultants and each of their partners, officers, shareholders, directors, and employees from any and all claims, judgments, suits, liabilities, damages, costs, or expenses (including reasonable defense and attorney's fees) arising as the result of either: (1) recipient's failure to comply with any of the requirements of this agreement for the delivery of documents in electronic format; or (2) a defect, error, or omission in the Electronic Documents or the information contained therein, which defect, error, or omission was not contained in the contract documents as defined in Paragraph 2 or where the use of such contract documents would have prevented the claim, judgment, suit, liability, damage, cost, or expense.

13. The **handling fee** for the time and effort it will take LaBella Associates, D.P.C. to deliver the requested Electronic documents is **$200.00** for the first sheet and **$50.00** per sheet thereafter. Under no circumstances shall delivery of the electronic documents be considered a sale by LaBella Associates, D.P.C.

14. The requestor shall provide to LaBella Associates, D.P.C., as an attachment to this form, the requested list of electronic documents to be provided. Also the requestor shall describe the method or media for transfer, i.e.: CD, DVD, e-mail, etc..

_____

Signature, Representative of **Recipient**

Project Safety Standards

for

Rochester Schools Modernization Program

Date: October 22, 2013

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DEFINITIONS: The following definitions shall apply herein.

ANSI (American National Standards Institute): A professional organization chartered to promote and facilitate voluntary consensus standards and conformity assessment systems, and safeguarding their integrity.

Authorized Person: A person approved or assigned by their employer to perform a specific type of duty or duties or at a specific location on the Project.

Competent Person: A person who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them.

National Electrical Code (NEC): The National Electric Code is a set of electrical safety standards that is a subset of the national fire codes set forth by the National Fire Protection Agency. The NEC has been adopted by nearly every area within the United States as a guideline for safe electrical installation.

National Fire Protection Agency (NFPA): A United States organization charged with creating and maintaining minimum standards and requirements for fire prevention and suppression activities, training, and equipment, as well as other life-safety codes and standards. This includes everything from building codes to the personal protective equipment utilized by firefighters while extinguishing a blaze.

OSHA (Occupational Health and Safety Administration): The U.S. federal agency charged with developing and enforcing regulations designed to protect the workforce.

Qualified Person: A person who, by possession of a recognized degree, certificate, or professional standing, or who by extensive knowledge, training, and experience, has successfully demonstrate their ability to solve or resolve problems relating to the work or the Project.

PROJECT INTRODUCTION

EDISON TECHNICAL SCHOOL – SITEWORK AND ROOFING

ADMINISTRATION

Policy Statement

It is the Owner's intention that all contractors commit to maintaining an accident-free workplace. There is never an acceptable reason for compromising safety. Contractors must provide a safe place to work at all times and to conduct all operations in a manner as to provide protection for all individuals who might come into contact with these operations. By law, every contractor is obligated to conform to the requirements of the Federal Occupational Safety and Health Act of 1970 (OSHA) and all additions and revisions thereto, as well as other applicable federal, state and local requirements. In addition, and when not in conflict with the foregoing legal standards, all contractors, must comply with the minimum

safety standards and protocol set forth in this "Project Safety Standards." **All supervisory employees of contractors must accept responsibility for the prevention of accidents and for conducting all operations under their direction in a safe and efficient manner.** The collective goal should be to achieve accident-free work that conforms to all Contract Document requirements. With the cooperation, dedication and assistance of every contractor, this will be a successful and safe Project.

Statement of Final Authority

- All persons who enter the work area for any reason during construction will be required to comply with the minimum standards set forth in this Section in addition to all applicable legal requirements.
- Each contractor must submit a site-specific safety program ("Safety Program") upon award of a Contract, prior to commencing any work. The Safety Program must implement all requirements of OSHA as well as the minimum standards set forth in this Section.
- If the Construction Manager finds areas of work or individuals that are not in noncompliance with OSHA requirements, or any other applicable law or regulations, or the minimum standards set forth herein, the Construction Manager shall have the authority to order immediate correction and cessation of the non-compliant occurrence or condition.
- **Non-compliance, if not immediately corrected, will be grounds for Contractor dismissal and/or denial of access to the Project site**. All costs of correction shall be borne by the non-compliant Contractor.
- Nothing contained herein, however, shall serve to relieve a contractor of its liabilities and/or obligations required by OSHA as well as all other applicable law, or the minimum standards of this Section.

Responsibilities

Construction Manager (CM)

- Audit the Contractor's Safety Program to determine if it conforms to the above requirements, provided that any failure by the Construction Manager to determine non-conformity herewith shall not relieve contractor of its obligations set forth in this Section.
- Provide weekly, written site inspections of the job site, notify the Contractors of any unsafe practices and conditions for which they are responsible, and counsel them on the appropriate corrective actions when necessary. Site inspections shall be reviewed and discussed with the construction team.
- Provide all new Contractors and their subcontractors with a safety orientation before they start working on the Project site. The orientation shall include at least a list of work rules, identification of hazardous areas, and the location of MSDS sheets. This orientation will inform the contractor of hazards specific to the site operations. After the orientation is complete, contractor's employees shall be required to sign a statement and complete an exam in order to confirm that they received and understood the training.
- Identify the location where MSDS sheets provided from the contractors can be found

for the Project.
- Maintain required records and accident prevention materials at the job site so that an adequate history is maintained for the Project.
- Monitor the entrance and exit to and from the job site.
- Review injury and first aid records during the Project to identify injury trends to take positive action to reduce or eliminate such injuries from occurring.
- Examine and become familiar with the job site and adjacent areas from the standpoint of access and facilities regarding safety.
- Evaluate any difficulties that might be encountered in complete execution of the work safely. Make frequent inspections of the site so as to initiate corrective measures to eliminate unsafe practices and conditions.
- Immediately investigate all accidents or near miss accidents and take corrective actions to help prevent reoccurrence.
- Appoint a Project Manager to perform the duties set forth below.

CM's Project Manager

- Direct and administer the Safety Program. All reports, surveys, accident reports and other information relating to safety are to be submitted in a timely manner to the Project Manager.
- Establish a safety organization to assure the involvement of all personnel in the safety effort and to provide for their participation.
- Appoint the Project Superintendent as the CM's representative to monitor safety activities on the site.
- Evaluates contractor's safety performance for compliance with all applicable laws and regulations, as well as with the standards set forth in this Section.

CM's Project Superintendent

- Oversee compliance with the requirements of the Project Safety Standards.
- Plan and require all work to be done in compliance with the Project Safety Standards.
- Perform and document weekly inspections relating to safety.

Contractors

- The name of and résumé for each Contractor's Safety Plan coordinator will be provided to the CM for review prior to starting work on the site.
- Contractors with a staff and crew of 20 or more on site (including subcontractors of all tiers) shall appoint a full time safety representative. Contractors with a staff and crew on site of less than 20 shall anticipate that the safety aspects of this position will encompass substantial time during the work week and may occasionally require fulltime attention. For this reason, serious consideration shall be given to the ability of a superintendent or foreman to simultaneously meet the responsibilities of both positions.
- Each safety coordinator will meet the following criteria:
    - A minimum of an OSHA 30-hour construction hazard recognition certification; be certified as a competent person in the type of work being performed; First Aid and CPR-certified; experienced in the construction industry in the type of work being performed.

  - Each Safety coordinator has the right and authority to stop any and all hazardous work being performed by their employer whenever imminent danger to life and health exists.
  - Conduct regular and frequent inspections for the Contractor's work areas.
  - Take immediate action to eliminate unsafe acts and/or conditions.
  - Ensure that prior to the start of any work activity; every foreman has reviewed each task assignment with every affected employee to assure a comprehensive understanding of the safety requirements and precautions to be taken while performing this work.
  - Ensure that appropriate personal protective equipment is provided and its use enforced.
- Each safety coordinator shall participate in accident and incident investigation involving their work and employees and those of their subcontractors.
- Each safety coordinator shall attend safety meetings as scheduled by the CM.
- Contractor shall instruct each employee on Project site in the recognition and avoidance of unsafe acts and/or conditions applicable to its work environment to control or eliminate injury or illness.
- Contractor is responsible for providing and requiring the use of appropriate personal protective equipment in all operations where there is an exposure to hazardous conditions. All records shall be maintained at a location accessible to the CM.
- Contractor is responsible for notifying the CM of any hazardous chemicals or substances that are brought or cause to have been brought on Project site. Contractor shall provide the CM with a copy of Contractor's Hazardous Communication Program, Chemical information list, and Material Safety Data Sheet(s) (MSDS) for the chemical(s) or substance(s) intended for use on the site. The CM will provide a centrally located place for this information. Contractor is responsible for maintaining a copy of Contractor's Hazard Communication Program, Chemical Information List, and Material Safety Data Sheet(s) on site for Contractor's own reference and employee training. The proper storage, use and disposal of wastes of any hazardous chemicals or substances are the responsibility of Contractor.
- Contractor is responsible for conforming to OSHA and NFPA standards of fire protection and prevention practices. Contractor shall also comply with all fire and safety rules and regulations established on the Project.
- If Contractor fails to correct safety violations, the CM will issue the Contractor written notification, outlining safety violations. Failure of the Contractor to abate may result in the removal of the Contractor from the Project site, and the CM's approved bidders list, or other appropriate measures.
- Compliance with Federal, State, Local Laws and regulations is the contractual obligation of Contractors working on this Project. Conflicts between current laws or contractual requirements shall be resolved by adhering to the more stringent requirement. Any Project requirement of this Section which exceeds the minimum standards established by OSHA, shall be incorporated in Contractor's Safety Program.
- The Contractor shall ensure that its supervisors are aware of their responsibilities, which include:

- Become familiar with the requirements of all accident prevention standards and safety rules pertaining to their job.
- Be responsible for carrying out the procedures required by the Project Safety Standards.
- Ensure that each employee under their supervision has received the initial Project safety orientation provided by the CM.
- Explain to all employees applicable safe practice rules and regulations under their direct supervision.
- Supervise the instruction and training of new employees either personally or through delegated experienced persons until the new employee satisfactorily demonstrates their ability to perform the work in a safe and efficient manner.
- Be responsible for continuous housekeeping in their area and for the use and maintenance of all personal protective devices, equipment, and safeguards.
- Notify their direct supervisor and/or the Contractor's safety representative concerning work areas where they believe protective devices are required. Such safety devices will include, but not be limited to, the following: Machine guards, operational shields, exhaust vent hoods and systems, welding shields, approved personal protective equipment, automatic stops and controls, barricades, railings, etc.
- Report to their own direct supervisor all cases of employees who, in their opinion, are not qualified for the work to which they have been assigned or who engages in unsafe practices.
- Attend and participate in all supervisors' safety meetings.
- Conduct or arrange for weekly "toolbox" safety meetings for all employees under their supervision as required. Minutes of "toolbox" meetings are to be maintained and a copy of each is to be given to the CM before end-of -shift the day given.

- Each Contractor shall complete a "Safety Task Assignment Process" form each day for all work crews, discuss with each work crew on a daily basis or when non-routine tasks occur and provide a copy to the CM at the end of the work day with their daily report.
- Report immediately, all accidents in which personal injury, property damage or a near-hit occurs.
- Should an accident occur involving a Contractor's employee, the Principal/Owner of the Contractor shall attend a "Principals" meeting at the Project location to review the incident. The CM will conduct this meeting.
- Assist in accident investigation and submit a report promptly on required forms. Lessons learned from such investigations shall be incorporated into all future daily activities and plans of the Contractor.
- In the event Contractor utilizes employees whose primary language is not English, the contractor shall provide for appropriate interpretation to assure complete comprehension.
- Periodically analyze work methods in detail for the purpose of job simplification and for the establishment of safe work methods.

- Site safety inspections are to be an ongoing process and documented at least weekly. Contractors should document inspections on the "Site Audit Checklist" or approved Contractor's form and submit to the CM.
- Ensure that all hazards created in an area as a result of work activities are addressed before the crew leaves the area, including breaks or lunch.
- Contractor's supervisors (i.e., Project Manager, superintendents, foremen) will be required to attend a Supervisor Skills Workshop when offered by the CM. The training will consist of 2 (two)- 4 (four) hour sessions and be taught by a designated CM employee.

Employees

- No employee shall be required or knowingly permitted to work in an unsafe environment except for the purpose of making safety corrections and then only after proper precautions have been taken for their protection.
- Each employee is responsible for learning and abiding by those rules and regulations which are applicable to the assigned tasks and for reporting observed or anticipated hazards to their immediate Supervisor. If the hazard is not immediately corrected, the affected employee will report the hazard to the CM.
- All employees shall observe the following rules of conduct:
    - **Courtesy**: Employees shall observe standards of behavior and conduct their work in a manner to avoid offending any Owner employees or visitors. Each individual on this Project must be given the courtesy that would be extended to one's family or best friend.
    - **Personal Protective Equipment**: all persons on the site will wear hard hats, eye protection, gloves and work boots with substantial soles. All other personal protective equipment, including respirators or eye protection, as appropriate to assigned tasks, shall be utilized in the proper manner at all times while there is exposure to the hazards.
    - **Clothing**: Clothing suitable for the weather and your work shall be worn. Torn or loose clothing, cuffs or neckwear, which may be a hazard, are not allowed. Shirts must be worn and have short sleeves. Pants must have legs (no shorts allowed). Clothing shall be maintained in a clean, neat and repaired fashion
    - **Vehicles**: Employees shall park their vehicles in designated areas. There will be no on-site parking provided for this Project. Operation of vehicles on the Project site shall conform to all local traffic laws. The maximum speed limit on the Project site is 10 miles per hour.
    - **Smoking**: Smoking or use of tobacco products in any form is not permitted anywhere on the Project site.
    - **Intoxicants**: Consumption of alcoholic beverages or controlled substances is not allowed on the Project. All workers who are taking physician-prescribed or over-the-counter medication must be fit for work. **All employees are specifically directed to the "Drug Policy" which is a part of this Project Safety Standards.**
    - **Accidents**: All employees must immediately advise their Supervisor of any

injury on the Project or any non-injury accident that involves damage to property or equipment.

- **Personal Conduct**: Practical jokes, horseplay, scuffling, wrestling or fighting is prohibited.
- **Good Housekeeping**: Good housekeeping on the Project is mandatory and every employee must do their part daily to minimize dust and to clean up their work area to keep the Project clean for safety and efficiency. Controls shall be observed which keep dirt from being tracked into areas outside the workspace. Clean-up methods shall follow prescribed techniques to minimize the distribution of dust into the air.
- **Authorized Access**: Employees shall confine their activities to the areas designated as the work site. The employee's Supervisor shall obtain permission from the appropriate Owner representative prior to entry into any areas outside the work site.
- **Fire Protection**: Employees shall adhere to all fire protection regulations, and shall conduct their work in a manner to preserve the fire safety integrity of the building.
- **Entertainment Devices**: No televisions, radios, CD/cassette/digital music players, gaming systems, or other entertainment devices are allowed to be used while work is being performed.
- **Cell Phones**: Cell phones on the Project are only permitted for the furtherance of Project-related business. At no time shall cell phones be used while operating equipment or machinery or while exposed to hazards created by equipment or machinery.

Accident Investigation

- For all injuries or near-hits that risk injury to person or property, the CM is to be notified immediately. Copies of ALL accident reports must be filed with CM immediately.
- Any accident or incident resulting in a lost-time injury, fatality, damage to property or equipment exceeding U.S. $1,000, a serious "near-hit" or the recognition of a potential hazard to health and environment is to be investigated by a committee comprised of the following, as appointed by the CM: CM Project Manager, the CM Project Superintendent, and Contractor's Supervisor, or anyone familiar with the practices involved in the incident who can contribute to its analysis and recommend actions to prevent a reoccurrence.
- The investigation shall begin promptly after the incident. Results of the investigation and recommendations for preventive action shall be documented within five (5) workdays of the incident.
- With the Owner's permission, a brief news release may be posted, for the information of workers, covering fatalities and serious occurrences.
- The occurrences are also to be discussed at the regular or special safety meetings.
- This investigation and report shall be made immediately, but release may await any similar investigation and reports required by governmental regulations.

- The CM shall also review first aid injuries to establish trends and practices that deviate from work standards and shall report and take corrective actions.
- The CM shall provide for the Owner, in the Monthly Progress Report, a safety report covering safety activities for the preceding month. The report shall include:
    - The accident experience, recordable, lost time, first-aid and near-hit incidents for the month.
    - The relationship of the accident experience to the number of people employed using a recognized national standard for recordable injuries and lost time injuries.
    - A review and summary of the safety activities, problem areas, and contemplated action, including fire hazards and environmental hazards.

Discipline - Enforcement

- All contractors shall conform to the requirements of these Project Safety Standards.
- Should an Imminent dangerous condition be discovered, all work in the area of danger will be stopped until corrections are effected.
- Should the CM find contractor areas of work or individuals in non-compliance with OSHA or the Project Safety Standards, the CM shall have the authority to order immediate correction of the non-compliance.
- All costs of correction shall be borne by the contractor(s) deemed responsible.
- Nothing contained herein, however, shall serve to relieve a contractor of its liabilities and/or obligations under OSHA as well as other applicable laws or regulations, or of these Project Safety Standards.
- The CM may withhold payment of any sums due contractors for failure to follow these Project Safety Standards. The CM will issue a written, 24-hour notice in this regard requiring immediate response by the contractor.
- Repeated violations or lack of cooperation with regard to the Project Safety Standards by employees of a contractor will indicate non-compliance with provisions included in the contract and may be reason for the employee being barred from the Project site and/or for termination of the contractor's contract.
- At orientation, new employees are given their first warning: If an employee fails to follow the rules, the CM may issue a notice of violation.
- **1st Notice of Violation**: Notice is sent to employer. Employee must come in and see the CM to review violation so there is an assurance the employee knows how serious this citation is and what corrective action must be taken.
- **2nd Notice of Violation**: The individual will be removed from the property and banned from further access to the site.
- **"Immediate removal from the property" Violations** will result when:
    - Any employee, supervisor or manager exposes themselves or other employees to imminent loss of life or substantial and unjustified risk of bodily harm.
    - Any employee, supervisor or manager openly exhibits disregard, defiance or disrespect for the requirements of these Project Safety Standards.

- Any employee, supervisor or manager knowingly falsifies any investigative document or testimony involved in an investigation.
- Violent physical encounters (fighting) occur. All individuals involved in the incident are subject to removal.
- Threats are made against any personnel performing their duties.
- Theft or destruction of property occurs.
- Any employee, supervisor or manager consumes, possesses, distributes or is under the influence of alcohol/drugs. Reference is made to the "Drug Policy," herein below.
- Other Citations: Violations of safety, traffic, housekeeping or material storage rules

Hazard Analysis

- Prior to beginning work, each contractor shall prepare a hazard analysis that defines the activities to be performed and identifies the sequence of the work, the specific hazards, and the methods to be used to eliminate or minimize each hazard.
- The hazard analysis shall be submitted prior to, and will be reviewed during the pre-construction meeting by the CM, and the contractor's supervisors and safety representative. The hazard analysis shall be written in a form acceptable to the CM.
- Hazard Analysis shall be done when the scope of the work or conditions change.
- Each contractor's Foreman will inform his/her work crew of the Hazard Analysis for their work activity each day prior to start of work or when conditions change.
- Each contractor shall submit for review by the CM a site specific safety program which addresses all the elements of this safety plan as they will be implemented by the contractor, its contractors, vendors and suppliers.
- The Hazard Analysis will be included as an appendix to the contractor's site-specific Safety Program.

Inspection and Auditing

Purpose and Scope

- To establish a basic inspection/audit program for the elimination of unsafe practices by employees and to establish a hazard free work environment for all employees on the Project.

Objectives

- To reaffirm the Contractor's basic responsibility for the actions of the employees as originally assigned under OSHA.
- The exercise of these responsibilities by all contractors will be the effective deterrent to accidents arising from unsafe practices and physical conditions, which will materially enhance the construction efficiency of this Project.

Procedures

- Control will be achieved only when each trade contractor fulfills their contractual and statutory responsibilities and applies all practical steps to maintain safe and healthful work practices and conditions.

Project Controls

- Continued monitoring/audit of the performance of the Contractor and their supervision under this Section will be made by both the CM and the Contractors' supervisory staff.
- Contractors will be notified of any unsafe practices observed.
- The Contractor's safety supervisor, the Project Safety representative and the Construction Manager's field staff shall utilize a nationally recognized inspection form.

Supervisory Control

Contractor

Contractor will be responsible for conducting continuous daily surveys of their operations to insure they are aware of the probable sources of potential injury or loss due to unsafe acts of procedures.

Planning

Contractors must extensively plan the procedures to be followed for each operation using Hazard Analysis procedures and submit such plans to the CM. Personnel chosen to perform any such planned operation shall be thoroughly briefed in all aspects of the procedure, including emergency actions to be taken in the event of a mishap.

Inspections

In addition to inspections conducted by the CM, Insurance Representatives, and each Contractor, construction activities are subject to periodic inspection by OSHA Compliance Officers.

Each Contractor is required to notify the CM in writing prior to starting work if they, by their Company policy, they will require a warrant for OSHA to inspect their work. The CM does not require a warrant.

Contractors shall forward copies of any and all inspection reports and/or citations received by the Contractor from OSHA to the CM. All information will remain confidential.

In the event that an OSHA Compliance Officer visits the site, he/she will be directed to the CM office. The appropriate Contractors will then be notified so that an Opening Conference may be conducted. The CM will organize an inspection party, consisting of both employer and employee representatives.

Notification of Hazards

Each Contractor shall notify the CM verbally or in writing of the existence of any hazardous conditions, property, or equipment at the work site, which are not under the Contractor's control. However, it is the Contractor's responsibility to

take all necessary precautions against injury until corrected by the responsible party.

Equipment and Facilities
All Contractors operating equipment and facilities used shall be inspected, and maintained as directed by this manual; as dictated by the applicable Federal and State safety and health regulations. In the event of conflict, the more stringent requirement will take precedence.

Meetings

Meeting - Pre-construction

- The Contractor, before starting work at the Project site, shall attend a pre-construction meeting with the CM to understand the Project conditions and safety requirements.
- A Project site tour shall be made to confirm the Contractor's awareness of potential safety hazards.
- Contractor, to assure a safe work place, shall provide appropriate methods, equipment, devices and material.
- Contractor shall provide or develop its own Project specific Safety Program and submit it to the CM for review prior to starting work at the Project site.
- Such review shall not relieve Contractor of responsibility for safety, nor shall such reviews be construed as limiting in any manner the CM's authority to enforce the provisions of this Section.
- It is the Contractor's obligation to undertake any action as may be required to establish and maintain safe working conditions at the Project site.

Meetings - During Construction

- A Project start safety conference will be held with the superintendent(s), safety coordinator and Foremen of each new Contractor prior to coming on the site.
- The CM will issue the Project start package information and will issue special instructions to the Contractors in support of the Project Safety Standards when needed.
- The CM will conduct regularly scheduled meetings with the Supervisors of new Contractors coming on the site and explain safety goals, contents of this manual and otherwise provide site orientation, safety activities and information. All Supervisors will be required to attend this orientation after coming on the site.
- Contractor meetings will be held as necessary and as directed by the CM. All Contractors actually working on the Project will have a representative at the safety meeting to maintain all safety requirements for their trade.
- The CM will conduct safety Meetings on a regularly scheduled basis. Minutes of the meeting will be a topic of all scheduling and progress meetings.
- All Contractors are required to hold weekly 10-15 minutes **"Tool Box" safety meetings** for all employees. Topics related to work assigned, and current safety

problems will be discussed. Monthly meetings for supervisory and clerical employees will be held. The CM will monitor these "Tool Box" meetings through personal attendance or by reviewing a copy of the meeting report.

- Prior to starting any major operation, which would involve locking/tagging procedures, a meeting must be set up involving the CM, and every Contractor Superintendent and every Contractor Safety representative affected by the work.
- Specific procedures must be adopted and reviewed by all concerned with the operation prior to commencement of the work.
- Daily, or more often if the craft crews' task should change, a documented meeting shall be held between the crew foreperson or superintendent and the crew to discuss the assigned task referred to as a **Safety Task Assignment (STA) or Task Hazard Analysis (THA)**. The agenda for this meeting shall include a description of the assigned task, the hazards posed for the crew and the Project by virtue of performing the task, the control measures to be implemented to mitigate the hazards, required personal protective equipment, tools and equipment, environmental and logistical considerations, individual crew member assignments, and fitness for duty of the crew members. See the Appendices for a sample form to document the STA/THA meeting.

OSHA/State

OSHA Required Training

- Instruction and training of employees is a requirement of OSHA and will be enforced on this Project.
- Training of contractor personnel is the responsibility of the contractor.
- All Contractor personnel must attend the CM 's "New Employee Orientation" prior to their starting work on their first day on the Project.

OSHA - Inspection

- It is the CM's policy to allow OSHA to conduct an inspection of the Project (subject to review by the CM, if necessary). If a contractor wishes to assert their rights under the U.S. Constitution regarding inspection by OSHA, then it must so notify OSHA prior to the start of any such inspection.
- The CM will accompany the OSHA inspection party at all times and will make arrangements for the necessary meetings between OSHA, contractors and organized labor representatives (if any). The CM does not assume liability or responsibility for the presence of any alleged hazards or their correction.
- Contractors will inform the CM of the issuance of any OSHA citations and provide a copy when requested.

Project - Code of Safe Practices

Each individual working on this Project will be required to attend a safety orientation meeting at the start of their assignment. At the conclusion of the meeting, each will be required to

sign a Code of Safe Practices as follows, indicating their agreement to follow that Code while on the Project. This does not relieve the trade contractor of any responsibility to properly orient and train their employees for the specifics of their work.

Project Name:

_____

Employee Name: _____

Company: _____

I agree to abide by the following Code of Safe Practices while on this Project:

1. To assist the Project in being incident and injury free, I have granted permission to the Construction Manager to discuss all aspects of working safely with me. Likewise, I have the right to discuss safety issues with the Construction Manager, other trades (regardless of trade jurisdiction or craft) and to stop work at any time I feel there is an unsafe condition to me or to others.
2. I understand there are requirements for this Project in excess of OSHA as set forth in the Project Safety Standards. I will abide by those "above-OSHA" requirements of the Project Safety Standards.
3. I will work in a safe manner, protecting others, and myself and will report observed hazards to my supervisor. If not addressed, I will further report these hazards to the Construction Manager's Superintendent.
4. I will dress appropriately for the Project, wearing a long or short-sleeved shirt, long pants, and work boots with ankle protection and substantial soles.
5. I will use personal protective equipment as required by my trade, and will wear my hard hat and safety glasses at all times.
6. I will abide by the six-foot fall protection rules, including the use of a harness where required.
7. I will park only in designated areas & observe a ten mile per hour speed limit on site.
8. I understand that there is a policy prohibiting the use of tobacco products in any form on the Project site.
9. I will eat only in designated areas and dispose of trash in proper containers.
10. I will not use any intoxicants or other controlled substances on the Project.
11. I will report all injuries and accidents involving persons or property.
12. I will not bring any weapons, including knives with blades over 4 inches, onto the site.
13. I will conduct myself in a professional manner and not engage in any violence, horseplay, practical jokes, or other behavior obnoxious to the general public. I will not harass anyone else on site or any member of the public, sexually or otherwise. I will not bring, write or draw any sexually explicit materials on site.
14. I will not use headset-type radios, music players, personal televisions, or other personal entertainment devices on site.
15. I will not use my cell phone in work areas, around heavy equipment, or while engaged in work activities. If I must use a cell phone, I will do so in safe areas, and only to conduct jobsite business, or for a personal emergency.
16. I will comply with the security procedures established throughout the Project, for entrance to the site.

Signed _____

Project Safety Rules

- All personnel on this Project, including the employees of Contractor, will be required to comply with these rules. Contractor shall ensure and indicate that all its employees have read these rules and understood its contents. The employee must sign a declaration, which shall then be retained by Contractor with the employee's personnel file. In addition, Contractor shall comply with the following:
- Long or short sleeve shirts shall be worn at all times. All shirts shall be tucked in trousers at all times. All shirts shall be hemmed at neck, sleeve and tail. "Muscle Shirts" are prohibited.
- Long pants are required. "Shorts" are prohibited.
- A well-constructed boot/shoe that provides ankle protection with a substantial, flexible sole shall be worn. Exposure to hazard dictates whether or not a protective toe guard will be required. Sandals, tennis shoes, or any other street type shoes (even if equipped with ANSI toe protection), will not be permitted.
- Loose fitting clothes or dangling jewelry shall not be worn around moving machinery, grinding operations, welding, or other hazardous operations.
- Hair, which could come in contact with, or be caught in machinery, shall be protected by a hardhat or hair net, as appropriate.
- Approved hard hats meeting specifications contained in the most current addition of the American National Standards Institute (ANSI), Z89.1 and/or Z89.2 are required. "Cowboy-type" hard hats are not allowed. Baseball caps and other soft headwear are not allowed under the Hard Hat suspension.
- All contractors' means of ingress and egress shall be adequately marked and kept clear of stored material, debris and equipment.
- No firearms are allowed on the Project site.
- Practical jokes, horseplay, scuffling, wrestling and/or fighting are prohibited and may be grounds for immediate dismissal.
- Reflective vests or clothing shall be worn by all personnel exposed to equipment during the site work and excavation phases of the Project or when deemed necessary by the CM.
- Stilts may only be used where allowed by local regulation and then only where the floor is clean and free of debris and obstructions, there are no uncovered floor holes, where there are no pipe- stub-ups and all guardrails are raised to provide adequate fall protection.
- Drinking and/or possession of intoxicants on The Owner's property is forbidden. The use of narcotics, unless authorized by a physician, and notification provided to the Project Manager/Superintendent is forbidden. Violation(s) of the above will result in immediate dismissal.

Protection of the Public

Access to the Site

- No work shall be performed in any area occupied by the public unless specifically reviewed and permitted by the CM. In that the Project interfaces with the public, precautions to be taken include, but are not limited to:
    - Each Contractor shall take such necessary action as is needed to protect and maintain public use of sidewalks, entrances to buildings, lobbies, corridors, aisles, doors, exits and vehicular roadways. The Contractor shall protect the public with appropriate sidewalk sheds, canopies, catch platforms, fences, guardrails, barricades, shields, and adequate visibility as required by laws and regulations of governing authorities.
    - Such protection shall guard against flying materials, falling or moving materials and equipment, hot or poisonous materials, flammable or toxic liquids and gases, open flames, energized electric circuits or other harmful exposures.
    - Guardrails shall be made of rigid materials complying with the requirements for standard guardrails as defined by OSHA and the Project Safety Standards.
    - Temporary sidewalks, ramps or stairs shall be provided with guardrails on both sides whenever permanent sidewalks, ramps or stairs are obstructed by the work.
    - The CM may authorize barricades, secured against accidental displacement, meeting the requirements of local authorities, where fences, sheds, walkways and/or guardrails are impractical. During the period when any barricade, fence, shed, walkway, or guardrail is removed for the purpose of work, a watchman shall be placed at all openings.
    - Appropriate warnings, signs and instructional safety signs shall be conspicuously posted where necessary.
    - A signalman shall control the moving of motorized equipment in areas where the public might be endangered.
    - Warning lights, including lantern, torches, flares and electric lights, meeting the requirements of governing authorities shall be provided and maintained from dusk to sunrise along guardrails, barricades, temporary sidewalks and at every obstruction to the public.
    - These warning signs and lights shall be placed at both ends of such protection or obstruction and not over 20 feet apart alongside of such protection or obstructions.
- With respect to operations being performed on public roadways, all New York State or U.S. Department of Transportation (DOT) and municipal requirements doe public safety will be strictly observed.
- Access to the site is limited to the entrance designated for construction traffic as indicated on the site plans issued with the construction documents.
- At no time is Contractor personnel or vehicles to obstruct traffic on public streets or Owner entry driveways.

- All material deliveries shall be scheduled in advance with the Project Superintendent and shall be completed within the time segment allocated for the specific delivery.
- The above shall be implemented only where allowed by the governing authority. Where the owner of the property specifically prohibits such protective devices, rules and regulations of the governing authority shall apply.

Authorized Visitors

- All visitors to the site are required to register with the CM upon arrival. Each Contractor will be expected to regulate their visitors accordingly.
- All visitor passes expire upon departure from the site and are to be surrendered to the gate security guard.

Parking

- Parking shall be in designated areas only.
- All vehicles delivering materials to the Project shall be authorized to do so by the CM.
- Unauthorized vehicles may be removed at the direction of the CM and all towing charges will be the responsibility of the vehicle Owner.
- Fire hydrants and all designated fire lanes shall remain clear at all times for the use of emergency vehicles.

Employee Identification

- Where required, all Project site employees will be issued an identification badge and hardhat sticker upon completion of their initial safety orientation and after having passed their alcohol and drug test.
- All persons without a hardhat identification sticker shall report to the CM s office for verification of employment status, attendance at an orientation session, or issuance of a single day visitor pass.
- This identification badge will remain the property of the CM and the Owner. The identification badge shall be maintained in good condition and on the person to whom it is issued.
- The identification badge shall be returned to the CM or the Owner when employment on the Project is terminated or when requested by the CM, or other authorized and designated person.
- All lost or stolen identification cards shall be immediately reported to the CM or the Owner.

Tours

- It is of the utmost importance that a high degree of protection be afforded all persons touring the Project site.
- The following guidelines shall be complied with by personnel who are responsible for the organization, direction and safe conduct of the tours:
- All group tours will be cleared through the Owner's representative and the CM, allowing for maximum notice.
- All tours will be coordinated by the CM to accommodate the Project schedule, to make necessary preparations, and to assure safety precautions are observed.
- The CM will review the following items with the person requesting the tour:

Number of visitors

Individual tour groups in non-hazardous areas should be limited to no more than 10 persons per tour guide (i.e,. a tour group of 20 will require at least two tour guides).

Clothing

Tour groups will be required to wear appropriate clothing (i.e., slack and low-heeled, solid-soled shoes).

Children

Children under the age of 12 will not be permitted to accompany tours. An adult must accompany each child age 12 to 15, although the CM at its discretion may prohibit access to minors. No one under the age of 18 years shall be permitted to work on the Project.

Personal Protective equipment

Hard hats, boots, raincoats, eye protection, etc., will be supplied as required.

Release and Hold Harmless

Each visitor will be required to sign this form prior to the start of the tour. In the case of children, an adult must sign for them, preferably a parent.

Immediately prior to entering the Project site, all visitors shall be briefed about the need for careful and orderly conduct, including mention of any special hazards, which may be encountered.

Technical and official visitor tours will be conducted in accordance with the above safety precautions. Since technical tours are often conducted through areas of more hazardous work, it is recommended that the number of people on such tours be proportionate to the degree of hazard involved.

Substance Abuse Policy – Minimum

Purpose

The owner and the CM have a commitment to protect people and property and to provide a safe working environment. The purpose of this policy is to establish a drug-free work environment for each worker.

Policy

- The use possession, distribution, or sale on the Project site, facilities, or work places of any of the following is strictly prohibited: alcoholic beverages, intoxicants, non-prescription drugs, and related drug paraphernalia.
- Workers must not report for duty or perform work while under the influence of any alcoholic beverage, intoxicant, illegal or non-prescription drugs, or any other substance which may impair a worker's physical or mental abilities.
- Workers on the Project site will be subject to search as provided herein. Applicants and workers will be required to consent to drug testing as provided herein.
- This policy will apply where state law or regulation and/ or collective bargaining agreements allow.

Definitions

The following definitions shall apply to terms used in this "Substance Abuse Policy – Minimum

Accident - Any event resulting in injury to a person or property to which a worker contributed as a direct or indirect cause.

Alcohol - Ethyl (Ethanol). References to use or possession of alcohol include the use of any beverage, mixture, or preparation containing alcohol.

Applicant - Any individual who is referred or makes application for employment on the Project site.

Contraband - Substances including but not limited to the following: drugs, alcohol, and drug paraphernalia.

Controlling Employer - Any individual or firm that provides Workers to perform work on the Project site and is responsible for their hiring, advancement, payment, discipline, and termination.

Drug - Any substance (other than alcohol) including prescription drugs which may impair mental or motor function; including, but not limited to, any psychoactive substance, controlled substance, marijuana, or designer or simulated drugs. This definition does not apply to prescription drugs that have been disclosed to the CM and the Controlling Employer by the worker and are approved for use within prescription limits.

Drug Paraphernalia - Any article intended for the use, storage, or sale of illegal drugs.

Employee - Any individual, salaried or hourly, who actually performs work for a Controlling Employer on the Project site.

Incident - Any event that the CM determines has the attributes of an accident, except that no harm was caused to personnel or property.

Project Site - All part of any office, work site, or other Project location, including parking lots under the control of the Owner and/or the CM.

Testing Facilities - A laboratory where a specimen can be tested for drugs and alcohol within threshold limits according to standards established by the U.S. Department of Transportation (DOT) and is certified by the U.S. Department of Health and Human Services (HHS) under the National Laboratory Certification Program (NLCP) or in the case of a foreign laboratory is approved for participation by the U.S. DOT with respect to Part 40.

Tobacco Products - Any article containing tobacco, including but not limited to cigars, cigarettes, pipe tobacco, snuff, and chewing tobacco.

Worker(s) – Any individual, salaried or hourly, of any employer who will be performing work on the Project site.

Drug Detection Thresholds

Drug Detection Thresholds will be in accordance with U.S. DOT.

- All confirmatory drug testing shall be done in NLCP-certified facility

Prescription Drugs

- Any worker using a prescription drug, which may impair mental or motor function,

shall, as soon as possible, notify their employer who is to notify the CM and/or the Controlling Employer.
- For the safety of all workers, the CM may direct the Controlling Employer to not permit the worker on the Project site until released as fit for duty by the prescribing physician.
- The CM reserves the right to obtain a confirming medical opinion before allowing the worker to return to duty.

Worker Pre-Assignment Testing (per applicable laws and Project Labor Agreement)

- All workers, salaried or hourly, who are hired, transferred or temporarily assigned to the Project site shall be required to consent to drug testing in accordance with applicable laws prior to assuming Project responsibilities.
- Controlling Employers shall certify to the CM in writing on company letterhead signed by an officer of the employer that their current workers have passed a drug test ***immediately prior*** to assignment to working on the Project site.

Post- Accident Testing (per applicable laws and PLA)

- After an accident or incident, the CM will ask the Controlling Employer to test all those involved.

Reasonable Suspicion Testing (per applicable laws and PLA)

- The CM will also ask the Controlling Employer to test workers when a reasonable suspicion exists that the worker has been using drugs or alcohol.
- The maximum level of alcohol blood content shall not exceed 0.08 g/100 ml blood or equivalent.

Random Testing (per applicable laws and PLA)

- Urine and/or blood drug screening analysis of workers and others on the Project site may be conducted on a random basis at periodic, unannounced intervals during the construction of the Project, in accordance with applicable laws and applicable PLA's.
- A minimum of 12% of active employees on site will be selected, at random, for drug screening, or as required per Regional Substance Abuse Program Consortium or PLA's. Controlling Employers must certify negative test results to the CM; otherwise worker shall not be permitted to return to the Project site.

Discipline and Rehabilitation

- Unless a Project-specific Substance Abuse Policy by the CM or Owner is in effect, each Controlling Employer shall certify that they have a Substance Abuse Policy which incorporates as a minimum the following requirements:
    - When an applicant submits to pre-assignment testing and passes the required test, s/he will be eligible for further employment consideration.
    - If the applicant fails the required test, s/he may reapply for employment consideration after a period of no less than sixty (60) calendar days have elapsed. The CM may waive this sixty-day waiting period if the applicant completes an acceptable drug/alcohol rehabilitation program and presents

acceptable proof of completion of the program to the CM. An applicant who fails the second test will not be considered for employment at the Project site for a period of no less than one year.

- All workers who refuse to submit to a drug and alcohol test, or who fail to pass a drug and alcohol test will be removed from the Project site by the Controlling Employer and will be referred to their personnel management for disciplinary action.
- A worker on the Project site, facility, or work place in possession of contraband is subject to disciplinary action, up to and including barring from the site by the CM and immediate termination by the Controlling Employer. Contractors and/or workers who are in possession of contraband are subject to removal and denial of future access to the Project site.

Financial Obligation of the Controlling Employer

- The Controlling Employer will bear the cost of time, transportation, and testing for workers who are being given drug and alcohol tests.

Confidentiality

- The CM will take steps to maintain the confidentiality of information generated by the implementation and enforcement of this policy and these procedures.
- Disclosure will be made only in appropriate circumstances. The Controlling Employer shall be responsible for maintaining the confidentiality of all information generated by the implementation and enforcement of this policy and these procedures for their own workers.
- The CM shall have the right to audit compliance with this policy and these procedures by the Controlling Employer, which shall include access to this confidential information.

Training

- Supervisors and management personnel will be trained to recognize appropriate symptoms and to administer the policy in a consistent, confidential, and intelligent manner.

Contractors and Suppliers

- The CM and all Controlling employers will include the provisions of this policy and these procedures, in their contracts with subcontractors, suppliers, consultants, agents, and others involved in providing goods or services on the Project site, and will require that they do the same with respect to their lower-tier contractors, suppliers, etc.

Posting and Distribution

- Significant sections of this policy and these procedures will be given to each applicant and worker upon request.
- A warning notice will be posted in a conspicuous location on the Project site.
- This Substance Abuse Policy will be included in each pre-bid and pre-construction meeting as well as an integral part of the Project Safety Standards and contract documents.

- The CM may revise and amend this policy and these procedures as required.

Procedures for Examination Post-Accident Screening When Required By the CM

- A Controlling Employer supervisor is to accompany an injured employee or those employees involved in the accident or incident involving a worker to the clinic or medical facility.
- Controlling Employers shall certify any worker(s) involved in an accident or incident tested negative for drugs and alcohol prior to allowing them to return to the Project site.
- If the injured worker refuses to give a specimen of body fluid, the Controlling contractor supervisor is to notify the CM. The worker is to be advised, again, that the refusal to submit to drug screening is a violation of the Project Safety Standards, and that refusal will result in removal from the site.
- Results of all drug screenings and analyses must remain strictly confidential.
- Workers must report all injuries immediately to their supervisor, whether the injury requires medical treatment or first aid only.

Random Testing Policy

- Drug screening analysis of workers and others on the Project site may be conducted on a random basis at periodic, unannounced intervals during the construction of the Project, in accordance with applicable laws and PLA's.
- Controlling Employers shall advise their employee immediately prior to selection for random testing and shall ensure workers submit to drug screening as soon as possible, and no longer than 1 hour from being notified.
- Controlling Employers must certify negative test results to the CM; otherwise, the worker shall not be permitted to return to the Project site.

Third Party Inspections

- In addition to visits and safety inspections by its own corporate or insurance representatives, Contractor is advised that authorized third parties may inspect the Project from time to time. Among others so authorized are Owner's Representatives, insurance companies and OSHA.
- Upon their proper identification and clearance through security, they are entitled to access and courteous consideration.
- The CM must be made aware of their presence upon arrival, and in any case as soon as possible, of the purpose and results of such visits which relate to safety.

Tool Box Training

- Instruction and training of employees is an OSHA requirement and, as such, will be required on this Project. Examples of such required training to be provided by Contractor are:
    - Newly employed, promoted and/or transferred personnel shall be verbally instructed in the safety practices required by their work assignments.

- All work assignments must include specific attention to safety. "Follow-up" monitoring is required in order to prevent accidents.
- OSHA requires that employees performing specific non-routine tasks or operating specific equipment be trained in its usage.
- Training of contractor personnel is the responsibility of the contractor.
- Conduct Tool Box safety meetings for all employees at least once a week.
- Maintain an attendance record by having employees sign the reverse side of the Toolbox Safety Meeting Report, or equivalent form.
- Complete the Report and submit it to the CM Office within 24 hours after each meeting.
- File all toolbox meeting reports and summaries so that they are available for review at any time during Project operations or for a period of five years following termination of the Project.
- It is the responsibility of Contractor to explain the hazards involved in an assignment to all employees, either individually or in a group before they actually begin an assigned task. This task may only require a few words, but in many cases it will require the actual demonstration of how the Project can be done safely and the pointing out of the hazards that may be or will be encountered in any task.

Environmental

Environmental - Asbestos

- OSHA regulations have been promulgated to protect workers from exposure to airborne asbestos fibers.
- Under the Asbestos Control and Licensing Act, a contractor must be licensed by the Department of Labor and the state in which the work is being performed in order to remove asbestos.

Notification

- Before starting asbestos removal work, the United States Environmental Protection Agency (EPA) and the Local Department of Environmental Management must be notified in writing by the contractor and appropriate permits must be on file. The CM and/or its agent will verify this information by way of contract requirements.

Training

- Employees of the contractor must be appropriately trained and licensed prior to the removal of any asbestos contaminated material.
- Any contractor's employees who may be exposed to Asbestos must be trained in the recognition of hazards and appropriate controls.

Posting

- The asbestos material removal area shall be cordoned-off to discourage entry.
- Appropriately worded caution signs must be posted at all approaches to the area at such interval to allow individuals to take any necessary protective steps before entering the removal area.

Asbestos Handling

- The encapsulation, removal and/or disposal of ACM shall be performed by a Contractor licensed to do such work in which the work is being performed and in accordance with all applicable laws and regulations and per approved abatement plans.

Work Practices

- Asbestos containing materials shall be worked in a wet state sufficient to prevent the emission of airborne fibers in excess of the permissible exposure limits.
- Work areas are to be adequately protected, through appropriate type enclosures, so as to ensure that no asbestos contaminated material will be permitted to leave the controlled area.

Personal Protective Equipment

- In instances where re-usable clothing is used, the following precautions must be followed:
  - Contaminated clothes must be appropriately bagged and labeled. Notification and transportation to authorized laundries and haulers.
  - All employees working in asbestos removal areas shall wear appropriate personal protective equipment.

Cleanup

- There shall be no dry sweeping of asbestos material. Use floor coverings to prevent debris from falling to lower floors and to speed up house-keeping.

Labeling and Waste Disposal

- Appropriately worded labels must be affixed to all materials, waste, debris, etc., containing asbestos friable materials. Asbestos waste and/or asbestos contaminated material must be collected and discarded in sealed, labeled, impervious containers by contractor.
- The following label content is acceptable to both the EPA and OSHA:

CAUTION
CONTAINS ASBESTOS FIBERS
AVOID CREATING DUST
BREATHING ASBESTOS DUST MAY
CAUSE SERIOUS BODILY HARM

- The CM shall be provided with copies of all air monitoring reports and certified disposal receipts prior to final payment.

Environmental - Lead

Lead Painted Components

- Lead based paint can possibly be identified on numerous surfaces throughout these facilities. In keeping with the requirements of the OSHA's Lead Exposure in the Construction Industry Standard (29 CFR 1926.62) (OSHA Standdard), every painted surface shall be considered a potential lead hazard.
- A potential source of lead emission is the disturbing of painted surfaces of structures and components within these facilities. Typical activities that would significantly disturb a painted surface include the following:

- Removal of all or part of the paint by hand or power tools
- Removal of all or part of the paint by blast cleaning
- Removal of all or part of the paint by other means such as the use of chemical strippers or a heat gun
- Structural work to the surface such as welding, burning, cutting, or drilling
- Manual demolition of buildings, portions of buildings, or the building components.

- The primary consideration when specifying work methods shall be the requirement to protect workers from exposure to lead above the Permissible Exposure Limit (PEL). Further considerations when specifying work methods shall be the effort to reduce the release of lead into the air, water and soil, and to reduce to a minimum the generation of debris.
- At all times when activities which disturb paint are in process, the Competent Person for lead shall have unrestricted access to the work area for inspection, and shall have the authority to stop work when the control measures being utilized are not as specified in this section or the OSHA Standard, if the control measures are not adequately controlling exposures or if other hazards are identified which require work to be stopped.
- All air monitoring conducted by a Competent Person for lead or other qualified representative shall be performed in accordance with the OSHA Standard.
- Detailed and accurate records of all monitoring and other relevant data used in conducting employee exposure assessments shall be kept and maintained in accordance with the OSHA Standard.
- Signs shall be posted in each work area where work on painted surfaces disturbs the paint in such a way so as to expose personnel to lead contaminated dust, debris, or lead fumes. At minimum they shall read:

WARNING
LEAD WORK AREA
POISON
NO SMOKING OR EATING

- All worker protection requirements will, at minimum, meet the current OSHA Standard. These requirements include but are not limited to:
  - Signage, Barriers & Access
  - Exposure Monitoring
  - Respiratory Protection
  - Medical Surveillance & Records
  - Education & Training
  - Decontamination & Clearance
- All work involving lead removal or re-coating shall be conducted in a manner that minimizes the release of lead and lead containing materials into the air, water, and soil.

- All lead containing hazardous wastes that are generated shall be contained, collected, segregated, labeled and held at a location
- Designated or approved by the Owner or the CM pending the appropriate disposition.
- Contractor shall provide for proper disposal of waste, including EPA identification number, notification, certification, manifest, etc.
- All waste containers must be leak proof and capable of being securely covered.
- **All waste containers shall be clearly labeled with weather resistant labels using indelible ink to identify the type of waste they contain.**

Environmental - On-site Hazards

- Material that is designated as a hazardous substance requires special attention by the Contractor and workers to minimize the exposure.
- A plan addressing the proper handling, storage and disposal of hazardous material must be developed.
- The CM and the Owner must be immediately notified of any hazardous material leak or spill.
- Any Contractor-caused oil spills must be reported immediately to the CM.

Environmental - Silica

- Contractors shall submit their silica protection program for review by the CM prior to the pre-construction conference.
- As a minimum the contractor's silica protection program shall comply with OSHA regulations and shall address the following items:
    - Statement of the contractor's commitment to prevent silicosis and to comply with OSHA's standards.
    - Description of air monitoring to determine the silica levels generated by tasks to provide a basis for:
        - Selecting engineering controls,
        - Selecting respiratory protection,
        - Selecting work practices to reduce dust, and
        - Determining if a medical surveillance program is necessary.
    - Description of engineering controls which are proposed for the Project to eliminate or reduce the amount of silica in the air and the build-up of dust on equipment and surfaces.
    - Description of less hazardous materials than crystalline silica which are proposed for abrasive blasting and automatic blast cleaning machines or tools to be utilized.
    - Description of high-efficiency particulate air filter vacuums to be used by employees and work practices to vacuum, hose down, or wet clean work areas and equipment.

- Description of warning signs and other barriers proposed to identify work areas where respirable silica may be present and to limit access to only authorized employees.
- Description of personal protective equipment and clothing to be provided to employees and changing facilities if necessitated by the level of silica dust exposure.
- Certification of training provided to employees about health effects of silica exposure, engineering controls and work practices that reduce dust, the importance of maintenance and good housekeeping, as well as the proper type and fitting of respirators; and include a statement that the employee is or is not enrolled in a medical surveillance program.

Environmental - Powered Equipment

- If internal combustion engines are used on powered equipment in enclosed areas, the contractor is responsible for monitoring the quality of breathing air for harmful contaminants and adequate oxygen and is responsible for providing adequate ventilation.

Emergency Action Plans and Procedures

Emergency Procedures - Medical Services

Contractor's Responsibilities

- Prior to commencement of work, provisions must be made for prompt medical attention in case of serious injury.
- Each contractor shall have a minimum of one First Aid/CPR trained individual on the Project and inform the CM of their name.
- Ensure that adequate first aid supplies shall be easily accessible when required.
- Provide proper equipment for prompt transportation of the injured person to a physician or hospital, or a communication system for contacting necessary ambulance service.
- Telephone numbers and addresses of the physicians, hospital and ambulance shall be conspicuously posted.
- Contractor shall complete and provide to the CM an "Employer's First Report of Injury" within 24 hours of any/all incidents involving work activities associated with the Project. Contractors are advised to maintain their own OSHA 300 Log as an OSHA requirement.
- Contractor shall ensure that each of its lower-tier contractors meet these medical requirements.
- If the injured employee is released by the doctor for light or restricted work duty, the Contractor shall make available restricted duty work for the injured employee.
- Each occupational illness or injury shall be reported immediately by Contractor's employee to Contractor's first aid attendant and the CM.

- Contractor's first aid attendant or other competent person shall treat the injured employee as often as necessary to ensure complete recovery, or until a decision is made to seek medical treatment.
- Contractor must provide for the prompt transportation of the injured person to a hospital or other emergency facility.
- A representative of the Contractor shall drive the injured employee to the medical facility and remain at the facility until the employee is ready to return.
- Contractor's representative shall carry necessary forms; i.e., authorization slips, return to work notices to the medical facility.
- If it is necessary for the Contractor's first aid attendant to accompany the injured employee, provisions must be made by Contractor to have another employee, properly trained and certified in first aid, available to render same during the absence of the regular first aid attendant.
- If the employee is able to return to the Project site the same day, he/she must return with a statement from the doctor stating same and containing such information as date, employee's name, date of return to regular or restricted duty, date he/she is to return to doctor, diagnosis, signature and address of doctor.
- If the injured employee is unable to return to the Project site the same day, the employee who transported him/her should bring this information back to the Project site and report it to the CM.
- If it is necessary to call the outside medical facility, this call should be made by the CM Project Manager while the injured employee is being transported.
- Medical cases requiring ambulance services would be such cases as severe head injuries, amputations, heart attacks, severe bleeding, stopped breathing, etc.
- Should ambulance service be necessary, the following procedures should be taken immediately:
    - Contact Contractor first aid attendant or nearest employee properly trained and certified in first aid.
    - While first aid is being administered, contact the CM immediately.

Emergency Procedures - Alarms, Fire, Bomb, Weather, Environmental, Public Demonstration

- In order that necessary emergency services may be supplied promptly, each contractor shall post in a conspicuous place a list of emergency telephone numbers along with the type of information to be transmitted for each emergency situation.
- All accidents are to be handled by the ranking person present, with whoever is available to assist.
- The ranking person shall direct someone to notify first-aid personnel, and to call for emergency services as necessary.
- The CM Project Superintendent is to be notified as soon as this can be done without delaying assistance to the injured. He/she will then take appropriate action.
- In accidents resulting in injury to personnel, individuals qualified to administer first-aid will assist the injured, will stabilize their condition, and will arrange for

transportation to a hospital if further treatment is required.

- Except when necessary to avoid further injury, or to prevent additional damage to the work, equipment will not be moved, or the position of items, parts, pieces, controls, etc. will not be changed until photographs have been made and notes taken by the CM Project Superintendent or the person designated to make the investigation and report.
- As soon as the CM Project Superintendent can release the area from this constraint, contractors concerned will clean up and make repairs to return to a normal situation.
- Where a specific procedure has not been established, reasonable judgment should be used in determining what course to follow.

Alarms

- The CM shall be notified of all emergencies and notify the appropriate emergency service of the incident and initiate appropriate action.
- Fire alarms within the area of new construction will consist of three short blasts on an air horn or other suitable alarm located at the means of egress, stairway, ladder, or building entry.
- Telephone notification of the fire department will be initiated immediately after sounding the air horn alarm.
- Telephones are available in the Project site office.
- Radio contact with the Project site office and the CM shall be used to inform all concerned regarding the fire.
- A continuous long blast on the air horn may be used to summon first aid assistance in the event of an accident.

Fire

- The following procedures are established in the event of a fire. "RACE"
  - **R** **R**escue... anyone in immediate danger.
  - **A** **A**larm... activate pull station; go to phone and dial 911.
  - **C** **C**ontain... close doors and windows, isolate the fire.
  - **E** **E**xtinguish... use correct extinguisher.

Accident Involving Serious Injury or Death

- The following procedures are established in the event of an accident involving serious injury or death to employees, workers, or members of the general public.
  - Individuals qualified to administer first-aid will assist the injured, will stabilize their condition, and will arrange for transportation to the hospital emergency room if further treatment is required.
  - The CM is to be notified immediately. Immediate notification (within 8 hours) of the local OSHA office is required in the event of a fatality or serious injuries that may lead to a fatality.
  - All non-essential personnel shall be removed and/or kept back from the area.
  - Rescue personnel shall be provided assistance as requested.

- No comments shall be made. All inquiries shall be referred to the CM Project Manager.
- No on-site photographs are to be taken without the specific approval of the CM Project Manager and the CM Project Superintendent.
- The CM shall make a full investigation and file an Accident/Injury Report within twenty-four (24) hours of the occurrence.
- Within the immediate area of the accident scene, nothing is to be disturbed nor removed after proper evacuation of the injured personnel.
- Except when necessary to avoid further injury, equipment will not be moved, or the position of items, parts, pieces, controls, etc. will not be changed until photographs have been made and notes taken by the CM Project Superintendent or other person designated to make the investigation and report.
- As soon as the CM can release the area from the above constraint, contractors concerned will clean up and make repairs to return to a normal situation.

Property Damage Accidents

- The following procedures are established in the event of accident involving property damage.
  - The CM is to be notified as soon as this can be done without delaying efforts to prevent further damage. He will take appropriate action and direct other personnel to assist as necessary.
  - Efforts shall be taken to protect against further damage where possible.
  - All non-essential personnel shall be removed and/or kept back from the area.
  - No comments shall be made. All inquiries shall be referred the CM.
  - No on-site photographs are to be taken without the specific approval of the CM
  - The CM shall make a full investigation and file an Accident/Injury Report within twenty-four (24) hours of the occurrence.
  - Within the immediate area of the accident scene, nothing is to be disturbed nor removed after proper evacuation of the injured personnel.
  - Except when necessary to avoid further injury, equipment will not be moved, or the position of items, parts, pieces, controls, etc. will not be changed until photographs have been made and notes taken by the CM.
  - As soon as the CM can release the area from the above constraint, contractors concerned will clean up and make repairs to return to a normal situation.

Severe Weather

- The following procedures are intended to prepare the Project site in the event of severe weather conditions.
  - Since severe weather may occur during the Project without advance warning, all work activities and Project site conditions must be planned with a concern

for emergency preparations.

- Each contractor, at the time of mobilization, shall deliver to the CM a complete list of the contractor's supervisors with the complete after-hours telephone numbers. The list shall be kept current and shall be updated accordingly.
- Each contractor shall insure that his field trailers and his sub-tier contractors' field trailers are anchored in at least three locations.
- Upon notification of a Severe Weather Watch by the U. S. Weather Bureau, the following actions are to be initiated:
  - Each contractor having on-site, fuel-powered generators are requested to notify the CM of the numbers and wattage. Generators may be needed to provide temporary power for rescue or clean-up activities.
  - All materials shall be secured to prevent them from becoming air borne during high winds. Particular attention needs to be given to picking up scrap materials and hauling or covering trash containers.
  - Crawler and mobile cranes shall have booms lowered at the end of the shift.
  - Cranes not capable of lowering booms shall be permitted to weathervane or free swing. Check to assure that swinging booms will not contact other objects such as power lines, structures, etc.
  - Sufficient flashlights, batteries, and bulbs shall be provided to assigned emergency response personnel. A supply of fresh batteries shall be maintained at the Project for use in an emergency response.

Other Major Catastrophe

- Examples of other major catastrophes include, but are not limited to, the following:
  - Major fire.
  - Collapse of large portions of structures or large sections of scaffolds.
  - Heavy damage by wind or floods.
- Local authorities will be provided with an emergency call list to summon the CM's and the contractor's personnel to the site in the event of a major catastrophe outside working hours, on Saturdays or Sundays, etc.
  - The CM Project Superintendent or his best-qualified alternate will cooperate fully with the directives of the local emergency authorities in the event of a major catastrophe. S/he will take any or all of the following actions, as appropriate.
    - Initiate fire fighting, tie down building, etc.
    - Call for assistance from outside: fire trucks, ambulances, electricians, life flight helicopters, Civil Defense Support, police.
    - Stop work.
    - Call for site evacuation, to clear site access roads.
    - Issue instructions to supervisors and to others as necessary.
    - Set up security control at the disaster area.
    - Set up communications center in site trailers: radio/telephone.
    - Call in operators for heavy equipment such as front loaders, cranes, etc.

- Other actions considered necessary in the particular situation.

Bomb Threat

- When a bomb threat is received or if a suspicious article is found, the CM will take the following actions.
  - Work shall be stopped immediately and the Project and office shall be evacuated of all personnel.
  - A count will be made to assure that all are present.
  - Local police, fire or bomb disposal authorities shall be notified.
  - A search of the site will be made as directed by appropriate authorities.
  - If a suspicious article is found, DO NOT TOUCH IT. Notify the appropriate authorities.
  - Do not allow anyone except authorized personnel to re-enter the area.
  - If necessary to stop or detour traffic away from the affected area, local police or flagmen shall be utilized.
  - No comments shall be made. All inquiries shall be referred to the CM.
  - No on-site photographs are to be taken without the specific approval of the CM
  - The CM shall make a full investigation and file a report within twenty-four (24) hours of the occurrence.
  - If repeated threats occur within a short period of time, the CM will evaluate the situation and take appropriate action. This action may include shutting down the Project site for that day.

Environmental Spill

- In the event of a spill of environmentally damaging materials, immediate response is required to prevent or minimize the impact this event will have upon the environment and the public welfare.
- All personnel shall continue to observe standard precautions for handling the materials as detailed in the manufacturer's product Material Safety Data Sheet (MSDS), including the use of personal protective equipment.
- Where conditions warrant, the contractor shall have emergency spill containment supplies available for immediate use.
- The following general procedures apply to the immediate response which must be initiated:
  - Immediately, all personnel in the immediate area of the release shall be alerted to the hazardous material and the nature of the immediate danger to themselves and the environment.
  - As soon as possible, the CM shall be notified and requested to initiate emergency containment and clean up procedures.
  - The Local Fire Department shall be notified to mobilize their hazardous materials response units and shall be given the necessary information regarding the materials, which were released.
  - If safe to do so, every effort shall be made to contain the materials within

berms, by absorbent materials, or through other appropriate means, until proper handling and disposal personnel may be mobilized at the site.

- Particular attention needs to be taken to avoid contamination of surface water, storm sewers, sanitary sewers, ground, plants and animals.
- All non-essential personnel shall be removed and kept back from the area.
- No comments shall be made. All inquiries shall be referred to the CM Project Manager.
- No on-site photographs are to be taken without the specific approval of the CM Project Manager and the Project Superintendent.
- The CM shall make a full investigation and file an Accident/Injury Report within twenty-four (24) hours of the occurrence.
- Within the immediate area of the accident scene, nothing is to be disturbed nor removed after proper evacuation of the injured personnel.
- Except when necessary to avoid further injury, equipment will not be moved, or the position of items, parts, pieces, controls, etc. will not be changed until photographs have been made and notes taken by the Project Superintendent or other person designated to make the investigation and report.
- The Owner's or Rochester City School District (RSCD)'s environmental official shall be notified to initiate the response of available environmental remediation contractors who are under standby contract.
- As soon as the environmental remediation contractor has cleared the site, the Project Superintendent will release the area for contractors concerned to clean up and make necessary repairs to return to a normal situation.

Public Demonstrations

- When a public demonstration is expected or occurs, the CM will take the following actions.
  - Work on the Project site shall continue where not encumbered by the public demonstration; however work in the immediate area shall be stopped and all Project employees shall be evacuated.
  - A count will be made to assure that all are present.
  - Local police shall be notified, and all employees shall cooperate fully with the law enforcement authorities.
  - Do not allow anyone except authorized personnel to enter the Project site.
  - All visitor passes are revoked and all visitors shall be escorted from the Project site.
  - If necessary to stop or detour traffic away from the affected area, local police or flagmen shall be utilized.
  - No comments shall be made. All inquiries shall be referred to the Project Manager.
  - No on-site photographs are to be taken without the specific approval of the CM.
  - The CM shall make a full investigation and file a report within twenty-four (24) hours of the occurrence.

- If repeated public demonstrations occur within a short period of time, the CM will evaluate the situation and take appropriate action. This action may include shutting down the Project site for that day or obtaining a judicial restraining order.

Work Practices

Concrete (Cast-in-place)

- All equipment and materials used in concrete construction and masonry work shall meet the applicable requirements as prescribed in ANSI-A10.9-most recent version, "Safety Requirements for Concrete Construction and Masonry Work."

Confined Space Entry

- Contractor shall develop an entry procedure to be used when Contractor's employees are required to enter confined areas or spaces.
- Confined Space entry procedures will conform to OSHA 1910.146 and the owner's requirements.
- A confined space entry permit must be completed and posted at the entrance to the confined area.
- Documentation of appropriate formal training for all involved in the confined space activity (entrants, attendants, supervisor, and rescue personnel) shall be submitted to the CM for approval prior to any entry.

Crane Safety and Rigging

- The Contractor shall conform to the more stringent of Federal, State, local, client or CM safety policy.
- Contractors whose activities require the use of cranes shall be responsible for their proper set up and operation and shall advise the CM prior to the arrival on-site.
- The contractor shall supply the CM with documented evidence of their competent person's training, and of their 'qualified persons', as required by 1926.1404, 1926.27, 1926.1428, and where specified in 1926.1400, including the Operators, Riggers, Signal Persons, and 'Assembly/Disassembly Director.
- The Assembly/Disassembly Director shall be responsible to ensure that all provisions of safety as specified in 1926.1404 are met including but not limited to: adequate site and ground bearing conditions, proper blocking and cribbing, knowing load weights and center of gravity, equipment capacity, support of booms and counterweights, rigging of boom and suspension systems, determination of safe wind speeds, etc.

Inspection

- Inspections are required pre- and post-assembly in the configuration that the crane will be used, as well as in severe service and after adjustment or repair, for each piece of equipment.

- Contractors shall provide the CM evidence of annual inspection by a third-party inspection agency not under the control or ownership of the crane owner and approved by the CM Safety Manager.
- All repairs and adjustments noted on the inspection shall be corrected prior to next use. 'Temporary alternative measures' as specified within OSHA regulations will not be accepted.
- This applies to power-operated equipment used in construction that can hoist, lower and horizontally move a suspended load, as specified in 1926.1400.
    - Such equipment includes, but is not limited to: articulating cranes (such as knuckle-boom cranes); crawler cranes; floating cranes; cranes on barges; locomotive cranes; mobile cranes (such as wheel-mounted, rough-terrain, all-terrain, commercial truck-mounted, and boom truck cranes); multi-purpose machines when configured to hoist and lower (by means of a winch or hook) and horizontally move a suspended load; industrial cranes (such as carry-deck cranes); dedicated pile drivers; service/ mechanic trucks with a hoisting device; a crane on a monorail; tower cranes (such as fixed jib ("hammerhead boom"), luffing boom and self-erecting); pedestal cranes; portal cranes; overhead and gantry cranes; straddle cranes; side-boom tractors; derricks; and variations of such equipment.
- Inspections shall be performed by a qualified person designated by the contractor in accordance with 1926.1412, 1926.1413, and the manufacturer's recommendation and ANSI B30 Standard for the type of crane being inspected and the most current version.
- This inspection shall be completed prior to each shift starting work, as well as when equipment is modified, repaired or adjusted, post assembly, monthly, annually and in conditions of severe service.

Operation

- This certification will be for each crane and lifting device and associated rigging equipment brought onto the site.
- At least every 12 months, or if the crane or its associated rigging has sustained any incident which may have resulted in damage, in cases of severe service, or after if any repair or modification the crane and its associated rigging shall be fully re-inspected by a qualified person in accordance with OSHA regulations, with proof of inspection provided to the CM.
- No work shall proceed without evidence of a current annual inspection meeting the CM's requirements.
- No claims will be accepted for losses sustained by the contractor for delays caused by failure to comply with these requirements.
- Temporary alternative measures for safety devices or operational aids will not be accepted.
- Safety devices, including but not limited to: crane level indicator, boom and jib stops, foot pedal locks, check valves on hydraulic outrigger and stabilizer jacks, and horns, must be in proper working order before equipment operations can begin-temporary alternative measures are not permitted to be used.
- Operational Aids, including but not limited to: boom hoist limiting device, boom angle indicator, load radius indicator, luffing jib limiting device, anti two-blocking device, load weighing device (such as a load moment indicator), and outrigger

stabilizer position monitor must be in proper working order- temporary alternative measures are not permitted to be used.

Special Procedures

- A lift procedure shall be developed by the Contractor's qualified person, and overseen by the Contractors qualified and competent Assembly/disassembly director for the following and submitted to the CM prior to the lift taking place:
    - Critical Lift (defined as when lifting a load where the weights are at or over 75% of the rated capacity of the crane and rigging as determined by the manufacturer).
    - Multi-Crane Lift.
    - 100 Tons or greater Lift.
    - Any application that deviates from the manufacturers recommendations.
    - When special or unique hazards are under or adjacent to the load at any time during the lift.
    - When the CM determines such a procedure is necessary.
- The Lift Procedure will include a Hazard Analysis developed by the Contractor and submitted to the CM along with Pre-Lift meetings, which shall be held at 30 days prior to the lift, the day prior to the lift and immediately prior to the lift with the actual workforce doing the lift.
- All concerned parties must be present for the meetings with minutes of the meeting recorded by the CM.
- The Lift Procedure will include documentation of calculations which incorporates weight deductions of all rigging equipment, a load chart for the crane(s) that will be used, a site plan and layout sheet which will include the path of travel of the load, swing radius protection and any other necessary factors.

Record Keeping

- All records pertaining to crane inspections shall be kept with the crane or in the trade contractor's site field office in accordance with applicable OSHA regulations.
- If during any safety inspection, the operator or supervisor cannot produce the required crane inspection sheets, the crane shall be shut down as soon as possible and shall be inspected.
- Where crane operators are required to be licensed by the State where the Project is being built they shall have a current license and provide a copy to the CM when requested.
- Duplicates of Certification records shall be maintained on Project site by Contractor and made available to the CM upon request.
- The contractor shall provide evidence of competency of the operator to the CM.

Rigging

- Only qualified riggers shall perform rigging operations.
- A Competent Person appointed by the Contractor shall inspect all rigging equipment. Inspection shall be done and documented prior to each shift starting work, monthly

and annually in accordance with 1926.1413. If there are any deficiencies in equipment, it shall be removed from service and corrected or replaced per manufacturer's criteria.

- All rigging equipment that is defective or damaged shall be immediately removed for the Project site.
- Chain slings are not permitted to be used for any lifting operation unless specifically designed for a unique application.
- Wire rope slings shall bear a legible manufacturers capacity tag.
- Tag lines shall be used on all loads.
- All hooks used for overhead lifting shall be equipped with safety latches or alternate lifting methods such as clamps will be used. Shake-out/sorting hooks may only be used for unloading materials from trucks and will not be used for overhead lifting.

Signals

- The contractor shall appoint a qualified and trained signal person that meets the definition of 1926.1428 c and 1926.1430
- When hand signals are used, only the standard method for signals shall be used 1926.1400 App A.
- Operator and signal person shall meet prior to hoisting lifts to confirm understanding of signals.

Operator Qualifications

- The crane operator(s) shall be proficient in the operation of the crane(s) and licensed in the State/City where the operation is being performed, or—outside of NYC—certified by an accredited crane operator testing organization, such as the National Commission for the Certification of Crane Operators (NCCO), or by an audited employer program developed by an accredited crane operator testing organization and audited by a third party qualified auditor.

Power line Safety

- Crane and rigging operations are not permitted within 20 ft of power lines unless the power lines are de-energized and confirmed by a qualified utility company representative.
- Where encroachment is required within 20 ft from power lines in accordance with 1926.1408, Table A
    - A planning meeting shall be conducted with the assembly/Disassembly director, operator, crew and other workers in the area to review steps to prevent encroachment
    - Tag lines must be non-conductive
    - Dedicated spotters shall be used
    - Proximity alarms or range control warning device shall be used

Demobilization

- The Project Superintendent and each contractor shall organize and schedule the orderly removal of their Project site offices and trailer facilities, the termination of

temporary utility services, the transfer of telephone services to their offices, and the forwarding of mail.
- The site shall be left in the conditions specified by the contract documents.
- The Project Superintendent shall inspect the site with the Owner to verify that all permanent security and safety devices are in place and performing their intended function.

Demolition

Structural Demolition

- An engineering survey shall be completed before the start of demolition.
- All structural shoring shall have stamped drawing and calculations by a registered Professional Engineer.
- Areas being demolished must be secured by means of barricades to prevent unauthorized personnel from entering the area.
- Subcontractors must submit, prior to the start of construction, a detailed demolition plan to include, means and methods, related drawings, and other relevant safety plans.

Dust & Infection Control

- All debris containers must be covered before being removed from the construction area.
- All temporary partitions that are installed must have a fire rating equal to that which they are replacing and at least 2-hours in all cases.
- All temporary partitions shall be installed deck-to-deck and taped to prevent dust transmission.
- Construction areas must maintain negative air pressure. To accomplish this, the use of portable HEPA-filtered air machines may be used. When using the Projects ventilation system, approval from the CM is required.
- Routes shall be established for the removal of debris and movement of materials through occupied areas of Project.
- Walk-off mats or other means shall be used at construction entrances to prevent dust and other foreign matter from being tracked throughout the Project.
- Doors and entrances shall have bottom floor-sweeps installed.
- Where solid partitions of plywood or drywall are not possible, fire resistant polyethylene shall be used or fire-resistant tarps. All seams will be duct taped and dust proof entrances used.
- Appropriate signage will be posted at construction entrances.
- Powered hand tools shall be of the dust collecting type.
- All concrete and block shall be wet cut.
- Housekeeping must be performed on a continuous basis.
- Eating and smoking are not allowed inside the construction work areas.

- Temporary toilet facilities must be provided with adequate hand washing facilities equipped with towels and hand soap.

Interim Life Safety Measures

- Interim life safety measures shall be coordinated with the school before construction starts.
- This should include re-routing of fire escapes, signage requirements, fire exits, area mapping, and local fire marshal approval of the plan.
- Fire protection plan shall include – Hot work permits, fire watch, provisions for protection when sprinklers, smoke, and heat detectors are inactive, storage of compressed gas cylinders.

Electric - Temporary

- All electrical work, installation and wire capacities shall be in accordance with the pertinent provisions of the National Electrical Code (most current version), ANSI and OSHA Standards.
- All 120 volt, single phase, 15 & 20 amp temporary power circuits (with the exception of temporary lighting) shall have ground fault circuit interrupters installed.
- In addition all tools, cords and power sets shall have an assured equipment inspection program maintained on quarterly basis.
- The color codes used for identifying inspected & tested equipment on this Project are:

▪ January, February, March	▪ White
▪ April, May, June	▪ Green
▪ July, August, September	▪ Red
▪ October, November, December	▪ Orange

- (NOTE: The cycle of colors is repeated for the next year)
- Portable tools will have the appropriate color code affixed to the male (plug) end following inspection.
- Extension cords will have the appropriate color code affixed to both ends (plug & receptacle). The previous quarter's color code will be removed to avoid confusion.
- When using permanent power, once established in new construction or in renovation work, Ground Fault Circuit Interrupters must be used in conjunction with the AEGC inspections.
- All necessary open wiring must be made inaccessible to unauthorized employees or visitors and not be subject to damage.
- Open wiring is NOT acceptable for temporary lighting circuits.

- Lighting on barricades, fences, or sidewalk coverings shall be encased in metal raceway.
- Temporary lighting must have guards to prevent accidental contact with the bulb except where the bulb is deeply recessed in the reflector.
- Temporary lights shall not be suspended by the cord unless the fixture was specifically designed in that manner.
- Portable electric lighting used in moist or other hazardous locations such as drums, tanks, vessels, bins, bunkers, etc., shall be operated at a maximum of 12 volts (non-explosive).
- All shop lighting and portable task lighting shall have a cover and guard installed when in use or available for use.
- Extension cords used with portable tools must be of a heavy-duty 3-wire type. Flat extension cords are prohibited.
- Damaged electrical cords shall not be used.
- All extension cords will be suspended seven feet (7') above finish floor or work platform. Extension cords will not be fastened with staples, hung from nails, or suspended by non-insulated wire.
- All non-current carrying parts of electrical equipment must be grounded or have an approved double-insulated setup.
- Grounded circuits must have enough capability to carry all currents likely to be imposed on it.
- Contractor shall determine before operations start if there is any energized equipment or electrical circuit in the work area, which might have risk to the worker.
- Equipment and conductors that must be de-energized shall be identified to the CM who will arrange to de-energize the equipment under the Lockout and Tagging procedure/system.
- Contractor shall use the Project Lockout/Tagout procedure and strictly adhere to the use of this requirement. CM will monitor adherence to the procedure on a regular basis.
- All temporary power panels shall have covers installed at all times. All open or exposed breaker spaces shall be adequately covered, and labeled.
- All electrical equipment and wiring in hazardous locations must conform to the National Electrical Code standards.
- The frames of all cutting, welding (arc, heli-arc, gas-plasma-arc) machines shall be grounded.
- Fish tapes or lines made of metal or any other conductive medium are prohibited. Nonconductive tapes and lines will be used in their place.
- All temporary wiring shall be effectively grounded in accordance with the National Electrical Code (Articles 305 and 310).
- All wiring used for temporary lighting shall be in accordance with the most recent NEC.
- Defective Electrical Tools and Equipment - All electrical tools and extension cords found to be defective (Examples: missing or broken ground pins, exposed internal

conductors) will immediately be rendered in-operative by cutting off the plug end or by immediately removing from the Project.

- Electrical work (e.g. tie-ins, panel maintenance) shall be conducted only on de-energized (locked out and tagged out) systems.
- All circuit disconnects must be locked in the open position or otherwise appropriately identified with affixed tags stating "DANGER - DO NOT ENERGIZE" or other equivalent wording prior to working on the system or equipment.
- Employees are not permitted to work on any energized circuits unless conditions mandate and written approval is obtained from the Regional Safety Manager.
- The pre-task planning for all work on energized systems must be submitted for review.
- Additionally, work practices must conform to all applicable owner, state and federal requirements including the NEC and the most recent version of NFPA 70E.

Elevated Work (Other than Fall Protection)

Ladders

- Manufactured ladders on the Project shall comply with the regulations of ANSI-A14.1-1968 (or most recent version), Safety Code for Portable Wood Ladders or ANSI-A14.2-1972 (or most recent version), as required by OSHA.
- All ladders shall be used in the manner and for the purposes for which they were designed and constructed.
- The side rails or extension shall extend 36 inches above the landing. When this is not possible, grab rails shall be installed.
- All ladders in use shall be tied, blocked, stabilized by a second worker or otherwise secured to prevent accidental displacement.
- When working on/from a ladder at elevations greater than six (6') feet or more above the work surface, all ladders (including stepladders) must be tied, blocked, stabilized by a second worker or otherwise secured against accidental displacement.
- Where adequate anchorages are available, workers shall tie off using a Personal Fall Arrest System or utilize a different means of gaining access (i.e., scissor lift, scaffold, etc.).
- Portable metal ladders shall not be used.

Scaffolding

- All employees erecting, using and dismantling scaffolds shall be trained in the hazards present and the safe procedures to be followed to eliminate exposure to those hazards and shall be provided with fall protection when 6-feet or more above the next lower level.

Concrete and Masonry

- All equipment and materials used in concrete construction and masonry work shall meet the applicable requirements as prescribed in ANSI-A10.9-1970 (or most recent version)"Safety Requirements for Concrete Construction and Masonry Work."

Stairways

- Upon delivery to the Project site all office trailers and material storage trailers shall be provided with stairway access to all doorways and shall have landings with railings which allow for at least 20 inches of clearance in front of any door swing.
- Stairway placement shall follow placement of the upper floor deck as soon as practical.

Hoists and Elevators

- Temporary personnel elevators and material hoists shall be constructed, installed and maintained in compliance with the manufacturer's instructions and the provisions of applicable statutes and regulations of governing authorities.
- No elevators or hoists are to be used for the movement of materials and personnel until the devices have been certified and licensed by a third party inspector qualified to approve the equipment.
- No person shall be allowed to ride on a material hoist except for the purposes of inspections and maintenance.

Elevated Work - Fall Protection

- A Fall Protection Plan must be developed by the contractor for all work with a fall exposure greater than 6-feet with a copy provided to the CM prior to start of work.
- "Controlled Access Zones", "Safety Monitoring", and "warning Lines" are not permitted.
- Personal Fall Arrest systems shall be worn and used by all workers when working six (6') feet or more above the ground/floor or whenever working in a precarious position, unless other adequate fall protection such as guardrails or safety nets are provided.
- All lanyards are to be as short as possible, but in no event longer than six (6') feet. Shock absorbing lanyards must be used unless a Self-Retracting Lanyard is in use. Wire rope lanyards are prohibited unless approved by the CM.
- Personal Fall Arrest System shall also be worn and attached to the manufacturer's approved anchorage when working in aerial lifts and to vertical drop lines when working from suspended scaffolding.
- Only one individual shall use a vertical safety lines at a time.
- When wire rope is used as a guardrail providing fall protection, *please refer to the* 'Perimeter Protection' section within this Safety plan for design and installation details
- When wire rope is used as a horizontal lifeline, it shall be designed by a registered Professional engineer and installed and maintained by a competent person. It shall be designed, installed and maintained to meet, at a minimum, the requirements of OSHA as contained in 29 CFR 1926.502.
- To eliminate the potential of a fall when working on a flat roof or deck, a warning barrier meeting the following requirements may be used 15 feet from the fall hazard. If a worker is between the warning barrier and the fall hazard, a positive means of fall protection must be used.
    - Warning tape is not allowed as a warning barrier.

- Warning barriers shall consist of ropes, wires, or chains, and supporting stanchions erected as follows:
- The warning barrier rope, wire, or chain shall be flagged at not more than 6-foot (1.8 m) intervals with high-visibility material;
- The warning barrier rope, wire, or chain shall be rigged and supported in such a way that its lowest point (including sag) is no less than 34 inches (.9 m) from the walking/working surface and its highest point is no more than 39 inches (1.0 m) from the walking/working surface;
- After being erected, with the rope, wire, or chain attached, stanchions shall be capable of resisting, without tipping over, a force of at least 16 pounds (71 N) applied horizontally against the stanchion, 30 inches (.8 m) above the walking/working surface, perpendicular to the warning line, and in the direction of the floor, roof, or platform edge;
- The rope, wire, or chain shall have a minimum tensile strength of 500 pounds (2.22 kN), and after being attached to the stanchions, shall be capable of supporting, without breaking, the loads applied to the stanchions as prescribed in paragraph (f)(2)(iii) of this section; and
- The line shall be attached at each stanchion in such a way that pulling on one section of the line between stanchions will not result in slack being taken up in adjacent sections before the stanchion tips over.

- Steel Erection - Refer to Section entitled "Steel Erection".
- Precast/Prestressed Concrete - Refer to Section entitled "Architectural Precast Concrete".

Elevator Safety

- Contractor shall comply with all applicable provisions of OSHA, and ANSI, as well as the National Elevator Industry inc., Field Employees Safety handbook.

Excavation

- The contractor must designate a competent person trained in soil classification and the recognition of trenching and excavation hazards. This person must be on-site when excavating or trenching is being done.
- Appropriate documentation to meet the OSHA trenching and excavation standards is to be maintained on site.
- Where protective systems as defined in 29 CFR 1926.650-652 are designed by a licensed Professional Engineer, who is not a regular CM employee, the resulting design documents must be reviewed by the CM prior to the commencement of the work to assure that the documents set forth the accurate and complete assumptions (as set forth in the current applicable contract specifications) upon which the design is based.
- Prior to opening any excavation or trench an excavation permit from the CM is required. Contractor shall notify necessary personnel to determine whether under-ground installations; i.e. sewer, telephone, fuel, electric lines, etc., may be encountered and where they are located.

- Excavation permits shall be required on a daily basis while the excavation is open.
- Trenches 4 feet and over in depth or presenting a hazard to the worker shall be shored or walls cut back to protect employees from cave-in.
- All trenches and excavations shall be properly barricaded to prevent persons from walking into them.
- When an excavation will remain open longer than one work shift, a barrier sufficient to protect people from falling into the excavation or erected at a minimum of 6-feet from the excavation in order to warn of the fall hazard must be erected and maintained for the time duration that the excavation remains open.
- Excavation contractors will provide a spill kit for use on site in the event of a hazardous material spill.
- Drilled caissons will have fall protection provided both during and upon completion of the drilling by use of personal fall protection, guardrails or use of casing extending a minimum of 42 inches above the ground.

Personal Protective Equipment

- All job hazard analyses designed to meet the contractors' scope of work and included in the contractors' site specific safety plan or additions thereto shall include a description of all required personal protective equipment for each crew member of every task identified. This list of required personal protective equipment shall be updated or modified based on a review of the Daily Safety Task Assignment by the crew and its' supervisor to mitigate exposure to previously unidentified hazards.
- Appropriate eye protection meeting the requirements of ANSI Z87 (most recent version) with side shields are required to be worn in a manner to protect the eyes while in construction areas at all times.
- In addition, approved eye and face protection is required as follows:
- Goggles, welding hoods and shields, or face shields will be required to be properly worn at all times when in the area of operations, such as when welding, burning, grinding, chipping, chemical handling, corrosive liquids or molten materials, drilling, sawing, driving nails, power actuated tools, concrete pouring, tampers and gasoline fueled hand operated equipment (i.e. chain saws). This section will also apply to those employees of Contractors who are assisting any worker as an apprentice or helper.
- Prescription glasses must meet the requirements of ANSI Z87 (most recent version), or be covered with over-the-glass safety glasses or face shield.
- Hard hats must have the suspension aligned with the user's head as designed by the manufacturer and may not be worn over other hats or caps such as baseball caps.
- When exposed to welding radiation, appropriate eye shade protection attached to the hard hat is required for the welder. Welding operations shall provide for the protection of others from unintentional exposure to radiation by strategically locating welding shields..
- Chaps designed for use while using a chain saw as well as hearing protection, appropriate gloves, and face shields are required for any work involving chain saws.

- Hand Protection.
  - Gloves of appropriate design and construction are a requirement whenever exposure to hand injuries and/or lacerations is likely to exist.
  - Typical hazards include but are not limited to chemical skin absorption, heat/cold, laceration, punctures, biological contaminants and/or irritants, abrasion, and chemical burns.
  - The contractor will review all relevant MSDS, past injury experience, professional industry organizations' recommendations and publications, vendors' literature, best practices, and their own job hazard analyses to determine exactly which glove is correct protection for the hazard identified and require their use whenever an employee is exposed to the hazard.
  - General requirements. Employers shall select and require employees to use appropriate hand protection when employees' hands are exposed to hazards such as those from skin absorption of harmful substances; severe cuts or lacerations; severe abrasions; punctures; chemical burns; thermal burns; and harmful temperature extremes.
  - Selection. Employers shall base the selection of the appropriate hand protection on an evaluation of the performance characteristics of the hand protection relative to the task(s) to be performed, conditions present, duration of use, and the hazards and potential hazards identified.

Fire Protection

- Contractor shall be responsible for fire protection in its work and operational areas, including offices, tool rooms, and storage areas twenty four (24) hours per day, seven days per week through the duration of this Contract.
- The contractor, as required by OSHA and the local fire protection code, must provide appropriate fire suppression equipment.
- The contractor will provide for a fire watch trained in the use of fire extinguishers throughout the hot work and at least one half hour after the hot work has ceased.
- Additional fire watches may be required if the possibility exists for sparks, slag, embers, etc. to travel to adjacent rooms or floors below the hot work.
- At a minimum 20 pound multi-purpose ABC extinguishers are allowed on the Project.
- Only safety containers approved by UL and the local Fire Marshall, and properly labeled as to their contents, are to be used for handling and/or storage of flammable liquids in quantities more than one gallon.
- All tarpaulins and plastic used for temporary covers shall be of fire resistant manufacture.

Hazard Communication Program

- The Occupational Safety and Health Act (OSHA) requires that each employee potentially exposed to hazardous chemicals be advised of the potential hazards and how to guard against those hazards.
- Each contractor whose employees are potentially exposed to hazardous chemicals

must develop a list of all such chemicals used on the Project; gather material safety data sheets (MSDSs) for those materials; develop a labeling system for all materials; and train all potentially exposed personnel in the hazards and their controls for all listed compounds.

- These steps are outlined in detail in the following material.
- Employee training for this requirement will be documented and acknowledged by signatures following each session.

Material Safety Data Sheets (MSDS)

- Every contractor will be responsible for development and maintenance of a list of hazardous chemicals utilized within the Project operations and will be further responsible for obtaining and maintaining MSDS's for all such hazardous chemicals.
- Employees will be allowed access to this information and the specific MSDS for chemicals utilized in their work areas.
- All questions relating to the program should be directed to the contractor's superintendent or safety representative.
- A copy of each MSDS will be delivered to the CM prior to work starting involving that substance.

Employee Information and Training

- All new and present employees will be given information regarding the requirements of the Chemical Hazard Communication Program; the hazardous chemicals present in their work place; and the physical and health risks of these chemicals.
- This training may be met through orientation sessions for new employees, and refreshers for all during toolbox talks. The information and training will also include the following elements:
    - The symptoms of overexposure to the chemicals.
    - How to determine the hazardous presence or release of a chemical in the work place.
    - Methods to reduce or prevent the exposure to hazardous chemicals, such as control procedures, work practices, or personal protective equipment.
    - Procedures to follow in the event of an exposure to hazardous chemicals. The location of the log containing the MSDS's, which apply to their work place and the location of the written Chemical Hazard Communication Program.
    - How to review MSDS's to obtain the hazard information for the chemical, and how to read the labels, which are required on the chemical containers. When a new hazardous chemical is obtained for use, each employee who could be exposed will be given the information and training as described above, and a copy of the MSDS's for the chemical will be obtained and distributed to those who actually use the chemical in the work place. The MSDS's will be available to all employees during each work shift.
    - Proper disposal procedures of waste materials shall be enforced. Labeling of waste containers and disposal of all hazardous materials by a licensed disposal facility is required.

Container Labeling

- All chemical containers at the site must be clearly labeled as to the contents, the hazards involved, and the name and address of the manufacturer.
- All secondary containers of hazardous chemicals are to be clearly labeled with the same information as the original container.
- Each contractor's superintendent or safety representative shall perform the above responsibilities for all their materials.

Hazardous Non-Routine Tasks and Nearby Work

- In the event an employee is assigned to perform, or is assigned to work in an area where a hazardous task, non-routine to their work, the employee will be given the additional information and training related to the hazardous chemicals which may be encountered in the non-routine task.
- The first-line foreman, contractor superintendent, or contractor safety representative will provide this information and training.
- The information will include the specific chemical hazards of the task, the controls and protective measures required, the types of personal protective equipment required, how to use the equipment, the nature of other work being performed in or near the non-routine task, and what emergency procedures are involved with the task.

Demolition

- To the best of the Owner's knowledge, there is no asbestos, lead, polychlorinated biphenyl (PCB), or hazardous materials anywhere in the designated work areas. AIA-A201 Subparagraph 10.1.2 applies: Contractor shall stop the Work if material reasonably believed to be asbestos, lead, polychlorinated biphenyl (PCB), or hazardous materials is encountered in the Work area.

Chemicals in Unlabeled Pipes, Vessels and Containers

- To ensure that employees who work on unlabeled pipes, vessels or containers have been informed as to the hazardous materials contained within, the following policy has been established:
- Prior to starting work on unlabeled pipes, vessels or containers, employees are to contact their foreman for the following information:
    - Type of chemical in the pipe, vessel or container.
    - Potential hazards.
    - Safety precautions which should be taken.

Audit and Review

- It will be the responsibility of each contractor's superintendent and safety representative to review the entire Hazard Communication Program, and to revise and update the material contained herein to reflect all changes in the purchase, use, storage, and handling of hazardous chemicals at the Project site.

- It will be the further responsibility of the superintendent and safety representative to periodically audit that procedures in the use of the hazardous chemicals meet the requirements as set forth in the MSDS's.

Housekeeping

- **On a daily basis**, all debris and scrap material shall be removed from the work area.
- Debris and other loose materials shall not be allowed to accumulate in stairwells.
- Containers shall be provided for the collection and separation of waste, trash, oily and used rags and other refuse. Metal (dumpster type) containers must be used and emptied promptly.
- Garbage and other waste shall be disposed of at frequent or more regular intervals in a manner approved by the CM.
- Contractor shall notify the CM of any hazardous waste it will generate during performance of the Work.
    - Contractor has the direct responsibility of maintaining proper storage of these wastes while on site and will verify to the CM in writing that the wastes have been disposed of in a legal manner.
    - A copy of the haulers manifest must be provided to the CM.
- Contractor shall not pour, bury, burn, nor in any way dispose of a chemical on the work Project site.
- Contractor shall clear all combustible debris to a solid waste disposal Project site properly licensed under the laws of the State having jurisdiction.
- NO OPEN BURNING OF DEBRIS, OR RUBBISH WILL BE PERMITTED ANYWHERE ON THE PROJECT SITE.
- NO SMOKING OR TABACCO PRODUCT USE ON CONSTRUCITON SITE.
- Materials and supplies shall be stored in locations, which will not block access-ways, and arranged to permit easy cleaning of the area.
- In areas where equipment might drip oil or cause other damage to the floor surface, a protective cover of heavy gauge, flame resistant, oil proof sheeting shall be provided between the equipment and the floor surface sheeting so that no oil or grease contacts the concrete. This requirement is applicable to both finished and unfinished floors.
- All hoses, cables, extension cords, and similar materials shall be located, arranged and grouped so that they will not block any access-way and will permit easy cleaning and maintenance.

Interim Life Safety Matters for Occupied Facilities

Specific Measures

- Whenever construction affects the facility's ability to accommodate occupants (either because of disruption of services, interruption of normal operations, or when hazards are present), it will become necessary to implement interim life safety measures, as follows:

  - Ensure that all exits are clear. This includes areas directly affected as well as all other exits.
  - Ensure that there is free access to emergency services, that vehicles, material, etc. are not blocking the access route.
- Disabling of fire protection systems. A small disaster could escalate if the fire protection system is not functional. Care should be given to provide an alternate system while the primary system is off-line. This includes scheduled maintenance, upgrade, repairs, or adding of coverage resulting in disabling system, and disabling system to allow maintenance or repairs to be completed on other systems (e.g. hot work).
- Fire alarm, detection, and suppression systems must not be impaired. A temporary (but equivalent) system shall be used if the system is impaired. These temporary systems must be tested monthly.
- Temporary construction partitions shall be smoke tight and noncombustible. Adequate signage shall discourage casual observers from opening or entering the partitions.
- Additional (double) fire-fighting equipment must be provided, as well as personnel trained in its use.
- Smoking is prohibited on this Project in and adjacent to all construction areas. Strict enforcement must occur.
- Construction site shall be kept clean and orderly. This includes material piles, debris, platforms, and break areas.
- Hazard surveillance of sites shall be increased and documented. Attention is to be given to evacuation routes, construction areas, storage, office/lunch areas, and fuel storage.
- Whenever the safety of an adjacent area is compromised because of construction, staff shall be informed. Alternate exit routes shall be identified.
- Facility-wide education programs are conducted explaining interim life safety matters and current life safety deficiencies.
- The construction site must be restricted from all but authorized staff. Adequate signage shall be provided.
- Alternate access must be provided for public and emergency traffic whenever disruption occurs.
- Policy and procedures must ensure that roads and pathways are clear of mud, debris, materials, etc.
- Proper notification must be made to local authorities (fire, police, other) whenever life safety is diminished.
- Governing body shall be kept apprised of status of life safety during Project.
- Construction workers must be made aware of egress routes.
- Construction workers' egress routes must be inspected daily to ensure no obstacles.
- Effective storage, housekeeping, and debris-removal policies and procedures must be in place to reduce collection of combustibles in construction areas.

- Whenever fire zones are altered, the owner's staff will be informed in regard to new or different life safety measures regarding their changed configuration and fire safety.

Line Break

- This section refers to any entry into an operating Process System under installation, testing, or operating conditions and is subject to the procedures for "line breaking".
- All employees are to be informed of the inherent dangers of working on operating process systems.
- Entries can be made only with approval of the Owner and the CM.
- Added hazard potential exists when cooling occurs, vacuums, which may be holding liquids in pockets often break without warning and liquid is released to run to the lowest point. Plugs (particularly solidified process materials) can move and release materials after the first connection is broken.
- The Owner and the CM must agree on the location of first breaks
- All systems must be considered as having the potential to discharge contained energy/material from open ends of lines or broken flanges at any time even after the line has been drained and vented.
- No Contractor may enter an operating piping system or equipment until the requirements of this procedure are met. Systems activated for testing purposes fall under this procedure.
- Under no circumstances will any line/system be violated other than via the lock and tag procedure.

Lockout/Tagout Procedures

- The contractor must adhere and strictly follow either the Project Lockout and Tagout requirements, the Owner or CM's requirements, if any, or the contractors own requirements, whichever is the most stringent.
- Electrical work (e.g. tie-ins, panel maintenance) shall be conducted only on de-energized (locked out and tagged out) systems.
- All circuit disconnects must be locked in the open position or otherwise appropriately identified with affixed tags stating "DANGER - DO NOT ENERGIZE" or other equivalent wording prior to working on the system or equipment.
- Employees are not permitted to work on any energized circuits unless conditions mandate and written approval is obtained from the Regional Safety Manager.
- The pre-task planning for all work on energized systems must be submitted for review.
- Work practices must conform to all applicable owner, state and federal requirements including the NEC and the most recent version of NFPA 70E.

Lockout Devices

- Only individually keyed padlocks shall be used. Padlocks are to be painted per the craft color code for easier detection and craft identification.

- A lockout device of the standard scissor type that will allow the placing of more than one padlock is required, when more than one individual is working on a circuit or mechanical process.
- A piece of chain or cable may be necessary to complete a lockout on some valves or controls and shall be used wherever needed.

Danger Tags

- 'Danger Tags' are not 'Danger Signs', and shall not be used where a sign is needed.
- Two standardized Danger Tags shall be used on this Project. They are described as follows:
    - "DANGER - DO NOT USE": This tag must be attached to each padlock on a lockout.
    - "UNSAFE - DO NOT USE": This tag does not require an attachment to a padlock, but may be used if needed. This tag shall be used to identify tools, equipment, vehicles, etc.

Procedure

- If device, valve, switch, or piece of equipment is locked out, a "Danger Tag" shall be attached.
- No device, valve, switch or piece of equipment shall be operated with a "Danger Tag" and/or lockout attached regardless of circumstances! ! !
- Systems consisting of electrical components will be checked, locked and tagged first by electrical craft employee working on the circuit.
- The electrical craft will be the first lock on, and the last lock off.
- Where placing of lock is not feasible, the circuit conductor will be disconnected from the breaker and tagged out.
- The panel cover must be of the type that will cover all breakers when closed and must be equipped with a hasp in order to secure a lock to prevent the panel door from being opened.
- If panel cover is of a type that cannot be locked closed, a cover must be secured over the panel cover and be locked closed and tagged while any work is being performed on any of those circuits.
- If the above cannot be accomplished, each circuit will be tagged out as prescribed and an electrician will stand by the panel board to prevent breakers from being tampered with. This physical presence will continue daily until the work is complete.
- All "Danger Tags" must be dated and signed. Also on tag, must be the intended work and equipment for which tag has been placed.
- If employees of more than one craft or crew are to work on a system, circuit, machinery, or component, the supervisor from that craft shall place his individual lock and tag; and verify that the system, circuit, machinery or component being tagged, is indeed the system that is to be worked on.
- Only the person that placed the lock and tag shall remove it without special authorization from the Project Manager, Construction Manager or Craft Superintendent.

- Padlocks, Lockout Devices and "Danger Tags" shall be made available as specified above.
- Padlocks shall be color coded for craft identification and shall only be used by that craft for lockout purposes, i.e. valves, switches, electrical components, etc.
- Padlocks shall be issued from the contractor responsible where a sign in/out log will be maintained. Locks and tags shall be issued to the foremen or supervisor responsible for the craft performing the work.
- The contractor of each craft discipline will be responsible for assuring all padlocks are personally identified, that will be used for lock and tag purposes.
- The Contractor Superintendent(s) will be responsible for ordering their own craft's padlock. A master key will also be provided.
- Any employee(s) or person(s) found to have removed another's lock and/or tag will be subject to disciplinary action up to and including dismissal from the Project.

Special Situations

- When due to the nature of work, a supervisor who has employees assigned to work on systems that are between construction and client turnover that is to be locked and tagged out in order to perform work, the below shall be applied:
- Prior to the electrical foreman de-energizing the system, the foreman will ascertain whether system or device has been turned over and accepted by the client; If system is signed off, the client shall assume responsibility for de-energizing system and becoming the tagging authority.
- Contractor Electrical foreman/craft journeyman places lock and tag and tries to engage the equipment.
- The electrical journeyman or lead man will meter the tagged equipment to verify that it is de-energized.

Operating Facilities and Equipment

- All systems covered under this section whether electrical, mechanical or others are considered those systems where no future construction activity is warranted.

Electrically Operated Systems

- Client representative or designee de-energizes system demonstrating accuracy to construction electrical supervisor, then locks and tags.
- Construction electrical foreman/journeyman ascertains that fuses, breakers or throws have been removed, when applicable; tags, locks and tries system.
- Electrical foreman/journeyman, meters the side of the system to be worked on to verify it is de-energized and safe.
- Upon completion of work, the journeyman removes their lock/tag and advises the construction electrical supervisor.
- Client representative or designee clears system, removes lock and tag and re-energizes if necessary.

Other Systems

- Plant engineer or designee de-energizes system and makes system safe.
- Client mechanics or designee(s) makes first break in flanges, places blanks, blinds or valves, and demonstrates that the system is empty and decontaminated.
- Construction (Client) Coordinator or designee verifies that the system is de-energized and tagged.
- Construction Craft supervisor locks, tags and tries system, surrenders the key to the journeyman who will then perform the assigned task.
- Upon completion of work, the journeyman will return the key to the assigned supervisor and tag and lock are removed.
- Construction (Client) Coordinator or designee assures that system is clear, and then removes lock and tag.
- Client mechanics or designee(s) re-energize system.

Construction

- All systems under this section whether electrical, mechanical or others, are considered those systems that are still in the construction phase.
- Equipment or circuits that are de-energized shall be maintained inoperative at their main power source and shall have locks and tags attached to prevent accidental turn on.
- A staff member shall be designated from the electrical department (Superintendent or General Foreman), to assume the responsibility, for the removal of locks and tags, and activation of power from the main switchgear through end line component.

Masonry

- In addition to the requirements contained in OSHA 29 CFR 1926. 706, the following is required:
  - A person, appointed by the Masonry Contractor, who meets the OSHA definition of Qualified Person, will prepare a Hazard Analysis. The Hazard analysis will be reviewed with the CM Project Safety Manager and CM Project Superintendent prior to start of work.
  - The Mason's qualified person shall approve all changes in the Hazard Analysis.
  - A copy of the Hazard Analysis shall be maintained at the Project site showing all approved changes with a copy provided to the CM.
  - The implementation of the Hazard Analysis shall be by a person appointed by the Masonry contractor who meets the OSHA definition of Competent.
  - The Hazard Analysis shall be reviewed with each person working on the masonry wall each day prior to starting work.
  - A safe means of access to the level being worked shall be maintained.
  - There shall be protection provided to prevent tools and material from striking any person below the work/storage level.
  - A tag line shall be used to control all loads.

- When loads are being hoisted, all personnel are to be prevented from walking under the load.
- No one shall be permitted to ride a load under any circumstances.
- A measuring device to accurately determine wind speed shall be provided by the masonry contractor with observations made available to the CM upon request.

Masonry Wall Bracing

- The masonry contractor shall provide the CM a design, prepared by a Professional Engineer, meeting the requirements of OSHA 29 CFR 1926.706 (b) and the Standard Practice for Bracing Masonry Walls under Construction as developed by the Council for Masonry Wall Bracing.
- No one shall be permitted within the limited access zone of an unbraced or braced wall subjected to winds of more than 35 mph (20 mph if during the initial period of construction).
- A DANGER sign shall be placed on every unsupported masonry wall that is more than 6 feet in height, braced or unbraced, and 50 feet or less in length. The sign shall be placed at each end of the wall and at intervals of not more than 100 feet along each side of the wall. The sign shall contain the words *DANGER* and *THIS UNSUPPORTED WALL IS UNSTABLE IN WINDY CONDITIONS.*

Fall Protection (See Elevated Work - Fall Protection)

- All employees engaged in masonry work, including overhand laying or any other activity that exposes them to a fall of 6 feet or greater shall be provided with and use fall protection. This protection shall be either a personal fall arrest system consisting of a full-body harness, double, shock-absorbing lanyard, and anchorage or a safety net or a guardrail. "Controlled Access Zones" are not permitted.
- Fall protection requirements shall be rigorously enforced with any observed violation cause for removal from the Project.
- Body belts are not permitted as part of a fall restraint system. Only full body harnesses will be used as part of a personal fall arrest system.

Perimeter Protection

- A guardrail system will be constructed in accordance with OSHA 29 CFR 1926.500. or alternative fall protection consisting of safety nets or personal fall arrest equipment provided.

Motor Vehicles and Equipment

- All equipment must be inspected daily before use by Contractor's operator.
- Contractor must also make documented and complete inspections at 30-day intervals with proper documentation maintained at the Project site by Contractor and copies shall be made available to the CM upon request.
- Defective equipment shall be repaired or removed from service immediately.
- All Contractors' operators of construction equipment should be properly licensed and certified by a competent person.

- Copies of the certifications shall be maintained on Project site by Contractor and made available to the CM upon request.
- Vehicles used to transport employees shall have seats firmly secured and adequate for the number of employees to be carried and all passengers shall be properly seated with seat belt used.
- Standing/kneeling on the back of moving vehicles is prohibited.
- Locations for storage of all fuels, lubricants, starting fluids, etc., shall be reviewed by the CM prior to use by Contractor for storage and shall conform to the requirements of the NFPA as well as the local Fire Marshal.
- Where required, contractors shall provide equipment diapers to protect from environmental spills.
- Drivers of motor vehicles shall have a valid state drivers license (CDL when applicable) and be instructed to exercise judgment as well as observe posted speed limits.
- All contractors' means of ingress and egress shall be adequately marked and kept clear of stored material, debris and equipment.
- Pedestrians always have right-of-way over motorized traffic.
- Horns shall be sounded at blind corners, when passing, and/or for warning.
- Established hand signals or turn signals are to be used.
- Reckless driving or other non-observance of these instructions will be cause for withdrawal of driving privileges on the Project.
- Any ATV's used on the Project shall be "four"- wheeled, not three-wheeled.
- All vehicles permitted access to the site must display an appropriate vehicle identification badge from the rear view mirror or other conspicuous location at all times while on the Project.
- Seat belts shall be worn by all employees operating motor vehicles and any equipment with rollover protection structures during performance of work.
- Properly trained and equipped flag persons shall be used whenever construction traffic accesses or exits from public highways as well as when construction traffic and deliveries interfere with the planned flow of traffic on public highways.

Precast/Prestressed Concrete

- Fall Protection for all employees engaged in work with a fall exposure of 6 feet or greater above a lower level shall be either a guardrail system, a safety net system or personal fall arrest system.
- The use of "Safety Monitoring" and "Warning Line System" and "Controlled Access Zones" are not permitted.
- Refer to the Section "Elevated Work Fall Protection" for additional requirements.
- A pre-construction meeting between the CM, the Fabricator and the Erector must be held to discuss the following topics:
    - Sequence of erection;
    - Schedule of delivery by load list;
    - Crane capacities;
    - Crane lift plan with calculations based on load and crane location;

- Anchor bolt certification;
- Review of the structural plans and details;
- Stabilization plans for the structure during all phases of erection;
- Temporary bracing and guying procedures and equipment for deck members, columns and wall panels.

- The Erector is to provide the CM the following:
  - Written erection plan prepared by a Company Officer or Professional Engineer indicating complete details of all phases of erection that shall include at least the following:
  - Crane lift plans with load calculation based on the cranes to be used and various setup locations,
  - Written stabilization plans for all phases including the use of temporary guying and bracing for columns and wall panels,
  - Written documentation of temporary connection details for use until permanent connections are completed including capabilities of workers doing the installation, types of welds or adequacy of bolted connections.
  - Listing of competent persons for fall protection, crane operation and erection along with phone numbers for emergency contact.
  - Fall protection plan in accordance with the CM Safety Plan including Leading Edge protection both during installation and after. Sequencing breaks and end of workday protective measures will also be detailed. Interior floor hole protection must be provided per OSHA Subpart M greater than 2 inches in the least dimension.
  - Custody of Guardrail cables following completion of precast erection. Erector to present a plan detailing how the cables will be safely removed utilizing Personal Fall Arrest Systems; or safety nets.
  - Silica protection of workers during cutting of concrete.
  - Hazard Analysis of all operations, presented to all workers prior to each shift on hazards specific to the day's operation.
  - Proof of training for all erection crewmembers.
  - Delivery locations for trailers including adequate ground preparation and plan for unloading.
  - Wind loading considerations including when operations will be suspended due to high winds.
  - Any proposed field modifications to the approved Erection Plan shall be approved by a Company Officer or the Professional Engineer of Record, added to the plan, which shall be available at the jobsite. A copy must be submitted to the CM prior to any change.
  - Lifting inserts, which are embedded or otherwise attached to precast concrete members, shall be capable of supporting at least four times the maximum intended load applied or transmitted to them, and shall be used in accordance with the manufacturer's recommendations.
  - Lifting hardware shall be capable of supporting at least five times the maximum intended load applied or transmitted to the lifting hardware.

- Adjustment of precast members, after initial placement, which requires the lifting of the members in any manner, shall not be made unless wire rope safety tiebacks are used or the members are attached to the crane load line.
- Chains are not permitted to be used as slings. Chain "come-along" are permitted with proof of required inspections and certification.

Pressure Testing Safety Requirements

- Pressure testing involves hazards, such as the release of hazardous energy, being struck by loose fittings or burst pipe. In addition, if an inert gas, such as nitrogen is used, it can displace oxygen and can create an oxygen-deficient atmosphere, which can be harmful or fatal. If flammable gas is used, it can cause an explosion if there is an ignition source. Contractors shall develop a site/task specific Job hazard Analysis (JHA), (STA) or (THA), as well as their own procedures for safely pressure testing pipe, and review with the CM prior to starting this activity.
- Contractors shall develop a site/task specific Job Hazard Analysis (JHA) as well as their own procedures for safely pressure testing pipe and review with the CM prior to starting this activity.
- The following procedure shall set forth the minimum requirements to ensure that pressure testing is performed safely.
  - Contractor performing pressure testing shall barricade area off and place signage restricting access to only authorized personnel.
  - Authorized personnel shall wear appropriate PPE consistent with the contractors JHA. (examples should include: hard hat, safety glasses, face shield, gloves, etc in accordance with the MSDS for testing medium).
  - All mechanical devices, such as valves and blinds used to isolate the system shall have a lock and tag affixed by the contractor to prevent accident pressure release.
  - Contractor and authorized personnel shall walk down the system and check the integrity of all connections, caps, seals and fittings within the system to be tested to ensure they are secure.
  - Contractor shall install additional supports on piping necessary for increased pressure or weight of testing medium.
  - Test equipment and gauges shall be inspected by the contractor and confirmed to be in proper working order before testing is begun.
  - Maximum test pressure and duration of the test shall be communicated to the contractor's authorized testing personnel and the CM.
  - Contractor to develop a Venting procedure for dissipating inert gas safely.
  - Contractor shall develop a Drain procedure to drain water or other fluids safely, without polluting drains or creating slippery conditions.
  - Contractor shall review the JHA with all authorized personnel prior to the test.
  - Testing shall be performed under the supervision of the contractor supervisor.
  - Testing shall be conducted in accordance with pipe and testing equipment manufacturers precautions and specifications.
  - Test pressure shall not exceed the maximum allowable test pressure for any vessel, pumps, valves, or other components in the system.

- All repairs or adjustments to the system being tested shall be done only after the system pressure is safely and completely relieved and the test gauges indicate 0 psig pressure.
- Only mechanical devices, such as gate or ball valves shall be used for incremental release of flow in depressurizing systems.
- The opening or 'breaking' of flanges shall never be used as a means of depressurizing a tested system.
- Upon acceptance of the pressure test, pressure in the system shall be completely relieved so that the test gauges indicate 0 psig, and verified by contractors supervisor.
- Contractor shall conduct all testing in accordance with applicable laws, codes, and ASME B31, B16 and related standards.

Sanitation

Housekeeping

- The site, work areas, and all site occupied by the CM and contractor's personnel will be maintained in a clean, healthy and sanitary condition.
- Work areas, passageways and stairs, in and around buildings and structures, shall be kept clear of debris.
- Construction materials shall be stored in an orderly manner.
- Storage areas and walkways on the site shall be maintained free of dangerous depressions, obstructions, and debris.
- Construction equipment shall be stored or placed in an orderly manner.
- Good housekeeping on the Project is mandatory and every employee must do his part daily to minimize dust and to clean up his work area to keep the Project clean for safety and efficiency.
- Controls shall be observed which keep dirt from being tracked into areas outside the workspace.
- Immediate cleanup is required when dust, dirt or debris may affect the owner's operations.
- Eating within the construction Project shall be confined to areas designated by the CM for such purposes.
- Employees shall properly dispose of all lunch refuse and drink containers in trash receptacles
- Failure to maintain adequate housekeeping and to perform daily clean-up will result in the following actions:
- Written Notice: Upon receipt, the contractor shall take immediate action to perform housekeeping and clean up.
- If having been given sufficient notice, the contractor fails to clean up; the work will be performed by others, and the errant contractor back-charged for all related costs.
- Daily and final clean up must be performed in accordance with contract documents.

Facilities

- The locations of lunch areas and employee toilet facilities will be designated by the CM and approved by the Owner.

Refuse and Garbage

- Each contractor will provide an adequate number of covered garbage containers. The site will be cleaned and garbage and refuse will be collected at least daily and removed from the building.

Potable Water

- Each contractor shall provide potable water at the work site and test it at least weekly if delivery is from other than municipal supplies.
- Sanitary facilities shall be provided for personal hygiene.

Scaffold

- The Contractor's designated Competent Person shall inspect all scaffolds prior to each work shift with written documentation provided to the CM on a daily basis.
- All scaffolds shall bear a tag, signed and dated by the contractor's competent person, denoting that the scaffold has been inspected and is safe to use prior to any employee utilizing that scaffold that day.
- Any contractor using scaffolding shall provide the CM with the name of their Competent Person along with the content of the Competent Person's training program and proof of Scaffold User Training for all employees who may work on scaffolding.
- Ladder Jack scaffold are not permitted on this Project.
- Scaffolds with a width less than 60 inches must have guardrails (top, mid and toe) installed when the work platform is in excess of 48 inches above the floor or lower work area.
- Scaffold cross bracing is not permitted to be used as a substitute for guardrails. Swing gates will be provided at all ladder or stair access points.
- Where material is being landed on a scaffold, the outrigger extension will not be used to support the material unless it is deemed adequate by the manufacturer and a factor of safety of 4 is provided.
- All non-mobile scaffold frames shall have base plates installed.
- All mobile scaffolds will have wheels locked when in use and stationary.
- Nominal grade lumber is not allowed as scaffold planking.
- All individuals who are in scissor lifts shall wear a full body harness and be tied off by a lanyard to a manufacturer's approved anchorage point within the scissor lift.
- Standing on guardrails is not allowed.
- Only approved anchorages shall be used for fall arrest anchorage points.
- A mast climbing elevating work platform that may be adjustable by manual or powered means must meet the requirements of ANSI Standard ANSI/SIA A92.9-1993, American National Standard for Mast- Climbing Work Platforms.

Stair Scaffolds

- 'System' scaffold stairs shall be erected as early as possible during the building construction to facilitate safe access to all working levels, once the steel erector has released the floor/level to the CM.
- Scaffold stairs shall remain in place until the permanent stairs are constructed and made available for use by the CM.
- Stair scaffolds shall be constructed in accordance with manufacturer's instructions by trained and qualified workers under the direction of a competent person.
- Stair scaffolds shall be inspected daily by a competent person, authorized by the CM, at the beginning of each shift.
- The competent person shall date and initial a Scaffold tag, and place the tag at the entrance to the stair scaffold.
- Stairs used during winter months shall be enclosed to prevent ice and snow from creating slippery conditions.
- Temporary lighting in accordance with OSHA requirements shall be installed on all enclosed stair scaffolds.

Steel Erection

Erection Plan

- An erection plan will be prepared by the Steel Erector's Qualified Person and reviewed with the CM Project Safety Manager and/or the CM Project Superintendent prior to start of work. Refer to OSHA 1926, Subpart R, Appendix A.
- The erection contractor's qualified person shall approve all changes in the safety erection plan.
- A copy of the erection plan shall be maintained at the Project site showing all approved changes with a copy provided to the CM.
- The implementation of the erection plan shall be under the supervision of a competent person.
- A safe means of access to the level being worked shall be maintained. Climbing and sliding on columns or diagonals, is not allowed.
- Containers, such as buckets or bags, shall be provided for storing or carrying bolts or rivets.
- When bolts, drift pins, or rivet heads are being removed, a means shall be provided to prevent accidental displacement.
- Tools shall be secured in such a manner to prevent their falling.
- Fall protection provisions, such as lifeline attachments, dynamic fall restraints and other such devices shall be considered during shop drawing preparation, shall be incorporated in fabricated pieces, and shall have safety lines or devices attached prior to erection wherever possible.
- A tag line shall be used to control all loads.
- For the protection of other crafts on the Project, signs shall be posted in the erection area by the erection contractor reading, "*Danger Men Working Overhead*" and only

ironworkers allowed in this area. This will include shakeout areas, erection areas and the load travel path from the storage area to the erection area.

- When loads are being hoisted, all personnel are to be prevented from walking under the load.
- No one shall be permitted to ride a load under any circumstances.
- Crane personnel platforms will not be used for any purpose without the written approval of the CM.
- Material shall not be hoisted to a structure unless it is ready to be put into place and secured.
- Bundles of metal decking or small material shall be so secured as to prevent their falling out from the rigging.
- Christmas treeing (multiple lifts) is not allowed unless exception approved by the CM
- All workers engaged in steel erection activities including connecting, bolting-up, decking, welding or any other activity that exposes them to a fall of 6 feet or greater shall be provided with and use fall protection.
- This fall protection shall be either a personal fall arrest system consisting of a full-body harness, double, shock-absorbing lanyard, and anchorage or a safety net or a guardrail. Nether "Controlled Decking Zones" nor "Safety-monitor systems" are permitted. Metal deck is not considered a form of fall protection.
- Fall protection requirements shall be rigorously enforced during steel erection with any observed violation cause for removal from the Project.
- Body belts are not permitted as part of a fall restraint system. Only full body harnesses will be used as part of a personal fall protection system.

Perimeter Protection

- When wire rope is used as a guardrail providing fall protection it shall be designed at all elevations where a fall of 6' or greater is possible.
- To be in compliance the perimeter fall protection system shall be comprised of four 3/8 inch diameter wire rope cables installed at 60", 42", 21", and 0" above the deck or floor with non-combustible mesh fabric having openings of ½" or less and capable of withstanding 50 pounds force without damage or displacement.
- The mesh fabric shall be secured to the wire rope adequately to withstand wind load and/or to prevent materials from passing beyond the perimeter protection.
- Wire ropes shall be installed to prevent deflection beyond 3" when 200# of force is applied in a downward direction.
- All splices of wire rope shall be loop type with a minimum of 3 wire rope clamps. No straight splices shall be used.
- Turnbuckles shall be installed at all changes of direction and at straight runs of 60' or greater to provide for cable tightening.
- Wire rope guardrails shall be tensioned to 2,400 pounds of force, initially, and maintained to comply with OSHA fall protection requirements.
- Wire rope guardrails shall be installed immediately following the erection of beams and columns. The length of cable shall not exceed 60 feet without being terminated. Cables shall be terminated at all 90 degree turns and shall be 'looped' connections

with 3 wire rope clips used at all connections (line splicing is not permitted). All sequence breaks will require a two (2)-cable assembly.

- Turnbuckles shall be installed on top and mid-rail wire rope cables at each perimeter side, and at intervals not to exceed 60 feet, or as directed by the CM. Loading bays shall have separate guardrail and turnbuckle assemblies installed.

Interior Protection

- Installation of guardrails at interior floor openings, i.e. stair or mechanical shafts, shall conform to one, or a combination of the following:

  Option 1

  - Install 3/8" galvanized air craft cable through stanchions at 60", 42", 21", and 0" above the deck or floor with non-combustible mesh fabric having openings of ½" or less and capable of withstanding 50 pounds force without damage or displacement. Terminate cables at 90 degree turns.

  Option 2

  - Bolt 2 ½" x 2 ½"x ¼"steel angles onto stanchions. A mid-stanchion / post is required for spans greater than 8 feet.

  Option 3

  - Secure 2"x 4" construction grade lumber to steel stanchions. A mid-stanchion / post is required every 8'
    - Guardrails shall not be used as a horizontal lifeline as part of a personal fall arrest system unless designed by a licensed Professional Engineer and installed under the supervision of the steel erector's competent person.
    - Top and Midrail cables, as outlined above, shall also be used at all sequence breaks.

Signs, Signals, Barricades and Lights (Motor Vehicle Exposure)

- Signs, signals and barricades shall be visible at all times where a hazard exists and will be in compliance with ANSI D6.1 (most recent version), Uniform Manual of Traffic Control or regulations promulgated by the local authority.

Temporary Heat

- No open flame heaters are allowed.

Welding, Cutting and Burning – Hot-work

Electric Arc Welding

- A suitable, approved fire extinguisher shall be ready for instant use in any location where welding is done.
- Screens, shields, or other safeguards should be provided for the protection of men or materials, below or otherwise exposed to sparks, slab, falling objects, or the direct

rays of the arc.

- A dedicated fire watch shall be present at all welding operations and remain for at least 1 hour after the hot work has halted.
- The welder shall wear approved eye and head protection.
- Trades assisting the welder shall also wear protective glasses, head protection and protective clothing.
- Adequate exhaust ventilation shall be maintained at all welding and cutting work areas.
- Electric welding equipment, including cables, shall meet the requirements of the NEC.
- All arc welding and cutting cables shall be of the completely insulated flexible type capable of handling the maximum current requirements of the work.
- Cables in need of repair shall not be used.
- The frames of all arc welding and cutting machines shall be grounded either through a third wire in the cable connecting the circuit connector or through a separate wire which is grounded at the source of the current.
- All ground connections shall be inspected to insure that they are mechanically strong and electrically adequate for the required current.
- Welding practices shall comply with all applicable regulations.

Gas Welding or Cutting

- When gas cylinders are stored, moved, or transported, the valve protection cap shall be in place.
- When cylinders are hoisted, they shall be secured in an approved cage or basket. The valve cap shall never be used for hoisting.
- All cylinders shall be stored, transported, and used in an upright position. If the cylinder is not equipped with a valve wheel, a key shall be kept on the valve stem while in use.
- At the end of each work day or if work is suspended for a substantial period of time, compressed gas cylinder valves must be closed, regulators removed and properly stored.
- Cylinders containing oxygen or acetylene or other fuel gas shall not be taken into confined spaces.
- Cylinders containing oxygen or acetylene or other fuel gas shall be stored in designated areas outside the structure as approved by the CM.
- No one shall use a cylinder's contents for purposes other than those intended by the supplier.
- All hose used for carrying acetylene, oxygen or other fuel gas shall be inspected at the beginning of each working shift.
- Defective hose shall be removed from service.
- Oxygen cylinders and fittings shall be kept away from oil and grease.
- Oxygen shall not be directed at oily surfaces, greasy clothes or hands.
- Regulators, gauges, backflow check valves, and torches shall be kept in proper working order.

- An approved fire extinguisher shall be readily available.
- Flash arrestors are required on the oxygen and acetylene hoses, at the regulators.
- Appropriate personal protective equipment, such as burning glasses, shields, and/or gloves shall be used.
- Adequate exhaust ventilation shall be maintained at all welding and cutting work areas.
- Work permits shall be obtained daily, prior to any burning or cutting operations on the site.

Work Permit Procedures

General Procedures

- A copy of this section of the Project Safety Standards will be issued to all Contractors, and will serve as notice by the CM that a work permit as specified by the CM is necessary before starting any hazardous work activity.
- The work permit shall be obtained from the CM before starting each day's work.
- The procedures for initiating a hazardous work permit are listed on the permit application appropriate to the type of work.
- Hazardous work Permits include, but are not limited to the following activities: Hot Work, Confined space entry, Guardrail removal, Line Breaks, after Hours work, Trenching and excavation, Crane use and Barricade installation.
- Additional job-specific hazardous work permits may be required, due to special Project conditions, to be incorporated into the Project Safety Standards. These will also be considered a contract commitment.

Hot Work

- Hot work is defined as a process or procedure, which could result in a fire if not properly controlled. Common types of hot work are welding, burning, cutting, brazing, soldering.
- Hot work will usually be permitted only during normal working hours.
- Permits will be issued the day before work is to be accomplished, and the work area will be inspected to verify that adequate control has been established.
- A copy of the permit will be available at the point of work.
- An adequate number of fire extinguishers will be available within 50-feet of the point of work for which a permit is issued.
- The Contractor will take the necessary precautions when welding or burning above walls to assure that protection is maintained on both sides of the wall and that areas below are protected on multilevel buildings.

Confined Space

- When work in confined spaces is scheduled, such as a caisson, boiler, deep excavations, etc., consideration must be given to two major known and recognized hazards:
- The possibility of fire or explosion, flammable gases, fumes, vehicle fumes, vapors, or

dusts.

- The possibility of injury to the worker (or loss of consciousness) as a result of inhalation or absorption through the skin of toxic materials or from oxygen deficiency.
- For work in a confined space, the responsibility for recognition and advance notification is the Contractor's.
- The Project Superintendent and the Project Safety Coordinator will be notified and will evaluate the situation, issuing a work permit in those cases for which he considers it necessary.
- The Contractor will be responsible for providing equipment and special instructions for the worker, such as ventilating units, respirators, safety belts and life lines, etc., and for conformance to all applicable OSHA standards.
- It is required that the "buddy system be used and that an observer will tend all workers in a confined space.
- Rescue procedures must be agreed upon beforehand.

Guard Rail Opening

- The Project Superintendent and the Regional Safety Manager may approve work, which requires the opening of guardrails or the removal of holes covers to be performed, in advance.
- Particular attention shall be given to the alternate means of fall protection, which will be required to safely perform the work and protect other workers in the vicinity of the fall exposure.
- Specific plans for providing alternate fall protection shall be described in the request for the work permit.

Off-Hours Work

- The Project Superintendent and the Project Safety Coordinator shall approve work, which is required to be performed outside normal working hours established at the site, in advance and in accordance with the Project Labor Agreement (PLA), as applicable.
- Any work occurring within the existing Owner facility shall be at the convenience of the Owner. All off –hour work shall comply with all conditions imposed by the contract specifications and the work permit issued by the Project Safety Coordinator or other persons identified by the Owner.

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SECTION 013546 - INDOOR AIR QUALITY REQUIREMENTS

PART 1 – GENERAL

1.01 SUMMARY

1. Work in this section includes but is not limited to the following:
    1. The abatement of asbestos containing building material (ACBM).
    2. The abatement of lead-based paint.
    3. The abatement of PCBs

1.02 SUBMITTALS

1. The Contractor shall submit all notices, records, receipts, and all other information as may be required by the Board.

2. The Contractor shall submit all required notices, licenses, certifications and work practice methods, including approved variance, as required by the appropriate agency. The Contractor shall also submit all records pertaining to worker monitoring data and waste manifests as required for job specific recordkeeping.

PART 2 – PRODUCTS
Not Used

PART 3 – EXECUTION

3.01 GENERAL REQUIREMENTS

1. Work of this section shall be done in compliance with, but not limited to, the following;
    1. 29 CFR 1910 and 1926 - OSHA Construction Standard
    2. 40 CFR 61 - National Emissions Standards for Hazardous Air Pollutants (NESHAP)
    3. 40 CFR 763 - Asbestos Hazard Emergency Response Act (AHERA)
    4. 12 NYCRR 56 - Code Rule 56 and applicable variances
    5. Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing (HUD)
    6. 40 CFR Part 745 - EPA lead abatement regulations

2. Additional conditions and requirements regarding Work of this section will be elaborated in the event that unanticipated ACBM and/or lead-based paint is discovered and is determined to effect the progress of the Work. No work will proceed without authorization from the Construction Manager.

3. Work in this section shall be executed in such a manner so as to prevent undue and unnecessary delays in the progress of the project.

END OF SECTION 013546

SECTION 014500 - QUALITY CONTROL

PART 1 - GENERAL

1.1 Special Inspections is the monitoring of materials and workmanship that are critical to the integrity of the building structure. It is typically the review of the work of the General Construction Contractor as required by Section 1704 of the New York State Building Code (BC-NYS), to assure that the approved drawings and specifications are being followed and that relevant code and reference standards are being observed. The Special Inspection process is in addition to the inspections conducted by the Owner's Construction Manager and the design professional as part of structural observations. These inspections will be provided by the Owner by a separate independent Special Inspections Contractor.

1.2 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General Conditions of the Contract for Construction, and other Division 01 Specification Sections, apply to this Section.

1.3 SUMMARY

A. Section includes administrative and procedural requirements for quality assurance and quality control.

B. Testing and inspecting services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.

1. Specific quality-assurance and -control requirements for individual construction activities are specified in the Sections that specify those activities. Requirements in those Sections may also cover production of standard products.
2. Specified tests, inspections, and related actions do not limit Contractor's other quality-assurance and -control procedures that facilitate compliance with the Contract Document requirements.
3. Requirements for Contractor to provide quality-assurance and -control services required by Architect, Owner, Construction Manager, or authorities having jurisdiction are not limited by provisions of this Section.
    a. All Prime Contracts: Verify all Specification Sections for testing requirements in addition to the following:

1) Testing done for the convenience of the Prime Contractor or their Sub-Contractors.
2) Testing related to remedial operations or possible defects.

C. Related Requirements:

1. Division 01 Section “Cutting and Patching” for repair and restoration of construction disturbed by testing and inspection activities,

2. Divisions 02 through 33 Sections for specific test and inspection requirements.

1.4 DEFINITIONS

A. Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work to guard against defects and deficiencies and substantiate that proposed construction will comply with requirements.

B. Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work to evaluate that actual products incorporated into the Work and completed construction comply with requirements. Services do not include contract enforcement activities performed by Architect or Construction Manager.

C. Mockups: Full-size physical assemblies that are constructed on-site. Mockups are constructed to verify selections made under Sample submittals; to demonstrate aesthetic effects and, where indicated, qualities of materials and execution; to review coordination, testing, or operation; to show interface between dissimilar materials; and to demonstrate compliance with specified installation tolerances. Mockups are not Samples. Unless otherwise indicated, approved mockups establish the standard by which the Work will be judged.

1. Laboratory Mockups: Full-size physical assemblies constructed at testing facility to verify performance characteristics.

2. Integrated Exterior Mockups: Mockups of the exterior envelope erected separately from the building but on Project site, consisting of multiple products, assemblies, and subassemblies.

3. Room Mockups: Mockups of typical interior spaces complete with wall, floor, and ceiling finishes, doors, windows, millwork, casework, specialties, furnishings and equipment, and lighting.

D. Preconstruction Testing: Tests and inspections performed specifically for Project before products and materials are incorporated into the Work, to verify performance or compliance with specified criteria.

E. Product Testing: Tests and inspections that are performed by an NRTL, an NVLAP, or a testing agency qualified to conduct product testing and acceptable to authorities having jurisdiction, to establish product performance and compliance with specified requirements.

F. Source Quality-Control Testing: Tests and inspections that are performed at the source, e.g., plant, mill, factory, or shop.

G. Field Quality-Control Testing: Tests and inspections that are performed on-site for installation of the Work and for completed Work.

H. Testing Agency: An entity engaged to perform specific tests, inspections, or both. Testing laboratory shall mean the same as testing agency.

I. Installer/Applicator/Erector: Contractor or another entity engaged by Contractor as an employee, Subcontractor, or Sub-subcontractor, to perform a particular construction operation, including installation, erection, application, and similar operations.

1. Use of trade-specific terminology in referring to a trade or entity does not require that certain construction activities be performed by accredited or unionized individuals, or that requirements specified apply exclusively to specific trade(s).

J. Experienced: When used with an entity or individual, "experienced" means having successfully completed a minimum of five (5) previous projects similar in nature, size, and extent to this Project; being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction.

1.5 CONSTRUCTION TESTING

A. Prime Contractor Responsibilities: Unless otherwise indicated as the responsibility of another identified entity, each Prime Contractor shall provide inspections, tests, and other quality-control services specified elsewhere in the Contract Documents and required by authorities having jurisdiction. Costs for these services are to be included in the Contract Sum.

1. Where individual Sections specifically indicate that certain inspections, tests, and other quality-control services are Prime Contractor's responsibility, Prime Contractor shall employ and pay a qualified independent testing agency to perform quality-control services.
2. Where individual Sections specifically indicate that certain inspections, tests, and other quality-control services are the Owner's responsibility, the Owner will employ and pay a qualified independent testing agency to perform those services.

a. Where the Owner has engaged a testing agency and Prime Contractor is also required to engage an entity for the same or related element, the Prime Contractor shall not employ the entity engaged by the Owner, unless agreed to in writing by the Owner.

B. Retesting: Prime Contractor is responsible for retesting where results of inspections, tests, or other quality-control services prove unsatisfactory and indicate noncompliance with Contract Document requirements, regardless of whether the original test was Prime Contractor's responsibility.

1. Cost of retesting construction, revised or replaced by Prime Contractor, is Prime Contractor's responsibility where required tests performed on original construction indicated noncompliance with Contract Document requirements.

C. Associated Services: Cooperate with agencies performing required inspections, tests, and similar services, and provide reasonable auxiliary services as requested. Notify the agency sufficiently in advance of operations to permit assignment of personnel. Auxiliary services required include, but are not limited to, the following:

1. Provide access to the Work.
2. Furnish incidental labor and facilities necessary to facilitate inspections and tests.
3. Ladders.
4. Provide facilities for storage and curing of test samples.
5. Delivery of samples to testing laboratories.
6. Provide design mix documentation.
7. Provide security and protection of samples and test equipment at the Project Site.

D. Duties of the Testing Agency: The independent agency engaged to perform inspections, sampling, and testing of materials and construction specified in individual Sections shall cooperate with the Construction Manager and Prime Contractor in performance of the agency's duties. The testing agency shall provide qualified personnel to perform required inspections and tests.

1. The agency shall notify the Architect, Construction Manager and Prime Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.
2. The agency is not authorized to release, revoke, alter, or enlarge requirements of the Contract Documents or approve or accept any portion of the Work.
3. The agency shall not perform any duties of Prime Contractor.

E. Coordination: Coordinate the sequence of activities to accommodate required services with a minimum of delay. Coordinate activities to avoid the necessity of removing and replacing construction to accommodate inspections and tests.

1. Each Prime Contractor is responsible for scheduling times for inspections, tests, taking samples, and similar activities through the Construction Manager.

1.6 CONFLICTING REQUIREMENTS

A. Referenced Standards: If compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement. Refer conflicting requirements that are different, but apparently equal, to Architect for a decision before proceeding.

B. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements. Refer uncertainties to Architect for a decision before proceeding.

1.7 ACTION SUBMITTALS

A. Shop Drawings: For integrated exterior mockups, provide plans, sections, and elevations, indicating materials and size of mockup construction.

1. Indicate manufacturer and model number of individual components.
2. Provide axonometric drawings for conditions difficult to illustrate in two dimensions.

1.8 INFORMATIONAL SUBMITTALS

A. Contractor's Statement of Responsibility: When required by authorities having jurisdiction, submit copy of written statement of responsibility sent to authorities having jurisdiction before starting work on the following systems:

1. Seismic-force-resisting system, designated seismic system, or component listed in the designated seismic system quality-assurance plan prepared by Architect.
2. Main wind-force-resisting system or a wind-resisting component listed in the wind-force-resisting system quality-assurance plan prepared by Architect.

B. Testing Agency Qualifications: For testing agencies specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include proof of qualifications in the form of a recent report on the inspection of the testing agency by a recognized authority.

C. Schedule of Tests and Inspections: Prepare in tabular form and include the following:

1. Specification Section number and title.
2. Entity responsible for performing tests and inspections.

3. Description of test and inspection.
4. Identification of applicable standards.
5. Identification of test and inspection methods.
6. Number of tests and inspections required.
7. Time schedule or time span for tests and inspections.
8. Requirements for obtaining samples.
9. Unique characteristics of each quality-control service.

1.9 REPORTS AND DOCUMENTS

A. Test and Inspection Reports: Prepare and submit certified written reports specified in other Sections. Include the following:

1. Date of issue.
2. Project title and number.
3. Name, address, and telephone number of testing agency or inspecting agency.
4. Dates and locations of samples and tests or inspections.
5. Names of individuals making tests and inspections.
6. Description of the Work and test and inspection methods, citing ASTM reference standard used.
7. Identification of product and Specification Section.
8. Complete test or inspection data.
9. Test and inspection results and an interpretation of test results.
10. Record of temperature and weather conditions at time of sample taking and testing and inspecting.
11. Comments or professional opinion on whether tested or inspected Work complies with the Contract Document requirements.
12. Name and signature of laboratory inspector.
13. Recommendations on re-testing and re-inspecting.

B. Manufacturer's Technical Representative's Field Reports: Prepare written information documenting manufacturer's technical representative's tests and inspections specified in other Sections. Include the following:

1. Name, address, and telephone number of technical representative making report.
2. Statement on condition of substrates and their acceptability for installation of product.

3. Statement that products at Project site comply with requirements.
4. Summary of installation procedures being followed, whether they comply with requirements and, if not, what corrective action was taken.
5. Results of operational and other tests and a statement of whether observed performance complies with requirements.
6. Statement whether conditions, products, and installation will affect warranty.
7. Other required items indicated in individual Specification Sections.

C. Factory-Authorized Service Representative's Reports: Prepare written information documenting manufacturer's factory-authorized service representative's tests and inspections specified in other Sections. Include the following:

1. Name, address, and telephone number of factory-authorized service representative making report.
2. Statement that equipment complies with requirements.
3. Results of operational and other tests and a statement of whether observed performance complies with requirements.
4. Statement whether conditions, products, and installation will affect warranty.
5. Other required items indicated in individual Specification Sections.

D. Permits, Licenses, and Certificates: For Owner's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents, established for compliance with standards and regulations bearing on performance of the Work.

1.10 QUALITY ASSURANCE

A. General: Qualifications paragraphs in this article establish the minimum qualification levels required; individual Specification Sections specify additional requirements.

B. Manufacturer Qualifications: A firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.

C. Fabricator Qualifications: A firm experienced in producing products similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.

D. Installer Qualifications: A firm or individual experienced in installing, erecting, or assembling work similar in material, design, and extent to that indicated for this

Project, whose work has resulted in construction with a record of successful in-service performance.

E. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of the system, assembly, or products that are similar in material, design, and extent to those indicated for this Project.

F. Specialists: Certain Specification Sections require that specific construction activities shall be performed by entities who are recognized experts in those operations. Specialists shall satisfy qualification requirements indicated and shall be engaged for the activities indicated.

1. Requirements of authorities having jurisdiction shall supersede requirements for specialists.

G. Testing Agency Qualifications: An NRTL, an NVLAP, or an independent agency with the experience and capability to conduct testing and inspecting indicated, as documented according to ASTM E 329; and with additional qualifications specified in individual Sections; and, where required by authorities having jurisdiction, that is acceptable to authorities.

1. Each independent inspection and testing agency engaged shall be authorized by jurisdiction to operate in the state where Project is located.
2. NRTL: A nationally recognized testing laboratory according to 29 CFR 1910.7.
3. NVLAP: A testing agency accredited according to NIST's National Voluntary Laboratory Accreditation Program.
4. Testing agency qualifications must be approved by the Architect prior to proceeding with work.

H. Manufacturer's Technical Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to observe and inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.

I. Factory-Authorized Service Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.

J. Preconstruction Testing: Where testing agency is indicated to perform preconstruction testing for compliance with specified requirements for performance and test methods, comply with the following:

1. Contractor responsibilities include the following:

a. Provide test specimens representative of proposed products and construction.
b. Submit specimens in a timely manner with sufficient time for testing and analyzing results to prevent delaying the Work.
c. Provide sizes and configurations of test assemblies, mockups, and laboratory mockups to adequately demonstrate capability of products to comply with performance requirements.
d. Build site-assembled test assemblies and mockups using installers who will perform same tasks for Project.
e. Build laboratory mockups at testing facility using personnel, products, and methods of construction indicated for the completed Work.
f. When testing is complete, remove test specimens, assemblies, mockups, and laboratory mockups; do not reuse products on Project.

K. Testing Agency Responsibilities: Submit a certified written report of each test, inspection, and similar quality-assurance service to Architect, through Construction Manager, with copy to Contractor. Interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from the Contract Documents.

L. Mockups: Before installing portions of the Work requiring mockups, build mockups for each form of construction and finish required to comply with the following requirements, using materials indicated for the completed Work:

1. Build mockups in location and of size indicated or, if not indicated, as directed by Architect.
   a. Construct mockups complete, including work of all trades required in finished Project.
2. Notify Architect and Construction Manager seven (7) calendar days in advance of dates and times when mockups will be constructed.
3. Employ supervisory personnel who will oversee mockup construction. Employ workers that will be employed during the construction at Project.
4. Demonstrate the proposed range of aesthetic effects and workmanship.
5. Obtain Architect's approval of mockups before starting work, fabrication, or construction.
   a. Allow seven (7) calendar days for initial review and each re-review of each mockup.
6. Maintain mockups during construction in an undisturbed condition as a standard for judging the completed Work.
7. Demolish and remove mockups when directed unless otherwise indicated.

M. Integrated Exterior Mockups: Construct integrated exterior mockup as indicated on Drawings. Coordinate installation of exterior envelope materials and products for

which mockups are required in individual Specification Sections, along with supporting materials.

N. Laboratory Mockups: Comply with requirements of preconstruction testing and those specified in individual Specification Sections in Divisions 02 through 33.

1.11 QUALITY CONTROL

A. Owner Responsibilities: Where quality-control services are indicated as Owner's responsibility, Owner will engage a qualified testing agency to perform these services.

1. Owner will furnish Contractor with names, addresses, and telephone numbers of testing agencies engaged and a description of types of testing and inspecting they are engaged to perform.
2. Costs for re-testing and re-inspecting construction that replaces or is necessitated by work that failed to comply with the Contract Documents will be charged to Contractor, and the Contract Sum will be adjusted by Change Order.

B. Contractor Responsibilities: Tests and inspections not explicitly assigned to Owner are Contractor's responsibility. Perform additional quality-control activities required to verify that the Work complies with requirements, whether specified or not.

1. Unless otherwise indicated, provide quality-control services specified.
2. Where services are indicated as Contractor's responsibility, engage a qualified testing agency to perform these quality-control services.
   a. Contractor shall not employ same entity engaged by Owner, unless agreed to in writing by Owner.
3. Notify testing agencies at least twenty-four (24) hours in advance of time when Work that requires testing or inspecting will be performed.
4. Where quality-control services are indicated as Contractor's responsibility, submit a certified written report, in triplicate, of each quality-control service.
5. Contractor shall furnish to the Laboratory such samples of materials as may be necessary for testing purposes.
6. Testing and inspecting requested by Contractor and not required by the Contract Documents are Contractor's responsibility.
7. Submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.

C. Manufacturer's Field Services: Where indicated, engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including service connections. Report results in writing as specified in Division 01 Section "Submittal Procedures."

D. Manufacturer's Technical Services: Where indicated, engage a manufacturer's technical representative to observe and inspect the Work. Manufacturer's technical representative's services include participation in pre-installation conferences, examination of substrates and conditions, verification of materials, observation of Installer activities, inspection of completed portions of the Work, and submittal of written reports.

E. Re-testing/Re-inspecting: Regardless of whether original tests or inspections were Contractor's responsibility, provide quality-control services, including retesting and reinspecting, for construction that replaced Work that failed to comply with the Contract Documents.

F. Testing Agency and Special Inspector Responsibilities: Cooperate with Architect, Construction Manager, and Contractor in performance of duties. Provide qualified personnel to perform required tests and inspections.

1. Notify Architect, Construction Manager, and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.
2. Determine the location from which test samples will be taken and in which in-situ tests are conducted.
3. Conduct and interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from requirements.
4. Submit a certified written report, in duplicate, of each test, inspection, and similar quality-control service through Contractor.
5. Does not release, revoke, alter, or increase the Contract Document requirements or approve or accept any portion of the Work.
6. Do not perform any duties of the Contractor.
7. Submit reports to the Architect, Construction Manager, and Contractor within seven (7) calendar days of the test.

G. Associated Services: Cooperate with agencies performing required tests, inspections, and similar quality-control services, and provide reasonable auxiliary services as requested. Notify agency sufficiently in advance of operations to permit assignment of personnel. Provide the following:

1. Provide safe access to items to be tested. This includes sheeting and ladders for deep excavation; scaffolding and ladders for inspection and testing of superstructure items. Incidental labor and facilities necessary to facilitate tests and inspections.
2. Adequate quantities of representative samples of materials that require testing and inspecting. Assist agency in obtaining samples.
3. Facilities for storage and field curing of test samples.
4. Delivery of samples to testing agencies.

5. Preliminary design mix proposed for use for material mixes that require control by testing agency.

6. Security and protection for samples and for testing and inspecting equipment at Project site.

H. Coordination: Coordinate sequence of activities to accommodate required quality-assurance and -control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspecting.

1. Schedule times for tests, inspections, obtaining samples, and similar activities.

I. Schedule of Tests and Inspections: Prepare a schedule of tests, inspections, and similar quality-control services required by the Contract Documents. Coordinate and submit concurrently with Contractor's construction schedule. Update as the Work progresses.

1. Distribution: Distribute schedule to Owner, Architect, Construction Manager, testing agencies, and each party involved in performance of portions of the Work where tests and inspections are required.

2. Provide and maintain, for the sole use of the Testing Agency, adequate facilities for safe storage and proper curing of concrete test cylinders on the project site for the first 24 hours as required by ASTM C31-69.

1.12 SPECIAL TESTS AND INSPECTIONS

A. General: Special Inspections and Structural Testing shall be in accordance with Chapter 17 of the *Building Code of New York State (BC-NYS).*

B. Special Tests and Inspections: Owner will engage a qualified special inspector to conduct special tests and inspections required by authorities having jurisdiction as the responsibility of Owner, as indicated in Statement of Special Inspections attached to this Section, and as follows:

1. Verifying that manufacturer maintains detailed fabrication and quality-control procedures and reviews the completeness and adequacy of those procedures to perform the Work. The General Construction Contractor shall provide adequate documentation as requested by the design professional to determine that the off-site fabrication of structural members and assemblies is in compliance with the intent of Section 1704.2-1704.2.2 of the BC-NYS. The fabricator of said components must demonstrate an established quality control program with quality control personnel conducting regular inspections to verify that the work is in conformance with the requirements of the BC-NYS and applicable reference standards.

2. Notifying Architect, Construction Manager, and Contractor promptly of irregularities and deficiencies observed in the Work during performance of its services. Submitting a certified written report of each test, inspection, and similar quality-control service to Architect, through Construction Manager, with copy to

Contractor and to authorities having jurisdiction. The Special Inspections Contractor will furnish copies of all test and Special Inspection reports as follows;

.1 Construction Manager – 2 copies
.2 Design Professional – 1 copy
.3 Prime Contractor – 1 copy

3. Submitting a final report of special tests and inspections at Substantial Completion, which shall include a list of unresolved deficiencies.

4. Interpreting tests and inspections and stating in each report whether tested and inspected work complies with or deviates from the Contract Documents.

5. Re-testing and re-inspecting corrected work.

C. Qualifications: The Special Inspector shall be a Professional Engineer licensed in New York State.

1. The Testing Agency shall meet all the qualifications stated elsewhere in this Section and shall be approved by the Architect.

2. Inspectors: Special Inspections shall be performed by inspectors who are either Professional Engineers licensed to practice in the State of New York, or Engineers-In-Training (EIT) with an education and background in structural engineering except as indicated below:

   a. Special Inspection of soils and foundations may be conducted by Professional Engineers or EIT's with an education and background in geotechnical engineering.
   b. Technicians conducting tests of concrete shall be an ACI certified Concrete Field Technician – Grade 1 or higher.
   c. Personnel conducting inspections of concrete work may be an ACI certified Concrete Construction Inspector or other qualified individuals designated and supervised by the Special Inspector, with experience inspecting concrete work.
   d. Personnel conducting inspections of other work including but not limited to masonry, wood framing, and steel framing, may be individuals with experience inspecting such work, and designated and supervised by the Special Inspector.
   e. Technicians conducting tests or inspections of welds shall be AWS Certified Welding Inspectors. Technicians conducting ultrasonic testing shall also be certified as an ASNT-TC Level II or Level III technician.
   f. Technicians performing standard tests described by specific ASTM Standards shall have training in the performance of such tests and must be able to demonstrate either by oral or written examination competence for the test being conducted. Such Technicians shall not evaluate test results.

g. Technicians of Testing/Inspecting Agencies for smoke control shall have experience in fire-protection engineering, mechanical engineering, and shall have certification as air balancers.

3. Submittals: The Special Inspector and Testing/Inspecting Agency shall submit to the Architect for review, a copy of their qualifications which shall include the names and qualifications of each of the individual inspectors and technicians who will be performing same.

4. Conflicts of Interest: The Special Inspector and Testing/Inspecting Agency shall disclose any past or present business relationship or potential conflict of interest with the Contractors or Sub-contractors whose work will be inspected or tested.

D. Owner Responsibilities: The Owner will Contract with and pay for the services of the Special Inspector.

1. Contract Documents: The Owner will provide the Special Inspector with a complete set of Contract Documents, sealed by the Architect and approved by the Authorities Having Jurisdiction (AHJ).

E. Contractor's Responsibilities for Special Inspections: The Contractor will cooperate with the Special Inspector and their agents so that the Special Inspections and Testing may be performed without hindrance.

1. Notification: The Contractor shall notify the Special Inspector and Testing agency at least forty-eight (48) hours in advance of a required inspection or test as indicated in the Schedule of Special Inspections.

2. Access: The Contractor shall provide incidental labor and facilities to provide safe access for the Special Inspector or their agents to the work to be inspected or tested;

a. To obtain and handle samples at the site or at the source of products to be tested,
b. To facilitate tests and inspections,
c. To storage and curing of test samples on site.

3. Distant Fabricators: If any material(s) or fabricator(s) that require Special Inspections are fabricated in a plant over 200 miles away from the Project Site and the Special Inspector is required to visit the plant, then the Contractor shall be responsible for reimbursing the Special Inspector for mileage and travel expenses incurred beyond that distance limitation.

4. Re-testing/Re-inspection: The Contractor will be responsible for the cost of any retesting or re-inspection of work which fails to comply with the requirements of the Contract Documents.

5. The Contractor shall allow the Special Inspectors or their agent's use of current, updated Construction Documents showing changes to the Work, including but

not limited to submittals and shop drawings that have been approved by the Architect.

F. Limitations of Special Inspector's Authority: The Special Inspector shall not:

1. …release, revoke, alter, or enlarge on the requirements of the Contract Documents.
2. …have control over the Contractor's means and methods of construction.
3. …be responsible for construction site safety.
4. …have the authority to stop work.

G. Testing/Inspecting Agency Responsibilities to the Special Inspector: After the work requiring special inspections is complete, each testing/inspecting agency shall provide an "Agent's Final Report of Special Inspections" to the Special Inspector, stating that testing was completed in substantial conformance with the Contract Documents.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 TEST AND INSPECTION LOG

A. Test and Inspection Log: Prepare a record of tests and inspections. Include the following:

1. Date test or inspection was conducted.
2. Description of the Work tested or inspected.
3. Date test or inspection results were transmitted to Architect.
4. Identification of testing agency or special inspector conducting test or inspection.

B. Maintain log at Project site. Post changes and revisions as they occur. Provide access to test and inspection log for Architect's and Construction Manager's reference during normal working hours.

3.2 REPAIR AND PROTECTION

A. General: On completion of testing, inspecting, sample taking, and similar services, repair damaged construction and restore substrates and finishes.

1. Provide materials and comply with installation requirements specified in other Specification Sections or matching existing substrates and finishes. Restore patched areas and extend restoration into adjoining areas with durable seams that are as invisible as possible. Comply with the Contract Document requirements for cutting and patching in Division 01 Section 01 73 29.

B. Protect construction exposed by or for quality-control service activities.

C. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

3.3 FINAL REPORT OF SPECIAL INSPECTIONS

A. The Final Report of Special Inspections shall be completed by the Special Inspector and submitted to the Architect and Owner prior to issuance of a Certificate of Occupancy.

B. Use *Form 102-2001* published by the Council of American Structural Engineers, or other similar form.

1. The Final Report of Special Inspections shall state that required inspections have been performed and shall itemize any discrepancies which were not corrected nor resolved.

3.4 SCHEDULE OF SPECIAL INSPECTIONS

The following schedule indicates those special inspections that will be performed on this project. This schedule will updated by the Architect/Engineer for each Project site, as applicable.

TYPE OF INSPECTION	QUANTITY OF SPECIAL INSPECTIONS
1. SOILS - EXCAVATION & FILL	
A) Visual inspection to confirm proper site prep and/or extent or continuation of excavation due to poor soil conditions.	*One inspection near completion of excavation.*
B) Visual inspection to confirm proper installation procedures of fill/backfill operations (greater than 12").	*One inspection during second half of backfilling (concurrent with sieve analysis & proctor).*

C) Sieve analysis testing of fill materials (ROB, stone, sand, etc) being used at site.	*One sieve test of fill material during second half of backfilling process.*
D) Modified proctor of cohesive soils for Moisture-Density Relations using 10 lb. hammer & 18" drop (D1557).	*One proctor test during second half of backfilling process.*
E) Density by Nuclear Gauge.	*Not Required.*

2. CONCRETE CONSTRUCTION

A) Visual inspection of reinforcing steel and anchor bolts for placement, bar laps, spacing, size, bends, etc. and forms for stability, design conformance, releasing agents, snap-ties, etc. prior to and during concrete placement to confirm proper installation procedures (ACI 318: 3.5, 7.1-7.7).	*One inspection of strip footing forms & rebar at beginning of pour (concurrent with pour sampling). One inspection of foundation wall forms & rebar at beginning of pour (concurrent with placement inspection & pour sampling).*
B) Visual inspection of concrete being placed and vibration to confirm proper installation procedures (ACI 318: 5.9 - 5.10). (Typically concurrent with sample collection)	*One placement inspection during pour of foundation walls (concurrent with concrete sampling).*
C) Concrete sampling includes; Sampling (ASTM C172), Slump Test (ASTM C143), Air Content (ASTM C173) and (5) Compressive Strength Cylinders (ASTM C31 or C192).	*One test set during pour of footings. One test set during pour of foundation wall.*

D)	Compressive Strength on Concrete Cylinders - Includes capping, curing, cylinder molds (ASTM C31 and C39). Scheduled breaks (unless directed otherwise): 1 @ 7-day, 3 @ 28-day and 1 @ 56-day. If the first 2 of the 3 @ 28-day breaks are low, hold the third 28-day break for an additional 56-day break.	*One test set for footings. One test set for foundation wall.*
E)	Visual inspection for maintenance of specified curing temperature and technique (ACI 318: 5.11-5.13).	*Not Required.*
F)	Visual inspection of the erection of precast concrete members for placement, reinforcement, connections, grouting, etc. (ACI 318: ch 16).	*One site inspection during erection. One site inspection during grouting.*

3. MASONRY CONSTRUCTION

A)	Visual inspection of masonry including placement of units and mortar joints (ACI 530.1: art 2.6A); placement, size and location of reinforcement, type of connectors and anchorage (ACI 530. art 2.4 & 3.4); clear grout space (ACI 530.1: art 3.2D); proportions of site prepared grout (ACI 530.1: art 2.6B); placement of grout (ACI 530.1: art 3.5) to confirm proper installation procedures.	*One site inspection of cmu & reinforcing during first third of masonry erection including grout review. One site inspection during second third of masonry erection (concurrent with mortar sample). One site inspection during grouting operation (concurrent with grout sample).*
B)	Visual inspection for maintenance of specified curing temperature and technique during hot or cold weather (ACI 503.1: art 1.8).	*Not Required.*

C)	Preparing grout and/or mortar specimen prisms (ACI 530.1: art 1.4).	*One mortar specimen. One grout specimen.*
D)	Grout specimen compression test (4"x4"x8").	*One grout compression test.*
E)	Mortar cube compression test (2"x2"x2").	*One mortar compression test.*

4. STEEL CONSTRUCTION

A)	Visual inspection of structural steel for component verification in conformance with ASTM standards including steel frame joint details (ASTM A6 or A568).	*One site inspection at completion of steel erection (concurrent with weld inspection).*
B)	Visual and torque inspection of bolted connections (AISC LRFD)	*Not Required.*
C)	Visual inspection of welds by AWS methods and standards (AWS D1.1 or D1.3)	*One site inspection at completion of steel erection.*
D)	Butt welds for structural steel testing by Ultrasonic inspection (AWS Method).	*Not Required.*
E)	Fillet welds for structural steel inspection by Magnetic Particle inspection (AWS Method).	*Not Required.*

PART 4 - PRODUCTS

(Not applicable)

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SECTION 015000 - TEMPORARY CONSTRUCTION

1.0 PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. AIA Document A202-2009, "The General Conditions of the Contract for Construction, Construction Manager as the Advisor Edition", The American Institute of Architects. Articles 01 thru 15 are bound herein and are hereby made a part of the Specifications and shall apply to Prime Contractors and their Subcontractors unless otherwise specified.

B. Section 01 10 00, "Summary of Work".

C. Section 01 12 00, "Multiple Contract Summary."

1.2 SUMMARY

A. This Section specifies requirements for temporary services and facilities, including utilities, construction and support facilities, security and protection.

B. This Section applies to Prime Contractors and their subcontractors. Provide all temporary facilities (listed herein or not) required to complete the Contract Work. All items included herein shall be provided by the General Construction Contractor (Contract #300) unless specifically noted otherwise.

C. Temporary utilities required include but are not limited to:
1. Temporary Water service and distribution.
2. Temporary electric power and light.
3. Temporary staging.
4. Temporary heat.
5. Telephone service.

D. Temporary construction and support facilities required include but are not limited to:
1. Field offices and storage sheds.
2. Temporary roads and paving.
3. Sanitary facilities, including drinking water.
4. Dewatering facilities and drains.
5. Temporary heating and ventilation.
6. Weather protection.
7. Temporary Project identification signs and bulletin boards.
8. Cleanup and waste disposal services.
9. Construction aids and miscellaneous services and facilities.
10. Owners Representative Office Supplies
11. Mechanical Contractor (Contract #400 to provide and maintain filters on all supply air intake louvers during construction.

E. Security and protection facilities required include but are not limited to:
1. Temporary fire protection.
2. Storm water control.
3. Tree and plant protection.
4. Pest control.
5. Security enclosure and lockup.
6. Temporary partitions.
7. Barricades, warning signs, lights.
8. Environmental protection.
9. Temporary fence.

F. Related Sections include the following:
1. Division 01 Section "Submittals" for procedures for submitting copies of implementation and termination schedule and utility reports.
2. Divisions 02 through 31 Sections for temporary heat, ventilation, and humidity requirements for products in those Sections.
3. Division 32 Section "Asphalt Paving" for construction and maintenance of asphalt paving for temporary roads and paved areas.

1.3 DEFINITIONS

A. Permanent Enclosure: As determined by Architect, roofing is complete, insulated, and weather tight; exterior walls are insulated and weather tight; and all openings are closed with permanent construction or substantial temporary closures that are at least equal to the thermal performance of the final construction.

1.4 USE CHARGES

A. General: Cost or use charges for temporary facilities are not chargeable to Owner, Construction Manager or Architect and shall be included in the Contract Sum. Allow other entities to use temporary services and facilities without cost, including, but not limited to, the following:
1. Owner's construction forces.
2. Occupants of Project.
3. Architect.
4. Testing agencies.
5. Personnel of authorities having jurisdiction.
6. Construction Manager

B. Water Service: Water from Owner's existing water system is available for use without metering and without payment of use charges. All prime contractors shall provide and maintain connections and extensions of services as required for temporary construction operations.

C. Electric Power Service: Electrical from Owner’s existing electrical system is available for consumption use without metering and without payment of use

charges. All prime contracts shall will provide and maintain a temporary electrical as need to complete their Contract.

D. It is each contractor's responsibility to provide and maintain all necessary measures, satisfactory to the CM, for the conservation and minimization of Temporary Utility usage and cost to the Owner.

1.5 QUALITY ASSURANCE

A. Regulations: Comply with industry standards and applicable laws and regulations of all Federal, State, and local governing authorities having jurisdiction, including but not limited to:
1. OSHA Standards
2. Building Code requirements.
3. Health and safety regulations.
4. Utility company regulations.
5. Police, Fire Department and Rescue Squad rules.
6. Environmental protection regulations.

B. Standards: Comply with NFPA 241, "Standard for Safeguarding Construction, Alterations, and Demolition Operations", ANSI-A10 Series standards for "Safety Requirements for Construction and Demolition", and NECA Electrical Design Library "Temporary Electrical Facilities."
1. Trade Jurisdictions: Assigned responsibilities for installation and operation of temporary utilities are not intended to interfere with trade regulations and union jurisdictions.
2. Electrical Service: Comply with NEMA, NECA and UL standards and regulations for temporary electric service. Install service in compliance with National Electric Code (NFPA 70).

C. Each Contractor shall provide dust control as well as maintain clean roadways and parking areas at the Site. GC Contract #300 shall provide water truck and street sweeper as necessary as it pertains to their work. Provide all traffic control devices, signage and flag-person wearing Hi-Viz as required for deliveries occurring on site. Each Prime Contractor must notify the Construction Manager 48 hours in advance of deliveries.

D. Each Prime Contractor shall be responsible for the control of chemical fumes, gases and other contaminates produced by their construction activities such as welding, gasoline or diesel engines, roofing, paving, painting, etc. to ensure these contaminants do not enter occupied portions of the building or air intakes. All diesel engines shall be equipped with catalytic converters to minimize smoke and fumes.

E. Each Prime Contractor shall be responsible to ensure that activities and materials which result in "off-gassing" of volatile organic compounds such as glues, paints, concrete sealants, asphalt sealants, etc. are scheduled, cured or ventilated in accordance with manufacturers recommendations to insure odors

will not travel into building through doors, windows, and air intakes or openings of any kind. Report openings in new, existing, and temporary partitions to the Owner's Project Representative for repair.

F. Inspections: Arrange for authorities having jurisdiction to inspect and test each temporary utility before use. Obtain required certifications and permits.

1.6 PROJECT CONDITIONS

A. Temporary Utilities: when acceptable to the Owner, change over from use of temporary service to use of the permanent service.
   1. Temporary Use of Permanent Facilities: Installer of each permanent service shall assume responsibility for operation, maintenance, and protection of each permanent service during its use as a construction facility before Owner's acceptance, regardless of previously assigned responsibilities.

B. Conditions of Use: Keep temporary services and facilities clean and neat in appearance. Operate in a safe and efficient manner and repair any damages without delay. Take necessary fire prevention measures. Do not overload facilities, or permit them to interfere with progress. Do not allow hazardous dangerous or unsanitary conditions, or public nuisances to develop or persist on the site. Relocate temporary services and facilities as required by progress of the Work.

C. Damages: Prime Contractors shall provide for repair of damages caused by use of their temporary facilities. Walks, pavements, curbs, interior finishes, and any other existing surfaces that are broken, damaged, settled or otherwise defective, as a result of receiving, handling or storage of materials or the performance of work for this project shall be fully restored at the expense of the Prime Contractor whose operations or employees caused the damage.

D. Changes: Check for Alternates and other possible changes in the work that might affect work and materials of this section.

E. Parking: For Prime Contractors and their employees, parking shall be only in areas as approved by the Owner and shall be coordinated through the Construction Manager.

F. Use of Site: Prime Contractors shall limit use of the site for access, parking and storage of materials to those areas approved by the Owner and shall be coordinated through the Construction Manager. Materials shall be brought into the building only by routes approved by Owner. Bring materials to the site as needed for immediate installation as storage/staging areas have limited space.

G. Execution of work by individual trades shall be coordinated with the master schedule. Contractors shall coordinate the release of materials and equipment and schedule labor to meet all milestone dates. Each Contractor shall be

required to provide temporary materials and equipment as well as the labor associated with installation to allow District occupancy and use of spaces as scheduled if permanent materials/equipment are not available. Temporary materials and equipment are subject to District approvals.

1.7 STAGING AREAS AND BUILDING ACCESS

A. A temporary staging area will be provided at the Site with the Owners approval and shall be coordinated through the Construction Manager. Contractors shall utilize and maintain this area for staging office and storage units.

B. All access to the Site must be through the staging area, passageways, life safety and emergency vehicle access, etc. as assigned by the Owner and shall be coordinated through the Construction Manager.

C. No dumpster, material staging, parking etc. may be within 20 feet of any District building or structure on all sides. This also includes designated fire or emergency vehicle lanes.

D. Contractors' personnel shall not be allowed access to any other part of the District Property other than the immediate construction area except by special arrangement with the Owner coordinated through the Construction Manager.

2.0 PART 2 - PRODUCTS

2.1 MATERIALS

A. General: Provide new materials; if acceptable to the Architect, undamaged previously used materials in serviceable condition may be used. Provide materials suitable for the use intended.

B. Staging Areas:

1. Staging Areas, including but not limited to parking, equipment and material storage, and field office areas, shall be 12" crushed stone base course including Mirafi 500X Geotextile fabric and is the responsibility of the General Contractor (Contract #2). Staging Area to remain at the end of the project.
   a. Field Office Areas: Minimum 12" reference NYS DOT section 304.202 type 4 sub-base course under and around Field Offices.
   b. Access Roads: Includes access roads for delivery through staging area to building work areas, and to equipment and storage areas and sheds. Minimum of 12" reference NYS DOT section 304.202 type 4 sub-base course.
   c. Storage Areas: Includes footprint of storage areas and storage sheds. Minimum of 12" reference NYS DOT section 304.202 type 4 sub-base course.

C. Temporary Chain-Link Fencing: Minimum 2-inch , 0.148-inch- thick, galvanized steel, chain-link fabric fencing; minimum 8 feet high above ground with galvanized steel pipe posts; minimum 2-3/8-inch OD line posts and 2-7/8-inch OD corner and pull posts, with 1-5/8-inch OD top rails. Gate Posts 4- inch set in concrete.

D. Lumber and Plywood: Comply with requirements in Division 06 Section "Rough Carpentry."

E. Gypsum Board: Minimum 5/8 inch (15.9 mm) thick by 48 inches (1219 mm) wide by maximum available lengths; Type X panels with tapered edges. Comply with ASTM C 36/C 36M.

F. Insulation: Unfaced mineral-fiber blanket, manufactured from glass, slag wool, or rock wool; with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively.

G. Paint: Comply with requirements in Division 09 painting Sections.
1. For job-built temporary offices, shops, sheds, fences and other exposed lumber and plywood, provide exterior grade acrylic-latex emulsion over exterior primer.
2. For sign panels and applying graphics, provide exterior grade alkyd gloss enamel over exterior primer.

H. Tarpaulins: Provide waterproof, fire-resistant, UL labeled tarpaulins with flame-spread rating of 15 or less. For temporary enclosures provide translucent nylon reinforced laminated polyethylene or polyvinyl chloride fire retardant tarpaulins.

I. Water: Provide potable water approved by local health authorities.

2.2 EQUIPMENT

A. General: Provide new equipment; if acceptable to the Architect, undamaged, previously used equipment in serviceable condition may be used. Provide equipment suitable for use intended.

B. Water Hoses: Provide and maintain 3/4" heavy-duty, abrasion-resistant, flexible rubber hoses 100 ft. long, with pressure rating greater than the maximum pressure of the water distribution system; provide adjustable shut-off nozzles at hose discharge.

C. Electrical Outlets: Provide and maintain properly configured NEMA polarized outlets to prevent insertion of 110-120 volt plugs into higher voltage outlets. Provide receptacle outlets equipped with ground-fault circuit interrupters, reset button and pilot light, for connection of power tools and equipment.

D. Electrical Power Cords: Provide and maintain grounded extension cords; use "hard-service" cords where exposed to abrasion and traffic. Provide and maintain waterproof connectors to connect separate lengths of electric cords, if single lengths will not reach areas where construction activities are in progress. Do not exceed safe length-voltage ratio. All power cords in use must also be equipped with a Ground Fault Circuit Interrupter (GFCI) at all times.

E. Lamps and Light Fixtures: Provide and maintain general service incandescent lamps of wattage required for adequate illumination. Provide and maintain guard cages or tempered glass enclosures, where exposed to breakage. Provide and maintain exterior fixtures where exposed to moisture.

F. Heating Units: Permanent systems will not be used for temporary heat, provide and maintain a system of natural gas fired temporary heating units that have been tested and labeled by UL, and are A.G.A. certified. Natural gas fired heaters may be radiant type, natural convection type, or forced recirculation type, but all shall be UL rated and A.G.A. approved for non-vent use.
   1. Use of electric heaters, gasoline-burning space heaters, open-flame heaters, or salamander-type heating units is prohibited.
   2. Natural or propane gas heaters shall be ducted if heater is approved for ducted use.
   3. If bottled gas type units are used, storage tanks shall be located outside the building.

G. Prime Contractors Field Offices: Prefabricated or mobile units with serviceable finishes, temperature controls, and foundations adequate for normal loading of sufficient size to accommodate needs of construction personnel. Keep office and site clean and orderly. Each Prime Contractor is responsible to clean their own field office as needed. Rubbish removal shall be provided by each contractor and included within you bid.

H. Not Used

I. First Aid Supplies: Comply with OSHA Standards and at a minimum, each Contractor shall provide and maintain a First Aid Kit in their Site office location and within a gang box at each school where they are performing work.

J. Fire Extinguishers: Provide hand-carried, portable UL-rated, class "A" fire extinguishers for temporary offices and in each storage trailer. In other locations provide hand-carried, portable, UL-rated, class "ABC" dry chemical extinguishers, or a combination of extinguishers of NFPA recommended classes for the exposures.
   1. Comply with NFPA 10 and NFPA 241 for classification, extinguishing agent and size required by location and class of fire exposure.

2.3 CONSTRUCTION FENCE

A. The GC Contract #300 shall provide temporary construction fences as outlined on the site logistics drawing LPC SK-01 along with all accessories, heavy duty pad locks keyed alike, heavy duty chins as required securing entire construction work areas.

B.

1. Fence shall be a substantial heavy duty chain link type fence (6'-0") eight feet high. Provide entrance gates and doors of similar chain link construction, with location as approved by the Owner, with locking hardware and with sizes as required for admitting construction personnel, vehicles, and equipment. The fence shall be maintained in good repair at all times while it remains in place at the project site. A well painted or well galvanized appearance will be required at all times with no rusty areas. The fence shall be removed when it is no longer required and as directed by the Architect and it shall become the property of the Contractor after removal from the Site.

2. Provide heavy duty chains and heavy duty pad locks keyed alike at each construction gate. Provide 5 additional of these same keyed alike pad locks to the Construction Manager. Maintain all gate pad locks in good working order throughout the project. Provide keys to each Prime Contractor and the Owner. Maintain security by limiting number of keys and restricting distribution to authorized personnel. Assure the site fencing / gates are secure at the end of each work day. The GC Contract #300 is responsible to lock and unlock all construction gates required at the beginning and end of each day during normal working hours. Contractors working beyond the normal work hours will be responsible to lock the gates as they leave the site.

3. The GC Contract #300 shall provide, in addition to fencing shown on the site logistic plan drawing LPC SK-01, 200’ liner feet of installed fencing with (2) man gates. Location for installation will be as directed by the Construction Manager.

4. The GC Contract #300 shall relocate fencing as required to facilitate Districts use of surrounding areas as well as for construction operations.

C. Each Prime Contractor shall provide and maintain orange construction fencing with adequate support posts at all areas of excavation and as required to identify safe zone areas for loading, unloading protecting and securing. Additional fencing shall be provided as required to comply with all OSHA Regulations for their work.

3.0 PART 3 - EXECUTION

3.1 PROTECTION OF BUILDING OCCUPANTS

A. The requirements of Section 155 of the Regulations of the New York State Commissioner of Education apply to this Project. Include a copy of Section 155 in the Spec. book.

B. Owner occupied areas of the building shall always comply with the minimum requirements necessary to maintain a Certificate of Occupancy.

C. General safety and security standards for this project include:
   1. All construction materials shall be stored in safe, debris free and secure manner.
   2. Fences around areas of construction shall be maintained daily.
   3. Gates in temporary fences shall always be locked unless a worker is in attendance to prevent unauthorized entry to the Contract areas.
   4. During exterior or interior renovation or new work areas lighted paths, overhead protection and ¾" framed plywood side wall protection shall be provided and maintained for any sidewalks or any other areas immediately beneath overhead work activities to maintain access / egress and allow the continuation of other work. In the event the overhead work is not located above access / egress locations, the areas below the work shall be securely fenced off eliminating any possibility of persons gaining access to areas below the work. The fenced areas must be provided with warning signs indicating the nature of the danger.
   5. Workers shall wear photo-identification badges at all times for identification and security purposes. Workers must wear Hi-Viz attire at all times while on site or in the buildings / additions.

D. Separation of Construction Areas: Construction areas which are under the control of a Contractor and therefore not occupied by District Staff or Students shall be separated from occupied areas. Provisions shall be made to prevent the passage of dust and contaminants into occupied parts of the building. Periodic inspection and repairs of the contaminant barriers must be made to prevent exposure to dust or contaminants. Each Contractor working inside the buildings shall provide and maintain temporarily sealed doorways enclosing their work area, using heavy duty fire retardant plastic, Repairs of the plastic must be made immediately. Each Contractor shall also provide and maintain protection of all existing surfaces and furnishings where the work of their contract is performed. The contractor shall be responsible to restore or replace any surfaces or furnishings damaged as a result of their work activities.
   1. UL fire rated Gypsum board assemblies shall be used in exit ways or other areas which require fire rated separation.
   2. Fire retardant plastic sheeting may be used only as a vapor, fine dust, or air infiltration barrier, and shall not be used to separate occupied spaces from construction areas.
   3. In general, workers may not use corridors designated for students or school staff use.
   4. Large amounts of debris must be removed by using enclosed chutes or a similar sealed system. There shall be no movement of debris

through halls of occupied spaces of the building. No material shall be dropped or thrown outside the walls of the building.

5. All occupied parts of the building affected by renovation activity shall be cleaned at the close of each workday or more often if deemed necessary by the owner and or Construction Manager. School buildings occupied during a construction project shall maintain required health, safety, and capabilities within the school. Working while school is in session is not permitted.
6. Repairs needing to be made as a result of temporary barriers are the sole responsibly of the Prime Contractor and/or their Sub. This would include but not be limited to replacement of damaged carpet and flooring systems, painting walls and door frames, removal of adhesives or tape residue, masonry repairs to the satisfaction to the Architect and Owner.

E. Fire and hazard prevention: Areas of buildings under construction that are to remain occupied shall maintain a Certificate of Occupancy.
1. No smoking is permitted on public school property, including construction areas.
2. Do not block fire exits or emergency egress windows with construction materials, equipment, or debris.
3. Each Contractor shall seal penetrations they make in floors or walls with fire resistant material.
4. Each Contractor shall cover temporary openings and any other openings to prevent accidents, and to stop the possible spread of spilled liquids, construction dust, fumes or fire.

F. Noise abatement during construction:
1. Construction and maintenance operations shall not produce noise in excess of 60 dba in occupied spaces or shall be scheduled for times when the building is not occupied or acoustical abatement measures shall be taken.

G. Control of airborne contaminates during construction:
1. Each Contractor shall be responsible for the control of his chemical fumes, gases, and other contaminates produced by welding, gasoline or diesel engines, roofing, paving, painting, etc. to ensure they do not enter occupied portions of the building or air intakes.
2. Each Contractor shall be responsible to ensure that his activities and materials which result in off-gassing of volatile organic compounds such as glues, paints, furniture, carpeting, wall covering, drapery, etc. are scheduled, cured, or ventilated in accordance with manufacturer’s recommendations before a space can be occupied.
3. Large and small asbestos abatement projects as defined by 12NYCRR56 shall not be performed while the building is occupied.

3.2 INSTALLATION:

A. Use qualified personnel for installation of temporary facilities. Locate facilities where they will serve the Project adequately and result in minimum interference with performance of the Work. Relocate, maintain and modify facilities as required by progress of the Work. Coordinate locations with the Construction Manager, Owner and Architect.

B. Provide each facility ready for use when needed to avoid delay. Maintain and modify temporary protection as required. Do not remove until facilities are no longer needed, or are replaced by authorized use of completed permanent facilities.

C. Lifts and Hoists: Each Prime Contractor shall provide approved facilities for hoisting materials, equipment and employees in the advancement of the Project. Truck cranes and similar devices used for hoisting materials are considered "tools and equipment" and not temporary facilities. All persons that are to use these lifts and hoisting equipment must provide a copy of their certification to the Construction Manager Superintendent proving they have been trained in the use of the equipment. Certification is also required for Lull operation. Each Contractor hoisting tools, materials or equipment with a crane must have a licensed operator with current crane inspections as well as certified riggers performing the work.

1. The elevator in the existing building WILL NOT be allowed to be used by the contractors. Each contractor is to provide their own hoisting as required.

D. Shoring: Each Prime Contractor shall provide and maintain all shoring necessary for the advancement of the project. The work shall comply with all safety laws and be constructed so as not to interfere with other work. Coordinate with all other Contracts. The General Construction Contractor (Contract #300) shall shore all concrete placements, including slab on decks, to ensure final tolerances and dimensions. The General Construction Contractor (Contract #300) shall be responsible to hire their own Structural Engineer to design and certify their shoring to include areas where structural demolition is performed.

3.3 TEMPORARY UTILITY INSTALLATION, GENERAL:

A. Engage the appropriate local utility company to install temporary service or connect to existing service. Where the utility company provides only part of the service, provide the remainder with matching, compatible materials and equipment; comply with the utility company's recommendations.
The Contractor shall provide in advance of performing the work a written plan describing where the temporary work will take place, the duration to make the temporary installation/s and what will be affected by the temporary installation/s. Following approval of the Contractor’s written plan by the Owner and Construction Manager, the Contractor shall schedule the utility company and notify the Construction Manager of the time/s and date/s the

work will take place. The Owner must approve the times and dates prior to any work taking place that will impact the facilities.

3.4 WATER SERVICE:

A. Prime Contractors and subcontractors requiring water shall provide and maintain their own hoses and connections with their company name clearly indicated on them at the temporary header supplied by the Plumbing Contractor. All hoses and connections shall be checked at least at the end of each work day by the prime contractor/s using them to assure they are turned off and not leaking. Leaking hoses / connections must be repaired immediately or taken out of service.

B. Remove from premises all temporary lines, hose, etc., on completion of the Work or as otherwise directed. Restore to original condition any areas or items that were negatively impacted by the installation or use of temporary work.

3.5 TEMPORARY ELECTRIC SERVICE:

A. Each Prime shall provide any additional power required to complete the work of their contract. Lamps, extension cords, etc. shall be furnished by each Prime Contractor and subcontractors desiring these items.

3.6 TEMPORARY TELEPHONE/DATA NETWORK/PUBLIC ADDRESS SYSTEM:

A. Prime Contractors are responsible for their own data, fax and telephone lines to their respective office locations.

B. At each telephone, post a list of important telephone numbers.
1. Police and fire departments.
2. Ambulance service.
3. Project Team Directory.

C. Each Prime Contractor to provide portable cellular telephone with voice mail for superintendent’s use in making and receiving telephone calls when away from the field office.

D. Prime Contractor shall authorize his job foremen to make all necessary telephone calls required to expedite the job and at the Prime Contractor's expense.

3.7 DRAINAGE:

A. Temporary Erosion and Sedimentation Control: Comply with requirements specified in Division 31 Sections and ‘C’ Drawings.

B. Storm water Control: Comply with authorities having jurisdiction. Provide earthen embankments and similar barriers in and around excavations and subgrade construction to prevent flooding by runoff of storm water from heavy rains.

3.8 TEMPORARY CONSTRUCTION AND SUPPORT FACILITIES INSTALLATION:

A. Locate field offices, storage sheds, sanitary facilities and other temporary construction and support facilities for easy access. Coordinate with Owner and Architect.
   1. Maintain temporary construction and support facilities until near Substantial Completion. Remove prior to Substantial Completion. Personnel remaining after Substantial Completion will be permitted to use permanent facilities, under conditions acceptable to the Owner.
   2. Keep the field office and site clean and orderly. Provide daily cleaning and maintain office in good condition.

B. Provide incombustible construction for offices, shops and sheds located within the construction area, or within 30 feet of building lines. Comply with requirements of NFPA 241.

C. Contractor providing openings shall close openings through floor and horizontal surfaces with load-bearing, wood-framed construction. Removal and disposal to the dumpster by contractor placing permanent equipment.

D. Where temporary wood or plywood enclosure exceeds 100 sq. ft. (9.2 sq.m) in area, use UL labeled, fire-retardant-treated material for framing and main sheathing.

E. Generally, temporary closures for openings are the responsibility of the Contractor creating the opening and shall be installed to protect building from exterior elements. Specifically:
   1. The General Construction Contractor (Contract #300) shall enclose and maintain all window and curtain wall openings at the buildings with 2 x 4 wood blocking and reinforced 6 mil. Polyethylene sheets, as soon as perimeter exterior walls are placed. Removal and disposal to dumpster of temporary enclosure is also by the General Construction Contractor (Contract #300). All materials used for temporary protection shall be fire retardant.
   2. Contractors requiring temporary removal of temporary enclosures shall be responsible for removing and reinstalling the enclosure.

F. Roof curbs and sleeves are to be set by Contractor furnishing same. Provide curb infill with load bearing wood frame construction and make weather tight until permanent equipment is installed.

3.9 STORAGE

A. Prime Contractors or subcontractors may erect temporary buildings for the storage of materials and equipment as space allows and must be coordinated with other Prime Contractors, the Construction Manager and the Owner. Heat, light and power, if required, for temporary buildings, is the responsibility of the Prime Contractor or subcontractor erecting each temporary building. Temporary buildings must comply with all OSHA Standards. Each Contractor shall be responsible for the safety and security of any temporary structure they construct or provide.

B. The location of any temporary building shall be approved by the Architect and Owner and shall not interfere with the use of the adjacent buildings driveways, walks, etc.

C. Materials shall not be stored promiscuously about the site but shall be carefully stored in areas which will not interfere with pedestrian traffic nor with access to and egress from adjacent properties and buildings.

3.10 TEMPORARY PAVING:

A. Not used.

3.11 SANITARY FACILITIES:

A. GC Contract #300 shall provide / maintain sanitary facilities include temporary toilets. Comply with regulations and health codes for the type, number, location, operation and maintenance of fixtures and facilities. Install where facilities will best serve the Project's needs. Coordinate locations with Owner.
   1. Provide and maintain toilet tissue, paper towels, paper cups, hand sanitizer and similar disposable materials for each facility. Provide and maintain covered waste containers for used material.
   2. The area of sanitary facilities shall not be used for loitering, smoking and shall be kept clean.

3.12 PUMPING AND DRAINING:

A. Dewatering Facilities and Drains: For temporary drainage and dewatering facilities and operations not directly associated with construction activities included under individual Sections, comply with dewatering requirements of applicable Division-31 Sections. Where feasible, utilize the same facilities. Maintain the site, excavations and construction free of water.
   1. Dispose of rainwater in a lawful manner that will not result in flooding Project or adjoining property nor endanger permanent Work or temporary facilities.
   2. Before connection and operation of permanent drainage piping system, provide temporary drainage where roofing or similar waterproof deck construction is completed.

B. The Sitework Contract #300 shall keep excavations and other project related work areas that are under their contractual responsibility free from water at all times. Pump or drain as necessary. Distribute discharge to prevent excessive erosion and damage to surrounding areas.

3.13 WEATHER PROTECTION:

A. Temporary Enclosures: GC Contract #300 shall provide, maintain at all times, relocate / modify as work progresses temporary enclosures to protect work in place, secure and protect stored tools, equipment and materials from damages caused by inclement weather or from theft and insure the safety of unauthorized persons by eliminating their access to the work areas.

3.14 SCAFFOLDING AND HOISTING, GENERAL:

A. Prime Contractors shall provide all scaffolds, runways, ramps, ladders, hoists and other construction aids as may be required for reaching all portions of his work conveniently and safely per OSHA Standards, except as otherwise indicated.

B. Prime Contractors shall furnish and maintain all temporary ladders, ramps, runways, chutes, derricks, stairs, joists, shoring, cranes and similar items required for the proper execution of the work of the Contract, including the work of subcontractors. Any and all of these facilities shall be constructed so as to prevent damage to, including staining or marring of, permanent work. All damage resulting from the use of such facilities shall be repaired by the Contractor at his expense.
   1. Where chute operation is performed adjacent to areas occupied by the public in which there are wall openings, i.e.: windows, doors, etc., such openings shall be protected against penetration to withstand the maximum credible impact. Dust control is mandatory at chute locations as well as providing and maintaining work and access exclusion zones around the chutes / dumpsters.
   2. Truck cranes and similar devices used for hoisting materials are considered "tools and equipment" and not temporary facilities.
   3. Each Contractor shall hold harmless the Construction Manager's staff, the Owner, the Architects and Engineers of record and the Owners Testing Agents in allowing the use of their scaffolding, ladders, ramps, runways, stairs etc. to safely access inspect and observe the work.

3.15 MATERIAL HOIST

A. The Contractor who provides a material hoist of any type is responsible for assuring that personnel and the public is in no way put at risk by the operations. Contractors using these types of equipment must have certified personnel using them. Prior to persons operation equipment must provide copies of their certifications to the Construction Manager for record.

3.16 PROJECT SIGNS

A. Prime Contractors shall install approved signs as necessary for safety and as necessary to meet insurance requirements.

B. GC Contract #300 shall provide signs to route and reroute traffic and warn the public of construction zones based on contract scope of work. At no time shall the public, facility staff, students or anyone else have the ability to unknowingly wander into a work area. Each Contractor must provide and maintain whatever means of barriers necessary as well as providing physical person/s to assure no unauthorized person can enter a work zone.

C. Project Architect Sign: GC Contract #300 shall provide, maintain, install and remove one (1) project sign noting the Design Team, Construction Manager and Program Managers. The Architect shall provide sign layout and graphics after award of contract. Sign to be 4' by 8' with professional quality lettering and in-ground support posts. Sign to be removed and reinstalled by contractor at the Construction Manager's direction if necessary.

D. No other signs shall be erected on the grounds or on the building except as may be expressly authorized by the Owner and Architect.

3.17 CLEANUP AND WASTE DISPOSAL:

A. Waste Disposal Facilities: The General Construction Contractor (Contract #300) shall provide waste-collection containers in sizes adequate to handle construction debris (non-hazardous materials) from construction operations at all buildings.

B.

1. All prime contractors shall be responsible for removal and disposal of all debris, refuse and spoils etc. generated by the work of their contract.
2. GC contract #300 shall provide dumpsters as required to facilitate work of their contract.
3. Each Contractor shall be responsible for waste disposal facilities for hazardous, dangerous or unsanitary waste materials generated by the Work of their Contract.
4. Recycling of refuse materials is highly encouraged.

C. General: The premises and the job site shall be maintained in a reasonably neat and orderly condition and kept free from accumulations of waste materials and rubbish during the entire construction period. Remove all crates, cartons and other flammable waste materials or trash from the work areas at the end of each working day.

1. Access routes and piles of debris shall be wet down to eliminate excessive dust.

D. Responsibility: Each Prime Contractor shall be responsible to provide and maintain the general cleaning work of all of his work and the work of their subcontractors employed on the project, except as otherwise specified. If the premises and job site are not maintained properly, the Owner may have any accumulations of waste materials or trash removed and charge associated costs to the delinquent Contractor/s.

E. All areas inside and outside the work area shall be cleaned and left free from rubbish, mortar drippings, extraneous construction materials, dirt and dust. Clean up areas within the contract limits, and keep areas adjoining the construction site, such as streets driveways, walkways, etc., clean and free from debris, mud, etc., which was generated from the construction site.

F. All rubbish shall be lowered by way of chutes, or lowered in receptacles. Under no circumstances shall any rubbish or waste be dropped or thrown from one level to another within or outside the building.

G. Damage to Existing Surfaces: Care shall be taken by workmen not to mare, soil or otherwise deface any finished surfaces that are scheduled to remain. In the event that any finished surface becomes defaced in any way, the Contractor causing damage shall be responsible for cleaning, replacing in kind and / or restoring such surfaces to their original condition.

H. Clean up immediately upon completion of each trades work each day.

I. Collection and Disposal of Waste: Collect waste from construction areas and place in approate dumpsters daily. Comply with requirements of NFPA 241 for removal of combustible waste material and debris. Enforce requirements strictly. Do not hold materials more than 7 days during normal weather or 3 days when the temperature is expected to rise above 80 deg. F (27 deg. C). Handle hazardous, dangerous, or unsanitary waste materials separately from other waste by containerizing properly. Dispose of material in a lawful manner.

3.18 SECURITY AND PROTECTION FACILITIES INSTALLATION

A. Except for use of permanent fire protection as soon as available, does not change over from use of temporary security and protection facilities to permanent facilities until Substantial Completion.

3.19 TEMPORARY FIRE PROTECTION AND PREVENTION

A. Fire Protection Program: GC Contract #300 shall be responsible for the development, maintenance, personnel training and deployment of a fire protection and prevention program to be followed by all persons working on the project throughout all phases of the construction and demolition work, and he shall provide for the firefighting means and methods, signage and equipment as required for all Contractors and employees for the project. The program shall be in compliance with OSHA Construction Safety and Health Regulations as stated

in the Federal Register dated June 24, 1974, Volume 39, Number 122, Part II, Subparagraph F and any amendments or any updating thereof and any more stringent requirements by local governing bodies. There shall be no delay in providing the necessary equipment. Some conditions of the program are as follows:

1. No smoking allowed on site. This is a zero tolerance issue. Any person observed smoking on site will be removed from the site and not allowed to return.
2. Maintain unobstructed access at all times to fire extinguishers, fire hydrants, temporary fire protection facilities, stairways and other access routes for fighting fires. Prohibit smoking in hazardous fire exposure areas.
3. Provide and maintain general use certified fire extinguishers with signage per OSHA Standards. All firefighting equipment provided shall be conspicuously located and have clear signage indicating their location.
4. All firefighting equipment shall be inspected at a minimum on a weekly basis, and be certified and maintained in operating condition. Defective or deployed equipment shall be immediately replaced.
5. Fire extinguishers, water drums and other equipment, subject to freezing, shall be protected from freezing.
6. Store combustible materials in containers in fire-safe locations.
7. Each Prime Contractor shall provide a person for fire watch supervision as well as providing any necessary fire safety equipment when performing their own welding, soldering, brazing, burning, and grinding.
8. GC Contract #300 shall provide and maintain general use fire extinguishers per OSHA Standards for use by all persons employed on the project who are using equipment that constitute a fire hazard such as welding and he shall provide accessible appropriate fire extinguishers within 50 feet of wherever combustible or flammable liquids or gases are being used or stored on the job site.

B. Temporary Fire Protection: Until fire protection needs are supplied by permanent facilities, install and maintain temporary fire protection facilities of the types needed to protect against reasonably predictable and controllable fire losses. Comply with NFPA 10 "Standard for Portable Fire Extinguishers," and NFPA 241 "Standard for Safeguarding Construction, Alterations and Demolition Operations." All plans must be submitted to the School District for approval and implemented prior to any fire protection, alarm systems or communication system being taken temporarily off line.

C. Permanent Fire Protection: At the earliest feasible date in each area of the Project, complete installation of the permanent fire protection facility, including connected services, and place into operation and use. Instruct key personnel on use of facilities.

3.20 BARRICADES AND PROTECTION:

A. Barricades, Warning Signs and Lights: Comply with standards and code requirements for erection of structurally adequate barricades. Follow all OSHA Standards. Paint with appropriate colors, graphics and warning signs to inform personnel and the public of the hazard being protected against. Where appropriate and needed provide lighting, including flashing red or amber lights.
   1. Roadways, walks, paths, exit ways and other areas, etc. shall remain unobstructed and shall be maintained in a safe and satisfactory manner by GC contract #300. GC Contract #300 shall provide, maintain, remove and relocate any temporary cross walks and signage required by the work.
   2. Contractors shall provide and maintain OSHA Standard barricades and any necessary signage at all of their excavations, trenches, dangerous openings and other hazardous conditions to prevent injury or harm to any person in such areas.

B. Contractors shall provide and maintain any temporary protection materials as may be required for the protection of new work, existing work, where the work creates a condition/s that may cause injury. It is the Contractors responsibility in determining what material/s to use as well as the means and methods to install and maintain the protection. Temporary Protection shall include but not be limited to providing and maintaining planking, plywood, Masonite, kraft paper, fire retardant poly for floors and stair treads, boxing for jambs, heads and sills, projecting courses and such other work. Materials or methods which stain or damage finished work shall not be used.

C. GC Contract #300 shall provide and maintain throughout construction/ demolition during the course of the project, protection all trees, shrubs, lawns and other Site work property from damage by operations of this project where such items are to remain.
   1. Install temporary fencing and adequate supports located as indicated or outside the drip line of trees, to protect vegetation from damage from construction operations. Protect tree root systems from damage, flooding, and erosion.

D. Security Enclosure and Lockup: Install substantial temporary enclosure of partially completed areas of construction. Provide locking entrances to prevent unauthorized entrance, vandalism, theft and similar violations of security. Also see other applicable sections listed within Spec. Section 015000.
   1. Storage: Where materials and equipment must be stored, and are of value or attractive for theft, provide a secure lockup. Enforce discipline in connection with the installation and release of material to minimize the opportunity for theft and vandalism.

E. Environmental Protection: Provide protection, operate temporary facilities and conduct construction in ways and by means and methods comply with environmental regulations, and minimize the possibility that air, waterways and subsoil might be contaminated or polluted, or that other undesirable effects might result. Avoid use of tools and equipment which produce harmful noise. Restrict

use of noise making tools and equipment to hours that will minimize complaints from persons or firms near the site.

3.21 OPERATION, TERMINATION AND REMOVAL

A. Supervision: Enforce strict discipline in use of temporary facilities. Limit availability of temporary facilities to essential and intended uses to minimize waste and abuse.

B. Maintenance: Maintain facilities in good operating condition until removal. Protect from damage by freezing temperatures and similar elements.
   1. Protection: Prevent water filled piping from freezing. Maintain markers for underground lines. Protect from damage during excavation operations.
   2. Maintain operation of temporary enclosures, heating, cooling, humidity control, ventilation, and similar facilities on a 24-hour basis where required to achieve indicated results and to avoid possibility of damage.

C. Termination and Removal: Unless the Architect requests that it be maintained longer, remove each temporary facility when the need has ended, or when replaced by authorized use of a permanent facility. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with the temporary facility. Repair damaged Work, clean exposed surfaces and replace construction that cannot be satisfactorily repaired.
   1. Materials and facilities that constitute temporary facilities are property of the Contractor unless otherwise specified.
   2. Remove temporary paving that is not intended for or acceptable for integration into permanent paving. Where the area is intended for landscape development remove soil and aggregate fill that does not comply with requirements for fill or subsoil in the area. Remove materials contaminated with road oil, asphalt and other petrochemical compounds, and other substances which might impair growth of plant materials or lawns. Repair or replace street paving, curbs and sidewalks at the temporary entrances, as required by the governing authority.
   3. At Substantial Completion, clean and renovate permanent facilities that have been used during the construction period. Comply with final cleaning requirements in Division 01 Section “Project Closeout Procedures”.

3.22 OWNERS REPRESENTATIVE OFFICE SUPPLIES

PART 2 - PRODUCTS

Not used.

END OF SECTION 015000

SECTION 015500 ACCESS ROADS, PARKING AND STAGING AREAS

PART 1 - GENERAL

1.01 Requirements Included

A. Access Roads and parking.

PART 2 - PRODUCTS

2.01 Materials

Not used

PART 3 - EXECUTION

3.01 Installation

Not used

3.02 Access Roads

A. Not applicable

3.03 Existing Pavements and Parking Areas

A. Existing site driveways may be used for construction traffic.

B. Parking facilities are not available for construction personnel.

C. Storage of construction trailers or storage shed will be restricted to locations indicated on the Site Logistics Plan and as directed by the Construction Manager and may in no way interfere with the District's daily functions.

D. Temporary parking by construction personnel is allowed on site and is restricted to locations indicated on the Site Logistics Plan and as directed by the Construction Manager.

E. Traffic Regulations:
   a. Utilize only designated entrances.
   b. Maintain all traffic regulations.

3.04 Permanent Pavements and Parking Facilities

Not Used

3.05 Maintenance

3.06 Removal and Repair

3.07 Staging

A. Temporary staging is allowed on site and is restricted to locations indicated on the Site Logistics Plan LPC SK-01and as directed by the Construction Manager.

END OF SECTION 015500

SECTION 015610 NOISE CONTROL

PART 1 - GENERAL

1.01 Requirements Included

A. Provide and maintain labor, methods, equipment, and temporary construction as necessary to provide controls over environmental conditions at the construction site and related areas under Contractor's control; remove physical evidence of temporary facilities at completion of Work.

B. Comply with the general noise and vibration restrictions as set forth by current OSHA, State and local government and as required by the Owner to avoid disruption of adjacent facility use.

PART 2 - PRODUCTS

Not Used

PART 3 - EXECUTION

Not Used

END OF SECTION 015610

SECTION 015690 CONSTRUCTION CLEANING

PART 1 - GENERAL

1.01 Requirements Included

A. Cleaning and disposal of waste materials, debris and rubbish during construction.

1.02 Cleaning Notice

A. Each Prime Contractor and their subcontractors are responsible for clean-up and disposal of waste materials, debris and rubbish on a daily basis.

Each Prime Contractor shall participate in a composite cleanup crew program for general site (interior & exterior) cleanup. Each Prime Contractor shall provide one man for eight hours on Friday's. If the Prime Contractor does not provide, the Construction Manager will provide and deduct all costs from their contract. Prime Contractors will provide sweeping compound as required.

B. The Owner/Construction Manager may issue written notification of insufficient cleaning relative to the requirements of this Section. Upon issuance of the cleaning notice:

1. All waste and accumulation of trash containing the Contractor's debris shall be removed from the Owner's premises within 24 hours of notification.

2. All designated project areas containing the Contractor's debris or requiring general housekeeping shall be left fine broom clean (interior) or raked clean (exterior or rough surface). Sweeping compound shall be used for all interior broom cleaning to control dust.

C. Failure by the Contractor to comply with the 24 hour requirement of the notice to the satisfaction of the Owner/Construction Manager will result in a cleaning program directed by the Construction Manager at the expense of the Contractor. Cost of clean-up performed for the Owner will be deducted from the Contractor's Request for Payment.

PART 2 - PRODUCTS

Not Applicable

PART 3 - EXECUTION

3.01 Cleaning

A. Maintain areas under Contractor's control free of waste materials, debris, and rubbish. Maintain site in a clean and orderly condition.

B. Remove debris and rubbish from closed or remote spaces, prior to closing the space.

C. Daily clean interior & exterior areas to provide suitable conditions for work.

D. Broom clean interior areas prior to start of surface finishing, and continue cleaning on an as-needed basis.

E. Control cleaning operations so that dust and other particles will not adhere to wet or newly-coated surfaces.

3.02 Disposal

A. Dumpsters shall be located on site, accessible to building and roads. Each Contractor (exceptions see Section 01 10 00) may legally load acceptable construction debris into the Dumpsters (from this project only). Cost of all disposal fees for these Dumpsters shall be under each Prime Contract.

B. It is the responsibility of all Contactors to secure all Dumpsters provided by same during off-hours.

END OF SECTION 015690

SECTION 01 60 00 - PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for selection of products for use in Project; product delivery, storage, and handling; manufacturers' standard warranties on products; special warranties; product substitutions; and comparable products.

B. Related Sections include the following:
   1. Division 01 Section "References" for applicable industry standards for products specified.
   2. Division 01 Section "Closeout Procedures" for submitting warranties for Contract closeout.
   3. Divisions 02 through 49 Sections for specific requirements for warranties on products and installations specified to be warranted.

1.3 DEFINITIONS

A. Products: Items purchased for incorporating into the Work, whether purchased for Project or taken from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.

   1. Named Products: Items identified by manufacturer's product name, including make or model number or other designation shown or listed in manufacturer's published product literature that is current as of date of the Contract Documents.
   2. New Products: Items that have not previously been incorporated into another project or facility. Products salvaged or recycled from other projects are not considered new products.
   3. Comparable Product: Product that is demonstrated and approved through review process, or where indicated as a product substitution, to have the indicated qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics that equal or exceed those of specified product.

B. Substitutions: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents and proposed by Contractor.

C. Basis-of-Design Product Specification: Where a specific manufacturer's product is named and accompanied by the words "basis of design," including make or model number or other designation, to establish the significant qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics for purposes of evaluating comparable products of other named manufacturers.

1.4 SUBMITTALS

A. Product List: Submit a list, in tabular from, showing specified products. Include generic names of products required. Include manufacturer's name and proprietary product names for each product.

1. Coordinate product list with Contractor's Construction Schedule and the Submittals Schedule.
2. Form: Tabulate information for each product under the following column headings:

    a. Specification Section number and title.
    b. Generic name used in the Contract Documents.
    c. Proprietary name, model number, and similar designations.
    d. Manufacturer's name and address.
    e. Supplier's name and address.
    f. Installer's name and address.
    g. Projected delivery date or time span of delivery period.
    h. Identification of items that require early submittal approval for scheduled delivery date.

3. Completed List: Within Thirty (30) days from Notice To Proceed, submit Five (5) copies of completed product list. Include a written explanation for omissions of data and for variations from Contract requirements.
4. Architect's Action: Architect will respond in writing to Contractor Ten (10) days of receipt of completed product list. Architect's response will include a list of unacceptable product selections and a brief explanation of reasons for this action. Architect's response, or lack of response, does not constitute a waiver of requirement to comply with the Contract Documents.

B. Substitution Requests: Submit three copies of each request for consideration. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.
1. Documentation: Show compliance with requirements for substitutions and the following, as applicable:

a. Statement indicating why specified material or product cannot be provided.
b. Coordination information, including a list of changes or modifications needed to other parts of the Work and to construction performed by Owner and separate contractors that will be necessary to accommodate proposed substitution.
c. Detailed comparison of significant qualities of proposed substitution with those of the Work specified. Significant qualities may include attributes such as performance, weight, size, durability, visual effect, and specific features and requirements indicated.
d. Product Data, including drawings and descriptions of products and fabrication and installation procedures.
e. Samples, where applicable or requested.
f. List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners.
g. Material test reports from a qualified testing agency indicating and interpreting test results for compliance with requirements indicated.
h. Research/evaluation reports evidencing compliance with building code in effect for Project, from a model code organization acceptable to authorities having jurisdiction.
i. Detailed comparison of Contractor's Construction Schedule using proposed substitution with products specified for the Work, including effect on the overall Contract Time. If specified product or method of construction cannot be provided within the Contract Time, include letter from manufacturer, on manufacturer's letterhead, stating lack of availability or delays in delivery.
j. Cost information, including a proposal of change, if any, in the Contract Sum.
k. Contractor's certification that proposed substitution complies with requirements in the Contract Documents and is appropriate for applications indicated.
l. Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of failure of proposed substitution to produce indicated results.

2. Architect's Action: If necessary, Architect will request additional information or documentation for evaluation within Seven (7) days of receipt of a request for substitution. Architect will notify Contractor of acceptance or rejection of proposed substitution within Fifteen (15) days of receipt of request, or Seven (7) days of receipt of additional information or documentation, whichever is later.

   a. Form of Acceptance: Change Order.
   b. Use product specified if Architect cannot make a decision on use of a proposed substitution within time allocated.

C. Basis-of-Design Product Specification Submittal: Comply with requirements in Division 01 Section "Submittal Procedures." Show compliance with requirements.

1.5 QUALITY ASSURANCE

A. Compatibility of Options: If Contractor is given option of selecting between two or more products for use on Project, product selected shall be compatible with products previously selected, even if previously selected products were also options.

1. Each contractor is responsible for providing products and construction methods compatible with products and construction methods of other contractors.
2. If a dispute arises between contractors over concurrently selectable but incompatible products, Architect will determine which products shall be used.

1.6 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, and handle products using means and methods that will prevent damage, deterioration, and loss, including theft. Comply with manufacturer's written instructions.

B. Delivery and Handling:

1. Schedule delivery to minimize long-term storage at Project site and to prevent overcrowding of construction spaces.
2. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.
3. Deliver products to Project site in an undamaged condition in manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.
4. Inspect products on delivery to ensure compliance with the Contract Documents and to ensure that products are undamaged and properly protected.

C. Storage:

1. Store products to allow for inspection and measurement of quantity or counting of units.
2. Store materials in a manner that will not endanger Project structure.
3. Store products that are subject to damage by the elements, under cover in a weathertight enclosure above ground, with ventilation adequate to prevent condensation.
4. Store cementitious products and materials on elevated platforms.
5. Store foam plastic from exposure to sunlight, except to extent necessary for period of installation and concealment.
6. Comply with product manufacturer's written instructions for temperature, humidity, ventilation, and weather-protection requirements for storage.
7. Protect stored products from damage and liquids from freezing.

8. Provide a secure location and enclosure at Project site for storage of materials and equipment by Owner's construction forces. Coordinate location with Owner.

1.7 PRODUCT WARRANTIES

A. Warranties specified in other Sections shall be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of obligations under requirements of the Contract Documents.

1. Manufacturer's Warranty: Preprinted written warranty published by individual manufacturer for a particular product and specifically endorsed by manufacturer to Owner.
2. Special Warranty: Written warranty required by or incorporated into the Contract Documents, either to extend time limit provided by manufacturer's warranty or to provide more rights for Owner.

B. Special Warranties: Prepare a written document that contains appropriate terms and identification, ready for execution. Submit a draft for approval before final execution.

1. Manufacturer's Standard Form: Modified to include Project-specific information and properly executed.
2. Specified Form: When specified forms are included with the Specifications, prepare a written document using appropriate form properly executed.
3. Refer to Divisions 02 through 49 Sections for specific content requirements and particular requirements for submitting special warranties.

C. Submittal Time: Comply with requirements in Division 01 Section "Closeout Procedures."

PART 2 - PRODUCTS

2.1 PRODUCT SELECTION PROCEDURES

A. General Product Requirements: Provide products that comply with the Contract Documents, that are undamaged and, unless otherwise indicated, that are new at time of installation.

1. Provide products complete with accessories, trim, finish, fasteners, and other items needed for a complete installation and indicated use and effect.
2. Owner reserves the right to limit selection to products with warranties not in conflict with requirements of the Contract Documents.
3. Where products are accompanied by the term "as selected," Architect will make selection.

4. Where products are accompanied by the term "match sample," sample to be matched is Architect's.
5. Descriptive, performance, and reference standard requirements in the Specifications establish "salient characteristics" of products.
6. Or Equal: Where products are specified by name and accompanied by the term "or equal" or "or approved equal" or "or approved," comply with provisions in Part 2 "Comparable Products" Article.

B. Product Selection Procedures:

1. Product: Where Specifications name a single product and manufacturer, provide the named product that complies with requirements.
2. Manufacturer/Source: Where Specifications name a single manufacturer or source, provide a product by the named manufacturer or source that complies with requirements.
3. Available Products: Where Specifications include a list of names of both products and manufacturers, provide one of the products listed, or an unnamed product, that complies with requirements. Comply with provisions in Part 2 "Comparable Products" Article for consideration of an unnamed product.
4. Available Manufacturers: Where Specifications include a list of manufacturers, provide a product by one of the manufacturers listed, or an unnamed manufacturer, that complies with requirements. Comply with provisions in Part 2 "Comparable Products" Article for consideration of an unnamed product.
5. Product Options: Where Specifications indicate that sizes, profiles, and dimensional requirements on Drawings are based on a specific product or system, provide the specified product or system. Comply with provisions in Part 2 "Product Substitutions" Article for consideration of an unnamed product or system.
6. Basis-of-Design Product: Where Specifications name a product and include a list of manufacturers, provide the specified product or a comparable product by one of the other named manufacturers. Drawings and Specifications indicate sizes, profiles, dimensions, and other characteristics that are based on the product named. Comply with provisions in Part 2 "Comparable Products" Article for consideration of an unnamed product by the other named manufacturers.
7. Visual Matching Specification: Where Specifications require matching an established Sample, select a product that complies with requirements and matches Architect's sample. Architect's decision will be final on whether a proposed product matches.

    a. If no product available within specified category matches and complies with other specified requirements, comply with provisions in Part 2 "Product Substitutions" Article for proposal of product.

8. Visual Selection Specification: Where Specifications include the phrase "as selected from manufacturer's colors, patterns, textures" or a similar phrase, select a product that complies with other specified requirements.

a. Standard Range: Where Specifications include the phrase "standard range of colors, patterns, textures" or similar phrase, Architect will select color, pattern, density, or texture from manufacturer's product line that does not include premium items.
b. Full Range: Where Specifications include the phrase "full range of colors, patterns, textures" or similar phrase, Architect will select color, pattern, density, or texture from manufacturer's product line that includes both standard and premium items.

2.2 PRODUCT SUBSTITUTIONS

A. Refer to Section 01 25 00 – Substitution Procedures.

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 60 00

SECTION 017116 - ACCEPTANCE OF EXISTING CONDITIONS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General Conditions of the Contract for Construction, and other Division 00 and 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes general procedural requirements governing execution of the Work including, but not limited to, the following:

1. Construction layout.
2. Field engineering and surveying.
3. General installation of products.
4. Progress cleaning.
5. Starting and adjusting.
6. Protection of installed construction.
7. Correction of the Work.

B. Related Sections include the following:

1. Division 01 Section 01 30 00 "Construction Procedures and Control" for procedures for coordinating field engineering with other construction activities.
2. Division 01 Section 01 32 19 "Submittals" for submitting surveys.
3. Division 01 Section 01 73 29 "Cutting and Patching" for procedural requirements for cutting and patching necessary for the installation or performance of other components of the Work.
4. Division 01 Section 01 77 00 "Closeout Procedures" for submitting final property survey with Project Record Documents, recording of Owner-accepted deviations from indicated lines and levels, and final cleaning.

1.3 SUBMITTALS

A. Qualification Data: For land surveyor.

B. Certificates: Submit certificate signed by land surveyor certifying that location and elevation of improvements comply with requirements.

C. Landfill Receipts: Submit copy of receipts issued by a landfill facility, licensed to accept hazardous materials, for hazardous waste disposal.

D. Certified Surveys: Submit three (3) copies signed by land surveyor.

1.4 QUALITY ASSURANCE

A. Land Surveyor Qualifications: A professional land surveyor who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing land-surveying services of the kind indicated.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 EXAMINATION

A. Existing Conditions: The existence and location of site improvements, utilities, and other construction indicated as existing are not guaranteed. Before beginning work, investigate and verify the existence and location of mechanical and electrical systems and other construction affecting the Work.

1. Before construction, verify the location and points of connection of utility services.

B. Existing Utilities: The existence and location of underground and other utilities and construction indicated as existing are not guaranteed. Before beginning sitework, investigate and verify the existence and location of underground utilities and other construction affecting the Work.

1. Before construction, verify the location and invert elevation at points of connection of sanitary sewer, storm sewer, and water-service piping; and underground electrical services.

C. Acceptance of Conditions: Examine substrates, areas, and conditions, with Installer or Applicator present where indicated, for compliance with requirements for installation tolerances and other conditions affecting performance. Record observations.

1. Written Report: Where a written report listing conditions detrimental to performance of the Work is required by other Sections, include the following:

a. Description of the Work.
b. List of detrimental conditions, including substrates.
c. List of unacceptable installation tolerances.
d. Recommended corrections.

2. Verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.
3. Examine roughing-in for mechanical and electrical systems to verify actual locations of connections before equipment and fixture installation.
4. Examine walls, floors, and roofs for suitable conditions where products and systems are to be installed.
5. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.

3.2 PREPARATION

A. Existing Utility Information: Furnish information to local utility and Owner that is necessary to adjust, move, or relocate existing utility structures, utility poles, lines, services, or other utility appurtenances located in or affected by construction. Coordinate with authorities having jurisdiction.

B. Field Measurements: Take field measurements as required to fit the Work properly. Recheck measurements before installing each product. Where portions of the Work are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

C. Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.

D. Review of Contract Documents and Field Conditions: Immediately on discovery of the need for clarification of the Contract Documents, submit a Request for Information to Architect. Include a detailed description of problem encountered, together with recommendations for changing the Contract Documents. Submit requests on the form provided in Section 01 25 10 “RFI Form”.

3.3 CONSTRUCTION LAYOUT

A. Verification: Before proceeding to lay out the Work, verify layout information shown on Drawings, in relation to the property survey and existing benchmarks. If discrepancies are discovered, notify Architect and Construction Manager promptly and in writing.

B. General: Engage a land surveyor to lay out the Work using accepted surveying practices.

1. Establish benchmarks and control points to set lines and levels at each story of construction and elsewhere as needed to locate each element of Project.
2. Establish dimensions within tolerances indicated. Do not scale Drawings to obtain required dimensions.
3. Inform installers of lines and levels to which they must comply.

4. Check the location, level and plumb, of every major element as the Work progresses.
5. Notify Architect and Construction Manager when deviations from required lines and levels exceed allowable tolerances.

C. Site Improvements: Locate and lay out site improvements, including pavements, grading, fill and topsoil placement, utility slopes, and invert elevations.

D. Building Lines and Levels: Locate and lay out control lines and levels for structures, building foundations, column grids, and floor levels, including those required for mechanical and electrical work. Transfer survey markings and elevations for use with control lines and levels. Level foundations and piers from two or more locations.

E. Record Log: Maintain a log of layout control work. Record deviations from required lines and levels. Include beginning and ending dates and times of surveys, weather conditions, name and duty of each survey party member, and types of instruments and tapes used. Make the log available for reference by Architect and Construction Manager.

3.4 FIELD ENGINEERING

A. Reference Points: Locate existing permanent benchmarks, control points, and similar reference points before beginning the Work. Preserve and protect permanent benchmarks and control points during construction operations.

1. Do not change or relocate existing benchmarks or control points. Report lost or destroyed permanent benchmarks or control points promptly. Report the need to relocate permanent benchmarks or control points to Architect and Construction Manager before proceeding.
2. Replace lost or destroyed permanent benchmarks and control points promptly. Base replacements on the original survey control points.

B. Benchmarks: Establish and maintain a minimum of two (2) permanent benchmarks on Project site, referenced to data established by survey control points. Comply with authorities having jurisdiction for type and size of benchmark.

1. Record benchmark locations, with horizontal and vertical data, on Project Record Documents.
2. Where the actual location or elevation of layout points cannot be marked, provide temporary reference points sufficient to locate the Work.
3. Remove temporary reference points when no longer needed. Restore marked construction to its original condition.

C. Certified Survey: On completion of foundation walls, major site improvements, and other work requiring field-engineering services, prepare a certified survey showing dimensions, locations, angles, and elevations of construction and sitework.

D. Final Property Survey: Prepare a final property survey showing significant features (real property) for Project. Include on the survey a certification, signed by land surveyor, that principal metes, bounds, lines, and levels of Project are accurately positioned as shown on the survey.

1. Show boundary lines, monuments, streets, site improvements and utilities, existing improvements and significant vegetation, adjoining properties, acreage, grade contours, and the distance and bearing from a site corner to a legal point.

3.5 INSTALLATION

A. General: Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.

1. Make vertical work plumb and make horizontal work level.
2. Where space is limited, install components to maximize space available for maintenance and ease of removal for replacement.
3. Conceal pipes, ducts, and wiring in finished areas, unless otherwise indicated.

B. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.

C. Install products at the time and under conditions that will ensure the best possible results. Maintain conditions required for product performance until Substantial Completion.

D. Conduct construction operations so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy.

E. Tools and Equipment: Do not use tools or equipment that produces harmful noise levels.

F. Templates: Obtain and distribute to the parties involved templates for work specified to be factory prepared and field installed. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing products to comply with indicated requirements.

G. Anchors and Fasteners: Provide anchors and fasteners as required to anchor each component securely in place, accurately located and aligned with other portions of the Work.

1. Mounting Heights: Where mounting heights are not indicated, mount components at heights directed by Architect.
2. Allow for building movement, including thermal expansion and contraction.
3. Coordinate installation of anchorages. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor

bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.

H. Joints: Make joints of uniform width. Where joint locations in exposed work are not indicated, arrange joints for the best visual effect. Fit exposed connections together to form hairline joints.

I. Hazardous Materials: Use products, cleaners, and installation materials that are not considered hazardous.

3.6 PROGRESS CLEANING

A. General: Clean Project site and work areas daily, including common areas. Coordinate progress cleaning for joint-use areas where more than one installer has worked. Enforce requirements strictly. Dispose of materials lawfully.

1. Comply with requirements in NFPA 241 for removal of combustible waste materials and debris.
2. Do not hold materials more than 7 days during normal weather or 3 days if the temperature is expected to rise above 80 deg F (27 deg C).
3. Containerize hazardous and unsanitary waste materials separately from other waste. Mark containers appropriately and dispose of legally, according to regulations.

B. Site: Maintain Project site free of waste materials and debris.

C. Work Areas: Clean areas where work is in progress to the level of cleanliness necessary for proper execution of the Work.

D. Installed Work: Keep installed work clean. Clean installed surfaces according to written instructions of manufacturer or fabricator of product installed, using only cleaning materials specifically recommended. If specific cleaning materials are not recommended, use cleaning materials that are not hazardous to health or property and that will not damage exposed surfaces.

E. Concealed Spaces: Remove debris from concealed spaces before enclosing the space.

F. Exposed Surfaces in Finished Areas: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.

G. Waste Disposal: Burying or burning waste materials on-site will not be permitted. Washing waste materials down sewers or into waterways will not be permitted.

H. During handling and installation, clean and protect construction in progress and adjoining materials already in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.

I. Clean and provide maintenance on completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.

3.7 STARTING AND ADJUSTING

A. Start equipment and operating components to confirm proper operation. Remove malfunctioning units, replace with new units, and retest.

B. Adjust operating components for proper operation without binding. Adjust equipment for proper operation.

C. Test each piece of equipment to verify proper operation. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

D. Manufacturer's Field Service: If a factory-authorized service representative is required to inspect field-assembled components and equipment installation, comply with qualification requirements in Division 01 Section "Quality Requirements."

3.8 PROTECTION OF INSTALLED CONSTRUCTION

A. Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration at time of Substantial Completion.

B. Comply with manufacturer's written instructions for temperature and relative humidity.

3.9 CORRECTION OF THE WORK

A. Repair or remove and replace defective construction. Restore damaged substrates and finishes. Comply with requirements in Division 01 Section "Cutting and Patching."

1. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment.

B. Restore permanent facilities used during construction to their specified condition.

C. Remove and replace damaged surfaces that are exposed to view if surfaces cannot be repaired without visible evidence of repair.

D. Repair components that do not operate properly. Remove and replace operating components that cannot be repaired.

E. Remove and replace chipped, scratched, and broken glass or reflective surfaces.

END OF SECTION 017116

SECTION 017200 - EXECUTION

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes general procedural requirements governing execution of the Work including, but not limited to, the following:
   1. Construction layout.
   2. Field engineering and surveying.
   3. General installation of products.
   4. Progress cleaning.
   5. Starting and adjusting.
   6. Protection of installed construction.
   7. Correction of the Work.

B. See Division 01 Section "Closeout Procedures" for submitting final property survey with Project Record Documents, recording of Owner-accepted deviations from indicated lines and levels, and final cleaning.

1.2 SUBMITTALS

A. Certificates: Submit certificate signed by professional engineer certifying that location and elevation of improvements comply with requirements.

PART 2 - PRODUCTS (Not Used)

PART 3 – EXECUTION

3.1 EXAMINATION

A. Existing Conditions: The existence and location of site improvements, utilities, and other construction indicated as existing are not guaranteed. Before beginning work, investigate and verify the existence and location of mechanical and electrical systems and other construction affecting the Work.
   1. Before construction, verify the location and points of connection of utility services.

B. Existing Utilities: The existence and location of underground and other utilities and construction indicated as existing are not guaranteed. Before beginning sitework, investigate and verify the existence and location of underground utilities and other construction affecting the Work.
   1. Before construction, verify the location and invert elevation at points of connection of sanitary sewer, storm sewer, and water-service piping; and underground electrical services.
   2. Furnish location data for work related to Project that must be performed by public utilities serving Project site.

C. Acceptance of Conditions: Examine substrates, areas, and conditions, with Installer or Applicator present where indicated, for compliance with requirements for installation tolerances and other conditions affecting performance. Record observations.
    1. Verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.
    2. Examine roughing-in for mechanical and electrical systems to verify actual locations of connections before equipment and fixture installation.
    3. Examine walls, floors, and roofs for suitable conditions where products and systems are to be installed.
    4. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.

3.2 PREPARATION

A. Existing Utility Information: Furnish information to Owner that is necessary to adjust, move, or relocate existing utility structures, utility poles, lines, services, or other utility appurtenances located in or affected by construction. Coordinate with authorities having jurisdiction.

B. Field Measurements: Take field measurements as required to fit the Work properly.

Recheck measurements before installing each product. Where portions of the Work are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

C. Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.

D. Review of Contract Documents and Field Conditions: Immediately on discovery of the need for clarification of the Contract Documents, submit a request for information to Architect. Include a detailed description of problem encountered, together with recommendations for changing the Contract Documents.

3.3 CONSTRUCTION LAYOUT

A. Verification: Before proceeding to lay out the Work, verify layout information shown on Drawings, in relation to the property survey and existing benchmarks. If discrepancies are discovered, notify Architect promptly.

B. General: Engage a professional engineer to lay out the Work using accepted surveying practices.
    1. Establish benchmarks and control points to set lines and levels at each story of construction and elsewhere as needed to locate each element of Project.
    2. Establish dimensions within tolerances indicated. Do not scale Drawings to obtain required dimensions.
    3. Inform installers of lines and levels to which they must comply.
    4. Check the location, level and plumb, of every major element as the Work progresses.

5. Notify Architect when deviations from required lines and levels exceed allowable tolerances.
6. Close site surveys with an error of closure equal to or less than the standard established by authorities having jurisdiction.

C. Record Log: Maintain a log of layout control work. Record deviations from required lines and levels. Include beginning and ending dates and times of surveys, weather conditions, name and duty of each survey party member, and types of instruments and tapes used. Make the log available for reference by Architect.

3.4 FIELD ENGINEERING

A. Reference Points: Locate existing permanent benchmarks, control points, and similar reference points before beginning the Work. Preserve and protect permanent benchmarks and control points during construction operations.

B. Benchmarks: Establish and maintain a minimum of two permanent benchmarks on Project site, referenced to data established by survey control points.
1. Record benchmark locations, with horizontal and vertical data, on Project Record Documents.

3.5 INSTALLATION

A. General: Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.
1. Make vertical work plumb and make horizontal work level.
2. Where space is limited, install components to maximize space available for maintenance and ease of removal for replacement.
3. Conceal pipes, ducts, and wiring in finished areas, unless otherwise indicated.

B. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.

C. Install products at the time and under conditions that will ensure the best possible results. Maintain conditions required for product performance until Substantial Completion.

D. Conduct construction operations so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy.

E. Tools and Equipment: Do not use tools or equipment that produce harmful noise levels.

F. Templates: Obtain and distribute to the parties involved templates for work specified to be factory prepared and field installed. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing products to comply with indicated requirements.

G. Anchors and Fasteners: Provide anchors and fasteners as required to anchor each component securely in place, accurately located and aligned with other portions of the Work.
   1. Mounting Heights: Where mounting heights are not indicated, mount components at heights directed by Architect.
   2. Allow for building movement, including thermal expansion and contraction.
   3. Coordinate installation of anchorages. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.

H. Joints: Make joints of uniform width. Where joint locations in exposed work are not indicated, arrange joints for the best visual effect. Fit exposed connections together to form hairline joints.

I. Hazardous Materials: Use products, cleaners, and installation materials that are not considered hazardous.

3.6 PROGRESS CLEANING

A. General: Clean Project site and work areas daily, including common areas. Coordinate progress cleaning for joint-use areas where more than one installer has worked. Enforce requirements strictly. Dispose of materials lawfully.
   1. Comply with requirements in NFPA 241 for removal of combustible waste materials and debris.
   2. Do not hold materials more than 7 days during normal weather or 3 days if the temperature is expected to rise above 80 deg F ((27 deg C)).
   3. Containerize hazardous and unsanitary waste materials separately from other waste. Mark containers appropriately and dispose of legally, according to regulations.

B. Site: Maintain Project site free of waste materials and debris.

C. Work Areas: Clean areas where work is in progress to the level of cleanliness necessary for proper execution of the Work.
   1. Remove liquid spills promptly.
   2. Where dust would impair proper execution of the Work, broom-clean or vacuum the entire work area, as appropriate.

D. Installed Work: Keep installed work clean. Clean installed surfaces according to written instructions of manufacturer or fabricator of product installed, using only cleaning materials specifically recommended. If specific cleaning materials are not recommended, use cleaning materials that are not hazardous to health or property and that will not damage exposed surfaces.

E. Concealed Spaces: Remove debris from concealed spaces before enclosing the space.

F. Exposed Surfaces in Finished Areas: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.
G. Waste Disposal: Burying or burning waste materials on-site will not be permitted. Washing waste materials down sewers or into waterways will not be permitted.
H. During handling and installation, clean and protect construction in progress and adjoining materials already in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.
I. Clean and provide maintenance on completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.
J. Limiting Exposures: Supervise construction operations to assure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.

3.7 STARTING AND ADJUSTING

A. Start equipment and operating components to confirm proper operation. Remove malfunctioning units, replace with new units, and retest.
B. Adjust operating components for proper operation without binding. Adjust equipment for proper operation.
C. Test each piece of equipment to verify proper operation. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
D. Manufacturer's Field Service: If a factory-authorized service representative is required to inspect field-assembled components and equipment installation, comply with qualification requirements in Division 01 Section "Quality Requirements."

3.8 PROTECTION OF INSTALLED CONSTRUCTION

A. Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration at time of Substantial Completion.
B. Comply with manufacturer's written instructions for temperature and relative humidity.

3.9 CORRECTION OF THE WORK

A. Repair or remove and replace defective construction. Restore damaged substrates and finishes. Comply with requirements in Division 01 Section "Cutting and Patching."
    1. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment.
B. Restore permanent facilities used during construction to their specified condition.
C. Remove and replace damaged surfaces that are exposed to view if surfaces cannot be repaired without visible evidence of repair.

D. Repair components that do not operate properly. Remove and replace operating components that cannot be repaired.
E. Remove and replace chipped, scratched, and broken glass or reflective surfaces.

END OF SECTION 017200

SECTION 017329 - CUTTING AND PATCHING

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes procedural requirements for cutting and patching.

B. Contractor is responsible for all cutting, fitting and patching required for alteration Work or to correct or modify newly installed construction, including but not limited to:

1. Coordination between all trades.
2. Performing sequential excavation and backfill.
3. Completing the Work or making its several parts fit together properly or integrate with other Work.
4. Uncovering portions of the Work to provide for installation of ill-timed Work.
5. Removing and replacing defective Work.
6. Removing and replacing Work not conforming to requirements of Contract Documents.
7. Removing samples of installed Work as specified for testing.
8. Providing routine penetrations of non-structural surfaces for installation of materials such as piping and electrical conduit.

1.2 DEFINITIONS

A. Cutting: Removal of in-place construction necessary to permit installation or performance of other Work.

B. Patching: Fitting and repair work required to restore surfaces to original conditions after installation of other Work.

1.3 SUBMITTALS

A. Cutting and Patching Plan: Submit a plan describing procedures at least 15 days before the time cutting and patching will be performed, requesting approval to proceed. Include the following information:

1. Extent: Describe reason for and extent of each occurrence of cutting and patching, show how they will be performed, and indicate why they cannot be avoided.
2. Changes to In-Place Construction: Describe anticipated results. Include changes to structural elements and operating components as well as changes in building's appearance and other significant visual elements.

3. Products: List products to be used for patching and firms or entities that will perform patching work.

    a. For cutting and patching of newly installed construction, employ the original installer or fabricator for weather-exposed or moisture-resistant elements, and sight exposed finished surfaces.
    b. Include workmen qualifications for cutting and patching of weather-exposed or moisture-resistant elements, and sight exposed finished surfaces of existing construction being altered.

4. Dates: Indicate when cutting and patching will be performed.
5. Utility Services and Mechanical/Electrical Systems: List services/systems that cutting and patching procedures will disturb or affect. List services/systems that will be relocated and those that will be temporarily out of service. Indicate how long services/systems will be disrupted.

    a. Include description of provisions for temporary services and systems during interruption of permanent services and systems.

6. Structural Elements: Where cutting and patching involve adding reinforcement to structural elements, submit details and engineering calculations showing integration of reinforcement with original structure.
7. Enclosure Elements: Indicate measures regarding the integrity or effectiveness of weather-exposed or moisture-resistant elements and systems.
8. Alternatives to Cutting and Patching: Include a description of alternatives to cutting and patching.
9. Notices: Notify Owner and separate contractor when cutting and patching affects newly installed construction not performed under this Project; include evidence of notification and written permission.
10. Construction Manager's Approval: Obtain approval of cutting and patching plan before cutting and patching. Approval does not waive right to later require removal and replacement of unsatisfactory work.

1.4 QUALITY ASSURANCE

A. Structural Elements: When cutting and patching structural elements, notify Architect of locations and details of cutting and await directions from Architect before proceeding. Shore, brace, and support structural elements during cutting and patching. Do not cut and patch structural elements in a manner that could change their load-carrying capacity or increase deflection.

    1. A structural element includes any load-bearing, lateral force-resistant member, and wind or seismic movement resisting construction.
    2. Take precautions and exercise care to ensure Work is removed neatly and without movement or settlement to remainder of building. Contractor will be held liable for any damage, movement, settlement caused thereby or resulting therefrom.

B. Operational Elements: Do not cut and patch operating elements and related components in a manner that results in reducing their capacity to perform as intended or that results in increased maintenance or decreased operational life or safety. Examples of operating elements include, but are not limited to, the following:

1. Primary operational systems and equipment.
2. Air or smoke barriers.
3. Fire-suppression systems.
4. Mechanical systems piping and ducts.
5. Control systems.
6. Communication systems.
7. Conveying systems.
8. Electrical wiring systems.
9. Operating systems of special construction in Division 13 Sections.

C. Other Construction Elements: Do not cut and patch other construction elements or components in a manner that could change their load-carrying capacity, that results in reducing their capacity to perform as intended, or that results in increased maintenance or decreased operational life or safety. Examples of miscellaneous elements include, but are not limited to, the following:

1. Water, moisture, or vapor barriers.
2. Membranes and flashings.
3. Exterior curtain-wall construction.
4. Equipment supports.
5. Piping, ductwork, vessels, and equipment.
6. Noise- and vibration-control elements and systems.

D. Visual Requirements: Do not cut and patch construction in a manner that results in visual evidence of cutting and patching. Do not cut and patch construction exposed on the exterior or in occupied spaces in a manner that would, in Architect's opinion, reduce the building's aesthetic qualities. Remove and replace construction that has been cut and patched in a visually unsatisfactory manner.

E. Cutting and Patching Conference: Before proceeding, meet at Project site with parties involved in cutting and patching, including mechanical and electrical trades. Review areas of potential interference and conflict. Coordinate procedures and resolve potential conflicts before proceeding.

F. Manufacturer's Installation Instructions: Obtain and maintain on-site manufacturer's written recommendations and instructions for installation of products and equipment.

G. Qualifications: Workmen to have minimum three (3) years experience in working with materials being cut and patched.

1.5 WARRANTY

A. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during cutting and patching operations, by methods and with materials so as not to void existing warranties.

PART 2 - PRODUCTS

2.1 MATERIALS

A. General: Comply with requirements specified in other Sections.

B. In-Place Materials: Use materials identical to in-place materials.

1. For exposed surfaces, use materials that visually match in-place adjacent surfaces to the fullest extent possible.
2. If identical materials are unavailable or cannot be used, use materials that, when installed, will match the visual and functional performance of in-place materials.

C. Materials used for sealing openings shall have a fire rating equal to or greater than the rating of the floor, ceiling or partition and shall comply with applicable codes.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine surfaces to be cut and patched and conditions under which cutting and patching are to be performed.

1. Compatibility: Before patching, verify compatibility with and suitability of substrates, including compatibility with in-place finishes or primers.
2. Proceed with installation only after unsafe or unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Temporary Support: Provide temporary support of Work to be cut.

B. Protection: Protect in-place construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of Project that might be exposed during cutting and patching operations.

C. Adjacent Occupied Areas: Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas.

D. Existing Utility Services and Mechanical/Electrical Systems: Where existing services/systems are required to be removed, relocated, or abandoned, bypass such services/systems before cutting to prevent interruption to occupied areas.

3.3 PERFORMANCE

A. General: Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time, and complete without delay.

1. Cut in-place construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to their original condition.
2. Restore Work and surfaces with new products in accordance with requirements of the Contract Documents.

B. Cutting: Cut in-place construction by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage elements retained or adjoining construction. Employ original Installer for cutting and patching of newly installed construction; comply with original Installer's written recommendations.

1. In general, use hand or small power tools designed for sawing and grinding, not hammering and chopping. Cut holes and slots as small as possible, neatly to size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
2. Finished Surfaces: Cut or drill from the exposed or finished side into concealed surfaces.
3. Concrete and Masonry: Cut using a cutting machine, such as an abrasive saw or a diamond-core drill.
4. Excavating and Backfilling: Comply with requirements in applicable Sections where required by cutting and patching operations.
5. Mechanical and Electrical Services: Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after cutting.
6. Proceed with patching after construction operations requiring cutting are complete.

C. Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other Work. Patch with durable seams that are as invisible as possible. Provide materials and comply with installation requirements specified in other Sections.

1. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate integrity of installation.

2. Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will eliminate evidence of patching and refinishing.

    a. Refinish entire surfaces as necessary to provide an even new finish.
    b. For continuous surfaces, refinish to nearest intersection.
    c. For assemblies, entirely refinish.
    d. Clean piping, conduit, and similar features before applying paint or other finishing materials.
    e. Restore damaged pipe covering to its original condition.

3. Floors and Walls: Where walls or partitions that are removed extend one finished area into another, patch and repair floor and wall surfaces in the new space. Provide an even surface of uniform finish, color, texture, and appearance. Remove in-place floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.

    a. Patch subfloors under removed partitions, fixed equipment, etc. by cutting back, applying underlayment, concrete fill or other acceptable leveling fill as necessary to provide subfloor that is level with adjacent existing subfloors and properly prepare to receive finish flooring.
    b. In renovated rooms/areas to receive new floor finishes, remove existing finish flooring and related materials and prepare subfloor by cutting back, applying concrete fill or other acceptable leveling fill as necessary to provide subfloor that is level and properly prepared to receive new floor finish as required by Room Finish Schedule and material manufacturers written recommendations.
    c. In renovated rooms/areas to receive new wall finishes, those portions of existing walls that remain shall have their surfaces patched, cut back, or brought forward as necessary, and prepared as required to receive the new finishes per Room Finish Schedule.
    d. Where patching occurs in a painted surface, prepare substrate and apply primer and intermediate paint coats appropriate for the substrate over the patch and apply final paint coat over entire unbroken surface containing the patch. Provide additional coats until patch blends with adjacent surfaces.
    e. In rooms or areas where patching is required on one wall only, that entire wall is to be refinished to match the existing finish and color, including existing painted doors, door frames and window frames if they occur in that wall.
    f. In rooms or areas where patching is required on two or more walls, all walls, including painted doors, door frames and painted window frames, are to be refinished.

4. Ceilings: Patch, repair, or rehang in-place ceilings as necessary to provide an even-plane surface of uniform appearance.

    a. In rooms or areas where patching is required in an existing plaster or gypsum wallboard ceiling, the entire ceiling is to be repainted. In rooms where patching is required in existing acoustic tile ceilings, patch ceilings with matching type and pattern of acoustic tile, clean all remaining tile and apply one coat of white

latex paint by roller over all tile surfaces. Clean all exposed metal suspension system.

5. Exterior Building Enclosure: Patch components in a manner that restores enclosure to a weathertight condition and ensures thermal and moisture integrity of building enclosure.
6. Openings created as a result of removal of materials must be patched to match adjacent construction as to materials and finishes, unless otherwise indicated.

    a. Contractor responsible for cutting and patching shall also be responsible for furnishing and installing lintels where openings are cut through existing masonry or concrete walls. Refer to Lintel Schedule in Division 05 Section ”Metal Fabrications” for sizing of lintels, unless lintels are shown on Drawings.

7. Where existing equipment is removed and new equipment is installed in the existing opening, the Contractor installing the new equipment shall close up the unused portion of the opening with materials matching adjacent construction.
8. When new rubber or vinyl stair treads, risers and landings, are installed at existing stairs, paint all exposed steel.
9. Paint all exposed insulated or non-insulated pipes and ducts in finished rooms or areas.
10. Where existing equipment or assemblies are removed, the Contractor removing the equipment shall patch and repair the floor, walls and ceiling.

3.4 CLEANING

A. Clean areas and spaces where cutting and patching are performed.

B. Completely remove paint, mortar, oils, putty, and similar materials.

END OF SECTION 017329

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SECTION 017419 - CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes administrative and procedural requirements for the following:

1. Salvaging nonhazardous demolition and construction waste.
2. Disposing of nonhazardous demolition and construction waste.

1.2 DEFINITIONS

A. Construction Waste: Building and site improvement materials and other solid waste resulting from construction, remodeling, renovation, or repair operations. Construction waste includes packaging.

B. Demolition Waste: Building and site improvement materials resulting from demolition or selective demolition operations.

C. Disposal: Removal off-site of demolition and construction waste and subsequent sale, recycling, reuse, or deposit in landfill or incinerator acceptable to authorities having jurisdiction.

D. Salvage: Recovery of demolition or construction waste and subsequent sale or reuse in another facility as identified in section 024100 selective demolition.

E. Salvage and Reuse: Recovery of demolition or construction waste and subsequent incorporation into the Work as identified in section 024100 selective demolition.

1.3 ACTION SUBMITTALS

A. Waste Management Plan: Submit plan within 7 days of date established for the Notice of Award.

1.4 QUALITY ASSURANCE

A. Refrigerant Recovery Technician Qualifications: Certified by EPA-approved certification program.

B. Regulatory Requirements: Comply with hauling and disposal regulations of authorities having jurisdiction.

C. Waste Management Conference: Conduct conference at Project site to comply with requirements in Division 01 Section "Project Management and Coordination." Review methods and procedures related to waste management including, but not limited to, the following:

1. Review and discuss waste management plan.
2. Review procedures for periodic waste collection and transportation to recycling and disposal facilities.
3. Review waste management requirements for each trade.

1.5 WASTE MANAGEMENT PLAN

A. General: Develop a waste management plan according to ASTM E 1609 and requirements in this Section. Plan shall consist of waste identification and waste reduction work plan.

B. Waste Reduction Work Plan: List each type of waste and whether it will be salvaged, recycled, or disposed of in landfill or incinerator.

1. Salvaged Materials for Reuse: For materials that will be salvaged and reused in this Project, describe methods for preparing salvaged materials before incorporation into the Work.
2. Recycled Materials: Include list of local receivers and processors and type of recycled materials each will accept. Include names, addresses, and telephone numbers.
3. Disposed Materials: Indicate how and where materials will be disposed of. Include name, address, and telephone number of each landfill and incinerator facility.
4. Handling and Transportation Procedures: Include method that will be used for separating recyclable waste including sizes of containers, container labeling, and designated location on Project site where materials separation will be located.

PART 2 - PRODUCTS - (Not Used)

PART 3 - EXECUTION

3.1 PLAN IMPLEMENTATION

A. General: Implement waste management plan. Provide handling, containers, storage, signage, transportation, and other items as required to implement waste management plan during the entire duration of the Contract.

B. Waste Management Coordinator: Engage a waste management coordinator to be responsible for implementing, monitoring, and reporting status of waste management work plan. Coordinator shall be present at Project site full time for duration of Project.

C. Training: Train workers, subcontractors, and suppliers on proper waste management procedures, as appropriate for the Work occurring at Project site.

1. Distribute waste management plan to everyone concerned within three days of submittal return.
2. Distribute waste management plan to entities when they first begin work on-site. Review plan procedures and locations established for salvage, recycling, and disposal.

D. Site Access and Temporary Controls: Conduct waste management operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.

1. Designate and label specific areas on Project site necessary for separating materials that are to be salvaged, recycled, reused, donated, and sold.
2. Comply with Division 01 requirements for controlling dust and dirt, environmental protection, and noise control.

3.2 SALVAGING DEMOLITION WASTE

A. Salvaged Items for Reuse in the Work: Salvage items for reuse and handle as follows:

1. Clean salvaged items.
2. Pack or crate items after cleaning. Identify contents of containers with label indicating elements, date of removal, quantity, and location where removed.
3. Store items in a secure area until installation.
4. Protect items from damage during transport and storage.
5. Install salvaged items to comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make items functional for use indicated.

B. Salvaged Items for Sale and Donation: Not permitted on Project site.

C. Salvaged Items for Owner's Use:

1. Clean salvaged items.
2. Pack or crate items after cleaning. Identify contents of containers with label indicating elements, date of removal, quantity, and location where removed.
3. Store items in a secure area until delivery to Owner.
4. Transport items to Owner's storage area designated by Owner.
5. Protect items from damage during transport and storage.

D. Doors and Hardware: Brace open end of door frames. Except for removing door closers, leave door hardware attached to doors.

E. Equipment: Drain tanks, piping, and fixtures. Seal openings with caps or plugs. Protect equipment from exposure to weather.

F. Plumbing Fixtures: Separate by type and size.

G. Lighting Fixtures: Separate lamps by type and protect from breakage.

H. Electrical Devices: Separate switches, receptacles, switchgear, transformers, meters, panelboards, circuit breakers, and other devices by type.

3.3 RECYCLING DEMOLITION AND CONSTRUCTION WASTE, GENERAL

A. General: Recycle paper and beverage containers used by on-site workers.

B. Recycling Incentives: Revenues, savings, rebates, tax credits, and other incentives received for recycling waste materials shall accrue to Owner.

C. Preparation of Waste: Prepare and maintain recyclable waste materials according to recycling or reuse facility requirements. Maintain materials free of dirt, adhesives, solvents, petroleum contamination, and other substances deleterious to the recycling process.

D. Procedures: Separate recyclable waste from other waste materials, trash, and debris. Separate recyclable waste by type at Project site to the maximum extent practical.

1. Provide appropriately marked containers or bins for controlling recyclable waste until they are removed from Project site. Include list of acceptable and unacceptable materials at each container and bin.

    a. Inspect containers and bins for contamination and remove contaminated materials if found.

2. Stockpile processed materials on-site without intermixing with other materials. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.
3. Stockpile materials away from construction area. Do not store within drip line of remaining trees.
4. Store components off the ground and protect from the weather.
5. Remove recyclable waste off Owner's property and transport to recycling receiver or processor.

3.4 RECYCLING DEMOLITION WASTE

A. Asphaltic Concrete Paving: Break up and transport paving to asphalt-recycling facility.

B. Concrete: Remove reinforcement and other metals from concrete and sort with other metals.

C. Masonry: Remove metal reinforcement, anchors, and ties from masonry and sort with other metals.

D. Wood Materials: Sort and stack members according to size, type, and length. Separate lumber, engineered wood products, panel products, and treated wood materials.

E. Metals: Separate metals by type.

1. Structural Steel: Stack members according to size, type of member, and length.
2. Remove and dispose of bolts, nuts, washers, and other rough hardware.

F. Asphalt Shingle Roofing: Separate organic and glass-fiber asphalt shingles and felts. Remove and dispose of nails, staples, and accessories.

G. Gypsum Board: Stack large clean pieces on wood pallets and store in a dry location. Remove edge trim and sort with other metals. Remove and dispose of fasteners.

H. Acoustical Ceiling Panels and Tile: Stack large clean pieces on wood pallets and store in a dry location.

I. Metal Suspension System: Separate metal members including trim, and other metals from acoustical panels and tile and sort with other metals.

J. Carpet: Roll large pieces tightly after removing debris, trash, adhesive, and tack strips.

1. Store clean, dry carpet in a closed container or trailer provided by Carpet Reclamation Agency or carpet recycler.

K. Carpet Tile: Remove debris, trash, and adhesive.

1. Stack tile on pallet and store clean, dry carpet in a closed container or trailer provided by Carpet Reclamation Agency or carpet recycler.

L. Piping: Reduce piping to straight lengths and store by type and size. Separate supports, hangers, valves, sprinklers, and other components by type and size.

M. Conduit: Reduce conduit to straight lengths and store by type and size.

3.5 RECYCLING CONSTRUCTION WASTE

A. Packaging:

1. Cardboard and Boxes: Break down packaging into flat sheets. Bundle and store in a dry location.
2. Polystyrene Packaging: Separate and bag materials.
3. Pallets: As much as possible, require deliveries using pallets to remove pallets from Project site. For pallets that remain on-site, break down pallets into component wood pieces and comply with requirements for recycling wood.
4. Crates: Break down crates into component wood pieces and comply with requirements for recycling wood.

B. Wood Materials:

1. Clean Cut-Offs of Lumber: Grind or chip into small pieces.
2. Clean Sawdust: Bag sawdust that does not contain painted or treated wood.

C. Gypsum Board: Stack large clean pieces on wood pallets and store in a dry location.

1. Clean Gypsum Board: Grind scraps of clean gypsum board using small mobile chipper or hammer mill. Screen out paper after grinding.

3.6 DISPOSAL OF WASTE

A. General: Except for items or materials to be salvaged, recycled, or otherwise reused, remove waste materials from Project site and legally dispose of them in a landfill or incinerator acceptable to authorities having jurisdiction.

1. Except as otherwise specified, do not allow waste materials that are to be disposed of accumulate on-site.
2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.

B. Burning: Do not burn waste materials.

C. Disposal: Transport waste materials off Owner's property and legally dispose of them.

END OF SECTION 017419

SECTION 017423 - FINAL CLEANING

1.01 FINAL CLEANING: Each Prime Contract shall provide final cleaning of their respective areas and as further clarified as follows:

1. Final Cleaning; Provide final cleaning of this project's work, including related areas impacted by this project, at time indicated, consisting of cleaning each surface or unit of work to normal "clean" condition expected for a first-class building cleaning and maintenance program. Comply with manufacturer's instructions for cleaning operations. The following are examples, but not by way of limitation, of cleaning levels required:

2. Remove labels which are not required as permanent labels.

3. Clean transparent materials, including mirror and window/door glass, to a polished condition, remove substances which are noticeable as vision obscuring materials. Replace broken glass and damaged transparent materials.

4. Clean exposed exterior and interior hard-surface finishes, to a dirt free condition, free of dust, stains, films and similar noticeable distracting substances. Except as otherwise indicated, avoid disturbance of natural weathering of exterior surfaces. Restore reflective surfaces to original condition.

5. Remove debris and surface dust from limited-access spaces including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics and similar spaces.

6. Clean and shop vacuum concrete floors in non-occupied spaces (i.e. including equipment and storage areas) to broom-clean standard.

7. Clean and wet mop hard-surface floors in occupied spaces to wet mop standard.

8. Vacuum clean and shampoo carpeted surfaces and other similar soft surfaces.

9. Clean and wipe plumbing fixtures to a sanitary condition, free of stains including those resulting from water exposure.

10. Clean and wipe light fixtures and lamps as to function with full efficiency.

11. Clean project site (yard and grounds), including landscape development areas, of litter and foreign substances.

12. Sweep paved parking and sidewalk areas to a broom-clean condition, remove stains, petro-chemical spills and other foreign deposits. Rake grounds which are neither planted or paved, to a smooth even textured surface.

13. Wipe surfaces of mechanical and electrical equipment clean, remove and clean areas around equipment of any excess lubrication and other substances that may have resulted during installation or startup.

14. Prevent the spread of debris by providing plastic barriers between clean spaces and those still undergoing work or cleaning operations.

END OF SECTION 01 74 23

SECTION 017700 - CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General Conditions of the Contract for Construction, and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for contract closeout, including, but not limited to, the following:

1. Inspection procedures.
2. Starting and Adjusting
3. Commissioning
4. Warranties.
5. Final cleaning.

B. Related Sections include the following:
1. Division 01 Section "Project Record Documents" for submitting Record Drawings, Record Specifications, and Record Product Data.
2. Division 01 Section "Operation and Maintenance Data" for operation and maintenance manual requirements.
3. Divisions 02 through 49 Sections for specific closeout and special cleaning requirements for the Work in those Sections.

1.3 SUBSTANTIAL COMPLETION

A. Preliminary Procedures: Before requesting inspection for determining date of Substantial Completion, complete the following. List items below that are incomplete in request.

1. Prepare a list of items to be completed and corrected (punch list), the value of items on the list, and reasons why the Work is not complete.
2. Advise Owner of pending insurance changeover requirements.
3. Submit specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
4. Obtain and submit releases permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.

5. Prepare and submit Project Record Documents, operation and maintenance manuals, Work duration construction photographs, damage or settlement surveys, property surveys, and similar final record information.
6. Deliver tools, spare parts, extra materials, and similar items to location designated by Owner. Label with manufacturer's name and model number where applicable.
7. Make final changeover of permanent locks and deliver keys to Owner. Advise Owner's personnel of changeover in security provisions.
8. Complete startup testing of systems.
9. Submit test/adjust/balance records.
10. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
11. Advise Owner of changeover in heat and other utilities.
12. Submit changeover information related to Owner's occupancy, use, operation, and maintenance.
13. Complete final cleaning requirements, including touchup painting.
14. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.

B. Inspection: Submit a written request for inspection for Substantial Completion. On receipt of request, Architect and Construction Manager will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare the Certificate of Substantial Completion after inspection or will notify Contractor of items, either on Contractor's list or additional items identified by Architect, that must be completed or corrected before certificate will be issued.

1. Re-inspection: Request re-inspection when the Work identified in previous inspections as incomplete is completed or corrected.
2. Results of completed inspection will form the basis of requirements for Final Completion.

1.4 FINAL COMPLETION

A. Preliminary Procedures: Before requesting final inspection for determining date of Final Completion, complete the following:

1. Submit a final Application for Payment according to the General Conditions of the Contract for Construction.
2. Submit certified copy of Architect's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Architect and Construction Manager. The certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.
3. Submit evidence of final, continuing insurance coverage complying with insurance requirements.
4. Submit pest-control final inspection report and warranty.

5. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems.

B. Inspection: Submit a written request for final inspection for acceptance. On receipt of request, Architect and Construction Manager will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare a final Certificate for Payment after inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.

1. Re-inspection: Request re-inspection when the Work identified in previous inspections as incomplete is completed or corrected.

1.5 LIST OF INCOMPLETE ITEMS (PUNCH LIST)

A. Preparation: Submit three (3) copies of list. Include name and identification of each space and area affected by construction operations for incomplete items and items needing correction including, if necessary, areas disturbed by Contractor that are outside the limits of construction.

1. Organize list of spaces in sequential order, starting with exterior areas first and proceeding from lowest floor to highest floor.
2. Organize items applying to each space by major element, including categories for ceiling, individual walls, floors, equipment, and building systems.
3. Include the following information at the top of each page:

a. Project name and SED control number
b. Date.
c. Name of Architect and Construction Manager.
d. Name of Contractor.
e. Page number.

1.6 WARRANTIES

A. Submittal Time: Submit written warranties on request of Architect for designated portions of the Work where commencement of warranties other than date of Substantial Completion is indicated.

B. Partial Occupancy: Submit properly executed warranties within fifteen (15) days of completion of designated portions of the Work that are completed and occupied or used by Owner during construction period by separate agreement with Contractor.

C. Organize warranty documents into an orderly sequence based on the table of contents of the Project Manual.

1. Bind warranties and bonds in heavy-duty, 3-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-by-11-inch (215-by-280-mm) paper.
2. Provide heavy paper dividers with plastic-covered tabs for each separate warranty. Mark tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product and the name, address, and telephone number of Installer.

3. Identify each binder on the front and spine with the typed or printed title "WARRANTIES," Project name, and name of Contractor.

D. Provide additional copies of each warranty to include in operation and maintenance manuals.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.

PART 3 - EXECUTION

3.1 FINAL CLEANING

A. General: Provide final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.

B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer's written instructions.

1. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for entire Project or for a portion of Project:

a. Clean Project site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.
b. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.

c. Rake grounds that are neither planted nor paved to a smooth, even-textured surface.
d. Remove tools, construction equipment, machinery, and surplus material from Project site.
e. Remove snow and ice to provide safe access to building.
f. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
g. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.
h. Sweep concrete floors broom clean in unoccupied spaces.

i. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other noticeable, vision-obscuring materials. Replace chipped or broken glass and other damaged transparent materials. Polish mirrors and glass, taking care not to scratch surfaces.
j. Remove labels that are not permanent.
k. Touch up and otherwise repair and restore marred, exposed finishes and surfaces. Replace finishes and surfaces that cannot be satisfactorily repaired or restored or that already show evidence of repair or restoration.

1) Do not paint over "UL" and similar labels, including mechanical and electrical nameplates.

l. Wipe surfaces of mechanical and electrical equipment and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.
m. Replace parts subject to unusual operating conditions.
n. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.
o. Clean light fixtures, lamps, globes, and reflectors to function with full efficiency. Replace burned-out bulbs, and those noticeably dimmed by hours of use, and defective and noisy starters in fluorescent and mercury vapor fixtures to comply with requirements for new fixtures.
p. Leave Project clean and ready for occupancy.

C. Pest Control: Engage an experienced, licensed exterminator to make a final inspection and rid Project of rodents, insects, and other pests. Prepare a report.

D. Comply with safety standards for cleaning. Do not burn waste materials. Do not bury debris or excess materials on Owner's property. Do not discharge volatile, harmful, or dangerous materials into drainage systems. Remove waste materials from Project site and dispose of lawfully.

END OF SECTION 01 77 00

SECTION 017823 - OPERATION AND MAINTENANCE MANUALS AND DATA

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General Conditions of the Contract for Construction, and other Division 00 and 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for preparing operation and maintenance manuals, including the following:

1. Operation and maintenance documentation directory.
2. Emergency manuals.
3. Operation manuals for systems, subsystems, and equipment.
4. Maintenance manuals for the care and maintenance of products, materials, and finishes, systems and equipment.

B. Related Sections include the following:

1. Division 01 Section "Submittal Procedures" for submitting copies of submittals for operation and maintenance manuals.
2. Division 01 Section "Closeout Procedures" for submitting operation and maintenance manuals.
3. Divisions 02 through 49 Sections for specific operation and maintenance manual requirements for the Work in those Sections.

1.3 DEFINITIONS

A. System: An organized collection of parts, equipment, or subsystems united by regular interaction.

B. Subsystem: A portion of a system with characteristics similar to a system.

1.4 SUBMITTALS

A. Initial Submittal: Submit two (2) draft copies of each manual at least fifty (50) days before requesting inspection for Substantial Completion. Include a complete operation and maintenance directory. Architect will return one (1) copy of draft and mark whether general scope and content of manual are acceptable.

B. Final Submittal: Submit one (1) copy of each manual in final form at least five (5) days before final inspection. Architect will return copy with comments within seven (7) days after final inspection.

1. Correct or modify each manual to comply with Architect's comments. Submit two (2) copies of each corrected manual within fifteen (15) days of receipt of Architect's comments.

2. Include (10) copies electronically and submit on CDs for distribution. O&M and Discs should include as builts as well.

1.5 COORDINATION

A. Where operation and maintenance documentation includes information on installations by more than one factory-authorized service representative, assemble and coordinate information furnished by representatives and prepare manuals.

PART 2 - PRODUCTS

2.1 OPERATION AND MAINTENANCE DOCUMENTATION DIRECTORY

A. Organization: Include a section in the directory for each of the following:

1. List of documents.
2. List of systems.
3. List of equipment.
4. Table of contents.

B. List of Systems and Subsystems: List systems alphabetically. Include references to operation and maintenance manuals that contain information about each system.

C. List of Equipment: List equipment for each system, organized alphabetically by system. For pieces of equipment not part of system, list alphabetically in separate list.

D. Tables of Contents: Include a table of contents for each emergency, operation, and maintenance manual.

E. Identification: In the documentation directory and in each operation and maintenance manual, identify each system, subsystem, and piece of equipment with same designation used in the Contract Documents. If no designation exists, assign a designation according to ASHRAE Guideline 4, "Preparation of Operating and Maintenance Documentation for Building Systems."

2.2 MANUALS, GENERAL

A. Multiple Project Sites: When the Project involves multiple project sites prepare separate manuals for each separate site address, including in each manual only those items that apply to each individual site.

B. Organization: Unless otherwise indicated, organize each manual into a separate section for each system and subsystem, and a separate section for each piece of equipment not part of a system. Each manual shall contain the following materials, in the order listed:

1. Title page.
2. Table of contents.
3. Manual contents.

C. Title Page: Enclose title page in transparent plastic sleeve. Include the following information:

1. Subject matter included in manual.
2. Name and address of Project.
3. Name and address of Owner.
4. Date of submittal.
5. Name, address, and telephone number of Contractor.
6. Name and address of Architect.
7. Cross-reference to related systems in other operation and maintenance manuals.

D. Table of Contents: List each product included in manual, identified by product name, indexed to the content of the volume, and cross-referenced to Specification Section number in Project Manual.

1. If operation or maintenance documentation requires more than one volume to accommodate data, include comprehensive table of contents for all volumes in each volume of the set.

E. Manual Contents: Organize into sets of manageable size. Arrange contents alphabetically by system, subsystem, and equipment. If possible, assemble instructions for subsystems, equipment, and components of one system into a single binder.

1. Binders: Heavy-duty, 3-ring, vinyl-covered, loose-leaf binders, in thickness necessary to accommodate contents, sized to hold 8-1/2-by-11-inch (215-by-280-mm) paper; with clear plastic sleeve on spine to hold label describing contents and with pockets inside covers to hold folded oversize sheets.

a. If two or more binders are necessary to accommodate data of a system, organize data in each binder into groupings by subsystem and related components. Cross-reference other binders if necessary to provide

essential information for proper operation or maintenance of equipment or system.

b. Identify each binder on front and spine, with printed title "OPERATION AND MAINTENANCE MANUAL," Project title or name, and subject matter of contents. Indicate volume number for multiple-volume sets.

2. Dividers: Heavy-paper dividers with plastic-covered tabs for each section. Mark each tab to indicate contents. Include typed list of products and major components of equipment included in the section on each divider, cross-referenced to Specification Section number and title of Project Manual.
3. Protective Plastic Sleeves: Transparent plastic sleeves designed to enclose diagnostic software diskettes for computerized electronic equipment.
4. Supplementary Text: Prepared on 8-1/2-by-11-inch (215-by-280-mm) white bond paper.
5. Drawings: Attach reinforced, punched binder tabs on drawings and bind with text.

a. If oversize drawings are necessary, fold drawings to same size as text pages and use as foldouts.
b. If drawings are too large to be used as foldouts, fold and place drawings in labeled envelopes and bind envelopes in rear of manual. At appropriate locations in manual, insert typewritten pages indicating drawing titles, descriptions of contents, and drawing locations.

2.3 EMERGENCY MANUALS

A. Content: Organize manual into a separate section for each of the following:

1. Type of emergency.
2. Emergency instructions.
3. Emergency procedures.

Type of Emergency: Where applicable for each type of emergency indicated below, include instructions and procedures for each system, subsystem, piece of equipment, and component:

4. Fire.
5. Flood.
6. Gas leak.
7. Water leak.
8. Power failure.
9. Water outage.
10. System, subsystem, or equipment failure.
11. Chemical release or spill.

B. Emergency Instructions: Describe and explain warnings, trouble indications, error messages, and similar codes and signals. Include responsibilities of Owner's

operating personnel for notification of Installer, supplier, and manufacturer to maintain warranties.

C. Emergency Procedures: Include the following, as applicable:

1. Instructions on stopping.
2. Shutdown instructions for each type of emergency.
3. Operating instructions for conditions outside normal operating limits.
4. Required sequences for electric or electronic systems.
5. Special operating instructions and procedures.

2.4 OPERATION MANUALS

A. Content: In addition to requirements in this Section, include operation data required in individual Specification Sections and the following information:

1. System, subsystem, and equipment descriptions.
2. Performance and design criteria if Contractor is delegated design responsibility.
3. Operating standards.
4. Operating procedures.
5. Operating logs.
6. Wiring diagrams.
7. Control diagrams.
8. Piped system diagrams.
9. Precautions against improper use.
10. License requirements including inspection and renewal dates.

B. Descriptions: Include the following:

1. Product name and model number.
2. Manufacturer's name.
3. Equipment identification with serial number of each component.
4. Equipment function.
5. Operating characteristics.
6. Limiting conditions.
7. Performance curves.
8. Engineering data and tests.
9. Complete nomenclature and number of replacement parts.

C. Operating Procedures: Include the following, as applicable:

1. Startup procedures.
2. Equipment or system break-in procedures.
3. Routine and normal operating instructions.
4. Regulation and control procedures.
5. Instructions on stopping.
6. Normal shutdown instructions.
7. Seasonal and weekend operating instructions.

8. Required sequences for electric or electronic systems.
9. Special operating instructions and procedures.

D. Systems and Equipment Controls: Describe the sequence of operation, and diagram controls as installed.

E. Piped Systems: Diagram piping as installed, and identify color-coding where required for identification.

2.5 PRODUCT MAINTENANCE MANUAL

A. Content: Organize manual into a separate section for each product, material, and finish. Include source information, product information, maintenance procedures, repair materials and sources, and warranties and bonds, as described below.

B. Source Information: List each product included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual.

C. Product Information: Include the following, as applicable:

1. Product name and model number.
2. Manufacturer's name.
3. Color, pattern, and texture.
4. Material and chemical composition.
5. Reordering information for specially manufactured products.

D. Maintenance Procedures: Include manufacturer's written recommendations and the following:

1. Inspection procedures.
2. Types of cleaning agents to be used and methods of cleaning.
3. List of cleaning agents and methods of cleaning detrimental to product.
4. Schedule for routine cleaning and maintenance.
5. Repair instructions.

E. Repair Materials and Sources: Include lists of materials and local sources of materials and related services.

F. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.

1. Include procedures to follow and required notifications for warranty claims.

2.6 SYSTEMS AND EQUIPMENT MAINTENANCE MANUAL

A. Content: For each system, subsystem, and piece of equipment not part of a system, include source information, manufacturers' maintenance documentation, maintenance procedures, maintenance and service schedules, spare parts list and source information, maintenance service contracts, and warranty and bond information, as described below.

B. Source Information: List each system, subsystem, and piece of equipment included in the manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual.

C. Manufacturers' Maintenance Documentation: Manufacturers' maintenance documentation including the following information for each component part or piece of equipment:

1. Standard printed maintenance instructions and bulletins.
2. Drawings, diagrams, and instructions required for maintenance, including disassembly and component removal, replacement, and assembly.
3. Identification and nomenclature of parts and components.
4. List of items recommended to be stocked as spare parts.

D. Maintenance Procedures: Include the following information and items that detail essential maintenance procedures:

1. Test and inspection instructions.
2. Troubleshooting guide.
3. Precautions against improper maintenance.
4. Disassembly; component removal, repair, and replacement; and reassembly instructions.
5. Aligning, adjusting, and checking instructions.
6. Demonstration and training video, if available.

E. Maintenance and Service Schedules: Include service and lubrication requirements, list of required lubricants for equipment, and separate schedules for preventive and routine maintenance and service with standard time allotment.

1. Scheduled Maintenance and Service: Tabulate actions for daily, weekly, monthly, quarterly, semiannual, and annual frequencies.
2. Maintenance and Service Record: Include manufacturers' forms for recording maintenance.

F. Spare Parts List and Source Information: Include lists of replacement and repair parts, with parts identified and cross-referenced to manufacturers' maintenance documentation and local sources of maintenance materials and related services.

G. Maintenance Service Contracts: Include copies of maintenance agreements with name and telephone number of service agent.

H. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.

1. Include procedures to follow and required notifications for warranty claims.

PART 3 - EXECUTION

3.1 MANUAL PREPARATION

A. Operation and Maintenance Documentation Directory: Prepare a separate manual that provides an organized reference to emergency, operation, and maintenance manuals.

B. Emergency Manual: Assemble a complete set of emergency information indicating procedures for use by emergency personnel and by Owner's operating personnel for types of emergencies indicated.

C. Product Maintenance Manual: Assemble a complete set of maintenance data indicating care and maintenance of each product, material, and finish incorporated into the Work.

D. Operation and Maintenance Manuals: Assemble a complete set of operation and maintenance data indicating operation and maintenance of each system, subsystem, and piece of equipment not part of a system.

1. Engage a factory-authorized service representative to assemble and prepare information for each system, subsystem, and piece of equipment not part of a system.
2. Prepare a separate manual for each system and subsystem, in the form of an instructional manual for use by Owner's operating personnel.

E. Manufacturers' Data: Where manuals contain manufacturers' standard printed data, include only sheets pertinent to product or component installed. Mark each sheet to identify each product or component incorporated into the Work. If data include more than one item in a tabular format, identify each item using appropriate references from the Contract Documents. Identify data applicable to the Work and delete references to information not applicable.

1. Prepare supplementary text if manufacturers' standard printed data are not available and where the information is necessary for proper operation and maintenance of equipment or systems.

F. Drawings: Prepare drawings supplementing manufacturers' printed data to illustrate the relationship of component parts of equipment and systems and to illustrate control

sequence and flow diagrams. Coordinate these drawings with information contained in Record Drawings to ensure correct illustration of completed installation.

1. Do not use original Project Record Documents as part of operation and maintenance manuals.
2. Comply with requirements of newly prepared Record Drawings in Division 01 Section "Project Record Documents."

G. Comply with Division 01 Section "Closeout Procedures" for schedule for submitting operation and maintenance documentation.

END OF SECTION 01 78 23

SECTION 017839 - PROJECT RECORD DOCUMENTATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General Conditions of the Contract for Construction, and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for Project Record Documents, including the following:

1. Record Drawings.
2. Record Specifications.
3. Record Product Data.

B. Related Sections include the following:

1. Division 01 Section "Closeout Procedures" for general closeout procedures.
2. Division 01 Section "Operation and Maintenance Data" for operation and maintenance manual requirements.
3. Divisions 02 through 49 Sections for specific requirements for Project Record Documents of the Work in those Sections.

1.3 SUBMITTALS

A. Record Drawings: Submit one (1) set of marked-up Record Prints showing construction modifications.

B. Record Specifications: Submit one (1) copy of marked-up Project's Specifications, including addenda and contract modifications.

C. Record Product Data: Submit one (1) copy of each Product Data submittal.

1. Where Record Product Data is required as part of operation and maintenance manuals, submit marked-up Product Data as an insert in manual instead of submittal as Record Product Data.

PART 2 - PRODUCTS

2.1 RECORD DRAWINGS

A. Record Prints: Maintain one (1) set of black-line white prints of the Contract Drawings and Shop Drawings.

1. Preparation: Mark Record Prints to show the actual installation where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, to prepare the marked-up Record Prints.

   a. Give particular attention to information on concealed elements that would be difficult to identify or measure and record later.
   b. Accurately record information in an understandable drawing technique.
   c. Record data as soon as possible after obtaining it. Record and check the markup before enclosing concealed installations.

2. Content: Types of items requiring marking include, but are not limited to, the following:

   a. Dimensional changes to Drawings.
   b. Revisions to details shown on Drawings.
   c. Depths of foundations.
   d. Locations and depths of underground utilities.
   e. Revisions to routing of piping and conduits.
   f. Revisions to electrical circuitry.
   g. Actual equipment locations.
   h. Duct size and routing.
   i. Locations of concealed internal utilities.
   j. Changes made by Change Order or Change Directive.
   k. Changes made following Architect's written orders.
   l. Details not on the original Contract Drawings.
   m. Field records for variable and concealed conditions.
   n. Record information on the Work that is shown only schematically.

3. Mark the Contract Drawings or Shop Drawings, whichever is most capable of showing actual physical conditions, completely and accurately. If Shop Drawings are marked, show cross-reference on the Contract Drawings.
4. Mark record sets with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at same location.
5. Mark important additional information that was either shown schematically or omitted from original Drawings.
6. Note Construction Change Directive numbers, Alternate numbers, Change Order numbers, and similar identification, where applicable.

B. Format: Identify and date each Record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location.

1. Record Prints: Organize Record Prints and newly prepared Record Drawings into manageable sets. Bind each set with durable paper cover sheets. Include identification on cover sheets.
2. Identification: As follows:

a. Project name.
b. Date.
c. Designation "PROJECT RECORD DRAWINGS."
d. Name of Architect.
e. Name of Contractor.

2.2 RECORD SPECIFICATIONS

A. Preparation: Mark Specifications to indicate the actual product installation where installation varies from that indicated in Specifications, addenda, and contract modifications.

1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
2. Mark copy with the proprietary name and model number of products, materials, and equipment furnished, including substitutions and product options selected.
3. Record the name of manufacturer, supplier, Installer, and other information necessary to provide a record of selections made.
4. For each principal product, indicate whether Record Product Data has been submitted in operation and maintenance manuals instead of submitted as Record Product Data.
5. Note related Change Orders, Record Product Data, and Record Drawings where applicable.

2.3 RECORD PRODUCT DATA

A. Preparation: Mark Product Data to indicate the actual product installation where installation varies substantially from that indicated in Product Data submittal.

1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
2. Include significant changes in the product delivered to Project site and changes in manufacturer's written instructions for installation.
3. Note related Change Orders, Record Specifications, and Record Drawings where applicable.

2.4 MISCELLANEOUS RECORD SUBMITTALS

A. Assemble miscellaneous records required by other Specification Sections for miscellaneous record keeping and submittal in connection with actual performance of the Work. Bind or file miscellaneous records and identify each, ready for continued use and reference.

PART 3 - EXECUTION

3.1 RECORDING AND MAINTENANCE

A. Recording: Maintain one copy of each submittal during the construction period for Project Record Document purposes. Post changes and modifications to Project Record Documents as they occur; do not wait until the end of Project.

B. Maintenance of Record Documents and Samples: Store Record Documents and Samples in the field office apart from the Contract Documents used for construction. Do not use Project Record Documents for construction purposes. Maintain Record Documents in good order and in a clean, dry, legible condition, protected from deterioration and loss. Provide access to Project Record Documents for Architect's and Construction Manager's reference during normal working hours. Record Documents will be checked monthly, incomplete documents will be reason to withhold payments.

END OF SECTION 01 78 39

SECTION 017900 - DEMONSTRATION AND TRAINING REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General Conditions of the Contract for Construction, and other Division 00 and 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for instructing Owner's personnel, including the following:

1. Demonstration of operation of systems, subsystems, and equipment.
2. Training in operation and maintenance of systems, subsystems, and equipment.

B. Related Sections include the following:

1. Division 01 Section "Allowances" for administrative and procedural requirements for demonstration and training allowances.
2. Division 01 Section "Construction Procedure and Control" for requirements for pre-instruction conferences.
3. Divisions 02 through 28 Sections for specific requirements for demonstration and training for products in those Sections.

C. Allowances: Furnish demonstration and training instruction time under the Demonstration and Training Allowance (if there is one) as specified in Division 01 Section "Allowances."

D. Unit Price for Instruction Time: Length of instruction time will be measured by actual time spent performing demonstration and training in required location. No payment will be made for time spent assembling educational materials, setting up, or cleaning up or if a unit price isn't specified for training.

1.3 SUBMITTALS

A. Instruction Program: Submit two (2) copies of outline of instructional program for demonstration and training, including a schedule of proposed dates, times, length of instruction time, and instructors' names for each training module.

B. Attendance Record: For each training module, submit list of participants and length of instruction time.

1.4 QUALITY ASSURANCE

A. Instructor Qualifications: A factory-authorized service representative, complying with requirements in Division 01 Section "Quality Requirements," experienced in operation and maintenance procedures and training.

1.5 COORDINATION

A. Coordinate instruction schedule with Owner's operations. Adjust schedule as required to minimize disrupting Owner's operations.

B. Coordinate instructors, including providing notification of dates, times, length of instruction time, and course content.

C. Coordinate content of training modules with content of approved emergency, operation, and maintenance manuals. Do not submit instruction program until operation and maintenance data has been reviewed and approved by Architect.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 PREPARATION

A. Assemble educational materials necessary for instruction.

B. Set up instructional equipment at instruction location.

3.2 INSTRUCTION

A. Engage qualified instructors to instruct Owner's personnel to adjust, operate, and maintain systems, subsystems, and equipment not part of a system.

B. Scheduling: Provide instruction at mutually agreed on times. For equipment that requires seasonal operation, provide similar instruction at start of each season.

1. Schedule training with Owner with at least fourteen (14) days' advance notice.

C. Cleanup: Collect used and leftover educational materials and give to Owner. Remove instructional equipment. Restore systems and equipment to condition existing before initial training use.

END OF SECTION 01 79 00

SECTION 018400 – MAINTENANCE PRODUCTS

PART 1 – GENERAL

1.1 Maintenance Products for New Floor Finishes

The Rochester City School System utilizes and stocks the Hillyard and CORR Floor Care Programs for various types of floor finishes. Hillyard products are used exclusively for the resilient floor tile floors. These programs, products and procedures have proven to provide superior, long lasting results, less maintenance and man-hours. Therefore immediately upon completion of installation or renovation, each applicable contractor or subcontractor shall prepare and finish all newly installed floor surfaces with the following applicable specified products. Also see various specification sections for any specific finishes required. Coordinate with City School District prior to applying products to make sure most current list of products is being used. Follow all manufacturers' directions in said preparation and application. Refer to the following by type of floor surface:

.1 Resilient Tile Floors: Two (2) coats of Hillyard Seal 341 plus three (3) coats of Hillyard Navigator wax. To be applied after proper stripping of the factory wax and neutralization of the stripper.
.2 Unsealed Quarry Tile/Terrazzo/Hard Surfaces: Two (2) coats of granite sealer.
.3 Ceramic Tile: Two (2) coats of granite sealer (if sealing is required by specification or scope).
.4 Wood Floors and Sports Surfaces: Hillyard Tip Off Gym finish.
.5 Carpet: Spray with Soil Stop (Item #452) per manufacturer instructions.

1.2 Removal of scale, lime and salts from non-resilient Floor: Super Sassafrass

1.3 After the move of furniture and room contents boxes and prior to Final Turnover and occupation by staff: All hard floor surfaces need to be swept clean with a dust mop and damp mopped.

PART 2 – PRODUCTS

2.1 City School District Approved Product List:

.1 HILLYARD No. 21 Seal
.2 HILLYARD Trophy Gym Finish
.3 HILLYARD Fastdry 450 Gym Finish
.4 HILLYARD Tip-Off Finish
.5 HILLYARD 452 Soil Stop

.6 HILLYARD 426 Citrus Scrub
.7 Hillyard Seal 341 (sealer)
.8 Hillyard Navigator (wax finish)
.9 CORR Strip and Go
.10 CORR Rinse Away Neut.
.11 CORR Granite Sealer
.12 CORR Flashback Restorer
.13 CORR Magic Dust Mop Treatment
.14 CORR Super Sassafrass Cleaner

2.2 Any glue, mastic or adhesive shall be removed with Citrus Scrub (Item #426).

2.3 Maintenance Products For New Exterior Surfaces/Anti-Graffiti Sealer (Plus new masonry at interior 'Public' surfaces.)

.1 The RCSD has standardized on an anti-graffiti system for their exterior wall systems. Any new exterior masonry, concrete, etc. surface or cleaning of restored existing surface shall have the following applied.

.2 Product: "Graffiti Melt Barrier Coating" by Genesis Coatings, Inc., a colorless breathable barrier that does not alter the surface appearance.

.3 Areas of Application: All exterior masonry, concrete, etc. surfaces below 8' above general surrounding grade level or above aptly adjacent surface that can be stood upon. If directly adjacent to driveways or vehicular access apply to minimum 12' above pavement level. This includes painted, glazed, or other type masonry surfaces, including joints.

.4 Application: Follow manufacturers requirements for type of surface. Generally done with an airless sprayer, in non-windy conditions. Clean and prepare surface as directed. Protect all non masonry surfaces. Remove/clean all over spray. Apply two (2) coats, each at 350 sf per gallon.

.5 Notify Inspector prior to application so he may confirm complete installation.

PART 3 – EXECUTION

Not used.

END OF SECTION 01 84 00

SECTION 019113 – GENERAL COMMISSIONING REQUIREMENTS

PART 1 - GENERAL

1.1 OVERVIEW

A. This section of the specification describes the process for commissioning and defines the responsibilities of the commissioning agent, the contractors, and outlines the duties of other members of the commissioning team.

B. The commissioning process shall be applied to all equipment, components, and systems as listed in this section, including specific interfaces to and from equipment and systems provided under separate contracts.

C. Building Commissioning work is a joint team effort to ensure that all systems function together properly to meet the design intent, and to document system performance parameters for fine-tuning of control sequences and operations procedures. The commissioning process shall encompass and coordinate the traditionally separate functions of system documentation, equipment start-up, control system calibration, testing and balancing, training, and performance testing. This section does not supersede other requirements of the specifications. It may, though, expand on some of them.

1.2 COMMISSIONING AGENT

A. To Be Determined at a later date.

1.3 THE COMMISSIONING TEAM

A. The commissioning team shall consist of:

1. Commissioning Agent (CA).

2. HVAC Contractor (HC).

3. Plumbing Contractor (PC).

4. Electrical Contractor (EC).

5. General Contractor (GC).

6. All appropriate Contractors and Sub-Contractors including but not limited to; temperature controls, sheet metal, testing and balancing, fire alarm fire protection and elevator installer.

7. Approved Representatives of Mechanical, Electrical and Equipment Manufacturers.

8. Design Engineers (DE).

9. Design Architect (ARCH).

10. Facility Staff (FS).

11. Construction Manager (CM).

1.4 COORDINATION

A. Project Commissioning Team - The members of the Project Commissioning Team shall consist of the Commissioning Authority and any support personnel, the Owner's facility staff (FS) or designee, the HVAC Contractor, Electrical Contractor, Plumbing Contractor, Fire Alarm Contractor, Fire Protection Contractor, General Contractor, Elevator Vendor, or additional vendors as required, the Architect/Engineer (A/E) and Construction Manager (CM).

B. Management - The CA coordinates the commissioning activities through the Construction Manager (CM). All members shall work together to fulfill their contracted responsibilities and meet the objectives of the contract documents. Refer to Paragraph 1.6 for additional management details.

C. Scheduling - The CA, through the CM, will provide sufficient notice to the Contractors for scheduling commissioning activities with respect to the Owner's participation. The Contractors will integrate all commissioning activities into the overall project schedule. All parties will address scheduling problems and make necessary notifications in a timely manner in order to expedite the commissioning process.

1.5 COMMISSIONING PLAN

A. The CA will develop the commissioning plan which shall be included in the project schedule when approved by the Owner.

B. The commissioning plan shall contain the information necessary to document the commissioning process as it progresses from pre-start checks, to start-up and initial operation, and finally to functional performance verification of all systems.

C. The commissioning plan shall also contain a schedule of commissioning work, integrated with the overall project schedule. This schedule shall show:

1. Completion dates for each system or systems in each area of the building.

2. Dates for controls installation completion and point checkout.

3. Dates for carrying out Steps 1 and 2 commissioning work for each system or group of systems.

4. Submission dates for the documentation required by the Engineer prior to Step 3 verification.

5. Dates for carrying out Step 3 commissioning work.

D. The following narrative provides a brief overview of the commissioning tasks that shall be performed during construction and the general order in which they occur.

1. Commissioning during construction begins with an initial commissioning meeting conducted by the CA where the commissioning process is reviewed with the project commissioning team members.

2. Additional meetings will be required throughout construction, scheduled by the CA, through the Owner or CM, with necessary parties attending to plan, scope, coordinate, schedule future activities and address issues.

3. Equipment documentation is submitted to the CA, through the Owner, CM, Architect, during normal submittals, including detailed startup procedures.

4. The pre-functional checklists, developed by the CA are to be completed by the Contractor (or its Subcontractors), before and during the startup process.

5. Pre-functional checklists, TAB and startup must be completed before performance testing.

6. Items of non-compliance in material, installation, or setup shall be corrected at no expense to the Owner.

7. The Contractor ensures that the Subcontractors' pre-functional checklists are executed and documented and that startup and initial checkout are performed. The CA verifies that the TAB, pre-functional checklists and startup were completed according to the approved plans. This includes the CA approving TAB, checklists and startup plans. This also includes witnessing startup of selected equipment. Any testing failure is to be corrected at no additional cost to the Owner, and a re-test is to be performed, observed, and documented.

8. The CA develops and implements equipment and system functional test procedures. The forms and procedures are approved by the Owner and A/E.

9. The performance tests are executed by the Contractor under the direction of the CA with the assistance of the facility staff. All documentation is by the CA.

10. The CA provides the Commissioning Record.

11. Commissioning is to be completed before substantial completion.

12. Deferred testing and/or seasonal verifications are to be conducted as specified or required.

1.6 COMMISSIONING RESPONSIBILITIES

A. Commissioning Agent:

1. Plan, organize, direct and implement the Commissioning Process as specified herein.

2. Prepare the commissioning plan and submit for review by the Owner and Architect.

3. Revise the commissioning plan as required during construction.

4. Chair commissioning meetings, prepare and distribute schedules and agendas for the meetings, and prepare and distribute minutes to all Commissioning Team members, whether or not they attended the meeting.

5. Write the pre-functional checklists, initial operation and functional test procedures and submit for review by the Owner. The test procedures and checklists should be designed to verify detailed aspects of the proper operation of all equipment items and overall system performance in accordance with the design intent of the systems.

6. Coordinate commissioning activities among all Contractors, sub-trades, and suppliers, and all related commissioning requirements in the various specifications for all contracts.

7. Carry out all required system readiness checks and document the results as the checks are done.

8. In cooperation with the Controls Subcontractor, ensure all control point checkouts are carried out and the results documented as the checks are done.

9. Observe or verify all start-ups and initial system operations tests and checks, which shall encompass all specified functional performance tests, ensuring the results are documented as the tests and checks are done.

10. Provide periodic site visits as required to observe system installation.

11. Maintain master issues log.

12. At the direction of the Engineer, ensure equipment and systems are operated for functional performance verification purposes.

13. Ensure all required training and demonstrations are provided to the Owner's designated operating staff and that all Operations and Maintenance manuals are submitted, approved and provided to the Owner.

14. Develop a Final Commissioning Record.

15. Coordinate deferred commissioning required.

B. Contractors:

1. Within four (4) weeks of the award of the contract, the HC, PC, GC, EC Contractors and relevant subcontractors shall submit the names of the Project Manager who will be the Commissioning Coordinator for this project, as well as the names, addresses, phone numbers and qualifications of Subcontractors' Representatives and factory trained Manufacturer's Representatives for all equipment and systems required to participate in the Commissioning Process as specified in this Section.

2. Each Contractor and all his sub-trades and suppliers, shall cooperate with the Commissioning Agent in carrying out the Commissioning Process. In this context, each Contractor shall:

   a. Provide equipment and systems start-up as specified.

   b. Operate equipment and systems as required for initial systems operations, and witness final functional performance tests as they are performed by the Commissioning Agent, including the on-site participation of approved factory trained Manufacturer's Representatives for equipment.

   c. Attend commissioning meetings and attend to action items arising from them, as required to allow the Commissioning Process to proceed on schedule.

   d. Provide instruction and demonstrations for the Owner's designated operating staff, in conjunction with the Commissioning Agent, in order to meet all specified training requirements in this regard.

   e. The Contractors shall make any and all necessary corrections to systems, equipment, O & M manuals, as built drawings, and

procedures as necessary to meet the design intent, contract documents, manufacturer's recommendations or performance requirements if errors are discovered during the Commissioning Process.

f. The Contractors shall supply all necessary documentation, such as shop drawings, submittal data, maintenance manuals, etc. required for equipment and systems, to the Commissioning Agent for preparation of the commissioning plan, checklists, and functional performance plans.

g. The Contractors shall provide the required names, addresses and qualifications of all specified Manufacturer's Representatives to participate in the Commissioning Process prior to the initial commissioning meeting.

h. Subsequent installation and performance verifications, made necessary due to required corrections after initial verification, shall be at the respective Contractor's expense.

i. Carry all commissioning related costs in contract bid price.

j. Review all documentation provided by CA and provide comments, if required prior to on site commissioning activities.

k. Engage, at Contractor's cost, any Manufacturer's Representatives required to complete start-up and commissioning activities.

l. Include cost of all devices and special tools to complete commissioning activities.

C. Manufacturer's Representatives:

1. The factory trained and authorized Manufacturer's Representatives shall participate in the commissioning process as specified in this section and as indicated in the technical section of the specifications.

2. Each Manufacturer's Representative shall cooperate with the commissioning agent in carrying out the commissioning process. In this context, each Manufacturer's Representative shall:

a. Provide equipment start-up as specified.

b. On-site participation as required for initial equipment operations and witness final functional performance tests as they are performed by the commissioning agent.

c. Attend commissioning meetings, as applicable and attend to action items arising from them, as required to allow the commissioning process to proceed on schedule.

d. Provide instruction and demonstrations for the Owner's designated operating staff, as specified in conjunction with the commissioning agent, in order to meet all specified training requirements in this regard.

e. Make any and all necessary corrections to equipment, O&M manuals, as-built drawings and procedures as necessary to meet the design intent, contract documents or performance requirements if errors are discovered during the commissioning process.

f. Subsequent installation and performance verifications, made necessary due to required corrections after initial verification, shall be at the respective manufacturer's expense.

D. Design Engineers and Architects:

1. Provide "Basis of Design" documentation inclusive of design criteria for CA review.

2. The Design Engineers and Architect shall review the commissioning plan, commissioning checklists and functional performance test plans. They shall also participate, as appropriate, in on-site commissioning meetings.

3. During the functional performance phase of the Commissioning Process, the Design Engineers and Architects shall be on site to review commissioning documentation, witness functional performance tests, and verify acceptable performance or to declare performance unacceptable, as required.

4. Provide design narrative information to CA as required.

5. Participate in deficiency resolution process of items identified during Commissioning Process.

E. Owner's Representative (User):

1. Provide "Owner's Project Requirements" documentation for CA review.

2. The Owner shall ensure the availability of operating staff for all scheduled training and demonstration sessions. This staff shall possess sufficient skills and knowledge to operate and maintain the installation following attendance at these sessions.

3. Attend commissioning meetings.

4. Sign off of all accepted functional test procedures.

5. Participate in seasonal/deferred testing.

1.7 DESCRIPTION OF WORK

A. The "Systems and Equipment" as referred to in this section of the specifications shall include, but not be limited to, subsystems and components of subsystems; as provided by various contracts as follows:

1. Building HVAC Temperature Control System.
2. Building Egress Pressurization System.
3. Domestic Hot Water Equipment.
4. Daylight Dimming Controls.
5. Lighting System, Scheduled Lighting Controls and Occupancy Sensors.
6. Fire Protection System.
7. Fire Alarm System.
8. Security System.
9. Plumbing Fixtures and Controls.
10. Elevator.
11. Building Envelope.

1.8 COMMISSIONING PROCESS

A. The on-site commissioning process shall be organized and carried out in four (4) steps as follows:

1. Step 1 - System readiness and start-up.
2. Step 2 - Initial operation.
3. Step 3 - Functional performance verification.
4. Step 4 - Demonstration and instruction.

B. Each step is applicable to each separate system and its components, as listed in Part 3, including all related controls and specified interfaces to other divisions and contracts.

C. The Contractors shall review and verify the commissioning schedule and requirements for the interface between all trades in order to prevent delays in the Commissioning Process.

D. In some systems, improper adjustments, misapplied equipment, and/or deficient performance under varying loads may result in additional work being required to commission the systems. This work shall be completed under the direction of the General Contractor with input from the Contractors, Equipment Supplier, and Commissioning Agent. Whereas all members shall have input and the opportunity to discuss, debate, and work out problems, the Design Architect or

Engineer shall have final jurisdiction over any additional work done to achieve performance.

E. Corrective work shall be completed in a timely fashion to permit the completion of the commissioning process. Experimentation to demonstrate system performance may be permitted. If the Commissioning Agent deems the experimentation work to be ineffective or untimely as it relates to the Commissioning Process, the Commissioning Agent shall notify the Owner, indicating the nature of the problem, expected steps to be taken, and suggestions for completion of activities. Costs incurred to solve the problems in an expeditious manner shall be the Contractor's responsibility.

F. Seasonal commissioning is required under full load conditions during peak heating and peak cooling seasons, as well as part load conditions in the spring and fall. Simulations of peak load conditions may be implemented to allow for complete commissioning of the work.

G. Systems that are not weather dependent shall be tested under full and partial load to the fullest extent possible.

1.9 STEP 1 - SYSTEMS READINESS AND START-UP

A. Before starting any equipment or systems, the Contractors shall complete the system readiness or pre-start checks in the commissioning plan and the Commissioning Agent shall document the results. The following conditions and items shall be completed as applicable:

1. Piping systems have been pressure tested as specified, found to be tight, with reports submitted.

2. Piping systems have been flushed and cleaned as specified, any required reports submitted, and then filled or charged as applicable.

3. Equipment has been lubricated to specification.

4. Air system cleaning is complete, and particulate filters have been installed.

5. Vibration isolation has been installed to specification and adjusted.

6. Equipment drives have been aligned.

7. Electrical, water and fuel services have been installed and checked.

8. Control point checkouts have been completed.

9. Safety controls have been installed and operation checked.

10. Major equipment start-up has been carried out by Manufacturer's Representative when specified and required startup reports completed and submitted.

B. All checks shall be documented on the relevant checklists as they are carried out. Deficiencies or incomplete work shall be corrected and the checks repeated until the installation is ready for operation before proceeding to Step 2 of the process.

1.10 STEP 2 - INITIAL OPERATION

A. In Step 2 of the Commissioning Process, the Contractors, with the Commissioning Agent verifying, complete the testing, balancing, and calibration of all components and systems. They also operate all systems through all specified modes of operation and test system responses to specified abnormal or emergency conditions.

B. Work carried out during this step of commissioning shall include but not be limited to, the following:

1. Air systems balancing, including positioning of all balance dampers, adjustments to diffusers, registers and grilles.

2. Hydronic systems balancing, including positioning of all balance valves.

3. Correction of problems revealed during balancing, including changes to fan speeds or blade pitch as necessary.

4. Setting up and calibrating all automatic temperature controls devices, including adjustments to control valves and damper actuators.

5. Setting up or programming controls for accurate response and precise sequencing to meet specified performance.

6. With Commissioning Agent verifying, the Balancing Contractor and Controls Contractor working together setting up airflows and controls calibrations for terminal units and airflow stations.

7. Ensuring final adjustments to vibration isolation are carried out as necessary.

C. As was done in Step 1, all checks and tests shall be documented on the relevant checklists as they are carried out. Deficiencies or incomplete work shall be corrected, and the checks or tests repeated until correct installation and function has been confirmed and the installation is ready for engineering verification.

1.11 STEP 3 - FUNCTIONAL PERFORMANCE TEST AND VERIFICATION

A. All equipment and systems shall be operated through the entire specified sequence of operations for witness and verifying acceptable operation, by the Commissioning Agent.

B. During this step of commissioning, the following checks and test shall be required:

1. Check the location and accessibility of all access panels.

2. Operation of all control system devices, both sensors and actuators.

3. Proper physical response of all controlled devices and components to setpoint changes or other relevant adjustments.

4. Operation of randomly selected motorized dampers.

5. Demonstration of acceptable noise and vibration levels from major equipment, under its full range of operational conditions.

6. Operation of equipment and systems under every specified mode of operation and sequence of control.

7. Once acceptable performance of systems has been verified, then verification of specified interfaces to/from equipment and systems provided under other divisions and contracts shall be performed.

1.12 STEP 4 - DEMONSTRATION AND INSTRUCTION

A. The formal demonstration and instruction for operating staff shall commence once the Step 3 commissioning is complete and substantial completion achieved.

B. Demonstration and instruction in accordance with the "Design Intent" shall cover all equipment and systems and their controls.

1.13 COMMISSIONING START-UP AND COMPLETION

A. Commissioning of certain systems may be required to be performed during both heating and cooling seasons. Commissioning shall be performed at the earliest such time as possible after substantial completion of each system.

1.14 REFERENCES

A. Systems commissioning shall be accomplished as specified and in accordance with the latest version of commissioning publications from one the following industry associations:

1. American Society of Heating, Refrigeration and Air Conditioning Engineers (ASHRAE) Guideline 1-1996, Guidelines for commissioning of HVAC systems.

2. Associated Air Balancing Council, Commissioning Reference Manual.

3. Building Commissioning Association - The Building Commissioning Handbook.

1.15 DOCUMENTATION

A. Each Contractor shall provide to the Commissioning Agent three (3) copies of the following items as soon as they become available:

1. Certified and approved start-up and testing report forms for all subsystem equipment that comprise the System. Commissioning documentation shall include control schematics of the total system and all subsystems.

2. Records of required inspections for code compliance, and documentation of approved permits and licenses to operate components of the System.

3. Operating data which shall include all necessary instructions to the Owner's operating staff in order to operate the system to specified performance standards.

4. Maintenance data which shall include all necessary information required to maintain all equipment in continuous operating condition, such as the testing, balancing and adjusting report and the as-built drawings.

5. Written notice that building equipment and systems have been completed, tested and are fully operational.

6. Checklist of all submitted contract deliverables such as; operation and maintenance manuals, spare parts, warranties, training, documentation, etc.

PART 2 - PRODUCTS

2.1 TESTING

A. The Contractor shall provide any equipment or device required for access such as platforms, scaffolds, and spare filters as may be necessary for all verification and testing.

B. All standard testing equipment required to perform startup and initial checkout and required performance testing shall be provided by the Contractor for the equipment being tested. This includes, but is not limited to, two-way radios, meters, and data recorders.

C. Special equipment, tools, and instruments required for testing equipment according to these contract documents shall be included in the Contractor's base bid price and shall be turned over to the Owner at project close-out.

D. All testing equipment shall be of sufficient quality and accuracy to test and/or measure system performance within the tolerances specified in the specifications. If not otherwise noted, the following minimum requirements apply: Temperature sensors and digital thermometers shall have a certified calibration to NIST traceable standards within the past year to an accuracy of 0.5°F and a resolution of ± 0.1°F. Pressure sensors shall have an accuracy of ± 2.0% of the value range being measured (not full range of meter) and have been calibrated within the last year. All equipment shall be calibrated according to the manufacturer's recommended intervals and when dropped or damaged. Calibration tags shall be affixed or certificates readily available.

PART 3 - EXECUTION

3.1 GENERAL

A. Each Contractor shall coordinate with the Commissioning Team in the construction phase of the project to assure compliance with all system commissioning requirements.

3.2 DESIGN CRITERIA AND INTENT

A. Design criteria and intent shall be as described in the technical specification sections and contract drawings. The basis of design developed by the Architect and Engineer will be also referenced.

3.3 MEETINGS

A. Initial Meeting:

1. The CA, through the CM, will schedule, plan and conduct an initial commissioning meeting. The Contractors and their responsible parties are required to attend.

B. Miscellaneous Meetings:

1. Other meetings will be planned and conducted by the CA as construction progresses. These meetings will cover coordination, deficiency resolution, and planning issues. These meetings will be held to the extent possible following construction meetings to minimize additional travel for all parties.

3.4 STARTUP, CONSTRUCTION CHECKLISTS AND INITIAL CHECKOUT

A. The following procedures apply to all equipment/systems to be commissioned.

B. General: Pre-functional checklists are required to verify that the equipment and systems are fully connected and operational. It ensures that performance testing (in-depth system checkout) may proceed without unnecessary delays. The pre-functional checklists for a given system must be successfully completed and

approved prior to startup and formal performance testing of equipment or subsystems of the given system.

C. Startup and Checkout Plan: The CA will assist the Project Commissioning Team members responsible for startup of any equipment. The primary role of the CA in this process is to ensure that there is written documentation that each of the manufacturer recommended procedures has been completed. The CA shall provide pre-functional checklists and startup shall be identified in the commissioning scoping meeting and on the checklist forms.

1. The pre-functional checklists will be developed by the CA and provided to the Contractors. These checklists indicate required procedures to be executed as part of startup and initial checkout of the systems and the party responsible for their execution.

2. The Contractor shall determine which trade is responsible for executing and documenting each of the line item tasks and transmit the checklists to the responsible subcontractors. Each form may have more than one trade responsible for its execution.

3. The Contractor/Subcontractor responsible for the purchase of the equipment shall develop the full startup plan by combining the manufacturer's detailed startup and checkout procedures and the pre-functional checklists.

4. The Contractor/Subcontractor shall submit the full startup plan to the CA for review and approval.

5. The CA will review and approve the procedures and the documentation format for reporting. The CA will return the procedures and the documentation format to the Contractor.

6. The Contractor will transmit the full startup plan to the Subcontractors for their review and use.

D. Sensor and Actuator Calibration: All field-installed temperature, relative humidity, CO, CO_2, refrigerant, O_2, and/or pressure sensors and gages, and all actuators (dampers and valves) on all equipment shall be calibrated. Verify that all locations are appropriate and away from causes of erratic operation. Submit to the CA the calibration methods and results. All test instruments shall have had a certified calibration within the last six (6) months to NIST traceable standards, and comply with all local, state and/or federal requirements/certifications, as required. Sensors installed in the unit at the factory with calibration certification provided need not be field calibrated. Provide bench testing as required at the direction of the CA.

1. Sensor Calibration Methods:

a. All Sensors - Verify that all sensor locations are appropriate and away from causes of erratic operation. Verify that sensors with shielded cable, are grounded only at one end. For sensor pairs that are used to determine a temperature or pressure difference, make sure they are reading within 0.2°F of each other for temperature and within a tolerance equal to 2% of the reading, of each other, for pressure. Tolerances for critical applications may be tighter.

b. Sensors without Transmitters - Standard Application. Make a reading with a calibrated test instrument within 6 in. of the site sensor. Verify that the sensor reading (via the permanent thermostat, gauge or building automation system (BAS)) is within the tolerances in the table below of the instrument-measured value. If not, install offset in BAS, calibrate or replace sensor.

c. Sensors with Transmitters - Standard Application. Disconnect sensor. Connect a signal generator in place of sensor. Connect ammeter in series between transmitter and BAS control panel. Using manufacturer's resistance-temperature data, simulate minimum desired temperature. Adjust transmitter potentiometer zero until 4 mA is read by the ammeter. Repeat for the maximum temperature matching 20 mA to the potentiometer span or maximum and verify at the BAS. Record all values and recalibrate controller as necessary to conform with specified control ramps, reset schedules, proportional relationship, reset relationship and P/I reaction. Reconnect sensor. Make a reading with a calibrated test instrument within 6 in. of the site sensor. Verify that the sensor reading (via the permanent thermostat, gauge or building automation system (BAS)) is within the tolerances in the table below of the instrument-measured value. If not, replace sensor and repeat. For pressure sensors, perform a similar process with a suitable signal generator.

Tolerances, Standard Applications

Sensor	Required Tolerance (+/-)		Sensor	Required Tolerance (+/-)
Outside air, space air, duct air temps	0.4F		Flow rates, air	10% of design
Watthour, voltage & amperage	1% of design		Flow rates, water Relative humidity Oxygen or CO_2 monitor CO monitor	4% of design 4% of design 0.1% pts 0.01 % pts
Pressures, air, water and gas	3% of design		Barometric pressure	0.1 in. of Hg

d. Valve and Damper Stroke Setup and Check EMS Readout: For all valve and damper actuator positions checked, verify the actual position against the BAS readout. Set pumps or fans to normal operating mode. Command valve or damper closed, visually verify that valve or damper is closed and adjust output zero signal as required. Command valve or damper open, verify position is full open and adjust output signal as required. Command valve or damper to a few intermediate positions. If actual valve or damper position doesn't reasonably correspond, replace actuator or add pilot positioner (for pneumatics).

E. Execution of Construction Checklists and Startup:

1. Two (2) weeks prior to the scheduled start up, the Contractor shall coordinate startup and checkout with the Owner, A/E, CM, and CA. The execution and approval of the construction checklists, startup, and checkout shall be directed and performed by the Contractor, Subcontractor or Vendor. Signatures are required of the applicable Subcontractors for verification of completion of their work.

2. The Owner and facility personnel as necessary, shall observe, at minimum, the procedures for each piece of primary equipment, unless there are multiple units, in which case a sampling strategy may be used.

3. For lower-level components of equipment, (e.g., sensors, controllers), the CA shall observe a sampling of the startup procedures.

4. The Contractors, Subcontractors and Vendors shall execute startup and provide the CA with a signed and dated copy of the completed startup and construction checklists.

5. Only individuals employed by the Contractor (Technicians, Engineers, Tradesmen, Vendors, etc.) who have direct knowledge and witnessed that a line item task on the construction checklist was actually performed shall

check off that item. It is not acceptable for non-witnessing onsite supervisors to fill out these forms.

F. Deficiencies, Non-Conformance, and Approval of Checklists and Startup (Master Issues Log):

1. The Contractor shall ensure that the Subcontractors clearly list any outstanding items of the initial startup and construction checklist procedures that were not completed successfully, on an attached sheet. The form and any outstanding deficiencies shall be provided, to the CA within two (2) days of test completion.

2. The CA will review the report and issue either a non-compliance report or an approval form, to the Contractor. The installing Contractors or Vendors shall correct all areas that are deficient or incomplete in the checklists and tests in a timely manner, shall notify the CA as soon as outstanding items have been corrected, and resubmit an updated startup report with a Statement of Correction on the original non-compliance report. When satisfactorily completed, the CA will recommend approval of the execution of the checklists and startup of each system.

3. Items left incomplete, which later cause deficiencies or delays during performance may result in backcharges to the Contractor.

3.5 FUNCTIONAL PERFORMANCE TESTING

A. Requirements: The functional performance testing shall demonstrate that each system is operating according to the documented design intent and contract documents. Functional performance testing facilitates bringing the systems from a state of individual substantial completion to full dynamic operation. Additionally, during the testing process, areas of deficient performance are identified and corrected, improving the operation and functioning of the systems.

B. Coordination and Scheduling: The Contractor shall provide sufficient notice, regarding their completion schedule for the construction checklists and startup of all equipment and systems to allow the performance testing to be scheduled. The CA shall oversee, witness, and document the performance all equipment and systems. The CA, in association with the Contractor/Subcontractors and Facility Staff, shall execute the tests. Performance testing shall be conducted after the construction checklists, and startup has been satisfactorily completed. The control system shall be sufficiently tested and approved by the CA before it is used to verify performance of other components or systems. The air balancing and water balancing shall be completed and approved before performance testing of air or water-related equipment or systems. Testing proceeds from components to subsystems to systems. When the proper performance of all interacting individual systems has been achieved, the interface or coordinated responses between systems shall be checked.

C. Development of Test Procedures: Before test procedures are finalized, the Contractor shall provide to the A/E and the CA all requested documentation and a current list of changes affecting equipment or systems, including an updated points list, program code, control sequences, testing parameters, supplemental instructions, and addenda. Using the testing parameters and requirements in the technical specifications, the CA shall update/develop specific test procedures and forms to verify and document proper operation of each piece of equipment and system. Each Contractor/Subcontractor or vendor, as appropriate, shall provide assistance to the CA in developing the final procedures. Prior to finalization, the A/E shall review and concur with the test procedure.

D. Test Methods:

1. Performance testing and verification may be achieved by manual testing or by monitoring the performance and analyzing the results using the control system's trend log capabilities or by stand-alone data loggers. The CA may substitute specified methods or require an additional method to be executed other than what was specified, with the approval of the A/E. The CA will determine which method is most appropriate for tests that do not have a specified method.

2. Simulated Conditions. Simulating conditions shall be allowed, though timing the testing to experience actual conditions is encouraged wherever practical.

3. Overridden Values. Overriding sensor values to simulate a condition, such as overriding the outside air temperature reading in a control system to be something other than ambient is acceptable.

4. Simulated Signals. Using a signal generator which creates a simulated signal to test and calibrate transducers and DDC constants is generally recommended over using the sensor to act as the signal generator via simulated conditions or overridden values.

5. Altering Setpoints. Rather than overriding sensor values and when simulating conditions is difficult, altering setpoints to test a sequence is acceptable.

6. Indirect Indicators. Relying on indirect indicators for responses or performance shall be allowed only after visually and directly verifying and documenting, over the range of the test parameters, that the indirect readings through the control system represent actual conditions and responses.

7. Setup. Each functional performance test shall be performed under conditions that simulate actual conditions as closely as is practically possible. The Contractor/Subcontractor(s) assisting the CA in executing the test shall provide all necessary materials, system modifications, etc., to

produce the necessary flows, pressures, temperatures, etc., necessary to execute the test according to the specified conditions. At completion of the test, the Contractor/ Subcontractor(s) shall return all affected equipment and systems to their approved operating settings.

E. Problem Solving: The burden of responsibility to solve, correct, and retest malfunctions/failures is with the Contractor, with the CA providing suggestions.

3.6 DOCUMENTATION, NON-CONFORMANCE, AND APPROVAL OF TESTS

A. Documentation: The CA shall witness and verify/pre-approve the documentation of the results of all performance tests. The CA shall complete all documentation for performance testing.

B. Non-Conformance:

1. Corrections of minor deficiencies identified may be made during the tests at the discretion of the CA. In such cases the deficiency and resolution will be documented on the procedure form or on an attached sheet. If the correction is made immediately, the item does not need to be added to the issues log.

2. As tests progress and a deficiency is identified, the CA shall discuss the issue with the Commissioning Team and the Contractor.

a. When there is no dispute regarding the deficiency and the Contractor accepts responsibility to correct it:

1) The CA will document the deficiency and the Contractor's response and intentions. After the day's work, the CA will enter the item into the issues log. The Contractor corrects the deficiency, signs the statement of correction at the bottom of the non-compliance form certifying that the equipment is ready to be retested and sends it back to the CA.

2) The Contractor shall reschedule the test; and the test is repeated. The issues log is amended by the CA.

b. If there is a dispute about a deficiency, regarding whether or not it is a deficiency:

1) The dispute shall be documented on the non-compliance form with the Contractor's response.

2) Resolutions are made at the lowest management level possible. Other parties are brought into the discussions as needed. Final interpretive authority is with the A/E.

3) The CA documents the resolution process in the issues log.

4) Once the interpretation and resolution have been decided, the contractor corrects the deficiency, signs the statement of correction on the non-compliance form and provides it to the CA. The contractor shall reschedule the test and the test is repeated until satisfactory performance is achieved.

3. Cost for the CA to retest a functional performance test is borne by Contractor's.

4. The Contractor shall submit in writing to the CA at least as often as commissioning meetings are being scheduled, the status of each outstanding discrepancy identified during commissioning. Discussion shall cover explanations of any disagreement and proposed resolutions.

a. The CA retains the original non-conformance forms until the end of the project.

b. Retesting shall not be considered a justified reason for a claim of delay or for a time extension by the Contractor.

C. Failure Due to Manufacturer Defect: If 10% (or three (3), whichever is greater) of identical pieces of equipment fail to perform to the contract documents (mechanically or substantively) due to a manufacturing defect, not allowing it to meet its submitted performance specification, all identical units may be considered unacceptable. In such case, the Contractor shall provide the Owner with the following:

1. Within one (1) week of notification from the Owner, the Contractor or Manufacturer's Representative shall examine all other identical units making a record of the findings. The findings shall be provided to the CA within two (2) weeks of the original notice.

2. Within two (2) weeks of the original notification, the Contractor or Manufacturer shall provide a signed and dated, written explanation of the problem, cause of failures, etc., and all proposed solutions. The proposed solutions shall not significantly exceed the specification requirements of the original installation.

3. The A/E will determine whether a replacement of all identical units or a repair is acceptable.

4. Two (2) examples, where applicable, of the proposed solution shall be installed by the Contractor and the A/E shall be allowed to test the installations for up to one (1) week, upon which the A/E will decide whether to accept the solution.

5. Upon acceptance, the Contractor and/or Manufacturer shall replace or repair all identical items, at their expense. The replacement/repair work shall proceed with reasonable speed beginning within one week from when parts or material can be obtained.

D. Approval: The CA notes each satisfactorily demonstrated function on the test form. Final acceptance of the functional performance test by the Owner is made after review by the CA, following recommendations by the A/E.

3.7 DEFERRED TESTING

A. Unforeseen Deferred Tests: If any check or test cannot be completed due to the project completion level, weather conditions, or time of season, execution of checklists and functional performance testing may be delayed upon approval of the CA. These tests will be conducted in the same manner as the seasonal tests as soon as possible. Contractors will not be due any additional compensation.

B. Seasonal Testing: During the warranty period, seasonal testing (tests delayed until weather conditions are closer to the system's design) shall be completed as part of this contract. The CA shall coordinate this activity through the Owner. Tests will be executed, documented by the CA and deficiencies should be corrected by the appropriate Contractor/Subcontractors with the CA witnessing. Any final adjustments to the O&M manuals and ‘as-builts’ due to the testing shall be made by the Contractor.

3.8 COMMISSIONING RECORD

A. The CA is responsible to compile, organize and index the following commissioning data, for all commissioned equipment into labeled, indexed and tabbed, three-ring binders and deliver it to the Owner.

1. Commissioning Plan.

2. System reports including available design narratives and criteria including sequences. Each system shall contain the startup plan and report, approvals, corrections, construction checklists, completed performance tests, trending and analysis, training plan and recommended re-commissioning schedule.

3. Complete issues log inclusive of all items and resolutions.

4. Final Commissioning Report including an executive summary, list of participants and roles, brief building description, overview of commissioning and testing scope and a general description of testing and verification methods. For each piece of commissioned equipment, the report should contain the disposition of the Commissioning Authority regarding the adequacy of the equipment, documentation and training meeting the contract documents in the following areas:

   a. Equipment meeting the equipment specifications.

   b. Equipment installation.

   c. Performance and efficiency.

   d. Equipment documentation and design intent.

   e. Operator training.

5. All outstanding non-compliance items shall be specifically listed. Recommendations for improvement to equipment or operations, future actions, commissioning process changes, etc. shall also be listed. Each non-compliance issue shall be referenced to the specific performance test, inspection, trend log, etc. where the deficiency is documented. The performance and efficiency section for each piece of equipment shall include a brief description of the verification method used (manual testing, BAS trend logs, data loggers, etc.) and include observations and conclusions from the testing.

3.9 PRE-WARRANTY REVIEW

A. CA will conduct a pre-warranty review of the project approximately ten (10) months following final completion of the project. CA will provide to the Owner a list of remedial items that are required to be addressed by Contractors prior to warranty expiration. Contractors, at their cost, will address all identified items in their respective trades within thirty (30) day of notification. Upon completion of work, Contractor will notify Owner, Commissioning Authority, and Design Architect/Engineer in writing.

END OF SECTION 01 91 13

SECTION 19 10 00 – TV STUDIO VIDEO AND CONTROLS

PART 1 - GENERAL

1.1 PROJECT INFORMATION:

A. Owner: Rochester Schools Modernization Program
70 Carlson Road, Suite 200
Rochester, NY 14610

B. Architect: Labella Associates, D.P.C.
300 State Street
Suite 201
Rochester, New York 14614

C. Consultant: AVL Designs, Incorporated
1788 Penfield Rd, Suite 1
Rochester, New York 14611
Phone (585) 586-1100

D. Contractor: The successful bidder for the work described herein. Also referred to variously as the contractor, the bidder, the lighting installer, the specialties contractor or the lighting contractor.

E. Others: Other contractors who have provided work under separate contract and in different phases of related projects in the space.

1.2 DEFINITIONS:

A.	Code Requirements	Minimum requirements.
B.	Concealed	Work installed in pipe and duct shafts, chases or recesses, inside walls, above ceilings, in slabs or below grade.
C.	Equal or Equivalent	Equally acceptable as determined by Owner’s Representative.
D.	Final Acceptance	Owner acceptance of the project from Contractor upon certification by Owner's Representative.
E.	Furnish	Supply and deliver to installation location.
F.	Furnished by Others	Receive delivery at job site or where called for and install.
G.	Inspection	Visual observations by Owner's site Representative

H.	Install	Mount and connect equipment and associated materials ready for use.
I.	Labeled	Refers to classification by a standards agency.
J.	Or Approved Equal	Approved equal or equivalent as determined by Owner's Representative.
K.	Owner's Representative	The Prime Professional.
L.	Provide	Furnish, install and connect ready for use.
M.	Relocate	Disassemble, disconnect, and transport equipment to new locations, then clean, test, and install ready for use.
N.	Replace	Remove and provide new item.
O.	Review	A general contractual conformance check of specified products.
P.	Satisfactory	As specified in contract documents.

A. Refer to General Conditions of the Contract for additional definitions.

1.3 INTENT OF DRAWINGS:

A. Throughout the contract documents there are various manufacturers and products referenced. It is understood that these products establish a basis of design that all other "or equal" substitutions must meet or exceed. All submitted devices must be the referenced product or approved equal.

B. The drawings in this package are diagrammatic in nature. The drawings show the approximate locations of equipment and devices , unless detailed dimensioned drawings are included. The final and exact locations of all non-dimensioned devices are subject to the approval of the Owner or the Owner's Representative. Devices with detailed installation dimensions however are critically located and must be installed to those indicated dimensions unless alternate instructions have been given to the contractor in writing by the consultant.

C. The contractor(s) shall inspect the entire building(s) with the Owner's representative prior to beginning any work and shall identify the exact locations and installation methods for all devices, conduit and wiring prior to beginning work.

D. Typical details are shown for the installation of various devices. The details do not apply to all situations. Installation methods for all work shall be subject to the Owners and construction manager's approval. Provide all work and equipment required for a professional, workmanlike installation.

1.4 RELATED SECTIONS & DOCUMENTS:

A. The contractor(s) shall examine the full set of construction drawings and specifications and ascertain all aspects of the scope of work described within this specification. The contractor will be responsible for cooperation with and adherence to the overall scope and intent of the project relative to the work being done by the contractor.

B. Drawings and general provisions of the Contract including General and Supplementary Conditions and Division 0, 1, and 26 specification sections apply to work of this section (related specification sections may vary depending upon the particular CSI format being adhered to). All related drawings, contract conditions and general requirements found in the project manual that apply to the general contract will apply to the work described in this specification. Examine all referenced documents for general project requirements relating to the work in this specification. Contact the architects, engineers and/or construction manager for any clarification required to properly bid this project. It is the contractor's responsibility to obtain necessary clarification before bidding. No change orders will be allowed for existing project conditions and contractor requirements not properly investigated by the contractor.

1.5 SECTION INCLUDES BUT IS NOT LIMITED TO:

A. Provide all equipment, mounting hardware, racks, portable cables, miscellaneous equipment, commissioning and set up to the owner's satisfaction.

B. Provide programming of all equipment and proof of performance at final commissioning

C. Training of operators to be designated by the owner.

1.6 GENERAL REQUIREMENTS:

A. Provide all equipment outlined and described within this specification and assemble it into complete, properly functioning systems for use by the owner as described within this specification. The bidder assumes full responsibility for providing and installing systems that meet the performance and functional requirements stated, notwithstanding detailed information within this specification or on accompanying drawings.

B. Contractor shall order all equipment promptly based on owner approvals. In instances where the submitted equipment that was approved has subsequently been discontinued resulting in an increase in cost, the contractor is entitled to additional payments for the cost difference between the discontinued item and the current model on a per item basis. If equipment is not ordered in a timely fashion, then the contractor bears the sole responsibility of all costs differences.

C. It is the contractor's responsibility to clarify any misunderstandings or drawing-drawing/drawing-spec discrepancies prior to bid submittal and offer detailed alternatives in writing. Once a bid has been submitted it is assumed that the bidder is able to perform the entire scope of the work for the price specified. Where discrepancies occur and pre-

bid instructions have not been obtained, the contractor will abide by the owner's decision. In cases of a difference between stated quantities in drawings, specs or electrical drawings, the higher quantity will prevail.

D. Check in detail each component before installation as well as each portion of the project during installation to ensure that the intent of this specification is achieved.

E. Furnish, install and terminate all required wire and cable as well as any conduit and hardware required.

F. Provide all required equipment and hardware as necessary to provide a complete system.

G. Provide all required miscellaneous wire and cable as well as related conduit and hardware as necessary to provide a complete system/.

1.7 BIDDER QUALIFICATIONS – SUBMITTALS:

A. Provide (5) references of comparable scope projects completed within the last 5 years. For each reference provide the following:
   1. Contact name, phone number and E mail
   2. Project managers Name
   3. Project scope description
   4. Project Budget
   5. Date Completed

1.8 COORDINATION:

A. Staff the job site adequately at all times to maintain a progress in keeping with the total project progress. No allowances will be made for overtime required to maintain job progress.

B. The job site will be left in a clean safe condition at the end of any workday. All debris removal to a site designated by the owner will be the responsibility of the bidder on a daily basis.

C. All storage of tools and materials will be done by the contractor. No on site storage security will be provided by the owner.

D. The contractor will attend regular meetings with the architect, owner, general contractor, and the consultant when requested by any of the above, in order to achieve project coordination and progress.

1.9 STANDARDS REFERENCES:

A. The contractor is responsible for the provision of material and methods for installation of equipment conforming to the currently applicable standards of:
   1. ADA - Americans with Disabilities Act
   2. AISC - American Institute of Steel Construction
   3. AISI - American Iron and Steel Institute
   4. ANSI - American National Standards Institute
   5. ASME - American Society of Mechanical Engineers
   6. ASTME - American Society for Testing Materials
   7. FCC - Federal Communications Commission
   8. IEC - International Electronics Commission
   9. NEC - The National Electric Code
   10. NEMA - National Electrical Manufacturers Association
   11. NFPA - National Fire Protection Association
   12. OSHA - Occupational Safety and Health Association
   13. SAE - Society of Automotive Engineers
   14. SMPTE - Society of Motion Picture and Television Engineers
   15. UL - Underwriters Laboratories (Electrical components, devices and accessories shall bear a UL label where applicable. UL listed and labeled as defined by NFPA70, article 100, by a testing agency acceptable to authorities having jurisdiction and marked for intended use.)
   16. USITT - United States Institute for Theater Technology "Recommended Guidelines for stage rigging and stage machinery-specifications and practices".

B. Provide certification and labels where applicable. Comply with Federal, State, and Local regulations and applicable union regulations where required. All equipment will be furnished with the proper labels for New York State.

C. Provide only equipment that is standard new equipment, the latest model of regular stock product, and is furnished with all parts regularly used with the equipment offered for the purpose intended. The contractor guarantees that no modification of the equipment has been made contrary to the manufacturer's regular practice.

D. Review all materials and equipment prior to installation and notify owner as to any changes or discrepancies between published specifications and the actual material and equipment to be installed.

1.10 FUNCTIONAL REQUIREMENTS & SYSTEM DESCRIPTION:

A. The project involves providing broadcast control equipment, cameras, switchers, CG, Teleprompters, cloud based content delivery, monitors, audio, and related equipment, wiring and testing all systems, debugging and troubleshooting all systems. The contractor will need to interface with the owners personnel during final sets up to provide training, programming, and adjustments for use and user preferences. At the end of the installation all equipment must meet accepted industry and broadcast standards.

1.11 SUBSTITUTIONS:

A. See project manual and the following:
   1. The successful contractor shall submit on the schedule indicated within the contract documents and prior to award of the contract, the kind, type, brand, manufacturer, or equipment included in the base bid. Equivalent products must be highlighted on this list. The successful bidder shall also submit information, describing in specific detail, how any substituted equipment differs from the appearance, quality and performance required by the base specification. Submittal of the manufacturer's advertising cut sheets is not acceptable for proof of equivalency.
   2. The costs for any changes to the work required to implement the substitution proposed will be borne by the contractor.
   3. If proposing substitutes that affect the system flow as shown on the drawings, the contractor must submit flow charts, and any other drawings necessary to show differences in the system operation from the primary referenced system.
   4. The successful bidder shall be required to submit a sample of any substituted equipment when requested.
   5. The risk of whether bid equivalents will be accepted is borne by the contractor
   6. Final judgment as to equality will be solely that of the architect, owner, and consultant.

1.12 SUBMITTALS:

A. Equipment: After bid award but before ordering any equipment or starting any work submit to the owner for approval a list of all equipment to be furnished showing types, models, quantities and manufacturer. Attach catalog sheets for all items submitted.

B. Submit a quantity of copies as required within contract documents. by the architect, consultant and owner prior to any fabrication or installation as follows:
   1. Manufacturers cut sheets for all equipment
   2. Drawings of proposed mounting methods for all equipment.
   3. Samples or cut sheets for proposed marking systems for wire and equipment labeling.
   4. Rack layouts, panel layouts and proposed labeling.
   5. Schedule for submission of drawings for fabrication and site work.
   6. The full set of submitted drawings and data sheets must be presented in a professional manner.
   7. All shop drawings for submission must be CAD drawn (created with a computer aided drafting program). Hand drawings are not allowed. Illegible drawings shall not be acceptable.
   8. All cut sheets for submission must be clean electronic (pdf) copies of the manufacturer’s actual data sheets. Mark up each sheet with highlights or boxes around submitted products, options, etc. No data sheets shall be acceptable that are illegible, poorly photocopied or hand marked up with scribbles, etc.

C. Intents:
   1. The intent of the submittal package is that it contain one copy of the appropriate cut sheet for each item that the contractor is proposing to use on this project as well as a complete set of shop drawings that shows flow diagrams, rack layouts,

wiring label samples & intents, plan, section and elevation views and details of the entire system. There should be plan view drawings detailing speaker locations & dimensions, projection screen and other device locations. There should be detail drawings that show all typical attachment details, etc. as well as all custom fabricated devices, suspension intentions, etc. The intent of the shop drawings is for the contractor to communicate to the consultant the exact proposed locations, materials and fabrication methods of all standard and custom items for all intended system equipment. Submission of this package by the contractor is proof that the contractor has reviewed the entire system design, understands the intents and concurs that the designed system will actually function as laid out in the contract documents.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. The requirements of the referenced equipment as noted on the drawings are not generic in nature. Specific performance, control, interface, and routing capabilities are necessary for any alternate equipment. The details set forth herein and within the functional description of the system are the critical criteria for selection of each piece of equipment.

B. In bidding equipment from manufacturers other than those referenced be aware that all functional information included in this specification as well as the manufacturer's specifications, physical size, serviceability, warranty terms, product availability, and other non technical issues may be determining factors in product equivalency. Final judgment as to equality will be solely that of the owner, architect, and consultant.

C. Substitution Criteria:
   1. Loudspeakers substitutions require proof that the substituted product meets all performance requirements including but not limited to:
      a. Frequency Response – On and off axis
      b. Directivity by frequency
      c. Distortion
      d. Phase response
      e. Number of Drivers
      f. Power Handling Capacity and Maximum Output
      g. Weight
      h. Physical size
      i. Rigging options
      j. Powering method

   2. Mixing Console substitutions require proof that the substituted product meets all performance requirements including but not limited to:
      a. A/D Converters type and sampling rate
      b. Number of inputs/outputs and types
      c. Number of EFX processors, equalizers, and dynamics devices.

d. Ability to create custom pages and configuration via preset scene change.
e. Input Delay
f. Fade Rate by scene
g. Expandability where applicable
h. Configuration Capability – Ability to configure as per the specified model.
i. Interface to other devices digitally where applicable.
j. Physical Size
k. Connect ability
l. Control software and ability to be controlled via external computer and wireless

3. Microphone Substitutions require proof that the substituted product meets all performance requirements including but not limited to:
   a. Frequency response
   b. Pattern Consistency
   c. Capsule Type
   d. On/Off switch (or the lack of one).
   e. Physical Size.
   f. Color options
   g. Connector size, type and connections

4. Video Monitor Substitutions require proof that the substituted product meets all performance requirements including but not limited to:
   a. Native resolution
   b. Alternate resolution capabilities
   c. Input power requirements
   d. Built-in scaling capabilities (if applicable)
   e. Intelligent lens system availability and operation
   f. Aspect ratio
   g. Content capabilities (SD, HD, etc.)
   h. Overall physical weight
   i. Mounting options
   j. RS-232, Network or other remote interface capabilities
   k. Warranty period and limitations of coverage

5. Video Switcher Substitutions require proof that the substituted product meets all performance requirements including but not limited to:
   a. Native resolutions
   b. Alternate resolution capabilities
   c. Input power requirements
   d. Inputs types and quantities.
   e. Key layers and still store
   f. Cooling fans present
   g. Built-in scaling capabilities (if applicable)
   h. Content capabilities (SD, HD, etc.)
   i. Overall physical weight
   j. Mounting options
   k. RS-232, Network or other remote interface capabilities

l. Warranty period and limitations of coverage

6. Video products require proof that the substituted product meets all performance requirements including but not limited to:
   a. Native resolution
   b. Alternate resolution capabilities
   c. Input power requirements
   d. dB noise
   e. Cooling fans present
   f. Built-in scaling capabilities (if applicable)
   g. Aspect ratio
   h. Latency
   i. Content capabilities (SD, HD, etc.)
   j. Overall physical weight
   k. Mounting options
   l. RS-232, Network or other remote interface capabilities
   m. Registration & calibration line and color bar test patterns built in
   n. Warranty period and limitations of coverage
   o. Auto-sense features

7. Wire substitutions require proof that the substituted product meets all performance requirements including but not limited to:
   a. Jacket Type
   b. Number of Conductors
   c. Jacket Shape – i.e. round, twisted etc…
   d. Number of strands and gauge
   e. Flexibility
   f. Capacitance and resistance conductor-to-conductor as well as single conductor.

D. No contractor-manufactured products will be acceptable in place of referenced items except for those items enumerated in this specification as "custom".

E. The current manufacturer's data sheet for each referenced piece of equipment in force at the date of printing of this specification will be the basis for the specifications of the referenced equipment.

F. Any product accessories such as power supplies; rack mount kits, connectors, adapters, or other small items required for proper operation are the responsibility of the contractor whether or not they are called out in detail within these specifications or on drawings.

G. Specification details are provided only for the features required for current and intended future uses of the products.

H. Quantities:
   1. Where no quantity is indicated the contractor will supply quantities as indicated on drawings.

I. Options

1. If specific options are not identified with quantities the contractor will provide the product with all options.
   Provide all miscellaneous batteries, power supplies, or other items not noted required for system function.

2.2 16 PORT GIGABIT POE SWITCH: REFERENCED PRODUCT CRESTRON CEN-SWPOE16

A. Ethernet
   1. Ports (16) 10/100/1000Base-T auto-sensing Gigabit Ethernet w/PoE
   2. Network Standards IEEE 802.3, 802.3u, 802.3ab, 802.3bc, 802.3af, 802.3at Type 1 and 2
   3. Transmission Method Store-and-Forward
   4. MAC Addresses Up to 4K
   5. Switch Fabric 32 Gbps non-blocking

B. Indicators
   1. PWR (1) green LED, indicates operating power supplied via main power input
   2. LINK/SPEED 1 – 16 (16) green/yellow dual-color LEDs, indicates Ethernet link status and speed for each corresponding port
   3. ACT 1 – 16 (16) yellow LEDs, indicate Ethernet activity for each corresponding port
   4. POE 1 – 16(16) green LEDs, indicate PoE is active and a PoE powered device is connected to each corresponding port
   5. 10/100/1000 POWER OVER ETHERNET 1 – 16 (rear) (2) LEDs per each of (16) Ethernet ports, left green/amber dual-color LEDs indicate Ethernet link status and speed for each corresponding port, right amber LEDs indicate Ethernet activity for each corresponding port

C. Connectors
   1. 10/100/1000 POWER OVER ETHERNET 1 – 16 (16) 8-wire RJ45, female;
      a. 10/100/1000Base-T Ethernet ports and PoE Power Sourcing Equipment (PSE) outputs;
      b. Supports IEEE 802.3at Type 1 PoE, Class 0-3 (15.4W) power sourcing at all ports simultaneously;
      c. Supports IEEE 802.3at Type 2 PoE+, Class 4 (34.2W) power sourcing from any ports up to the maximum specified power capabilities;
      d. Maximum 34.2 Watts per port, 255 Watts total
   2. G (1) 6-32 screw, chassis ground lug
      a. 100-240V~50/60Hz 3.5-1.6A (1) IEC C14 male chassis plug, main power input;
      b. Mates with removable power cord, included
   3. COMPUTER (front) (1) USB Type B female;
      a. USB computer console port (6 ft cable included);
      b. For setup only

D. Power Requirements

1. Main Power 3.5-1.6 Amps @ 100-240 Volts AC, 50/60 Hz

E. Environmental
1. Temperature 32° to 104°F (0° to 40°C)
2. Humidity 10% to 90% RH (non-condensing)
3. Heat Dissipation 171 BTU/hour

F. Enclosure
1. Chassis Metal, black finish, fan-cooled, vented sides
2. Faceplate Aluminum, black finish with polycarbonate label overlay
3. Mounting Freestanding or 1U 19-inch rack-mountable (adhesive feet and rack ears included)

G. Dimensions
1. Height 1.73 in (44 mm)
2. Width 17.28 in (439 mm); 19.0 in (483 mm) with ears
3. Depth 10.06 in (256 mm)

H. Weight
1. 6.4 lb (2.9 kg)

2.3 16GB WIFI HIGH RESOLUTION LED-BACKLIT HANDHELD DISPLAY: REFERENCED PRODUCT APPLE IPAD2

A. Provide the latest generation iPad device (color TBD by owner).

B. Physical:
1. Size: 9.56” H x 7.47” W x 0.5” D (242.8 mm x 189.7 mm x 13.4 mm)
2. Weight: 1.5 pounds (0.68 kg) Wi-Fi model; 1.6 pounds (0.73 kg) Wi-Fi + 3G model

C. Display:
1. 9.7-inch (diagonal) LED-backlit glossy widescreen Multi-Touch display with IPS technology
2. 1024-by-768-pixel resolution at 132 pixels per inch (ppi)
3. Fingerprint-resistant oleophobic coating
4. Support for display of multiple languages and characters simultaneously

D. Wireless and cellular:
1. Wi-Fi model:
   a. Wi-Fi (802.11a/b/g/n)
   b. Bluetooth 2.1 + EDR technology

E. Location:
1. Wi-Fi
2. Digital compass
3. Assisted GPS (Wi-Fi + 3G model)
4. Cellular (Wi-Fi + 3G model)

F. Environmental:
   1. Arsenic-free display glass
   2. BFR-free
   3. Mercury-free LCD display
   4. PVC-free Recyclable aluminum and glass Enclosure

G. Capacity: 16GB

H. Processor: 1GHz Apple A4 custom-designed, high performance, low-power system-on-a-chip

I. Sensors:
   1. Accelerometer
   2. Ambient light sensor

J. Audio playback:
   1. Frequency response: 20Hz to 20,000Hz
   2. Audio formats supported: HE-AAC (V1), AAC (16 to 320 Kbps), Protected AAC (from iTunes Store), MP3 (16 to 320 Kbps), MP3 VBR, Audible (formats 2, 3, and 4), Apple Lossless, AIFF and WAV.
   3. User-configurable maximum volume limit.

K. TV and Video:
   1. Support for 1024 by 768 pixels with Dock Connector to VGA Adapter; 576p and 480p with Apple Component AV Cable; 576i and 480i with Apple Composite AV Cable.
   2. H.264 video up to 720p, 30 frames per second, Main Profile level 3.1 with AAC-LC audio up to 160 Kbps per channel, 48kHz, stereo audio in .m4v, .mp4 and .mov file formats; MPEG-4 video, up to 2.5 Mbps, 640 by 480 pixels, 30 frames per second, Simple Profile with AAC-LC audio up to 160 Kbps, 48kHz, stereo audio in .m4v, .mp4 and .mov file formats; Motion JPEG (M-JPEG) up to 35 Mbps, 1280 by 720 pixels, 30 frames per second, audio in ulaw, PCM stereo audio in .avi file format.

L. Mail attachment support:
   1. Viewable document types: .jpg, .tiff, .gif (images); .doc and .docx (Microsoft Word); .htm and .html (web pages); .key (Keynote); .numbers (Numbers); .pages (Pages); .pdf (Preview and Adobe Acrobat); .ppt and .pptx (Microsoft PowerPoint); .txt (text); .rtf (rich text format); .vcf (contact information); .xls and .xlsx (Microsoft Excel).

M. Languages:
   1. Language support for English (U.S.), English (UK), French (France), German, Traditional Chinese, Simplified Chinese, Dutch, Italian, Spanish, Portuguese (Brazil), Portuguese (Portugal), Danish, Swedish, Finnish, Norwegian, Korean, Japanese, Russian, Polish, Turkish, Ukrainian, Hungarian, Arabic, Thai, Czech, Greek, Hebrew, Indonesian, Malay, Romanian, Slovak, Croatian, Catalan, and Vietnamese.
   2. Keyboard support for English (U.S.), English (UK), French (France), French (Canadian), French (Switzerland), German, Traditional Chinese (Handwriting,

Pinyin, Zhuyin, Cangjie, Wubihua), Simplified Chinese (Handwriting, Pinyin, Wubihua), Dutch, Italian, Spanish, Portuguese (Brazil), Portuguese (Portugal), Danish, Swedish, Finnish, Norwegian, Korean, Japanese (Romaji, Fifty Key), Japanese (Kana), Russian, Polish, Turkish, Ukrainian, Estonian, Hungarian, Icelandic, Lithuanian, Latvian, Flemish, Arabic, Thai, Czech, Greek, Hebrew, Indonesian, Malay, Romanian, Slovak, Croatian, Bulgarian, Serbian (Cyrillic/Latin), Catalan, Vietnamese, Tibetan, Macedonian, and Cherokee.

3. Dictionary support (enables predictive text and autocorrect) for English (U.S.), English (UK), French, German, Traditional Chinese, Simplified Chinese, Dutch, Italian, Spanish, Portuguese (Brazil), Portuguese (Portugal), Danish, Swedish, Finnish, Norwegian, Korean, Japanese (Romaji), Japanese (Kana), Russian, Polish, Turkish, Ukrainian, Hungarian, Lithuanian, Flemish, Arabic, Thai, Czech, Greek, Hebrew, Indonesian, Malaysian, Romanian, Slovak, Croatian, Catalan, Vietnamese, and Cherokee.

N. Accessibility:
   1. Support for playback of closed-captioned content
   2. Voice Over screen reader
   3. Full-screen zoom magnification
   4. White on black display
   5. Mono audio

O. Battery and power:
   1. Built-in 25-watt-hour rechargeable lithium polymer battery
   2. Up to 10 hours of surfing the web on Wi-Fi, watching video or listening to music
   3. Up to 9 hours of surfing the web using 3G data network
   4. Charging via power adapter or USB to computer system

P. Input and output:
   1. Dock connector port
   2. 3.5-mm stereo headphone jack
   3. Built-in speaker
   4. Microphone
   5. Micro-SIM card tray (Wi-Fi + 3G model only)

Q. External buttons and controls: On/off, Sleep/wake, Mute, Volume and Up/down

R. Mac system requirements:
   1. Mac computer with USB 2.0 port
   2. Mac OS X v10.5.8 or later
   3. iTunes 10.1 or later
   4. iTunes Store account
   5. Internet access

S. Windows system requirements:
   1. PC with USB 2.0 port
   2. Windows 7; Windows Vista; or Windows XP Home or Professional with Service Pack 3 or later
   3. iTunes 10.1 or later

4. iTunes Store account
5. Internet access

T. Environmental requirements:
1. Operating temperature: 32° to 95° F (0° to 35° C)
2. Non-operating temperature: -4° to 113° F (-20° to 45° C)
3. Relative humidity: 5% to 95% non-condensing
4. Maximum operating altitude: 10,000 feet (3000 m)

U. Accessories: Provide with (1) iPad dock, (1) iPad keyboard dock, (1) iPad foldable stand case, (1) dock connector to USB cable and (1) iPad 10 Watt USB power adapter and all manufacturer's accompanying documentation. Provide with all necessary connectors, cables, etc. as needed in order to interface iPad with the computer, keyboard, dock, etc.

2.4 WIRELESS ROUTER: REFERENCED PRODUCT APPLE AIRPORT EXPRESS

A. Size and Weight
1. Dimensions: 3.9 inches (98 mm) by 3.9 inches (98 mm) by 0.9 inch (23 mm)
2. Weight: 8.5 ounces (240 grams)1

B. Wireless Protocols
1. IEEE 802.11a/b/g/n

C. Compatibility
1. Interoperable with 802.11a, 802.11b, 802.11g, and 802.11n-enabled Mac computers, iOS devices, Apple TV, Windows-based PCs, and other Wi-Fi devices
2. NAT, DHCP, PPPoE, VPN Passthrough (IPSec, PPTP, and L2TP), DNS Proxy, SNMP, IPv6 (6to4 and manual tunnels)

D. Security
1. Wi-Fi Protected Access™ (WPA/WPA2)2
2. WPA/WPA2 Enterprise2
3. Wireless security (WEP) configurable for 40-bit and 128-bit encryption
4. MAC address filtering
5. NAT firewall
6. 802.1X, PEAP, LEAP, TTLS, TLS, FAST
7. Time-based access control

E. Software and Documentation
1. Printed documentation included
2. AirPort Utility for Mac, Windows, and iOS available for free download
3. Bonjour for Windows available for free download

F. Interfaces
1. Simultaneous dual-band 802.11n wireless
2. 10/100BASE-T Ethernet WAN port for connecting a DSL modem, cable modem, or Ethernet network

3. 10/100BASE-T Ethernet LAN port for connecting a computer, Ethernet hub, or networked printer
4. USB 2.0 port for connecting a USB printer3
5. 3.5-mm audio minijack for analog or optical digital sound4
6. Built-in power supply

G. Number of Users
1. 50

H. Electrical and Environmental Requirements
1. 100-240V AC, 50-60Hz; input current: 0.2 amp
2. Operating temperature: 32° to 95° F (0° to 35° C)
3. Storage temperature: -13° to 140° F (-25° to 60° C)
4. Relative humidity (operating): 20% to 90%, noncondensing
5. Maximum operating altitude: 10,000 feet
6. Maximum storage altitude: 15,000 feet

I. Frequency Bands
1. Simultaneous dual-band 2.4GHz and 5GHz

J. Radio Output Power
1. 20.5 dBm maximum (varies by country)

K. Agency Approvals
1. FCC Part 15 Class B, Canada RSS-210, EN 300-328, EN 301-489, EN 301 893, ARIB STD-T66, RCR STD-T33, AS/NZS 4268: 2003, UL 60950, CSA-C22.2 No. 60950

L. Channels
1. Channels 1-11, 36-48, and 149-165 approved for use in the United States and Canada
2. Channels 1-13, 36-64, and 100-140 approved for use in Europe and Japan
3. Channels 1-13, 36-64, and 149-165 approved for use in Australia, Hong Kong, and New Zealand

M. System Requirements
1. Mac Users
    a. Setup and Administration
        1) From an iOS device:
            a) An iPhone, iPad, or iPod touch with iOS 5 or later and the AirPort Utility app
        2) From a Mac:
            a) OS X Lion v10.7.3 or later and AirPort Utility 6.1
            b) OS X v10.5.7 or later and AirPort Utility 5.6.1
    b. Wireless Device Access
        1) Any Wi-Fi-enabled device that uses the 802.11a/b/g/n specification
    c. Shared Printing with a USB Printer
        1) A USB printer
        2) A Mac with OS X v10.2.7 or later

2. PC Users
    a. Setup and Administration
        1) From an iOS device:
            a) An iPhone, iPad, or iPod touch with iOS 5 or later and the AirPort Utility app
    b. From a PC:
        1) Windows 7 or later and AirPort Utility 5.6.1
    c. Wireless Device Access
        1) Any Wi-Fi-enabled device that uses the 802.11a/b/g/n specification
    d. Shared Printing with a USB Printer
        1) A USB printer
        2) A PC with Windows XP (SP3), Windows Vista (SP1), or Windows 7

2.5 LED DISPLAYS

A. 4K 55” LED DISPLAY: REFERENCED PRODUCT CHRISTIE UHD551-L
1. Screen size (diagonal)
    a. 55”/139.7cm
2. Native resolution
    a. 4K UHD 3840 x 2160 (16:9)
3. Backlight
    a. Direct-lit LED
4. LED lifespan
    a. 50,000 hours to 50% brightness
5. Display orientation
    a. Landscape
6. Pixel pitch
    a. 0.315 x 0.315mm
7. Nominal bezel size
    a. 14mm/11mm/11mm (bottom/side/top)
8. Brightness
    a. 400 nits (cd/m2) typical
9. Contrast ratio (full field)
    a. 1200:1 typical
10. Viewing angle (CR 10:1)
    a. 178° h/v
11. Refresh rate
    a. 60Hz
12. Response time
    a. 8ms typical
13. Color space (CIE 1931)
    a. 68% typical
14. Display colors
    a. 10 bit, 1.07 billion colors
15. Video inputs
    a. 2 x HDMI (Ver 2.0, HDCP 2.2)
    b. DisplayPort (Ver 1.2a, HDCP 1.3)

c. VGA
d. YPbPr
e. 2 x USB 2.0
f. USB 3.0

16. Video outputs
    a. DisplayPort 1.2a
    b. HDMI 2.0
17. Audio inputs
    a. RCA (L/R) line in
18. Audio outputs
    a. RCA (L/R) line out
    b. 3.5mm headphone jack
    c. SPDIF coax
19. Control inputs
    a. RS-232 (D-Sub9)
    b. LAN (RJ45)
    c. IR wire extender
20. Power input rating
    a. 100-240 VAC @ 50-60Hz
21. Power consumption
    a. 70W typical without OPS
    b. 140W maximum without OPS
    c. ≤0.5W in standby without OPS
22. Operating temperature
    a. 32-104°F (0-40°C)
23. Storage temperature
    a. -4-140°F (-20-60°C)
24. Operating humidity
    a. 20-90% RH non-condensing
25. Physical size (panel only)
    a. (WxHxD) 48.7 x 28 x 4.1” (1238 x 712 x 104mm)
26. Physical weight
    a. 38.6lbs (17.5kg)
27. Mounting
    a. VESA 400 x 200mm, M6
28. Runtime
    a. Designed for 16/7 operation featuring a reliable power supply1
29. Features
    a. Commercial grade LCD with LED backlight
    b. OPS slot
    c. Anti-glare treatment
    d. 2 x 8W speakers
    e. On/off scheduler
    f. USB playback of Photo/Video/MP3
    g. HDMI-CEC
    h. Source switching for failover
    i. Kensington lock
    j. Wi-Fi®

k. Bluetooth
l. Miracast device connectivity
m. Pixel shifting

30. Accessories
    a. Panel ships with IR remote control
    b. External IR receiver
    c. Power cable
    d. User manual
31. Warranty
    a. Three year parts and labor limited warranty

B. 4K 65” LED DISPLAY: REFERENCED PRODUCT CHRISTIE UHD651-L

1. Screen size (diagonal)
    a. 65”/165.1cm
2. Native resolution
    a. 4K UHD 3840 x 2160 (16:9)
3. Backlight
    a. Direct-lit LED
4. LED lifespan
    a. 50,000 hours to 50% brightness
5. Display orientation
    a. Landscape
6. Pixel pitch
    a. 0.372 x 0.372mm
7. Nominal bezel size
    a. 21mm/15mm/15mm (bottom/side/top)
8. Brightness
    a. 400 nits (cd/m2) typical
9. Contrast ratio (full field)
    a. 1200:1 typical
10. Viewing angle (CR 10:1)
    a. 178° h/v
11. Refresh rate
    a. 60Hz
12. Response time
    a. 8ms typical
13. Color space (CIE 1931)
    a. 75% typical
14. Display colors
    a. 10 bit, 1.07 billion colors
15. Video inputs
    a. 2 x HDMI (Ver 2.0, HDCP 2.2)
    b. DisplayPort (Ver 1.2a, HDCP 1.3)
    c. VGA
    d. YPbPr
    e. 2 x USB 2.0
    f. USB 3.0
16. Video outputs

a. DisplayPort 1.2a
b. HDMI 2.0

17. Audio inputs
    a. RCA (L/R) line in
18. Audio outputs
    a. RCA (L/R) line out
    b. 3.5mm headphone jack
    c. SPDIF coax
19. Control inputs
    a. RS-232 (D-Sub9)
    b. LAN (RJ45)
    c. IR wire extender
20. Power input rating
    a. 100-240 VAC @ 50-60Hz
21. Power consumption
    a. 73W typical without OPS
    b. 140W maximum without OPS
    c. ≤0.5W in standby without OPS
22. Operating temperature
    a. 32-104°F (0-40°C)
23. Storage temperature
    a. -4-140°F (-20-60°C)
24. Operating humidity
    a. 20-90% RH non-condensing
25. Physical size (panel only)
    a. (WxHxD) 57.4 x 33.1 x 3.8” (1459 x 841 x 96mm)
26. Physical weight
    a. 54.5 lbs (24.7 kg)
27. Mounting
    a. VESA 400 x 200mm, M6
28. Runtime
    a. Designed for 16/7 operation featuring a reliable power supply1
29. Features
    a. Commercial grade LCD with LED backlight
    b. OPS slot
    c. Anti-glare treatment
    d. 2 x 8W speakers
    e. On/off scheduler
    f. USB playback of Photo/Video/MP3
    g. HDMI-CEC
    h. Source switching for failover
    i. Kensington lock
    j. Wi-Fi®
    k. Bluetooth
    l. Miracast device connectivity
    m. Pixel shifting
30. Accessories
    a. Panel ships with IR remote control

b. External IR receiver
c. Power cable
d. User manual

31. Warranty
    a. Three year parts and labor limited warranty

C. 4K 65” LED DISPLAY: REFERENCED PRODUCT SAMSUNG QM65F
1. Display
    a. Screen Size 65.0"
    b. Brightness 500 nits
    c. Resolution 3840 x 2160
    d. Panel Technology 60 Hz E-LED BLU
    e. Aspect Ratio 16:9
    f. Contrast Ratio 4700:1
    g. Viewing Angle Horizontal / Vertical: 178 / 178°
    h. Response Time 8 ms
2. Connectivity
    a. Input
        1) RGB: DVI-D (D-Sub Common), (2) Displayport 1.2
        2) Video: (4) HDMI
        3) Audio: Stereo mini jack
        4) USB Software Update Only
    b. Output
        1) Audio: Stereo mini jack
        2) External Control: RS232C (In / Out), RJ45
        3) Sensor: IR
3. Power Supply 100 to 240 VAC ±10%, 50/60 Hz
4. Power Consumption
    a. Typical: 120 W
    b. Maximum: 165 W
    c. Standby: <0.5 W
5. Environmental
    a. Operating Temperature 32 to 104°F (0 to 40°C)
    b. Operating Humidity 10 to 80%
6. General
    a. Dimensions (W x H x D)
        1) 57.3” x 32.8” x 1.4" without stand
    b. Bezel Width
        1) 12/12/12
    c. Weight
        1) 50.9 lb

D. 4K 49” LED DISPLAY: REFERENCED PRODUCT SAMSUNG QM49F
1. Display
    a. Screen Size 65.0"
    b. Brightness 500 nits
    c. Resolution 3840 x 2160
    d. Panel Technology 60 Hz E-LED BLU

e. Aspect Ratio 16:9
f. Contrast Ratio 4700:1
g. Viewing Angle Horizontal / Vertical: 178 / 178°
h. Response Time 8 ms

2. Connectivity
   a. Input
      1) RGB: DVI-D (D-Sub Common), (2) Displayport 1.2
      2) Video: (4) HDMI
      3) Audio: Stereo mini jack
      4) USB Software Update Only
   b. Output
      1) Audio: Stereo mini jack
   c. External Control: RS232C (In / Out), RJ45
   d. Sensor: IR
3. Power Supply 100 to 240 VAC ±10%, 50/60 Hz
4. Power Consumption
   a. Typical: 120 W
   b. Maximum: 165 W
   c. Standby: <0.5 W
5. Environmental
   a. Operating Temperature 32 to 104°F (0 to 40°C)
   b. Operating Humidity 10 to 80%
6. General
   a. Dimensions (W x H x D)
      1) 43.2” x 24.9” x 1.4" without stand
   b. Bezel Width
      1) 11/11/12
   c. Weight
      1) 29.5 lb

2.6 4.6K SUPER 35MM STUDIO CAMERA SYSTEM

A. 4.6K SUPER 35MM STUDIO CAMERA: REFERENCED PRODUCT BLACKMAGIC DESIGN URSA MINI 4.6EF
   1. Camera Features
      a. Sensor Size
         1) 25.34mm x 14.25mm (Super35)
      b. Shooting Resolutions
         1) 4608 x 2592
         2) 4096 x 2304 (4K 16:9)
         3) 4608 x 1920 (4K 2.4:1)
         4) 4096 x 2160 (4K DCI)
         5) 3840 x 2160 (Ultra HD)
         6) 3072 x 2560 (3K Anamorphic)
         7) 2048 x 1152 (2K 16:9)
         8) 2048x1080 (2K DCI)
         9) 1920 x 1080

c. Frame Rates
   1) Maximum sensor frame rate dependent on resolution and codec selected. Project frame rates of 23.98, 24, 25, 29.97, 30, 50, 59.94 and 60 fps supported.
d. Dynamic Range
   1) 15 stops
e. Focus
   1) Focus button turns on peaking, auto focus available using compatible lenses.
f. Iris Control
   1) Iris button automatically adjusts the lens iris settings on compatible lenses so no pixel is clipped in film mode. Scene average auto exposure in video mode.
g. Lens Mount
   1) EF Mount
h. Screen Dimensions
   1) 5” - 1920 x 1080
i. Screen Type
   1) LCD capacitive touchscreen
j. Metadata Support
   1) Automatic camera data and user data such as shot number, filenames and keywords.
k. Controls
   1) Touchscreen menus on 5” screen. Push buttons for other controls. 2 assignable shortcut keys.
l. Microphone
   1) 2 x built in cardioid microphones for stereo recording with -15dB pad and low cut filter.
m. Speaker
   1) 1 x mono speaker, enabled in playback mode when headphones are not used.

2. Storage Features
   a. Storage Rates – based on 30 frames per second
      1) 4608 x 2592
         a) CinemaDNG RAW - 513MB/s
         b) CinemaDNG RAW 3:1 - 180 MB/s
         c) CinemaDNG RAW 4:1 - 135 MB/s
      2) 3840 x 2160
         a) Apple ProRes 444 XQ - 250 MB/s
         b) Apple ProRes 444 - 165 MB/s
         c) Apple ProRes 422 HQ - 110 MB/s
         d) Apple ProRes 422 - 73.6 MB/s
         e) Apple ProRes 422 LT - 51 MB/s
         f) Apple ProRes Proxy - 22.4 MB/s
      3) 1920 x 1080
         a) Apple ProRes 444 XQ - 62.5 MB/s
         b) Apple ProRes 444 - 41.25 MB/s
         c) Apple ProRes 422 HQ - 27.5 MB/s

d) Apple ProRes 422 - 18.4 MB/s
e) Apple ProRes 422 LT - 12.75 MB/s
f) Apple ProRes Proxy - 5.6 MB/s

4) Storage Type
a) 2 x CFast 2.0

b. Recording Formats
1) Lossless CinemaDNG RAW, RAW 3:1 and RAW 4:1 with film dynamic range at 4608 x 2592, 4608 x 1920, 4096 x 2304, 4096 x 2160, 3072 x 2560, 2048 x 1152 and 2048 x 1080. Apple ProRes 3840 x 2160 and 1920 x 1080 with either film or video dynamic range.

3. Connections
a. SDI Video Output
1) 1 x 12G-SDI BNC 10-bit 4:2:2
2) 1 x 3G-SDI BNC 10-bit 4:2:2
b. SDI Video Input
1) 1 x 12G-SDI BNC 10-bit 4:2:2
c. Ref/ Timecode Input
1) 1 x BNC reference or timecode input with automatic detection
d. Analog Audio Input
1) 2 x XLR analog switchable between mic and line levels. Phantom power support.
e. SDI Audio Output
1) 2 channel
f. Headphones
1) 3.5mm stereo headphone jack
g. Remote Control
1) 2 x 2.5mm LANC input for Rec Start/Stop, plus Iris and Focus control using compatible lenses.
h. Computer Interface
1) USB 2.0 Mini-B port for software updates.

4. Standards
a. SDI Compliance
1) SMPTE 292M, SMPTE 424 Level B, Draft SMPTE 2081-1, Draft SMPTE 2082-1
b. SDI Audio Sampling
1) 48 kHz and 24 bit

5. Power Requirements
a. External Power Input
1) 1 x 4-pin XLR port for external power or battery use.
2) 1 x 12-pin molex connector on rear battery plate.
3) Custom V-mount battery plate with D-tap +12V regulated output from camera.
b. External Power Output
1) 1 x 12V output using 4-pin XLR for powering external accessories such as EVF.
2) 1 x 12V regulated output from rear molex 12-way connector.
c. Power

1) Rear camera mount compatible with industry standard V-mount or Gold Mount battery plates.

B. 4.6K SUPER 35MM STUDIO CAMERA VIDEWFINDER: REFERENCED PRODUCT BLACKMAGIC URSA STUDIO VIEWFINDER
   1. Connections
      a. SDI Video Input
         1) 1 x HD/Ultra HD 3G-SDI via BNC.
      b. Power Input
         1) 1 x 4 pin XLR 12V.
      c. Screen Dimensions
         1) 7" 1920 x 1200 resolution.
      d. Screen Type
         1) 7" IPS LCD.
      e. Computer Interface
         1) 1 x USB type C connector for initial setup and software updates via Blackmagic Camera Setup software.
   2. SDI Video Standards
      a. HD Format Support
         1) 720p50, 720p59.94, 720p60
         2) 1080p23.98, 1080p24, 1080p25, 1080p29.97, 1080p30, 1080p50, 1080p59.94, 1080p60
         3) 1080i50, 1080i59.94, 1080i60
      b. SDI Compliance
         1) SMPTE 259M, SMPTE 292M, SMPTE 296M, SMPTE 425M 2084.
      c. Video Sampling
         1) 4:2:2 YUV.
      d. Color Precision
         1) 10-bit.
      e. Color Space
         1) REC 601, REC 709.
      f. Multiple Rate support
         1) SDI switches between 1.5 Gb/s HD and 3.0 Gb/s 60P HD.
   3. Monitor Features
      a. Controls
         1) Dial, knobs and customizable function buttons for settings, short cut features and navigating menus.
      b. Handles
         1) Built in grab handles for positioning the monitor independently from the camera.
      c. Position Adjustment Options
         1) Variable tension pivot points for articulated arm and grab handles with forward, backward, up, down, pan and tilt adjustments.
      d. Mounting Options
         1) Quick release V-lock mounting bracket for attaching viewfinder to URSA Mini handle.
      e. Tally
         1) Large LED tally light with customizable perspex camera numbers.

f. Metadata Support
1) Detects camera information embedded in the SDI signal including status information, frame guides, focus peaking, tally, and more.
g. Screen Interface
1) On screen meters and status information including Camera ID, resolution, frames per second, shutter speed, gain, white balance, camera battery level, and more.
h. 3D Lookup Table Support
1) LUT support for loading custom LUTs.
4. Power Requirements
a. 12V power input via 4 pin XLR connected via URSA Mini 12v power output.
5. Environmental
a. Operating Temperature
1) 0° to 40° C (32° to 104° F)
b. Storage Temperature
1) -20° to 60° C (-4° to 140° F)
c. Relative Humidity
1) 0% to 90% non-condensing

C. 4.6K SUPER 35MM STUDIO CAMERA CINEMA LENS
1. Mount Type
a. EF
2. Focal Length
a. 18 to 80 mm
3. Zoom Ratio
a. 4.4x
4. Image Circle
a. 31.4 mm
5. Coverage
a. Super 35 / APS-C
6. Maximum Relative Aperture
a. T4.4 (f/4)
7. Number of Aperture Blades
a. 9
8. Angle of View
a. 24.6 x 13.8mm Imaging Area (1.78:1 Aspect Ratio):
1) 68.7° x 41.9° at 18mm
2) 17.5° x 9.9° at 80mm
b. 26.2 x 13.8mm Imaging Area (1.9:1 Aspect Ratio):
1) 72.1° x 41.9° at 18 mm
2) 18.6° x 9.9° at 80 mm
9. Minimum Object Distance
a. 1.7' (0.5 m)
10. Object Dimensions at M.O.D.
a. 24.6 x 13.8mm Imaging Area (1.78:1 Aspect Ratio):
1) 17.1 x 9.6" (43.4 x 24.3 cm) at 18mm
2) 3.7 x 2.1" (9.5 x 5.3 cm) at 80mm
b. 26.2 x 13.8mm Imaging Area (1.9:1 Aspect Ratio):

1) 18.2 x 9.6" (46.2 x 24.3 cm) at 18 mm
2) 4.0 x 2.1" (10.1 x 5.3 cm) at 80 mm

11. Front Lens Diameter
    a. 84 mm
12. Filter Thread
    a. 77 mm
13. Dimensions
    a. 3.7 x 4.2 x 7.2" (9.34 x 10.72 x 18.23 cm)
14. Weight
    a. 2.65 lb (1.2 kg)

2.7 PORTABLE FIELD VIDEO CAMERA: REFERENCED PRODUCT CANON HF-R700

A. Camera
1. Sensor
   a. 1 x 1/4.85" CMOS
2. Color Filter
   a. RGB
3. Pixel Gross
   a. 3.28 MP
4. Effective Pixels
   a. 2.07 MP (Video)
   b. 2.07 MP (Photo)

B. Optics
1. Focal Length
   a. 2.8 - 89.6mm
2. 35mm-Equivalent Focal Length
   a. 38.5 - 1232 Optical Zoom / Advanced Zoom Off
   b. 32.5 - 1853 Advanced Zoom On
3. Maximum Aperture
   a. f/1.8 - f/4.5
4. Minimum Focusing Distance
   a. 0.4" / 1.0 cm
5. Zoom
   a. Optical: 32x
   b. Advanced (Optical): 57x
   c. Digital: 1140x

C. Recording
1. System
   a. NTSC
2. Recording Media
   a. SD/SDHC/SDXC
3. Recording Time
   a. SD/SDHC/SDXC 32 GB
      1) 1920 x 1080 150 min, 60p, AVCHD
      2) 1920 x 1080 175 min, MXP, AVCHD

3) 1920 x 1080 250 min, FXP, AVCHD
4) 1440 x 1080 735 min, LP, AVCHD

b. SD/SDHC/SDXC 32 GB
1) 1920 x 1080 120 min, 35 Mb/s, MP4
2) 1920 x 1080 175 min, 24 Mb/s, Mp4
3) 1920 x 1080 250 min, 17 Mb/s, MP4
4) 1280 x 720 1,050 min, 4 Mb/s, MP4

4. Video Format
a. 1920 x 1080p at 60 fps (28 Mbps AVCHD)
b. 1920 x 1080i at 60 fps (17 Mbps AVCHD)
c. 1920 x 1080p at 30 fps (24 Mbps AVCHD)
d. 1440 x 1080p at 60 fps (5 Mbps AVCHD)
e. 1920 x 1080p at 60 fps (35 Mbps MP4)
f. 1920 x 1080p at 30 fps (24 Mbps MP4)
g. 1920 x 1080p at 24 fps (17 Mbps MP4)
h. 1280 x 720p (4 Mbps MP4)

5. Channels
a. 2.0-Channel Stereo

6. Audio Format
a. AAC-LC
b. Dolby Digital AC3

7. Sampling Frequency
a. Dolby 2-Channel: 48.0 kHz
b. AAC: 48.0 kHz

D. Display
1. Display Type
a. LCD
2. Touchscreen
a. Yes
3. Screen Size
a. 3"
4. Pixel Count
a. 230,000

E. Features
1. Image Stabilization
a. Optical & Digital
2. Scene Modes
a. Preset: Yes
3. Lux 5 (P mode)
a. .4 (Low Light Mode)
4. Creative Effects
a. Yes
5. Built-In Mic
a. Yes
6. Built-In Speaker
a. Yes

7. Built-In Light/Flash
   a. Light - No
   b. Flash - No
8. Wi-Fi
   a. None
9. Accessory Shoe
   a. None
10. Tripod Mount
    a. 1/4" - 20

F. Input/Output Connectors
1. Inputs
   a. 1 x 1/8" (3.5 mm) Stereo Mini Jack microphone
2. Outputs
   a. 1 x Mini-HDMI (Type-C)
   b. 1 x USB 2.0 Mini-AB
   c. 1 x A/V 3.5mm mini-jack/Headphone terminal
3. Microphone Input
   a. Yes
4. Headphone Jack
   a. Yes

G. General
1. Battery Rechargeable Lithium-Ion Battery Pack, 3.6 VDC, 2685 mAh
2. Charging Method AC Adapter
3. Operating Temperature 23 to 113°F / -5 to 45°C
4. Humidity: 60%
5. 32 to 104°F / 0 to 40°C
6. Humidity: 85%
7. Dimensions (W x H x D) 2.1 x 2.3 x 4.6" / 53.0 x 58.0 x 116.0 mm without grip belt
8. Weight 8.289 oz / 235 g without grip belt
9. 10.759 oz / 305 g including BP-727 battery, memory card, grip belt

2.8 TWO STAGE FIELD TRIPOD/FLUID HEAD SYSTEM: REFERENCED PRODUCT LIBEC TH-X

A. Head
1. Ball Diameter 65 mm
2. Counter Balance System Fixed
3. Tilt Drag Fixed
4. Tilt Range +90° / -80°
5. Pan Range 360°
6. Temperature Range -4 to 140°F / 20 to 60°C
7. Sliding Range ±1.2" / ±30 mm
8. Plate Attachment 1/4"-20 screw with register pin

B. Legs

1. Material Aluminum
2. Head Attachment Fitting 65 mm bowl diameter
3. Leg Stages 2-stage (3-section)
4. Lock Type Twist
5. Feet Rubber
6. Spreader Mid-level brace

C. General
1. Load Capacity 9 lb / 4.1 kg
2. Maximum Height 62.6" / 159 cm
3. Minimum Height 29.7" / 75.4 cm
4. Folded Length 29.7" / 5.4 cm
5. Weight 6.9 lb / 3.1 kg

2.9 STUDIO CAMERA PEDESTAL SYSTEM: REFERENCED PRODUCT LIBEC RSP-750PD

A. RHP75 FLUID HEAD WITH PH-8B EXTENDABLE PAN HANDLES
1. Payload 37.5 lb (17.0 kg)
2. Diameter 100 mm
3. Range Counterbalance: 12.0 to 31.0 lb (5.5 to 14.0 kg)
4. Counterbalance Continuous
5. Drag Mode 7-step
6. Tilt Angle +90 to -70°
7. Bubble Level Illuminated
8. Camera Plate Sliding plate
9. Sliding Range ± 2.2" (55.0 mm) (Standard)
10. Plate Attachment 2 x 3/8" screw
11. Spare Screw 3/8"
12. Temperature Range -40 to 140°F (-40 to 60°C)
13. Weight 8.4 lb (3.8 kg)
14. Packaging Info
15. Box Dimensions (LxWxH) 14.7 x 10.4 x 7.9"

B. PH-8B EXTENDABLE PAN BAR HANDLE FOR RHP75, RHP85, AND LX10 VIDEO HEADS
1. Compatibility Libec RHP75 Video Head
2. Libec RHP85 Video Head
3. Libec LX10 Video Head
4. Material Aluminum alloy with rubberized handle
5. Effective Arm Length 16.0 to 22.0" (40.6 to 55.9 cm)
6. Packaging Info
7. Box Dimensions (LxWxH) 13.7 x 2.8 x 1.6"

C. P110S PNEUMATIC COLUMN PEDESTAL SYSTEM
1. Payload 66 lbs (30kg)
2. Height 32-62" (81-157.5cm)
3. Column Number of columns: 3

4. Upper column: air pressure
5. Middle column: hand-operated
6. Weight 40.5 lbs (18.5kg)
7. Casters Diameter of casters: 4.9" (125mm)
8. Material Corrosion resistant aluminum alloy and resin

2.10 STUDIO CAMERA TELEPROMPTER SYSTEM: REFERENCED PRODUCT AUTOCUE OCU-PSP17MWAPP

A. Size: 17” (432 mm)

B. Reading Range: 6 m (20 ft)

C. Brightness: 420 Nits

D. Aspect Ratio: 4:3

E. Contrast Ratio: 500:1

F. Resolution: 720 x 400

G. Image Reverse: Yes

H. Tally Light & Sensor Ready: No

I. Video Inputs: BNC (Composite), VGA (by request)

J. Weight: 10.5 kgs (23 lbs)

K. Compliance: CE, FCC, ROHS

2.11 4K SDI VIDEO SWITCHER AND CONTROL PANEL

A. RACKMOUNT 4K VIDEO SWITCHER: REFERENCED PRODUCT BLACKMAGIC DESIGN ATEM PRODUCTION STUDIO 4K
   1. Connections
      a. Total Video Inputs
         1) 11 with 10 active.
      b. Total Video Outputs
         1) 10
      c. Total Aux Outputs
         1) 3
      d. SDI Rates
         1) 270Mb, 1.5G, 3G, 6G
      e. Total Audio Inputs
         1) 2 x XLR. 2 x RCA.
      f. Total Audio Outputs

1) 2 x XLR Program.

g. Timecode Connections
   1) None
h. Reference Input
   1) Tri-Sync or Black Burst.
i. Video Input Re-Sync
   1) On all 10 inputs.
j. SDI Video Input
   1) 10 x 10-bit SD/HD/Ultra HD 4K switchable. 2 channel embedded audio.
k. HDMI Video Input
   1) 1 x HDMI type A. 10-bit SD/HD/Ultra HD 4K switchable. 2 channel embedded audio.
l. Analog Audio Output
   1) 2 x XLR.
m. SDI Audio Output
   1) 2 Ch embedded into SDI output on all outputs.
n. SDI Program Output
   1) 2 x 10-bit SD/HD/Ultra HD 4K switchable.
o. HDMI Program Output
   1) 1 x HDMI type A, 10-bit SD/HD/Ultra HD 4K switchable.
p. Down Converted SDI Program Output
   1) 1 x 10-bit (Ultra HD 4K to HD)
q. SDI Preview Output
   1) 1 x 10-bit SD/HD/Ultra HD 4K switchable.
r. SDI Aux. Output
   1) 3 x 10-bit SD/HD/Ultra HD 4K switchable.
s. Quantity of Multi Views
   1) 2
t. Multi View Outputs
   1) 1 x SDI and 1 x HDMI.
u. Control Panel Connection
   1) Ethernet supports 10/100/1000 BaseT. Allows direct connection between panel and chassis, or via network.
v. Tally Output
   1) Added via ethernet connection to Blackmagic Design GPI and Tally Interface product. (Not included.)
w. Computer Interface
   1) 1 x USB 2.0 port.

2. Standards
   a. SD Format Support
      1) 525i59.94, 625i50 PAL
   b. HD Format Support
      1) 720p50, 720p59.94
      2) 1080p23.98, 1080p24, 1080p25, 1080p29.97, 1080p50, 1080p59.94
      3) 1080i50, 1080i59.94
   c. Ultra HD Format Support
      1) 2160p23.98, 2160p24, 2160p25, 2160p29.97

d. SDI Compliance
    1) SMPTE 259M, SMPTE 292M, SMPTE 424M.
e. Video Sampling
    1) 4:2:2.
f. Color Precision
    1) 10-bit
g. Color Space
    1) REC 601, REC 709, REC 2020.
h. HDMI Input Resolutions for Computers
    1) 720 x 480i 59.94Hz, 720 x 576i 50Hz, 1280 x 720 59.94Hz, 1280 x 720 50Hz, 1920 x 1080 50Hz, 1920 x 1080 59.94Hz, 3840 x 2160 23.98Hz, 3840 x 2160 24Hz, 3840 x 2160 25Hz, 3840 x 2160 29.97Hz.

3. Product Specifics
    a. Upstream Keyers
        1) 4
    b. Downstream Keyers
        1) 2
    c. Chroma Keyers
        1) 4
    d. Linear/Luma Keyers
        1) 7
    e. Transition Keyer (Stinger/DVE)
        1) 1 and 1
    f. Total Number of Layers
        1) 8
    g. Pattern Generators
        1) 7
    h. Color Generators
        1) 2
    i. DVE with 3D Borders & Drop Shadow
        1) 1
    j. Control Panel Compatibility
        1) ATEM 1 M/E Broadcast Panel preferred. Compatible with ATEM 2 M/E Broadcast Panel. Includes ATEM Software Control Panel.
4. Media Player
    a. Media Players
        1) 2
    b. Channels
        1) Fill and key for each Media Player.
    c. Media Pool Still Image Capacity
        1) 32 with fill and key.
    d. Media Pool Clip Capacity
        1) 2 with fill and key.
    e. Maximum Clip Length in 720 HD
        1) 1600 frames.
    f. Maximum Clip Length in 1080 HD
        1) 720 frames.
    g. Maximum Clip Length in Ultra HD

1) 180 frames
h. Maximum Clip Length in NTSC/PAL
1) 3600 frames.
i. Media Pool Still Image Format
1) PNG, TGA, BMP, GIF, JPEG and TIFF.
j. Media Pool Video File Format
1) TGA Sequence.
k. Media Pool Audio File Format
1) WAV, MP3 and AIFF.

5. Multi View Monitoring
a. Multi View Monitoring
1) 1 x 10 views.
b. Routable Windows
1) 8
c. Tally
1) Red for program and green for preview indication.
d. Windows Source Labels
1) Yes
e. Multi View Video Standard
1) HD

6. Display
a. Interface
1) Minimum monitor resolution of 1366 x 768.
b. Front Panel
1) Built in LCD monitor for video and 42 LED buttons for Aux switching.

7. Processing
a. Colorspace Conversion
1) Hardware based real time.
b. Processing Delay
1) < 2 Lines.
c. Audio Mixer
1) 12 input x 2 channel mixer.
d. Selectable On/Off/Audio-Follow-Video.
1) Level and Peak metering.
e. Master gain control.
1) Analog outputs may be used for separate monitoring.
f. 4K to HD Down Conversion
1) Yes, program x 1.

8. Software
a. Control Panel Included
1) ATEM Software Control Panel included free for Mac OS X 10.10 Yosemite, Mac OS X 10.11 El Capitan or later and Windows 8.1 64-bit or Windows 10 64-bit.
b. Software Updates
1) Using USB 2.0 connection directly connected to Mac OS X or Windows computers. Includes ATEM Switcher Utility.
c. Configuration

1) Set via ATEM Software Control Panel, excluding ATEM chassis IP address which is set via the ATEM Switcher Utility connected via USB to chassis.

9. Physical Installation
   a. Physical Installation
      1) 1 Rack Unit Size.
10. Environmental
   a. Operating Temperature
      1) 0° to 40° C (32° to 104° F)
   b. Storage Temperature
      1) -20° to 60° C (-4° to 140° F)
   c. Relative Humidity
      1) 0% to 90% non-condensing

B. 1 M/E CONTROL PANEL: REFERENCED PRODUCT BLACKMAGIC DESIGN ATEM 1M/E BROADCAST PANEL
   1. Connections
      a. Ethernet
         1) 10/100/1000 BaseT with loop output for additional control panels or computers.
      b. Software Updates
         1) 1 x USB for firmware updates
   2. Product Specifics
      a. Direct Cross Points
         1) 10
      b. Shifted Cross Points
         1) 20
      c. Crosspoint Button Type
         1) Tri-Color LED.
      d. Crosspoint Label
         1) 4 Character LED.
      e. Next Transition Selectors
         1) BKG, Key 1 - Key 4.
      f. On-Air indicator
         1) Yes
      g. Power Status Indicators
         1) 4
      h. DSK Transition Selectors
         1) Auto, Cut, Tie/Preview.
      i. Preview Transition
         1) 1
      j. Transition Rate Displays
         1) 2
      k. LED Menu Display
         1) 2
      l. Menu Control
         1) 12 x LCD Bitmap Buttons.
      m. Dedicated Macro Buttons

1) None
n. Multi Control Buttons
1) None
o. Destination Bus
1) 1
p. Source Select Bus
1) 1
q. Fader Bar
1) 1
r. 3 Axis Joystick
1) 1
s. Numeric Keypad
1) 1

3. Software
a. Software Applications
1) ATEM Software Control Panel.
4. Power Requirements
a. Input Voltage
1) 2 x Internal 110 - 240V AC.
b. Redundant Power
1) Yes
c. Power Usage
1) 40W
5. Environmental
a. Operating Temperature
1) 0° to 40° C (32° to 104° F)
b. Storage Temperature
1) -20° to 60° C (-4° to 140° F)
c. Relative Humidity
1) Up to 95%

2.12 HARD DRIVE VIDEO RECORDER: REFERENCED PRODUCT ATOMOS SHOGUN STUDIO

A. Display
1. Screen Size Dual 7.1" capacitive touch panels
2. Resolution 1920 x 1200
3. ppi: 323
4. Screen Type IPS LCD
5. Viewing Angle 179° with 100% sRGB color accuracy
6. Color Gamut 100% sRGB calibrated to Rec 709 with infinite 3D LUT conversion including BT-2020, DCI-P3
7. Bit Depth 8-bit
8. Brightness 400 cdm²
9. Contrast Ratio 800:1
10. Tally Light Front

B. Monitoring
   1. LUT Support
      a. 3D LUT in .CUBE format
      b. Internal Storage: 8 custom Luts
      c. Upload from External: Unlimited
   2. LUT on Output
      a. On screen
      b. On output
      c. Available to burn in to recorded clip

C. Recording
   1. Modes
      a. Pre Roll
         1) HD: 8 seconds
         2) 4K: 2 seconds
      b. 4K to HD Downscale
         1) Loop out and Playback
      c. Trigger & Timcode for Record
         1) LTC input and loop-through, SDI, HDMI, LANC, Timecode, Custom SDI
      d. Metadata Tagging
         1) Yes
   2. Formats
      a. 4K-DCI: 24/25/30p
      b. 4K-UHD: 24/25/30p, 1080p: 24/25/30/50/60/120
      c. 1080i: 50/60
      d. 720p: 50/60
   3. Codecs
      a. ProRes HQ, 422, LT
      b. DNxHR - HQX, HQ, SQ, LB
      c. DNxHD - 220,145,36
      d. HD Uncompressed V210
      e. DNG Files
   4. File Type / Wrapper
      a. .MOV
      b. DNG
   5. Pull Down
      a. 24/25/30pSF > 24/25/30p (2:2 pulldown)
      b. 60i > 24p (3:2 pulldown)
   6. RAW Formats
      a. C500
      b. Sony FS
      c. AJA
      d. Arri to ProRes
      e. DNxHR
      f. DNG
      g. Uncompressed
   7. Resolutions from RAW

a. 4K, UHD, HD: 120/60

8. Simultaneous Recording
   a. 4K ProRes & 2K/HD ProRes
   b. 4K DNxHR & 2K/HD DNxHD
   c. 4K RAW & 2K/HD RAW
   d. 2 x 4K/2K/HD ProRes, DNxHR/HD & RAW
   e. RAW to ProRes/DNxHR
9. Convert or Duplicate Files
   a. 4K Avid to 4K ProRes
   b. 2K/HD Avid to 2K/HD ProRes
   c. 4K ProRes to 2K/ProRes
   d. 4K ProRes to 2K/HD Avid
   e. 4K Avid to 2K ProRes

D. Inputs / Outputs
1. Input Per Monitor
2. HDMI: 1x HDMI 1.4b up to 12-bit
3. SDI: 1 x 12G/6G/3G/HD
4. Timecode: LTC input and loop-through, SDI, HDMI, Internal REC Run, Time of Day, Auto Restart
5. Genlock
6. Genlock Input for Playout: Black Burst, Tri-Level Sync
7. Output Per Monitor
8. HDMI: 1 x HDMI (loop-through)
9. SDI: 1 x 12G/6G/3G/HD (loop-through)
10. Timecode: Loop-through, SDI, HDMI, Internal REC Run, Time of Day, Auto Restart

E. Drive Specs
1. Drive Slot 2 channels
2. Drive Type Qualified 2.5" drives supplied in Master Caddy
3. Drive Format exFAT
4. FAT 32
5. Connections SATA
6. Hot Swap Support Yes (between channels)

F. Interface
1. Control Type AtomOS Capacitive Multi-Touch
2. Front Panel Buttons Power: 2x (one per monitor)
3. Screen Lock: 2x (one per monitor)
4. Jog/Shuttle On screen
5. RS422 Remote Yes
6. Ethernet Control Remote: Yes (AMP)
7. Scheduling Yes: Rec / Play
8. Gang Control Yes

G. General
1. Power Dual Redundant Power Supplies: IEC c14 PSU FCC, CE, CCC UL, PSE (external Adaptor)

2. Operating Temperature -22 to 104°F / -30 to 40°C
3. Rack Height 3 RU
4. Dimensions 19 x 5.2 x 8" / 482 x 132 x 202 mm
5. Weight 8.2 lb / 3.7 kg

2.13 MINI CONVERTERS

A. SDI VIDEO TO HDMI: REFERENCED PRODUCT BLACKMAGIC MINI CONVERTER SDI TO HDMI 4K
   1. Connections
      a. SDI Video Input
         1) 1 x SD, HD or 6G-SDI.
      b. SDI Video Output
         1) (4K HDMI output only)
      c. HDMI
         1) HDMI type A out.
      d. SDI Redundant Input
         1) Automatically switches over if main SDI input is lost.
      e. Multi Rate Support
         1) Auto detection of SD, HD or 6G-SDI. Instant Lock on HDMI Output.
      f. Updates and Configuration
         1) USB
      g. Reclocking
         1) Yes
   2. Standards
      a. SD Format Support
         1) 525/29.97 NTSC, 525/23.98 NTSC, 625/25 PAL
      b. HD Format Support
         1) 720p50, 720p59.94, 720p60, 1080i50, 1080i59.94, 1080i60,1080PsF23.98, 1080PsF24, 1080PsF25, 1080PsF29.97, 1080PsF30, 1080p23.98, 1080p24, 1080p25, 1080p29.97, 1080p30, 1080p50, 1080p59.94, 1080p60
      c. 2K Format Support
         1) 2048 x 1080PsF23.98, 2048 x 1080p23.98, 2048 x 1080PsF24, 2048 x 1080p24, 2048 x 1080PsF25, 2048 x 1080p25
      d. 4K Format Support
         1) 3840 x 2160p23.98, 3840 x 2160p24, 3840 x 2160p25, 3840 x 2160p29.97, 3840 x 2160p30, 4096 x 2160p24
      e. SDI Compliance
         1) SMPTE 292M, SMPTE 259M, SMPTE 296M, SMPTE 372M, SMPTE 424M-B, SMPTE 425M, SMPTE ST-2081.
      f. SDI Video Rates
         1) SDI video connections are switchable between standard definition, high definition level B 3G-SDI and 6G-SDI.
      g. SDI Video Sampling
         1) 4:2:2 and 4:4:4
      h. SDI Audio Sampling

1) Television standard sample rate of 48 kHz and 24 bit.

i. SDI Color Precision
1) 4:2:2 and 4:4:4

j. SDI Color Space
1) YUV and RGB

k. SDI Auto Switching
1) Automatically detects SD, HD or 6G-SDI.

l. HDMI Format Support
1) 625p25 PAL, 525p29.97 NTSC, 525i59.94 NTSC, 720p50, 720p59.94, 720p60, 1080i50, 1080i59.94, 1080i60, 1080p23.98, 1080p24, 1080p25, 1080p29.97, 1080p30, 1080p50, 1080p59.94, 1080p60, 2160p23.98, 2160p24, 2160p25, 2160p29.97, 2160p30, 4K DCI p24

m. HDMI Color Space
1) YUV and RGB

n. HDMI Color Precision
1) 4:2:2 and 4:4:4

3. Software
a. Software Control
1) Mac OS X™ and Windows™ software upgrade via USB.

b. Internal Software Upgrade
1) Via included updater application.

4. Settings Control
a. Mini Switches or USB software

5. Power Requirements
a. Power Supply
1) +12V universal power supply included with international socket adapters for all countries. Cable tie point.

b. Power Consumption
1) 5.2 Watts

c. Operational Voltage Range
1) 12 - 31V DC

6. Environmental
a. Operating Temperature
1) 0° to 40° C (32° to 104° F)

b. Storage Temperature
1) -20° to 45° C (-4° to 113° F)

c. Relative Humidity
1) 0% to 90% non-condensing

2.14 DISTRIBUTION AMPS

A. 1X3 AUDIO-VIDEO DISTRIBUTION AMP: REFERENCED PRODUCT EXTRON MDA 3AV
1. Video
a. Gain: Unity
b. Bandwidth: 435 MHz (-3 dB)

2. Video input

a. Number/signal type: 1 composite video
b. Connectors: 1 BNC female
c. Nominal level: 1 Vp-p
d. Minimum/maximum levels: 0.4 V to 2.0 Vp-p with no offset
e. Impedance: 75 ohms
f. Return loss: <-27 dB @ 5 MHz
g. DC offset (max. allowable): 5.0 V
h. Input coupling: AC

3. Video output
   a. Number/signal type: 3 buffered composite video
   b. Connectors: 3 BNC female
   c. Nominal level: 1 Vp-p
   d. Minimum/maximum levels: 0.4 V to 2.0 Vp-p, follows input
   e. Impedance: 75 ohms
   f. Return loss: <-30 dB @ 5 MHz
   g. DC offset: ±50 mV with input at 0 offset
4. Sync
   a. Standards: NTSC 3.58, NTSC 4.43, PAL, SECAM
5. Audio
   a. Gain: Unity (0 dB) DIP switch set to match output type
   b. Frequency response: 20 Hz to 20 kHz, ±0.05 dB
   c. THD + Noise: 0.03% @ 1 kHz at nominal level
   d. S/N: >90 dB, balanced at maximum output
   e. Stereo channel separation: >80 dB @ 1 kHz; >60 dB @ 20 kHz
   f. CMRR: >75 dB @ 20 Hz to 20 kHz
6. Audio input
   a. Number/signal type: 1 stereo balanced/unbalanced
   b. Connectors: (1) 3.5 mm captive screw connector, 5 pole
   c. Impedance:
      1) >50k ohms unbalanced
      2) >25k ohms balanced, DC coupled
   d. Nominal level
      1) +4 dBu (1.23V), 0 dBu (0.775 V), -10 dBV (316 mV), -20 dBV (100 mV) compatible
   e. Maximum level
      1) +24 dBu (balanced) at 1%THD+N, 0 dBu = 0.775 Vrms, 0 dBV = 1 Vrms, 0 dBV ≈ 2 dBu
7. Audio output
   a. Number/signal type: 3 stereo, balanced/unbalanced
   b. Connectors: (3) 3.5 mm captive screw connectors, 5 pole
   c. Impedance:
      1) 50 ohms unbalanced
      2) 100 ohms balanced
   d. Gain error: ±0.1 dB channel to channel
   e. Maximum level (Hi-Z): >+24 dBu, balanced at 1%THD+N
   f. Maximum level (600 ohm): >+15 dBm, balanced or unbalanced, at 1%THD+N
8. General

a. External power supply
   1) 100 VAC to 240 VAC, 50/60 Hz, 5 watts, external, autoswitchable; to 12 VDC, 1 A (max.), regulated
b. Power input requirements : 12 VDC, 0.3 A (max.)
c. Temperature/humidity
   1) Storage: -40 to +158 °F (-40 to +70 °C) / 10% to 90%, noncondensing
   2) Operating: +32 to +122 °F (0 to +50 °C) / 10% to 90%, noncondensing

B. 6 CHANNEL STEREO AUDIO DISTRIBUTION AMPLIFIER: REFERENCED PRODUCT EXTRON DA 6A
1. Audio
   a. Gain
      1) Unity when internal jumpers are set to match output wiring.
   b. Frequency response
      1) 20 Hz to 20 kHz, ±0.05 dB (with voltage reference @ 1 kHz)
   c. THD + Noise
      1) 0.03% @ 1 kHz at nominal level
   d. S/N
      1) >90 dB, unbalanced/balanced, at maximum output (unweighted)
   e. Stereo channel separation
      1) >80 dB @ 1 kHz, >60 dB @ 20 kHz
   f. CMRR
      1) >75 dB @ 20 Hz to 20 kHz
   g. Output cable driving distance
      1) Up to 1000 feet with STP 22 cable
2. Audio input
   a. Number/signal type
      1) 1 stereo, balanced/unbalanced
   b. Connector
      1) (1) 3.5 mm captive screw connector, 5 pole
   c. Impedance
      1) >18k ohms unbalanced, >24k ohms balanced, DC coupled
   d. Nominal level
      1) Compatible with +4 dBu (1.23 Vrms), 0 dBu (0.775 Vrms), -10 dBV (316 mVrms), -20 dBV (100 mVrms)
   e. Maximum level
      1) +24 dBu, (balanced) at 1%THD+N
3. Audio output
   a. Number/signal type
      1) 6 stereo, balanced/unbalanced
   b. Connectors
      1) 6) 3.5 mm captive screw connectors, 5 pole
   c. Impedance
      1) 50 ohms unbalanced, 100 ohms balanced
   d. Maximum level (Hi-Z)
      1) >+24 dBu, balanced at 1%THD+N
   e. Maximum level (600 ohm)
      1) >+15 dBm, balanced at 1%THD+N

4. General
    a. Power
        1) 100 VAC to 240 VAC, 50-60 Hz, 8 watts, internal
    b. Temperature/humidity
        1) Storage: -40 to +158 °F (-40 to +70 °C) / 10% to 90%, noncondensing
        2) Operating: +32 to +122 °F (0 to +50 °C) / 10% to 90%, noncondensing
    c. Mounting
        1) Rack mount
            a) Yes, with optional 1U deep rack shelf
        2) Furniture mount
            a) Yes, with optional under-desk mounting kit or through-desk mounting kit
    d. Enclosure type
        1) Metal
    e. Enclosure dimensions
        1) 1.7" H x 8.7" W x 6.0" D (1U high, half rack wide)
        2) (4.3 cm H x 22.1 cm W x 15.2 cm D)
        3) (Depth excludes connectors.)
    f. Product weight
        1) 2 lbs (0.9 kg)
    g. Shipping weight
        1) 4 lbs (2 kg)
    h. Vibration
        1) ISTA 1A in carton (International Safe Transit Association)
    i. Regulatory compliance
        1) Safety
            a) CE, c-UL, UL
        2) EMI/EMC
            a) CE, C-tick, FCC Class A, VCCI, ICES
    j. Warranty
        1) 3 years parts and labor

2.15 DUAL CHANNEL HD CHARACTER GENERATOR: COMPIX CYNERG2 HD

A. Video I/O Standards Supported
1. HD-SDI
    a. SMPTE 292M
    b. 1920x1080i (60/59.94/50)
    c. 1280x720p (60/59.94/50)
2. SD-SDI
    a. SMPTE 259M
3. Input
    a. (1) HD-SDI, Passes HANC and VANC (optional for HD Ready) or SD-SDI, Passes VBI
4. (1) System Genlock
    a. HD-SDI, BB, Tri-level Sync SD-SDI, BB Internal, Input video
5. Output

a. (2) HD-SDI key and fill (optional for HD Ready) or SD-SDI key and fill

B. Minimum System Specifications
1. CPU: Intel Celeron
2. OS: Windows 10 Professional
3. RAM:
a. 4GB Dual (HD and HD Ready)
b. 2GB (SD-SDI and Analog)
4. Hard Drive:
a. 1TB SATA HDD
5. Ports:
a. 1 Ethernet 10/100/1000 BaseT (RJ-45)
b. 2 RS-232 (DB-9)
c. 6 USB 2.0

C. Power Specifications
1. Power Supply: 500W
2. 110/220 Volt 60/50 Hz (Auto-sensing)
3. Dual redundant hot swappable power supplies
4. (Option for all configurations)

D. Physical Dimensions
1. 4RU rack mount chassis:
2. Height : 7 in (17.78cm)
3. Width : 19 in (48.26cm)
4. Depth : 20 in (50.80cm)
5. Weight : 37 lbs (16.55kg)

2.16 TELEPROMPTER WORKSTATION: REFERENCED PRODUCT HP Z240 WITH 24" MONITOR

A. Performance
1. Processor Intel Core i5-6500 Quad-Core
2. Base Clock Speed 3.2 GHz
3. Max Boost Speed 3.6 GHz
4. L3 Cache 6 MB
5. System Bus 8 GT/s
6. Chipset Socket: FCLGA1151
7. Type: Intel PCH C236
8. Memory Slots 4 x DIMM 288-Pin
9. Memory Installed: 8 GB
10. Capacity: 64 GB
11. Memory Type 1 x 8 GB PC4-17000 2133 MHz DDR4 SDRAM
12. Graphics Type Integrated
13. Graphics Card Intel HD Graphics 530

B. Drives
1. Hard Drive

a. Bays: 1x 3.5"
2. Installed: 1 TB 7200 rpm
3. Type: SATA
4. Optical Drive 8x-Speed Tray-Load SuperMulti DVD Burner with Dual Layer Support
5. Drive Expansion
   a. 1 x 2.5" (Internal)
6. 1 x 3.5" (External)
7. PCI Expansion
   a. 1 x PCIe Gen 3 x16 (x16 Mechanical)
   b. 2 x PCIe Gen 3 x1 (x1 Mechanical)
   c. 1 x PCIe Gen 3 x4 (x16 Mechanical)
   d. 1 x PCIe v2 Minicard

C. Inputs/Outputs
1. Ports
   a. 8 x USB 3.0 Type-A
   b. 2 x USB 2.0 Type-A
   c. 2 x PS/2
   d. 1 x DB-9 Serial
2. Display 3 x DisplayPort
3. Audio 1/8" (3.5 mm) Headphone/Microphone Combo Jack
4. 1/8" (3.5 mm) Headphone Output

D. Communications
1. Network 1 x 10/100/1000 Mbps Gigabit Ethernet (RJ-45)
2. Wi-Fi None
3. Bluetooth None

E. Keyboard & Mouse
1. Keyboard Type: Full-Size
2. Features: Numeric Keypad
3. Mouse USB

F. General
1. Operating System Windows 7 Professional
2. Dimensions (WxHxD) 13.3 x 4.0 x 15.0" / 33.8 x 10.2 x 38.1 cm
3. Weight 12.66 lb / 5.74 kg

G. HP Z24X Monitor
1. Panel
   a. Type 24-inch IPS gen 2, LED backlit
   b. Viewable Image Area 24-inch / 60.96 cm
   c. Panel Active Area 20.47 x 12.81" / 52.00 x 32.56 cm
   d. Panel Type
      1) Gen 2 IPS (Gen 2 technology, also called AH-IPS, enables lower power consumption)
   e. Resolution 1920 x 1200 @ 60 Hz
   f. Aspect Ratio 16:10

g. Viewing Angles
   1) Horizontal: 178°
   2) Vertical: 178°
   3) (10:1 minimum contrast ratio)
h. Brightness 350 cd/m²
i. Contrast Ratio (Typical) 1,000:1
j. Dynamic Contrast Ratio 5,000,000:1
k. Response Time (Typical)
   1) 20 ms typical
   2) 6 ms gray-to-gray
l. Pixel Pitch 0.270 mm
m. Backlight Lamp Life (to Half Brightness) 30,000 hours minimum
n. Color Support 1.07 billion
o. Color Gamut
   1) 100% of sRGB
   2) 100% of BT.709
   3) 99% of AdobeRGB
   4) 96% of DCI-P3

2. User Controls
   a. Buttons/Switch Master power switch (rear), secondary power, 5 programmable OSD/function buttons
   b. Languages English, Spanish, German, French, Italian, Netherlands, Portuguese, Japanese, T-Chinese and S-Chinese
   c. OSD Controls Color Space, Video Inputs, Image Control, PIP Control, Language, Management Features, Message Control, Information, Factory Reset
3. DreamColor Functions
   a. DreamColor Engine 2 Internal color palette of 4.4 Trillion colors driven by 14-bit internal color precision. The engine outputs 10-bit color that produces 1,024 gray levels per channel and up to 1.07 billion on-screen colors.
   b. Factory Calibrated Presets sRGB, Adobe RGB, BT.709, User and Native
   c. User Calibration Support Calibrate with optional HP DreamColor calibration solution (listed under options below). Includes customized X-Rite 1i Display Pro precision colorimeter and Windows software.
4. Signal Interface/Performance
   a. Horizontal Frequency 24-80 kHz
   b. Vertical Frequency 24-60 Hz
   c. Native Resolution 1920 x 1200 @ 60 Hz
   d. Preset VESA Graphic Modes (Non-Interlaced)
      1) 640 x 480 @ 60 Hz
      2) 800 x 600 @ 60 Hz
      3) 1024 x 768 @ 60 Hz
      4) 1280 x 720 @ 60 Hz
      5) 1280 x 960 @ 60 Hz
      6) 1280 x 1024 @ 60 Hz
      7) 1440 x 900 @ 60 Hz
      8) 1600 x 1200 @ 60 Hz

9) 1680 x 1050 @ 60 Hz
10) 1920 x 1200 @ 60 Hz

e. Maximum Pixel Clock Speed 170 MHz
f. User Programmable Modes 20
g. Anti-Glare Glass Yes
h. Default Color Temperature Native (Monitor has four calibrate-able color spaces)

5. Video/Other Inputs
   a. Plug & Play Yes
   b. Self Powered USB 3.0 Hub
      1) 1 x upstream
      2) 4 x downstream
      3) (2 on side and 2 on bottom)
   c. DreamColor Ports
      1) 2 x downstream (to monitor)
   d. Input Connectors
      1) 1 x DVI-D
      2) 1 x DisplayPort 1.2 (1 input and 1 output)
      3) 1 x HDMI HDCP support on all inputs
   e. Audio 1 x audio out (analog)
6. Power
   a. Power Supply Internal
   b. Input Power 90-265 VAC at 45-63 Hz
   c. Energy Star Power Consumption 28.9 W
   d. Default Power 58 W
   e. Maximum Power 84 W
   f. Sleep Power >0.5 W
7. Ergonomics
   a. Detachable Stand Yes, ships detached
   b. Tilt Range -5° to +20° vertical
   c. Swivel 45°L to 45°R
   d. Height Adjustable Yes, 0 to 120 mm
   e. Pivot Rotation Yes
8. Environmental
   a. Temperature
      1) Operating: 41 to 95°F / 5 to 35°
      2) Non-Operating: -4 to 140°F / -20 to 60°C
   b. Humidity
      1) Operating: 20 to 80% non-condensing
      2) Non-Operating: 5 to 95%, 38.7° max wet-bulb
   c. Altitude
      1) Operating: 0 to 16,404 ft / 0 to 5,000 m
      2) Non-Operating: 0 to 40,000 ft / 0 to 12,192 m
   d. White LED Backlights
   e. Arsenic-Free Display Glass
   f. Low Halogen
   g. Mercury-Free Display Backlighting
   h. Certification and Compliance

1) TCO Certified, CEL Grade 1, Microsoft WHQL Certification (Windows 8 and Windows 7), ENERGY STAR Qualified, EPEAT Gold5, FCC, CE mark, UL, Energy Star 6.0, TCO 6.0, TUV-GS, TUVKC-Ergonomics, WEEE, RoHS, C-Tick, Argentina S-Mark, VCCI, CECP, CCC, CEL Grade 1, Singapore PSB, EAC (Russia), NOM (Mexico), Ukraine

9. Mechanical
   a. VESA Compatibility One set of standard 4-hole pattern, 100 mm
   b. Dimensions (WxDxH)
      1) Unpacked with Stand (highest setting): 22.00 x 9.40 x 20.70" / 55.94 x 23.80 x 52.50 cm
      2) Unpacked with Stand (head only): 22.00 x 2.60 x 14.40" / 55.94 x 6.65 x 36.50 cm
   c. Weight Head Only: 10.40 lb / 4.73 kg
   d. Unpacked: 15.40 lb / 6.98 kg

2.17 DIGITAL MATRIX PROCESSOR: REFERENCED PRODUCT ASHLY PROTEA NE4400

A. The digital signal processor unit shall be analog line input / output with four option bays for supporting Cobranet® or Dante® network audio, AES/EBU, and mic input options. The processor shall consist of four inputs and four outputs. The processor shall use fixed-path architecture with hot-plugable audio functions anywhere in the signal path to reduce set-up time. All control and monitoring programming shall be accomplished using a PC platform and standard Ethernet network connection or RS-232 protocol. Multi-level security with password access and no front panel controls shall insure tamper-resistant operation. Input / output channel processing blocks shall include a full array of variable-Q graphic and parametric equalization. The processor shall have crossover filters to 8th order Butterworth, Bessel, Linkwitz, and Notched-Linkwitz. The processor shall have an advanced automatic feedback suppressor, FIR filter capability, autolevelers, compressors, matrix duckers, limiters, frequency-keyed gates and time delay to 1365ms. Sinewave, pink noise, and white noise generators shall be included in the processor. A matrix mixer shall allow any input to be routed to any output at any level. A gain-sharing automixer may also be enabled on any input signal of any output mixer. Rear panel Euroblock connectors shall include eight logic input or output connections, plus eight remote potentiometer level controls. Word clock input and output BNC connections shall be provided for digital audio frame locking to a house sync. The DSP processor shall mount in a standard 19” rack using 2 spaces (3.5” high).

2.18 40 CHANNEL 25 BUS DIGITAL CONSOLE: REFERENCED PRODUCT MIDAS M32R

A. Processing
   1. Input Channels: 32 input channels, 8 aux channels, 8 FX return channels
   2. Output Channels: 8 / 16
   3. Buses: 16 aux buses, 6 matrices, main LRC: 100
   4. Effects Engine: 8 / 16, (True Stereo / Mono)
   5. Automation: Internal Show Automation (Structured Cues / Snippets): 500 / 100
   6. Scenes: Internal Total Recall Scenes (Incl. Preamplifiers and Faders): 100

7. Signal Processing: 40-bit floating point
8. A/D and D/A Conversion:
    a. A/D Conversion (8-channel, 96 kHz Ready): 24-bit, 114 dB dynamic range, A-weighted
    b. D/A Conversion (stereo, 96 kHz Ready): 24-bit, 120 dB dynamic range, A-weighted
9. Latency
    a. 0.8 ms, (I/O, console input to output)
    b. 1.1 ms, (network latency, stage box in > console > stage box out)

B. Connectors
1. Preamplifier Midas PRO Series Microphone Preamplifiers (XLR): 16
2. Talkback Talkback Microphone Input (XLR): 1
3. RCA RCA Inputs / Outputs: 2 / 2
4. Audio Out (XLR) XLR Outputs: 8
5. Monitoring Outputs Monitoring Outputs (XLR / ¼" TRS Balanced): 2 / 2
6. Auxiliary Aux Inputs/Outputs (¼" TRS Balanced): 6 / 6
7. Headphones Phones Output (¼" TRS): 1 (Stereo)
8. Networking AES50 Ports (Klark Teknik SuperMAC): 2
9. Ultranet P-16 Connector (No Power Supplied): 1
10. Expansion Expansion Card Interface: 32 Channel Audio Input / Output
11. MIDI MIDI Inputs / Outputs: 1 / 1
12. USB USB Type A (Audio and Data Import / Export): 1
13. USB Type B: 1, rear panel, for remote control
14. Ethernet RJ45: 1, rear panel, for remote control

C. Microphone Inputs
1. Design Midas PRO Series
2. THD+N THD+N (0 dB gain, 0 dBu output): <0.01% unweighted
3. THD+N (+40 dB gain, 0 to +20 dBu output): <0.03% (unweighted)
4. Input Impedance Input Impedance (Unbalanced / Balanced): 10 kOhms / 10 kOhms
5. Maximum Input Level Non-Clip Maximum Input Level: +23 dBu
6. Phantom Power +48 V, (switchable per input)
7. Equivalent Input Noise @ +45 dB gain (150 ohm source): -125 dB (22 Hz - 22 kHz, unweighted)
8. CMRR CMRR @ Unity Gain (Typical): >70 dB
9. CMRR @ 40 dB Gain (Typical): >90 dB

D. Input/Output
1. Frequency Response @ 48 kHz Sample Rate: 0 to -1 dB (20 Hz - 20 kHz)
2. Dynamic Range
    a. Analog In to Analog Out: 106 dB (22 Hz - 22 kHz, unweighted)
    b. A/D, Preamplifier and Converter (Typical): 109 dB (22 Hz - 22 kHz, unweighted)
    c. D/A, Converter and Output (Typical): 109 dB (22 Hz - 22 kHz, unweighted)
3. Crosstalk Rejection: Typically @ 1 kHz 100 dB, adjacent channels
4. Output Level: XLR Connectors (Nominal / Maximum): +4 dBu / +21 dBu

5. Output Impedance
   a. XLR Connectors (Unbalanced / Balanced): 50 ohms / 50 ohms
   b. TRS (Unbalanced / Balanced): 50 ohms / 50 ohms
   c. Phones Output Impedance / Maximum output Level: 40 ohms / +21 dBu (Stereo)
6. Input Impedance: TRS Connectors (Unbalanced / Balanced): 20 kOhms / 40 kOhms
7. Maximum Input Level: Non-Clip Maximum Input Level, TRS Connectors: +21 dBu
8. Output Level: TRS (Nominal / Maximum): +4 dBu / +21 dBu
9. Residual Noise
   a. Residual Noise Level, Out 1-16 XLR Connectors, Unity Gain: -85 dBu 22 Hz - 22 kHz unweighted
   b. Residual Noise Level, Out 1-16 XLR Connectors, Muted: -88 dBu 22 Hz - 22 kHz unweighted
   c. Residual Noise Level, TRS and Monitor out XLR Connectors: -83 dBu 22 Hz - 22 kHz unweighted

E. Display
   1. Screens Main Screen: 5" TFT LCD, 800 x 480 resolution, 262 k colors
   2. Channel LCD Screen: 128 x 64 LCD with RGB color backlight
   3. Main Meter: 18-segment (-45 dB to clip)

F. Power
   1. Power Supply Switch-Mode Power Supply: Auto-ranging 100 - 240 VAC (50 / 60 Hz) ±10%
   2. Power Consumption 70 W

G. Physical
   1. Operating Temperature 41 - 104°F (5 - 40°C)
   2. Dimensions 18.8 x 24.3 x 8.2" (478 x 617 x 208 mm)

H. Weight 31.5 lb (14.3 kg)

2.19 16X8 AES50 REMOTE I/O DIGITAL STAGEBOX: REFERENCED PRODUCT MIDAS DL16

A. Front Panel Connections
   1. Microphone Inputs 16 XLR male 3-pin, Neutrik

B. + 48 V phantom powered
   1. Outputs (Analog) 8 XLR female 3-pin, Neutrik

C. Dual ADAT
   1. Preamps 16 Midas PRO
   2. MIDI I/O For directional communication
   3. Monitoring Ultranet personal monitoring system
   4. Headphones 1 x 1/4" (6.3 mm) TRS
   5. Network AES ports with Klark Teknik SuperMAC technology

6. Network Cables CAT5/5e for up to 328' (100 m)
7. Power Supply Auto-ranging universal switch-mode power supply

2.20 POWERED SPEAKERS: REFERENCED PRODUCT FBT J5A

A. Electronic Sepcifications
   1. System Type
      a. 2 Way
   2. Internal amplifiers
      a. cont.: 60W+30W RMS
      b. max.: 80W+40W RMS
      c. max peak: 160W+80W
   3. Input Impedance
      a. 22 kOhm
   4. Frequency Response
      a. 80Hz - 20kHz (@-6dB)
   5. Maximum SPL cont. peak
      a. 113dB / 117dB
   6. Dispersion
      a. 90° H x 90°V
   7. Crossover Frequency
      a. 3.5kHz
   8. AC Power Requirement
      a. 75VA

B. Physical Specifications
   1. Low Frequency
      a. Woofer 5” / 1” coil
   2. High Frequency Driver
      a. 1” dome / 0.75” coil
   3. Input Connectors
      a. Balanced Neutrik combo jack, XLR, 1/4" TRS
   4. Net Dimensions (inches)
      a. 6.69 x 10.82 x 7.08
   5. Net Weight
      a. 7.49 lbs
   6. Enclosure Material
      a. polypropylene
   7. Grille
      a. Steel with powder coat black or white paint finish

C. POWERED NEAR FIELD MONITORS: REFERENCED PRODUCT KRK ROKIT5
   1. Drivers: Woofer: 5" Glass Aramid Composite Woofer
   2. Tweeter: 1" Neodymium Soft Dome Tweeter with Ferro Fluid
   3. Input: XLR (3-pin), RCA & 1/4" TRS - 10k Ohm, Balanced / Unbalanced
   4. Amplification: 75 Watt Bi-amp Dynamic Power, 18 dB Octave Filters
   5. Freq Response: 53Hz - 20kHz (+/- 1.5 db)
   6. Video Shielding: Yes

2.21 MICROPHONES AND ACCESSORIES:

A. UHF DIGITAL WIRELESS MICROPHONE SYSTEM: REFERENCED PRODUCT SHURE QLXD SERIES
   1. System Specifications
      a. RF Carrier Range
         1) 470–937.5MHz, varies by region
      b. Working Range
         1) 100 m (328 ft)
      c. RF Tuning Step Size
         1) 25 kHz, varies by region
      d. Image Rejection
         1) >70 dB, typical
      e. RF Sensitivity
         1) -97 dBm at 10−5 BER
      f. Latency
         1) <2.9 ms
      g. Audio Frequency Response
         1) QLXD1: 20 Hz – 20 kHz (±1 dB)
         2) QLXD2: Note: Dependent on microphone type
      h. Audio Dynamic Range System (Gain @ +10)
         1) >120 dB, A-weighted, typical
      i. Total Harmonic Distortion (-12 dBFS input, System Gain @ +10)
         1) <0.1%
      j. System Audio Polarity
         1) Positive pressure on microphone diaphragm produces positive voltage on pin 2 (with respect to pin 3 of XLR output) and the tip of the 6.35 mm (1/4-inch) output.
      k. Operating Temperature Range
         1) -18°C (0°F) to 50°C (122°F)
      l. Storage Temperature Range
         1) -29°C (-20°F) to 74°C (165°F)
   2. UHF DIGITAL RECEIVER: SHURE QLXD4
      a. Dimensions
         1) 41 × 197 × 151 mm (1.63 × 7.75 × 5.94 in.), H × W × D
      b. Weight: 777 g (1.71 lbs), without antennas
      c. Housing: Steel
      d. Power requirements: 12 V DC @ 0.4 A, supplied by external power supply (tip positive)
      e. RF Input
         1) Spurious Rejection: >80 dB, typical
         2) Connector Type: BNC
         3) Impedance: 50 Ω
      f. Audio Output
         1) Gain Adjustment Range: -18 to +42 dB in 1 dB steps
         2) Configuration:
            a) 1/4" (6.35 mm): Impedance balanced (Tip=audio, Ring=no audio, Sleeve=ground)

b) XLR: Balanced (1=ground, 2=audio +, 3=audio −)
3) Impedance:
a) 1/4" (6.35 mm): 100 Ω (50 Ω Unbalanced)
b) XLR: 100 Ω
4) Full Scale Output
a) 1/4" (6.35 mm): +12 dBV
b) XLR: LINE setting= +18 dBV, MIC setting= −12 dBV
5) Mic/Line Switch: 30 dB pad
6) Phantom Power Protection
a) 1/4" (6.35 mm): Yes
b) XLR: Yes

g. Networking
1) Network Interface: Single Port Ethernet 10/100 Mbps
2) Network Addressing Capability: DHCP or Manual IP address
3) Maximum Ethernet Cable Length: 100 m (328 ft)

3. UHF DIGITAL HANDHELD TRANSMITTER: SHURE QLXD2
a. Mic Offset Range: 0 to 21 dB (in 3 dB steps)
b. Battery Type: Shure SB900 Rechargeable Li-Ion or AA batteries 1.5 V
c. Battery Runtime (@ 10 mW): Shure SB900: up to 10 hours Alkaline: up to 9 hours
d. Dimensions: 256 mm × 51 mm (10.1 in. × 2.0 in.) L × Dia.
e. Weight: 347 g (12.2 oz.), without batteries
f. Housing: Machined aluminum
g. Audio Input
1) Configuration: Unbalanced
2) Maximum Input Level 1 kHz at 1% THD: 145 dB SPL (SM58)
h. RF Output
1) Antenna Type: Integrated Single Band Helical
2) Occupied Bandwidth: <200 kHz
3) Modulation Type: Shure proprietary digital
4) Power: 1 mW or 10 mW
5)

4. UHF DIGITAL BODYPACK TRANSMITTER: SHURE QLXD1
a. Mic Offset Range: 0 to 21 dB (in 3 dB steps)
b. Battery Type:
1) Shure SB900 Rechargeable Li-Ion
2) AA batteries 1.5 V
c. Battery Runtime @ 10 mW:
1) Shure SB900: up to 10 hours
2) Alkaline: up to 9 hours
d. Dimensions: 3.38in.×2.57in.×0.92in. (H×W×D)
e. Weight: 138 g (4.9 oz.), without batteries
f. Housing: Cast aluminum
g. Audio Input
1) Connector: 4-pin male mini connector (TA4M)
2) Configuration: Unbalanced
3) Impedance: 1 MΩ
4) Maximum Input Level 1kHz @ 1%THD: 8.5 dBV (7.5 Vpp)

5) Preamplifier Equivalent Input Noise (EIN) System Gain Setting ≥ +20: −120 dBV, A-weighted, typical

h. RF Output
1) Connector: SMA
2) Antenna Type: ¼ wave
3) Impedance: 50 Ω
4) Occupied Bandwidth: <200 kHz
5) Modulation Type: Shure proprietary digital
6) Power: 1 mW or 10 mW

B. LAVALIER WIRELESS MIC ELEMENT: REFERENCED PRODUCT AUDIO TECHNICA AT831b
1. Element: Fixed-charge back plate permanently polarized condenser.
2. Polar Pattern: Cardioid
3. Frequency Response: 40 - 20,000 Hz
4. Low-Frequency Roll-Off: 80 Hz, 18 dB/octave
5. Open Circuit Sensitivity: – 44 dB (6.3 mV); (Phantom / Battery) –45 dB (5.6 mV) re 1V at 1 Pa
6. Impedance: (Phantom / Battery) 200 ohms / 270 ohms
7. Maximum Input Sound Level (Phantom / Battery): 135 dB / 121 dB SPL, 1 kHz at 1% T.H.D.
8. Dynamic Range (typical - Phantom / Battery): 106 dB / 92 dB, 1 kHz at Max SPL
9. Signal - to - Noise Ratio: 65 dB, 1 kHz at 1 Pa
10. Phantom Power Requirements: 9-52V DC, 2 mA typical
11. Battery Type: 1.5V AA/UM3
12. Battery Current/Life: 0.4 mA / 1200 hours typical (alkaline)
13. Switch: Off, on-flat, on-roll-off
14. Weight (less cable and accessories): Microphone - 0.1 oz (2.8 g); Power Module - 5.2 oz (147 g)
15. Dimensions: Microphone - 0.98" (25.0 mm) long, 0.39" (10.0 mm) diameter; Power Module - 3.27" (83.0 mm) H x 2.48" (63.0 mm) W x 0.87" (22.0 mm) D
16. Output Connector (power module): Integral TA4F
17. Cable: Integral 6' (1.8 m), permanently attached between microphone and power module
18. Provide Microphone with the following accessories: AT8417 clothing clip; AT8116 windscreen; protective carrying case

C. REMOTE INTERVIEW MIC: REFERENCED PRODUCT ELECTROVOICE RE50/B
1. Polar Pattern Omnidirectional
2. Element Type Dynamic
3. Output Connector 3-Pin XLR Male
4. Frequency Response 80 Hz - 13 kHz
5. Output Impedance 150 Ohms
6. Sensitivity 1.6 mV/Pa
7. Power Requirements None
8. Case Material Aluminum
9. Dimensions (L x D) 7.8 x 1.9" / 198.1 x 48.3 mm
10. Weight 9.5 oz / 269 g

D. MODULAR DUAL-CAPSULE CONDENSER MICROPHONE: REFERENCED PRODUCT ASTATIC e70
   1. Operating Principal: Permanently Biased Condenser
   2. Polar Pattern: Cardioid and Omnidirectional
   3. Frequency Response: 30Hz - 20kHz
   4. Sensitivity: -40dBV (10mV) @ 1Pa
   5. Impedance: 85 ohms
   6. Self Noise: 23dBA
   7. Max SPL: 160dB (20dB Pad Engaged)
   8. Power Requirements: P48, 2mA

E. LARGE DIAPHRAGM VARIABLE PATTERN CONDENSER MICROPHONE REFERENCED PRODUCT ASTATIC M179
   1. The microphone shall be a dual diaphragm externally biased condenser microphone. The frequency response shall be 10Hz - 20KHz. The microphone shall have a continuously variable polar pattern.
   2. The sensitivity shall be -36dBV (16mV) @ 1Pa. The microphone shall have a professional 3 pin XLR type output connector. The microphone shall have a switch selectable 100Hz high pass filter with a 6dB per octave slope when enabled. The microphone shall have a switch selectable 20dB
   3. non-capacitive pad. The microphone will operate from standard 48V phantom power with a current consumption of 8mA.
   4. The dimensions of the microphone shall be 6 11/16" tall, 2" wide, and 15/16" high. The weight of the microphone shall be 17.8 oz (506 grams) not including the shockmount. The microphone will have a durable urethane painted finish. The microphone will supplied be with a shockmount.

2.22 INTERCOM SYSTEMS

A. INTERCOM POWER SUPPLY: REFERENCED PRODUCT CLEAR-COM PS-704
   1. Program Line Input
      a. Maximum Level before Clipping: >= 20dBu
      b. Input Impedance: >= 5KΩ
   2. Frequency Response
      a. Program Input - Party-line: 200 - 20KHz ± 3dB
   3. Max Distortion
      a. Program Input - Party-line : <= 0.2%
   4. Noise
      a. Program Mic Input - Party-line:< -70dBu
   5. Max Gain
      a. Program Input - Party-line: >= -16dB
   6. Min Gain
      a. Program Input - Party-line: <= -20dB
   7. Mains Power
      a. Input Voltage Range: 100 - 240 VAC
      b. Input Frequency Range: 50 - 60 Hz
      c. Input Power : <= 60 VAC

d. Output Voltage: 30 VDC ± 0.5V
e. Output Current per Channel (Continuous): 1.2 A
f. Output Current per Channel (Peak): 2 A (Do not exceed the 1.2A rating for more than 2 seconds per 1 minute period)
g. Short Circuit Recovery Time (1st short): <= 0.5 sec
h. Short Circuit Recovery Time: >= 20 shorts in 20sec) <= 20 sec

8. Station Capacity
   a. Up to 40 RS-601 beltpacks or 10 speaker stations or 12 headset stations distributed over both channels
9. Rear Panel Connectors
   a. Intercom: (8) XLR-3M (2 per channel)
   b. Program: (1) XLR-3F
   c. AC Power: IEC 320 connector
10. Rear Panel Controls
   a. (4) Termination On-Off switches
   b. (1) Volume control
11. Front Panel Controls & Indicators
   a. (4) Program switch
   b. (4) Send level controls
   c. (4) Overload LEDs
   d. (1) Power indicator LED
   e. (1) Power switch
12. Environmental
   a. 32˚ - 122˚F (0 - 50˚C)
13. Dimensions
   a. 19 in. W x 1.75 in. H x 7.5 in. D (483 mm x 44 mm x 190 mm)
14. Weight
   a. 6.16 lbs. (2.80 kg)

B. INTERCOM BELTPACK: REFERENCED PRODUCT CLEARCOM RS-701
1. General
   a. Amplifier Design: I.C. amplifiers, including solid-state digital switching and signaling circuits. Current-limited and shortcircuit protected.
   b. Signal to Noise: >75 dB
   c. Bridging Impedance: >15k
   d. Line Level: -14 dB, +5 dB max.
   e. Sidetone Adjust: >35 dB
   f. EMI and RFI rejection: >60 dB
2. Microphone Pre-Amplifier
   a. Headset Mic Impedance: 200 ohms
   b. Gain, mic to line: 41 dB (dynamic)
   c. Limiter Range: 26 dB
   d. Frequency Response: 200 Hz – 12 kHz contoured for intelligibility
3. Headphone Amplifier
   a. Load Impedance: 50 - 2,000 ohms
   b. Output Level: +17 dBv before clipping
   c. Distortion: <0.1% THD @ 1 kHz
   d. Gain, line to output: +34 dB

e. Frequency Response: 100 Hz - 18 kHz, ±2dB

4. Connectors
   a. Intercom Line: (2) 3-pin XLR–M–F
   b. Headset: 4-pin XLR–M
5. Power Requirements
   a. RS-601 26mA quiescent
   b. 30mA average talk
   c. 50mA talk with signaling
   d. DC Voltage Range: 12-32 volts
6. Environmental
   a. Operating Temp. Range: 0°C - 70°C (32°F - 158° F)
   b. Humidity: 0 - 90% relative humidity

C. SINGLE MUFF INTERCOM HEADSET: REFERENCED PRODUCT CLEARCOM CC-300
   1. Headphones
      a. Transducer type: neodymium magnet, copper- clad aluminum wire voice coil
      b. Nominal impedance 400 ohm single muff
      c. Frequency response 40 to 20 kHz
      d. Maximum continuous SPL: 102 dB at 1 kHz
   2. Microphone
      a. Transducer type: Dynamic
      b. Polar pattern: Hyper-cardioid
      c. Frequency response: 300 to 20 kHz
      d. Front-to-back ratios: > 15 dB

2.23 RACKS, FURNITURE, AND HARDWARE

A. WELDED METAL DESKTOP RACK: REFERENCED PRODUCT MIDDLE ATLANTIC DTRK SERIES.
   1. EIA compliant 19” desktop/under-desk equipment rack shall have a useable depth of 18-1/2”. DTRK shall come equipped with two pairs of steel rackrail with tapped 10-32 mounting holes in universal EIA spacing, black e-coat finish and numbered rackspaces. Sides of DTRK shall feature vertical slotted vent pattern for ventilation. DTRK shall accept patent-pending LeverLock™ tool free and hardware free internal cable and device management system accessories when used with optional LL-DTRK adapter (10 space + only). DTRK shall be of fully welded construction. DTRK shall be finished in an environmentally friendly, durable metallic grey powdercoat. Fully welded construction shall provide a static capacity of 1,200 lbs. and a UL Listed load capacity of 300 lbs. DTRK shall be UL Listed in the US and Canada. DTRK shall be GREENGUARD Indoor Air Quality Certified for Children and Schools. DTRK enclosure shall comply with the requirements of RoHS EU Directive 2002 / 95 / EC compliant. DTRK shall be manufactured by an ISO 9001 and ISO 14001 registered company. DTRK enclosure shall be warrantied to be free from defects in material or workmanship under normal use and conditions for the lifetime of the rack.

B. RACK DRAWERS: REFERENCED PRODUCT MIDDLE ATLANTIC AUDIO D SERIES.

1. EIA compliant 19” rackmount drawer shall have a useable depth of 14-1/2”. Drawer base shall be 20-gauge steel, top and sides shall be 16-gauge steel. Drawer faceplate shall be .090” thick aluminum with a black textured powder coat finish. Drawer shall use full extension, ball bearing slides. Grommet shall be provided for safely passing cables through the cable entry point at the rear of the drawer on 2, 3 and 4 space models. 2, 3 and 4 space drawers shall include a no-slip drawer mat. Drawer shall have a 50 lb. weight capacity.
2. Drawer shall be warrantied to be free from defects in materials or workmanship under normal use and conditions for a period of three years. Drawer shall be UL Listed in the US and Canada.
3. Drawer shall be GREENGUARD Indoor Air Quality Certified for Children and Schools. Drawer shall be RoHS EU Directive 2002/95/EC compliant. Drawer shall be manufactured by an ISO 9001 and ISO 14001 registered company.
4. OPTIONS
    a. Keylock option - add a keylock to any D or TD drawer, model # LK

C. VENT PANELS: REFERENCED PRODUCT MIDDLE ATLANTIC VT SERIES
1. EIA compliant 19” vent panels shall be constructed of 16-gauge perforated steel and shall have a black powdercoat finish. Vent panel shall be GREENGUARD Indoor Air Quality Certified for Children and Schools. Vent panel shall be RoHS EU Directive 2002/95/EC compliant. Vent panel shall be manufactured by an ISO 9001 and ISO 14001 registered company. Vent panel shall be warrantied to be free from defects in material or workmanship under normal use and conditions for the lifetime of the product.
2. Perforations
    a. VT perforation pattern shall be: 5/32” dia. hole, with 3/16” staggered centers Open Area 64%

D. BLANK PANELS: REFERENCED PRODUCT MIDDLE ATLANTIC BL SERIES
1. Blank panels shall be constructed of 1/16” thick aluminum. Blank panels shall be RoHS EU Directive 2002/95/EC compliant. Blank panels shall be manufactured by an ISO 9001 and ISO 14001 registered company. Blank panels shall be warrantied to be free from defects in material or workmanship under normal use and conditions for the lifetime of the panel.

E. SECURITY COVERS: REFERENCED PRODUCT MIDDLE ATLANTIC AUDIO SEC SERIES.

2.24 RACK WORK LIGHT: REFERENCED PRODUCT SOUNDOLIER RWL-2

A. Portable lamp with wide light diffusion provides illumination of interior rack spaces. Supplied with a "non-mar" magnetic mount, 3-wire grounded AC outlet, on-off switch, high impact clear polycarbonate lens, two 10-Watt incandescent lamps (one for replacement) and six-foot power cord. Assembly is 18 and 22-gauge CRS. Standard finish is flat black epoxy.

2.25 UPS: REFERENCED PRODUCT MIDDLE ATLANTIC UPS-S1000R

A. Rackmount UPS shall be AVR with boost only. Rackmount UPS shall operate on 120 VAC/60Hz current. Rackmount UPS shall have a nominal output of 120V. Rackmount UPS shall have a priority outlet bank consisting of _ outlets (refer to chart) dedicated to ensure maximum run time of critical components. Rackmount UPS shall have a simulated sine wave output waveform. Rackmount UPS shall have an 8ms transfer time. Rackmount UPS shall be IP enabled when used with option IP Expansion card, model# UPS-IPCARD. Rackmount UPS shall include a 10' __ (refer to chart) power cord with NEMA __ (refer to chart) plug. Rackmount UPS shall have surge suppression that utilizes a clean line-to-neutral design that does not pass noise contamination to ground. Rackmount UPS shall be RoHS EU Directive 2002/95/ EC & 2011/65/EU compliant. Rackmount UPS shall utilize Middle Atlantic Power Manager™ software. Rackmount UPS shall be warrantied to be free from defects in materials and workmanship under normal use and conditions for a period of 3 years; battery shall be warrantied for a period of 2 years. Rackmount UPS shall be UL listed in US and Canada.

2.26 INSTALLATION WIRE STANDARDS: ALL WIRE IN OR OUT OF CONDUIT WILL BE TYPE CL2-CL3 UNLESS OTHERWISE REQUIRED BY NEC AND JOB SITE CONDITIONS. PORTABLE CABLE EXCLUDED.

A. WIRE - INSTALLED LINE LEVEL:
   1. West Penn 293
      a. Construction
         1) Conductor Gauge: 2 - 22 AWG
         2) Strands: 7 x 26 tinned copper.
         3) Insulation: .008" Polypropylene
         4) Number of Conductors: 2
         5) Shield: Aluminum foil with 100% coverage
         6) Drain Wire: Stranded tinned copper.
         7) Jacket Material: PVC
         8) Jacket Thickness: 0.017" Nom
         9) Overall cable Diameter: 0.160" Nom
         10) Flame Rating: UL 1666 Riser Flame Test
      b. Electrical
         1) Temperature Rating: -20 C° to +60 C°
         2) Operating Voltage: 300V RMS
         3) Max Capacitance between conductors @ 1kHz: 40 pf/ft.
         4) Capacitance between Conductors to Shield @ 1kHz: 79 pF/ft
         5) DC Resistance per Conductor @ 20° C: 6.6 Ω/1M'
      c. Mechanical
         1) Min Bend Radius: 1.6"
         2) Max Pull Tension: 57.5 lbs.

B. WIRE - INSTALLED MULTIPAIR LINE LEVEL:
   1. West Penn D440
      a. Construction
         1) Conductor Gauge: 2 - 18 AWG
         2) Strands: 7 x 26 tinned copper.

3) Insulation: .006” Polyolefin
4) Number of Conductors: 4 (2 Pair)
5) Shield: Aluminum foil with 100% coverage
6) Drain Wire: Stranded tinned copper.
7) Jacket Material: PVC
8) Jacket Thickness: 0.025” Nom
9) Overall cable Diameter: 0.268” Nom
10) Flame Rating: UL 1685 Riser Flame Test

b. Electrical
1) Temperature Rating: -20 C° to +60 C°
2) Operating Voltage: 300V RMS
3) Max Capacitance between conductors @ 1kHz: 42 pf/ft.
4) Capacitance between Conductors to Shield @ 1kHz: 76 pF/ft
5) DC Resistance per Conductor @ 20° C: 6.6 Ω/1M’

c. Mechanical
1) Min Bend Radius: 2.7”
2) Max Pull Tension: 100 lbs.

C. WIRE - INSTALLED MICROPHONE LEVEL:
1. West Penn 291
a. Construction
1) Conductor Gauge: 2 - 22 AWG
2) Strands: 7 x 30 tinned copper.
3) Insulation: .007” Polypropylene
4) Number of Conductors: 2
5) Shield: Aluminum foil with 100% coverage
6) Drain Wire: Stranded tinned copper.
7) Jacket Material: PVC
8) Jacket Thickness: 0.017” Nom
9) Overall cable Diameter: 0.127” Nom
10) Flame Rating: UL 1666 Riser Flame Test

b. Electrical
1) Temperature Rating: -20 C° to +60 C°
2) Operating Voltage: 300V RMS
3) Max Capacitance between conductors @ 1kHz: 34 pf/ft.
4) Capacitance between Conductors to Shield @ 1kHz: 67 pF/ft
5) DC Resistance per Conductor @ 20° C: 17 Ω/1M’

c. Mechanical
1) Min Bend Radius: 1.3”
2) Max Pull Tension: 23.7 lbs.

2. West Penn 293
a. Construction
1) Conductor Gauge: 2 - 22 AWG
2) Strands: 7 x 26 tinned copper.
3) Insulation: .008” Polypropylene
4) Number of Conductors: 2
5) Shield: Aluminum foil with 100% coverage
6) Drain Wire: Stranded tinned copper.

7) Jacket Material: PVC
8) Jacket Thickness: 0.017" Nom
9) Overall cable Diameter: 0.160" Nom
10) Flame Rating: UL 1666 Riser Flame Test

b. Electrical
1) Temperature Rating: -20 C° to +60 C°
2) Operating Voltage: 300V RMS
3) Max Capacitance between conductors @ 1kHz: 40 pf/ft.
4) Capacitance between Conductors to Shield @ 1kHz: 79 pF/ft
5) DC Resistance per Conductor @ 20° C: 6.6 Ω/1M'

c. Mechanical
1) Min Bend Radius: 1.6"
2) Max Pull Tension: 57.5 lbs.

3. Microphone level wiring will be run as follows: WP 291 CL3 - 22 AWG (or equal as referenced above) is to be used for runs ≤ 100 feet. WP 293 CL3 - 18 AWG (or equal as referenced above) is to be used for runs in excess of 100 feet.

D. WIRE - INSTALLED MULTIPAIR MICROPHONE LEVEL:

1. West Penn D430
a. Construction
1) Conductor Gauge: 2 - 22 AWG.
2) Strands: 7 x 30 tinned copper.
3) Insulation: .006" Polyolefin
4) Number of Conductors: 4 (2 Pair)
5) Shield: Aluminum foil with 100% coverage
6) Drain Wire: Stranded tinned copper.
7) Jacket Material: PVC
8) Jacket Thickness: 0.025" Nom
9) Overall cable Diameter: 0.235" Nom
10) Flame Rating: UL 1685 Riser Flame Test

b. Electrical
1) Temperature Rating: -20 C° to +60 C°
2) Operating Voltage: 300V RMS
3) Max Capacitance between conductors @ 1kHz: 34 pf/ft.
4) Capacitance between Conductors to Shield @ 1kHz: 67 pF/ft
5) DC Resistance per Conductor @ 20° C: 17 Ω/1M'

c. Mechanical
1) Min Bend Radius: 2.4"
2) Max Pull Tension: 55 lbs.

2. West Penn D439
a. Construction
1) Conductor Gauge: 2 - 22 AWG.
2) Strands: 7 x 30 tinned copper.
3) Insulation: .006" Polyolefin
4) Number of Conductors: 8 (4 Pair)
5) Shield: Aluminum foil with 100% coverage
6) Drain Wire: Stranded tinned copper.
7) Jacket Material: PVC

8) Jacket Thickness: 0.025” Nom
9) Overall cable Diameter: 0.28” Nom
10) Flame Rating: UL 1685 Riser Flame Test

b. Electrical
1) Temperature Rating: -20° C to +60° C
2) Operating Voltage: 300V RMS
3) Max Capacitance between conductors @ 1kHz: 34 pf/ft.
4) Capacitance between Conductors to Shield @ 1kHz: 67 pF/ft
5) DC Resistance per Conductor @ 20° C: 17 Ω/1M’

c. Mechanical
1) Min Bend Radius: 2.5”
2) Max Pull Tension: 80 lbs.

3. West Penn D432
a. Construction
1) Conductor Gauge: 2 - 22 AWG.
2) Strands: 7 x 30 tinned copper.
3) Insulation: .006” Polyolefin
4) Number of Conductors: 12 (6 Pair)
5) Shield: Aluminum foil with 100% coverage
6) Drain Wire: Stranded tinned copper.
7) Jacket Material: PVC
8) Jacket Thickness: 0.025” Nom
9) Overall cable Diameter: 0.332” Nom
10) Flame Rating: UL 1685 Riser Flame Test

b. Electrical
1) Temperature Rating: -20° C to +60° C
2) Operating Voltage: 300V RMS
3) Max Capacitance between conductors @ 1kHz: 34 pf/ft.
4) Capacitance between Conductors to Shield @ 1kHz: 67 pF/ft
5) DC Resistance per Conductor @ 20° C: 17 Ω/1M’

c. Mechanical
1) Min Bend Radius: 3.0”
2) Max Pull Tension: 126 lbs.

E. MICROPHONE CABLE PORTABLE: REFERENCED PRODUCT PRO CO M SERIES WITH 223 B CABLE
1. Conductor Gauge: 23 AWG. Strands: 60 x 32 bare copper. Nominal Lay length: 1.5". Insulation: .012” polypropylene. Shield: Braid Tinned copper - 96%. Capacitance between conductors: 19 pf/FT.

F. WIRELESS MICROPHONE ANTENNA CABLE: REFERENCED PRODUCT BELDEN 8240
1. Contruction:
a. Conductor Gauge: 20 AWG Solid
b. Insulation: .116” PE
c. Jacket: PVC
d. Shield: Tinned Copper Braid, 95” Coverage
e. Overall Diameter: 0.193” Nom.

2. Electrical:
    a. Nominal Capacitance Between Conductor to Shield: 28.5 pf/ft
    b. Conductor DC Resistance: 10 Ohms/1000'
    c. Shield DCResistance: 4.1 Ohms/1000'
    d. Nominal Impedance: 52 Ohms
3. Mechanical
    a. Minimum Bed Radius: 2" installed
    b. Max Pull Tension: 47 lbs.

G. WIRE – CAT5E NETWORK CABLE: REFERENCED PRODUCT WEST PENN 4245
1. Construction:
    a. Conductor Gauge: 24 AWG Solid
    b. Number of Conductors: 8 (4 Pair)
    c. Insulation: 0.008" Thermoplastic
    d. Shield: None
    e. Drain: None
    f. Jacket Material: PVC
    g. Overall Diameter: 0.202" Nom.
2. Electrical:
    a. Temperature Rating: -20° C to +60° C
    b. Operating Voltage: 300V RMS
    c. DC Resistance per Conductor @ 20° C: 9.38 Ω/100 m
    d. Mutual Capacitance: 14 pF/ft Nom
    e. Nominal Impedance: 100Ω +/- 15% (1-100 Mhz)
    f. Delay Skew: 45 ns/100m MAX
    g. Standards: TIA/EIA568-B.2
3. Mechanical
    a. Minimum Bed Radius: 4x Cable OD or 1" min.
    b. Max Pull Tension: 25 lbs.

H. SDI VIDEO CABLE: REFERENCED PRODUCT GEPCO VHD200M
1. Construction:
    a. Conductor Gauge: 21 AWG (19x34) Stranded BC (Compact)
    b. Insulation: .146" Gas Injected Foam PE
    c. Inner Jacket: 0.114" PVC
    d. Shield:
        1) Tinned Copper Braid, 95" Coverage
        2) Tinned Copper Braid, 95" Coverage
    e. Outer Jacket: Flexible PVC
    f. Overall Diameter: 0.242" Nom.
2. Electrical:
    a. Nominal Capacitance Between Conductor to Shield: 17 pf/ft
    b. Conductor DC Resistance: 14.3 Ohms/1000'
    c. Inner Shield DC Resistance: 2.4 Ohms/1000'
    d. Nominal Impedance: 75 Ohms

I. WIRE MULTICONDUCTOR SNAKE CABLE:

1. INSTALLATION MULTICORE SNAKE – REFERENCED PRODUCT WHIRLWIND W58PRFLX
   a. The Multiconductor cable will consist of from 4 - 58 pairs of individually shielded audio cable. Conductor Gauge: 24. Strands: 7 x 32 bare copper. Nominal Lay length: 0.93". Insulation: polyethylene. Shield: Foil wrap polyester 100%. Drain Wire: 24 gauge 7 strand tinned copper. Capacitance between conductors: 25 pF/ft. Capacitance between one conductor and other conductor tied to shield: 47 pf/FT. Black Outer Jacket
   b. Capacitance between one conductor and other conductor tied to shield: 47 pf/FT. Blue Outer Jacket
2. PORTABLE MULTICORE SNAKE – REFERENCED PRODUCT WHIRLWIND WITH CANARE MR202 SERIES WIRE
   a. The Multiconductor cable will consist of from 4 - 58 pairs of individually shielded audio cable. Conductor Gauge: 24. Insulation: polyethylene. Shield: Foil wrap polyester 100%. Drain Wire: 25 gauge 7 strand tinned copper. Capacitance between conductors: 23.2 pF/ft. Capacitance between one conductor and other conductor tied to shield: 43.3 pf/FT.
3. Multiconductor cable fan out end will be factory wired with colored and numbered heat shrink to identify the channel numbers. Length of cable is to be as required by site conditions.
4. Where multiconductor snake cable is indicated, the snake must have a common outer jacket. Individual pairs will not be accepted.

PART 3 - EXECUTION

3.1 GENERAL:

A. Contractor will adhere to all requirements of the general contract for this project as called for in the project manual.

B. Assess life safety implications of all installation methods and verify there is no compromise of life safety issues. All liability for rigging, fastening, wiring, and other installation methods will be borne by the contractor alone. If the contractor has a reason to believe that safety will be compromised in the installation of any specified equipment in the locations specified they must note this at the time of bid and offer alternatives in writing.

C. Any dangerous work areas marked must be roped off in a manner that will inform all persons as to potential danger regardless of sensory handicaps.

D. Maintain M.S.D.S. for all materials used where applicable and submit same if requested upon completion.

E. Maintain integrity of all fire walls and doors during construction and upon completion.

F. Take all precautions necessary to guard against electromagnetic and electrostatic hum, RF noise, supply adequate ventilation, and install all equipment for the maximum safety

of the operator. Any of these conditions that affect system performance in any way will be rectified by the contractor at no additional cost.

G. The contractor will verify all on site dimensions prior to ordering or installation of critically dimensioned equipment and wiring. In a case of a discrepancy between these documents and attached drawings, construction documents, and actual on site dimensions the contractor will notify the owner and consultant before making any changes in intended work. The owner and consultant will determine the correct modification to the work to be done. No additional payments will be made for material or equipment improperly ordered or sized due to site variations.

H. Any equipment, hardware, wiring harnesses, or other items not specifically included in this specification but required for the system to function as called for within this specification will be the responsibility of the contractor at no additional cost to the owner.

I. Provide all racks, hardware, wire, conduit, raceways, and all other required parts to provide a complete system. Provide rack shelves or kits for all equipment to be located in equipment racks that is not inherently rack mountable. Any shelf mounted equipment will be securely attached to the associated shelf.

J. All installation methods must be cosmetically acceptable to the owner. All equipment installed neatly, with respect to level, sight lines, and finish. All wiring must be neatly run and concealed in an orderly fashion and attached to appropriate support structures.

K. Moderate changes or moves necessary to accommodate other equipment, coordination with other trades, or for a pleasing appearance will be made without claim for additional payment.

L. Identify any equipment requiring licensing (wireless etc..) and initiate licensing procedures for all such equipment.

M. Coordinate all work with other on site trades in order to achieve a coordinated progress at all times.

N. Any existing equipment is the property of the owner and will be removed and delivered to the owner for salvage. This does not include debris, used conduit, wire etc.

3.2 WIRING AND RACKS:

A. CONNECTORS (The priority for use of connectors is as follows):
   1. Audio
      a. Wherever barrier strips or Phoenix connectors are available to connect equipment these are the preferable means for connection. Barrier connections are to be made utilizing insulated crimp connectors. Phoenix connectors may be utilized without crimp connectors if proper strain relief is provided to avoid fatigue to the connection.
      b. Next in order of preference are XLR type connectors. Where no other means is available balanced 1/4" are to be used. Unbalanced 1/4" and RCA are to

be use only if no other means of connection is possible. Use right angle jacks where needed for space requirements. Banana jacks are not to be used on amplifier outputs.

c. All wiring (except AC power) entering or leaving the rack will be connected via terminal strips or direct connection to the equipment terminals or connectors. No in line connectors are acceptable. Appropriate connectors and controlled cycle crimping devices will be employed. No wire nuts may be used in any system wiring except AC power.

2. Video
   a. BNC is the preferred connector for SDI.

B. All IT wiring shall meet the requirements of TIA -569.

C. All wiring shall be neatly tie wrap bundled (or as indicated otherwise on contract drawings) with wires parallel and perpendicular to rack sides and backs and/or control booth walls or roll top desks (i.e. no random angle wiring). All wiring shall be dressed neatly from devices to input/output plates with excess cable hidden below the countertop and secured as described below.

D. All loose audio, control or power cables & wiring must be dressed neatly with tie wraps & eyes or ring runs & tucked up against underside of control booth countertop. No dangling and loose cabling shall be allowed underneath the audio control area. This means that the contractor shall not be allowed to simply coil up excess cable and lay it on the floor or hang it from the wall or over a junction box. All cabling shall be cut to length (unless specifically indicated to be of certain lengths on the drawings) and all excess to be securely mounted so that it cannot become caught, snagged or otherwise engaged by operators, legs, chairs, etc. All cabling not handled as described above shall be fixed by the contractor at no additional cost to the owner. No excessively long cables (except those called out by length on drawings) shall be allowed.

E. Provide a single 120 V AC 60 watt LED equivalent light source within each rack, located at the top of the rack as necessary to clear equipment mounted within the rack. Provide rough duty lamps and protective lamp cages for each lamp, as well a switch assembly within each rack.

F. Provide all necessary jumper cables, turnarounds, adaptors, etc. as needed in order to interconnect all equipment as intended, even if those cables are not specifically shown on the drawings.

G. No equipment or terminal strips will be mounted to the sides, doors, top or bottom of the racks. Tie down bars will be provided by the contractor for neat wiring in adherence with industry standard practice.

H. Wiring Standards - Plenum Rated Cable: Unless specifically noted on the drawings, all low voltage wiring is to be CL2/CL3 wiring. Where specific plenum conduits exist its has been noted to use a plenum rated cable. Where wiring runs occur in concealed spaces – walls, ceilings, etc. - and are not enclosed in conduit the contractor must verify the space is not being used as a plenum path. Any areas encountered that are plenums

must have plenum cable or the wiring must be contained in conduit rated for the plenum application. Field verify conditions prior to ordering or installing cabling.

I. No rack rails will be allowed for equipment mounting in the rear of the rack unless otherwise noted in this specification.

J. Separate wiring paths must be maintained within each rack for microphone level, line level, AC, and speaker level signals. No bundling of dissimilar signal types is allowed.

K. No undue stress may be placed on any connection by a lack of support of the wiring within the rack.

L. Any equipment having accessible controls that are not normally used during system operation will have it's controls capped or otherwise locked such that they are not adjustable. If no other means is feasible the use of security covers is mandated. Rack doors are not acceptable as means of tamper resistance for controls.

M. Provide blank and/or vent panels as needed to complete each rack with no unfilled spaces, as per rack elevations or as required by alternates to equipment specified. No racks with unfilled panel spaces shall be allowed.

N. All conduits indicated on the drawings shall terminate directly into racks as shown – top, bottom or at any of the provided knockout locations (unless otherwise and specifically indicated on the drawings as otherwise) and so as not to obstruct access to the racks or adjacent walkways or approaches. Route conduits into racks with as few bends as possible – use sweep elbows where necessary. No loose or dangling or drooping wiring/cabling draped, dropped or festooned into the racks from dead-ended conduits or overhead cable tray systems shall be acceptable. All wiring shall be protected in conduit until it has reached the internal space of the indicated rack(s).

O. ELECTRICAL & GROUNDING:
   1. All equipment to have the availability of chassis ground lifts or to be mounted with ground lift isolation washers.
   2. Grounding of shields and chassis shall adhere to industry standard practice, with shields terminated at one end only on signal cables. Terminate the open shield end with plastic tape or shrink on collars.
   3. All electronics' ground will be terminated to a single point within the rack. Ground this point as well as the racks to an appropriate main service ground . No AC line cord safety grounds may be lifted in an attempt to cure hum or noise problems. All such problems will be rectified by accepted industry practice such as the use of transformer isolation, ground lift rack washers, etc...
   4. Any AC service shall be installed to standard Edison U-Ground style outlets at the locations noted on the electrical drawings. Where racks are located the service is to be run to the interior of the rack. This service should be capable of powering all system equipment at 100% of rated power. Two U-ground outlets will be available for each 20 amp, single-phase circuit unless otherwise indicated or terminated into distribution devices.

5. Internal rack AC distribution is the responsibility of the contractor. Acceptable methods: Rack mount power strips, rack mounted power distribution devices, Wiremold style outlet strip.
6. Install all internal AC rack power with all switches and controls carrying hazardous voltage housed in steel enclosures within the rack. Provide positive electrical grounding for all steel enclosures. All AC service will incorporate separate hot, neutral, and ground for each device. All grounds and neutrals will be appropriately bonded and connected to earth as required by codes and industry standard practice.
7. Provide each rack with sufficient AC isolated ground distribution for all equipment with 2 spares per rack.

P. CONDUITS:
1. Use separate conduits for microphone level (below -20dBm), video and line level (up to +30dBm) speaker level (greater than +30 dBm), control circuits and power circuits. No sharing of signal types within conduits is permissible.
2. All wiring in conduit shall be rated as necessary for full load continuous operation of the wiring within the conduit.
3. All conduits shall be concealed unless the owner has been notified in writing and accepts by written approval the location of the exposed conduits.
4. No conduit shall be allowed that is loaded beyond 50% fill. The contractor responsible for installing the indicated conduits shall upsize as needed any conduit found to be too small at no additional cost to the owner.
5. A pull string shall be left in place by the installing contractor after pulling all wiring through each conduit. This pull string shall be tied off at both ends and left for future use.
6. All lines, cabling or wiring in any conduit run must be free from any splices or junction points.
7. All lines, cabling or wiring must be free from damage. Any that exhibits stress, damage, intermittent signal problems, data errors or other anomalies due to excessive pull torque shall be replaced by the installing contractor at no additional cost to the owner.

Q. JUNCTION/GANG BOXES
1. Unless otherwise specified all controls, receptacles, user interface stations, plugs and outlets shall be located in an appropriately sized gang box. No multi-gang backboxes with raised, tile ring, extension ring or mud ring style reducers to obtain the specified faceplate gang size shall be acceptable in lieu of the indicated device backbox. Any multi-gang devices with these extension rings used shall be replaced and the specified backbox sizes provided at no additional cost to the owner.
2. Any junction (i.e. terminal blocks, punch down blocks etc.) shall be housed in metal enclosures with an attached ground. No such connections may be made in ceiling spaces or other areas without the use of a steel enclosure.
3. Any added junction boxes shall be sized and located for ease of troubleshooting access and all connections within shall be connected on terminal strips, which are clearly identified, in a logical, consistent & permanent manner.

R. ASSEMBLY & PRE-TEST

1. All equipment shall be turned on and burned in for a period of at least two weeks continuously before assembling into racks. No equipment may be delivered to the site without being fully tested and burned in off site. The equipment does not need to be under load during this period, although the contractor should shop test each piece of equipment for signal flow integrity.
2. All sub assemblies and individual components (i.e. speakers etc.) shall be fully tested off site before delivery for installation.
3. An inspection of the system in test mode is required. This inspection must take place before any equipment is installed on site. Allow two weeks notice prior to the date requested for the inspection. The equipment must be set up in a mockup that allows full signal flow through all primary pathways.

3.3 FINISHES & CLEANING:

A. All finishes shall be returned to their original finish and condition after any temporary machining or other work.

B. Cover any walls, furniture, finished floors and carpeted areas to catch all metal particles, grit, etc. that may occur during installation.

C. Cover all equipment left or installed on site during construction to prevent dust, dirt, paint or other airborne debris from infiltrating equipment and to prevent contamination or damage from occurring. The contractor shall be responsible for all cleaning and damage caused to any equipment being installed before the site is safe for such installation. Typically electronic equipment should not be installed until after drywall sanding, welding, painting, use of motorized man lifts, construction debris sweeping and other such work has been completed.

D. Any equipment that has become dirty due to installation before room finishes are complete shall be completely cleaned by the contractor (both internally & externally) and returned to an “as new” condition prior to date of acceptance. This includes over spray from painting.

E. Provide thorough cleaning of all work areas including vacuuming, spray cleansers and dust removal as required. Clean all equipment fan filters before final acceptance tests.

F. If any paint-work is to be done on sight, all overspray or drips must be contained. The contractor is responsible for any damage to any building finish caused by their work.

G. Maintain clean work areas, removing all debris daily.

H. The contractor shall wipe clean (with a clean, damp cloth) all touchscreens, faceplates, misc. input/output jacks, audio racks, control console, rack mounted equipment, etc. just prior to turning the systems over to the owner. Upon cleaning, all items shall appear in as new condition and without scratches, blemishes, dirt, dust, debris, chalking, paint marks, etc. on them.

3.4 LABELING:

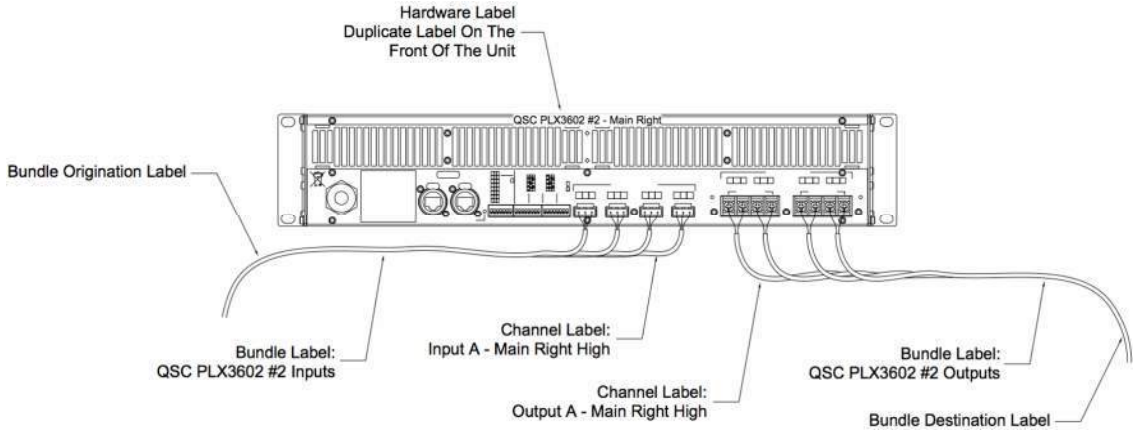
A. All switches, cables, wire, controls and outlets will be permanently and logically marked during installation. Permanently mark cables with an identifying label at each end, in a consistent logical manner. Submit to the consultant for approval a listing of intended nomenclature.

B. On metal panels and plates where possible engrave directly upon the plates and assemblies. Where disassembly of the equipment would be required to achieve engraving the use of adhesive or screw on engraved labels will suffice. Engravings will be paint filled for best contrast with black or white paint.

C. Do not use Dymo style labels or hand lettering. No cables will be labeled with masking tape, Gaffer tape, or other material subject to degradation. Such labeling may be done on a temporary basis during installation so long as all such labels are removed and their adhesive cleaned off when final labeling is applied. Self-laminating labels are preferable such as laser printed labels by Panduit.

D. Color-coding of the entire system will be logical and adhere to accepted industry standards.

E. Labeling must allow the owner and potential novice users to disconnect a piece of equipment or peripheral equipment and reconnect it without the need for drawings or assistance from the installing contractor. Labeling must be done in a manner that precludes errors in connecting. If multiple inputs of the same type (such as XLR, 1/4" etc....) are present in a location the labeling must be detailed.
   1. All equipment shall be labeled on the back as to it's function and where multiple units are present the unit number.
   2. All input wiring shall be bundled and all output wiring shall be bundled separately with the bundle labeled with the same nomenclature of the hardware. See example below:



   3. Examples: Input 1 (XLR) plugged into an XYZ mixer should be labeled "INPUT 1 XYZ Mixer" if this mixer is located in a rack with other XLR input equipment. If this was a front of house mixer with only XLR inputs to the mixer then a snake labeling system of numbers only would be acceptable.

4. At the same mix positions, any 1/4" lines used for processing, sends, etc. would need to be labeled to match the nomenclature on the mixer and the associated line or piece of equipment due to multiple 1/4" jacks being present. A jack plugged into "AUX 1 OUT" should be labeled as such. If the other end plugs into "XYZ REVERB INPUT LEFT", it should be labeled as such.
5. Where network switches are being provided as part of the audio system, the contractor shall label all wiring destinations. Labels should describe network connection locations.
6. All punchdown block wiring shall be labeled on both the input and output. Input wiring shall be labeled with its origination and output wiring shall be labeled with its destination.

F. Labeling is subject to an extended warranty as noted in the "Warranty and Service" section within these specifications.

3.5 RIGGING:

A. The following minimum standards apply in addition to the standards referenced elsewhere in the specification. These guidelines do not negate the standards referenced elsewhere in the specification.

B. All equipment not described as portable in this specification will be rigidly held in place.

C. All equipment will be supported at a minimum of three points plus a backup. Each point must be able to carry the entire rated load with a safety margin of at least ten (10) times the rated load. All methods must incorporate an independent safety backup with a safety margin of at least ten (10) times the rated maximum load as installed in case of failure of any rigging component.

D. Speakers:
1. All items that are to be suspended must have factory installed and rated rigging points. No loudspeaker may be modified in any way by the contractor for installation by suspension. All hardware for the equipment must be furnished by the manufacturer or an approved rigging hardware manufacturer.
2. All cables are to be dressed along the nearest support cable. Cables are to have no tension and are not to alter in any way the aiming angle of the speaker

E. All hardware used for rigging is to be installed with a torque wrench set to the manufacturer settings.

F. All rigging and related fastening methods must be treated as permanent. All threads must be treated with vibration compounds such as vibratite or loctite as per manufacturer's recommendations.

G. All rigging hardware must be load rated with the load rating or approval stamped on each piece of hardware.

H. No chain of any type will be acceptable for the hanging or backup support of any equipment unless specifically called out on the drawings.

I. No fabric or plastic devices of any type will be considered as acceptable methods of hanging of any equipment.

3.6 ROUGH-IN:

A. Due to small scale of Drawings, it is not possible to indicate all offsets, fittings, changes in elevation, etc. Verify final locations for rough-ins with field measurements and with the equipment being connected. Verify exact location and elevations at work site prior to any rough in work. DO NOT SCALE PLANS. If field conditions, details, changes in equipment or shop drawing information require a significant change to the original documents, contact the owners representative for approval before proceeding.

B. All equipment locations shall be coordinated with other trades to eliminate interference with required clearances for equipment maintenance and inspections.

C. Coordinate work with other trades and determine exact routing of all duct, pipe, conduit, etc., before fabrication and installation. Coordinate with Architectural and MEP Drawings. Coordinate all work with the architectural reflected ceiling plans and/or existing Architecture. Mechanical and electrical drawings show design arrangement only for Diffusers, grilles, registers, air terminals, lighting fixtures, sprinklers, speakers and other items. Do not rough-in contract work without reflected ceiling location plans.

D. Cooperate with other trades to insure proper location and size of connections to insure proper functioning of all systems and equipment. Obtain written authorization from the Owners representative or other contractor for any “rough ins” that, due to project schedule, are required before approved coordination drawings are available. Any work installed without written authorization or approved coordination drawings, causing a conflict will be relocated by the contractor at no expense to the Owner.

E. For equipment provided in this contract, prepare roughing drawings as follows:
   1. New equipment: Obtain equipment roughing drawings and dimensions, then prepare rough-in drawings.

F. Where more than one trade is involved in an area, space or chase, all shall cooperate and install their own work to utilize the space equally between them in proportion to their individual requirements. In general, ductwork shall be given preference except where grading of piping becomes a problem, followed by piping then electrical wiring. If, after installation of any equipment, piping, ducts, conduit, and boxes, it is determined that ample maintenance and passage space has not been provided, rearrange work and/or furnish other equipment as required for ample maintenance space. Any changes in the size or location of the material or equipment supplied, which may be necessary in order to meet field conditions or in order to avoid conflicts between trades, shall be brought to the immediate attention of the Owner's Representative and approval received before such alterations are made.

G. Provide easy, safe, and code mandated clearances at controllers, motor starters, valve access, and other equipment requiring maintenance and operation.

3.7 CUTTING AND PATCHING:

A. Refer to "General Conditions of the Contract for Construction" for general requirements.
   1. Cut and drill from both sides of walls and/or floors (if possible) to eliminate splaying (if not possible, then contractor shall do everything possible in order to minimize splaying). Patch all cut or abandoned holes left by removals of equipment or devices. Patch adjacent existing work disturbed by installation of new work including insulation, walls and wall covering, ceiling and floor covering or other finished surfaces. Patch openings and damaged areas equal to existing surface finish (i.e. “patch to match existing”). Cut openings in prefabricated construction units in accordance with manufacturer's instructions.
   2. Patching shall include infilling with new appropriate and matching materials in kind and finishing with standard industry practices. Patched and finished surfaces shall match those existing adjacent surfaces as closely as possible in finish, texture, color and durability. If the general conditions conflict with any of the language present in this paragraph, then the general conditions language shall take precedence as to methods for cutting and patching.

3.8 PROTECTION OF WORK:

A. All devices in the work area installed before construction is complete shall be completely wrapped with a heavy duty protective plastic covering taped securely in place around each device until all painting and other dust creating work within the auditorium and all related cleanups have been completed (unless these devices are installed after all above mentioned work and related cleanup has been completed). Any damage done to these items or any over painting of connectors, control inputs/outputs, display screens, etc. shall be completely repaired by the contractor and all components returned to "as new" condition prior to energization of the system and at no extra cost to the owner. The contractor shall coordinate installation of the protective plastic coverings with the installation of devices and either wrap the units in such a way that they can be hung or installed with the protective plastic covering on them or wrapped after installation but before painting or other dust creating work has commenced. This may require the contractor to make multiple trips to the jobsite in order to accomplish this task. Upon completion of all room painting, dust creating work and related cleanups the contractor shall remove all parts of the protective plastic covering, tape, etc. And shall legally dispose of the protective coverings, tape, etc. All items related to the installation and removal of the protective plastic covering shall be performed and completed at no additional cost to the owner. Any tape residue shall be cleaned from affected devices as well.

3.9 CONCEALMENT:

A. Conceal all contract work above ceilings and in walls, below slabs and elsewhere throughout building (this does not include control consoles, input stations, user interface devices, touchscreens, etc.). If concealment is impossible or impractical, notify Owner's Representative before starting that part of the work and install only after his review and written authorization and instructions on how to proceed. In areas with no ceilings, install only after Owner's Representative reviews and comments on arrangement and appearance. Obtain and maintain written records and approvals for all work exposed work performed or devices installed.

3.10 PERFORMANCE:

A. Digital Audio Console Set Up
   1. The contractor shall set up the digital mixing console for the owner. This will require coordination with owner personnel as to preferences includes but is not limited to the following:
      a. Scribble Strip Assignments
      b. Gain structuring all intended microphones and applying good basic EQ for each mike type for the intended use. Each mike type channel strip will then be saved as a library preset.
      c. Setting up compressor and gate libraries for use with typical voice types for natural response.
      d. Routing
      e. Effect Buss device assignments
      f. DCA assignment
      g. Delay assignments where applicable.
      h. Network setup for I pad interface
      i. Setting up record output busses with broadcast processing for leveling and tone control.

B. TEST EQUIPMENT: (All test equipment will remain the property of the contractor.)
   1. SMAART, TEF or other DUAL FFT Analyzer with calibrated microphones.
   2. All cables, adaptors, etc. required for test procedures enumerated.
   3. Laptop PC loaded with all DSP control software loaded. A cable of at least 100' to interface to the DSP's must be onsite during acceptance tests.

3.11 PERFORMANCE

A. SET UP:
   1. Studio Video Switcher and attached sources
      a. The contractor will commission the system and all accessory packages, resolve network communication between graphics stations. Load software packages for graphics, and verify all system functions prior to training.
   2. Cameras
      a. All cameras and accessories will be fully assembled, tested, and verified. All tripods and accessories will be set up and tested. Transport bags will be prepped for the configuration of the cameras to be used when at remote venues.
   3. Remote locations

a. All feeds from the studio will be fully tested. Test recordings using all camera feeds will be recorded using camera control from the studio, All camera control function will be operated for each cameras during the taping of each venue to verify all camera control functions are operational. These tapes will be archived for review by the consultant at acceptance to verify functions without setting up the cameras at that time.

4. Teleprompter – Set up for remote control by the talking head, or studio control.
5. I PAD Controls – I pad software interfaces via wireless interface to the Broadcast Pix system must be set up by the contractor. These I pads allow remote mirror of the control surface and remote control
6. Digital Audio – Presets will be created for studio set ups that will be commonly used – Talking Heads, Weather, Games, and other uses. These presets will be saved and protected. All presets will be offloaded via Studio manager for archive.
7. Cases and Carts – All cases and carts will be set up and loaded with the cabling to be used in remote venues.
8. Crestron AV3 and Keypads

3.12 INITIAL POST COMPLETION TESTS & SET UP:

A. Cameras – Verification and calibration includes but is not limited to the following:
   1. CCU
   2. Icom
   3. Lensing

B. Switcher– Verification and calibration includes but is not limited to the following:
   1. Input
   2. Output
   3. DVE
   4. Keying layers Still store
   5. CG

C. CG– Verification and calibration includes but is not limited to the following:
   1. Configure all software and libraries as required by the owner.
   2. Verify Monitor Output

D. Teleprompter– Verification and calibration includes but is not limited to the following:
   1. Software
   2. Monitor Output

E. Video Multiview and Program Monitors
   1. Color correct all monitors to match to SMPTE Colors (within the range of LED capabilities)
   2. Adjust contrast and brightness with SMPTE bars

F. Audio
   1. Gain structure all normally used inputs to nominal for broadcast 0VU recording level output.

G. I com and IFB
   1. Verify local I-com channels and operation.

H. Audio
   1. Parasitic oscillation and RF pickup: Verify that the system is free from RF pickup and oscillation with no input as well as normal operating levels.
   2. Loudspeaker phasing: Check each loudspeaker with a phase measuring device for proper polarity.
   3. Distortion, rattles, and buzzes: With high quality digital program material set the equalized systems for average levels of 90 dB check for unusual distortions or rattles. Also apply a constant sine wave sweep from 80 Hz - 8000 Hz at a level providing average levels of 86 dB measured at standing ear height. Walk through all systems and check for unusual distortions or rattles. Correct any problems. If the problem is outside of the system, bring the source to the attention of the owner.
   4. Gain Control Settings: Adjust controls for optimum signal to noise of the all systems relative to the performance requirements of this specification. Adjust all inputs, equalizers, limiters, etc. to provide equal relative loudness of music and voice sources with typical input levels. Adjust all equalizers, delays, etc. for use as called for within the specification.
   5. Verify all systems inputs, outputs, equipment and functions.

3.13 DOCUMENTATION:

A. Contractor must submit (7) seven copies of the following items. All items should be part of the O&M Manual.

B. Wiring diagrams showing all wiring types, connections, and paths. Any terminal block locations must be clearly marked on blueprints. Full as built drawings of installed wiring showing all nomenclature and color codes.

C. System testing documentation as required by final testing and acceptance procedures outlined in this document.

D. ALL O&M Manual submissions shall be in heavy-duty, D-Ring style, 3-Ring binders (provide size most appropriate for the quantity of paperwork included) with front plastic display pocket and internal side pockets. NO PAPER FOLDERS SHALL BE ALLOWED.

E. Complete technical manuals for all equipment installed.

F. List of serial numbers of all equipment installed, and the specific location of each piece of equipment.

G. Warranty cards for all equipment.

H. Manufacturer MSDS sheets for all applicable equipment.

I. Operations & Maintenance Manuals shall NOT include any alternate languages or language sections unless specifically requested by the owner (i.e. French, Dutch, German, Spanish, Japanese, etc.). If alternate language manuals are requested by the owner, then the contractor shall provide all alternate language manuals as complete manuals in that language in addition to the required English manuals.

J. Operations & Maintenance Manual: An operations and maintenance manual (or "Systems Manual") written in English on the safe use of a that particular site's audio and A/V system(s) shall be provided by the contractor to the owner (provide separate manual sections for different spaces included in this project – each to be a separate, complete and distinct section in the manual for each differing or multiple system and location). The manual shall be a custom compiled manual detailing the specific equipment & conditions included in this project and at this job site (and not including misc. parts & pieces that are not part of this job). No general, cookie-cutter style manuals detailing equipment not specified or provided for this project shall be acceptable as part of this requirement. This manual should include, but is not limited to, the following (these items shall also be included in the system training and video taping):

1. Table of contents
2. Simplified operational instructions written by the contractor. This should include information covering all normal operating modes of the system as designed. Where the technical manuals suffice, copies of operational sections may be inserted as detailed information.
3. Maintenance procedures required for equipment installed.
4. Simplified troubleshooting guide for typical and common problems associated with the control console, automix system, Crestron system and related LCD stations and any other systems furnished as part of this project.
5. A complete section for the Crestron control system LCD screens showing a screen shot of each screen, overall system topology, detailed explanations of button functionality for each page, preset link control and a step-by-step procedural guide to follow in order to reset the system or reinstall the control configuration if problems arise.
6. All troubleshooting guides should be set up in a standard, simplified, 2-column format (problem description or error code, steps to take for resolution) and should employ straightforward descriptions in standard English without abbreviations, slang or other non-standard vernacular.
7. System turn on/off procedures.
8. Software reset procedures.
9. Override Procedures in case of control failures.
10. Operation of control consoles including standard procedures, all patching, functions and file saves.
11. How to patch/repatch channels on the console, channel copy/paste, channel attributes, user defined button programming, how to set, record, operate, edit and recall presets and parameters, cues, etc.
12. An overview of saving files, creating system and file backups, recalling and restoring backups or saved files, software and firmware update procedures, etc.
13. Lists of any special tools or requirements to perform maintenance.
14. Lists of consumable items and replacement parts for routine maintenance. (fuses, etc.) and recommended stock levels for such parts.
15. Graphic documentation of contractor adjusted control settings.
16. Video of patch configuration screens for each critical screen on the system (these can also be done as digital stills with a quality still camera or as screen captures).
17. A "show" operation overview – i.e. how an operator would set up a show and program parameters.

18. Emergency contact number(s) and procedures to follow in the event of a catastrophic system failure.
19. As built line diagrams. Mount one copy of the applicable finished system line diagram behind clear plastic near the associated equipment racks.
20. Maintenance procedures and recommended schedules required for equipment installed.

K. Provide a copy of the software presets to consultant and owner. Provide a copy of the operating software to owner.

L. The contractor shall provide a copy of the compiled touchpanel file for each touchscreen as well as the uncompiled code for the entire control system. The contractor shall provide copies of all control software required for all AV control hardware.

M. A DVD (or set of DVD's, depending on requirements listed below) that details the training of users on the owner's installed systems. See owner instruction section below.

N. O&M Manual pdf requirements: The contractor shall provide a pdf copy (with appropriate titles) for each piece of documentation listed above and bound together in a pdf portfolio/binder, labeled with the owner's name and with the submitting contractor's information. All electronic manuals shall contain only equipment and information that pertains to the project. Where custom procedural guides and troubleshooting manuals are required, these shall be produced by the contractor in a professional piece of software (Microsoft Office, Adobe Acrobat or cadd software or equal) and shall contain all required information in a neat and logical presentation. Where there are portions of the stock manuals that contain sections that do not pertain, the contractor shall use a program such as Adobe Acrobat Pro, BlueBeam or other similar pdf markup software applications and use the strikethrough function with a heavy red line to strike out any text or sections that do not apply. Where factory manuals are available the contractor shall provide these. Where factory manuals are not available, the contractor shall provide high resolution (150 dpi minimum and fully optimized in Acrobat or equal), full page, properly and consistently oriented pages in a consecutive ascending order. All pdf portfolio and binders produced and submitted shall be professionally put together and presented well. No pdf scan pages that are skewed, illegible, miss-ordered, angled, copied at a low dpi setting or that do not pertain to this project shall be allowed. All manuals shall be saved as standard Adobe Portable Document Format (PDF) files that are capable of being opened & viewed on any modern computer system with a standard pdf reader and shall be without password access protection or other security preventative measures engaged.

3.14 OWNER INSTRUCTION:

A. All owner instruction to be provided by the contractor as part of this contract shall be scheduled and performed within 12 months of the final system turnover date to the owner (that date, determined by the architect and/or construction manager, that is on or around the completion and fulfillment date of all the contractor's installation obligations and final punch list completions). Any training that has not been requested by the owner prior to this 12-month time frame will be considered forfeiture, and the contractor shall not be

obligated to perform it or to provide a monetary give-back due to training not performed. Additional training beyond the 12-month time frame shall be performed at the contractor's discretion at additional cost to the owner.

B. Training time may be utilized in any number of ways that may not relate directly to the hands-on training. These required hours can be utilized in order for the contractor to perform additional system programming, set manipulation, customizing layouts, control screen optimizations/changes or any other related work requested by the owner – up to the "not to exceed" hour totals listed in these specifications. Additional training or programming work beyond that indicated in these specifications shall be at additional cost to the owner.

C. The contractor will provide a training program at the project location (owner's location) and with the project equipment (owner's equipment), consisting of the following hours/periods of instruction (TOTAL TRAINING TIME NOT TO EXCEED 48 HOURS PER SPACE FOR A TOTAL OF 96 HOURS. NO TRAINING BLOCK TO BE LESS THAN 4 HOURS IN DURATION. ALL TRAINING HOURS ARE EXCLUSIVE OF TRAVEL TIME.)
   1. INITIAL SYSTEM TRAINING: This block of time is to consist of at least four (4) hours of instruction on each base system, which should include such topics as basic system setup, patching topology, software system navigation, general system maintenance, console functions & programming, detailed console operation, console preset/library creation and storage, trouble-shooting procedures, transferring attributes, recording presets, touchscreen navigation and control and establishing a general familiarity and working knowledge of overall system setup and operation with the owner and owner's designated operators.
   2. FOLLOW-UP TRAINING: As required by the owner the res of the hours of follow-up training should include a more in-depth understanding of and training in the operation of previously mentioned topics. This training is also to be set up to answer problems encountered during events, general system understanding questions and other items that will assist the owner and owner's designated operators in using and maintaining the new audio system.

D. Training hours shall be set up on a spreadsheet by the contractor with each block of training time signed off on by the appropriate owner or construction manager personnel. Training time hours shall commence once the contractor has arrived on site (at the pre-arranged time) and shall conclude when the contractor prepares to leave after training has finished for that session. Training times that have not been properly signed off on by the appropriate personnel may be required of the contractor again.

E. Training intents are for all system training to be as hands-on for the end users as is possible and NOT to be lecture style with the instructor touching all of the controls. The end users should be operating the specific devices being described as the instructor is teaching in an "over-the-shoulder" style so that they are getting a real feel for programming system parameters, operating controls & interfacing with other system devices, etc. A simple demonstration or explanation of procedures is not acceptable. The owner's personnel must actually perform the procedures themselves, with the contractor, trainer and his men providing backup and support the entire time.

F. Training will be scheduled at the convenience of the owner and may take place on more than one day. The owner is not obligated to receive all hours of training on one day or all hours of training included for this project.

G. Additional software training for owner of eight (8) hours [in addition to training time mentioned above] in making adjustments to basic settings in presets (including, but not limited to, Crestron system and the video switchers/CCU's. This is not to include designing configurations. A short-cut manual will be written by the contractor as to how changes are made and then turned over to the owner during training. Manual is for future reference by the owner and the system operators.

H. All training for audio and A/V related work detailed within this specification shall be performed by individuals designated by the contractor who possess actual field experience, detailed knowledge of and expertise on the system(s) and specific equipment being demonstrated. All training techs should also possess good people skills and be adept at accurately and effectively communicating with a group of end users of various skill levels. All training shall be provided by individuals in the employ of an authorized dealer or by a factory representative. All training shall be performed by the same individual in order to provide continuity & familiarity for the owner. No training from multiple rotating individuals at each different training session shall be allowed. No trainers without detailed system knowledge shall be allowed to demonstrate equipment to the owner or to train end users. If the contractor does not possess adequate or trained personnel who are qualified to provide training, then the contractor shall arrange for (at his own expense) a third-party qualified trainer for all training sessions.

I. Video Taping - The contractor is responsible for video taping of the training on the system. The contractor will provide a camera (mini DV minimum requirement) and operator to video tape "primary system training". Primary system training will consist of an operational walkthrough of each system with general operations, all equipment and power source locations at the owner's facility, etc. Specific operational instruction shall be provided on owner equipment or on identical equipment at the contractor's shop – set up in a similar fashion to owner's equipment. Provide (1) copy of the DVD training set for acceptance by the consultant and (2) copies of the DVD training set to the owner (after written acceptance by the consultant). The contractor should also keep (1) copy of the DVD training set for his own records and in case the owner needs future copies. The video training DVD set needs to include all items listed in the "Documentation" section "Operations & Maintenance Manual" section that pertain to this project at a minimum.

J. The video training shall be edited and transferred by the contractor onto DVD's of no longer than 4 hours each in length. This includes any additional trainings required on software, preset creation, network gear manipulation and addressing, etc. Editing should remove user questions unless they are applicable to a full understanding of the system. Video training should include short cut, quick setup type topics as well. A program such as I DVD should be used to create an opening screen directory, titled indexing chapters, etc. in order for the DVD to provide appropriate search features. No hour long, single chapter sessions shall be acceptable. Chapters should be limited to approx. 5-minute lengths and should be arranged in a logical order. There must be an intro screen, which shows the chapters of the DVD with titles. No pictorial only chapter designations shall be

allowed. All chapters must be titled. Video to be in 16:9 HD format in a well lit room. All DVD's shall be presented to the owner in DVD cases with a cover/jacket for each that indicates the content and author of the DVD training series. Single DVD training sets shall be provided in 7 mm premium slim single disc polypropylene style DVD cases. Multiple DVD training sets shall be provided in 27 mm premium multiple disc polypropylene DVD cases. No paper DVD sleeves shall be acceptable. Derogatory comments about the consultant should be edited onto a separate disc and delivered to the consultant with names of the persons making each comment.

K. The intent of the video taping and training is for the finished DVD product to be a complete and intensive professional video reference guide to operational system components for future use and not simply a visual record of the training sessions. Since this DVD training shall be utilized by various other users in the future (novice users and previously trained users needing a refresher), it shall be filmed in such a way as to make it informative and valuable for all system users and shot in an "over-the-shoulder" style. This will require the contractor to provide adequate personnel during training (system trainer(s) as well as qualified camera operator(s), camera, tripod, supplemental lighting and other required accessories). Provide a tripod with enough height adjustment and articulation capabilities that can be positioned in such a way as to obtain mid and close-up control surface, control screen, fader/button operation, system device and operator interface shots during training sessions. No static, group, distant shot or dark, unfocused, grainy, jerky and unclear training DVD's shall be acceptable. Provide additional video shoot lighting as needed in order to obtain necessary light levels for professional video footage to be shot. No DVD's shall be acceptable that have video where the operator's body blocks the screen or large portions of it during the training. All video footage must be steady and professional. The intent is not for the camera to be focused on the trainer but on the system devices being demonstrated and with the devices being trained upon clearly shown on the screen and readable. Large portions or the majority of the video training DVD's should be product/device specific (i.e. the training video should be of the systems at this facility or identical to the systems at this facility).

3.15 WARRANTY AND SERVICE:

A. The contractor guarantees all equipment, materials, and workmanship to be free from defects for a period of one year from the date of owner acceptance. This warranty supersedes all manufacturers warranties for the one year period. Any manufacturer's warranty that exceeds the one year will continue to be applicable. The contractor will replace any defective materials at no charge to owner. Any equipment replaced during the one year warranty will have a new one year warranty to the owner.

B. The contractor guarantees all labeling to be free from defects for a period of two years from the date of owner acceptance. In cases where the label's adhesive fails or the label suffers from degradation causing it to become unreadable, the label will be considered defective and will be replaced at no cost to the owner.

C. The contractor will respond by phone to requests for service within 2 business hours, and respond with a technician being sent (if needed) within 1 business day.

D. Any equipment that tends to "drift" or whose performance deteriorates during the warranty period will be considered defective, even if such drifting is normal during break in. This equipment will be readjusted at no charge to the owner.

E. Provide during the warranty period two service inspections for preventive maintenance, at six month intervals. This will include but not be limited to cleaning fan filters, checking speaker operation, lubricating controls as needed, checking microphones for proper operation, and a full system operational check.

F. Provide all service at the owners location regardless of any manufacturer warranty terms regarding carry in service.

G. During the warranty period if any equipment failed will take more than 24 hours to repair, the contractor will make available and interconnect at no cost to the owner suitable temporary equipment to maintain a fully operational system until repairs are complete.

3.16 SIGNAGE:

A. A sign shall be posted in an accessible location (typically on the rack(s) or in the control booth) providing the name, address and phone number of the primary system contractor, manufacturer and supplier (if not already listed) of the system equipment.

3.17 DEMONSTRATION AND ACCEPTANCE:

A. CONDITIONS FOR SCHEDULING FINAL ACCEPTANCE:
1. It is not the intention of the final acceptance to be a "punch list" meeting. The system is required to be complete and fully tested. Any failure that may have occurred between the contractor's final tests and the date of acceptance will be noted and can be corrected after that date. All of the following conditions must be met before scheduling an acceptance tests:
   a. All system problems resolved. Noise, intermittent issue etc…. Shall not be present at acceptance.
   b. All permanent settings marked.
   c. All wiring and labeling complete. No "Clean up" to be done on date of tests.
   d. All inputs tested and operational.
   e. Any equipment failures resolved. All equipment to have been burned in as noted within the specifications.
   f. All peripheral equipment including portable equipment tested.
   g. The contractor will submit an initial post completion test report to the architect, construction manager, owner, and consultant. In this report, the contractor will certify that they have completed all of the initial post completion tests.
   h. The contractor will submit documentation as required to the consultant.

B. PROCEDURE FOR SCHEDULING FINAL ACCEPTANCE:
1. The contractor shall notify the owner and consultant of a proposed date and time for the final acceptance tests. The contractor shall include two alternate dates and

times. The dates proposed will be a minimum of fourteen (14) calendar days from the date of the proposal.

2. The owner and consultant will respond within two (2) business days as to whether the date and time for final acceptance tests has been approved.
3. If none of the dates and times are acceptable, the owner and/or consultant will submit two alternate dates and/or times to the contractor. The contractor will respond within two (2) business days as to whether the dates and times for acceptance tests are acceptable.
4. If the dates and/or times proposed by the owner and/or consultant are not accepted, the contractor, owner, and/or consultant will continue to alternate per these procedures until an acceptable date and time has been found.

C. DATE OF TESTS:

1. Test equipment as enumerated above must be set up and operational. A technician familiar with the equipment must be on hand.
2. Tools must be on hand to remove connector plates and provide for other possible inspections.
3. All racks must be open and all security covers removed.
4. Documentation for all wiring must be completed in at least a neat draft form and on site. This must include as built nomenclature and wiring schedules.
5. The control software must be programmed and all equalization completed for the presets and scenarios as indicated.
6. Any time required to resolve any of the above conditions will be billed by the consultant at the rate of $ 100.00 per hour to be deducted from the contractor's remaining balances with the owner. Any time waiting for the contractor to set up test equipment or other required equipment will be billed at the same rate and in the same manner.
7. Any return trips to correct any of the above conditions will be wholly billed to the contractor and deducted from the contractor's remaining balances with the owner at the same rate.
8. Changes to the settings to accommodate subjective assessments will be done during acceptance. These adjustments will incur no costs to the owner.

D. CONDITIONS OF ACCEPTANCE:

1. It is understood that the consultant cannot inspect every aspect of the installation. The contractor is responsible for installation quality and methods, fabrication quality and methods, and performance of their work. Acceptance of the project will constitute an acceptance of the following:
   a. All specified equipment is installed and the system is operating in an acceptable manner from a functional standpoint.
2. Upon completion and acceptance of the project the contractor will provide to the owner a letter stating that all of the equipment and installation methods meet or exceed the specification requirements in all respects, and that the system as installed meets all of the applicable standards and codes required under the specification and meets applicable federal, state, and local codes and laws.
3. Final adjustments for the sound system presets will likely need to be changed in the days following completion. This will require the participation of the contractor at several events over as much as forty-five (45) days after system acceptance.

These adjustments will be made at no additional charge and upon reasonable notice by the owner. These visits will not exceed a total of sixteen (16) manhours on site (including any travel time).

4. Prior to acceptance testing there are a number of conditions that need to be verified. There are also site conditions required for the consultant to perform tests as indicated. The contractor shall ensure that every item on this checklist has been performed and verified prior to the consultant's acceptance tests can begin. Scheduling of the consultant to perform final acceptance tests must be coordinated with the owner, the project's construction manager (or clerk of the works), the contractor and the consultant (See paragraphs above for detailed requirements).
5. GENERAL:
    a. No other contractors may be working within the rooms to be tested during tests. Adjacent rooms cannot have construction noise – drilling, jackhammer usage, hammering, pounding, banging, etc. The consultant will be testing room conditions, coverage, functionality, turning on/off lighting, etc., and this requires an environment with no noise being produced by others and no people moving about.
    b. No other activities may take place during tests.
    c. The contractor must verify these conditions can be maintained during testing. If acceptance tests are scheduled and conflicts on site are found, the contractor scheduling the tests will be responsible for paying the costs of a return visit (see billing rates noted above).

E. AUDIO – TYPICALLY TAKES 4 HOURS:
1. Required Attendance – Personnel from the sound contractor equipped with test equipment as required within specifications. All test equipment set up and ready for use.
2. All room finishes complete.
3. System Status:
    a. All labeling complete
    b. Front of equipment faces
    c. Rear of equipment panels
    d. Cabling & cable dress
    e. Plates installed with all trim rings present
4. All security covers removed, but on site ready for reinstallation after tests.
5. All systems must be fully wired and gain structured – free from buzzes, hum and noise.
6. The system must be equalized as required within specifications. Additional tuning will be done during acceptance, but primary equalization should be done prior to acceptance.
7. All intercoms tested on all circuits and able to be verified.
8. Hearing assistance (if applicable) system tested and ready to be verified.
9. Recording systems set up and calibrated for expected gain.
10. All wireless systems must be coordinated for frequencies with no interference in the locality they are installed. Units should not unsquelch or exhibit any noise issues even if all transmitters are not in use.
11. All wireless must be walk tested for dropouts and set up for drop out free performance and frequency coordinated.

12. All auxiliary gear and record systems tested.
13. HVAC system operational and able to be controlled if needed.
14. Audio control console must be set up with the proper cards installed and all addressing, programming and patching fully complete.
15. The ADA system must be fully functioning with levels set, source selection and a quality signal present at each receiver and throughout the room.
16. All green room feeds shall be present, tested and without hums, buzzes, ground bars, etc.

F. VIDEO SYSTEMS – TYPICALLY TAKES 4-8 HOURS:
1. System Status:
    a. All labeling complete
    b. Front of equipment faces
    c. Rear of equipment panels
    d. Cabling & cable dress
    e. Plates installed with all trim rings present
2. All security covers removed, but on site ready for reinstallation after tests.
3. Switchers, CGI, TelePrompTer, and still store systems loaded with content for demonstration.
4. Cameras and CCU's calibrated and set up for demonstration.
5. Monitors color corrected to SMPTE standards.
6. Control system programmed to allow all operational modes.
7. Intercom tested and verified.
8. LTN global link tested an functional with a far end arranged for testing and demonstration.

G. CONTROL SYSTEMS –
1. System Status:
    a. All labeling complete
    b. Front of equipment faces
    c. Rear of equipment panels
    d. Cabling & cable dress
    e. Plates installed with all trim rings present
2. All security covers removed, but on site ready for reinstallation after tests.
3. All control system equipment installed and fully functioning.
4. All wireless WAP's coordinated with campus IT and ready for use.
5. All control system software programming complete.
6. All touchscreen controls fully programmed and functional (i.e. all buttons, pages, commands, etc. must work and execute intended tasks).
7. All touchscreens must mirror each other and all pages update to both screens as to current selection status, etc.

END OF SECTION

SECTION 19 20 00 – TV STUDIO LIGHTING AND CONTROLS

PART 1 - GENERAL

1.1 PROJECT INFORMATION:

A. Owner: Rochester Schools Modernization Program
70 Carlson Road, Suite 200
Rochester, NY 14610

B. Architect: Labella Associates, D.P.C.
300 State Street
Suite 201
Rochester, New York 14614

C. Consultant: AVL Designs, Incorporated
1788 Penfield Rd, Suite 1
Rochester, New York 14611
Phone (585) 586-1100

D. Contractor: The successful bidder for the work described herein. Also referred to variously as the contractor, the bidder, the lighting installer, the specialties contractor or the lighting contractor.

E. Others: Other contractors who have provided work under separate contract and in different phases of related projects in the space.

1.2 DEFINITIONS:

Code Requirements	Minimum requirements as specified by all applicable and published codes.
Concealed	Work installed in pipe and duct shafts, chases or recesses, inside walls, above ceilings, in slabs or below grade.
Equal or Equivalent	Equally acceptable as determined by Owner’s Representative.
Extend	To increase the length(s) of any indicated conduit/wiring so as to reach a particular specified or implied point – including the provision of any misc. additional equipment as required for proper extension and to maintain full system functionality.
Final Acceptance	Owner acceptance of the project from Contractor upon certification by Owner's Representative.

Furnish	Supply and deliver to installation location.
Furnished by Others	Receive delivery at job site or where called for and install.
Inspection	Visual observations by Owner's site Representative
Install	Mount and connect equipment and associated materials ready for use.
Labeled	Refers to classification by a standards agency.
Or Approved Equal	Approved equal or equivalent as determined by Owner's Representative.
Owner's Representative	The Prime Professional, Construction Management or Clerk of the Works.
Provide	Furnish, install and connect ready for use.
Relocate	Disassemble, disconnect, and transport equipment to new locations, then clean, test, and install ready for use.
Replace	Remove and provide new item.
Review	A general contractual conformance check of specified products.
Satisfactory	As specified in contract documents.

Refer to General Conditions of the Contract for additional definitions.

1.3 INTENT OF DRAWINGS:

A. Throughout the contract documents there are various manufacturers and products referenced. It is understood that these products establish a basis of design that all other "or equal" substitutions must meet or exceed. All submitted devices must be the referenced product or approved equal.

B. The drawings in this package are diagrammatic in nature, unless detailed dimensioned drawings are included. The drawings show the approximate locations of equipment and devices. The final and exact locations of all non-dimensioned devices are subject to the approval of the Owner or the Owner's Representative. Devices with detailed installation dimensions; however, are critically located and must be installed to those indicated dimensions unless alternate instructions have been given to the contractor in writing by the consultant.

C. The contractor(s) shall inspect the entire building(s) with the Owner's representative prior to beginning any work and shall identify the exact locations and installation methods for all devices, conduit and wiring prior to beginning work.

D. Typical details are shown for the installation of various devices. The details do not apply to all situations. Installation methods for all work shall be subject to the Owner's and construction manager's approval. Provide all work and equipment required for a professional, workman-like installation.

1.4 RELATED SECTIONS & DOCUMENTS:

A. The contractor(s) shall examine the full set of construction drawings and specifications and ascertain all aspects of the scope of work described within this specification. The contractor will be responsible for cooperation with and adherence to the overall scope and intent of the project relative to the work being done by the contractor.

B. Drawings and general provisions of the Contract including General and Supplementary Conditions and Division 0, 1 and 26 specification sections apply to work of this section (related specification sections may vary depending upon the particular CSI format being adhered to). All related drawings, contract conditions and general requirements found in the project manual that apply to the general contract will apply to the work described in this specification. Examine all referenced documents for general project requirements relating to the work in this specification. Contact the architects, engineers and/or construction manager for any clarification required to properly bid this project. It is the contractor's responsibility to obtain necessary clarification before bidding. No change orders will be allowed for existing project conditions and contractor requirements not properly investigated by the contractor.

1.5 SECTION INCLUDES BUT IS NOT LIMITED TO:

A. Provide new lighting console, Network/DMX distribution equipment, work lighting fixtures, studio lighting fixtures and accessories, junction boxes, connector strips and outlet boxes as indicated on the bid documents.

B. Provide of all labor/personnel for the termination of control wiring, set up of control system and a complete training on controls systems and related software, even if that requires factory personnel.

C. Provide all new power wiring, conduit, breakers, panels, etc. as indicated and necessary for the new lighting system and equipment.

1.6 RELATED WORK:

A. Electrical: See E Series drawings for source panels.

1.7 GENERAL REQUIREMENTS:

A. Provide all equipment outlined and described within this specification and assemble it into a complete, properly functioning system for use by the owner as described within this specification. The bidder assumes full responsibility for providing and installing systems that meet the performance and functional requirements stated, notwithstanding detailed information within this specification or on accompanying drawings.

B. Furnish and install all equipment, including any and all items not specified within this document but required to meet any and all requirements within this specification and the contract drawings in order to provide a complete functioning system.

C. Contractor shall order all equipment within 60 days of submittal approval unless otherwise instructed by the owner. In instances where the submitted equipment that was approved has subsequently been discontinued resulting in an increase in cost, the contractor is entitled to additional payments for the cost difference between the discontinued item and the current model on a per item basis. If equipment is ordered beyond that 60 day time frame, then the contractor bears the sole responsibility of all costs differences.

D. It is the contractor's responsibility to clarify any misunderstandings or drawing-drawing/drawing-spec discrepancies prior to bid submittal and offer detailed alternatives in writing. Once a bid has been submitted it is assumed that the bidder is able to perform the entire scope of the work for the price specified. Where discrepancies occur and pre-bid instructions have not been obtained, the contractor will abide by the owner's decision. In cases of a difference between stated quantities in drawings, specs or electrical drawings, the higher quantity will prevail.

E. Check in detail each component before installation as well as each portion of the project during installation to ensure that the intent of this specification is achieved.

F. Obtain all required building and/or electrical permits and licenses. Obtain required insurance and bonds as required by owner.

G. Provide all required equipment and hardware not provided by others as necessary to provide a complete system.

1.8 BIDDER QUALIFICATIONS – SUBMITTALS:

A. Provide evidence that the bidder has been in business for at least five years. It must be noted in the bid if the firm bidding is currently in bankruptcy of any type or has been in the last five years.

B. The bidder shall provide references of at least three (3) installations of comparable scope performed by the bidder, including location, system description, and name, address, and telephone number of the architects, consultants, and owners and the names of contract persons for each.

C. The bid shall include the name and qualifications of the person in charge of the project. One member of the successful bidder's firm must be in charge of the project from award to completion. If the person in charge of the project is changed for any reason without the express written permission of the owner, the contract may be canceled at the owner's option and or payments may be withheld pending owner's consent to the change.

D. Evidence of the ability and intent to meet the guarantee and service requirements included in this document. Financial information may be required before bid award. This typically will require a balance sheet, income statement, profit and loss statement, and stockholder information provided by a CPA within the last 6 months. Interim financial information may also be required.

E. The bidder must maintain service facilities and have service available on site within 24 hours. The bidder must be a factory authorized dealer for all products submitted and may be required to submit such proof of factory authorization in writing, or in the form of copies of authorized agreements with the various vendors.

F. The bidder and all persons performing studio lighting system related work on this job must be ETCP certified (Entertainment Technician Certification Program) as an Entertainment Electrician or under the direct supervision of an ETCP certified foreman. This applies to all studio lighting equipment installation and any other assemblies indicated as being provided or installed by the bidder Proof of current certification MUST be provided in the submittals package (this is typically in the form of a pdf copy of the current and active certification certificates from PLASA). Out of date or expired certifications shall not be recognized as meeting the requirements of ETCP certification.

G. The bidder must be the installing contractor or shall provide written documentation of any intended qualified subcontractors up front for approval. All subcontractors must be identified & must have current ETCP certification. Failure to provide this information or allowing unqualified subs to perform work may require the Contractor to redo large portions of the system at no additional cost to the owner and without negatively impacting the overall project schedule.

1.9 INQUIRIES AND COMMUNICATIONS:

A. All questions should be posed in writing as called for in the project manual.

B. Verbal responses will be limited to instructing bidders where to find items in the drawings and specs. Where discrepancies occur the bidder will need to formalize their questions as called for in the project manual procedures.

C. Comply with all requirements regarding these specifications, manufacturer's recommendations, and all applicable federal and state codes.

D. Where discrepancies occur and pre bid instructions have not been obtained by written request, the contractor will abide by the owners decision at no additional cost to the owner.

1.10 COORDINATION:

A. ITEMS TO BE PROVIDED BY OTHERS:
   1. Control Room Rack – See SV Drawings and section 19 10 00.

B. Cooperate with all trades to achieve well-coordinated progress at all times. Notify the owner and consultant as often as necessary with regards to job progress or changes in the installation schedule. No change orders for additional payment will be allowed based upon conflicts with other trades on the project site. All such conflicts will be reported to the architect, construction manager, owner, and consultant in writing. All reasonable attempts will be made to correct any difficulties.

C. Staff the job site adequately at all times to maintain a progress in keeping with the total project progress. No allowances will be made for overtime required to maintain job progress.

D. Provide all materials to be installed by others in a timely fashion based upon the related trades' schedules.

E. The job site will be left in a clean safe condition at the end of any workday. All cleanup and debris removal to a site designated by the owner will be the responsibility of the bidder on a daily basis.

F. All storage of tools and materials will be done by the contractor. No on site storage security will be provided by the owner.

G. The contractor will attend regular meetings with the architect, owner, general contractor, and the consultant when requested by any of the above, in order to achieve project coordination and progress.

1.11 STANDARDS REFERENCES:

A. The contractor is responsible for the provision of material and methods installation of equipment conforming to the currently applicable standards of:
   1. AISC - American Institute of Steel Construction
   2. AISI - American Iron and Steel Institute
   3. ANSI - American National Standards Institute
   4. ASME - American Society of Mechanical Engineers
   5. ASTM - American Society for Testing Materials
   6. AWS - American Welding Society
   7. ESTA - Entertainment Services and Technology Association
   8. FCC - Federal Communications Commission
   9. IEC - International Electronics Commission
   10. IFI - Industrial Fasteners Institute
   11. ISO - International Organization for Standardization
   12. NACM - National Association of Chain Manufacturers
   13. NEC - The National Electric Code

14. NEMA - National Electrical Manufacture Association
15. NFPA - National Fire Protection Association
16. OSHA - Occupational Safety and Health Association
17. SAE - Society of Automotive Engineers
18. SMPTE - Society of Motion Picture and Television Engineers
19. UL - Underwriters Laboratories (Electrical components, devices and accessories shall bear a UL label where applicable. UL listed and labeled as defined by NFPA70, article 100, by a testing agency acceptable to authorities having jurisdiction and marked for intended use.)
20. USITT - United States Institute for Stage Technology "Recommended Guidelines for theater rigging and theater machinery-specifications and practices".

B. Provide certification and labels where applicable. Comply with federal, state and local regulations and applicable union regulations where required. Provide all equipment with proper labels for sale and use within New York State.

C. Provide only equipment that is standard, new equipment, the latest model of regular stock product and is supplied with all parts regularly used with the equipment offered for the purpose intended. The contractor guarantees that no modification of the equipment has been made contrary to the manufacturer's regular practice.

D. Review all materials and equipment prior to installation and notify owner as to any changes or discrepancies between published specifications and the actual material and equipment to be installed, including discontinued product updates, etc.

1.12 SUBSTITUTIONS:

A. The successful bidder shall submit any product substitutions prior to award of the contract detailing the kind, type, brand, manufacturer or equipment included in the base bid. Equivalent products must be highlighted on this list. When requested, the successful bidder shall also submit information, describing in specific detail, how the equivalent bid material differs from the appearance, quality and performance required by the base specification. Submittal of the manufacturer's advertising cut sheets is not acceptable for proof of equivalency.

B. Proof of equivalency may require the bidder (at the request of the owner, architect or consultant) to provide physical samples, a full sized mockup or specific manufacturer information detailing technical equivalency. Proof of equivalency shall be the burden of the submitting contractor/bidder and not that of the consultant. Proof of equivalency relates to all pertinent functions of the specified equipment, regardless of if that information is reflected on any manufacturer's issued cut sheets.

C. If proposing alternates that affect the system flow as shown on the drawings, the bidder must submit flow charts, and any other drawings necessary to show differences in the system operation from the primary referenced system.

D. The successful bidder shall be required to submit, if requested, a mockup sample of any substituted systems (i.e. fixture assemblies, electronics packages, additional power/control signal alteration devices, modulators, etc.) in order to determine equivalency. Any mockups shall be provided both for the owner's and consultant's evaluation & approval. Mockups shall be delivered by the successful bidder to both the owner and the consultant.

E. The risk of whether bid equivalents will be accepted is borne by the contractor. See section 2.1 "Performance Requirements" for more information.

F. No substitutions will be considered after the Contract award unless specifically provided in the Contract Documents.

G. Final judgment as to equality will be solely that of the consultant, architect, construction manager and owner.

H. The costs for any changes by other trades required to implement the substitution proposed will be borne by the contractor.

1.13 SUBMITTALS:

A. Equipment: After bid award but before ordering any equipment or starting any work submit to the owner for approval a list of all equipment to be furnished showing types, models, quantities and manufacturer. Attach catalog sheets for all items submitted.

B. Submit seven (7) copies of submission package, unless quantity of submission packages differs in front end contract documents. Contractor shall submit quantity of submission packages for each discipline as directed in front end documentation (or as indicated here if no quantities are indicated in front end contract documentation).

C. Submit seven (7) copies of material schedules and shop drawings for approval by the architect, consultant and owner prior to any fabrication or installation as follows:
   1. The full set of submitted drawings and data sheets must be presented in a professional manner.
   2. All drawings for submission must be CADD drawn (created with a computer aided drafting program). Hand drawings are not allowed. Illegible drawings shall not be acceptable.
   3. All cut sheets for submission must be clean electronic (pdf) copies of the manufacturer's actual data sheets. Mark up each sheet with highlights or boxes around submitted products, options, etc. No data sheets shall be acceptable that are illegible, poorly photocopied or hand marked up with scribbles, etc.
   4. Drawings of proposed mounting methods for all equipment.
   5. Samples of proposed marking systems for wire and equipment labeling.
   6. Rack layouts, panel layouts and proposed labeling.
   7. Schedule for submission of drawings for fabrication and site work.

D. Intents:

1. The intent of the submittal package is that it contain one copy of the appropriate cut sheet for each item that the contractor is proposing to use on this project as well as a complete set of manufacturer's (if applicable) and contractor's shop drawings that shows details of the proposed lighting system. The intent of these drawings is for the contractor to communicate to the consultant the exact proposed type of control system, type and quantity of lighting fixtures, types, lengths and quantities of misc. portable cabling, layout and design of touchscreen control stations and details of any other related components and locations, etc. for the intended system equipment. Submission of this package by the contractor is proof that the contractor has reviewed the entire system design, understands the intents and concurs that the designed system will actually function as laid out in the contract documents.

E. Quality Assurance
1. The Console manufacturer shall have a factory authorized service center with at least one full time service technician on staff located within 100 miles of the job site. In addition, the manufacturer shall provide a 24-hour service hotline.
2. Fabrication shall begin only after approved drawings and a written notice to proceed have been delivered to the manufacturer at the manufacturer's place of business.
3. A qualified engineering representative employed by the manufacturer shall visit the job site after installation is complete and prior to the energization of the system to inspect, test and adjust the system.
4. This representative shall terminate & connect all control wiring, verify all load and line wiring, and energize the system. The factory representative will also program architectural control presets.
5. They shall also at that time instruct the owner's representatives in the operation and maintenance of the system. These services shall not exceed three days and shall be provided within 14 days written notice by the contractor.

1.14 FUNCTIONAL REQUIREMENTS & SYSTEM DESCRIPTION:

A. Studio Lighting System:
1. Dimming shall be performed internally within each studio fixture.
2. Hang, Address, and adjust each fixture for the owner to their needs.
3. The control system shall utilize and RDM console with 40 device control channels. It shall interface with the system via DMX/RDM.
4. DMX connections shall be located as indicated on drawings and programmed by the contractor as needed so that they are addressed and ready to use. No dumb or unassigned DMX ports on any input, output or gateway devices shall be allowed.
5. The lighting connector strips in the studio shall be overhung on the pipe grid battens by the contractor.
6. The new work lighting fixtures shall be installed as shown on the construction drawings.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS:

A. The requirements of the referenced equipment are not generic in nature. Specific performance, control and routing capabilities are necessary for any alternate or substituted equipment. The details set forth herein and within the functional descriptions of each system are the critical criteria for the selection of each piece of equipment.

B. In bidding equipment from manufacturers other than those referenced be aware that all functional information included in this specification as well as the manufacturer's specifications, physical size, serviceability, acoustic output, warranty terms, product availability and other non-technical issues may be determining factors in product equivalency. Final judgment as to equality will be solely that of the owner, architect and consultant.

C. If the contractor substitutes a piece of equipment that does not meet with all of the critical device functionality of the specified equipment (functionality and feature set as detailed below and required based upon the intents of the contract documents), then he will have to replace all substandard equipment with either the specified equipment or an alternate piece of equipment that meets/exceeds the specified equipment's feature set and shall provide all reprogramming, etc. as is required.

D. All lighting must meet these minimum requirements:
   1. All LED fixtures shall feature power factor correction (PFC) in their circuitry and/or meet a minimum power factor (PF) of .9. Active PFC is preferred, although passive PFC is acceptable, if the fixtures meet the minimum PF.

E. Substitution Criteria:
   1. Lighting control system device substitutions require proof that the substituted product meets all performance requirements including but not limited to:
      a. Physical device size
      b. Device installation options (rack mount, DIN rail mount, etc.)
      c. Physical quantity of inputs, outputs, sourcing & sinking
      d. Output modes (DMX, RDM0-10V, 0-15V, 0-2.5V, 0-5V, etc.)
      e. Current rating per channel
      f. RDM discoverability and remote manipulation capabilities
      g. Selectable starting addresses
      h. Signal isolation and fault protection limits
      i. Voltage step selections (.05V, .1V, etc.)
      j. Quantity of DMX universe control
      k. Protocol conversion and compatibility with alternate control schemes (sACN, DMX, RDM, 0-10V, DALI, etc.)
      l. Display, programming buttons & configuration limitations
      m. Panic controls interface
   2. Lighting fixture substitutions require proof that the substituted product meets all performance requirements including but not limited to:

a. Physical fixture size
b. Form factor
c. Light output pattern
d. Light output intensity in FC distribution
e. Wattage of lamps
f. Expected life
g. Ability of fixtures to fit/hang in intended locations and with all physical limitations of surrounding structure.
h. Ability of studio fixtures to side-hang on tormentor or Shakespeare pipe assemblies.
i. Ability of studio style fixtures to be oriented “base up” for Houselighting applications.

3. LED fixture substitutions require proof that the substituted product meets all performance requirements including but not limited to:
   a. Physical LED strip size, flexibility & durability
   b. PF (power factor)
   c. Light output pattern
   d. Efficacy (lumens per watt)
   e. CRI
   f. Light output intensity in FC distribution
   g. Form factor
   h. Wattage of LED’s
   i. Expected and average LED & related drive electronics lifespan
   j. Total length of runs powered by a single, dimmable LED driver/power supply shall meet or exceed specified products.
   k. LED driver/power supply(ies) and their ability to dim the LED’s smoothly and down to 1% is critical.
   l. Ability of LED fixtures/strips to fit in intended locations and with all physical limitations of surrounding structure.
   m. Binning tolerances & LED quality control must match or exceed specified product.
   n. LED drivers, interfaces, mounting options, etc. shall meet or exceed specified product.
   o. No rope lighting or similar products (not even LED rope lighting) shall be considered as an equal to the specified LED strip lighting products nor shall any rope lighting equivalents be approved.
   p. Lumen outputs at deep colors
   q. Visual representation of white light output of fixture - color temperature variants
   r. Power draw requirements.
   s. Beam spread characteristics
   t. Fixture power supplies must have inherent brown-out protection built in, such as a switching power supply, that shall be self-resettable, not fuse driven and shall not require human interaction in order to operate.
   u. Color mixing capabilities without excessive rainbowing effects at beam edges
   v. Fixture lens options
   w. Total numbering and visual quality of distinct renderable colors

x. Critical accessories and mounting options.
y. Cooling requirements – convection cooled vs. fan cooled and including fan noise, tonality of fans, etc.

4. LED work lighting fixture substitutions require proof that the substituted product meets all performance requirements including but not limited to:
   a. Physical LED strip size, flexibility & durability
   b. PF (power factor)
   c. Available light output patterns
   d. Lumen package options
   e. Efficacy (lumens per watt)
   f. CRI
   g. Light output intensity in FC distribution
   h. Form factor
   i. Wattage of LED's
   j. Expected and average LED & related drive electronics lifespan
   k. LED driver/power supply(ies) and their ability to dim the LED's smoothly and down to <1% is critical (dim to black capabilities).
   l. Ability of LED fixtures/strips to fit in intended locations and with all physical limitations of surrounding structure.
   m. Binning tolerances & LED quality control must match or exceed specified product.
   n. LED drivers, interfaces, mounting options, etc. shall meet or exceed specified product.
   o. No rope lighting or similar products (not even LED rope lighting) shall be considered as an equal to the specified LED strip lighting products nor shall any rope lighting equivalents be approved.
   p. Visual representation of white light output of fixture - color temperature variants.
   q. Power draw requirements.
   r. Beam spread characteristics
   s. Critical accessories and mounting options.
   t. Cooling requirements – convection cooled vs. fan cooled and including fan noise, tonality of fans, etc.
   u. Fixture installation requirements (installable from below, retrofittable into existing ceiling and holes, etc.)
5. Connector strip substitutions require proof that the substituted product meets all performance requirements including but not limited to:
   a. Physical connector strip size
   b. Connector strip bracket type, style, size and required frequency of suspension locations.
   c. Form factor
   d. Load rating of connector strip brackets
6. Wire substitutions require proof that the substituted product meets all performance requirements including but not limited to:
   a. Jacket Type
   b. Number of Conductors
   c. Jacket Shape – i.e. round, twisted, etc.
   d. Number of strands and gauge

e. Flexibility
f. Overall physical size of wire
g. Capacitance and resistance conductor-to-conductor as well as single conductor.

F. No contractor-manufactured products shall be acceptable in place of referenced items except for those items enumerated in this specification as "custom."

G. The current manufacturer's data sheet, user's manual and actual technical specifications/capabilities/feature set for each referenced piece of equipment in force at the date of printing of this specification shall be the basis for the specifications of the referenced equipment.

H. Any necessary product accessories such as additional duplex power outlets, power supplies, connectors, adapters or other small items are the responsibility of the contractor to provide, whether or not they are called out in detail within these specifications. This may include additional electrical work, depending upon the differences between substituted and specified equipment and shall be the sole responsibility of the contractor to provide at no additional cost to the owner.

I. Specification details are provided only for the features required for current and intended future uses of the products.

J. Quantities:
1. Where no quantity is indicated in the written specifications, the contractor shall supply quantities as indicated on drawings.
2. Items not indicated on drawings but necessary for project completion shall be provided as required for project execution at no additional cost.

2.2 UNINTERRUPTIBLE POWER SUPPLY WITH SURGE SUPPRESSION AND POWER FILTRATION: REFERENCED PRODUCT TRIPP-LITE SMART1500LCD

A. OUTPUT:
1. VA Rating: 1500
2. kVA capacity: 1.5
3. Watt Rating: 900
4. Output Voltage: 115, 120 VAC
5. Frequency: 60 Hz.
6. Output voltage regulation (Line Mode): -18%, +8%
7. Output voltage regulation (Battery Mode): 115V (+/- 5%)
8. Built-in UPS output receptacles: (8) 5-15R
9. PDU outlet options: Basic PDU, Metered PDU, External PDU Redundancy and Switched PDU – offering various configurations.
10. Output AC waveform (AC mode): Sine wave
11. Output AC waveform (Battery mode): PWM sine wave

B. INPUT:

1. Rated input current (at maximum load): 8.5A
2. Nominal input voltage: 120 VAC
3. UPS input connection type: 5-15P (space saving right angled input plug)
4. UPS input cord length: 6 feet
5. Input circuit breaker: 10A
6. Recommended electrical service: 15 A, 120 VAC

C. BATTERY:
1. Full load runtime (minutes): 3.5 (900 watts)
2. Half load runtime (minutes): 13 (450 watts)
3. DC system voltage (VDC): 24
4. Battery recharge rate (included batteries): Less than 4.5 hours from 10% to 90%
5. Battery Access: Battery access door; hot-swappable, user-replaceable batteries

D. VOLTAGE REGULATION:
1. Voltage regulation description: Automatic voltage regulation (AVR) maintains line power operation with input voltage range of 75 to 147.
2. Overvoltage correction: Input voltages between 128 and 147 are reduced by 12%
3. Undervoltage correction: Input voltages between 93 and 107 are boosted by 14%
4. Severe undervoltage correction: Input voltages between 75 and 92 are boosted by 30%

E. LED'S, ALARMS & SWITCHES:
1. LED indicators: Front panel LCD display
2. LCD display: Backlit LCD screen indicates input voltage, 5-bar battery charge level, overload, AVR, on battery and replace battery status; LCD screen rotates for rack/tower viewing
3. Alarms: Audible alarm indicated power-failure, low-battery and overload status; alarm can be disabled using PowerAlert software
4. Alarm cancel operation: Power-fail alarm can be silenced using alarm-cancel switch; once silenced, alarm will re-sound to indicate low-battery status
5. Switches: (2) switches control off/on power status and alarm-cancel/self-test operation; dimmer switch controls LCD brightness

F. SURGE/NOISE SUPPRESSION:
1. UPS AC suppression joule rating: 480
2. UPS AC suppression response time: Instantaneous
3. UPS Dataline suppression: (1) line TEL/DSL protection or 10Base T Ethernet protection
4. EMI/RFI AC noise suppression: Yes

G. PHYSICAL:
1. Installation form factors supported with included accessories: 4 post 19 inch rack mount (mounting kit included); 2 post 19 inch rackmount (mounting kit included); Tower
2. Primary form factor: Rackmount
3. UPS / Power Module dimensions in primary form factor (height x width x depth / inches): 3.5 x 17.2 x 10.5

4. Secondary form factor: Tower
5. Installed whole system dimensions in secondary form factor (height x width x depth / inches): 17.2 x 3.5 x 10.5
6. UPS / Power Module weight (lbs): 29.4
7. UPS housing material: ABS
8. Cooling method: Fan

H. ENVIRONMENTAL:
1. Operating Temperature Range: +32 to +104 degrees Fahrenheit / 0 to +40 degrees Celsius
2. Storage Temperature Range: +5 to +122 degrees Fahrenheit / -15 to +50 degrees Celsius
3. Relative Humidity: 0 to 95%, non-condensing
4. AC mode BTU / hr. (full load): 266.1
5. Battery mode BTU / hr. (full load): 626.7

I. COMMUNICATIONS:
1. Communications interface: USB (HID enabled)
2. PowerAlert software: Free download from www.tripplite.com
3. Communications cable: USB cable included
4. WatchDog compatibility: Supports Watchdog application, OS and hard-reboot restart options for remote applications

J. LINE/BATTERY TRANSFER:
1. Transfer time: 2 - 4 milliseconds
2. Low voltage transfer to battery power (setpoint): 75
3. High voltage transfer to battery power (setpoint): 147

K. SPECIAL FEATURES:
1. Cold Start (startup in battery mode during a power failure): Cold-start operation supported
2. Green & high efficiency features: Greater than 95% efficiency - GREEN UPS

L. CERTIFICATIONS:
1. UPS Certifications: Tested to UL1778 (USA); Tested to CSA (Canada); Tested to NOM (Mexico); Meets FCC Part 15 Category B (EMI); Meets FCC Part 68 / Industrie Canada (telecommunications); ROHS (Reduction of Hazardous Substances.

2.3 GENERAL LIGHT EMITTING DIODE WHITE, WIDE AREA WORK LIGHTING FIXTURE: REFERENCED PRODUCT SSRC WL-LED

- Fixtures shall be available in the following configurations (provide the specific fixture(s) as indicated on the contract drawings):
- WL-LED-150-W - 13,500 lumens, 3000/3600K warm white
- Dimensions
- 150w - 13,500 lumens 150w size: 17.75"(w) x 12.50"(h) x 4.1"(d)
- Housing shall be aluminum alloy with columnar-structured heat radiator

- Housing finish shall be black
- Fixture to be IP65 rated
- Led emitter shall be cl7 3030
- Available Kelvin color temperatures: 3000K warm or 5000K cool white
- CRI greater than 80RA
- Beam angle 120 degrees
- Input voltage AC 85 – 265 volts
- 50,000 estimated life hours
- 3 year warranty
- Ul listed
- Options/Accessories (provide each fixture with one of each of the following accessories):
- C-clamp
- Male plug of choice (see drawings)
- Black standard lighting safety cable

2.4 STUDIO FRESNEL LIGHT REFERENCED PRODUCT : DRACAST FLED2000T FRESNEL SERIES 3200K

- Light Output 223 fc @ 15° 55 fc @ 60° at 12 Feet
- Optical System 42, Surface Mounted CREE LEDs in 6 x 7 arrangement.
- Light Aperture 6.8 inches (174 mm)
- Beam Angle 15° - 60° Adjustable Beam Angle
- Weight 17 lbs (7.7 kg)
- Mounting 5/8” Baby Pin Aluminum Mounting Yoke
- Tilt Angle 90 degrees
- Voltage Input 24VDC
- Power Consumption 100 W
- Power Connection 110 - 240 VAC, 50 - 60 Hz, 2.0 A
- Heat Management Passive
- On Board Fan No
- Color Temperature 3200K
- Color Rendition CRI > 95
- Dimming 0 - 100% Continuous
- Controls Local On-Board Manual Controls / 3 Pin DMX In / Out
- Housing Build Aluminum Alloy
- Est. LED Lifetime 50,000 hours
- Provide with Baby C clamp, 4 Way Barn doors, Safety Cable, Power Cable 4 Pin - Edison

2.5 LED PANEL LIGHT REFERENCED PRODUCT : DRACAST DRS-FLED1000-T LED 1000 STUDIO SERIES 3200K

- Light Output @ 9 Ft - 121 Fc
- Optical System 2048, 5mm LED bulbs in 32 x 64 arrangement.
- Beam Angle 45 Degrees Beam Angle

- Size 12X12X2
- Weight 9.5 lbs
- Mounting Yoke Aluminum Yokes Dual locking, 5/8” Baby Pin Aluminum Mounting
- Tilt Angle 90 degrees
- Voltage Input 24VDC
- Power Consumption 130 W
- Power Connection 110 - 240 VAC, 50 - 60 Hz, 2.0 A
- Heat Management Passive
- On Board Fan NoDr
- Color Temperature 3200K
- Color Rendition CRI > 95
- Dimming 0 - 100% Continuous
- Controls Local On-Board Manual Controls / 3 Pin DMX In / Out
- Housing Build Aluminum Alloy
- Est. LED Lifetime 50,000 hours
- Provide with Baby C clamp, 4 Way Barn doors, Safety Cable, Power Cable 4 Pin – Edison, Color Frame.

2.6 LED PANEL LIGHT REFERENCED PRODUCT : DRACAST DRS-FLED2000-T LED2000 STUDIO SERIES 3200K

- Light Output @ 9 Ft - 137 Fc Degrees
- Optical System 2048, 5mm LED bulbs in 32 x 64 arrangement.
- Beam Angle 45 Degrees Beam Angle
- Weight 9.5 lbs
- Size 15X24X2
- Mounting Yoke Aluminum Yokes Dual locking, 5/8” Baby Pin Aluminum Mounting
- Tilt Angle 90 degrees
- Voltage Input 24VDC
- Power Consumption 130 W
- Power Connection 110 - 240 VAC, 50 - 60 Hz, 2.0 A
- Heat Management Passive
- On Board Fan No
- Color Temperature 3200K
- Color Rendition CRI > 95
- Dimming 0 - 100% Continuous
- Controls Local On-Board Manual Controls / 3 Pin DMX In / Out
- Housing Build Aluminum Alloy
- Est. LED Lifetime 50,000 hour

2.7 DRACAST LIGHTING FLOOR STAND: REFERENCED PRODUCT DRACAST DLS 805

A. 72” Extended Height

B. Tripod base Collapsible

2.8 LED PORTABLE LIGHTING KIT – REFERENCED PRODUCT DRACAST S SERIES 3X500

A. Led portable lighting kit including the following:
3x LED500 Daylight Lights with Barn doors
1. 3x Kit Stands, 3x Power Supplies, Case
2. 5600K Daylight Color Temperature
3. 0-100% Dimming
4. V-Mount or Dual-NPF Battery Plate
5. 10 x 10.4 x 1.8" Panel, Weighs 2 lb
6. 45-Degree Beam Angle, CRI: 95
7. AC or DC Operation
8. 100-0% Dimming
9. CRI 95

2.9 FOUR COLOR MIXING LIGHT EMITTING DIODE WASH FIXTURE: REFERENCED PRODUCT ETC COLORSOURCE PAR LED

A. General

B. The fixture shall be a color-mixing high-intensity LED illuminator with DMX control of intensity and color. The fixture shall be a ColorSource Par as manufactured by Electronic Theatre Controls, Inc. or approved equal.

C. All LED fixtures shall be provided by a single manufacturer to ensure compatibility

D. The fixture shall be UL 1573 listed for stage and studio use

E. The fixture shall comply with the USITT DMX-512 A standard

F. Physical
1. The fixture shall be contained in a rugged all-metal die-cast housing, free of burrs and pits.
2. The housing shall have a rugged black powdercoat finish
3. White or silver/gray powdercoat finishes shall be available as color options
4. Other powdercoat color options shall be available on request

G. Power supply, cooling and electronics shall be integral to each unit.
1. Fixture housing shall provide two easy-access slots for secondary lenses and other accessories
2. Slots shall be equipped with locking retaining clip

H. The unit shall ship with:

1. Theatrical-style hanging yoke as standard
2. 5’ power lead with Edison connector as standard
3. Available options shall include but not be limited to:
4. Floor stand conversion Kit
5. Bare-end, Stage-Pin or Twist-lock type-equipped power leads
6. PowerCon to PowerCon cables for fixture power linking
7. Multiple secondary lens options to include multiple angles in the following patterns:
8. Linear
9. Round
10. Oblong
11. Light output shall be via a round aperture
12. Aperture and accessory slots shall accommodate standard 7.5” accessories such as used in other similar-sized fixtures
13. Accessories available as options shall include but not be limited to:
14. Gel/diffusion frames
15. Top hats
16. Barndoors
17. Egg crate louvers
18. Concentric ring louvers
19. Multiple secondary lensing options

I. ENVIRONMENTAL AND AGENCY COMPLIANCE
1. The fixture shall be UL and cUL LISTED and/or CE rated, and shall be so labeled when delivered to the job site.
2. The fixture shall be UL LISTED to the UL1573 standard for stage and studio use
3. The fixture shall be rated for IP-20 dry location use.

J. THERMAL
1. The fixture shall be cooled with a variable speed fan.
2. The fixture shall utilize advanced thermal management systems to maintain LED life to an average of 70% intensity after 20,000 hours of use
3. Thermal management shall include multiple temperature sensors within the housing to include:
4. The LED array
5. The control board
6. The fixture shall operate in an ambient temperature range of 0°C (32°F) minimum, to 40° C (104°F) maximum ambient temperature.

K. ELECTRICAL
1. The fixture shall be equipped with 100V to 240V 50/60 Hz internal power supply
2. The fixture shall support power in and thru operation
3. Power in shall be via Neutrik® PowerCon™ input connector
4. Power thru shall be via Neutrik ® PowerCon ™ output connector
5. Fixture power wiring and accessory power cables shall be rated to support linking of multiple fixtures up to the capacity of a 15A breaker
6. The fixture requires power from non-dim source
7. Power supply outputs shall have self-resetting current limiting protection
8. Power supply shall have power factor correction

9. LED Emitters
10. The fixture shall contain 4 different LED colors to provide color characteristics as described in Section H below.
11. All LEDs used in the fixture shall be high brightness and proven quality from established and reputable LED manufacturers.
12. Fixture shall utilize Luxeon® Z™ LED emitters
13. Manufacturer of LED emitters shall utilize an advanced production LED binning process to maintain color consistency.
14. LED emitters should be rated for nominal 20,000 hour LED life to 70% intensity
15. All LED fixtures (100% of each lot) shall undergo a minimum three-hour burn-in test during manufacturing.
16. LED system shall comply with all relevant patents

L. CALIBRATION
1. Fixture shall be calibrated at factory for achieve consistent color between fixtures built at different times and/or from different LED lots or bins
2. Calibration data shall be stored in the fixture as a permanent part of on-board operating system
3. All arrays, including replacement arrays shall be calibrated to the same standard to insure consistency
4. Fixtures not offering LED calibration shall not be acceptable
5. COLOR
6. The fixture shall utilize an minimum of 40 LED emitters
7. These emitters shall be made up of Red, Green, Blue and Lime

M. DIMMING
1. The LED system shall use 15-bit nonlinear scaling techniques for high-resolution dimming.
2. The dimming curve shall be optimized for smooth dimming over longer timed fades.
3. The LED system shall be digitally driven using high-speed pulse width modulation (PWM)
4. LED control shall be compatible with broadcast equipment in the following ways:
5. PWM control of LED levels shall be imperceptible to video cameras and related equipment
6. PWM rates shall be adjustable by the user via RDM to avoid any visible interference to video cameras and related equipment

N. CONTROL AND USER INTERFACE
1. The fixture shall be USITT DMX 512A-compatible via In and Thru 5-pin XLR connectors
2. The fixture shall be compatible with the ANSI RDM E1.20 standard
3. All fixture functions shall accessible via RDM protocol for modification from suitably equipped control console
4. Temperature sensors within the luminaire shall be viewable in real time via RDM
5. Fixtures not offering RDM compatibility, feature set access or temperature monitoring via RDM shall not be compatible

6. The fixture shall be equipped with a 7-segment display for easy-to-read status and control
7. The fixture shall be equipped with a three-button user-interface
8. The fixture shall offer RGB control
9. The fixture shall operate in Regulated mode for droop compensation
10. The fixture shall offer stand-alone functionality eliminating the need for a console
11. Fixture shall ship with 12 preset colors accessible as a stand-alone feature
12. Fixture shall ship with 5 Sequences accessible as a stand-alone feature
13. Each color and sequence can be modified by the end user
14. Fixtures can be linked together with standard DMX cables and controlled from designated master fixture
15. Up to 32 fixtures may be linked
16. Fixtures in a stand-alone state shall restore to the settings present prior to power cycling, eliminating the need for reprogramming
17. Fixtures without stand-alone operation features described in a, b, c, d, and e shall not be acceptable.

2.1 THEATRICAL LIGHTING CONSOLE AND ACCESSORIES: REFERENCED PRODUCT ETC COLOR SOURCE 40

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 colorsource 40 as manufactured by electronic theatre controls, inc., or equal.
2. The system shall provide control of 512 dmx512a addresses on a maximum of eighty (80) control channels. Any or all of the dmx512a outputs may be controlled by a channel.
3. A maximum of 999 cues may be contained in non-volatile electronic memory.
4. Twenty (20) or forty (40) faders shall provide access to individual intensity channels, intensity for devices as well as playbacks.
5. Four (4) configurable faders shall provide functionality for output of bump buttons, cue list control or crossfade control.
6. The console shall have one (1) built-in 7” color multi-touch touchscreen. The touchscreen shall provide the primary interface for system configuration, programming show data and multi-parameter control.
7. Six (6) softkey buttons shall be provided, five of which may be configured by the user.
8. Console shall be equipped with an on-board help system, with on-board tutorial videos.
9. Console shall not require the use of an external monitor for normal use.
10. Console software upgrades shall be made by the user via usb drive. Changing internal components shall not be required.
11. The console shall provide a usb port allowing show data to be saved for archival or transfer to other consoles or a personal computer.
12. Systems that do not provide the above capabilities shall not be acceptable.

B. Controls and playback

1. Patching
    a. The console shall provide patching facilities for dimmers and multi-parameter devices via a built in library of fixture definitions. The fixture library shall be updated via software based updates. It shall be possible to create custom fixture definitions using an offline application.
    b. The console shall support patching, address setting, and mode changes using remote device management (rdm) on the local dmx/rdm port.
    c. Channel or playback faders
    d. Twenty (20) or forty (40) proportional, fully overlapping faders shall be provided with 45mm potentiometers and bump buttons.
    e. The faders shall provide direct manual control of intensity for all channels. Channel levels can be changed at any time by using the individual channel faders or through the use of the touch screen interface.
    f. Faders shall also control up to ten (10) pages of twenty (20) (or forty (40)) recordable memories or sequences. Memories shall record user-selected channel levels. Sequences shall record user-selected memories or channel levels.
    g. With color mixing systems, output of color from fixtures shall appear to be a combination of the active memories in a color space.

C. Programming tools

1. The console shall provide a 7” color multi-touch touchscreen with six (6) softkeys, as well as touch-based controls. The LCD shall provide system configuration, programming show data and multi-parameter control.
2. Touch-based tools shall include:
3. Forty (40) programmable color chips and color picker.
4. Touch-based parameter controls.
5. Virtual level/rate wheel.
6. Virtual keypad for level entry.
7. Customizable channel display using stage map. It shall be possible to rearrange the graphical representations for control channels to closely mimic the positions of fixtures in the venue.
8. Effects (intensity, color, shape, and parameter)
9. It shall be possible to assign multiple effects to the same channel and parameters. The playback of those effects shall play levels back relative to the combination of the two effects.

D. Fixture selection shall be made via:

1. Auto fixture selection on fader moves.
2. Pressing the selection button under channel faders.
3. Touching the channel icon in the stage map display on the touch screen.
4. Fixture tags for quick selects
5. Selection of multiple fixture shall be possible through a special controls dock that groups channels together based on the channel tile positions within a pre-defined area in the topographical view for channels.

6. Selection shall be possible through the use of informational tags. Selecting a predefined tag selects all fixtures sharing that same tag. At least two tags may be assigned to any one channel.
7. There shall be at least 27 quick select groupings.
8. Two independent channels shall be provided with on/off functionality. Independents shall be patched in a location separate from patch.

E. Playback controls

1. A cue list of up to 999 cues shall be provided. Cues may be made up of channel levels and parameter settings or contain a reference to a recorded memory. Cues shall be editable and shall be able to be individually deleted and inserted.
2. playback toy for filtered and timed execution of playbacks.
3. Multiple bump modes (flash, solo, solo change, move/go).
4. Full history rubber banding for playbacks.
5. Interface options
6. The console shall provide connectors for the following:
7. 12v ac or dc input for external power supply
8. Dmx512-a/rdm output (one (1) 5-pin xlr connector)
9. Usb connection (one (1) type a connector)
10. Physical
11. All operator controls and console electronics shall be housed in a single desktop console.
12. Size and weight:
13. Twenty (20) fader console shall be equal to or less than 18.31" (465mm) wide 11" (279mm) deep 2.36" (60mm) high (including controls), and6.9 lbs. (3.13 kg.)
14. Forty (40) fader console shall be equal to or less than 26.31" (668mm) wide 11" (279mm) deep 2.36" (60mm) high (including controls) and 9.55 lbs. (4.33kg).
15. Twenty (20) fader console shall be able to be mounted into a 19” equipment rack with the use of additional mounting hardware.
16. Console power shall be 12v ac or dc via an external power unit. The power unit shall operate with 90-265vac line voltage, 50 or 60hz. Console is provided with a universal power supply.

2.2 POWER DISTRIBUTION EQUIPMENT:

A. General

1. Connectors available are 20A, 50A and 100A grounded theater pin, 20A twist lock and 20A “U” ground (dual rated “T-slot”); other connectors available as specified. Pigtails shall be three-wire type “SOW” rubber jacketed cable sized for the circuit ampacity. Internal wiring shall be sized to circuit ampacity and shall be rated at 125°C.

a. 20 amp cable mount theater pin connectors shall be 12 gauge 4 way indent crimp (with inspection window) type where the wire is inserted and crimped directly in the socket.

2. Terminations shall be at one end using feed through terminals individually labeled with corresponding circuit numbers. 20 amp circuits shall use screwless tension clamp or standard screw-type/barrier strip U-style terminals listed for 20 – 8 gauge wire. 50 amp circuits shall use compression terminals listed for 10 – 1 gauge wire and 100 amp circuits shall use compression terminals listed for 8 – 2/0 gauge wire. Terminals that place a screw directly on the wire are not acceptable.
3. Equipment, except for wall-mounted boxes, shall be supplied with appropriate brackets and hardware for mounting as shown on the drawings. Connector strips shall have brackets on 5' centers. Brackets shall be 1½" x .188" ASTM A 36 steel and hardware shall be ASTM A307 grade 5.
4. A low voltage distribution system for DMX or Network (or other protocols as specified) shall be available, incorporated in the connector strip, locations and methods to be per print. Connector strips shall have a voltage barrier installed to accommodate these systems. Distributed DMX or Network systems shall use pass through assemblies consisting of a 6" panel with the following: one DMX or Network Output Connector, one DMX or Network Input (Pass Through) connector, one DMX or Network Pass Through (Bypass) Switch, and a label detailing the use of the pass through assembly. The bypass switch shall be used when no DMX or Network devices are present at that location. When activated, the pass through switch shall pass DMX or Network directly through to the next DMX or Network panel on the strip. The pass through switch shall have a mechanical indicator to show the operator that it has or has not been engaged. Low Voltage signals shall enter the connector strip via a strain relief or connector mounted in a separate DMX or Network terminal box at the specified end of the connector strip.
5. Power distribution equipment shall be Underwriter Laboratories (UL) Listed.

B. Connector Strips
1. Connector Strips shall be fabricated from 18 gauge galvanized steel 6.25"H x 3.3"D with length specified in increments of 6" and shipped fully wired in a minimum of 6'0" sections with all splicing hardware included. They shall be finished with fine-textured, scratch-resistant, black powder coat. Circuits shall be labeled on one side of the connector strip with 2" white lettering on black background labels. Pigtails and outlets shall be spaced on 18" centers, or as otherwise specified. Outlets shall be mounted on individual 3" panels and there shall be no external terminal boxes for units with 28 or fewer circuits unless otherwise specified.
a. Connector strip circuit number labeling:
1) Circuits shall be labeled on both sides of the connector strip with 2" white lettering on black background labels.

2.3 WIRING DEVICES (DISTRIBUTION EQUIPMENT): SEE DRAWINGS FOR DETAILS

A. Wiring devices shall be fabricated from 16 gauge cold rolled steel, in 6' 0" sections as required. Devices shall be properly cleaned, primed and painted with fine-textured,

scratch resistant, black powder coat. Circuit numbers shall be 3/4” Lexan tags with white letters on black background.

B. Individual pigtails and outlets shall be evenly spaced, on 12" centers in connector strips, or as otherwise specified. Where a circuit would fall on a joint it shall be moved 3" towards the junction box end of the strip.

C. All connectors shall be flush mount 20 Amp 2P&G unless otherwise noted.

D. Devices except for wall-mounted boxes shall be supplied with appropriate hardware for mounting as shown on the drawings. Connector strips shall have brackets on 5' centers. Connector strips shall have a terminal block on one end as shown on the drawings.

E. Wiring devices shall be UL Laboratories Listed.

2.4 WIRE STANDARDS: ALL WIRE IN OR OUT OF CONDUIT WILL BE TYPE CL2-CL3 UNLESS OTHERWISE REQUIRED BY NEC AND JOB SITE CONDITIONS. PORTABLE CABLE EXCLUDED.

A. WIRE – PORTABLE CONTROL CABLES (those cables for use with DMX512-A and USITT DMX512/1990 Systems):
   1. The data transmission rate (250 kbits/s) used by DMX512 requires the selection of a portable DMX512 cable that does not significantly distort the signal or give rise to spurious signal reflections. Cables intended for use with audio systems (such as microphone cables), while having the convenience of flexibility, availability and relative low cost, may not be suitable for use with DMX512 because of their high capacitance and incorrect characteristic impedance; at DMX512 data rates this will give rise to bit time distortion and signal reflections/overshoot.
   2. Maximum and minimum cable lengths
      a. Maximum and minimum run lengths are specifically omitted due to a number of factors, including signal quality, device operating characteristics including capacitive values, and installation environment. Maximum distance runs without repeaters, therefore, shall be determined by standard industry practices of approx. 330 feet. Regardless of the overall run lengths, the system shall run properly, reliably and without errors, glitches, etc. due to improper use of installed/portable cabling or connectors, terminations, etc.
   3. Construction
      a. Portable DMX512 cables shall use twisted pair conductors. Conductors shall be of stranded construction. The raw cable used for a DMX512 cable assembly shall be declared by its manufacturer as suitable for use with EIA-422/EIA-485/EIA-485-A systems. Shielding shall be on individual pairs or overall shielding of pairs or both. The portable cable itself shall be flexible and rugged enough for the repeated coiling and uncoiling to which it will be subjected.
         1) Cables implementing only the Primary Data Link shall consist of at least one twisted pair and be marked according to ANSI E1.27-1, Clause 7.1.

2) Cables implementing both Data Links shall consist of at least two twisted pairs and be marked according to ANSI E1.27-1, Clause 7.1.
3) Cables implementing only the Secondary Data Link shall not be allowed.

4. Impedance
   a. Portable DMX512 cables shall have a characteristic impedance in the range 100 to 120 ohms. Due to the characteristic impedance of 120 ohms in EIA-485 systems, 120 ohms is preferred.
5. Capacitance
   a. Capacitance between conductors within a shield shall not exceed 19.8 pF/ft (65 pF/m). Capacitance between any conductor and the shield shall not exceed 35 pF/ft (115 pF/m).
6. Dielectric Withstanding Protection
   a. Dielectric rating for portable DMX512 cables shall conform to prevailing electrical codes.
7. Connection Methods - Required Connector
   a. Portable cables shall use 5-pin XLR connectors. The physical pin designations of the 5-pin XLR shall be in accordance with Table 1 (see below).
   b. Any use of alternate connectors shall comply with ANSI E1.11.
8. Electrical Specifications and Physical Layer
   a. General
      1) The physical layer of a DMX512 data link is constrained by earth grounding practices, termination methods, signal levels, EMI, and accidental damage by connection to other devices. Where a conflict exists, DMX512-A shall govern.
   b. DMX512 Portable Cables
      1) General
         a) A DMX512 Portable Cable is a digital data transmission cable designed for the provisional interconnection of two DMX512 devices. Portable cables shall each have two prescribed connectors, a male 5-pin XLR at the end nearest the transmitting device and a female 5-pin XLR at the end nearest the receiving device. Pins shall be designated 1 through 5. There shall be no connection to the shell.
9. Data link common and grounding topologies
   a. In all cases Pin 1 of DMX512 portable cable connectors shall act as Data Link Common. The wire connected to Pin 1 shall be no smaller than the wire used for the twisted pairs in the cable.
10. Each data link shall consist of a separate twisted pair.
11. Terminations
   a. All DMX cabling shall be terminated per applicable standards and so that all devices in any given data run work properly. Use DMX terminators where and as needed and recommended by equipment manufacturers.
   b. 5-Pin XLR Cabling:

Table 1 – Signal Designations Summary		
Use	5-Pin XLR Pin	DMX512 Function
Common Reference	1	Data Link Common
Primary Data Link	2	Data 1-
	3	Data 1+
Secondary Data Link	4	Data 2-
	5	Data 2+

c. CAT5 Pinout DMX Cabling: *

Wire Color & #	Function	Equivalent XLR Pin #
1 (White/Orange)	Data + (pair 1 true)	3
2 (Orange)	Data – (pair 1 complement)	2
3 (White/Green)	Optional Data + (pair 2)	5
6 (Green)	Optional Data – (pair 2)	4
4 (Blue)	Unassigned	--
5 (White/Blue)	Unassigned	--
7 (White/Brown)	Common for pair 1	1
8 (Brown)	Common for pair 2	1

* The above table is shows the ANSI E1.27-2 standard DMX pinout when using Category 5 (or higher) wire and an RJ45 connector.

The above table is intended for DMX512 cabling only - **NOT** DMX-over-Ethernet cabling. Great care must be taken to prevent the accidental connection of DMX equipment to non-DMX equipment. The connection of DMX equipment to non-DMX equipment such as Ethernet switches or telephone equipment may result in serious equipment damage and/or personal injury, as pins 4 and 5 may carry voltages of up to 48VDC or greater. Category wire is not recommended for loose or temporary cabling. The use of RJ45 connectors for DMX equipment should be restricted to patch bays in access controlled rooms and should not be used for the direct connection of portable equipment.
Please be aware that some non-standard pin-outs are also in use (i.e. Color Kinetics, etc.) and that custom cabling, connectorizations, etc. may be required in order to interface non-standard pin-outs with the specified system.

2.5 HIGH RESOLUTION LED-BACKLIT HANDHELD DISPLAY: REFERENCED PRODUCT APPLE IPAD

A. Provide an iPad that is the most current shipping model available. Provide with all software updates, etc. installed, set up and ready for use.

B. Physical:

1. Size: 9.56” H x 7.47” W x 0.5” D (242.8 mm x 189.7 mm x 13.4 mm)
2. Weight: 1.5 pounds (0.68 kg) Wi-Fi model; 1.6 pounds (0.73 kg) Wi-Fi + 3G model

C. Display:

1. 9.7-inch (diagonal) LED-backlit glossy widescreen Multi-Touch display with IPS technology

2. 1024-by-768-pixel resolution at 132 pixels per inch (ppi)
3. Fingerprint-resistant oleophobic coating
4. Support for display of multiple languages and characters simultaneously

D. Wireless and Cellular:
1. Wi-Fi model:
   a. Wi-Fi (802.11a/b/g/n)
   b. Bluetooth 2.1 + EDR technology

2. Wi-Fi + 3G model:
   a. UMTS/HSDPA (850, 1900, 2100 MHz)
   b. GSM/EDGE (850, 900, 1800, 1900 MHz)
   c. Data only
   d. Wi-Fi (802.11a/b/g/n)
   e. Bluetooth 2.1 + EDR technology

3. Location:
   a. Wi-Fi
   b. Digital compass
   c. Assisted GPS (Wi-Fi + 3G model)
   d. Cellular (Wi-Fi + 3G model)

4. Environmental:
   a. Arsenic-free display glass
   b. BFR-free
   c. Mercury-free LCD display
   d. PVC-free Recyclable aluminum and glass Enclosure

5. Capacity: 16GB, 32GB or 64GB flash drive

6. Processor: 1GHz Apple A4 custom-designed, high performance, low-power system-on-a-chip

7. Sensors:
   a. Accelerometer
   b. Ambient light sensor

8. Audio Playback:
   a. Frequency response: 20Hz to 20,000Hz
   b. Audio formats supported: HE-AAC (V1), AAC (16 to 320 Kbps), Protected AAC (from iTunes Store), MP3 (16 to 320 Kbps), MP3 VBR, Audible (formats 2, 3, and 4), Apple Lossless, AIFF and WAV.
   c. User-configurable maximum volume limit.

9. TV and Video:
    a. Support for 1024 by 768 pixels with Dock Connector to VGA Adapter; 576p and 480p with Apple Component AV Cable; 576i and 480i with Apple Composite AV Cable.
    b. H.264 video up to 720p, 30 frames per second, Main Profile level 3.1 with AAC-LC audio up to 160 Kbps per channel, 48kHz, stereo audio in .m4v, .mp4 and .mov file formats; MPEG-4 video, up to 2.5 Mbps, 640 by 480 pixels, 30 frames per second, Simple Profile with AAC-LC audio up to 160 Kbps, 48kHz, stereo audio in .m4v, .mp4 and .mov file formats; Motion JPEG (M-JPEG) up to 35 Mbps, 1280 by 720 pixels, 30 frames per second, audio in ulaw, PCM stereo audio in .avi file format.

10. Mail Attachment Support:
    a. Viewable document types: .jpg, .tiff, .gif (images); .doc and .docx (Microsoft Word); .htm and .html (web pages); .key (Keynote); .numbers (Numbers); .pages (Pages); .pdf (Preview and Adobe Acrobat); .ppt and .pptx (Microsoft PowerPoint); .txt (text); .rtf (rich text format); .vcf (contact information); .xls and .xlsx (Microsoft Excel).

11. Languages:
    a. Language support for English (U.S.), English (UK), French (France), German, Traditional Chinese, Simplified Chinese, Dutch, Italian, Spanish, Portuguese (Brazil), Portuguese (Portugal), Danish, Swedish, Finnish, Norwegian, Korean, Japanese, Russian, Polish, Turkish, Ukrainian, Hungarian, Arabic, Thai, Czech, Greek, Hebrew, Indonesian, Malay, Romanian, Slovak, Croatian, Catalan, and Vietnamese.
12. Accessibility:
    a. Support for playback of closed-captioned content
    b. Voice Over screen reader
    c. Full-screen zoom magnification
    d. White on black display
    e. Mono audio

13. Battery and Power:
    a. Built-in 25-watt-hour rechargeable lithium polymer battery
    b. Up to 10 hours of surfing the web on Wi-Fi, watching video or listening to music
    c. Up to 9 hours of surfing the web using 3G data network
    d. Charging via power adapter or USB to computer system

14. Input and Output:
    a. Dock connector port
    b. 3.5-mm stereo headphone jack
    c. Built-in speaker
    d. Microphone
    e. Micro-SIM card tray (Wi-Fi + 3G model only)

15. External buttons and controls: On/off, Sleep/wake, Mute, Volume and Up/down

16. Mac system Requirements:
    a. Mac computer with USB 2.0 port
    b. Mac OS X v10.5.8 or later
    c. iTunes 10.1 or later
    d. iTunes Store account
    e. Internet access

17. Windows System Requirements:
    a. PC with USB 2.0 port
    b. Windows 7; Windows Vista; or Windows XP Home or Professional with Service Pack 3 or later
    c. iTunes 10.1 or later
    d. iTunes Store account
    e. Internet access

18. Environmental Requirements:
    a. Operating temperature: 32° to 95° F (0° to 35° C)
    b. Non-operating temperature: -4° to 113° F (-20° to 45° C)
    c. Relative humidity: 5% to 95% non-condensing
    d. Maximum operating altitude: 10,000 feet (3000 m)

19. Software: Provide with the software suite(s) indicated (installed and ready to operate), including any licensing fees, app fees, etc. paid for (1) year (owner will be responsible for recurring charges after that time period has expired). Set all apps up in the owner's name and with the owner's information.

2.6 DMX/RDM ETHERNET GATEWAY: REFERENCED PRODUCT PATHWAY CONNECTIVITY OCTO 6401

A. General
    1. Provide eight-port DMX nodes to permit DMX512 and RDM data to be encoded, routed and decoded over a conventional 10/100Base-T CAT5 (twisted pair copper) Ethernet network.
    2. Each node shall incorporate eight (8) gold-plated 5-pin rear-mounted XLR-type female connectors, connectors for DMX/RDM ports.
    3. Each node shall also incorporate one external 10/100 Ethernet port utilizing a rear-mounted EtherCon RJ-45 type female jack.
    4. Nodes shall incorporate a manual user interface consisting of an encoder knob with integral pushbutton and a backlit graphical LCD display for identification (soft-labeling) and status reporting. Labeling shall be user configurable.
    5. Nodes shall be capable of encoding or decoding DMX data to or from any industry standard Ethernet lighting control protocol and certain commonly used proprietary Ethernet protocols.
    6.

B. DMX Ports

1. DMX ports shall comply with the requirements of the ANSI E1.11 DMX512-A standard, and the USITT DMX512 (1990) standard.
2. DMX ports shall be fully electrically isolated from the Ethernet network infrastructure and chassis ground.
3. DMX ports shall be capable of being user-configured as inputs, outputs or not used (available).
4. Each DMX port shall include three front panel LEDs to indicate port direction, data activity and isolated power status.
5. The DMX output update (refresh) rate shall be user-selectable between rates of 31Hz, 36Hz, 40Hz, and 44Hz (maximum possible rate). The update rate shall be user selectable on a port-by-port basis.
6. DMX ports configured as outputs shall support ANSI E1.20 RDM (Remote Device Management).
7. DMX ports shall provide connections for signal common, the primary data pair, and connection points only for the secondary (optional) data pair.

C. Ethernet Port
1. The Ethernet port shall comply with the requirements of the IEEE 802.3 10/100Base-T standard.
2. The Ethernet port shall include LED indicators for Link status and 10/100 speed status.

D. Processor
1. Each node shall have sufficient processing power to merge up to eight (8) incoming DMX universes with respect to each output port.
2. The CPU shall be capable of processing up to sixteen (16) megabits per second of network traffic without any dropped packets.
3. Maximum delay time from input to output shall not be greater than one DMX packet time (approximately 30 mSec.).
4. Node firmware shall be stored in non-volatile (Flash) memory. It shall be possible to upload new firmware files via the Ethernet port.

E. Mechanical
1. The node housing shall be constructed of die-cast aluminum and steel.
2. Nodes shall be of pleasing appearance, suitable for high-visibility locations.
3. Nodes shall be designed to mount in a single rack unit of height and shall include all necessary mounting hardware for this purpose.
4. Nodes shall be provided in satin black textured powder-coat finish.

F. Electrical
1. The power supply shall be a field-replaceable, wide-range input (85-264VAC, 50/60Hz) switching power supply. There shall be no power switch to reduce chances of being shut off in error.
2. There shall be 4000-volt electrical isolation between mains power supply and low voltage circuits.
3. There shall be 2500-volt electrical isolation between adjacent DMX I/O sections.
4. Each DMX I/O port shall be capable of withstanding the continuous application of up to 48V, and transient application of up to 250V, without damage to internal

components. Protection shall be of a self-resetting type, rated for 250V. Replaceable fuses are not acceptable.

G. Configuration
1. Node identification (naming), DMX port direction, universe patching and all other configuration shall be accomplished using a personal computer connected to the Ethernet port. The node manufacturer shall provide the configuration software for this function (see Section 10).
2. All nodes on the same network shall be remotely configurable from a personal computer connected to the Ethernet network.
3. Once configuration is done, the nodes shall not require a computer to be present on the network for proper operation.
4. All configuration and operational data shall be stored in non-volatile memory in each node.
5. It shall be possible for a personal computer connected to the Ethernet network, to download from a system of all connected nodes, all their configuration and operational data, such that a complete new system configuration file can be created and saved in the computer.
6. It shall be possible to make configuration changes at any time during live performance without interrupting or otherwise adversely affecting the flow of DMX data through the system, with the exception of the specific port(s) directly affected by the changes.

H. DMX Routing
1. It shall be possible for the user to route complete DMX universes from any input port to any DMX output port at any node. It shall be possible to route universes to any number of nodes. Routing shall be configured from a personal computer running the configuration software.
2. It shall further be possible to route individual DMX channels (or ranges of channels) from any input port to any output port. Routing shall be configured from the configuration software.
3. It shall be possible to merge whole universes or individual DMX channels to any output port.
4. It shall be possible to prioritize input universes or individual channels routed to any output port.
5. Where two or more control sources are prioritized with respect to a given DMX channel or universe, the system shall be capable of cross-fading between sources as they are
6. The computer shall only be required for configuration and signal routing assignment, and shall not be required for the normal operation of the system.
7. All relevant routing information shall be stored in non-volatile memory at each node. The system shall recover from a power outage without requiring a computer to be online.

I. Network
1. Communications physical layer shall comply with the IEEE 802.3 10/100Base-T Ethernet specification. Products offering only 10Base-T connectivity shall not be acceptable.

2. All network cabling shall be Cat5, Cat5e or Cat6 conforming to TIA-568A/B, and shall be installed and certified by a qualified network installer.
3. Data transport shall utilize the TCP/IP suite of protocols to transfer the DMX and RDM data.
4. Nodes shall support industry standard ANSI E1.31 Streaming ACN.
5. Nodes shall also support ETCNet3, Pathport Protocol, Art-Net, and Strand ShowNet.
6. Nodes shall be capable of accepting DMX level data from any or all of the above named protocols simultaneously.

J. Management Software
1. Provide and install node management software to allow the user to discover, configure and monitor all nodes in the system.
2. The software shall be capable of managing individual nodes or all installed nodes in the system simultaneously.
3. Software that can manage only one node at a time shall not be acceptable.
4. The software shall provide an intuitive graphical user interface for all configuration and monitoring functions.
5. The software shall include an RDM master controller function.
6. The software shall provide a comprehensive log of all user-initiated and system-generated status and error messages to aid in troubleshooting.
7. The software shall include password protection to prevent unauthorized access.
8. The software shall be compatible with Windows, Macintosh and Linux operating systems.

K. System Requirements
1. Provide the quantity and type of nodes required, as indicated on the drawings and schedules.
2. Provide Ethernet switches as shown on the drawings and schedules.
3. Provide system management software as described in Section 10.

L. Compliance
1. The DMX/RDM Gateway nodes shall be compliant with the RoHS directive.
2. The DMX/RDM Gateway nodes shall conform to all FCC and CE requirements.
3. The DMX/RDM Gateway nodes shall be tested by a National Recognized Testing Laboratory.

M. Warranty
1. The manufacturer shall warrant the DMX/RDM Gateway nodes to be free of defects in materials and workmanship for a period of not less than two (2) years from the date of final acceptance by the customer.
2. The manufacturer shall provide any and all software and firmware updates to the customer free of charge for a period of not less than five (5) years from the date of final acceptance.

N. Acceptable Product
1. The nodes shall be Pathway Pathport® OCTO 8-Port DMX/RDM Gateway Model #640X.

2. The management software shall be Pathway Pathport Manager Version 5 or later.

2.7 BILL OF MATERIALS

A. System equipment, console and all accessories and controls - see drawings for equipment, quantities and required coordination with the contractor and other related trades.

B. Lighting fixtures: See drawings for quantities, types, locations, installation requirements, etc.

C. Contractor shall provide all worklighting fixtures with required mounting clamp/yoke, safety cable, lamp, and Edison connector .

D. Contractor shall furnish all portable cables shown on the bid drawings plus any and all additional portable cabling, adaptors, turn-arounds, termination devices or misc. interface devices needed in order to present the owner with a complete, fully-functioning system (even if those devices or cabling do not specifically appear on the drawings but are required for the system to function).

E. Provide all DMX terminators as necessary for all DMX controlled equipment.

PART 3 - EXECUTION

3.1 GENERAL:

A. Contractor shall adhere to all requirements of the general contract for this project as called for in the project manual.

B. All liability for rigging, fastening, wiring and other installation methods shall be borne by the contractor alone. If the contractor has a reason to believe that safety will be compromised in the installation of any specified equipment in the locations specified they must note this at the time of bid and offer alternatives in writing.

C. Assess life safety implications of all installation methods and verify there is no compromise of life safety issues.

D. Any dangerous work areas must be marked or roped off in a manner that will inform all persons as to potential danger, regardless of that person’s sensory handicaps.

E. Maintain M.S.D.S. for all materials used where applicable and submit same if requested upon completion.

F. Maintain the integrity of all fire-walls and doors during construction and upon completion.

G. Take all precautions necessary to guard against electromagnetic interference, electrostatic hum and RF interference, especially into the audio and video systems. Any lighting, rigging, video or audio system interference directly attributable to the contractor that arises as a result of work done under this contract and that adversely affects the performance of those systems will be rectified by the contractor at no additional cost to the owner.

H. The contractor shall supply adequate ventilation and will install all equipment for the maximum safety of the operator.

I. The contractor shall verify all on site dimensions prior to the ordering or installation of critically dimensioned equipment and wiring. In a case of discrepancy between these documents and attached drawings, construction documents and actual on-site dimensions, the contractor will notify the owner and consultant in writing before making any changes in intended work. The owner and consultant will determine the correct modification to the work that needs to be done. No additional payments will be made for material or equipment improperly ordered or sized due to site variations. The contractor shall have personnel on site at times as needed in order to make these determinations.

J. Any equipment, hardware, wiring harnesses or other items not specifically included in this specification but required for the system to function as called for and intended within this document will be the responsibility of the contractor to provide at no additional cost to the owner.

K. Provide all hardware, wire, conduit, raceways and all other required parts to provide a complete system to the extent that such items are not provided by others.

L. All methods must be cosmetically acceptable to the owner. All equipment shall be installed neatly, with respect to level & plumb, sight lines and finish. All wiring must be neatly run and concealed in an orderly fashion and attached to appropriate support structures.

M. Moderate changes or moves necessary to accommodate other equipment, coordination with other trades or for pleasing appearance will be made without claim for additional payment.

N. Identify any equipment requiring licensing and initiate licensing procedures for all such equipment.

O. Coordinate all work with other on-site trades in order to achieve a coordinated progress at all times.

3.2 WIRING AND RACKS:

A. The contractor shall field verify all locations where contractor provided wiring shall be run in order to determine each space's "plenum status." If any wiring noted on the drawings must be run through an air plenum space, then the contractor must provide

plenum rated wiring for all such locations, even if the wiring noted on the drawings is non-plenum rated or spaces have ducted air. The contractor shall provide plenum rated wiring matching the specified wiring as closely as is possible.

B. All wiring shall be neatly tie wrap bundled (or as indicated otherwise on contract drawings) with wires parallel and perpendicular to rack sides and backs and/or control booth. All wiring shall be dressed neatly from devices to input/output plates with excess cable hidden below the countertop and secured as described below.

C. All loose lighting or power cables & wiring must be dressed neatly with tie wraps & eyes or ring runs & tucked up against underside of lighting countertop. No dangling and loose cabling shall be allowed underneath the lighting control area. All cabling not installed as described above shall be fixed by the contractor at no additional cost to the owner. No excessively long cables (except those called out by length on drawings) shall be allowed.

D. No undue stress shall be placed on any connection by a lack of support of the wiring within the rack. Provide all wiring supports, etc. as needed and in order to support wiring from drooping down or so that it interferes with installing or hot swapping modules.

E. Any wiring splices necessary must utilize butt style inline insulated splices crimped with a properly adjusted controlled cycle termination tool. Referenced style Panduit BSV10X-D or equal. Size splices per gauges of wiring to be spliced & provide as required. No incorrectly sized splices shall be allowed.

F. Any equipment having accessible controls that are not normally used during system operation will have it's controls capped or otherwise locked such that they are not adjustable. If no other means is feasible the use of security covers is mandated. Rack doors are not acceptable as means of tamper resistance for controls.

G. Wiring Standards - Plenum Rated Cable: Unless specifically noted on the drawings, all low voltage wiring is to be CL2/CL3 wiring. Where specific plenum conduits exist its has been noted to use a plenum rated cable. Where wiring runs occur in concealed spaces – walls, ceilings, etc. - and are not enclosed in conduit the contractor must verify the space is not being used as a plenum path. Any areas encountered that are plenums must have plenum cable or the wiring must be contained in conduit rated for the plenum application. Field verify conditions prior to ordering or installing cabling.

H. ELECTRICAL & GROUNDING:
   1. Grounding of shields and chassis will adhere to industry standard practice and as required by the control systems manufacturer.
   2. Verify that all hot, neutral and ground conductors are tightened at least 5 days after initial installation and landing of line & load conductors.
   3. Any AC service shall be installed by the contractor to standard Edison U-Ground style outlets at the locations noted on the electrical drawings. Where racks are located the service is to be run to the interior of the rack. This service should be capable of powering all system equipment at 100% of rated power. Two U-ground outlets will be available for each 20 amp, single-phase circuit unless otherwise indicated or terminated into MPR style devices.

I. CONDUITS:
1. Use separate conduits for data and other control cabling. Control power and ground may be run with data for the same devices.
2. All wiring in conduit shall be rated as necessary for full load continuous operation of the wiring within the conduit.
3. All conduits shall be concealed unless the owner has been notified in writing and accepts by written approval the location of all exposed conduits.
4. No conduit shall be allowed that is loaded beyond 50% fill. The contractor responsible for installing the indicated conduits shall upsize as needed any conduit found to be too small at no additional cost to the owner.
5. A pull string shall be left in place by the installing contractor after pulling all wiring through each conduit. This pull string shall be tied off at both ends and left for future use.
6. All lines, cabling or wiring in any conduit run must be free from any splices or junction points.
7. All lines, cabling or wiring must be free from damage. Any that exhibits stress, damage, intermittent signal problems, data errors or other anomalies due to excessive pull torque shall be replaced by the installing contractor at no additional cost to the owner.

J. JUNCTION/GANG BOXES:
1. Unless otherwise specified all controls, receptacles, user interface stations, plugs and outlets shall be located in an appropriately sized gang box. No multi-gang backboxes with raised, tile ring, extension ring or mud ring style reducers to obtain the specified faceplate gang size shall be acceptable in lieu of the indicated device backbox.

K. LIGHTING FIXTURES - ASSEMBLY & PRE TEST:
1. Install connectors as required on fixtures prior to bench test and focus.
2. Attach all safety cables to fixtures by removing one yoke bolt and sliding the fixed end loop of the safety cable over the yoke. Reinstall the yoke bolt.
3. All LED fixtures shall be burned in for at least 8 hours to check for defective power supplies, drive electronics packages or other fixture anomalies.
4. Adjust for highest output flat field.
5. All LED fixtures shall be DMX addressed, set up in the proper color mode, have fan speeds set to quietest mode of operation, etc. and tested with addressing in place.
6. All LED fixtures shall be set up in a controlled, quiet environment, such as a shop, plugged in, powered up and verified prior to their installation at the owner's location. This shall include unit-to-unit comparisons for all similar equipment verifying similar performance, similar optical output, similar audibility and tonality of fans and fan noise, all device parameters normal, no temp sensors, etc. faulty, etc.
7. All fixture assemblies provided must have visually consistent color temperature outputs (regardless of what the part number or manufacturer's box/information details). The contractors shall be solely responsible to replace any lamps that fail to pass this visual test, including any that the owner or consultant request changed due to visual anomalies, color inconsistency, etc.

L. LIGHTING EQUIPMENT - ASSEMBLY & PRE TEST:
   1. All lighting equipment (other than lighting fixtures) shall be turned on/burned in for a period of at least two weeks continuously before arrival onto the jobsite. No equipment may be delivered to the site without being fully tested off-site. The equipment does not need to be under load during this period.
   2. All sub assemblies and individual components shall be fully tested off-site before delivery for installation.

3.3 FINISHES & CLEANING:

A. All finishes shall be returned to their original finish and condition after any temporary machining or other work.

B. Cover any walls, furniture, finished floors and carpeted areas to catch all metal particles, grit, etc. that may occur during installation.

C. Cover all equipment left or installed on site during construction to prevent dust, dirt, paint or other airborne debris from infiltrating equipment and to prevent contamination or damage from occurring. The contractor shall be responsible for all cleaning and damage caused to any equipment being installed before the site is safe for such installation. Typically electronic equipment should not be installed until after drywall sanding, welding, painting, use of motorized man lifts, construction debris sweeping and other such work has been completed.

D. Any lighting fixtures that have become dirty due to installation before room finishes are complete shall be completely cleaned by the contractor (both internally & externally) and returned to an “as new” condition prior to date of acceptance. This includes over spray from painting. Fixtures with dirty lenses from construction will not be accepted.

E. Provide thorough cleaning of all work areas including vacuuming, spray cleansers and dust removal as required. Clean all equipment fan filters before final acceptance tests.

F. If any paint-work is to be done on sight, all overspray or drips must be contained. The contractor is responsible for any damage to any building finish caused by their work.

G. Maintain clean work areas, removing all debris daily.

H. The contractor shall wipe clean (with a clean, damp cloth) all LED fixtures, , connector strips, brackets, dimmer strips, dimmer boxes, faceplates, misc. input/output jacks, Upon cleaning, all items shall appear in as new condition.

3.4 LABELING:

A. All switches, cables, wire, controls and outlets will be permanently and logically marked during installation. Submit to the consultant for approval a listing of intended nomenclature. Where possible engrave directly upon plates and assemblies. Where

disassembly would be required the use of adhesive or screw on engraved labels will suffice. Engravings will be paint filled for best contrast with black or white paint.

B. Do not use Dymo style labels or hand lettering. No cables shall be labeled with masking tape, gaffer tape or other material subject to degradation. Such labeling may be done on a temporary basis during installation so long as all such labels are removed and their adhesive cleaned off when final labeling is applied. Self-laminating labels are preferable for the final labeling system.

C. Permanently mark cables with an identifying label at each end in a consistent, logical manner.

D. Color-coding of the entire system shall be logical and adhere to accepted industry standards.

3.5 RIGGING:

A. The following minimum standards apply in addition to the standards referenced elsewhere in this specification. These guidelines do not negate the standards referenced elsewhere in this specification.

B. All equipment not described as portable in this specification will be rigidly held in place as per the manufacturer's recommendations or as indicated.

C. All equipment (except luminaires) will be supported at a minimum of three points plus a backup. Each point shall be able to carry the entire rated load with a safety margin of at least five (5) times the rated load.

D. Studio lighting fixtures will be supported by their primary attachment point, either C clamp or factory supplied or other specified clamp (such as a Megaclaw style clamp or Baby C clamp. A safety cable rated for at least 10 times the rated static weight of the fixture will be utilized as a safety backup in case of a failure of the primary attachment point.

E. All rigging and related fastening methods must be treated as permanent. All threads shall be treated with vibration compounds such as Vibratite or Loctite as per manufacturer's recommendations and shall be visible upon inspection.

3.6 ROUGH-IN:

A. Due to small scale of Drawings, it is not possible to indicate all offsets, fittings, changes in elevation, etc. Verify final locations for rough-ins with field measurements and with the equipment being connected. Verify exact location and elevations at work site prior to any rough in work. DO NOT SCALE PLANS. If field conditions, details, changes in equipment or shop drawing information require a significant change to the original documents, contact the owners representative for approval before proceeding.

B. All equipment locations shall be coordinated with other trades to eliminate interference with required clearances for equipment maintenance and inspections.

C. Coordinate work with other trades and determine exact routing of all duct, pipe, conduit, etc., before fabrication and installation. Coordinate with Architectural Drawings. Verify with Owner's Representative exact location and mounting height of all equipment in finished areas, such as thermostats, fixtures, communication and electrical devices, including panels. Coordinate all work with the architectural reflected ceiling plans and/or existing Architecture. Mechanical and electrical drawings show design arrangement only for Diffusers, grilles, registers, air terminals, lighting fixtures, sprinklers, speakers and other items. Do not rough-in contract work without reflected ceiling location plans.

D. Before roughing for equipment furnished by Owner or in other contracts, obtain from Architect and other Contractors, approved roughing drawings giving exact location for each piece of equipment. Do not "rough in" services without final layout drawings approved for construction. Cooperate with other trades to insure proper location and size of connections to insure proper functioning of all systems and equipment. Obtain written authorization from the Owners representative or other contractor for any “rough ins” that, due to project schedule, are required before approved coordination drawings are available. Any work installed without written authorization or approved coordination drawings, causing a conflict will be relocated by the electrical contractor at no expense to the Owner.

E. For equipment and connections provided in this contract, prepare roughing drawings as follows:
   1. Existing equipment being relocated: Measure the existing equipment and prepare drawings for installation in new location.
   2. New equipment: Obtain equipment roughing drawings and dimensions, then prepare rough-in drawings.

F. Where more than one trade is involved in an area, space or chase, all shall cooperate and install their own work to utilize the space equally between them in proportion to their individual requirements. In general, ductwork shall be given preference except where grading of piping becomes a problem, followed by piping then electrical wiring. If, after installation of any equipment, piping, ducts, conduit, and boxes, it is determined that ample maintenance and passage space has not been provided, rearrange work and/or furnish other equipment as required for ample maintenance space. Any changes in the size or location of the material or equipment supplied, which may be necessary in order to meet field conditions or in order to avoid conflicts between trades, shall be brought to the immediate attention of the Owner's Representative and approval received before such alterations are made.

G. Provide easy, safe, and code mandated clearances at controllers, motor starters, valve access, and other equipment requiring maintenance and operation.

3.7 CUTTING AND PATCHING:

A. Each trade shall include their required cutting and patching work unless shown as part of the General Construction work on the architectural drawings. Refer to "General Conditions of the Contract for Construction" for additional requirements. Cut and drill from both sides of walls and/or floors (if possible) to eliminate splaying (if not possible, then contractor shall do everything possible in order to minimize splaying).

B. Patch all cut or abandoned holes left by removals of equipment or devices. Patch adjacent existing work disturbed by installation of new work including insulation, walls and wall covering, ceiling and floor covering or other finished surfaces. Patch openings and damaged areas equal to existing surface finish (i.e. “patch to match existing”).

C. Cut openings in prefabricated construction units in accordance with manufacturer's instructions. Contractor shall also refer to any “front end” contract document sections that deal with selective structure demolition, wall excavation procedures and cutting and patching for further details and instructions as it regards the cutting, patching and refinishing of any affected surfaces related to the rigging system removals and additions as well as the limits of incidental damage liability.

D. If no instructions exist in the contract documents addressing these issues, then the contractor shall contact the architect and construction manager in writing prior to proceeding with any work in order to obtain written instructions regarding this type of work. Patching shall include infilling with new appropriate and matching materials in kind and finishing with standard industry practices. Patched and finished surfaces shall match those existing adjacent surfaces as closely as possible in finish, texture, color and durability. If the general conditions conflict with any of the language present in this paragraph, then the general conditions language shall take precedence as to methods for cutting and patching.

3.8 PROTECTION OF WORK:

A. All connector strips, lighting fixtures, interface and plug-in stations, DMX/network nodes, , etc. and any other related equipment shall be completely wrapped with a heavy duty protective plastic covering taped securely in place around each device until all painting and other dust creating work within the auditorium and all related cleanups have been completed (unless these devices are installed after all above mentioned work and related cleanup has been completed). Any damage done to these items or any overpainting of number designations, pin connectors, control inputs/outputs, display screens, LCD stations, buttons, etc. shall be completely repaired by the contractor and all components

returned to "as new" condition prior to energization of the system and at no extra cost to the owner.

B. The contractor shall coordinate installation of the protective plastic coverings with the installation of devices and either wrap the units in such a way that they can be hung or installed with the protective plastic covering on them or wrapped after installation but before painting or other dust creating work has commenced. This may require the contractor to make multiple trips to the jobsite in order to accomplish this task. Upon completion of all room painting, dust creating work and related cleanups the contractor shall remove all parts of the protective plastic covering, tape, etc. And shall legally dispose of the protective coverings, tape, etc. All items related to the installation and removal of the protective plastic covering shall be performed and completed at no additional cost to the owner. Any tape residue shall be cleaned from affected devices as well.

3.9 CONCEALMENT:

A. Conceal all contract work above ceilings and in walls, below slabs and elsewhere throughout building (this does not include lighting fixtures, control consoles, user interface stations, etc.). If concealment is impossible or impractical, notify Owner's Representative before starting that part of the work and install only after his review and written authorization and instructions on how to proceed. In areas with no ceilings, install only after Owner's Representative reviews and comments on arrangement and appearance. Obtain and maintain written records and approvals for all work exposed work performed or devices installed.

3.10 PERFORMANCE:

A. All LED fixtures shall exhibit quiet operation (the preference is for all fixtures to be convection cooled). Audible requirements for ALL LED fixtures is as follows:

1. No LED fixture shall be allowed that exceeds an NC10 noise curve as measured 4’ from any point of the fixture. Any fixtures that are provided that exceed this maximum standard shall be replaced by the at no additional cost to the owner, including providing the specified fixtures – if substitutions have occurred.
2. NC measurements shall be dBA and measured in 1/3rd octave resolution.
3. For fan cooled devices, the fans are normally to be set up and operated in auto mode.
4. The tonality of an LED’s fan unit is critical. No fans that exhibit a whine, drone, tonality, etc. that is different from the specified fixture shall be allowed. **
5. No fan noise measurements can come into compliance by dimming the light output of the related fixture.
6. The tonality of an LED fixture, whether it is fan cooled or convection cooled, is critical. No units that exhibit a whine, drone, distinct tonality, etc. shall be allowed. **

7. Any fixtures and fixture fans that exhibit a tonality or that develop a tonality within the first 12 months of use shall be replaced by the contractor at no additional cost to the owner and within a reasonable amount of time (typically less than 2 weeks).

** Tonality shall be defined as any frequency or frequency bands that are narrower than 1/3rd of an octave that exceed the average adjacent background level by more than 3 dB as measured on an FFT style trace. This is typical of both fundamental frequencies as well as any related harmonics.

3.11 INITIAL POST COMPLETION TESTS & SET UP:

A. RDM assign all fixtures

B. Program presets as instructed by the owner.

3.12 DOCUMENTATION:

A. Contractor must submit (7) seven “hard” copies of the following items. All items should be part of the O&M Manual.

B. System testing documentation as required by final testing and acceptance procedures outlined in this document.

C. ALL O&M Manual submissions shall be in heavy-duty, D-Ring style, 3-Ring binders (provide size most appropriate for the quantity of paperwork included) with front plastic display pocket and internal side pockets. NO PAPER FOLDERS SHALL BE ALLOWED.

D. Complete technical manuals for all equipment installed.

E. List of serial numbers of all equipment installed and the specific location of each piece of equipment.

F. Warranty cards for all equipment.

G. Manufacturer MSDS sheets for all applicable equipment.

H. Operations & Maintenance Manuals shall NOT include any alternate languages or language sections unless specifically requested by the owner (i.e. French, Dutch, German, Spanish, Japanese, etc.). If alternate language manuals are requested by the owner, then the contractor shall provide all alternate language manuals as complete manuals in that language in addition to the required English manuals. Any alternate language manuals required shall be at additional cost to the owner.

I. Operations & Maintenance Manual: An operations and maintenance manual (or “Systems Manual”) written in English on the safe use of a that particular site’s lighting, controls system(s) shall be provided by the contractor to the owner. (provide separate

manual sections for different spaces included in this project – each to be a separate, complete and distinct section in the manual for each differing or multiple system and location).

1. Table of contents.
2. A custom compiled and contractor written simplified guide to operating the control console, programming submasters & cues, etc., including standard procedures, all patching, functions and file saves.
3. A custom compiled and contractor written simplified guide to programming and operating the architectural control system.
4. A custom compiled and contractor written simplified troubleshooting guide for typical and common problems associated with the LED worklighting and other specialty fixtures, network/DMX system, any other devices furnished as part of this project.
5. A custom compiled and contractor written simplified operational instructions manual that includes information covering all normal operating modes of the system as designed. Where the technical manuals suffice, copies of operational sections may be inserted as detailed information regarding these system modes.
6. Microsoft Excel style spreadsheets of all lighting system patch data, DMX assignments, LED assignments, profiles, configs, color groups, lighting system network information, assignments, passwords, etc. and other basic lighting system configurations.
7. All troubleshooting guides should be set up in a standard, simplified, 2-column format (problem description or error code, steps to take for resolution) and should employ straightforward descriptions in standard English without abbreviations, slang or other non-standard vernacular.
8. A list of the required override procedures in case of lighting system control failures.
9. A visual picture of each lighting system patch configuration screen for each critical screen on the system (these can also be done as a video or as digital stills with a quality still camera or as screen captures. Contractor hand drawn screens shall not be allowed. All photos or digital stills must be hi-resolution, properly lit and completely visible/legible for all critical information).
10. Emergency contact number(s) and procedures to follow in the event of a catastrophic system failure.

J. Proper procedure in resetting all color-changing, LED fixture functions, how to make any necessary programming changes and how to troubleshoot field problems with device misbehavior or malfunctions.

K. Maintenance procedures and recommended schedules required for equipment installed.

L. Lists of any special tools or requirements to perform maintenance.

M. Lists of consumable items and replacement parts for routine maintenance (fuses, lamps, etc.) and recommended stock levels for such parts.

N. A DVD (or set of DVD's, depending on requirements listed below) that details the training of users on the owner's installed systems. See owner instruction section below.

O. O&M Manual pdf requirements: The contractor shall provide a pdf copy (with appropriate titles) for each piece of documentation listed above and bound together in a pdf portfolio/binder, labeled with the owner's name and with the submitting contractor's information. All electronic manuals shall contain only equipment and information that pertains to the project. Where custom procedural guides and troubleshooting manuals are required, these shall be produced by the contractor in a professional piece of software (Microsoft Office, Adobe Acrobat or cadd software or equal) and shall contain all required information in a neat and logical presentation. Where there are portions of the stock manuals that contain sections that do not pertain, the contractor shall use a program such as Adobe Acrobat Pro, BlueBeam or other similar pdf markup software applications and use the strikethrough function with a heavy red line to strike out any text or sections that do not apply. Where factory manuals are available the contractor shall provide these. Where factory manuals are not available, the contractor shall provide high resolution (150 dpi minimum and fully optimized in Acrobat or equal), full page, properly and consistently oriented pages in a consecutive ascending order. All pdf portfolio and binders produced and submitted shall be professionally put together and presented well. No pdf scan pages that are skewed, illegible, mis-ordered, angled, copied at a low dpi setting or that do not pertain to this project shall be allowed. All manuals shall be saved as standard Adobe Portable Document Format (PDF) files that are capable of being opened & viewed on any modern computer system with a standard pdf reader and shall be without password access protection or other security preventative measures engaged.

3.13 OWNER INSTRUCTION:

A. All owner instruction to be provided by the contractor as part of this contract shall be scheduled and performed within 12 months of the final system turnover date to the owner (that date, determined by the architect and/or construction manager, that is on or around the completion and fulfillment date of all the contractor's installation obligations and final punch list completions). Any training that has not been requested by the owner prior to this 12-month time frame will be considered forfeiture, and the contractor shall not be obligated to perform it or to provide a monetary give-back due to training not requested. Additional training beyond the 12-month time frame shall be performed at the contractor's discretion at additional cost to the owner.

B. Training time may be utilized in any number of ways that may not relate directly to the hands-on training. These required hours can be utilized in order for the contractor to perform additional system programming, set manipulation, customizing layouts or any other related work requested by the owner – up to the "not to exceed" hour totals listed in these specifications. Additional training or programming work beyond that indicated in these specifications shall be at additional cost to the owner.

C. The contractor shall provide a training program at the project location (owner's location) and with the project equipment (owner's equipment), consisting of the following hours/periods of instruction (TOTAL TRAINING TIME NOT TO EXCEED 12 HOURS. NO TRAINING BLOCK TO BE LESS THAN 4 HOURS IN DURATION. ALL TRAINING HOURS ARE EXCLUSIVE OF TRAVEL TIME.):

1. INITIAL SYSTEM TRAINING: This block of time is to consist of at least four (4) hours of instruction, which should include such topics as basic system setup, patching topology, general system maintenance, trouble-shooting procedures, how to reload system parameters from scratch, how to download and install any firmware or software updates to affected devices, how to completely patch and unpatch the system and basically establishing a general familiarity and working knowledge of overall system setup and operation with the owner and owner's designated operators (this should also include a detailed physical knowledge of where all system components are –DMX-DA or Network devices, connector strips, data drops, etc. - located and what to do in case of failures and emergencies).
2. Training should not be all technical setup items but should help to instruct the owner as to how to use the lighting console and related system in the real world – for instance, explaining how and why the user may want to create subgroups of commonly controlled similar devices prior to creating cues.
3. FOLLOW-UP TRAINING: This block of time is to consist of at least four (4) hours of follow-up training, which should include a more in-depth understanding of and training in the operation of previously mentioned topics. This training is also to be set up to answer questions and problems encountered during work, general system understanding questions and other items that will assist the owner and owner's designated operators in using and maintaining the new lighting system. Advanced topics can also be discussed.

D. Training hours shall be set up on a spreadsheet by the contractor with each block of training time signed off on by the appropriate owner or construction manager personnel. Training time hours shall commence once the contractor has arrived on site (at the pre-arranged time) and shall conclude when the contractor prepares to leave after training has finished for that session. Training times that have not been properly signed off on by the appropriate personnel may be required of the contractor again.

E. Training intents are for all system training to be as hands-on for the end users as is possible and NOT to be lecture style with the instructor touching all of the controls. The end users should be operating the specific devices being described as the instructor is teaching in an "over-the-shoulder" style so that they are getting a real feel for programming system parameters, operating controls & interfacing with other system devices, etc. A simple demonstration or explanation of procedures is not acceptable. The owner's personnel must actually perform the procedures themselves, with the contractor, trainer and his men providing backup and support the entire time.

F. Training will be scheduled at the convenience of the owner and may take place on more than one day. The owner is not obligated to receive all hours of training on one day or all hours of training included for this project.

G. All training for lighting work detailed within this specification shall be performed by individuals designated by the contractor who possess actual field experience, detailed knowledge of and expertise on the system(s) and specific equipment being demonstrated. All training techs should also possess good people skills and be adept at accurately and effectively communicating with a group of end users of various skill levels. All training shall be performed by the same individual in order to provide continuity

& familiarity for the owner. No training from multiple rotating individuals at each different training session shall be allowed. No training techs without detailed system knowledge shall be allowed to demonstrate equipment to the owner or to train end users.

1. If the contractor does not possess adequate or trained personnel who are qualified to provide training, then the contractor shall arrange for (at his own expense) a third-party qualified trainer for all training sessions.

H. Video Taping - The contractor is responsible for video taping of the training on the system. The contractor will provide a camera (mini DV minimum requirement) and operator to video tape “primary system training”. Primary system training will consist of an operational walkthrough of each system with general operations, all equipment and power source locations at the owner’s facility, etc. Specific operational instruction shall be provided on owner equipment or on identical equipment at the contractor’s shop – set up in a similar fashion to owner’s equipment. Provide (1) copy of the DVD training set for acceptance by the consultant and (2) copies of the DVD training set to the owner (after written acceptance by the consultant). The contractor should also keep (1) copy of the DVD training set for his own records and in case the owner needs future copies. The video training DVD set needs to include all items listed in the “Documentation” section “Operations & Maintenance Manual” section that pertain to this project at a minimum.

I. The video training shall be edited and transferred by the contractor onto DVD’s of no longer than 2 hours each in length. This includes any additional trainings required on software, preset creation, network gear manipulation and addressing, etc. Editing should remove user questions unless they are applicable to a full understanding of the system. Video training should include short cut, quick setup type topics as well. A program such as I DVD should be used to create an opening screen directory, titled indexing chapters, etc. in order for the DVD to provide appropriate search features. Chapters should be limited to approx. 5-10 minute lengths and should be arranged in a logical order. There must be an intro screen, which shows the chapters of the DVD with titles. No pictorial only chapter designations shall be allowed. All chapters must be titled. Video to be in 16:9 HD format in a well lit room. All DVD’s shall be presented to the owner in DVD cases with a cover/jacket for each that indicates the content and author of the DVD training series. Single DVD training sets shall be provided in 7 mm premium slim single disc polypropylene style DVD cases. Multiple DVD training sets shall be provided in 27 mm premium multiple disc polypropylene DVD cases. No paper DVD sleeves shall be acceptable. Derogatory comments about the consultant should be edited onto a separate disc and delivered to the consultant with names of the persons making each comment.

J. The intent of the video taping and training is for the finished DVD product to be a complete and intensive professional video reference guide to operational system components for future use and not simply a visual record of the training sessions. Since this DVD training shall be utilized by various other users in the future (novice users and previously trained users needing a refresher), it shall be filmed in such a way as to make it informative and valuable for all system users and shot in an “over-the-shoulder” style. This will require the contractor to provide adequate personnel during training (system trainer(s) as well as qualified camera operator(s), camera, tripod, supplemental lighting and other required accessories). Provide a tripod with enough height adjustment and articulation capabilities that can be positioned in such a way as to obtain mid and close-

up control surface, control screen, fader/button operation, system device and operator interface shots during training sessions. No static, group, distant shot or dark, unfocused, grainy, jerky and unclear training DVD's shall be acceptable. Provide additional video shoot lighting as needed in order to obtain necessary light levels for professional video footage to be shot.

K. No DVD's shall be acceptable that have video where the operator's body blocks the screen or large portions of it during the training. All video footage must be steady and professional. The intent is not for the camera to be focused on the trainer but on the system devices being demonstrated and with the devices being trained upon clearly shown on the screen and readable. Large portions or the majority of the video training DVD's should be product/device specific (i.e. the training video should be of the systems at this facility or identical to the systems at this facility).

3.14 WARRANTY AND SERVICE:

A. The contractor guarantees all equipment, materials (excepting lamps) and workmanship to be free from defects for a period of one year from owner acceptance. This warranty supersedes all manufacturers warranties for the one-year period. Any manufacturer's warranty that exceeds the one-year will continue to be applicable. The contractor will replace any defective materials at no charge to owner. Any equipment replaced during the one-year warranty will have a new one-year warranty to the owner.

B. The contractor guarantees all labeling to be free from defects for a period of two years from the date of owner acceptance. In cases where the label's adhesive fails or the label suffers from degradation causing it to become unreadable, the label will be considered defective and will be replaced at no cost to the owner.

C. Fixtures that fail in the first 90 days will be replaced at no cost unless an electrical fault can be shown to have caused a major outage or fixture failures.

D. The contractor will respond by phone to requests for service within 2 business hours, and respond with a technician being sent (if needed) within 1 business day.

E. Any equipment that tends to "drift" or whose performance deteriorates during the warranty period will be considered defective, even if such drifting is normal during break in. This equipment will be readjusted by the contractor at no additional charge to the owner.

F. Provide all service at the owner's location regardless of any manufacturer warranty terms regarding carry in service.

G. During the warranty period if any equipment failed will take more than 24 hours to repair, the contractor will make available and interconnect at no cost to the owner suitable temporary equipment to maintain a fully operational system until repairs are complete.

3.15 SIGNAGE:

A. A sign shall be posted in an accessible location (typically on the rack or in the control booth) providing the name, address and phone number of the primary system contractor, manufacturer and supplier (if not already listed) of the system equipment.

3.16 DEMONSTRATION AND ACCEPTANCE:

A. CONDITIONS FOR SCHEDULING FINAL ACCEPTANCE:
1. It is not the intention of the final acceptance to be a "punch list" meeting. The system is required to be complete and fully tested. Any failure that may have occurred between the contractor's final tests and the date of acceptance will be noted and can be corrected after that date. All of the following conditions must be met before scheduling an acceptance test:
   a. The contractor will submit an initial post completion test report to the architect, construction manager, owner, and consultant. In this report, the contractor will certify that they have completed all of the initial post completion tests and bench focus.
   b. The contractor will submit the appropriate documentation to the consultant as called for within this specification. If documentation is not available, the system will not be accepted.

B. PROCEDURE FOR SCHEDULING FINAL ACCEPTANCE:
1. The contractor shall notify the owner and consultant of a proposed date and time for the final acceptance tests. The contractor shall include two alternate dates and times. The dates proposed will be a minimum of fourteen (14) calendar days from the date of the proposal.
2. The owner and consultant will respond within two (2) business days as to whether the date and time for final acceptance tests has been approved.
3. If none of the dates and times are acceptable, the owner and/or consultant will submit two alternate dates and/or times to the contractor. The contractor will respond within two (2) business days as to whether the dates and times for acceptance tests are acceptable.
4. If the dates and/or times proposed by the owner and/or consultant are not accepted, the contractor, owner, and/or consultant will continue to alternate per these procedures until an acceptable date and time has been found.

C. DATE OF TESTS:
1. Sufficient personnel will be on hand so that final focus/adjustments can be made to the lighting fixtures.
2. The contractor will have the appropriate equipment available to focus/adjust the lights (for example, ladder, manlift, etc.).
3. Tools must be on hand to remove connector plates and provide for other possible inspections.
4. Documentation for all wiring must be completed in at least a neat draft form and on site. This must include as built nomenclature and wiring schedules.
5. The contractor will demonstrate operation of all major components of the systems including, but not limited to, the following:
   a. Demonstrate all system functions and presets.

b. Demonstrate programming input.
c. Demonstrate DMX inputs with the lighting console.

6. Any time required resolving any of the above conditions will be billed by the consultant at the rate of $100.00 per hour to be deducted from the contractor's remaining balances with the owner. Any time waiting for the contractor to set up test equipment or locate microphones or other required equipment will be billed at the same rate and in the same manner.
7. Any return trips to correct any of the above conditions will be wholly billed to the contractor and deducted from the contractor's remaining balances with the owner at the same rate.

D. CONDITIONS OF ACCEPTANCE:
1. It is understood that the consultant cannot inspect every aspect of the installation. The contractor is responsible for installation quality and methods, fabrication quality and methods, and performance of their work. Acceptance of the project will constitute an acceptance of the following:
   a. All specified equipment is installed and the system is operating in an acceptable manner from a functional standpoint (See checklist below for specific functional requirements).
2. Upon completion and acceptance of the project the contractor will provide to the owner a letter stating that all of the equipment and installation methods meet or exceed the specification requirements in all respects, and that the system as installed meets all of the applicable standards and codes required under the specification and meets applicable federal, state and local codes and laws.

E. ACCEPTANCE TESTS CHECKLIST:
1. Prior to acceptance testing there are a number of conditions that need to be verified. There are also site conditions required for the consultant to perform tests as indicated. The contractor shall ensure that every item on this checklist has been performed and verified prior to the consultant’s acceptance tests can begin. Scheduling of the consultant to perform final acceptance tests must be coordinated with the owner, the project’s construction manager (or clerk of the works), the contractor and the consultant (See paragraphs above for detailed requirements).
2. GENERAL
   a. No other contractors may be working within the rooms to be tested during tests. Adjacent rooms cannot have construction noise – drilling, jackhammer usage, hammering, pounding, banging, etc. The consultant will be testing room conditions, coverage, functionality, turning on/off lighting, etc., and this requires an environment with no noise being produced by others and no people moving about.
   b. No other activities may take place during tests.
   c. The contractor must verify these conditions can be maintained during testing. If acceptance tests are scheduled and conflicts on site are found, the contractor scheduling the tests will be responsible for paying the costs of a return visit (see billing rates noted above).
3. STUDIO LIGHTING – TYPICALLY TAKES 1-2 HOURS.
   a. Required attendance – A technician fully capable of programming and operation on all software including the console, architectural controls and

any other software must be on site. Personnel and equipment needed for focus also need to be on site.

b. Any remote programming software that requires an external computer to address the lighting system must be on site, on line and loaded into a laptop provided by the contractor and ready for use if system programming changes are required.
c. All lighting circuits tested and verified. Have factory test report available on site.
d. All lighting system labeling complete, including wire management, yoke and fixture labeling, portable cabling, etc.
e. All tie line and wire ties installed, trimmed and complete.
f. All nodes and DMX distribution completely programmed and patched.
g. Verification, in the form of signed documents, that all portable equipment has been delivered to the owner per specs and drawings and stored as per the owner's instructions. Portable equipment must be available for visual inspection as well.
h. Network configuration software set up and fully programmed.

END OF SECTION

SECTION 19 30 00 – TV STUDIO PIPE GRID TRACKS AND CURTAINS

GENERAL

1.1 PROJECT INFORMATION:

A. Owner: Rochester Schools Modernization Program
70 Carlson Road, Suite 200
Rochester, NY 14610

B. Architect: Labella Associates, D.P.C.
300 State Street
Suite 201
Rochester, New York 14614

C. Consultant: AVL Designs, Incorporated
1788 Penfield Rd, Suite 1
Rochester, New York 14611
Phone (585) 586-1100

D. Contractor: The successful bidder for the work described herein. Also referred to variously as the contractor, the bidder, the lighting installer, the specialties contractor or the lighting contractor.

E. Others: Other contractors who have provided work under separate contract and in different phases of related projects in the space.

1.2 DEFINITIONS:

Code Requirements	Minimum requirements as specified by all applicable and published codes.
Concealed	Work installed in pipe and duct shafts, chases or recesses, inside walls, above ceilings, in slabs or below grade.
Equal or Equivalent	Equally acceptable as determined by Owner's Representative.
Extend	To increase the length(s) of any indicated conduit/wiring so as to reach a particular specified or implied point – including the provision of any misc. additional equipment as required for proper extension and to maintain full system functionality.
Final Acceptance	Owner acceptance of the project from Contractor upon certification by Owner's Representative.

Furnish	Supply and deliver to installation location.
Furnished by Others	Receive delivery at job site or where called for and install.
Inspection	Visual observations by Owner's site Representative
Install	Mount and connect equipment and associated materials ready for use.
Labeled	Refers to classification by a standards agency.
Or Approved Equal	Approved equal or equivalent as determined by Owner's Representative.
Owner's Representative	The Prime Professional, Construction Management or Clerk of the Works.
Provide	Furnish, install and connect ready for use.
Relocate	Disassemble, disconnect, and transport equipment to new locations, then clean, test, and install ready for use.
Replace	Remove and provide new item.
Review	A general contractual conformance check of specified products.
Satisfactory	As specified in contract documents.

Refer to General Conditions of the Contract for additional definitions.

1.3 INTENT OF DRAWINGS:

A. Throughout the contract documents there are various manufacturers and products referenced. It is understood that these products establish a basis of design that all other "or equal" substitutions must meet or exceed. All submitted devices must be the referenced product or approved equal.

B. The drawings in this package are diagrammatic in nature, unless detailed dimensioned drawings are included. The drawings show the approximate locations of equipment and devices. The final and exact locations of all non-dimensioned devices are subject to the approval of the Owner or the Owner's Representative. Devices with detailed installation dimensions; however, are critically located and must be installed to those indicated dimensions unless alternate instructions have been given to the contractor in writing by the consultant.

C. The contractor(s) shall inspect the entire building(s) with the Owner's representative prior to beginning any work and shall identify the exact locations and installation methods for all devices, conduit and wiring prior to beginning work.

D. Typical details are shown for the installation of various devices. The details do not apply to all situations. Installation methods for all work shall be subject to the Owner's and construction manager's approval. Provide all work and equipment required for a professional, workman-like installation.

1.4 RELATED SECTIONS & DOCUMENTS:

A. The contractor's shall examine the full set of construction drawings and specifications and ascertain all aspects of the scope of work described within this specification. The contractor will be responsible for cooperation with and adherence to the overall scope and intent of the project relative to the work being done by the contractor.

B. Drawings and general provisions of the Contract including General and Supplementary Conditions and Division 0, 1, 11 and 26 specification sections apply to work of this section (related specification sections may vary depending upon the particular CSI format being adhered to). All related drawings, contract conditions and general requirements found in the project manual that apply to the general contract will apply to the work described in this specification. Examine all referenced documents for general project requirements relating to the work in this specification. Contact the architects, engineers and/or construction manager for any clarification required to properly bid this project. It is the contractor's responsibility to obtain necessary clarification before bidding. No change orders will be allowed for existing project conditions and contractor requirements not properly investigated by the contractor.

C. Where work is provided by others (i.e. conduit, backboxes, rack installations, etc.), the specialties contractor (audio, A/V, lighting or rigging) is responsible to verify installation conditions that relate to his work. If installation of related work is substandard, deficient or missing items (this includes crooked backboxes in architecturally sensitive areas, missing pull boxes, incorrect conduit sizes, items that deviate from contract documents, etc.) then the specialties contractor shall stop his work and generate a written RFI through proper channels based upon construction documents. The specialties contractor shall not install his work to any substandard devices, etc. provided by others until such work has been repaired/returned to a satisfactory condition and until he has received written authorization from the construction manager to proceed. If the specialties contractor ignores substandard installation work by others and proceeds to install his devices to these items, then he accepts and bears sole responsibility to repair, reinstall and correct any found deficiencies to the satisfaction of the owner upon final inspections.

1.5 SECTION INCLUDES BUT IS NOT LIMITED TO:

A. Reinstallation of existing IFR TV studio curtains to new tracks. Provision of new pipe grid and related accessories. The owner will remove and store the curtains for the project. Any cleaning or ironing will be the responsibility of the owner.

B. Modify curtain hangers to the track as needed to provide proper trim at floor level.

C. Provision and installation of new curtains, tracks and all related and miscellaneous hardware.

D. Installation of connector strips.

E. Provision of all field welding, including field certifications, etc. as needed and noted on the contract documents.

1.6 RELATED WORK NOT INCLUDED:

A. Electrical: The electrical service for devices related to the rigging system will be provided by others. The rigging contractor will need to coordinate their work with the electrical work.

1.7 GENERAL REQUIREMENTS:

A. Provide all equipment outlined and described within this specification and assemble it into a complete, properly functioning system for use by the owner as described within this specification. The bidder assumes full responsibility for providing and installing systems that meet the performance and functional requirements stated, notwithstanding detailed information within this specification or on accompanying drawings.

B. Obtain appropriate parking and access permits for the duration of the project.

C. Furnish and install all equipment, including any and all items not specified within this document but required to meet any and all requirements within this specification in order to provide a complete functioning system.

D. Contractor shall order all equipment within 60 days of submittal approval. In instances where the submitted equipment that was approved has subsequently been discontinued resulting in an increase in cost, the contractor is entitled to additional payments for the cost difference between the discontinued item and the current model on a per item basis. If equipment is ordered beyond that 60 day time frame, then the contractor bears the sole responsibility of all costs differences.

E. It is the contractor’s responsibility to clarify any misunderstandings or drawing-drawing/drawing-spec discrepancies prior to bid submittal and offer detailed alternatives in writing. Once a bid has been submitted it is assumed that the bidder is able to perform the entire scope of the work for the price specified. Where discrepancies occur and pre-bid instructions have not been obtained, the contractor will abide by the owner’s decision.

In cases of a difference between stated quantities in drawings, specs or electrical drawings, the higher quantity will prevail.

F. Check in detail each component before installation as well as each portion of the project during installation to ensure that the intent of this specification is achieved.

G. Obtain all required building and/or electrical permits and licenses. Obtain required insurance and bonds as required by owner.

H. Provide all required equipment and hardware not provided by others as necessary to provide a complete system.

1.8 BIDDER QUALIFICATIONS – SUBMITTALS:

A. Provide evidence that the bidder has been in business for at least five years. It must be noted in the bid if the firm bidding is currently in bankruptcy of any type or has been in the last five years.

B. The bidder shall provide references of at least three (3) installations of comparable scope performed by the bidder, including location, system description, and name, address, and telephone number of the architects, consultants, and owners and the names of contract persons for each.

C. The bid shall include the name and qualifications of the person in charge of the project. One member of the successful bidder's firm must be in charge of the project from award to completion. If the person in charge of the project is changed for any reason without the express written permission of the owner, the contract may be canceled at the owner's option and or payments may be withheld pending owner's consent to the change.

D. Evidence of the ability and intent to meet the guarantee and service requirements included in this document. Financial information may be required before bid award. This typically will require a balance sheet, income statement, profit and loss statement, and stockholder information provided by a CPA within the last 6 months. Interim financial information may also be required.

E. The bidder must maintain service facilities and have service available on site within 24 hours. The bidder must be a factory authorized dealer for all products submitted and may be required to submit such proof of factory authorization in writing, or in the form of copies of authorized agreements with the various vendors.

F. The bidder and all persons performing theatrical rigging system related work on this job must be ETCP certified (Entertainment Technician Certification Program) as a theater or arena rigger or under the direct supervision of an ETCP certified foreman. This applies to all theatrical rigging equipment installation and any other assemblies indicated as being provided or installed by the bidder. Proof of current certification MUST be provided in the submittals package (this is typically in the form of a pdf copy of the current and

active certification certificates from PLASA). Out of date or expired certifications shall not be recognized as meeting the requirements of ETCP certification.

G. The bidder must be the installing contractor or shall provide written documentation of any intended qualified subcontractors up front for approval. All subcontractors must be identified.

1.9 INQUIRIES AND COMMUNICATIONS:

A. All questions should be posed in writing as called for in the project manual.

B. Verbal responses will be limited to instructing bidders where to find items in the drawings and specs. Where discrepancies occur the bidder will need to formalize their questions as called for in the project manual procedures.

C. Comply with all requirements regarding these specifications, manufacturer's recommendations, and all applicable federal and state codes.

D. Where discrepancies occur and pre bid instructions have not been obtained by written request, the contractor will abide by the owners decision at no additional cost to the owner.

1.10 COORDINATION:

A. ITEMS TO BE PROVIDED BY OTHERS:
1. Structural waffle deck system (existing and to remain).
2. Mezzanine and decking system (existing and to remain).
3. Electrical services by Division 26 Contractor. See drawings for more information.

B. Cooperate with other trades to achieve well-coordinated progress at all times. Notify the construction manager as often as necessary with regards to job progress or changes in the installation schedule. No change orders for additional payment will be allowed based upon conflicts with other trades on the project site. All such conflicts will be reported to the construction manager, the architect, owner, general contractor, and the consultant in writing. All reasonable attempts will be made to correct any difficulties.

C. Staff the job site adequately at all times to maintain a progress in keeping with the total project progress. No allowances will be made for overtime required to maintain job progress.

D. Provide all materials to be installed by other in a timely fashion based upon the related trades schedule.

E. The job site will be left in a clean safe condition at the end of any workday. All debris removal to a site designated by the owner will be the responsibility of the bidder on a daily basis.

F. All storage of tools and materials will be the responsibility of the contractor. On site storage may be possible. This will need to be approved and coordinated with the owner. All risk of loss for materials or tools stored on site will be that of the contractor regardless of any verbal assurances that the contractor may receive from owner's personnel as to security. No on-site storage security will be provided by the owner.

G. The contractor will attend regular meetings with the construction manager, the architect, owner, general contractor, and the consultant when requested by any of the above, in order to achieve project coordination and progress.

1.11 STANDARDS REFERENCES:

A. The contractor is responsible for the Provision of material and methods installation of equipment conforming to the currently applicable standards of the following as well as those described elsewhere within the contract documents.

1. AA - The Aluminum Association
2. AISC - American Institute of Steel Construction
3. AISI - American Iron and Steel Institute
4. ANSI - American National Standards Institute
5. ASCE - American Society of Civil Engineers
6. ASME - American Society of Mechanical Engineers
7. ASTM - American Society for Testing Materials
8. AWS - American Welding Society
9. ESTA - Entertainment Services and Technology Association
10. FCC - Federal Communications Commission
11. IEC - International Electronics Commission
12. IFI - Industrial Fasteners Institute
13. ISO - International Organization for Standardization
14. NACM - National Association of Chain Manufacturers
15. NEC - The National Electric Code
16. NEMA - National Electrical Manufacture Association
17. NFPA - National Fire Protection Association
18. OSHA - Occupational Safety and Health Association
19. PLASA NA- Professional Lighting and Sound Association of North America
20. SAE - Society of Automotive Engineers
21. SMPTE - Society of Motion Picture and Television Engineers
22. UL - Underwriters Laboratories (Electrical components, devices and accessories shall bear a UL label where applicable. UL listed and labeled as defined by NFPA70, article 100, by a testing agency acceptable to authorities having jurisdiction and marked for intended use.)
23. USITT - United States Institute for Theater Technology "Recommended Guidelines for theater rigging and theater machinery-specifications and practices".
24. Wire Rope Users Manual
25. Manual of Steel Construction 14th Edition or later (aka the AISC Steel Construction Manual)

B. Provide certification and labels where applicable. Comply with federal, state, and local regulations and applicable union regulations where required. All equipment will have the proper labels for New York State.

C. Provide only equipment that is standard, new, previously unused equipment of the latest design or of the latest model of regular stock product and is supplied with all parts regularly used with the equipment offered for the purpose intended. No re-furbished or obsolete materials shall be permitted. The contractor guarantees that no modification of the equipment has been made contrary to the manufacturer's regular practice.

D. Review all materials and equipment prior to installation and notify owner as to any changes or discrepancies between published specifications and the actual material and equipment to be installed.

1.12 SUBSTITUTIONS:

A. The successful bidder shall submit within ten (10) calendar days after opening of bids, and prior to award of the contract, the kind, type, brand, manufacturer or equipment included in the base bid. Equivalent products must be highlighted on this list. When requested, the successful bidder shall also submit information, describing in specific detail, how the equivalent bid material differs from the appearance, quality and performance required by the base specification. Submittal of the manufacturer's advertising cut sheets is not acceptable for proof of equivalency.

B. The costs for any changes by other trades required to implement the substitution proposed will be borne by the bidder.

C. If proposing alternates that affect the system flow as shown on the drawings, the bidder must submit flow charts, and any other drawings necessary to show differences in the system operation from the primary referenced system.

D. The successful bidder shall be required to submit, if requested, a mockup sample of any substituted systems (i.e. motorized units, blocks, rigging assemblies, etc.) in order to determine equivalency. Any mockups shall be provided both for the owner's and consultant's evaluation & approval.

E. The risk of whether bid equivalents will be accepted is borne by the contractor. See section 2.1 "Performance Requirements" for more information.

F. No substitutions will be considered after the Contract award unless specifically provided in the Contract Documents.

G. Final judgment as to equality will be solely that of the owner, consultant, and architect.

H. Dimensions for rigging equipment are based on JR. Clancy equipment. Verify all dimensional issues when bidding alternate manufacturers.

1.13 SUBMITTALS:

A. Equipment: After bid award but before ordering any equipment or starting any work submit to the owner for approval a list of all equipment to be furnished showing types, models, quantities and manufacturer. Attach catalog sheets for all items submitted.

B. Submit seven (7) copies of a schedule for submission of drawings for fabrication and site work.

C. Submit seven (7) copies of submission package, unless quantity of submission packages differs in front end contract documents. Contractor shall submit quantity of submission packages for each discipline as directed in front end documentation (or as indicated here if no quantities are indicated in front end contract documentation).

D. Submit two (2) copies of curtain material samples (for each different type of curtain indicated on contract documents) and standard color selection charts (charts to be in color and manufacturer's actual cut sheet – no color selection charts in black & white or photocopies of original color selection charts shall be acceptable) for approval by the architect & owner prior to any fabrication or installation. These two (2) copies are to be submitted to the architect ONLY. The intent of these is for the charts and samples to be used for the selection of the curtain and shell colors. Submit documentation in the submittal package to the consultant that these have been delivered to the architect & owner.

E. Submit (7) copies of each of the following, as each pertains to this project, for approval by the construction manager, the architect, owner and the consultant prior to any fabrication or installation. Provide copies for each related person performing indicated work who holds these certifications:
   1. Current welding certifications
   2. Current ETCP certification

F. Submit seven (7) copies of material schedules, shop drawings, bill of materials, rigging system data/cut sheets and any applicable fire rating data or MSDS sheets for all rigging system components and curtains for approval by the construction manager, the architect, owner, general contractor and the consultant prior to any fabrication or installation.

G. Submit seven (7) copies of a complete set of rigging drawings (each sheet bearing the signed stamp of and fully reviewed by a current New York State licensed professional engineer – i.e. a "stamped set" or "NYS PE stamped" set of drawings) of the proposed rigging system and related building components (including, but not limited to, the overhead rigging steel, concrete waffle deck system, floor construction and loading under locking rail, etc.).
   1. Technical Drawings:
      a. The full set of submitted drawings and data sheets must be presented in a professional manner.
      b. All shop drawings for submission must be CADD drawn (created with a computer aided drafting program). Hand drawings are not allowed. Illegible drawings shall not be acceptable.

c. All cut sheets for submission must be clean electronic (pdf) copies of the manufacturer's actual data sheets. Mark up each sheet with highlights or boxes around submitted products, options, etc. No data sheets shall be acceptable that are illegible, poorly photocopied or hand marked up with scribbles, etc.
d. Provide a complete drawing package including attachment details, rigging details, suspension details & mounting and other required miscellaneous details.
e. Provide complete system drawings including plans, elevations, sections and details.
f. Provide complete fabrication and attachment method drawings.
g. Provide a separate cut sheet (manufacturer's data sheet) for every piece of equipment being provided.

H. The intent of the submittal package is that it contain one copy of the appropriate cut sheet for each item that the contractor is proposing to use on this project as well as a complete set of stamped shop drawings that shows plan, section and elevation views and details of the entire rigging system. There should be plan view drawings detailing set layouts & dimensions, batten and curtain lengths and other device locations. There should be elevation/section views that show set travel trims, tormentor/Shakespeare/truss locations and other pertinent details. There should be detail drawings that show all typical attachment details, trim chains, beam clamps, pipe assembly constructions, etc. as well as all custom fabricated devices, suspension intentions, etc. There should be manufacturer drawings of all required mechanical and electrical details that relate to any included motorized units and control systems. The intent of the stamped shop drawings is for the contractor to communicate to the consultant the exact proposed locations, materials and fabrication methods of all standard and custom items for all intended rigging system equipment as well as to have all proposed systems approved by a structural engineer as to loading, breaking strengths, embedment depths, loads imposed on building structure, etc. The PE review shall include an evaluation of all individual system components, the rigging components together as an interrelated system and a review of all related rigging steel, floor loading, system uplift on structure, etc. Submission of this package by the contractor is proof that the contractor has reviewed the entire system design, understands the intents and concurs that the designed system will actually function as laid out in the contract documents.

1.14 FUNCTIONAL REQUIREMENTS & SYSTEM DESCRIPTION:

A. The contractor shall provide a rigging system that incorporates the dead-hung pipe grid system and accessories as well as wrap-around style curtain/track systems as detailed on the drawings. The contractor shall provide all items noted as well as any related & additional items not noted that are necessary in order to provide a working pipe grid system based upon the intents shown on the bid drawings and written specifications section. The contractor shall verify exact room parameters in field prior to beginning any work on this project. See the drawings for more information on the pipe grid. Provide

pipe grid system complete with pipe battens, Grid Lock pipe clamps, batten splices and all necessary and miscellaneous hardware as indicated.

PRODUCTS

1.15 PERFORMANCE REQUIREMENTS:

A. The requirements of the referenced equipment are not generic in nature. Specific performance, control and routing capabilities are necessary for any alternate equipment. The details set forth herein and within the functional description of the system are the critical criteria for the selection of each piece of equipment.

B. In bidding equipment from manufacturers other than those referenced be aware that all functional information included in this specification as well as the manufacturer's specifications, physical size, serviceability, warranty terms, product availability and other non-technical issues may be determining factors in product equivalency. Final judgment as to equality will be solely that of the owner, architect and consultant.

C. Substitution Criteria:
   1. Curtain & Track substitutions require proof that the substituted product meets all performance requirements including but not limited to:
      a. Flame rating
      b. Available colors & finishes
      c. Sheen of fabric face
      d. Material weight per square yard
      e. Light blocking capabilities
      f. Longevity
      g. UV Resistance
      h. General workability and finished appearance
      i. Track construction, pulleys and material finishes available
      j. Track weights, accessories and attachments
      k. Rotator & brake operations and functionality
      l. Load ratings of curtain track equipment
      m. Curtain track and accessories available finishes
   2. Wire substitutions require proof that the substituted product meets all performance requirements including but not limited to:
      a. Jacket Type.
      b. Number of Conductors.
      c. Jacket Shape – i.e. round, twisted, etc.
      d. Number of strands and gauge.
      e. Flexibility.
      f. Overall physical size of wire.
      g. Capacitance and resistance conductor-to-conductor as well as single conductor.
   3. Miscellaneous rigging hardware (counterweight or dead hung) substitutions require proof that the substituted product meets all performance requirements including but not limited to:

a. Physical size.
b. Physical weight (self-weight of individual piece).
c. Stamping or other indications of load rating.
d. Custom pieces available if need arises.
e. Critical spacing, line handling or physical size characteristics that may impact installation intents.
f. Load ratings and WLL capacities.
g. Safety factors.
h. Attachment methods.
i. Welding requirements.
j. Physical construction.
k. Rated and expected life duty cycles.
l. Part traceability.
m. Appropriateness or approval for overhead lifting use.

D. All individual parts and overall assemblies shall additionally conform to the requirements listed below in the “Standards” section of these written specifications.

E. No contractor-manufactured products shall be acceptable in place of referenced items except for those items enumerated in this specification as “custom.”

F. The current manufacturer’s data sheet for each referenced piece of equipment in force at the date of printing of this specification shall be the basis for the specifications of the referenced equipment.

G. Any necessary product accessories such as additional power outlets, power supplies, rack mount kits, connectors, adapters or other small items are the responsibility of the contractor to provide, whether or not they are called out in detail within these specifications. This may include additional electrical work, (also depending upon the differences between any substituted vs. specified equipment), junction boxes, breakers, disconnects, etc. and shall be the sole responsibility of the contractor to provide at no additional cost to the owner.

H. Specification details are provided only for the features required for current and intended future uses of the products.

I. Quantities:
1. Where no quantity is indicated in the written specifications, the contractor shall supply quantities as indicated on drawings.
2. Items not indicated on drawings but necessary for project completion shall be provided as required for project execution at no additional cost.

1.16 STANDARDS:

A. Intentions of standards:
1. This document establishes the minimum standards required for the specified rigging and related equipment installed in this facility as part of this specification

and related drawings; however, the proper installation and operation of this equipment are equally important. Equipment shall be operated and maintained by (or under the supervision of) a competent person (trained and experienced personnel with the proper knowledge and training to understand theater rigging systems and to recognize all of the imposed hazards and functional requirements that these devices involve as it relates to this particular installation). Failure to adhere to these minimum standards could result in serious injury to operators or bystanders and/or substantial structural damage.

2. These standards apply to rigging hardware only and not to the building or related structure from which the rigging components are supported/suspended.
3. These standards DO NOT apply to raising, lowering, suspending or "flying" of people. None of the items listed within this specification or indicated on the contract documents is intended for the aforementioned rigging or attachment of a person to any portion of the theater rigging or related systems. RIGGING A PERSON TO/FROM THIS SYSTEM IS UNSAFE AND IS NEVER RECOMMENDED.

B. All dead hung rigging system components shall conform (as a minimum) to the standards set forth in ANSI E1.4 – 2009 (Entertainment Technology Manual Counterweight Rigging Systems) or the current version of the most recent standard revision.

C. All parts shall be industry standard load rated types. All hardware shall be rated for maximum possible load with an industry standard safety factor as per the codes and practices noted elsewhere within this specification. A list of load factors for all materials utilized shall be provided to the owner in the form of manufacturer data sheets.

D. The list of major components that follows does not include all required items, only major system components. Field verify dimensions for all items and change as required to fit field conditions for flange sizes, headblock spacing, steel elevations, orientations, etc.

E. Materials shall conform to the following ASTM and ANSI standard specifications:
1. A-47 Specification for malleable iron casting.
2. A-48 Specification for gray iron casting.
3. A-120 Specification for black and hot-dipped zinc-coated (galvanized) steel pipe for ordinary use.
4. B18.2.1&2 Specification for square and hex bolts and nuts.

F. In order to establish minimum standards of safety, the following factors shall be used:
1. Cables and fittings - 10:1 Safety Factor.
2. Cable bending ratio - Sheave tread diameter is 30 times cable diameter or as recommended by wire rope manufacturer, whichever is more restrictive.
3. Maximum fleet angle - 1-1/2 degrees.
4. Steel - 1/5 of yield.
5. Bearings - Two times required load at full speed for 2000 hours.
6. Bolts - Minimum SAE J429 Grade 5 (ISO R898 Class 8.8), zinc plated.
7. Motors - 1.0 Service Factor.
8. Gearboxes - 1.25 Mechanical Strength Service Factor.

G. COMPONENTS:
1. All system components shall be designed, engineered and manufactured to withstand all design loads without deformation or damage to components and shall meet the requirements of the “Design Factors” section of the current ANSI codes for counterweight rigging systems.
2. All housings and mounting components shall use materials having ductile properties that will deform plastically without fracturing.
3. Unless specifically noted otherwise, fasteners shall have a minimum SAE J429 Grade 5 or ISO R898 Class 8.8 rating. Bolts in tension shall have nuts of equivalent rating. Fasteners shall be self-locking or secured by alternate means (moused) to prevent loosening. Fasteners shall be installed in accordance with the manufacturer’s instructions. Attachments made through slotted, elongated or oversized holes (more than 1/16” over the fastener diameter) shall use flat washers.
4. The maximum allowable fleet angle for lift lines and purchase line shall be in accordance with the requirements of the “Design Factors” section of the current ANSI codes for counterweight rigging systems, unless the grooves in the block, and the bearings, are designed to accept a greater side thrust without harming the wire rope.
5. All welding shall be performed in accordance with current AWS standards as well as in compliance with any additional local, state or other standards. All field welds shall be certified and verified as required in the contract documents – at the bidder’s expense.
6. No quick links or quick link style sleeved and threaded coupler style links shall be allowed for overhead lifting under any circumstances – even if the parts are load rated.

1.17 MISCELLANEOUS RIGGING HARDWARE:

A. EYE BOLTS:
1. All eyebolts shall be The Crosby Group or equal.
2. All eyebolts shall be:
   a. Drop forged steel and hot dipped galvanized steel in construction or machinery type - quenched and tempered.
   b. Fatigue rated.
   c. Load rated.
   d. Recommended for straight and in-line pulls only.
   e. Where circumstances require angular loading, only shoulder eye or machinery bolts shall be used. For angular lifts, the contractor shall adjust size of eye bolts in order to maintain the proper working load limit and safety factor based upon manufacturer’s standard deratings due to imposed angular forces/loads. Direction of pull of 45° will cause the adjusted working load to be 30% of the rated working load. Direction of pull of 90° will cause the adjusted working load to be 25% of the rated working load.
   f. Regular nut eye bolts are not allowed and are strictly prohibited.
   g. The shoulder shall always be secured flush against the load surface.

B. SHACKLES:
   1. All shackles shall be The Crosby Group or equal.
   2. All shackles shall be:
      a. Drop forged and hot dipped galvanized steel in construction.
      b. Screw pin or bolt type only.
      c. Provided with a redundant fixing means (moused), after pin insertion (this is to keep any and all threaded pins from backing out over time or due to vibration or rotation during use). The fixing method shall be performed in accordance with the manufacturer's recommendations. Mouse with galvanized wire or black nylon wire ties after final adjustment to prevent loosening.
      d. Fatigue rated.
      e. Load rated.
      f. Working load limit permanently shown on the body of the shackle.
      g. Quenched and tempered.
      h. Meet DNV impact requirements of 42 joules at -20°C.
      i. Furnished with certification certificates to design standards (ABS, DNV,Lloyds...) and proof tested.
      j. Meet the performance requirements of Federal Specification RR-C-271D, Type IVA/IVB, Grade A/B, Class 2/3 (except for those provisions required of the contractor).
      k. Rated for use in applications involving side-loading circumstances (with reduced load limits, depending on angle of loading).
      l. Where circumstances require angular loading, the contractor shall adjust size of shackles in order to maintain the proper working load limit and safety factor based upon manufacturer's standard deratings due to imposed angular forces/loads. Direction of pull of 45° will cause the adjusted working load to be 70% of the rated working load. Direction of pull of 90° will cause the adjusted working load to be 50% of the rated working load.
      m. Shackles shall never be used to join two bridled parts together.
      n. Angular loads that exceed 120° included angle shall never be imposed upon any shackle (and those that are at 120° included angle shall only be symmetrically loaded).
      o. Round pin shackles are not allowed and are strictly prohibited.

C. TURNBUCKLES:
   1. All turnbuckles shall be The Crosby Group or equal.
   2. All turnbuckles shall be:
      a. Drop forged and hot dipped galvanized steel in construction.
      b. Fatigue rated.
      c. End fittings quenched and tempered.
      d. Bodies heat treated by normalizing.
      e. Feature UNC threads with modified UNJ threads on end fittings for improved fatigue properties.
      f. Recommended for straight and in-line pulls only.
      g. Meet the performance requirements of Federal Specifications FF-T-791b, Type 1, Form 1 – Class 2/4/7/8 (except for those provisions required of the contractor).

h. Provided with a redundant fixing means (moused), after pin insertion (this is to keep any and all threaded pins from backing out over time or due to vibration or rotation during use). The fixing method shall be performed in accordance with the manufacturer's recommendations. Mouse with galvanized wire or black nylon wire ties after final adjustment to prevent loosening.
i. Turnbuckles shall not feature hook end fittings. Hook end fittings are not allowed and are strictly prohibited.

D. GENERAL FITTINGS REQUIREMENTS:
1. Never use fittings that:
   a. Show signs of wear or damage.
   b. Shafts are bent or eyes are elongated (past manufacturing tolerances).
   c. Are underrated on their loading limits.
   d. Are not designed to safely handle the loads imposed upon them.
   e. Have been modified, undercut, shortened or otherwise altered by the contractor.
   f. Have had a load applied to them suddenly.
2. Always use fittings that:
   a. Have clean threads, shanks and receiving holes.
   b. Have been properly tightened and moused.
   c. Have been properly seated as per the manufacturer's recommendations against the load.
   d. Are designed to safely handle the loads imposed upon them, including angular lifts with appropriate deratings.
   e. Have been shimmed with washers in order to change eye alignment to necessary orientation (if needed).
3. All angular loads must be applied in the plane of the fittings' bow.
4. Misc. fittings and parts shall not be allowed that are "consumer grade" non-load rated, purchased at a local box stores, etc. excepting that these parts shall meet or exceed all requirements as set forth in these specifications.
5. No previously used parts or fittings shall be allowed. Only brand new, never before been installed parts shall be provided for this project.

E. FABRICATION:
1. The mechanical fabrication and workmanship shall incorporate best practices for good fit and finish. There shall be no burrs or sharp edges to cause a hazard nor shall there be any sharp corners accessible to personnel.
2. All moving parts shall have specified tolerances. Sheaves shall run plumb and true and shall not scrape housings.
3. All equipment shall be built and installed to facilitate future maintenance and replacement.

F. FINISHES:
1. Paint shall be the manufacturer's standard finish and color except as noted.
2. All turnbuckles, clips, tracks, chains and other items of incidental hardware shall be furnished plated or painted.

G. RECOMMENDED WORKING LOAD (RWL):

1. This specification calls for minimum recommended working loads for many hardware items. This is the maximum load which the manufacturer recommends be applied to properly installed, maintained and operated new equipment. Manufacturer's recommended working loads shall be determined by calculations by a Licensed Professional Engineer and destructive testing by an independent testing laboratory. These calculations and reports shall be available for review.
2. All rigging hardware, rigging assemblies, etc. noted in this specification shall bear a maximum of 1/10th of the RWL for the weakest component. The minimum safety factor for any rigging related devices or assemblies in this project shall be 10:1 (RWL vs. actual imposed load per location), unless otherwise noted and regardless of the manufacturer's safety factor.
3. Any contractor fabricated or erected assemblies must feature a 10:1 safety factor. It shall be the sole responsibility of the fabricating and installing contractor to verify that the entire assembly meets this minimum 10:1 safety factor, regardless of what pieces may be noted on the contract drawings. If the contractor finds that undersized hardware was specified, then it is his responsibility to provide upgraded/larger sized hardware in order to maintain the noted 10:1 safety factor.
4. All misc. hardware, bolts, shackles, pairing rings, turnbuckles, nuts, washers, etc. shall be as manufactured by The Crosby Group, Inc. or equal, shall be load rated, shall be recommended for the usage imposed and shall be a minimum of Grade 5 or equal. All noted RWL's shown in the table below are based upon The Crosby Group, Inc. published data tables.

H. MINIMUM RECOMMENDED WORKING LOADS PER PART:

Description	Shank Diameter (in/mm)	Working Load Limit (WLL) ton
Screw Pin Anchor Shackle (forged)	3/16"	1/3
(referenced product forged, G-209/S-209)	¼"	½
	5/16"	¾
	3/8"	1
	7/16"	1.5
	½"	2
	5/8"	3.25
	¾"	4.74
Shoulder Nut Eye Bolt (forged)	6.35 mm	.29
(referenced product forged, G-277)	7.94 mm	.54
	9.53 mm	.70
	12.7 mm	1.18
	15.9 mm	2.35

Machinery Eye Bolt (forged)	6.35 mm	.29
(referenced product forged, S-279 UNC)	7.94 mm	.54
	9.53 mm	.70
	12.7 mm	1.18
	15.9 mm	2.35
Jaw & Eye Turnbuckle (forged)	¼"	.23
(referenced product forged, HG-227)	5/16"	.36
	3/8"	.54
	½"	1
	5/8"	1.59
	¾"	2.36

- The above chart is only for the most commonly used hardware specified and is not an all inclusive or comprehensive list. For any hardware specified that is not listed here, the contractor shall refer to the ratings shown in the latest Crosby Group hardware catalog.
- Recommended Working Load (RWL) and Working Load Limit (WLL) are understood to be synonymous terms.
- Fatigue load rating on most Crosby hardware is 1.5 times the Working Load Limit.
- Maximum Proof load rating on most Crosby hardware is 2.0 times the Working Load Limit.
- Minimum Ultimate load rating of most Crosby hardware is 5.0 times the Working Load Limit minimum.
- All tonnage is understood to be a standard ton (2,000 lbs.).
- Verify all load limits with the manufacturer's most recent publications.
- All hardware must be hot dipped galvanized.

1.18 CROSS GRID CONNECTOR ASSEMBLY: REFERENCED PRODUCT PEAK TRADING GRID LOCK PIPE CLAMP

A. The cross grid connector shall be a right angle, low profile connector assembly consisting of two pieces. These pieces shall be capable of joining two 1 ½" pipe battens oriented at a right angle to each other without the need to slide them on from the pipe ends.

B. Each cross grid connector clamp shall be made from a single piece of 7-gauge steel flat bar (3/16") that has been factory formed to fit firmly around a standard 1 ½" pipe batten. Clamp sections shall be fastened together with four 3/8" load rated (Grade 5 minimum) hex head bolts with matching locknuts. When the clamps are fastened together, they

shall force the pipe battens together and greatly restrict rotational and lateral pipe movement.

C. Cross grid connector assemblies shall have a RWL of 1800 lbs. minimum.

1.19 BATTEN CLAMP: REFERENCED PRODUCT H&H SPECIALTIES MODEL #680 BATTEN CLAMP

A. All batten clamps shall be made from steel or other ductile materials. Clamps shall fully wrap the perimeter of the batten cross-section and shall provide a positive resistance to rotational loads. The clamps shall permit attachment to the lift line using hardware specifically designed for the connection type indicated. Batten clamps shall not have sharp edges or corners. No half clamps shall be allowed.

B. Batten clamps shall be constructed of 10-gauge steel and shall be furnished with 3/8" x 1" Grade 5 hex bolts with locknuts and a hole for the attachment of cable, chain, shackle, turnbuckle, thimble or other fittings.

C. Beam clamps shall be for use on standard 1 ½' schedule 40 pipe battens.

D. Batten clamps shall have a WLL of 1,400 lbs.

1.20 PIPE BATTENS:

A. All battens shall be 1-1/2" nominal diameter, schedule 40 black iron pipe in lengths as shown on the drawings. Nominal diameter is the ID size of the pipe. Actual OD shall be larger.

B. Any batten exceeding one standard pipe length (typically approx. 20') shall be joined using internal splicing sleeves. (All joints shall be spliced with 18" long splicing sleeves with 9" extending into each pipe and held by two 3/8" hex bolts and lock nuts on each side of the joint. Splices shall not occur at lift points. See drawings for more information and requirements for batten splices, bolt orientation and interchangeability.) Threaded couplers shall not be permitted. All batten splices shall have at least the same overall capacity, deflection and strength as the component pipe and shall be interchangeable with any other batten splice provided as part of this project. Each batten shall be coated with a rust resistant finish.

C. A minimum of 100 mm (4 inches) at each end of the batten shall be durably marked with an approved OSHA color (by use of an item such as a safety yellow vinyl end cap "batten cap" that fits snugly over the end of the batten), except in architecturally sensitive areas.

D. Each batten shall be capable of supporting at minimum 45 kg/m (30 lbs/ft) of uniformly distributed load. Each batten shall be capable of sustaining a point load of 45 kg (100 pounds) at mid-span between any two lift lines with a maximum span deflection of 1/180 of the span (unless specifically noted elsewhere in these written specifications or on the contract documents).

E. The typical batten shall be fabricated using materials that support the design loads in accordance with the requirements of this standard.

F. See Section Labeling and Marking for labeling requirements.

1.21 METAL FRAMING SYSTEM: REFERENCED PRODUCT UNISTRUT METAL FRAMING

A. All contractor provided metal framing, metal channel or miscellaneous support systems indicated on the drawings shall be Unistrut Framing Systems 1 5/8" width series channel and related nuts & hardware as manufactured by Unistrut Corporation or equal.

B. Framing Members:
1. Unistrut channel members and continuous inserts shall be fabricated from cold-formed to size from structural grade, low carbon strip steel.
2. Welding: All spot-welded combination members (except P1001T) shall be welded on 3" (76 mm) maximum centers.
3. Curved channel: All curved Unistrut channel noted on the drawings shall be curved to the radius specified by the manufacturer. No contractor bent or curved channel shall be acceptable.
4. Raw steel shall conform to the following ASTM specifications:

GAGE	FINISH	ASTM NO.
12	GR & HG	A1011 SS GR 33
	PG	A653 GR 33
14	GR & HG	A1011 SS GR 33
	PG	A653 GR 33
16	GR & HG	A1011 SS GR 33
	PG	A653 GR 33
19	GR	A1008

C. Nuts & Bolts:
1. Unistrut nuts shall be made from steel bars. After all machining operations are complete, they shall be thoroughly case hardened. Nuts shall be rectangular with ends shaped to permit a quarter turn clockwise in the framing member after insertion through the slotted opening in the channel. Two toothed grooves in the top of the nut shall engage the unturned edges of the channel and, after bolting operations are completed, will prevent any movement of the bolt and nut within the framing member. All bolts and nuts shall have unified coarse screw threads. The standard framing nuts shall conform to ASTM Specification A1011 SS GR 33 (material only). Screws shall conform to SAE J429 GR.
2. Bolt Torque: Bolt torque values are given to ensure the proper connection between Unistrut Metal Framing components. It is important to understand that there is a direct, but not necessarily consistent, relationship between bolt torque and tension in the bolt. Too much tension in the bolt can cause it to break or crush the component parts. Too little tension in the bolt can prevent the connection from

developing its full load capacity. The torque values given have been developed over many years of experience and testing.

Bolt Torque						
Bolt Size	¼" – 20	5/16" – 18	3/8" – 16	½" – 13	5/8" – 11	¾" – 10
Rec. Torque Ft./Lbs. (N*m)	6 (8)	11 (15)	19 (26)	50 (68)	100 (136)	125 (170)
Max Torque Ft./Lbs. (N*m)	7 (9)	15 (20)	25 (34)	70 (95)	125 (170)	135 (183)

3. These are based on using a properly calibrated torque wrench with a clean dry (non-lubricated) Unistrut fitting, bolt and nut. A lubricated bolt or nut can cause extremely high tension in the connection and may lead to bolt failure. It must be noted that the accuracy of commercial torque wrenches varies widely and it is the responsibility of the installer to ensure that proper bolt torque has been achieved.

D. Fittings:
1. Unistrut fittings, unless noted otherwise, shall be punch-press made from hot rolled, pickled and oiled steel plates, strip or coil, and shall conform to ASTM specifications A575, A576, A635 or A36. The fitting steel shall also meet the physical requirement of ASTM A1011 SS GR 33. The pickling of the steel shall produce a smooth surface free from scale.

E. Loading:
1. All loading characteristics shall meet or exceed those published in the Unistrut catalog for each associated member including, but not limited to, beam loading, uniform loading, cantilever loading, column loading, deflection, shear, pull-out force, etc.
2. Load Data: All beam and column load data pertains to carbon steel and stainless steel channels. Load tables and charts are constructed to be in accordance with the "Specification For The Design Of Cold-Formed Steel Structural Members 2001 Edition" published by the American Iron And Steel Institute Using ASD Method.

Type of Load	Safety Factor to Yield Strength	Safety Factor to Ultimate Strength
Beam Loads	1.67	2.0
Column Loads	1.80	2.2

F. Finish:
1. The Unistrut channel, nuts, bolts and all fittings shall be finished with a durable, multi-step process that provides resistance to corrosion, chalking, checking, fading, etc. (unless unfinished, stainless steel or aluminum channels are specifically called out elsewhere within these specifications or on the drawings).

All portions of the Unistrut that are visible below ceiling surfaces, etc. shall be painted by the contractor as noted on the drawings (typically this is in a flat black finish, smooth and even, with no brush marks, drips, runs or other visible finish marks showing). In instances where the finish must match a specific adjacent surface, the contractor shall obtain the exact finish color from the architect and the finish paint from related contractors (typically the painting contractor). Finished other than dark colors may also require the contractor to lightly sand all surfaces for maximum paint adhesion, provision of primer coats, provision of finish coats, etc. In order to properly finish all metal framing system parts, the contractor may be required to spray all parts individually in a spray booth.

2. Unless otherwise indicated, all metal framing system parts shall be finished in Unistrut Perma-Green III (GR) or equal high performance coating. No bare metal finishes shall be allowed where Unistrut channel framing system parts have been called out.
3. Any cut ends, drilled holes or any significant scratches in the finish of metal framing members shall be "touch-up" finished by the contractor with appropriate layers of primer (Rustoleum or Krylon clean metal primer) and finish coats (Rustoleum or Krylon flat finish) of the appropriate matching color (or as close as is possible).
4. Perma-Green III (GR) Technical Data:
    a. Steel Substrate Preparation:
        1) Ten stage continuous cleaning, phosphate process.
        2) Substrate after "prep": sealed zinc phosphate conversion coating.
    b. Coating:
        1) Thermoset acrylic
        2) Color: Federal highway green; color tolerance chart; PR color No. 4.
        3) Hardness: 2H.
        4) Coating Process: Cathodic Electrode position.
        5) Performance:
            a) Salt Spray: Scribed – exceeds 400 hours per ASTM B117 (1/8" creep). Unscribed – exceeds 600 hours per ASTM B117 (6% red rust).
            b) Chalk: Nominal at 1,000 hours per weatherometer G023 test.
            c) Checking: None at 1,000 hours per weatherometer G023 test.
            d) Fade: Lest than 50% compared to standard epoxy E.C. coatings.
        6) Environmental Issues:
            a) Formulated as a "heavy metal" free coating (trace elements only).
            b) Outgassing in service: Essentially none at 350° for 24 hours.

1.22 CURTAIN TRACKS: REFERENCED PRODUCT ADC MODEL 140 RIG-I-FLEX WALK-ALONG TRACK

A. Curtain tracks shall be of 11-gauge extruded aluminum I-Beam construction consisting of a center rib and top, intermediate and bottom flanges. Each curtain carrier shall be spaced on 12" centers and shall be of steel construction to include two nylon-tired ball-bearing wheels rolling on two separate parallel treads. Each curtain carrier shall consist

of a free-moving plated swivel to accommodate curtain snap hook. Live-end and Dead-end pulley blocks shall be equipped with sleeve-bearing wheels adequately guarded. Nylon snap-on spacers shall be attached to wheel supports of curtain carriers. The manufacturer shall furnish two end stops for placement at track ends and a tension floor pulley for increasing cord tension. Track shall be rigidly supported from ceiling clamps or hanging clamps. Stretch-resistant operating cord (Model 1728 for hand operating tracks and Model 3529 for machine operated tracks) shall have synthetic or wire center and shall be of ¼" or 3/16" diameter. Curves require ball-bearing spindles and ball-bearing idlers. 1-1/4" I.D. stiffening pipe or the equivalent shall be used to support both straight and curved areas of all suspended curved tracks.

1.23 MISCELLANEOUS HARDWARE:

A. It is the responsibility of the contractor to provide all necessary hardware needed in order to complete this project and all related installations, even if it is not specifically called out or called for on the bid drawings. This includes, but is not limited to, any miscellaneous supplementary steel needed to provide appropriate pickup points, beam clamps, threaded rod, angle iron supports, wall anchors or toggles, bolts, nuts, washers, suspension chain, wire rope and related Nicopress thimbles and closures, brackets, pipe clamps, custom fabricated metal hangers and clips, bracing channel, tube or studs back to substantial structure and all related installation labor. Any and all necessary hardware provided that has not been specifically called out or for on the drawings shall be installed by the contractor in a conscientious manner with respect to symmetry, aesthetics, related surfaces, plumbness and levelness. Obtain written approvals from architect, consultant and owner on these types of items prior to installation where appropriate. No haphazard, crooked or otherwise unsightly installation and related hardware shall be acceptable. Any items installed in this manner shall be fixed and/or replaced by the contractor at no additional expense to the owner.

1.24 CURTAINS:

A. GENERAL:
   1. Reinstall existing to new tracks.

B. MAINTENANCE PROCEDURES:
   1. Contractor shall instruct the owner on all pertinent points of proper care and maintenance of the theater curtains including, but not limited to, routine curtain inspections, proper fabric tear repair techniques (i.e. no tape repairs – all repairs to be made by either machine sewing or good hand stitching by a qualified professional), standard retrimming practices to keep hems off floor, storage parameters, storage bag types & folding techniques, proper wrinkle removal techniques with hanging durations, irons or steamers, the danger of water contact and steam with FR curtains, retreatment schedules (if applicable) and routine dry cleaning intervals.
   2. All FR material types (those materials that have been treated with a flame retardant chemical and are not inherently flame retardant by themselves) are recommended

to be tested annually by qualified personnel using the NFPA 705 (1997 or later) field test method for textiles in order to accurately quantify the material's current flame resistance characteristics. These materials must be retreated on a regular basis (maximum of 5 year spans).
a.

1.25 MOBILE LIGHTING A FRAME STEPLADDER: REFERENCED PRODUCT WERNER, CO. STOCKR'S PT SERIES TYPE 1A FIBERGLASS A-FRAME LADDER

A. Contractor shall provide a fiberglass A-frame stepladder for use as a mobile lighting platform. Provide the Werner, Co. PT7400-XX class unit (see drawings for specific model & quantities to provide) with the following options & features:
1. Ladder Rating: Type 1A Duty Rating
2. Load Capacity: 300 lbs. (per side)
3. Soft rubber, spring mounted, 360 degree, heavy-duty casters featuring stainless steel springs, steel stem and ball bearing swivels and heavy-duty step braces at all locations.
4. Slip-resistant Traction-Tred steps on front and rear ladder step sections.
5. Pinch Proof platform.
6. Non-conductive fiberglass rails.
7. Glas*Mark violator stripes on rails for maximum visibility.
8. Aluminum external rail shield.
9. Safety guard rail (at platform height).
10. Rails – approx. 3 1/8"
11. Steps – approx. 3"
12. Folded width – 12"
13. Specifications:

Model #	Size	Height to Platform	Approx. Overall Height (Ladder Closed)	Reach Height	Max. Standing Height	Approx. Width
PT7408-4C	8'	8'	10'	14'	7 – 8"	32 ¼"

14. Certifications: ANSI A14.5 (2007); OSHA
15. Stencil the owner's facility name, etc. on the stepladder as indicated by the owner. Stencils shall be approx. 3" high letters. All stencil lettering shall be flat black. Label on both sides of ladder rails (2 locations per ladder). Obtain lettering sign off from the owner prior to stenciling.

EXECUTION

1.26 GENERAL:

A. Contractor shall adhere to all requirements of the general contract for this project as called for in the project manual.

B. All liability for rigging, fastening, and other installation methods shall be borne by the contractor alone. The fact that the specification calls for any equipment to be installed does not constitute an approval by the consultant or owner of any method for accomplishing the mounting or installation of the device or the suitability of the device for mounting in the manner, which the contractor has proposed in shop drawings. If the contractor has a reason to believe safety will be compromised in the installation of any of the specified equipment, they must note this at the time of bid and offer alternatives in writing.

C. Assess life safety implications of all installation methods and verify there is no compromise of life safety issues.

D. Any dangerous work areas marked or roped off in a manner, which will inform all persons as to potential danger regardless of sensory handicaps.

E. Maintain M.S.D.S. for all materials used where applicable and submit same to architect.

F. Maintain integrity of all fire-walls and doors during construction and upon completion.

G. The contractor will verify all on site dimensions prior to ordering or installation of critically dimensioned equipment and wiring or any of the rigging system equipment. In a case of discrepancy between these documents and attached drawings, construction documents, and actual on site dimensions the contractor will notify the owner and consultant before making any changes in intended work. The owner and consultant will determine the correct modification to the work to be done. No additional payments will be made for material or equipment improperly ordered or sized due to site variations.

H. Any equipment, hardware or other items not specifically included in this specification but required for the system to function as called for within this document will be the responsibility of the contractor to provide at no extra cost to the owner.

I. Provide all hardware and all other required parts to provide a complete system to the extent that such items are not provided by others.

J. All methods must be cosmetically acceptable to the owner. All equipment will be installed neatly, with respect to level, sight lines, and finish. All wiring must be neatly run and concealed in an orderly fashion and attached to appropriate support structures.

K. Moderate changes or moves necessary to accommodate other equipment, coordination with other trades, or for pleasing appearance will be made without claim for additional payment.

L. Coordinate all work with other on site trades in order to achieve a coordinated progress at all times.

M. If specific elevations of the pipe grid system are not indicated on the contract documents, it is the responsibility of the contractor to obtain these elevations in writing from the consultant prior to any installation. Any installation of materials without proper knowledge and written documentation of the actual and exact installation heights intended will result in the contractor rehanging all such improperly installed devices to the intended installation heights. The contractor shall be solely responsible for all removal and reinstallation labor, hardware, etc. as is needed in order to rehang all improperly installed devices at the intended heights.

1.27 FINISHES & CLEANING:

A. All finishes shall be returned to their original finish and condition after any temporary machining or other work.

B. Cover any walls, furniture, finished floors, etc. to catch all metal particles, grit, etc. that may occur during installation.

C. Cover all equipment left or installed on site during construction to prevent dust, dirt, paint or other airborne debris from infiltrating equipment and to prevent contamination or damage from occurring. The contractor shall be responsible for all cleaning and damage caused to any equipment being installed before the site is safe for such installation.

D. Provide thorough cleaning of all work areas including vacuuming, spray cleansers and dust removal as required.

E. If any paint-work is to be done on sight, all overspray or drips must be contained. The contractor is responsible for any damage to any building finish caused by their work.

F. Maintain clean work areas, removing all debris daily.

G. Finishes:
   1. All welds (and the surrounding area) must be touched up by the contractor to match adjacent undisturbed finishes. No bare metal, unfinished welds, weld spatter or other welding debris, weld “heat” or scorch marks, etc. shall be allowed.
   2. All finishes which are disturbed during shipping and installation shall be touched up to match the original.

H. No curtains shall be installed prior to the theater floor being swept and wet mopped by the rigging installer in order to remove all dirt, dust, misc. spilled items, etc. Alternatively, the rigging installer may cover the entire theater floor with a single layer (overlapped 12” as needed) of new, clean, heavy-duty, clear plastic prior to the installation of theater drapery (the rigging installer shall also be responsible for the removal and legal disposal of this covering as well as obtaining written permission by the owner, architect and/or construction manager to install it). Any curtains installed so that portions of the curtain

drag across or touch the floor or become dusty, cob-webbed or soiled by any means during construction and prior to turning the room over to the owner shall be completely cleaned, repaired (if damaged) and retrimmed by the rigging contractor at no additional cost to the owner. The rigging contractor shall clean all dirt, dust, etc. from curtains that may have accumulated on them just prior to turning the room over to the owner.

I. The rigging contractor shall wipe clean (with a clean, damp cloth) all curtain tracks, theater grid pipe battens, mezzanine railing system, connector strips, etc. just prior to turning the systems over to the owner. Upon cleaning, all items shall appear in as new condition and without scratches, blemishes, dirt, dust, debris, chalking, paint marks, etc. on them.

J. Final curtain presentation requirements:
   1. All curtains must be hung properly and per industry standards and shall not feature excessively long jack chains, tie offs, etc.
   2. All curtains must be hung for long enough so that wrinkles/folds/creases from storage & shipment are removed. Final curtain presentation, upon turning the room over to the owner, shall be smooth, flat, non-wrinkled (wrinkle & crease free) curtains. If, after installation of the curtains in the studio, the curtains display wrinkles, creases, folds or any other such visual anomalies, then the contractor shall provide additional labor, etc. as needed in order to iron or steam (or other approved and recommended procedures appropriate for the fabric) any such wrinkles, folds, creases, etc. from the curtains prior to turning the room over to the owner. No curtains displaying wrinkles, folds, creases, etc. or other such visual anomalies shall be allowed or accepted.
   3. The bottom edge of all curtains shall be level with the theater floor for its entire length across the theater and shall not deviate from theater level more than 1/8".
   4. All curtains shall be trimmed so that the bottom of each clears the floor by ½" - ¾". This is especially critical on dead hung pipe grid systems where curtains cannot be retrimmed by readjusting a counterweight arbor. Curtain fullness and potential snow loading conditions shall be calculated and considered prior to the curtains final installation. This will require the contractor to provide one additional trip to the site during the winter season and with snow load on the roof/ceiling in order to re-trim curtains as and if needed in order to account for snow loading deflection of the waffle deck system and so that curtains do not drag on the floor.

1.28 LABELING:

A. All labeling and signage shall comply with the requirements of the following recognized national standards, where such requirements can be implemented with rigging components, assemblies and systems:
   1. ANSI Z535.1-2006, Safety Color Code
   2. ANSI Z535.2-2006, Environmental and Facility Safety Sign
   3. ANSI Z535.3-2006, Criteria for Safety Symbols
   4. ANSI Z535.4-2006, Product Safety Signs and Labels

B. All signs or labels shall be in English. If operating personnel are not familiar with English, additional signs or labels in the appropriate language shall be permitted.

C. The working load limit, manufacturer's name or grade reference mark shall be permanently displayed on each piece of equipment and hardware. Chain, rope and wire rope shall be exempt from this requirement. If the hardware or equipment is size-specific (e.g. wire rope clips), then the size shall be displayed on the product. Where permanent labeling or marking of individual components is impractical, then the load, manufacturer, or grade reference information shall be indicated in the system reference documents.

D. A sign shall be displayed in the Studio stating the overall capacity of the grid system, per LF design capacity, mezzanine floor capacity, etc. See below for safety signage required and specific locations.

E. Pipe Grid Rigging Systems: There shall be no labels as to loading capacities, liftline locations, centerlines, etc. on any pipe grid systems. Maximum pipe grid capacities shall be based upon manufacturer's standard printed data and similar to those capacities listed below.
   1. Pipe Grid Systems:
      a. Drapery Locations – these locations shall be rated for the maximum load of the track(s), suspension chains, curtains, lines and batten clamps only. No additional loading shall be indicated.
      b. Miscellaneous Locations – all other sets of various types that do not fall into any of the above categories shall be rated only for those suspension items and the associated set apparatus on each set with no additional capacities for other things.

         NOTE: All batten capacities include the weights of the battens, suspension lines, etc. and are not all live load capacities.

         It shall be the responsibility of the contractor to accurately estimate the final/finished weight of all related components in order to obtain accurate capacities for all pipe grid mounted devices, battens, etc.

F. Load Types Defined:
   1. Dead loads are those static forces that are relatively constant for an extended period of time. This includes typical structural elements like the pipe batten, trim chains, lift lines, turnbuckles and shackles, etc. These are items that are structurally related to the working mechanics of the sets.
   2. Live loads are typically unstable loads or loads that are moving. These are also sometimes called dynamic loads and typically include items such as fixtures, clamps, power supplies, curtains, speakers, hanging mics, etc. These are items that are taken off and put on battens on a semi-regular basis as the look, theme or focus of each show is restruck.
   3. Cyclic loads are typically moving loads that are associated with a motor. These loads would include those presented by the use of curtain draw machines, motorized winches, motorized trusses, moving lights, etc.

G. A wall plaque shall be placed in the Studio indicating standard rigging system operations and methods, as well as load capacities for the grid system, basic system usage parameters and practices, etc. See paragraphs below for additional and job specific safety signage requirements.

H. All curtains shall have a label affixed as to the date of flame retardant treatment (and/or IFR status) and the life cycle of the treatment. This label shall not be visible from the audience. Label location shall be on the lower rear hem of curtains so that it is readily visible without removing a curtain or climbing a ladder.

1.29 RIGGING:

A. The following minimum standards apply in addition to the standards referenced elsewhere within this specification. These guidelines do not negate the standards referenced elsewhere within this specification. The standards indicated are minimum standards and do not supersede the requirements of the structural engineer to meet appropriate codes and standards.

B. All equipment not described as portable in this specification will be rigidly held in place.

C. All equipment will be supported at a minimum of three (3) points plus a backup. The contractor shall be responsible to provide backups as required, even if those backups do not appear in plans or on the detail drawings.

D. Each point shall be able to carry the entire rated load with a safety margin of at least five (5) times the rated load. All methods shall incorporate an independent safety backup with a safety margin of at least five (5) times the rated maximum load as installed in case of failure of any rigging component.

E. All rigging and related fastening methods must be treated as permanent. All threads shall be treated with vibration compounds such as Vibratite or Loctite as per manufacturer's recommendations.

F. All rigging hardware shall be load rated with the load rating or approval stamped on each piece of hardware.

G. No chain of any type will be acceptable for the primary hanging or backup support of any equipment, unless specifically noted on the drawings. (Trim chains and fire curtain chains excepted)

H. No fabric devices, polyester roundslings, ratchet straps, webbing, wire mesh slings, wire rope core windings with fabric jackets, natural or synthetic corded or devices incorporating cam or buckle parts shall be considered as acceptable methods of hanging of any equipment excepting curtains.

I. No stainless steel rope shall be secured with threaded compression type fittings alone. Compression type closures such as Nicopress with copper sleeves only must be utilized. All wire rope where connected to turnbuckles, trim chain or eyes will have strain

relief/minimum bend radius thimbles installed. A go-no-go calibration toll must be on the job site and closures checked during installation.

J. All loose ends of the wire rope shall be neatly taped down after Nicopress is installed and crimped. No frayed rope ends shall be allowed under this specification.

K. All Nicopress or equal compression connections and wire rope swaging products utilized on this project shall be required to pass field gauge tests as to their proper terminations and compression (typically referred to as go-no-go gauge tests). Due to the sheer quantity of manufacturer's and the varying types/styles of compression tools in use, this will require the contractor to provide the proper go-no-go gauge during acceptance testing (punch list) for each different compression tool utilized on the project (typically a specific gauge is provided with each tool purchased). This gauge will be turned over to the consultant for use in verifying that the correct compression has been performed on the oval sleeves. It is understood that the consultant cannot test every single oval sleeve but will, instead, check a random percentage of sleeves that will be assumed to be typical of all similar compression fittings on this project. It is the contractor's responsibility to verify, during installation, that every oval sleeve has been compressed properly and that it passes the go-no-go gauge test. Improperly swaged oval sleeves pose a serious risk to theater personnel. Improperly swaged oval sleeves shall be replaced by the contractor as required, even if that means that the associated wire rope and other related hardware must also be replaced.

L. All Nicopress of equal compression connection thimbles shall be loaded (mounted) only on a round shaft. Thimbles through a punched hole or other where the thimble encounters an edge shall not be allowed.

M. Nothing shall be allowed into the interior of any Nicopress or equal compression connection oval sleeves except the wire rope itself. Any taping of wire rope ends shall be performed only after all compression connections are properly swaged.

1.30 ROUGH-IN:

A. Due to small scale of Drawings, it is not possible to indicate all offsets, fittings, changes in elevation, etc. Verify final locations for rough-ins with field measurements and with the equipment being connected. Verify exact location and elevations at work site prior to any rough in work. DO NOT SCALE PLANS. If field conditions, details, changes in equipment or shop drawing information require a significant change to the original documents, contact the owners representative for approval before proceeding.

B. All equipment locations shall be coordinated with other trades to eliminate interference with required clearances for equipment maintenance and inspections.

C. Coordinate work with other trades and determine exact routing of all duct, pipe, conduit, etc., before fabrication and installation. Coordinate with Architectural Drawings. Verify with Owner's Representative exact location and mounting height of all equipment in finished areas, such as thermostats, fixtures, communication and electrical devices,

including panels. Coordinate all work with the architectural reflected ceiling plans and/or existing Architecture. Mechanical and electrical drawings show design arrangement only for diffusers, grilles, registers, air terminals, lighting fixtures, sprinklers, speakers and other items. Do not rough-in contract work without reflected ceiling location plans.

D. Before roughing for equipment furnished by Owner or in other contracts, obtain from Architect and other Contractors, approved roughing drawings giving exact location for each piece of equipment. Do not "rough in" services without final layout drawings approved for construction. Cooperate with other trades to insure proper location and size of connections to insure proper functioning of all systems and equipment. Obtain written authorization from the Owners representative or other contractor for any "rough ins" that, due to project schedule, are required before approved coordination drawings are available. Any work installed without written authorization or approved coordination drawings, causing a conflict will be relocated by the electrical contractor at no expense to the Owner.

E. For equipment and connections provided in this contract, prepare roughing drawings as follows:
   1. Existing equipment being relocated: Measure the existing equipment and prepare drawings for installation in new location.
   2. New equipment: Obtain equipment roughing drawings and dimensions, then prepare rough-in drawings.

F. Where more than one trade is involved in an area, space or chase, all shall cooperate and install their own work to utilize the space equally between them in proportion to their individual requirements. In general, ductwork shall be given preference except where grading of piping becomes a problem, followed by piping then electrical wiring. If, after installation of any equipment, piping, ducts, conduit, and boxes, it is determined that ample maintenance and passage space has not been provided, rearrange work and/or furnish other equipment as required for ample maintenance space. Any changes in the size or location of the material or equipment supplied, which may be necessary in order to meet field conditions or in order to avoid conflicts between trades, shall be brought to the immediate attention of the Owner's Representative and approval received before such alterations are made.

1.31 CUTTING AND PATCHING:

A. Each trade shall include their required cutting and patching work unless shown as part of the General Construction work on the architectural drawings. Refer to "General Conditions of the Contract for Construction" for additional requirements. Cut and drill from both sides of walls and/or floors (if possible) to eliminate splaying (if not possible, then contractor shall do everything possible in order to minimize splaying). Patch all cut or abandoned holes left by removals of equipment or devices. Patch adjacent existing work disturbed by installation of new work including insulation, walls and wall covering, ceiling and floor covering or other finished surfaces. Patch openings and damaged areas equal to existing surface finish (i.e. "patch to match existing"). Cut openings in prefabricated construction units in accordance with manufacturer's instructions.

Contractor shall also refer to any “front end” contract document sections that deal with selective structure demolition, wall excavation procedures and cutting and patching for further details and instructions as it regards the cutting, patching and refinishing of any affected surfaces related to the rigging system removals and additions as well as the limits of incidental damage liability. If no instructions exist in the contract documents addressing these issues, then the contractor shall contact the architect and construction manager in writing prior to proceeding with any work in order to obtain written instructions regarding this type of work. Patching shall include infilling with new appropriate and matching materials in kind and finishing with standard industry practices. Patched and finished surfaces shall match those existing adjacent surfaces as closely as possible in finish, texture, color and durability. If the general conditions conflict with any of the language present in this paragraph, then the general conditions language shall take precedence as to methods for cutting and patching.

1.32 PERFORMANCE:

A. All grid batten ends must line up with each other (for all battens of similar length).

B. All curtains shall be installed only after all dirt and dust creating work and paintwork has been completed and cleaned up. Curtains must be installed very near the end of the job but before all final acoustic testing, AFC tuning and sound system tuning have been performed. This will require the rigging installer to coordinate with all related trades and their schedules in order to install curtains at the appropriate times.

C. No battens shall be allowed to have threaded ends or threaded couplings at all.

D. No battens shall be allowed to have plug welded splices at all.

E. Any installation errors or variance in installation methods from standard industry practices and standards shall be corrected by the contractor at no additional cost to the owner, even if that means that the contractor must remove and reinstall the entire rigging system (and with the owner’s schedule in mind).

F. The pipe grid system shall have properly installed turnbuckles, shackles, etc. on the suspension lines. The intent is for the suspension lines to be installed with a turnbuckle at the lower termination points so that they may be tensioned in order to make the grid level along its extents. This shall be accomplished by the TC utilizing load rated jaw-eye turnbuckles. Liftlines shall be terminated directly to the upper eye of the turnbuckle and the jaw portion affixed to the JR Clancy pipe clamp. See detail drawings for more information on intent.

1.33 INITIAL POST COMPLETION TESTS & SET UP:

A. Verify that the pipe grid and related systems equipment/devices have been properly installed.

1.34 DOCUMENTATION:

A. Contractor must submit (7) seven “hard” copies of the following items. All items should be part of the O&M Manual.

B. System testing documentation as required by final testing and acceptance procedures outlined in this document.

C. ALL O&M Manual submissions shall be in heavy-duty, D-Ring style, 3-Ring binders (provide size most appropriate for the quantity of paperwork included) with front plastic display pocket and internal side pockets. NO PAPER FOLDERS SHALL BE ALLOWED.

D. Complete technical manuals for all equipment installed.

E. List of serial numbers of all equipment installed and the specific location of each piece of equipment.

F. Warranty cards for all equipment or classes of equipment.

G. Curtain flame resistance certificates.

H. Manufacturer MSDS sheets for all applicable equipment.

I. Operations & Maintenance Manuals shall NOT include any alternate languages or language sections unless specifically requested by the owner (i.e. French, Dutch, German, Spanish, Japanese, etc.). If alternate language manuals are requested by the owner, then the contractor shall provide all alternate language manuals as complete manuals in that language in addition to the required English manuals. Any alternate language manuals required shall be at additional cost to the owner.

J. Operations & Maintenance Manual: An operations and maintenance manual (or “Systems Manual”) written in English on the safe use of a that particular site’s lighting, dimming and controls system(s) shall be provided by the contractor to the owner. (provide separate manual sections for different spaces included in this project – each to be a separate, complete and distinct section in the manual for each differing or multiple system and location). The manual shall be a custom compiled manual detailing the specific equipment & conditions included in this project and at this job site (and not including misc. parts & pieces that are not part of this job). No general, cookie-cutter style manuals detailing equipment not specified or provided for this project shall be acceptable as part of this requirement. This manual should include, but is not limited to, the following (these items shall also be included in the system training and video taping):
   1. A custom compiled simplified guide to standard rigging procedures, including, but not limited to, the following items:

a. Industry standard procedures for the handling, loading and unloading of pipe grid systems equipment (Note that we do not approve of or encourage the removal or relocation of any pipe grid battens).
b. Make a clear effort to inform the owner (both during formal training and in the O&M Manuals) and to direct ALL operators to abide by the facility's "policy for working at height" and as is OSHA approved.
c. The proper procedures for taking curtains down, protecting them from dirt & damage during this process, storing them properly and reinstalling them.
d. How to properly load/offload fixtures from the grid.
e. The purpose and proper hanging of lighting fixtures to a batten, including the tensioning of clamps and use of safety cables.
f. Generally accepted theater practices regarding personnel on Studio floor while the grid is being loaded, etc.
g. The simple math involved in calculating parameters surrounding the proper loading of the pipe grid system without overloading it.
h. A complete copy of manufacturer's furnished standard theater & rigging safety procedures.
i. The minimum number of persons required for safely loading/unloading the pipe grid (two – 1 working and 1 supervising) along with proper adult supervision requirements during major set changes.

2. A sheet showing the ratings, safety factors and load limits of the overall pipe grid system and all individual system.
3. A reduced size copy of each safety sign and the included verbiage – large enough to be read but still small enough to fit neatly into binder.
4. A complete reduced size set of the final print drawings of the installation ("as builts"), including field changes, routings, locations of sets, set numbering, installation details and other pertinent information.
5. A sheet providing the name, address and phone number of the primary system installation contractor, manufacturer and supplier (if not already listed) of the system equipment, etc.
6. A simple list of any required periodic maintenance procedures that need to be performed on the pipe grid system.
7. *See the training section below for the intents of training and any additional requirements.

K. The contractor must provide a letter to the owner upon completion of the installation and training work that all fabric/material utilized is flame retardant (or is FR per specifications) and that all system hardware and components have been installed per specifications and industry standard practices (note any approved digressions from contract documents in a short, simple paragraph style format). No digression from industry standard installation practices and/or ANSI standard requirements shall be allowed.

L. The contractor must provide a copy of the "Certificate of Flame Resistance" to the owner for each type of curtain fabric used within the job. Each certificate should be complete and signed by the appropriate authority certifying its compliance with applicable fire codes – typically this is a sheet issued by the fabric manufacturer that states compliance with all appropriate NFPA regulations, etc. and is then filled out by the contractor as to the owner of the curtains, pattern and color of the fabric, the order and control numbers,

date the order was processed, the contractor's invoice number and the yards processed for the fabrication of the theater curtains (some may even bear the official seal of a particular state and/or authorizing agency). Contractor sworn depositions or even duly witnessed and notarized sheets as to any particular fabric's flame resistant characteristics is unacceptable as the contractor has no authority to make such statements.

M. A sheet detailing any maintenance procedures required for the equipment installed that is custom compiled and written by the contractor as well as a list of the specific tools required, user servicing guidelines, etc. related to serviceable devices.

N. The contractor shall provide the owner with complete instructions on maintaining the flame resistant characteristics of any included fabrics, materials, etc. (e.g. the interval between flame retardant chemical applications) as well as the dangers involved in allowing third party vendors to apply flame retardant chemicals to IFR materials.

O. All users of the rigging system shall be instructed to read and thoroughly understand the information contained in the systems manual. Knowledge of the system-specific load capacities, operating instructions and maintenance schedules are important to establishing safe operating practices and should be understood by all users of the rigging systems and related components.

P. O&M Manual pdf requirements: The contractor shall provide a pdf copy (with appropriate titles) for each piece of documentation listed above and bound together in a pdf portfolio/binder, labeled with the owner's name and with the submitting contractor's information. All electronic manuals shall contain only equipment and information that pertains to the project. Where custom procedural guides and troubleshooting manuals are required, these shall be produced by the contractor in a professional piece of software (Microsoft Office, Adobe Acrobat or cadd software or equal) and shall contain all required information in a neat and logical presentation. Where there are portions of the stock manuals that contain sections that do not pertain, the contractor shall use a program such as Adobe Acrobat Pro, BlueBeam or other similar pdf markup software applications and use the strikethrough function with a heavy red line to strike out any text or sections that do not apply. Where factory manuals are available the contractor shall provide these. Where factory manuals are not available, the contractor shall provide high resolution (150 dpi minimum and fully optimized in Acrobat or equal), full page, properly and consistently oriented pages in a consecutive ascending order. All pdf portfolio and binders produced and submitted shall be professionally put together and presented well. No pdf scan pages that are skewed, illegible, mis-ordered, angled, copied at a low dpi setting or that do not pertain to this project shall be allowed. All manuals shall be saved as standard Adobe Portable Document Format (PDF) files that are capable of being opened & viewed on any modern computer system with a standard pdf reader and shall be without password access protection or other security preventative measures engaged.

1.35 WARRANTY AND SERVICE:

A. The contractor guarantees all equipment, materials, and workmanship to be free from defects for a period of one (1) year from owner acceptance. This warranty supersedes all manufacturers warranties for the one (1) year period. Any manufacturer's warranty that exceeds the one (1) year will continue to be applicable. The contractor will replace any defective materials at no charge to owner. Any equipment replaced during the one (1) year warranty will have a new one (1) year warranty to the owner.

B. The contractor guarantees all labeling to be free from defects for a period of two years from the date of owner acceptance. In cases where the label's adhesive fails or the label suffers from degradation causing it to become unreadable, the label will be considered defective and will be replaced at no cost to the owner.

C. The contractor will respond by phone to requests for service within two (2) business hours, and respond with a technician being sent (if needed) within one (1) business day.

D. Provide during the warranty period one (1) service inspection for preventive maintenance, at six (6) months after acceptance. This will include but not be limited to a full system operational and safety check and tightening of manila operating lines as required.

E. Provide all service at the owner's location regardless of any manufacturer warranty terms regarding carry in service.

1.36 SIGNAGE:

A. Provide safety signs for the Studio as indicated. See the SL series drawings for sample safety signage, verbiage, etc. Signage information is to be job specific. Signage should include procedures for loading and unloading of the pipe grid, etc. as well as standard safety and operational procedures. Specific load ratings shall be detailed for the system designed as indicated on the bid documents and may not exactly reflect the information on the signage samples included. Signage sample, text and title shown is for illustrative purposes ONLY and does not include all job specific information or weight related data for this system that should appear on each sign. Signage sizes may be longer than noted below if more room for pertinent safety text is required; however, the signage size indicated is the MINIMUM size allowed. Signage to be printed with permanent, non-smudging ink. No smudges or high gloss surface treatments will be allowed. Contractor is to obtain specific weight related information and pertinent operational procedures for this system from bid drawings and manufacturer's recommendations and is to obtain weight stacking information from the architect and the designed load capacities of the theater floor at each weight stacking location. Spare weight stacking locations are TBD by the owner, architect or owner's representative. Contractor is to submit sample signage to the consultant for approval of text and information prior to ANY sign fabrication, ordering or installation. These signs are in addition to standard safety and operational signage that should be included. Contractor is to obtain exact signage locations and mounting heights from the architect, owner and any applicable codes relating to safety signage placement. Signs should be placed in locations where they

will not be obstructed and are highly visible and readable. FOAM CORE SIGNAGE IS NOT ACCEPTABLE.

B. A sign shall be posted in an accessible location providing the name, address and phone number of the primary system contractor, manufacturer and supplier (if not already listed) of the system equipment.

1.37 INSPECTIONS:

A. General inspections:
1. Each system component shall be inspected by a qualified person on a recurring schedule as recommended by the manufacturer.
2. All installations shall be visually inspected and shall be tested for operation in a non-destructive manner.
3. All systems shall be inspected after installation and prior to user operation. Inspections shall meet the requirements of this section, but additional requirements shall be permitted.
4. Qualified persons shall oversee the inspection and testing process and shall certify that all inspection requirements have been met.
5. Inspection procedures and results shall be fully documented. The testing supervisor, the installer and the system owner shall retain complete copies of the test documentation.

1.38 DEMONSTRATION AND ACCEPTANCE:

A. CONDITIONS FOR SCHEDULING FINAL ACCEPTANCE:
1. It is not the intention of the final acceptance to be a “punch list” meeting. The system is required to be complete and fully tested. Any failure that may have occurred between the contractor’s final tests and the date of acceptance will be noted and can be corrected after that date. All of the following conditions must be met before scheduling an acceptance tests:
a. The contractor will submit an initial system performance report to the architect, construction manager, owner and consultant. In this report, the contractor will certify that the system meets all the performance criteria set forth within this specification.
b. The contractor shall inspect, completely verify and submit signed documentation that all system components meet all applicable current ANSI standards.
c. The contractor will submit the appropriate documentation to the consultant as called for within this specification. If documentation is not available, the system will not be accepted.

B. PROCEDURE FOR SCHEDULING FINAL ACCEPTANCE:
The contractor shall notify the owner and consultant of a proposed date and time for the final acceptance tests. The contractor shall include two alternate dates and times.

The dates proposed will be a minimum of fourteen (14) calendar days from the date of the proposal.

1. The owner and consultant will respond within two (2) business days as to whether the date and time for final acceptance tests has been approved.
2. If none of the dates and times are acceptable, the owner and/or consultant will submit two alternate dates and/or times to the contractor. The contractor will respond within two (2) business days as to whether the dates and times for acceptance tests are acceptable.
3. If the dates and/or times proposed by the owner and/or consultant are not accepted, the contractor, owner, and/or consultant will continue to alternate per these procedures until an acceptable date and time has been found.

C. DATE OF TESTS:
1. The contractor will demonstrate operation of all major components of the systems including, but not limited to, the following:
   a. Demonstrate the proper usage of the pipe grid system and the proper safety measures for set up and in use of the pipe grid system.
   b. Demonstrate proper installation and operation of all curtains and tracks. Provide proof of flame treatments by demonstration.
2. Any return trips to re inspect any of the above conditions will be wholly billed by the consultant at the rate of $100.00 per hour to be deducted from the contractor's remaining balances with the owner.

D. CONDITIONS OF ACCEPTANCE:
1. It is understood that the consultant cannot inspect every aspect of the installation. The contractor is responsible for installation quality and methods, fabrication quality and methods, and performance of their work. Acceptance of the project will constitute an acceptance of the following:
   a. All specified equipment is installed and the system is operating in an acceptable manner from a functional standpoint (See checklist below for specific functional requirements).
2. Upon completion and acceptance of the project the contractor will provide to the owner a letter stating that all of the equipment and installation methods meet or exceed the specification requirements in all respects, and that the system as installed meets all of the applicable standards and codes required under the specification and meets applicable federal, state and local codes and laws.

E. ACCEPTANCE TESTS CHECKLIST:
1. Prior to acceptance testing there are a number of conditions that need to be verified. There are also site conditions required for the consultant to perform tests as indicated. The contractor shall ensure that every item on this checklist has been performed and verified prior to the consultant's acceptance tests can begin. Scheduling of the consultant to perform final acceptance tests must be coordinated with the owner, the project's construction manager (or clerk of the works), the contractor and the consultant (See paragraphs above for detailed requirements).
2. GENERAL
   a. No other contractors may be working within the rooms to be tested during tests. Adjacent rooms cannot have construction noise – drilling, jackhammer

usage, hammering, pounding, banging, etc. The consultant will be testing room conditions, system functionality, turning on/off motorized hoists, etc., and this requires an environment with no noise being produced by others and no people moving about.

b. No rehearsals or other activities may take place during tests.
c. The contractor must verify these conditions can be maintained during testing. If acceptance tests are scheduled and conflicts on site are found, the contractor scheduling the tests will be responsible for paying the costs of a return visit (see billing rates noted above).

3. PIPE GRID SYSTEM – TYPICALLY TAKES 2 HOURS.
   a. Required attendance – Adequate Personnel from the theater-rigging contractor to operate sets, answer system installation questions and reset the fire curtain during tests. Personnel must be capable of fire curtain reset and adjustments to the fire curtain drop rate (if installed).
   b. Curtains installed to tracks.
   c. Pipe grid installed level, true and plumb.
   d. All curtain tracks checked for end stops and binding on tracks.
   e. All cable drops for connector strips properly dressed and not tangling during travel.
   f. Verification in the form of signed documents that all portable equipment has been delivered to the owner per specs and drawings. Portable equipment must be available for visual inspection as well.
   g. All Nicopress or equal compression sleeves have been properly swaged and tested by the contractor with a go-no-go gauge and found to be in compliance.
   h. All curtains hung, clean, wrinkle-free and with the proper documentation on site as to their flame retardant characteristics.
   i. All shackles and turnbuckles properly moused with all wire ties clipped short and clean (with no protruding ends).
   j. All batten end caps installed.
   k. All standard and custom safety signage correct, site specific and properly installed in all locations called for in the written specifications.

END OF SECTION

ROCHESTER SCHOOLS MODERNIZATION PROGRAM

EDISON TECHNICAL SCHOOL

TELEVISION STUDIO EQUIPMENT

655 COLFAX STREET
ROCHESTER, NEW YORK 14606

S.E.D. PROJECT NO. 26-16-00-01-0-111-032
DWT NO. 26-16-00-01-7-999-020

BID DOCUMENTS
MAY 1, 2017

LaBella
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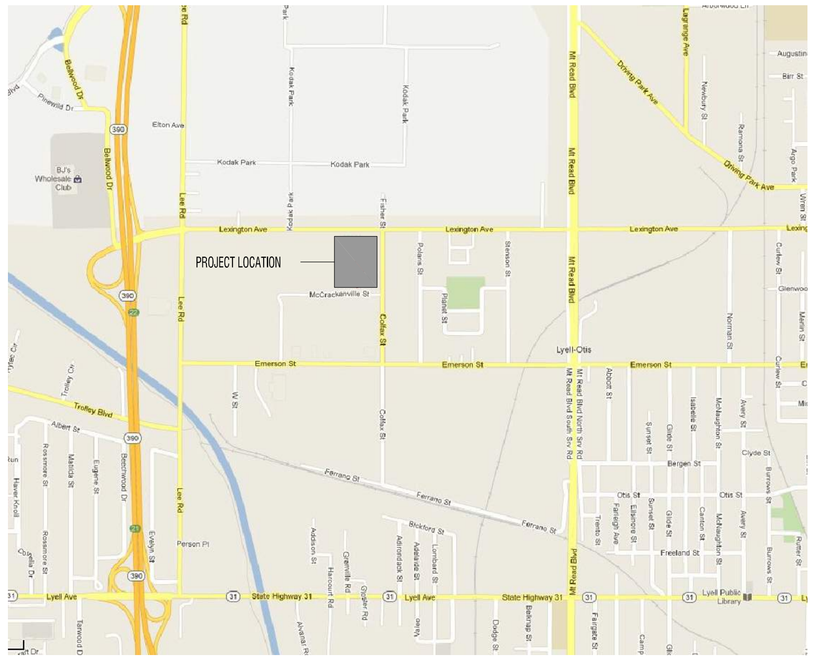
RSMP

ROCHESTER CITY SCHOOL DISTRICT

Savin Engineers, P.C. in association with Gilbane

avl designs inc.
DESIGNS INCORPORATED
CONSULTANTS IN THEATRICAL DESIGN
1788 PENFIELD ROAD • PENFIELD, NY 14526
PHONE: (585) 586-1100 • FAX: (585) 586-1143

SITE MAP



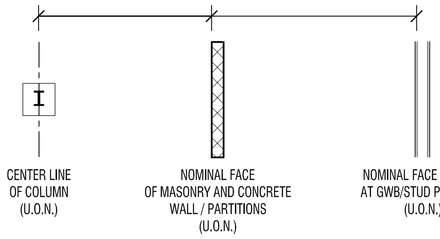
MATERIAL SYMBOLS

- CONCRETE MASONRY UNITS (CMU)
- CONCRETE
- BRICK
- CEMENT, SAND, GROUT, PLASTER, OR GYPSUM WALL BOARD
- EARTH
- STONE, GRAVEL, OR POROUS FILL
- WOOD (FINISHED)
- WOOD (ROUGH)
- RIGID INSULATION
- STEEL
- ASPHALT
- PAVEMENT SECTION
- BEDROCK
- BATT. OR LOOSE INSULATION
- CARPET
- PLYWOOD

REFERENCE SYMBOLS

- BUILDING SECTION (DETAIL NO / SHEET NO)
- WALL SECTION (DETAIL NO / SHEET NO)
- EXTERIOR ELEVATION (DETAIL NO / SHEET NO)
- INTERIOR ELEVATION (DETAIL NO / SHEET NO)
- DETAIL REFERENCE
- MATCH LINES (MATCH LINE)
- COLUMN LINES (1, 2 / A, B)
- ELEVATION (XXXXXXXXXXXXX / ELEV. = XXX'-XX")
- CENTER LINE
- CUT LINE
- ROOM IDENTIFIER (RMTOP / RMBOTTOM / ###)
- DOOR IDENTIFIER (###)
- WINDOW TYPE (A)
- KEYNOTE (1)
- WALL TYPE (A1)
- REVISION SYMBOL AND CLOUD (1)

TYPICAL PLAN DIMENSIONING



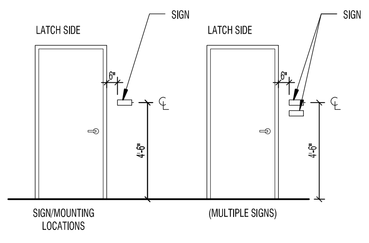
GENERAL NOTES

1. CONSTRUCTION SHALL CONFORM TO THE "NEW YORK STATE UNIFORM FIRE PROTECTION AND BUILDING CODE", LATEST REVISION, THE NEW YORK STATE ENERGY CODE AND ANY OTHER CODES GOVERNED BY THE JURISDICTION IN WHICH THE PROJECT IS BEING CONSTRUCTED.
2. CONSTRUCTION SHALL COMPLY WITH ALL LOCAL, STATE AND FEDERAL CODES AND REGULATIONS.
3. ALL DRAWINGS ARE GRAPHIC REPRESENTATIONS OF APPROXIMATE LOCATIONS OF NEW MATERIALS. IT IS THE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY ALL CONDITIONS PRIOR TO COMMENCEMENT OF WORK.
4. CONTRACTORS ARE RESPONSIBLE FOR ALL MATERIALS, CONSTRUCTION METHODS AND CRAFTSMANSHIP.
5. CONTRACTORS ARE TO VERIFY ALL EXISTING CONDITIONS, REQUIREMENTS, NOTES, CODES AND DIMENSIONS, PRIOR TO THE START OF CONSTRUCTION AND SHALL NOTIFY THE ARCHITECT IF CONDITIONS VARY FROM THOSE SHOWN ON THE DOCUMENTS.
6. CONTRACTORS ARE TO PROVIDE ADEQUATE SUPPORT OF EXISTING FOUNDATION WALLS, LOAD BEARING WALLS AND PARTITIONS DURING DEMOLITION AND CONSTRUCTION.
7. THOROUGHLY COORDINATE WORK WITH OTHER TRADES AND DETERMINE THE EXACT ROUTE AND LOCATION OF UTILITIES, MATERIALS AND EQUIPMENT BEFORE FABRICATION AND INSTALLATION.
8. WHEN EXISTING CONSTRUCTION IS REMOVED, DISTURBED, DAMAGED, REPLACED OR RENOVATED IN ANY WAY, CONTRACTORS SHALL PROVIDE PATCHING, PAINTING AND MATERIALS OF SAME TYPE AND QUALITY AS TO MATCH ADJACENT EXISTING SURFACES, UNLESS OTHERWISE NOTED.
9. CONTRACTORS PROVIDE ALL BLOCKING, FURRING AND SHIMMING FOR INSTALLATION AND COMPLETION OF WORK.
10. ALL NEW WORK SHALL BE PLUMB, LEVEL AND SQUARE. SCRIBE AND MAKE FIT ALL NEW TO EXISTING.
11. CONTRACTORS VERIFY ALL DIMENSIONS BEFORE ORDERING MATERIAL OR DOING WORK. NO EXTRA COMPENSATION OR CHARGES WILL BE ACCEPTED DUE TO DIFFERENCES BETWEEN THE ACTUAL MEASUREMENTS AND MEASUREMENTS INDICATED ON THE DRAWINGS.
12. ITEMS NOTED AS 'BY OWNER' ARE TO BE FURNISHED AND INSTALLED BY THE OWNER OR THE OWNER'S VENDOR.
13. OWNER PROVIDED EQUIPMENT IS INDICATED FOR REFERENCE ONLY. VERIFY DIMENSIONS AND CLEARANCE REQUIREMENTS WITH ACTUAL EQUIPMENT PROVIDED.
14. SECURITY, WEATHERPROOFING, DUST CONTROL AND SAFETY SHALL BE THE FULL RESPONSIBILITY OF THE CONTRACTOR.

ABBREVIATIONS

ACT	ACOUSTICAL CEILING TILE	FIN	FINISH (ED	PC	PLUMBING CONTRACTOR
AFF	ABOVE FINISH FLOOR	FL	FLOOR	PLAM	PLASTIC LAMINATE
AFG	ABOVE FINISH GRADE	FT	FOOT OR FEET	PT	PRESSURE TREATED
AHU	AIR HANDLING UNIT			PVC	POLYVINYL CLORIDE
ALUM	ALUMINUM	GALV	GALVANIZED		
ALT	ALTERNATE	GC	GENERAL CONTRACTOR	QTY	QUANTITY
APPROX	APPROXIMATE (LY)	GWB	GYPSUM WALL BOARD		
AVG	AVERAGE			RD	ROOF DRAIN
		HC	HEATING, VENTILATING AND AIR	REF	REFERENCE
BLDG	BUILDING		CONDITIONING CONTRACTOR	RO	ROUGH OPENING
BO	BOTTOM OF	HVAC	HEATING, VENTILATING AND AIR	ROW	RIGHT OF WAY
BUR	BUILT UP ROOF		CONDITIONING	RTU	ROOF TOP UNIT
		HORIZ	HORIZONTAL		
CFM	CUBIC FEET PER MINUTE			SIM	SIMILAR
CFMF	COLD FORMED METAL FRAMING	ID	INSIDE DIAMETER	SPEC	SPECIFICATION
CJ	CONTROL JOINT	IN	INCH	SQ FT	SQUARE FOOT
CLG	CEILING	INSUL	INSULATION	SQ IN	SQUARE INCH
CLR	CLEAR	INT	INTERIOR	SS	STAINLESS STEEL
CIP	CAST IN PLACE			STD	STANDARD
CMU	CONCRETE MASONRY UNIT	LOC	LOCATION		
COL	COLUMN			TBD	TO BE DETERMINED
CONC	CONCRETE	MAX	MAXIMUM	TEMP	TEMPORARY
CONT	CONTINUOUS	MFG	MANUFACTURER	TO	TOP OF
CU	CUBIC	MECH	MECHANICAL	TYP	TYPICAL
		MIN	MINIMUM		
DEMO	DEMOLISH	MISC	MISCELLANEOUS	UL	UNDERWRITER'S LABORATORY
DIA	DIAMETER	MO	MASONRY OPENING	UNO	UNLESS NOTED OTHERWISE
DWG	DRAWING	MTD	MOUNTED		
		MTG	MOUNTING	VIF	VERIFY IN FIELD
EC	ELECTRICAL CONTRACTOR			VOL	VOLUME
ELEV	ELEVATION	NA	NOT APPLICABLE		
EPDM	ETHYLENE PROPYLENE DIENE MONOMER	NIC	NOT IN CONTRACT	W/	WITH
ETR	EXISTING TO REMAIN	NTS	NOT TO SCALE	W/O	WITHOUT
EQ	EQUAL				
EXIST	EXISTING	OC	ON CENTER		
EXT	EXTERIOR	OD	OUTSIDE DIAMETER		
		OH	OVERHEAD		
		OPP	OPPOSITE HAND		

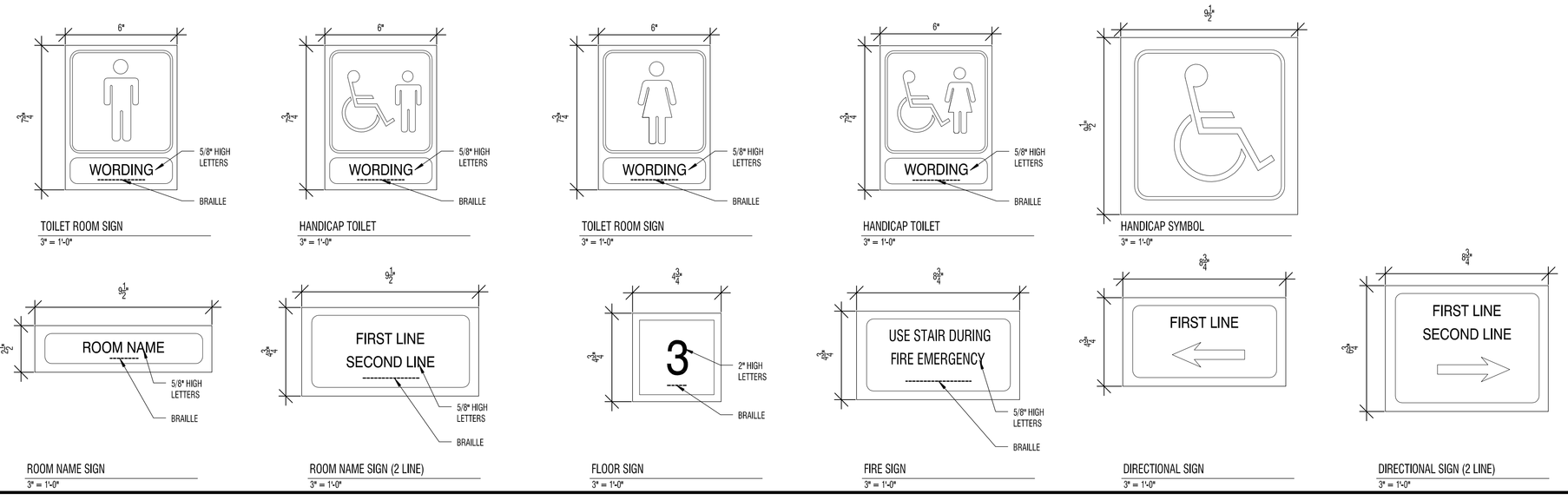
SIGN MOUNTING HEIGHTS



SIGN NOTES:

1. SIGN SIZES ARE APPROXIMATE AND MAY VARY BY MANUFACTURER
2. SIGN COLOR TO BE SELECTED BY ARCHITECT
3. CENTER LINE OF SIGNAGE TO BE 54" A.F.F.

SIGNS



DRAWING INDEX

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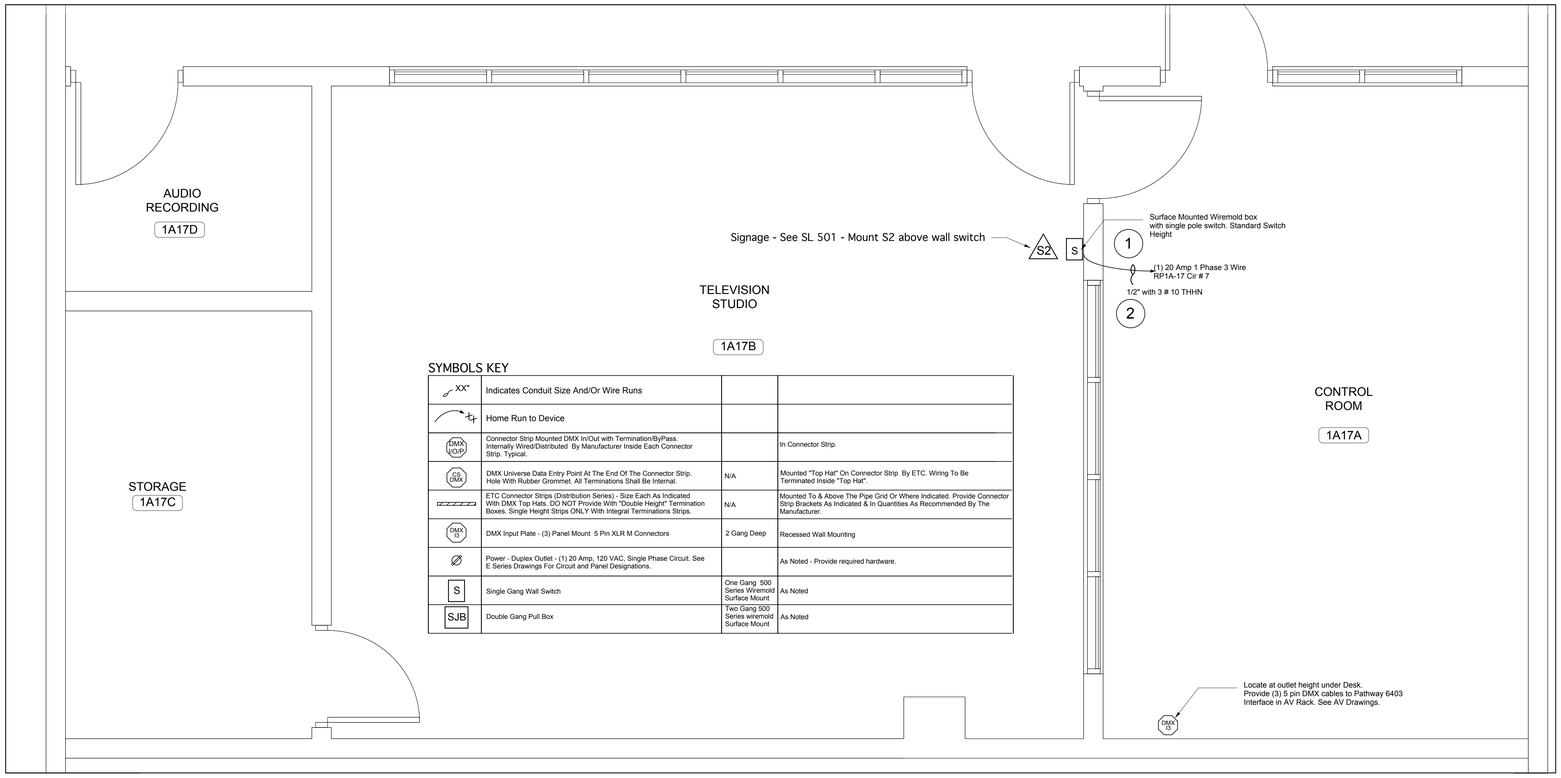
ROCHESTER SCHOOLS MODERNIZATION PROGRAM
1776 N. CLINTON AVE
ROCHESTER, NY 14621

RSMP

EDISON TECHNICAL SCHOOL
655 COLFAX STREET
ROCHESTER, NY 14606
SED NO. 26-16-00-01-0-111-032
DWT NO. 26-16-00-01-7-999-020

NO:	DATE:	DESCRIPTION:
REVISIONS		

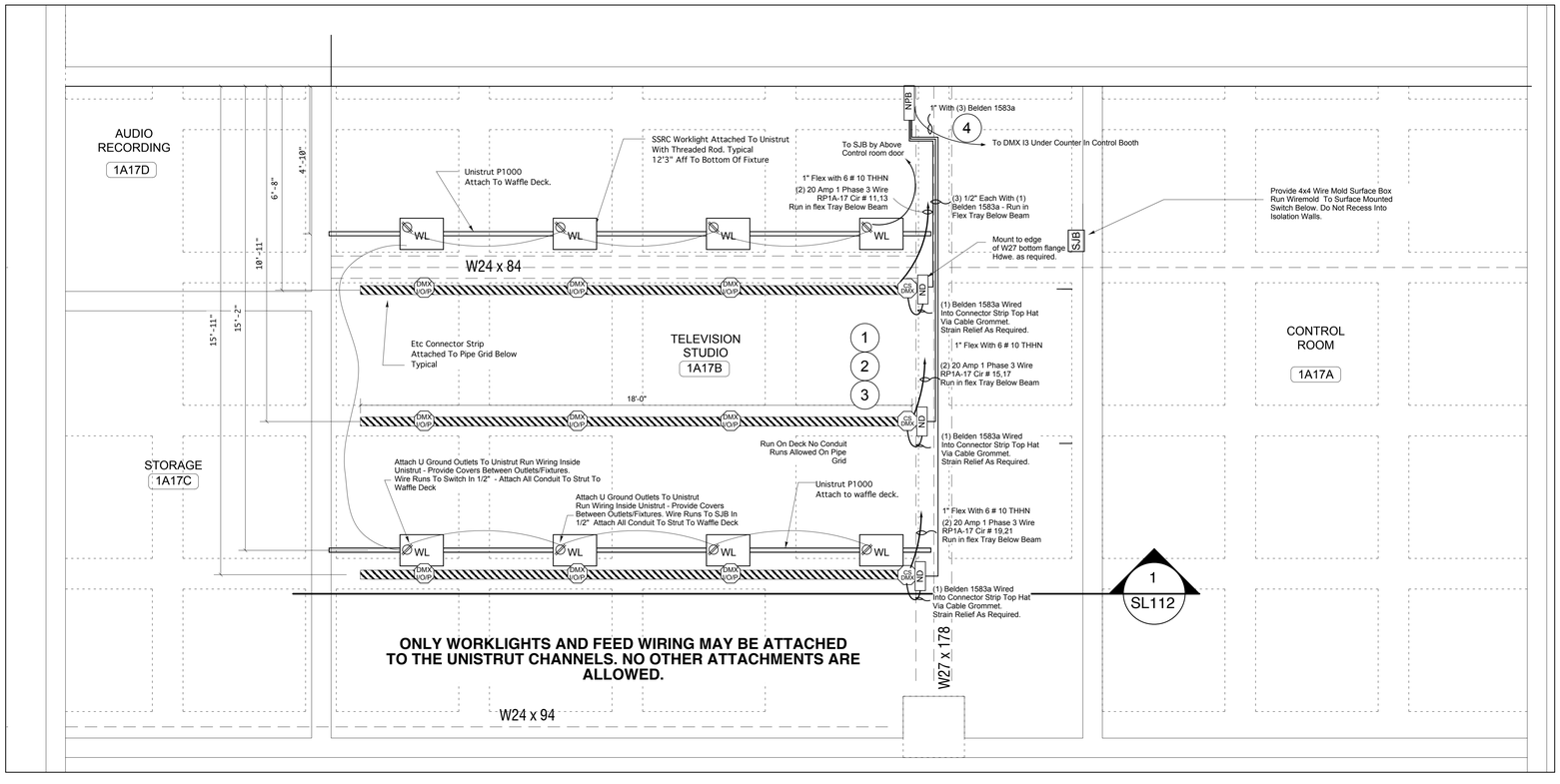
PROJECT NUMBER: 2170218
DRAWN BY: MJF
REVIEWED BY: MES
ISSUED FOR: BID DOCUMENTS
DATE: NOVEMBER 3, 2017
DRAWING NAME: PROJECT INFORMATION, DRAWING LIST & SIGNAGE
DRAWING NUMBER: G001



SYMBOLS KEY

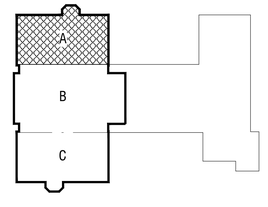
XX"	Indicates Conduit Size And/Or Wire Runs		
	Home Run to Device		
DMX I/O/P	Connector Strip Mounted DMX In/Out with Termination/ByPass. Internally Wired/Distributed By Manufacturer Inside Each Connector Strip. Typical.		In Connector Strip.
DMX OUT	DMX Universe Data Entry Point At The End Of The Connector Strip. Hole With Rubber Grommet. All Terminations Shall Be Internal.	N/A	Mounted "Top Hat" On Connector Strip By ETC. Wiring To Be Terminated Inside "Top Hat".
	ETC Connector Strips (Distribution Series) - Size Each As Indicated With DMX Top Hats. DO NOT Provide With "Double Height" Termination Boxes. Single Height Strips ONLY With Integral Terminations Strips.	N/A	Mounted To & Above The Pipe Grid Or Where Indicated. Provide Connector Strip Brackets As Indicated & In Quantities As Recommended By The Manufacturer.
DMX IN	DMX Input Plate - (3) Panel Mount 5 Pin XLR M Connectors	2 Gang Deep	Recessed Wall Mounting
	Power - Duplex Outlet - (1) 20 Amp, 120 VAC, Single Phase Circuit. See E Series Drawings For Circuit and Panel Designations.		As Noted - Provide required hardware.
S	Single Gang Wall Switch	One Gang 500 Series Wiremold Surface Mount	As Noted
SJB	Double Gang Pull Box	Two Gang 500 Series wiremold Surface Mount	As Noted

1 **STUDIO LOWER LEVEL CIRCUIT PLAN**
Scale: 1/2" =1'



ONLY WORKLIGHTS AND FEED WIRING MAY BE ATTACHED TO THE UNISTRUT CHANNELS. NO OTHER ATTACHMENTS ARE ALLOWED.

2 **STUDIO UPPER LEVEL CIRCUIT PLAN**
Scale: 1/2" =1'



KEY PLAN
N.T.S

General Notes

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1776 N. CLINTON AVE
ROCHESTER, NY 14621

RSMP

EDISON TECHNICAL SCHOOL
655 COLFAX STREET
ROCHESTER, NY 14606
SED NO. 26-16-00-01-0-111-032
DWT NO. 26-16-00-01-7-999-020

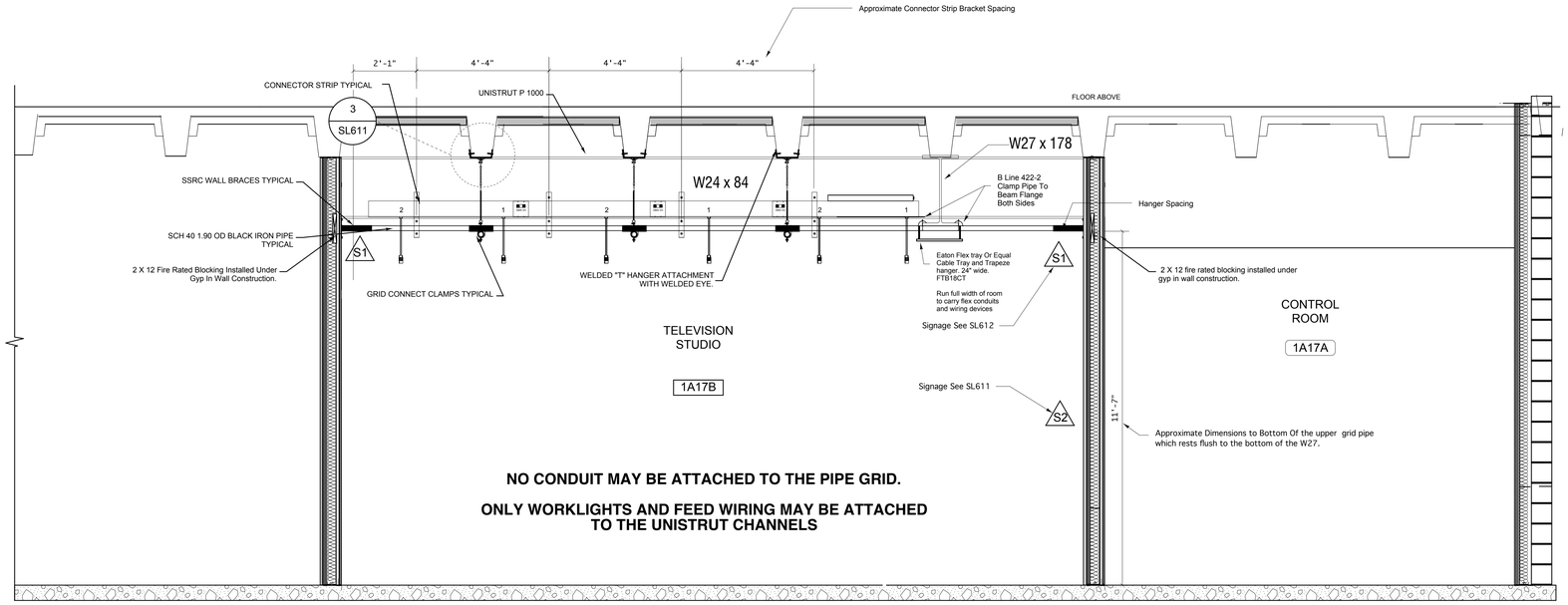
NO:	DATE:	DESCRIPTION:
REVISIONS		

PROJECT NUMBER: 2170218
DRAWN BY: SEW
REVIEWED BY: SEW
ISSUED FOR: BID DOCUMENTS
DATE: FEBRUARY 2, 2018
DRAWING NAME:

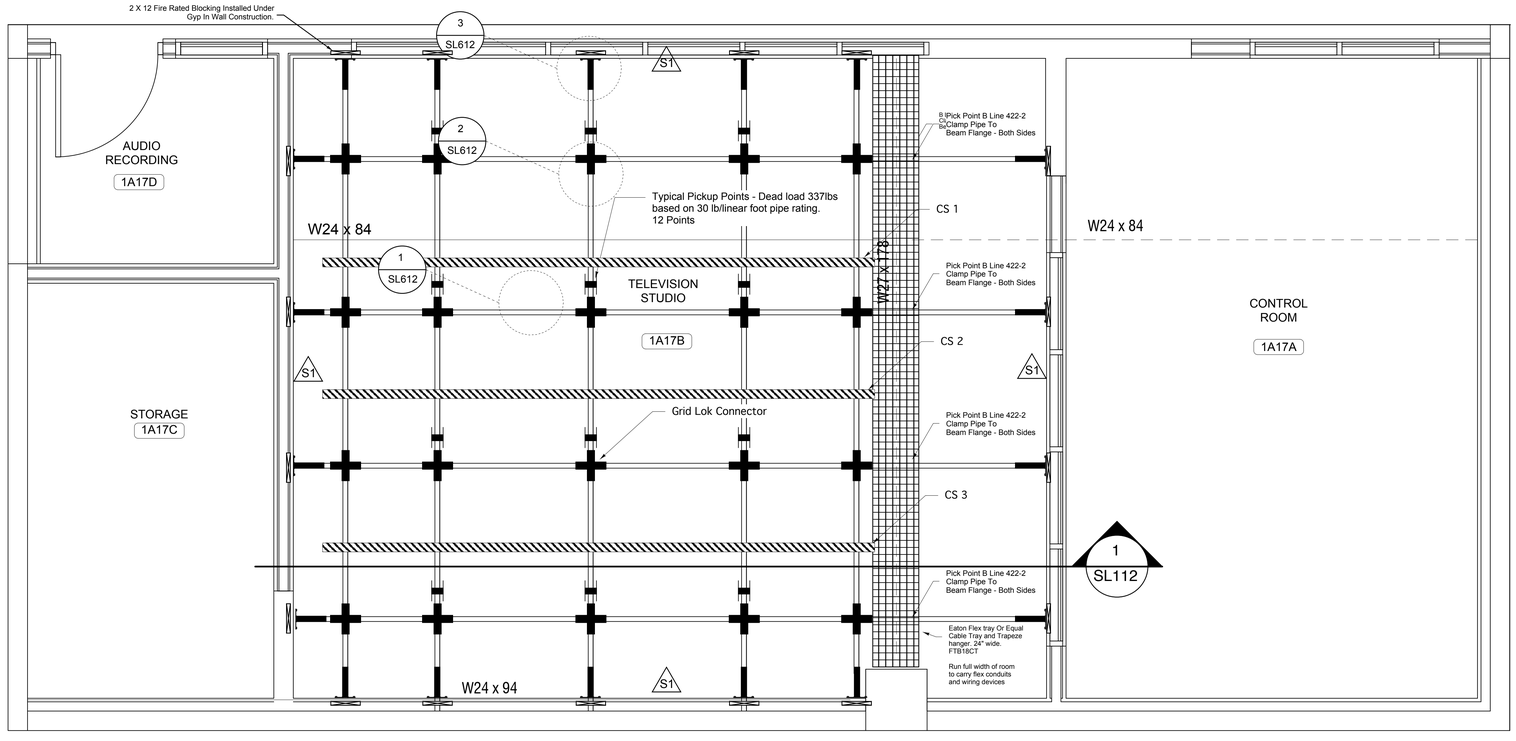
STUDIO LIGHTING CONTROL AND POWER PLANS

DRAWING NUMBER:

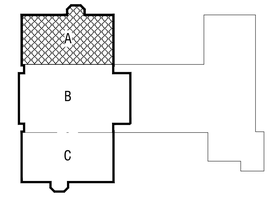
SL111



1 **STUDIO PIPE GRID SECTION**
Scale: 1/2" =1'



2 **STUDIO PIPE GRID PLAN**
Scale: 1/2" =1'



KEY PLAN
N.T.S

N

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SED NO. 26-16-00-01-0-111-032
DWT NO. 26-16-00-01-7-999-020

NO:	DATE:	DESCRIPTION:
REVISIONS		

PROJECT NUMBER: 2170218
DRAWN BY: SEW
REVIEWED BY: SEW
ISSUED FOR: BID DOCUMENTS
DATE: FEBRUARY 2, 2018
DRAWING NAME:

STUDIO PIPE GRID

DRAWING NUMBER:

SL112

ACCESSORIES SCHEDULE
PROVIDE THE FOLLOWING

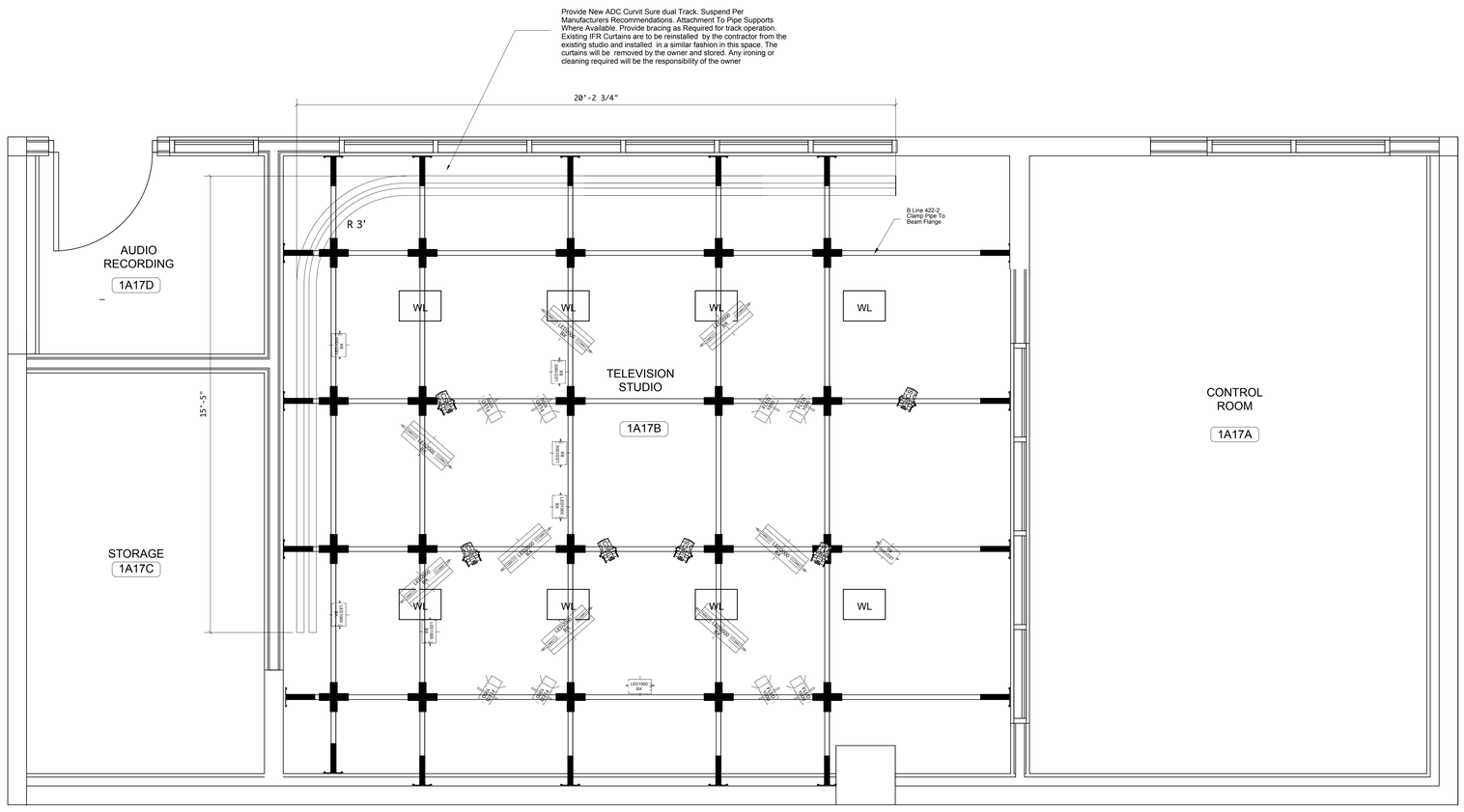
QTY	Description
18	5' DMX - 5 Pin
24	10' DMX - 5 Pin
6	Dracast 805 Floor Stand
4	Dracast LED 2000 Filter Frame
8	Dracast LED 1000 Filter Frame
8	HOSA PWX-4083 3 Foot Power Extension
8	HOSA PWX-408 8 Foot Power Extension
12	HOSA PWX-415 15 Foot Power Extension
1	Rosebrand Tie Line 96 Black Tie Line - Roll 96 Feet
3	Dracast S - Series 3X500 Portable Light Kit - 5600 Degree CT.

KEY TO FIXTURE SYMBOLS: PROVIDE THE FOLLOWING

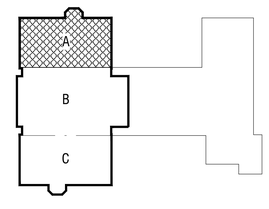
Symbol	Fixtures	LED Array	QTY
FLED 1000 S	Dracast FLED 2000T Fresnel 15° - 60° Beam Angle. Color 3200 °K. Provide The Hanging Version with baby pipe clamp and safety cable. Provide With Power & Individual DMX/Network Interconnect Cabling, Hanging Yoke With A Spigot & Adaptor For Track System For Each Fixture & All Misc. Hardware Needed In Order To Assemble & Interconnect These Fixtures. Provide With 4 Way Barn Doors.	RGB+W LED Array (Included With Fixture)	8
LED1000 BX	Dracast DRS-LED 1000TX. 3200 degree CCT White Only Panel/Wash Fixture With Yoke Bracket & Pole Mount & 45° Beam Angle. Set Up Each Fixture In X-Channel, 16 Bit DMX Operating Mode. Provide With All Waterfall Power & Individual DMX Interconnect Cabling, Hanging Yoke With Dracast Baby-C Clamp For Each Fixture & All Misc. Hardware Needed In Order To Assemble & Interconnect These Fixtures.Provide With 4 Way Barn Doors.	RGB+W LED Array (Included With Fixture)	8
LED2000 BX	Dracast DRS-4LED 2000TX LED 3200 degree White Only Panel/Wash Fixture With Yoke Bracket & Pole Mount & 45° Beam Angle. Set Up Each Fixture In X-Channel, 16 Bit DMX Operating Mode. Provide With All Waterfall Power & Individual DMX Interconnect Cabling, Hanging Yoke With Dracast Baby-C Clamp For Each Fixture & All Misc. Hardware Needed In Order To Assemble & Interconnect These Fixtures. Provide With 4 Way Barn Doors.	2,048, 5 mm, White LED Array - 32x32 (Included With Fixture)	8
WL	SSRC LED Worklight - 150 Watts. Provide with Mounting hardware for Unistrut Channel (P1000) . 13,500 Lumens Warm White. Provide with safety cable, cord set terminated in Edison U ground.		8
ESTA	ETC ColorSource Par RGB-L LED Fixture. Set Up Each Fixture In 5-Channel DMX Operating Mode. Provide With All Waterfall Power & Individual DMX Interconnect Cabling, Hanging Yoke With A C-Clamp For Each Fixture & All Misc. Hardware Needed In Order To Assemble & Interconnect These Fixtures. Provide With Both Round & Oblong Field Medium Lenses.Provide With 4 Way Barn Doors.	(40) Luxeon Z LED Emitters - (5) Per Optic - (8) Optic Chipsets	6

Note: All Fixtures Shall Be 120 Volt Versions. No 130 Or 277 Volt Versions Shall Be Allowed. All cables to be terminated with U ground Edison Male.

Note: The fixture plot shown is a starting point only. The contractor will coordinate with the studio manager to hang all fixtures and assist with lighting sets as required at the start up the studio. See Specifications for more information.



1 **STUDIO FIXTURE PLAN**
Scale: 1/2" =1'



KEY PLAN
N.T.S

General Notes

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655 COLFAX STREET
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SED NO. 26-16-00-01-0-111-032
DWT NO. 26-16-00-01-7-999-020

NO:	DATE:	DESCRIPTION:

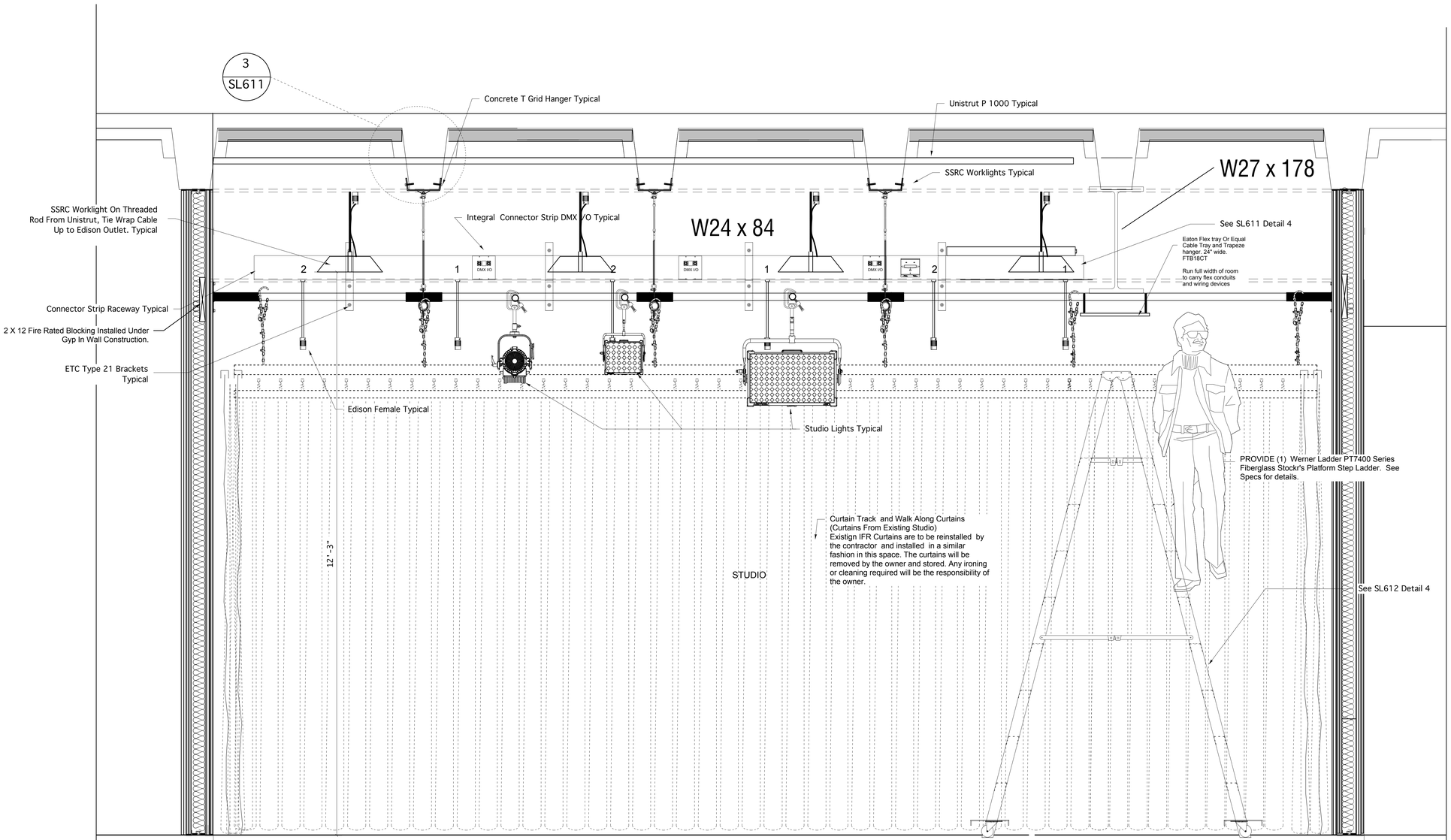
REVISIONS

PROJECT NUMBER: 2170218
DRAWN BY: SEW
REVIEWED BY: SEW
ISSUED FOR: BID DOCUMENTS
DATE: FEBRUARY 2, 2018
DRAWING NAME:

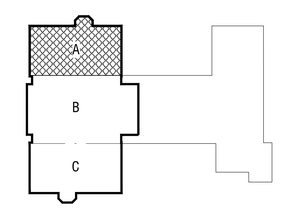
STUDIO LIGHTING FIXTURE & CURTAIN TRACK PLAN

DRAWING NUMBER:

SL113



1 **STUDIO PIPE GRID ENLARGED SECTION**
Scale: 1" =1'



KEY PLAN
N.T.S

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DRAWING NAME:

STUDIO ENLARGED SECTION

DRAWING NUMBER:

SL411

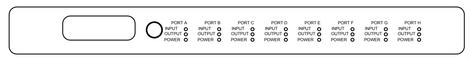
Provide One Apple I Pad Mini 2 - WI FI 32GB
Install IT Cue Pad app and configure
to wireless WAP. Download and set up Amigo Remote
Browser app for use to remote control the Console.

(1) ETC Color Source 40 Console
Provide with DMX Cable. Length as required.

Provide with Tripplite Smart 1500 UPS

Pathway Connectivity Model 6401 DMX Gateway
Mounted in AV Rack Under Counter

See SV Drawings for more information on racks



Provide (3) DMX cables - length as required

DMX I 3
Plate with (3) 5 Pin XLRM

1" WITH (3) BELDEN 1583A

LOCATED ON WAFFLE DECK

NETWORK PULL BOX #2 (LIGHTING NETWORK WIRING INSIDE)

(NPB)

1/2" WITH (1) BELDEN 1583A EMT OR FLEX CONDUIT).

LOCATED ON WAFFLE DECK

(ND DEVICE)

FLEXIBLE NETWORK CABLE TO CONNECTOR STRIP TYPICAL

LIGHTING NETWORK DATA DISTRIBUTION IN CONNECTOR STRIP

LOCATED ON WAFFLE DECK

(ND DEVICE)

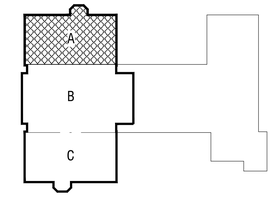
LIGHTING NETWORK DATA DISTRIBUTION IN CONNECTOR STRIP

LOCATED ON WAFFLE DECK

(ND DEVICE)

LIGHTING NETWORK DATA DISTRIBUTION IN CONNECTOR STRIP

1 **LIGHTING CONTROL SYSTEM SINGLE LINE DIAGRAM**
Scale: NONE



KEY PLAN
N.T.S

N

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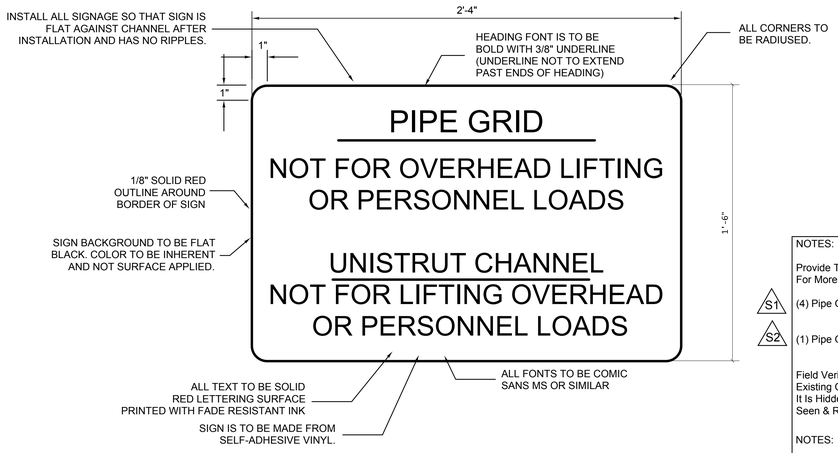
ISSUED FOR: BID DOCUMENTS
DATE: FEBRUARY 2, 2018
DRAWING NAME:

STUDIO LIGHTING CONTROL SINGLE LINE DIAGRAM

DRAWING NUMBER:

SL511



Pipe Grid Warning Signage - The Contractor Shall Provide (4) signs - one for each side of the grid. Wall mount at 12' AFF

NOTES:

Provide The Following Custom Safety Signs (See Written Specifications For More Information)

S1 (4) Pipe Grid Safety Signs

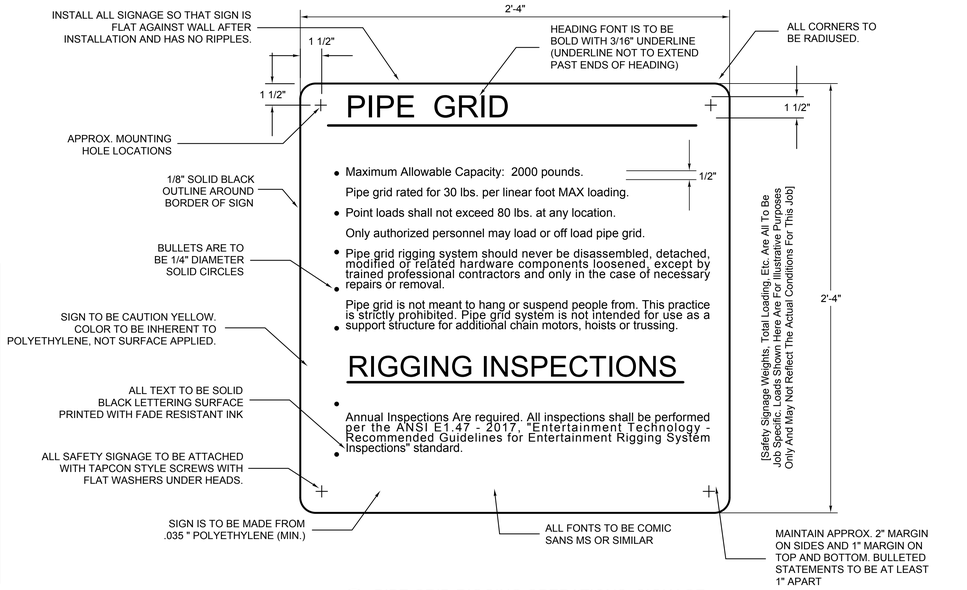
S2 (1) Pipe Grid Operations signs

Field Verify All Exact Mounting Locations With The Owner & Mount Where Existing Obstructions Permit. DO NOT Mount Any Safety Signage Where It Is Hidden Behind Curtains, Doors, Etc. Or Where It Cannot Be Easily Seen & Read.

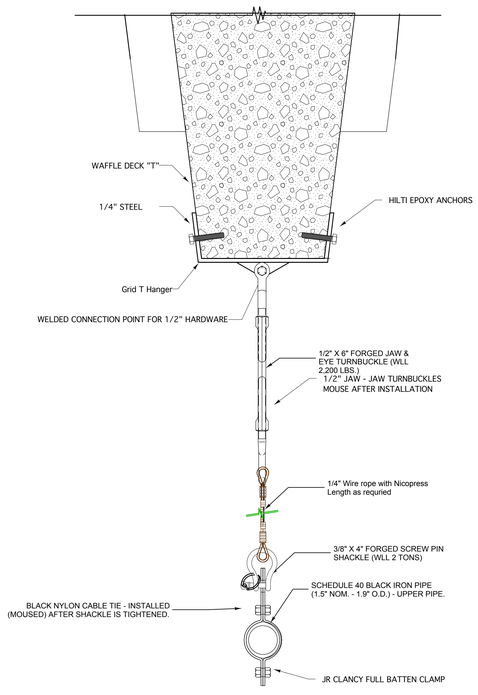
NOTES:

All Safety Signage Shown Is Diagrammatic In Nature. Specified Safety Signage Text & Statements Must Accurately Reflect The Rigging At The Intended Facility. Verify All Pertinent Signage Text With The Designed & Intended System(s). Signage Sizes May Need To Be Larger Than What Is Shown Due To Increased Text Demands. Do Not Reduce Signage Text Font Size In Order To Fit Intended Verbiage Onto Specific Signage Size Shown (Except For Critical Signage Sizes Such As Unistrut, Etc. Signs).

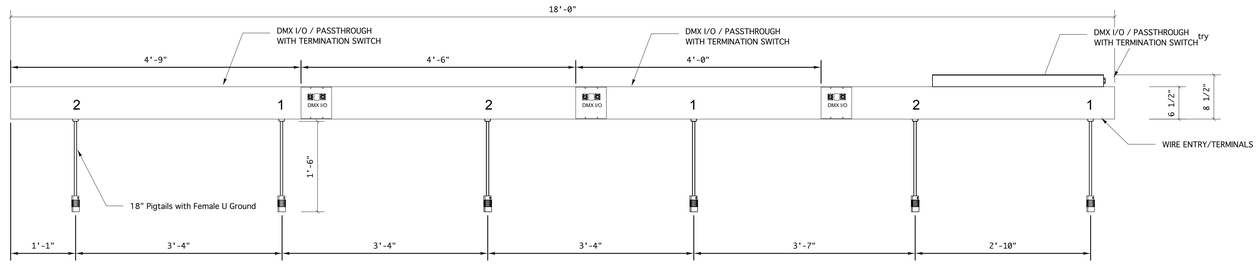
1 PIPE GRID SAFETY SIGNAGE
SCALE: NONE



2 PIPE GRID RIGGING OPERATIONS SIGNAGE
SCALE: NONE

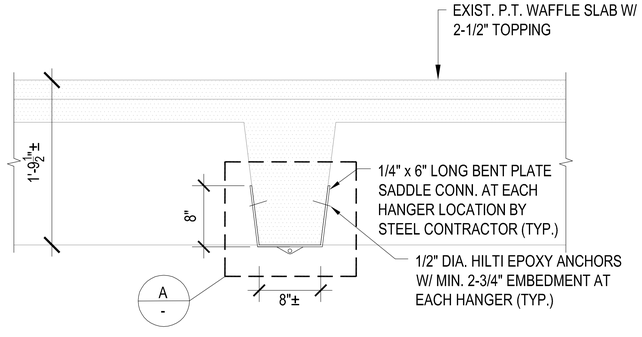


3 "T" GRID HANGER AND GRID SUSPENSION
SCALE: 3" =1'

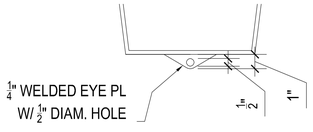


PROVIDE (3) CONNECTR STRIPS
PROVIDE EACH CONNECTOR STRIP WITH NUMBERING ON BOTH SIDES
CS1 - Circuits 1,2
CS2 - Circuits 3,4
CS3 - Circuits 5,6.

4 CONNECTOR STRIP DETAILS
SCALE: 3" =1'

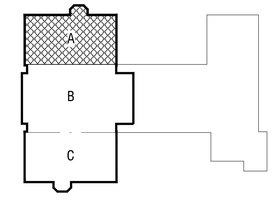


TYPICAL AT WAFFLE SLAB



DETAIL A - NOT TO SCALE

5 "T" GRID HANGER DETAIL
SCALE: NONE



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RSMP

EDISON TECHNICAL SCHOOL
655 COLFAX STREET
ROCHESTER, NY 14606
SED NO. 26-16-00-01-0-111-032
DWT NO. 26-16-00-01-7-999-020

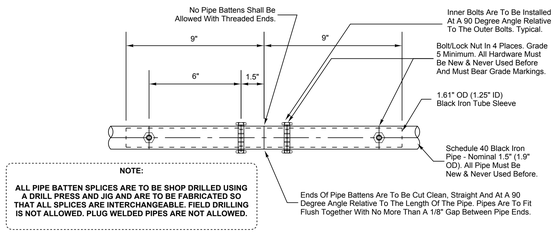
NO:	DATE:	DESCRIPTION:
REVISIONS		

PROJECT NUMBER: 2170218
DRAWN BY: SEW
REVIEWED BY: SEW
ISSUED FOR: BID DOCUMENTS
DATE: FEBRUARY 2, 2018
DRAWING NAME:

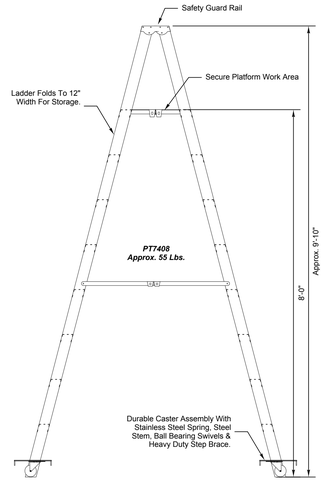
STUDIO SIGNAGE & DETAILS

DRAWING NUMBER:

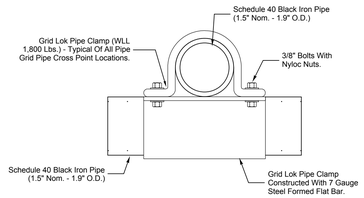
SL611



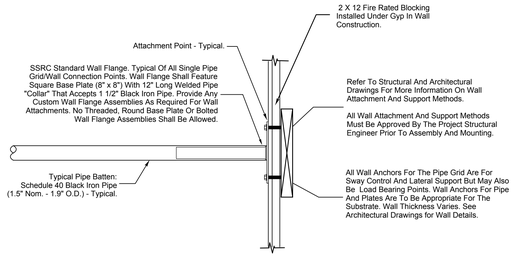
1 BATTEN SPLICE DETAIL
Scale: 3" = 1'



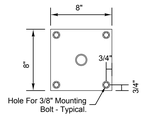
4 ACCESS LADDER DETAILS
Scale: 3" = 1'



2 GRID LOK PIPE CLAMP
SCALE: 6" = 1'



SIDE VIEW



NOTE: COORDINATE ALL FLANGE ATTACHMENT POINTS WITH WALL PANEL, AND STUD LAYOUTS. FIELD MODIFY ACOUSTIC WALL PANELS AS REQUIRED IN ORDER TO ACCOMMODATE FLANGE & FINISH PER WALL PANEL MANUFACTURER'S INSTRUCTIONS.

ALL FINISHED INSTALLATION OF ACOUSTIC WALL PANELS & FLANGES SHALL APPEAR PROFESSIONAL & FINISHED.

INSTALL STUDS & INTERNAL WOOD BLOCKING AS REQUIRED FOR WALL FLANGE PLACEMENTS.

3 LIGHTING GRID SINGLE WALL FLANGE DETAIL
SCALE: 1 1/2" = 1'

DRAWING NOTES:

Each note indicates a typical location for the type of work to be performed or equipment to be provided. The contractor shall provide for all instances of typical work indicated. All drawing notes may not appear or be referenced on each drawing; however, all notes still apply to the work indicated within each note and all similar instances of typical work shall be performed by the referenced contractor(s).

ELECTRICAL:

Work to be performed by the contractor as described below and on each SL series drawing. All work shall conform to the standards of Division 26 and spec section 19 3000:

1 Provide (provide means to furnish and install) all conduit, wire,cables, raceways, switch boxes, junction boxes, power outlets and related faceplates, miscellaneous hardware and all installation labor to provide complete conduit layouts and control, line and load circuits/runs as indicated. Refer to notes below and written specifications for additional scope of work as it regards assembly, installation labor, labeling requirements and/or coordination. Labeling requirements outlined in the written specifications are extensive and detailed.

2 Labeling: All conduits shall be clearly labeled on each end as to their origin and destination in a simple, logical manner. All junction boxes, switch boxes and backboxes indicated on drawings shall be labeled with the nomenclature indicated on the drawings. All outlet boxes shall be labeled with the corresponding panel and circuit designations they are fed from. Permanent black marker on conduit or junction box face is acceptable on conduits, junction boxes, etc. that will not be painted. If any related devices are to be painted, then provide the following: Conduits shall be labeled with 3M Durable ID Labels with permanent adhesive (applied after painting). Junction boxes, etc. shall be labeled with 3M Durable ID Labels with permanent adhesive Labeling shall be done in neat, easily readable, block style letters/numbers. Locate internal labels to prevent damage/smudging, etc.

No conduit shall be allowed to be loaded beyond 50% fill.

3 Wiring Standards - Plenum Rated Cable: Unless specifically noted on the drawings, all low voltage wiring is to be CL2/CL3 wiring. Where specific plenum conduits exist its has been noted to use a plenum rated cable. Where wiring runs occur in concealed spaces – walls, ceilings, etc. - and are not enclosed in conduit the contractor must verify the space is not being used as a plenum path. Any areas encountered that are plenums must have plenum cable or the wiring must be contained in conduit rated for the plenum application. Field verify conditions prior to ordering or installing cabling.

4 Fire stop and acoustically seal all penetrations in new and existing fire rated and acoustical assemblies resulting from the work of this contract.

GENERAL:

All rigging system equipment shall be SSRC, ADC,JR Clancy, Crosby or equal. All system miscellaneous hardware such as shackles, bolts and other hardware to be of domestic manufacture and stamped with the working load limit. The working load limit shall incorporate a safety factor of at least 10:1. See written specifications and detail drawings for additional rigging standards and requirements. Minimum size of misc. hardware to be 1/4".

All rigging system equipment and all misc. hardware shall be new and specifically configured for use on this project.

All misc. hardware used on this project shall feature load rating markings. All hardware shall be Grade 5 minimum (higher if specifically called out).

System shall be rated for the pounds per linear foot of pipe grid piping, tracks & accessories as noted on the drawings.

RIGGING SYSTEM:

Provide pipe grid system complete with pipe battens, SSRC wall flanges, Grid Lok pipe clamps, pipe batten splices (no splices to occur at suspension/support points), misc. clamps and all necessary and miscellaneous hardware as indicated. Mount pipe grid at elevation as indicated on SL series drawings. Entire pipe grid and all suspension hardware is to be inherently black or painted flat black.

Provide SSRC wall flanges on welded steel plates for pipe grid sway braces.

Provide JR Clancy full batten clamp assembly for all indicated batten suspension locations with Grade 5 hex head bolts, lock washers and a load rated shackle.

Provide load rated turnbuckles to level grid. Mouse all turnbuckles after leveling. All leveling of grid shall be verified with a laser level or other similar piece of equipment to ensure that grid, once complete, is level and plumb.

Provide ADC Curv It Sure walk along tracks (both straight & curved sections as needed). Provide carriers on 6" centers on these tracks. Provide dual track mounting brackets, factory bent corners, ADC strap style pipe clamps and all required and spare carries, etc. and supplemental bracing & blocking as required to rigidly mount tracks as intended. Tracks to be suspended per manufacturer's recommendations. Attach as indicated and required.

The owner will remove curtains from the existing TV studio and store. Reinstall curtains as indicated on drawings. Mount per manufacturer's instructions.

RIGGING SYSTEM DRAWING BUBBLE NOTES - CONTINUED:

Provide 1.5" (1.9" OD) Schedule 40 black iron pipe battens (painted flat black) with industry standard 18" batten splices & grade 5 minimum hardware (no threaded ends or couplers allowed). Batten splices shall be precisely drilled as indicated. Adjust battens on turnbuckles to hang true, level and plumb to the studio floor.

Provide signage for the pipe grid systems that states the maximum loading and should also include standard safety and operational signage. Submit all intended signage sizes and text to consultant for approval prior to fabrication. Signage to be permanently attached to the wall on all four corners with screws, bolts or other similar means. Neither adhesive backed tape nor pressure sensitive backings are acceptable as the sole means of mounting the signage. Foam core signage is not acceptable. See specifications and other SL drawing details for more information and for sample signage.

Install connector strips in locations where they are indicated on drawings. Provide all necessary hardware as required for installation. Coordinate as required for access and installation, as the connector strips will likely have to be installed along with the pipe grid system in a staggered, well-timed schedule. The contractor shall be solely responsible to schedule and time installations so that everything can be properly installed.

MISCELLANEOUS:

Provide all support structure, Unistrut channels, etc. as required and indicated. Unistrut, pipes, and clamps to be painted flat black.

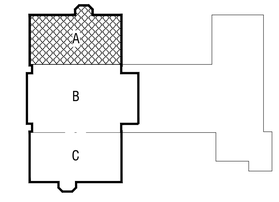
Protect acoustical panels, wall surfaces, and floor areas during work.

Refer to the written specifications & detail drawings for additional scope of work as it regards labeling. Labeling requirements outlined in the written specifications are extensive and detailed.

All persons performing theatrical rigging system related work on this job must be ETCP certified (Entertainment Technician Certification Program) as a theater or arena rigger or under the direct supervision of an ETCP certified foreman.

MODEL NUMBERS:

Manufacturer names and model numbers for products are indicated on drawings to provide a full understanding of the system functional intent. See written specifications and the project manual for additional information and requirements for substitutions and procedures.



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NO:	DATE:	DESCRIPTION:
REVISIONS		

PROJECT NUMBER: 2170218
DRAWN BY:
REVIEWED BY:
ISSUED FOR: BID DOCUMENTS
DATE: FEBRUARY 2, 2018
DRAWING NAME:

STUDIO DETAILS

DRAWING NUMBER:

SL612

VIDEO STUDIO SYMBOLS KEY

Device	Description	Box Size	Mounting
XX"	Indicates conduit size and/or wire runs		
XX	Homerun to device		
	Audio Racks 19" EIA. See SV611 For Details		
	Power - Duplex Outlet- 20A-120VAC	1 Gang	Mount At Standard Electrical Outlet Height Or As Indicated
	Power - Quad Outlet- 20A-120VAC	1 Gang	Mount At Standard Electrical Outlet Height Or As Indicated
MM	Cover Plate with (4) XLR-F and (2) Neutrik Ethercon Connectors		Mounted to Custom SSRC Raceway
CCX	Custom Punched Cover Plate. See SV511 For Connector Types and Quantities		Mounted to Custom SSRC Raceway
IO	Plate with (1) Neutrik XLR-M, (2) Neutrik XLR-F, and (2) Neutrik Ethercon Connectors	3 Gang	Flush Mounted At As Indicated
DS	Plate with (1) Neutrik Ethercon Connector	1 Gang	Flush Mounted At As Indicated
VM	Plate with (1) Neitrik 5-Pin XLR-F, (2) Neutrik XLR-M, And (1) Neutrik BNC Connector	2 Gang	Flush Mounted As Indicated.
JB	6x6x4 Screw Cover Style Junction Box		Surface Mounted At As Indicated
JB2	8x8x6 Screw Cover Style Junction Box		Surface Mounted At As Indicated
RJB	4x4x4 Screw Cover Style Box		Flush Mount Behind Custom SSRC Raceway
RJB2	6x4x4 Screw Cover Style Box		Flush Mount Behind Custom SSRC Raceway
	Custom SSRC BAL Raceway. See SV Drawings For Length As Required		Surface Mounted At As Indicated
	Wiremold 4000 Series Divided Raceway		Surface Mounted At As Indicated

CONTRACTOR SCOPE OF WORK :

Perform All Work As Described Below And On Each SV Series Drawing. All Work Shall Conform To The Standards Of Division 26 Specifications And Spec Section 19 1000:

BOXES, CONDUIT & WIRE:

The contractor shall provide (provide means to furnish and install) all conduit, duplex or quad outlets and related faceplates, multiple device boxes, miscellaneous hardware and all installation labor to provide complete conduit layouts and control, line and load circuits/runs as indicated. The contractor shall coordinate the exact locations of all devices shown with the owner, existing obstructions and any other A/V related items that they may need to be located near or in conjunction with. The contractor shall determine all final locations prior to routing or installing any conduit or backboxes.

The contractor shall terminate all conduits into racks, junction boxes, pull-boxes or other appropriate devices as indicated. No cut off conduits with end bushings and wiring dangling out the end shall be allowed.

Labeling: All conduits shall be clearly labeled on each end as to their origin and destination in a simple, logical manner. All junction boxes, switch boxes and backboxes indicated on drawings shall be labeled with the nomenclature indicated on the drawings. All outlet boxes shall be labeled with the corresponding panel and circuit designations they are fed from. Permanent black marker on conduit or junction box face is acceptable on conduits, junction boxes, etc. that will not be painted. If any related devices are to be painted, then the contractor shall provide the following: Conduits shall be labeled with 3M Durable ID Labels with permanent adhesive (applied after painting). Junction boxes, etc. shall be labeled with 3M Durable ID Labels with permanent adhesive (except stage devices, which shall be labeled with Lamacoid style engraved labels, permanently adhered to the device). All junction boxes, outlets, etc. shall also be labeled by the contractor on the back of each cover plate and also with a durable tag inside each box stating the same information. All labeling shall be done with neat, simple, easily readable, block style lettering/numbering (labeling may be done by hand, if the labeler's handwriting is neat and legible. If not, then all labeling must be done by laser printing onto indicated labels). All labeling shall reference the device's designation, conduit originations/destinations, etc. & not be a coded, indexed or legend style referencing system. The contractor shall provide printed documentation to all related contractors as to the source, destination, elbows/sweeps, pull box locations, approx. run distances and routing of related conduits throughout building as part of normal coordination on the project. Labeling shall be done in neat, easily readable, block style letters/numbers. Locate internal labels to prevent damage/smudging, etc.

The contractor shall provide blank cover plates for any switch box or junction box that does not have a specific device plate indicated on the drawings symbols keys. All cover plates shall be provided in a color and style that matches other cover plates in the immediate vicinity of the indicated device or as determined by the owner. Cover plates shall be "form fitting" and shall not have sharp edges that protrude out past edges of backboxes.

All conduits are to be concealed unless specifically called out on drawings as exposed. Any visible conduits and boxes are to conform to general contract requirements and Division 26 for finish and installation requirements.

Back-to-back outlets in common walls shall not be permitted. All outlet boxes shall be separated by at least one stud bay/cavity.

Note - All circuits are required to have separate hot and neutral conductors. Provide ground wiring as required by applicable code. All circuits shall be calculated for full rated loads, constant duty non diversity unless otherwise specified. Size wire gauges and conduit sizing to allow for full load operation after taking into account all derating for distance, voltage drop and other conditions required by the most recent national electric code (NEC), the New York State building codes and local codes.

All wiring indicate shall be provided by the contractor. The contractor shall leave at least 3' excess wire at each end unless otherwise indicated on the drawing. Secure ends of all pulled wire to prevent accidental removal or damage during construction. Label all low voltage cables as to their origin and destination and tuck into back boxes to protect from damage. The contractor shall provide continuous pull strings (for future use) in all conduits even after all indicated wire is pulled in.

In some areas wiring may be called out as CL3 not in conduit. In these areas the contractor must provide adequate attachment and support to protect the cable from potential damage using the best routing. Wiring may not be left lying loose in any area unless fully protected (i.e. Inside a wall).

The contractor shall radius all conduits where possible. Conduit runs are not to exceed 270 degrees of radius bend. Where elbows and pull boxes are unavoidable, locate these in easily accessible locations not requiring special equipment to reach. Any elbows used must be sweeps and must be accessible without the use of special equipment. If more than 270 degrees of bend is required, the contractor shall provide accessible pull boxes.

The contractor shall provide all power circuits indicated on SL and SV drawings and associated conduit, backboxes, wire, termination and duplex outlets. Termination of these outlets will be to panel boards as indicated on E-series drawings. These outlets may also be indicated on E series drawings. Check SV and E drawings and verify there is no duplication of devices. Some outlets are to be installed in racks - coordinate the exact locations within each rack.

The contractor is responsible for fire stopping all penetrations in new and existing fire rated assemblies resulting from the work of his contract.

Branch power circuits indicated are for the dedicated use of the video systems. No other connections may be made or branches added to these circuits including ground or neutral taps. Each circuit must have separate hot, neutral, and ground conductors. Conduit grounds are not acceptable for these circuits. All wire to be THHN Stranded. Hot and Neutral conductors shall be #10 and all grounds shall be #10.

The branch circuits indicated are to be installed as required to either outlet devices or inside racks to distribution devices. See E series drawings for panel designations and origination.

Provide all outlet plates as indicated on the drawings.

Coordinate exact location of the junction boxes for the all devices with the locations for lighting junction boxes and network pull boxes for the lighting system. Maintain as much distance as is physically possible between audio conduits and all lighting and power related boxes.

Coordinate the location of all conduit runs with the ceiling configuration and metal framing system.

All locations & clearances shown for the video system & other related devices are specific & critical and may not be altered in the field without obtaining prior written permission from the consultant. Any new proposed changes due to field obstructions must be communicated to the consultant in writing and clearly indicated on scaled plan drawings provided by the contractor prior to the start of work. Any racks, wiring, conduit and related devices that are installed in locations other than those indicated on the bid documents will be removed and reinstalled in the correct locations in an as new manner by the contractor at no additional cost to the owner.

The contractor shall properly & completely seal all wall & floor conduit penetrations entering or exiting racks to ensure that airflow passes through racks as intended by manufacturers. Route all conduits so that they do not interfere with any lighting,rigging, or HVAC ductwork.

All conduits to be concealed except where noted on drawings. No conduits, wire or related hardware shall be allowed to run horizontally below 7' - 6" AFF or in conflict with any of the indicated devices.

THE FOLLOWING RULES APPLY TO ALL CONDUIT RUNS

Large load (3 Phase dimmer power, etc.) should not run near any of the low voltage conduit lines. Power conduits shall not run parallel with any audio or video signal or lighting control conduits within 6' of each other. Any branch circuit power conduits, which must cross audio or video signal, or lighting control conduits shall do so at 90-degree angles.

All wiring to be installed including patch panels, outlets, as well as unterminated lengths of wire are to be fully tested for function, fully labeled and identified, and neatly dressed and bundled.

Conduits to be labeled as indicated by device name. Conduit designations to be marked in permanent marker or adhered labels at both ends.

All devices boxes to be marked with designation indicated on drawings.

Pull strings shall be installed in all conduits tied off at both ends, even in runs with wire installed.

INSTALLED WIRING

All data-type network wiring shall be verified and certified after installation. Contractor shall provide a certification report as part of close-out documentation.

All wiring at rack ends to have sufficient length to reach bottom of rack with two feet excess. Each wire to be labeled as indicated on drawings at rack end.

All wire runs to be labeled as to source and destination.

GENERAL NOTES

Do not scale plans.

Field verify all dimensions before ordering material or performing any work. Location of all devices must be coordinated with existing and/or new architectural, mechanical, electrical and structural elements. Obtain all related shop drawings and review for conflicts prior to roughing in any work. It is the sole responsibility of the contractor to verify the intended location of other elements with other contractors by reviewing their shop drawings.

Where conflicts occur contact the architect in writing for clarification before performing any work. If the contractor chooses to proceed without clarification they do so at their own risk. Any work done by the contractor without clarification will be redone at no cost to the owner at the request of the architect, owner, construction manager or consultant.

Coordinate all work for symmetrical installation with relation to height and level with architectural elements, switches, outlets, and other controls.

This drawing represents the configuration of a system. It does not in any way constitute instructions for installation except with regards to configuration. The sole responsibility for field verification of dimensions, installation/fabrication methods, code conformance, safety issues, and the quality and performance of their work shall be that of the installing contractor.

This drawing is to be interpreted in conjunction with other drawings in the contract documents as well as written specifications for this project. The contents of the drawing do not in any way do not negate the written specifications, nor do the written specifications in any way negate the contents of the drawings.

If there are inconsistencies between written specifications and drawings or between any drawings in the contract documents in the construction document set it is the responsibility of the contractor to obtain clarification before bidding this project. If no clarification has been obtained prior to bid the contractor will abide by the decision of the architect and consultant at no additional cost to the owner even if work has to be redone.

Obtain schedules from related trades to verify the intended configurations and scheduling of their work. The contractor is responsible for coordinating their work with other related trades in a manner that avoids conflicts of work and scheduling.

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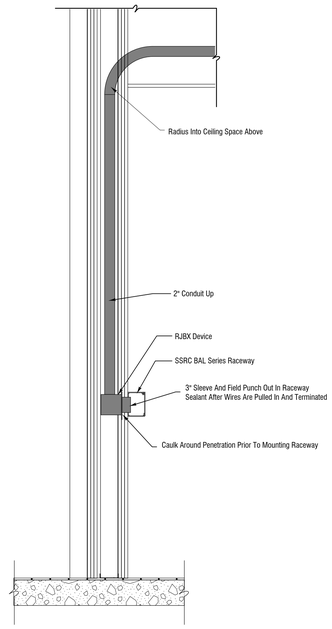
PROJECT NUMBER: 2170218
DRAWN BY: GWN
REVIEWED BY: GWN
ISSUED FOR: BID DOCUMENTS
DATE: FEBRUARY 2, 2018
DRAWING NAME:

STUDIO VIDEO & CONTROL SYSTEM NOTES & SYMBOLS KEYS

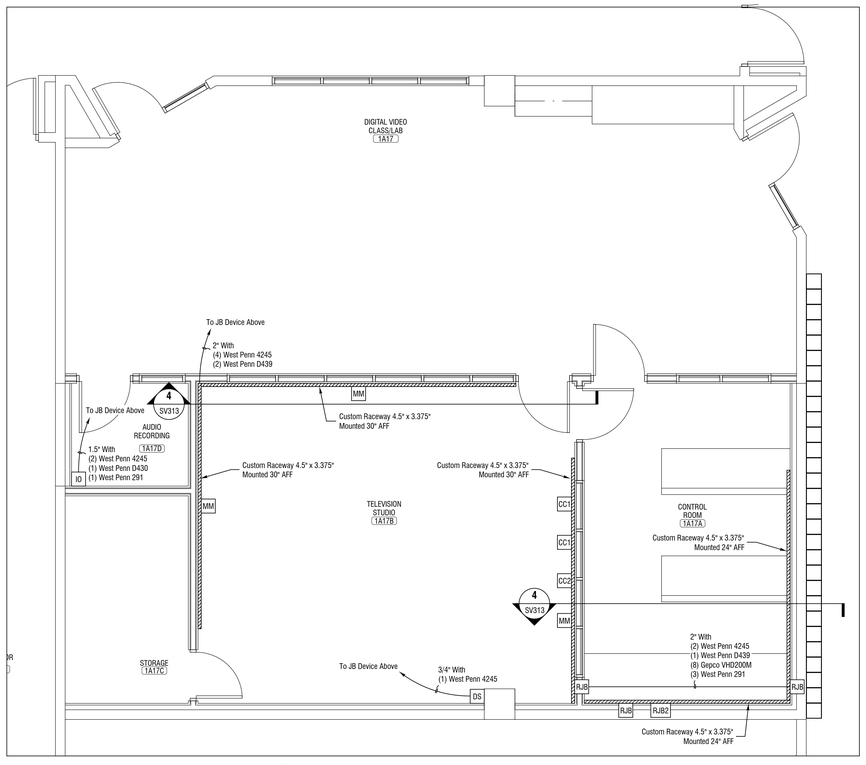
DRAWING NUMBER:

SV000

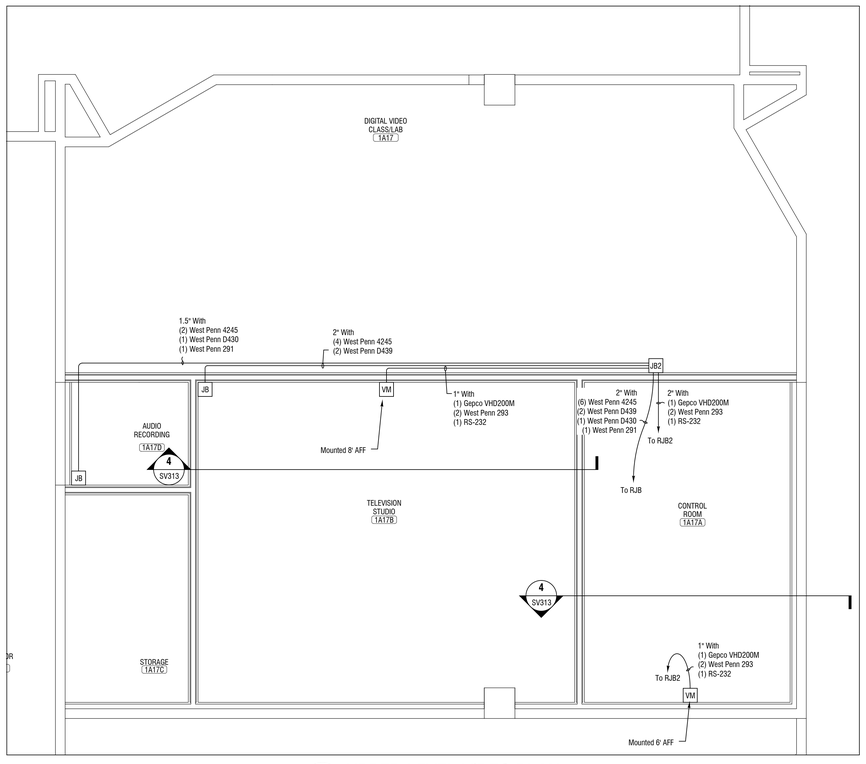
CONTRACTOR SHALL REFER TO DRAWING SV000 FOR ALL VIDEO & AUDIO RELATED DRAWING NOTES, BUBBLE NOTES, KEYS, SCHEDULES, TABLES, ELECTRICAL RELATED NOTES AND OTHER INFORMATION THAT PERTAIN TO THE SV SERIES DRAWINGS.



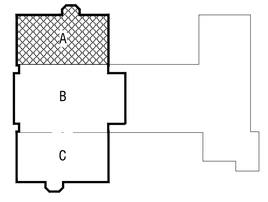
3 / SV111 CONDUIT INTERFACE TO RACEWAY
1" = 1'-0"



1 / SV111 LOWER LEVEL VIDEO PLAN
1/4" = 1'-0"



2 / SV111 UPPER LEVEL VIDEO PLAN
1/4" = 1'-0"



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PROJECT NUMBER: 2170218
DRAWN BY: GWN
REVIEWED BY: GWN
ISSUED FOR: BID DOCUMENTS
DATE: FEBRUARY 2, 2018
DRAWING NAME:

STUDIO VIDEO UPPER AND LOWER LEVEL DEVICE PLANS

DRAWING NUMBER:

SV111

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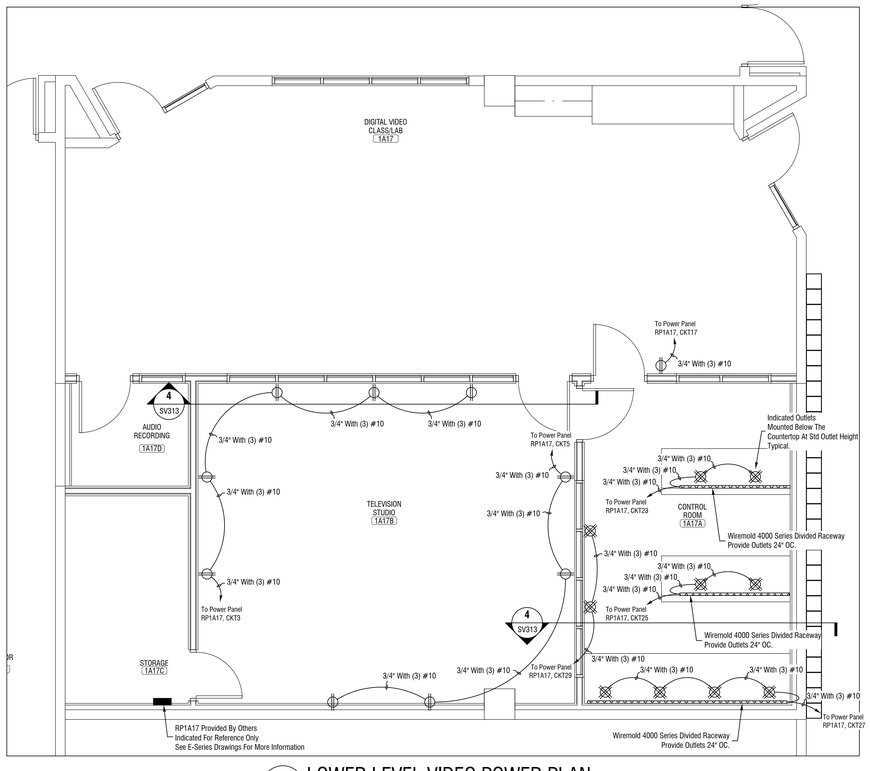
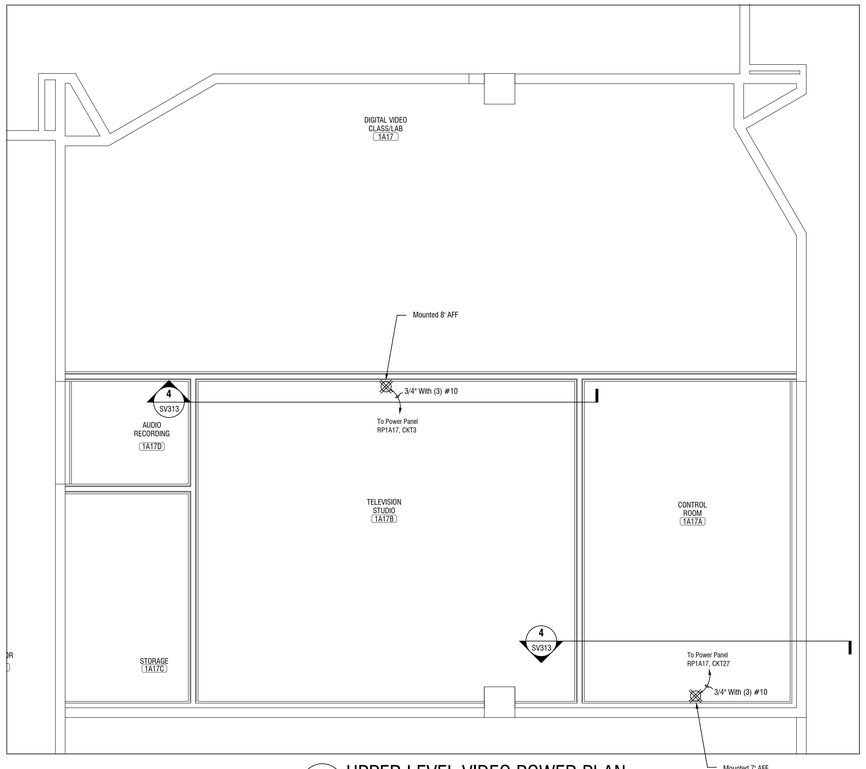
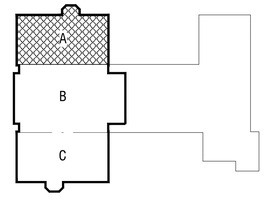


1 SV112 LOWER LEVEL VIDEO POWER PLAN
1/4" = 1'-0"



2 SV112 UPPER LEVEL VIDEO POWER PLAN
1/4" = 1'-0"



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1748 PENFIELD ROAD - PENFIELD, NY 14526
PHONE: (585) 586-1100 - FAX: (585) 586-1143

ROCHESTER SCHOOLS MODERNIZATION PROGRAM

1776 N. CLINTON AVE
ROCHESTER, NY 14621

RSMP

EDISON TECHNICAL SCHOOL

655 COLFAX STREET
ROCHESTER, NY 14606
SED NO. 26-16-00-01-0-111-032
DWT NO. 26-16-00-01-7-999-020

NO:	DATE:	DESCRIPTION:
REVISIONS		

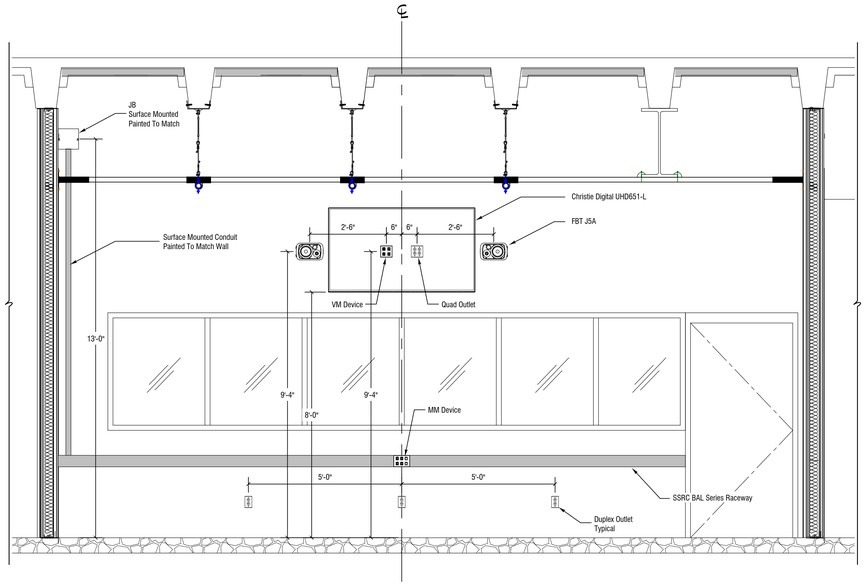
PROJECT NUMBER: 2170218
DRAWN BY: GWN
REVIEWED BY: GWN
ISSUED FOR: BID DOCUMENTS
DATE: FEBRUARY 2, 2018
DRAWING NAME:

STUDIO VIDEO UPPER AND LOWER LEVEL POWER PLANS

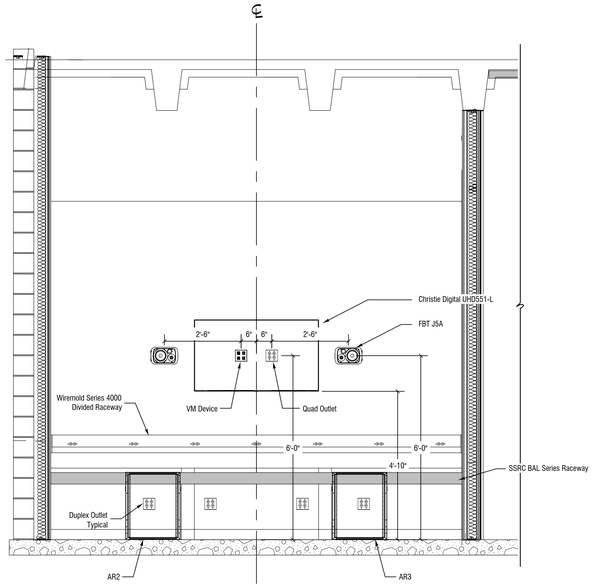
DRAWING NUMBER:

SV112

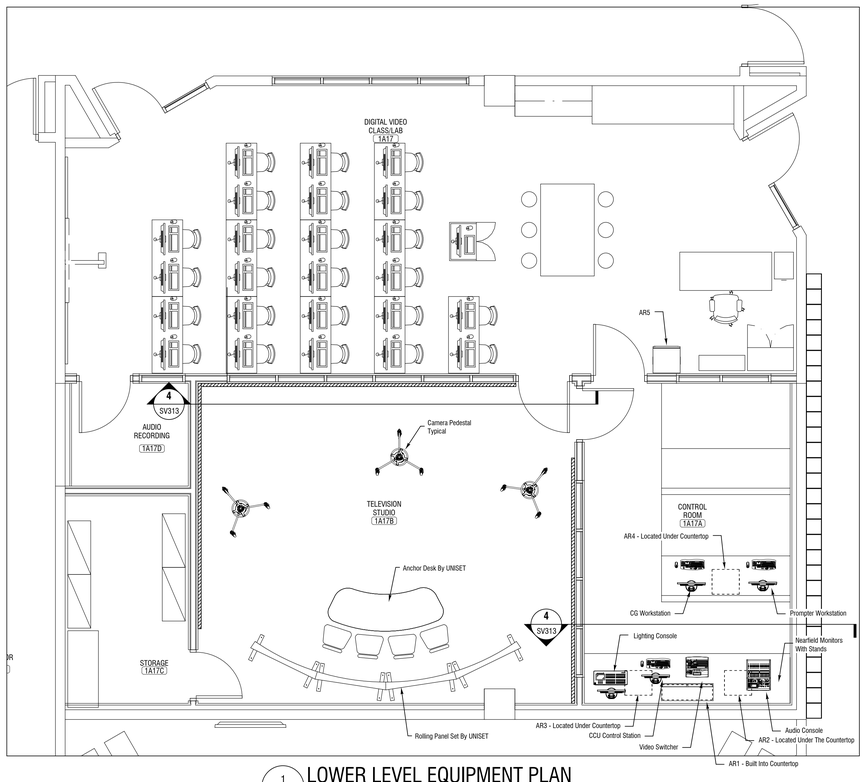
CONTRACTOR SHALL REFER TO DRAWING SV000 FOR ALL VIDEO & AUDIO RELATED DRAWING NOTES, BUBBLE NOTES, KEYS, SCHEDULES, TABLES, ELECTRICAL RELATED NOTES AND OTHER INFORMATION THAT PERTAIN TO THE SV SERIES DRAWINGS.



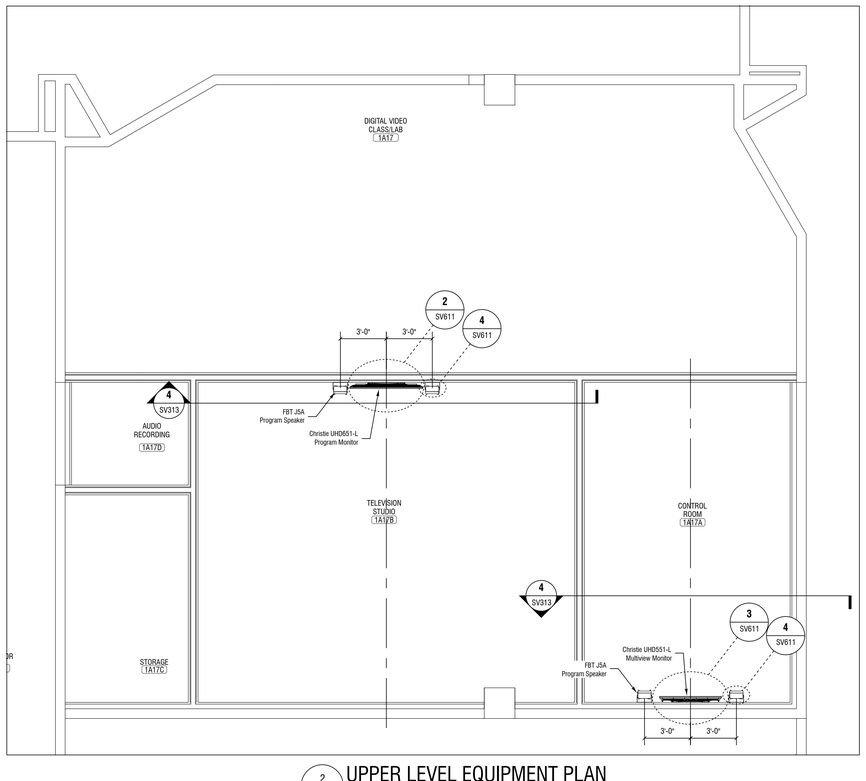
3 SV113 TV STUDIO DEVICE ELEVATION
1/4" = 1'-0"



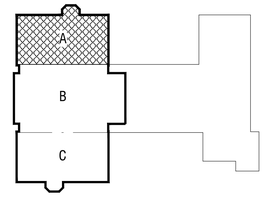
4 SV113 TV STUDIO DEVICE ELEVATION
1/2" = 1'-0"



1 SV113 LOWER LEVEL EQUIPMENT PLAN
1/4" = 1'-0"



2 SV113 UPPER LEVEL EQUIPMENT PLAN
1/4" = 1'-0"



KEY PLAN
N.T.S

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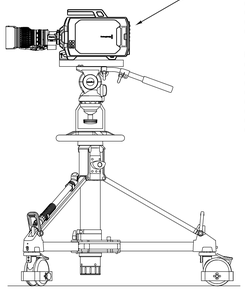
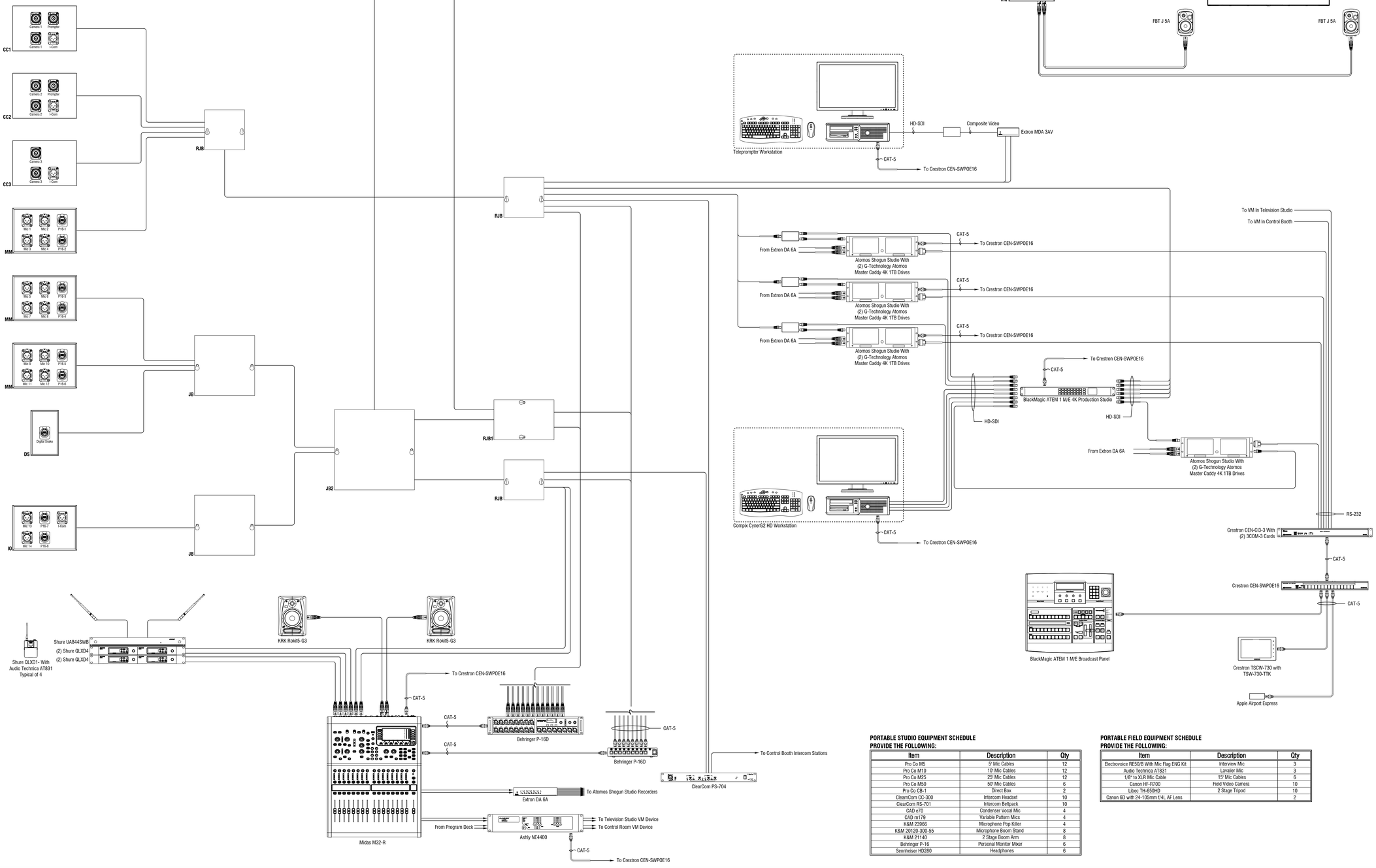


Provide Two Camera Systems Each With The Following:
(1) Blackmagic URSA Mini Pro Camera Body
(2) 35' Canare RG6 HD-SDI Cables
(1) Blackmagic Camera Adapter
(1) Blackmagic URSA Mini Studio Viewfinder
(1) Canon CN-E 18-20 Cine Zoom Lens
(1) Canon FPD-400
(1) Canon ZSD-300D
(1) AutoCue OCU-PSP17MWAPP Teleprompter System
(1) Libec RSP-750PD(s) Camera Pedestal System

Provide One Camera System Each With The Following:
(1) Black magic URSA Mini Pro Camera Body
(2) 35' Canare RG6 HD-SDI Cables
(1) Blackmagic Camera Adapter
(1) Blackmagic URSA Mini Studio Viewfinder
(1) Canon CN-E 18-20 Cine Zoom Lens
(1) Canon FPD-400
(1) Canon ZSD-300D
(1) Libec RSP-750PD(s) Camera Pedestal System



PORTABLE STUDIO EQUIPMENT SCHEDULE
PROVIDE THE FOLLOWING:

Item	Description	Qty
Pro Co M5	5' Mic Cables	12
Pro Co M10	10' Mic Cables	12
Pro Co M25	25' Mic Cables	12
Pro Co M50	50' Mic Cables	6
Pro Co CB-1	Direct Box	2
ClearCom CC-300	Intercom Headset	10
ClearCom RS-701	Intercom Beltpack	10
CAD e70	Condenser Vocal Mic	4
CAD m179	Variable Pattern Mics	4
K&M 23966	Microphone Pop Killer	4
K&M 20120-300-55	Microphone Boom Stand	8
K&M 21140	2 Stage Boom Arm	8
Behringer P-16	Personal Monitor Mixer	6
Sennheiser HD280	Headphones	6

PORTABLE FIELD EQUIPMENT SCHEDULE
PROVIDE THE FOLLOWING:

Item	Description	Qty
Electrovoice RE50/B With Mic Flag ENG Kit	Interview Mic	3
Audio Technica AT831	Lavalier Mic	3
1/8" to XLR Mic Cable	15' Mic Cables	6
Canon HF-R700	Field Video Camera	10
Libec TH-650HD	2 Stage Tripod	10
Canon 6D with 24-105mm f/4L AF Lens		2

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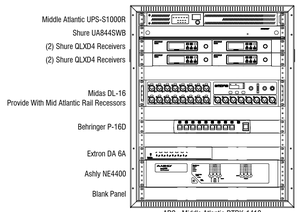
STUDIO VIDEO & CONTROL SYSTEM SINGLE LINE FLOW DIAGRAM

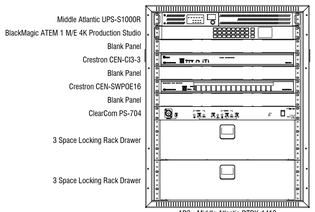
DRAWING NUMBER:

SV511

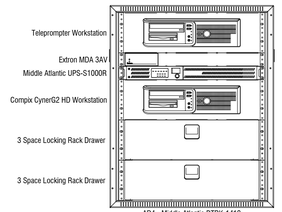
AR1 - Custom Rack Built Into Countertop
Located In Control Booth



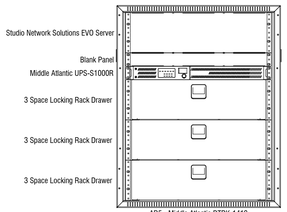
AR2 - Middle Atlantic DTRK-1418
Located In Control Booth



AR3 - Middle Atlantic DTRK-1418
Located In Control Booth

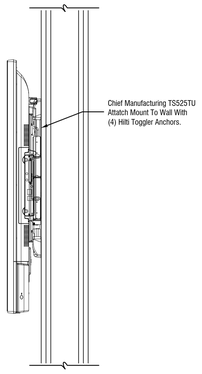


AR4 - Middle Atlantic DTRK-1418
Located In Control Booth

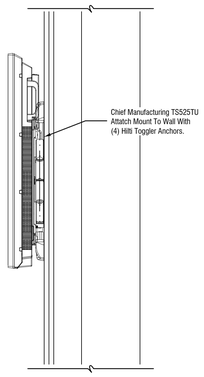


AR5 - Middle Atlantic DTRK-1418
Located In Digital Video Class/Lab

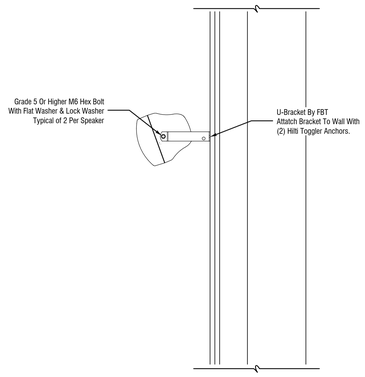
1 SV611 AUDIO RACK ELEVATIONS
1 1/2" = 1'-0"



2 SV611 TELEVISION STUDIO MONITOR DETAIL
1 1/2" = 1'-0"



3 SV611 CONTROL ROOM MONITOR DETAIL
1 1/2" = 1'-0"



4 SV611 SPEAKER MOUNTING DETAIL
1 1/2" = 1'-0"

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STUDIO VIDEO DETAILS

DRAWING NUMBER:

SV611