Wayne State University
Community Arts - Gallery Lighting
WSU Project Number 039-231828
Prevailing Wage Work

FOR:
Board of Governors
Wayne State University
Detroit, Michigan

Owner's Agent:
Loretta McClary
WSU – Procurement & Strategic Sourcing
5700 Cass, Suite 4200
Detroit, Michigan 48202
313-577-3731 / 313-577-3747 fax
ac2843@wayne.edu and copy Ag5343@wayne.edu

Owner's Representative:
Thomas J. Edwards, Project Manager
Facilities Planning & Management
Design & Construction Services
5454 Cass
Wayne State University
Detroit, Michigan 48202

Consultant:
Strategic Energy Solutions
4000 W. Eleven Mile Road
Berkley, MI 48072

July 7, 2015
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INFORMATION FOR BIDDERS

OWNER: Board of Governors
Wayne State University

PROJECT: Community Arts - Gallery Lighting
Project No. 039-231828

LOCATION: Wayne State University
450 Reuther Mall
Detroit, Michigan 48202

OWNER’S AGENT: Loretta McClary
WSU – Procurement & Strategic Sourcing
5700 Cass, Suite 4200
Detroit, Michigan 48202
313-577-3731 / 313-577-3747 fax
ac2843@wayne.edu & copy Ag5343@wayne.edu

OWNER’S REPRESENTATIVE: Thomas J. Edwards, Project Manager
Facilities Planning & Management
Design & Construction Services
Wayne State University
5454 Cass Avenue
Detroit, Michigan 48202

Architect: Strategic Energy Solutions
4000 W. Eleven Mile Road
Berkley, MI 48072

SPECIAL NOTE: Right to reject any and all proposals, either in whole or in part and to waive any irregularities therein is reserved by the Owner.

BIDS ADVERTISED: July 7, 2015

BIDDING: Bidding documents may be obtained by vendors from the University Purchasing Web Site at http://www.forms.procurement.wayne.edu/Adv_bid/Adv_bid.html beginning July 7, 2015. When visiting the Web Site, click on the “Construction” link in green. Copies of the RFP will not be available at the pre-proposal meeting.

MANDATORY Pre-Bid Conference: 1:00 PM, local time, July 15, 2015 to be held at Wayne State University – 5454 Cass Ave, Conference Room #3, Detroit, MI, 48202. Late Arrivals may not be permitted to submit bids.

OPTIONAL Second Walk Through: (if needed) To be determined at the conclusion of the pre-bid conference, by those in attendance.

DUE DATE FOR QUESTIONS: Due Date for questions shall be July 22, 2015 at 12:00 Noon. All questions must be reduced to writing and emailed to the attention of Loretta McClary at ac2843@wayne.edu, copy to, Robin Watkins at: Ag5343@wayne.edu.

Bids Due: Sealed proposals for lump-sum General Contract will be received at the office of the Procurement & Strategic Sourcing located at 5700 Cass Avenue, Suite 4200, Detroit, MI 48202 on July 30, 2015, until 2:00 p.m. (local time).

No public bid opening will be held.

Bid Qualification Meeting: Bidders must be available for bid prequalification meeting the day following the bid opening. The lowest qualified bidder will be contacted and requested to meet with Facilities Planning & Management at their office located at 5454 Cass Avenue, Detroit, MI 48202. During the prequalification, the Vendor must provide a Project Schedule and a Schedule of Values, including a list of Contractor’s suppliers, subcontractors and other qualifications.
An unsigned contract will be given to the successful Contractor at the conclusion of the Pre Award meeting, if all aspects of the bid are in order. The Contractor has 5 business days to return the contract to the Project Manager for University counter signature. The contractor must also submit a Performance Bond as outlined above and a Certificate of Insurance in the same 5 business day period. In the event the Contractor fails to return the documents in this 5 day period, the University reserves the right to award the contract to the next most responsive bidder.

All available information pertaining to this project will be posted to the Purchasing web site at http://www.forms.procurement.wayne.edu/Adv_bid/Adv_bid.html. Information that is not posted to the website is not available/not known.
INSTRUCTIONS TO BIDDERS

OWNER:            Board of Governors
                  Wayne State University

PROJECT:          Community Arts - Gallery Lighting
                  Project No. 039-231828

LOCATION:         Wayne State University
                  450 Reuther Mall,
                  Detroit, Michigan 48202

OWNER’S AGENT:    Loretta McClary
                  WSU – Procurement & Strategic Sourcing
                  5700 Cass, Suite 4200
                  Detroit, Michigan 48202
                  313-577-3731 / 313-577-3747 fax
                  ac2843@wayne.edu & copy ag5343@wayne.edu

1. PROPOSALS
A. The Purchasing Agent will receive sealed Proposals for the work as herein set forth at the place and until the
time as stated in the "Information for Bidders", a copy of which is bound herewith in these specifications. No
public bid opening will be held.

B. Proposals shall be for a lump-sum General Contract for the entire work of the Project as provided in
the Form of Proposal.

C. Proposals shall be submitted in duplicate on forms furnished with the Bidding documents. The forms must
be fully filled out in ink or typewritten with the signature in longhand, and the completed forms shall be
without alterations, interlineations, or erasures. Forms shall contain no recapitulations of the work to be
done. Each proposal shall be delivered in an opaque sealed envelope, marked "PROPOSAL" AND SHALL
BEAR THE NAME OF THE PROJECT AND THE NAME OF THE BIDDER. Proposals submitted by
telephone or telegraph will not be accepted. Modifications by telephone or telegraph to previously submitted
proposals will not be accepted.

D. (revised 5-29-2009) All base bids must be conforming to the detailed specifications and drawings provided
by the University, including any Addenda issued. Voluntary Alternates will only be considered if the
Contractor has also submitted a conforming base bid. Any stipulation of voluntary alternates or qualifications
contrary to the Contract requirements made by the Bidder in or accompanying his proposal as a condition for
the acceptance of the Contract will not be considered in the award of the Contract and will cause the
rejection of the entire Proposal.

E. The competency and responsibility of Bidders will be considered in making the award. The Owner
does not obligate himself to accept the lowest or any other bids. The Owner reserves the right to
reject any and all bids and to waive any informalities in the Proposals.

2. PROPOSAL GUARANTEE (revised 3-22-2012)
A. A certified check or bank draft payable to the Owner, or satisfactory Bid Bond executed by the Bidder and
Surety Company, in an amount equal to not less than five percent (5%) of the maximum proposal amount
shall be submitted with each Proposal, which amount may be forfeited to the Board of Governors, Wayne
State University, if the successful Bidder refuses to enter into a Contract within ninety (90) days from receipt
of Proposals.

B. Bond must be issued by a Surety Company with an "A rating as denoted in the AM Best Key Rating Guide"
The bid deposit of all bidders except the lowest three will be returned within three (3) days after the bids are opened. After the formal Contract and bonds are approved, the bid deposit will be returned to the lowest three bidders, except when forfeited.

Bid bonds shall be accompanied by a Power of Attorney authorizing the signer of the bond to do so on behalf of the Surety Company.

Withdrawal of Proposals is prohibited for a period of ninety (90) days after the actual date of opening thereof.

**3. CONTRACT SECURITY (revised 3-22-2012)**

- The successful Bidder will be required to furnish a Performance Bond and Labor and Material Payment bond in an amount equal to 100% of the contract award amount, and include such cost in the Proposal, complying with the laws of the State of Michigan. The graduated formula no longer applies.

- Performance Bond and Labor and Material Payment Bond shall be from a surety company acceptable to the Owner and made payable as follows:
  1. A bond for 100% of the contract award amount to the Board of Governors of Wayne State University, and guaranteeing the payment of all subcontractors and all indebtedness incurred for labor, materials, or any cause whatsoever on account of the Contractor in accordance with the laws of the State of Michigan relating to such bonds.
  2. A bond for 100% of the contract award amount to the Board of Governors of Wayne State University to guarantee and insure the completion of work according to the Contract.

- The only acceptable Performance Bond shall be the AIA A312 – 2010.

- Bond must be issued by a Surety Company with an “A rating as denoted in the AM Best Key Rating Guide”.

**4. BOND CLARIFICATION**

For bids below $50,000.00,

- Bid bond will not be required.
- Performance Bond will not be required.

**5. INSPECTION**

- Before submitting his Proposal, each Bidder shall be held to have visited the site of the proposed work and to have familiarized himself as to all existing conditions affecting the execution of the work in accordance with the Contract Documents. No allowance or extra consideration on behalf of the Contractor will subsequently be made by reason of his failure to observe the Conditions or on behalf of any subcontractor for the same reason.

**6. EXPLANATION TO BIDDERS AND ADDENDA**

- Neither the Owner nor Representative nor Purchasing Agent will give verbal answers to any inquiries regarding the meaning of drawings and specifications, and any verbal statement regarding same by any person, previous to the award, shall be unauthoritative.

- Any explanation desired by Bidders must be requested of the Purchasing Agent in writing, and if explanation is necessary, a reply will be made in the form of an Addendum, a copy of which will be forwarded to each Bidder registered on the Bidders’ List maintained by Procurement & Strategic Sourcing.

- All addenda issued to Bidders prior to date of receipt of Proposals shall become a part of these Specifications, and all proposals are to include the work therein described.

**7. INTERPRETATION OF CONTRACT DOCUMENTS**
A. If any person contemplating submitting a bid for the proposed Contract is in doubt as to the true meaning of any part of the drawings, specifications, or other Contract Documents, he may submit to the Purchasing Agent, a written request for an interpretation thereof. The person submitting the request will be responsible for its prompt delivery. Any interpretation of the Contract Documents will be made by an addendum duly issued. A copy of such addendum will be mailed and delivered to each registered Bidder. Each proposal submitted shall list all addenda, by numbers, which have been received prior to the time scheduled for receipt of proposal.

8. SUBSTITUTION OF MATERIALS AND EQUIPMENT*

A. Whenever a material, article or piece of equipment is identified on the Drawings or in the Specifications by reference to manufacturers' or vendors' names, trade names, catalog numbers, or the like, it is so identified for the purpose of establishing a standard, and any material, article, or piece of equipment of other manufacturers or vendors which will perform adequately the duties imposed by the general design will be considered equally acceptable provided that the material, article, or piece of equipment so proposed is, in the opinion of the Architect, of equal substance, appearance and function. It shall not be purchased or installed by the Contractor without the Architect's written approval.

9. TAXES

A. The Bidder shall include in his lump sum proposal and make payment of all Federal, State, County and Municipal taxes, including Michigan State Sales and Use Taxes, now in force or which may be enacted during the progress and completion of the work covered.

10. REQUIREMENTS FOR SIGNING PROPOSALS AND CONTRACTS

A. The following requirements must be observed in the signing of proposals that are submitted:

1. Proposals that are not signed by individuals making them shall have attached thereto a Power of Attorney, evidencing the authority to sign the Proposal in the name of the person for whom it is signed.

2. Proposals that are signed for partnership shall be signed by all of the partners or by an Attorney-in-Fact. If signed by an Attorney-in-Fact, there must be attached to the Proposal a Power of Attorney evidencing authority to sign the Proposal, executed by the partners.

3. Proposals that are signed for a corporation shall have the correct corporate name thereof and the signature of the President or other authorized officer of the corporation, manually written in the line of the Form of Proposal following the words "signed by". If such a proposal is signed by an official other than the President of the Corporation, a certified copy of resolution of the Board of Directors, evidencing the authority of such official to sign the bid, shall be attached to it. Such proposal shall also bear the attesting signature of the Secretary of the Corporation and the impression of the corporate seal.

11. QUALIFICATIONS OF BIDDERS

A. The Owner may request each of the three (3) low bidders to submit information necessary to satisfy the Owner that the Bidder is adequately prepared to fulfill the Contract. Such information may include past performance records, list of available personnel, plant and equipment, description of work that will be done simultaneously with the Owner's Project, financial statement, or any other pertinent information. This information and such other information as may be requested will be used in determining whether a Bidder is qualified to perform the work required and is responsible and reliable.

12. SPECIAL REQUIREMENTS

A. The attention of all Bidders is called to the General Conditions, Supplementary General Conditions, and Special Conditions, of which all are a part of the Specifications covering all work, including Subcontracts, materials, etc. Special attention is called to those portions dealing with Labor Standards, including wages, fringe benefits, Equal Employment Opportunities, and Liquidated Damages.
B. Prior to award of the project, the apparent low bidder will be required to produce a schedule of values which will include the proposed subcontractors for each division of work and whether the subcontractor is signatory or non-signatory. A contract will not be issued to the apparent low bidder until this document is provided. A contractor will have one week to produce this document. If the required document is not received within this time, the bidder will be disqualified.


A. The Proposal shall be deemed as having been accepted when a copy of the Contract (fully executed by both the vendor and the appropriate signatory authority for the University), with any/all Alternates, Addenda, and Pre-Contract Bulletins, as issued by the office or agent of the Owner has been duly received by the Contractor. After signing the Contracts, the Contractor shall then return all copies, plus any required bonds and certificates of insurance, to the office of the Owner's Representative, at 5454 Cass, Wayne State University, Detroit, MI 48202. Construction will begin when the fully-executed contract has been returned to the Contractor.

14. TIME OF STARTING AND COMPLETION

A. It is understood that the work is to be carried through to substantial completion with the utmost speed consistent with good workmanship and to meet the established start and completion dates.

B. The Contractor shall begin work under the Contract without delay, upon receipt of a fully-executed contract from the Owner, and shall substantially complete the project ready for unobstructed occupancy and use of the Owner for the purposes intended within the completion time stated in the Contract.

C. The Contractor shall, immediately upon receipt of fully-executed contract, schedule his work and expedite deliveries of materials and performance of the subcontractors to maintain the necessary pace for start and completion on the aforementioned dates.

15. CONTRACTOR’S PERFORMANCE EVALUATION (2-2015)

In an effort to provide continuous process improvement regarding the construction of various university projects, Wayne State University is embarking upon a process of evaluating the contractor’s overall performance following the completion of work. At the conclusion of the construction project a subjective evaluation of the Contractor’s performance will be prepared by the Project Manager and the supervising Director of Construction. The evaluation instrument that will be used in this process is shown in Section 00440-01 - Contractor’s Performance Evaluation.

16. BIDDING DOCUMENTS

A. Bid specifications are not available at the University, but are available beginning July 7, 2015 through Wayne State University Procurement & Strategic Sourcing’s Website for Advertised Bids: http://www.forms.procurement.wayne.edu/Adv_bid/Adv_bid.html. The plans for this project can be viewed in advance and/or printed from the above website. Copies of the RFP will not be available at the pre-proposal meeting.

B. DOCUMENTS ON FILE (revised 12-2007)

(1) Wayne State University Procurement & Strategic Sourcing’s Website. All available information pertaining to this project will be posted to the Purchasing web site at http://www.forms.procurement.wayne.edu/Adv_bid/Adv_bid.html. Information that is not posted to the website is not available/not known.

(2) Notification of this Bid Opportunity has been sent to DUNN BLUE (for purchase of Bid Documents only), DODGE REPORTS, REED CONSTRUCTION, CONSTRUCTION NEWS and the CONSTRUCTION ASSOCIATION OF MICHIGAN (CAM).

(3) Please note: Effective December 1, 2007, bid notices will be sent only to those Vendors registered to receive them via our Bid Opportunities list serve. To register, to
http://www.forms.procurement.wayne.edu/Adv_bid/Adv_bid.html, and click on the “Join our Listserve” link at the top of the page.
NOTICE OF MANDATORY PRE-BID CONFERENCE

PROJECT: Community Arts - Gallery Lighting.

PROJECT NOS.: WSU PROJECT NO. 039-231828

It is MANDATORY that each Contractor proposing to bid on this work must attend a pre-bid conference at the following location:

Wayne State University
5454 Cass Ave, Conference Room #3
Detroit MI  48202

1:00 PM, local time, July 15, 2015

The purpose of this conference is to clarify the procedures, scope of work, and to identify any omissions and/or inconsistencies that may impede preparation and submission of representative competitive bids.

In the event that less than 4 individual contractor firms attend the pre-bid conference, the University reserves the right, at its sole discretion, to postpone the balance of the calendar of events and to hold an additional pre-bid conference.

An attendance list shall be prepared and minutes of the conference shall be furnished to all those attending.

Any clarifications or corrections that cannot be made at the conference will be by Addendum.

For your convenience a map of the University and appropriate parking lots can be downloaded and printed from: [http://campusmap.wayne.edu/](http://campusmap.wayne.edu/). Guest parking in any of the University student and guest lots is $7.00. A detailed list of Cash & Coin operated lots can be viewed at [http://purchasing.wayne.edu/cash_and_credit_card_lots.php](http://purchasing.wayne.edu/cash_and_credit_card_lots.php). Cash lots dispense change in quarters. Due to time constraints, Vendors are encouraged to avoid parking at meters on the street (especially blue “handicapped” meters).

All available information pertaining to this project will be posted to the Purchasing web site at [http://www.forms.procurement.wayne.edu/Adv_bid/Adv_bid.html](http://www.forms.procurement.wayne.edu/Adv_bid/Adv_bid.html).

Information that is not posted to the website is not available/not known.
AGENDA

I. Welcome and Introductions
   A. Wayne State University Representatives
   B. Vendor Representatives
   C. Sign in Sheet- be sure to include your fax number and email address (LEGIBLY) on the sign in sheet.

II. Brief Overview of Wayne State University
   A. Purpose and Intent of RFP.
   B. Detailed review of the RFP and the requirements for a qualified response.
   C. Review of all pertinent dates and forms that are REQUIRED for a qualified response.

III. Vendor Questions/Concerns/Issues
   A. Questions that can be answered directly by the appropriate person in this meeting will be answered and both question and answer will be recorded in the minutes of the meeting.
   B. Questions that need to be researched will be answered and a nature of clarification will be emailed to the appropriate ListServ. See http://www.forms.purchasing.wayne.edu/Adv_bid/Adv_Bid_Listserve.html for a list of ListServ Bid Lists.
   C. Minutes will be emailed to all participants of the meeting within a reasonable amount of time. (be sure to include your email address/addresses on the sign in sheet)
   D. Questions and concerns that come up after this meeting are to be addressed to Loretta McClary, Procurement & Strategic Sourcing. Discussion with other University members is seriously discouraged and could lead to disqualification from further consideration. All questions and answers will be recorded and emailed to all participants of the RFP.
   E. Due date for questions is **July 22, 2015, 12:00 noon**.

IV. Minimum Participation
   A. Pre-registration for the Pre-Bid meeting is required. In the event that we do not have four (4) or more eligible bidders pre-registered, the University reserves the right to postpone the Pre-bid meeting with up to 4 business hour notice.
   B. If less than 4 individual contractor firms attend the mandatory pre-bid meeting, the University reserves the right, at its sole discretion, to postpone the balance of the calendar of events and to hold an additional pre-bid conference.
   C. On the day of the bid opening, if less than 3 sealed bids are received, the University reserves the right, at its sole discretion, to rebid the project in an effort to obtain greater competition. If the specifications are unchanged during the rebid effort, any contractor who submitted a bid will be given the option of keeping its bid on file for opening after the second bid effort, or of having the bids returned to them unopened.

V. Proposal Due Date- **July 30, 2015, 2:00 p.m.**

VI. Final Comments

VII. Adjourn
VENDOR NAME

GENERAL CONTRACT - PROPOSAL FORM (revised 1 - 2011)

Please Note – Vendors must Pre-qualify themselves when responding to this bid opportunity. Our Prequalification questions can be found on page 4 of this section.

OWNER: Board of Governors
Wayne State University

PROJECT: Community Arts - Gallery Lighting

PROJECT NO.: WSU PROJECT NO. 039-231828

PROJECT TYPE: None Work

PURCHASING AGENT: Loretta McClary
WSU – Procurement & Strategic Sourcing
5700 Cass, Suite 4200
Detroit, Michigan 48202
313-577-3731/ 313-577-3747 fax
ac2843@wayne.edu & copy Ag5343@wayne.edu

OWNER'S REPRESENTATIVE: Thomas J. Edwards, Project Manager
Design & Construction Services
Facilities Planning & Management
Wayne State University
5454 Cass Avenue
Detroit, Michigan 48202

TO: Board of Governors
Wayne State University
Detroit, Michigan

BASE PROPOSAL: The undersigned agrees to enter into an Agreement to complete the entire work of the Community Arts - Gallery Lighting project (WSU Project No. 039-231828) in accordance with the Bidding Documents for the following amounts:

$ Dollars

LAWN REPLACEMENT: The undersigned agrees that, in the event of existing lawn or landscaping damage, due to the Contractor's work, that has not been properly addressed and repaired to the satisfaction of the University, the University may repair/replace the lawn and/or landscaping, and that the expense will be at a unit cost of $10.00 per square yard for lawn, and landscaping at a rate of 1.5 times the cost of said repairs, the full cost of which shall be reimbursed by the contractor.

CONTRACT CHANGE ORDERS: (revised 4-01-2011) The undersigned agrees to the following pricing formula and rates for changes in the contract work:

1. For subcontract work, Contractor's markup for handling, overhead, profit and bonding on subcontractors sell price, shall not exceed 5%.

1.1. For subcontract work that is provided on a time and material basis, the subcontractor shall be permitted a single markup for handling, overhead,
profit and bonding of 5%. When a markup is identified in the subcontractor’s hourly labor rate, additional markup on labor is not permitted.

1.1.1 For changes that are based upon a lump sum value, subcontractor shall provide all labor and material back-ups to ensure that duplicative charges are avoided and authorized mark-ups for OH&P can be confirmed.

2. For work by his own organization, Contractor’s markup for job* and general overhead, profit and bonding shall not exceed 5% of the net labor** and material costs.

Within 14 days of the project’s contract execution Contractor shall provide to the Owner; Subcontractor’s hourly labor rate breakdown details. This requirement shall extend to the lowest level of subcontractor participation.

* Job and general overhead includes supervision and executive expenses; use charges on small tools, scaffolding, blocking, shores, appliances, etc., and other miscellaneous job expenses.

** Net labor cost is the sum of the base wages, fringe benefits established by governing trade organizations, applicable payroll taxes, and increased expense for contractor's liability insurance (Workman's Compensation, P.L. and P.D.).

TIME OF COMPLETION: (revised 4-01-2011)
The Contract is expected to be fully executed on or about 25 calendar days after successful bidder qualification and recommendation of award. The undersigned agrees to start construction immediately after receipt of a fully executed contract, and to complete the work as follows:

Substantial Completion will be completed no later than January 22, 2016.

LIQUIDATED DAMAGES:
It is understood and agreed that, if project is not completed within the time specified in the contract plus any extension of time allowed pursuant thereto, the actual damages sustained by the Owner because of any such delay, will be uncertain and difficult to ascertain, and it is agreed that the reasonable foreseeable value of the use of said project by Owner would be the sum of $500.00, Five Hundred Dollars per day, and therefore the contractor shall pay as liquidated damages to the Owner the sum of $500.00, Five Hundred Dollars per day for each day's delay in substantially completing said project beyond the time specified in the Contract and any extensions of time allowed thereunder.

TAXES:
The undersigned acknowledges that prices stated above include all applicable taxes of whatever character or description. Michigan State Sales Tax is applicable to the work. Bidder understands that the Owner reserves the right to reject any or all bids and to waive informalities or irregularities therein.

ADDENDA:
The undersigned affirms that the cost of all work covered by the following Addenda are included in the lump sum price of this proposal.

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<tr>
<th>Addendum No.</th>
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<th>Date</th>
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CONTRACTOR’S PREQUALIFICATION STATEMENT & QUESTIONNAIRE:

Our Minimum Requirements for Construction Bids are:
**WSU considers this project:** None Work.

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Small Project bid less than $50,000</th>
<th>Medium Project bid between $50,001 and $250,000</th>
<th>Large Project bid between $250,001 and $2 million</th>
<th>Very Large Project bid greater than $2 million</th>
</tr>
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<tbody>
<tr>
<td>EMR Rating (Experience Modification Rating)</td>
<td>1.0 or Less</td>
<td>1.0 or Less</td>
<td>1.0 or Less</td>
<td>1.0 or Less</td>
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<tr>
<td>Bondable Vendor</td>
<td>N.A.</td>
<td>Required</td>
<td>Required</td>
<td>Required</td>
</tr>
<tr>
<td>Length of Time in Construction Business</td>
<td>2 Years</td>
<td>3 Years</td>
<td>5 Years</td>
<td>5 Years</td>
</tr>
<tr>
<td>Demonstrated Experience in Projects Similar in Scope and Price in the last 3 years</td>
<td>1 or more</td>
<td>1 or more</td>
<td>2 or more</td>
<td>3 or more</td>
</tr>
<tr>
<td>Unsuccessful Projects on Campus in last 3 years</td>
<td>None Allowed</td>
<td>None Allowed</td>
<td>None Allowed</td>
<td>None Allowed</td>
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<tr>
<td>Failure to comply with Prevailing Wage and/or Project Labor requirements</td>
<td>None Allowed</td>
<td>None Allowed</td>
<td>None Allowed</td>
<td>None Allowed</td>
</tr>
<tr>
<td>Withdrawn University Bid (with or without Bond forfeiture) within the last 3 years **</td>
<td>1 or less</td>
<td>1 or less</td>
<td>1 or less</td>
<td>1 or less</td>
</tr>
<tr>
<td>Company currently not in Chapter 11 of the US Bankruptcy Code</td>
<td>1 Year</td>
<td>2 Years</td>
<td>3 Years</td>
<td>3 Years</td>
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** Withdrawal of a bid is subject to the University suspension policy, for a period up to one year.

**Contractors must complete the following information to determine their eligibility to participate in this bid.** This information is required with your Bid to the University

**Failure to complete this form in its entirety will result in your bid being disqualified.**

Check one of the following on the makeup of your company:

- Corporation
- Individual
- Partnership
- Joint Venture
- Other (Explain below:)

Diversity Classification: Please indicate the appropriate diverse classification for your company. The University recognizes the following groups as diverse or disadvantaged:

- Majority Owned
- Minority Business Enterprises (MBE)
- Women Business Enterprises (WBE)
- Disabled Veteran Enterprises (DVBE)
- Disabled Person Enterprises (DBE)
- Veteran Owned Businesses (VBE)
- Small Businesses per the US Small Business Administration (SBE)
• Other (Please Explain:) ____________________________

1. How many years has your organization been in business as a contractor? ________________

2. How many years has your organization been in business under its present business name? __________

3. List states in which your organization is legally qualified to do business. ____________________________

4. Provide the Name and Address of your Liability Insurance Carrier. ____________________________

5. What is your current EMR Rating?
   The minimum requirement is an EMR Rating of 1.0 or less for all projects. Bidders with a rating higher than 1.0 understand that their bid may be disqualified, at the sole discretion of the University.

6. What percentage of work performed on projects are by company employees; excluding any hired subcontracting and outsourced relationships, for the bid submitted? ________%

7. What percentage of work performed on your company's behalf are by subcontracted business relationships; disallowing 1099 contracting work forces, for the bid submitted? ________%

8. Have you ever failed to complete any work awarded to you? If so, attach a separate sheet of explanation. Include the name of the Project, the customer, the dates of the work, and the amount of the contract?

9. Have you withdrawn a bid after a University bid opening and/or refused to enter into a contract with the University upon notification of award within the last 3 years? If so, state the Project Name and Number, and the date of bid submission below.

10. Has any officer or partner of your organization ever been an officer or partner of another organization that failed to complete a construction contract? If so, attach a separate sheet of explanation.

11. List the construction experience of the principals and superintendents of your company.

   Name: ____________________________ Title: ____________________________
   ____________________________
   ____________________________
   ____________________________

   Name: ____________________________ Title: ____________________________
   ____________________________
   ____________________________
   ____________________________

   Name: ____________________________ Title: ____________________________
   ____________________________
   ____________________________
   ____________________________

12. List the construction Projects, and approximate dates, when you performed work similar in Scope to this project.
Project: ___________________________  Owner: __________________________
Contract Amount: __________________________
Date Completed: _________________________

Project: ___________________________  Owner: __________________________
Contract Amount: __________________________
Date Completed: _________________________

Project: ___________________________  Owner: __________________________
Contract Amount: __________________________
Date Completed: _________________________

13. List the construction Projects, and approximate dates, when you performed work similar in Dollar Amount to this project.

Project: ___________________________  Owner: __________________________
Contract Amount: __________________________
Date Completed: _________________________

Project: ___________________________  Owner: __________________________
Contract Amount: __________________________
Date Completed: _________________________

Project: ___________________________  Owner: __________________________
Contract Amount: __________________________
Date Completed: _________________________

14. Is your Company “bondable”?  Yes  No

15. What is your present bonding capacity?  $ __________________________

16. Who is your bonding agent?

NAME: __________________________
ADDRESS: __________________________
PHONE: (______) __________________________
CONTACT: __________________________

17. Does your company agree to provide financial reports to the University upon request? Failure to agree may result in disqualification of your bid. Yes  No

18. Does your company agree that all of the Terms and Conditions of this RFP and Vendor’s Response Proposal become part of any ensuing agreement? Yes  No

19. Does your company agree to execute a contract containing the clauses shown in Section 00500 “Agreement Between Contractor and Owner for Construction”?  Yes  No

If “No”, clearly note any exceptions to any information contained in the contract documents and include with your proposal.

20. Did your company quote based upon Prevailing Wage Rates?  Yes  No

Note: Contractors submitting proposals for this project may, at the discretion of the University, be required to submit references including contact information to be used to assist in the post bid evaluation process for the subject project.

ACKNOWLEDGEMENT OF MINIMUM QUALIFICATIONS:
The undersigned has read and understands the minimum qualifications for University construction projects, and has completed the Prequalification section completely and accurately. The undersigned understands that a contractor, who fails to meet the minimum qualifications in the category identified for this project, will be disqualified from consideration for the project.
The undersigned agrees to execute a Contract, being the Wayne State University standard form titled "Agreement Between Contractor and Owner for Construction" (see section 00500 of the bid documents), provided that we are notified of the acceptance of our Proposal within ninety (90) days of the date set for the opening thereof.

The undersigned below understands that the bid will be disqualified if the Prequalification information above is not completed in its entirety.

NAME OF COMPANY: ________________________________

OFFICE ADDRESS: ________________________________

PHONE NUMBER: ___________________________ DATE________________

FAX NUMBER: ________________________________

SIGNED BY: ________________________________

Signature

(Please print or type name here)

TITLE ________________________________

EMAIL ADDRESS: ________________________________ @ ________________________________
PREVAILING WAGE RATE SCHEDULE (revised 4-05-2010)

A. See also Page 00100-4 Section 12.B

B. Wayne State University requires all project contractors, including subcontractors, who provide labor on University projects to compensate at a rate no less than prevailing wage rates.

C. The rates of wages and fringe benefits to be paid to each class of laborers and mechanics by each VENDOR and subcontractor(s) (if any) shall be no less than the wage and fringe benefit rates prevailing in Wayne County, Michigan, as determined by the United States Secretary of Labor. Individually contracted labor commonly referred to as "1099 Workers" and subcontractors using 1099 workers are not acceptable for work related to this project.

D. To maintain compliance with State of Michigan Ordinances, Certified Payroll must be provided for each of the contractor's or subcontractor's payroll periods for work performed on this project. Certified Payroll should accompany all Pay Applications. Failure to provide certified payroll will constitute breach of contract, and pay applications will be returned unpaid, and remain so until satisfactory supporting documents are provided.

A Prevailing Wage Rate Schedule has been issued from the State of Michigan that is enclosed in this section.

Additional information can be found on the University Procurement & Strategic Sourcing’s web site at the following URL address:

http://purchasing.wayne.edu/vendors/wage-rates.php

If you have any questions, or require rates for additional classifications, please contact:

Michigan Department of Consumer & Industry Services, Bureau of Safety and Regulation, Wage and Hour Division, 7150 Harris Drive, P.O. Box 30476, Lansing, Michigan 48909-7976

http://www.michigan.gov/dleg/0,1607,7-154-27673_27706---,00.html

F. Wayne State University’s Prevailing Wage Requirements:

When compensation will be paid under prevailing wage requirements, the University shall require the following:

A. The contractor shall obtain and keep posted on the work site, in a conspicuous place, a copy of all current prevailing wage and fringe benefit rates.

B. The contractor shall obtain and keep an accurate record showing the name and occupation of and the actual wages and benefits paid to each laborer and mechanic employed in connection with this contract.

C. The contractor shall submit a completed certified payroll document [U.S. Department of Labor Form WH 347] verifying and confirming the prevailing wage and benefits rates for all employees and subcontractors for each payroll period for work performed on this project. The contractor shall include copies of pay stubs for all employee or contract labor payments related to Wayne State University work. The certified payroll form can be downloaded from the Department of Labor website at http://www.dol.gov/whd/forms/wh347.pdf.

D. A properly executed sworn statement is required from all tiers of contractors, sub-contractors and suppliers which provide services or product of $1,000.00 or greater. Sworn statements must accompany applications for payment. All listed parties on a sworn statement and as a subcontractor must submit Partial or Full Conditional Waivers for the amounts invoiced on the payment application. A copy of the acceptable WSU Sworn Statement and Waiver will be provided to the awarded contractor.
E. Apprentices for a skilled trade must provide proof of participation in a Certified Apprenticeship Program and the level of hours completed in the program.

F. Daily project sign-in sheets and field reports for the project must be turned in weekly.

Note: Contractor invoices WILL NOT be processed until all listed certified payroll documents are received.

G. If the VENDOR or subcontractor fails to pay the prevailing rates of wages and fringe benefits and does not cure such failure within 10 days after notice to do so by the UNIVERSITY, the UNIVERSITY shall have the right, at its option, to do any or all of the following:

1. Withhold all or any portion of payments due the VENDOR as may be considered necessary by the UNIVERSITY to pay laborers and mechanics the difference between the rates of wages and fringe benefits required by this contract and the actual wages and fringe benefits paid.

2. Terminate this contract and proceed to complete the contract by separate agreement with another vendor or otherwise, in which case the VENDOR and its sureties shall be liable to the UNIVERSITY for any excess costs incurred by the UNIVERSITY.

3. Propose to the Director of Purchasing that the Vendor be considered for Debarment in accordance with the University’s Debarment Policy, found on our website at http://purchasing.wayne.edu/docs/appm28.pdf

Terms identical or substantially similar to this section of this RFP shall be included in any contract or subcontract pertaining to this project.

H. The current applicable prevailing wage rates as identified by the State of Michigan Department of Consumer & Industry Services, Bureau of Safety and Regulation, Wage and Hour Division are attached. Refer to item C above if additional information is required.

I. Prior to award of the project, the apparent low bidder will be required to produce a schedule of values which will include the proposed subcontractors for each division of work and whether the subcontractor is signatory or non-signatory. A letter of intent or contract will not be issued to the apparent low bidder until this document is provided. The apparent low bidder will have one week to produce this document. If the required document is not received within this time, the bidder will be disqualified, and the next low bidder will be required to provide this schedule of values.

SEE ATTACHED STATE PREVAILING WAGE INFORMATION
State of Michigan

WHPWRequest@michigan.gov

Official Request #: 859
Requestor: Wayne State University
Project Description: RFB- Community Arts Gallery Lighting 2015 Replace lighting fixtures in the Art Gallery
Project Number: 039-231828

Wayne County

Official 2015 Prevailing Wage Rates for State Funded Projects

Issue Date: 6/29/2015
Contract must be awarded by: 9/27/2015

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<table>
<thead>
<tr>
<th>Classification</th>
<th>Name Description</th>
<th>Last Updated</th>
<th>Straight Time and a Half Hourly</th>
<th>Double Time</th>
<th>Overtime Provision</th>
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<tbody>
<tr>
<td>Asbestos &amp; Lead Abatement Laborer</td>
<td>MLDC</td>
<td>10/1/2014</td>
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<td>$53.64</td>
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</tr>
<tr>
<td></td>
<td>Monday-Saturday, must be consecutive</td>
<td></td>
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</tbody>
</table>

Asbestos & Lead Abatement, Hazardous Material Handler

|                     | AS207                             | 10/1/2014    | $40.25                          | $53.58      | H H X X X X D Y   |
|                     | 4 ten hour days @ straight time allowed |              |                                 |             |                  |
|                     | Monday-Saturday, must be consecutive |              |                                 |             |                  |

Boilermaker

|                     | BO169                             | 2/17/2015    | $54.70                          | $81.08      | $107.45 H H H H H D Y |

Apprentice Rates:

| 1st 6 months        | $40.31                          | $59.49      | $78.67                          |
| 2nd 6 months        | $41.45                          | $61.21      | $80.95                          |
| 3rd 6 months        | $42.57                          | $62.88      | $83.19                          |
| 4th 6 months        | $43.69                          | $64.57      | $85.43                          |
| 5th 6 months        | $44.81                          | $66.24      | $87.67                          |
| 6th 6 months        | $48.63                          | $72.50      | $96.36                          |
| 7th 6 months        | $49.32                          | $73.01      | $96.69                          |
| 8th 6 months        | $51.58                          | $76.40      | $101.21                         |
### Official 2015 Prevailing Wage Rates for State Funded Projects

#### Issue Date: 6/29/2015

**Contract must be awarded by:** 9/27/2015

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<table>
<thead>
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<th>Classification Name</th>
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<td>Saturday for 5 day 8 hour week</td>
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<td>Friday for 4 day 10 hour week</td>
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<tr>
<td></td>
<td>4 10s allowed M-TH</td>
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<td><strong>Apprentice Rates:</strong></td>
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<tr>
<td>First 6 months</td>
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<td>$47.81</td>
<td>$63.74</td>
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<td>$50.60</td>
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<td>3rd 6 months</td>
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<td>$35.57</td>
<td>$53.37</td>
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<tr>
<td>4th 6 months</td>
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<tr>
<td>5th 6 months</td>
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<td>$39.27</td>
<td>$58.92</td>
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<td>6th 6 months</td>
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<tr>
<td>7th 6 months</td>
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<td>$42.97</td>
<td>$64.46</td>
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<tr>
<td>8th 6 months</td>
<td></td>
<td>$44.82</td>
<td>$67.24</td>
<td>$89.64</td>
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</tbody>
</table>

| **Carpenter**       | Diver | CA 687 D 6/25/2014 | $64.65 | $93.14 | $121.63 | X X H X X H D Y |
|                     | Make up day allowed comment | | | | | |
|                     | Saturday allowed comment | | | | | |
|                     | Four 10s allowed M-Sat; double time due when over 12 hours worked per day | | | | | |
Official 2015 Prevailing Wage Rates for State Funded Projects

Issue Date: 6/29/2015
Contract must be awarded by: 9/27/2015

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<table>
<thead>
<tr>
<th>Classification</th>
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<tbody>
<tr>
<td>Carpet and Resilient Floor Layer, (does not include installation of prefabricated formica &amp; parquet flooring which is to be paid carpenter rate)</td>
<td>CA1045</td>
<td>6/12/2014</td>
<td>$49.21 $70.18 $91.14 X X H X X X X D Y</td>
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</table>

**Apprentice Rates:**

1st 6 months | $24.23 $32.71 $41.18 |
2nd 6 months | $28.25 $38.73 $49.22 |
3rd 6 months | $30.35 $41.88 $53.42 |
4th 6 months | $32.44 $45.02 $57.60 |
5th 6 months | $34.54 $48.17 $61.80 |
6th 6 months | $36.63 $51.31 $65.98 |
7th 6 months | $38.74 $54.48 $70.20 |
8th 6 months | $40.82 $57.59 $74.36 |

Carpenter | CA687Z1 | 6/24/2014 | $55.24 $79.04 $102.84 X X H X X H H D Y |

four 10s allowed Mon-Sat; double time due when over 12 hours worked per day

**Apprentice Rates:**

1st year | $33.82 $46.92 $60.00 |
3rd 6 months | $36.21 $50.49 $64.78 |
4th 6 months | $38.58 $54.05 $69.52 |
5th 6 months | $40.97 $57.64 $74.30 |
6th 6 months | $43.33 $61.17 $79.02 |
7th 6 months | $45.72 $64.77 $83.80 |
8th 6 months | $48.09 $68.32 $88.54 |

Official Request #: 859
Requestor: Wayne State University
Project Description: RFB- Community Arts Gallery Lighting 2015 Replace lighting

Official Rate Schedule
Every contractor and subcontractor shall keep posted on the construction site, in a conspicuous place, a copy of all prevailing wage and fringe benefit rates prescribed in a contract.
Official 2015 Prevailing Wage Rates for State Funded Projects

Issue Date: 6/29/2015
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<th>Name</th>
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<th>Double Time</th>
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<tr>
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<td>Four 10s allowed Monday-Saturday; double time due when over 12 hours worked per day</td>
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</table>

Make up day allowed comment Saturday

Apprentice Rates:
1st 6 months $33.82 $46.92 $60.00
2nd 6 months $38.58 $54.05 $69.52
3rd 6 months $43.33 $61.17 $79.02
4th 6 months $48.09 $68.32 $88.54

---

Cement Mason br1cm 10/15/2014 $50.05 $71.17 $92.28 X X H H H D N

Apprentice Rates:
1st 6 months $29.13 $39.45 $49.77
2nd 6 months $31.20 $42.54 $53.87
3rd 6 months $35.31 $48.67 $62.01
4th 6 months $39.46 $54.85 $70.23
5th 6 months $41.52 $57.91 $74.30
6th 6 months $45.67 $64.10 $82.52

---

Cement Mason CE514 11/10/2011 $46.30 $64.89 $83.48 H H D H H H D N

Apprentice Rates:
1st 6 months $26.77 $36.07 $45.36
2nd 6 months $28.68 $38.91 $49.13
3rd 6 months $32.50 $44.59 $56.66
4th 6 months $36.32 $50.26 $64.19
5th 6 months $38.24 $53.11 $67.98
6th 6 months $42.06 $58.79 $75.51
### Official 2015 Prevailing Wage Rates for State Funded Projects

**Issue Date:** 6/29/2015  
**Contract must be awarded by:** 9/27/2015

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<table>
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<tr>
<th>Classification</th>
<th>Name Description</th>
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<th>Half Time</th>
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<tbody>
<tr>
<td><strong>Drywall</strong></td>
<td></td>
<td></td>
<td>$44.41</td>
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<td>$70.91</td>
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<td>Drywall Taper</td>
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<td>Four 10s allowed Monday-Thursday</td>
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<tr>
<td></td>
<td>Make up day allowed comment</td>
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<td></td>
<td>Friday make-up day for bad weather or holidays</td>
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</table>

**Apprentice Rates:**

- First 3 months: $31.16, $37.79, $44.41
- Second 3 months: $33.81, $41.76, $49.71
- Second 6 months: $36.46, $45.73, $55.01
- Third 6 months: $39.11, $49.71, $60.31
- 4th 6 months: $40.43, $51.69, $62.95

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<th>Classification</th>
<th>Name Description</th>
<th>Updated Date</th>
<th>Hourly</th>
<th>Half Time</th>
<th>Straight Time</th>
<th>Double Time</th>
<th>Overtime Provision</th>
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<tbody>
<tr>
<td><strong>Electrician</strong></td>
<td></td>
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<td>$58.91</td>
<td>$77.39</td>
<td>$95.87</td>
<td>H H H H H H D N</td>
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<tr>
<td></td>
<td>Inside Wireman</td>
<td>10/2/2014</td>
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</table>

**Apprentice Rates:**

- 0-1000 hours: $36.73, $44.12, $51.51
- 1000-2000 hours: $38.58, $46.89, $55.21
- 2000-3500 hours: $40.43, $49.67, $58.91
- 3500-5000 hours: $42.27, $52.44, $62.59
- 5000-6500 hours: $45.97, $57.98, $69.99
- 6500-8000 hours: $49.67, $63.53, $77.39

<table>
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<th>Classification</th>
<th>Name Description</th>
<th>Updated Date</th>
<th>Hourly</th>
<th>Half Time</th>
<th>Straight Time</th>
<th>Double Time</th>
<th>Overtime Provision</th>
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<td>$51.23</td>
<td>$64.35</td>
<td>H H H H H D N</td>
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<tr>
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<td>Sound and Communication Installer</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Apprentice Rates:**

- Period 1: $24.99, $31.55, $38.11
- Period 2: $26.30, $33.52, $40.73
- Period 3: $27.62, $35.50, $43.37
- Period 4: $28.93, $37.46, $45.99
- Period 5: $30.25, $39.44, $48.63
- Period 6: $31.55, $41.39, $51.23

---

Official Request #: 859  
Requestor: Wayne State University  
Project Description: RFB- Community Arts Gallery Lighting 2015 Replace lighting  

Official Rate Schedule  
Every contractor and subcontractor shall keep posted on the construction site, in a conspicuous place, a copy of all prevailing wage and fringe benefit rates prescribed in a contract.
### Official 2015 Prevailing Wage Rates for State Funded Projects

**Issue Date:** 6/29/2015  
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<table>
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<th>Classification</th>
<th>Name Description</th>
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<th>Double Overtime</th>
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<td>Glazier</td>
<td>GL-357</td>
<td>10/2/2014</td>
<td>$47.35</td>
<td>$65.97</td>
</tr>
</tbody>
</table>

**Elevator Constructor**

Elevator Constructor  
*Make up day allowed*

**Apprentice Rates:**

1st Year Apprentice  
2nd Year Apprentice  
3rd Year Apprentice  
4th Year Apprentice

**Glazier**

Glazier  
If a four 10 hour day workweek is scheduled, four 10s must be consecutive, M-F.

**Apprentice Rates:**

1st 6 months  
2nd 6 months  
3rd 6 months  
4th 6 months  
5th 6 months  
6th 6 months  
7th 6 months  
8th 6 months

**Heat and Frost Insulator**

Spray Insulation

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## Official 2015 Prevailing Wage Rates for State Funded Projects

**Issue Date:** 6/29/2015  
**Contract must be awarded by:** 9/27/2015

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<table>
<thead>
<tr>
<th>Classification</th>
<th>Name</th>
<th>Description</th>
<th>Last Updated</th>
<th>Straight Time and a Half</th>
<th>Double Time</th>
<th>Overtime Provision</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Heat and Frost Insulator and Asbestos Worker</td>
<td>Heat and Frost Insulators and Asbestos Workers</td>
<td>AS25</td>
<td>1/29/2014</td>
<td>$60.25</td>
<td>$76.00</td>
</tr>
<tr>
<td>Four 10s must be worked for a minimum of 2 consecutive weeks, Monday thru Thursday. All hours worked in excess of 10 will be paid at double time. All hours worked on the fifth day,</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Four 10s must be worked for a minimum of 2 consecutive weeks. OVERTIME is different on a four 10 week. OT is 2x for hours beyond 10. All hours on fifth day, M-F require time and one half. Sat first 8 hours, 1.5, all hours after 8 require double time.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Apprentice Rates:

1st Year: $46.08  
2nd Year: $49.23  
3rd Year: $50.80  
4th Year: $53.95

<table>
<thead>
<tr>
<th>Classification</th>
<th>Name</th>
<th>Description</th>
<th>Last Updated</th>
<th>Straight Time and a Half</th>
<th>Double Time</th>
<th>Overtime Provision</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ironworker</td>
<td>Fence, Sound Barrier &amp; Guardrail erection/installation and Exterior Signage work</td>
<td>IR-25-F1</td>
<td>2/24/2015</td>
<td>$34.65</td>
<td>$46.65</td>
<td>$58.65</td>
</tr>
<tr>
<td>Four ten hour work days may be worked during Monday-Saturday.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Apprentice Rates:

70% Level: $26.86  
75% Level: $28.15  
80% Level: $29.45  
85% Level: $30.75

---

Official Request #: 859  
Requestor: Wayne State University  
Project Description: RFB- Community Arts Gallery Lighting 2015 Replace lighting  
Project Number: 039-231828  
County: Wayne

---

Official Rate Schedule

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## Official 2015 Prevailing Wage Rates for State Funded Projects

**Issue Date:** 6/29/2015  
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<thead>
<tr>
<th>Classification</th>
<th>Name</th>
<th>Description</th>
<th>Last Updated</th>
<th>Updated</th>
<th>Straight Time and a Half Time</th>
<th>Double Overtime</th>
<th>Overtime Provision</th>
</tr>
</thead>
<tbody>
<tr>
<td>Siding, Glazing, Curtain Wall</td>
<td>IR-25-GZ2</td>
<td>6/5/2015</td>
<td>$47.16</td>
<td>$58.82</td>
<td>$70.48 X X H H H D D Y</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Make up day allowed comment</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>4 tens may be worked Monday thru Thursday @ straight time.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Apprentice Rates:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Level 1</td>
<td></td>
<td></td>
<td>$30.23</td>
<td>$36.84</td>
<td>$43.43</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Level 2</td>
<td></td>
<td></td>
<td>$32.34</td>
<td>$39.58</td>
<td>$46.80</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Level 3</td>
<td></td>
<td></td>
<td>$34.46</td>
<td>$42.33</td>
<td>$50.19</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Level 4</td>
<td></td>
<td></td>
<td>$36.58</td>
<td>$45.08</td>
<td>$53.57</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Level 5</td>
<td></td>
<td></td>
<td>$38.69</td>
<td>$47.82</td>
<td>$56.95</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Level 6</td>
<td></td>
<td></td>
<td>$40.81</td>
<td>$50.57</td>
<td>$60.33</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Pre-engineered Metal Work              | IR-25-PE-Z1 | 6/3/2015 | $46.49 | $56.78 | $67.06 X X H X X D Y | | |
| Make up day allowed comment            | | | | | | |
| 4 tens allowed M-Th with Saturday make up day | | | | | | |
| Apprentice Rates:                      |           |             | $27.36      | $32.83  | $38.31                        | | |
| 1st Year                               |           |             | $29.48      | $35.71  | $41.93                        | | |
| 3rd 6 month period                     |           |             | $31.61      | $38.60  | $45.58                        | | |
| 4th 6 month period                     |           |             | $33.73      | $41.46  | $49.20                        | | |
| 5th 6 month period                     |           |             | $35.86      | $45.24  | $54.62                        | | |

| Reinforced Iron Work                   | IR-25-RF  | 6/3/2015 | $56.11 | $84.03 | $111.95 H H D D D D N | | |
| Make up day allowed                    | | | | | | |
| Apprentice Rates:                      |           |             | $36.76      | $54.83  | $72.88                        | | |
| Level 1                                |           |             | $39.13      | $58.37  | $77.62                        | | |
| Level 2                                |           |             | $41.49      | $61.92  | $82.34                        | | |
| Level 3                                |           |             | $44.03      | $65.72  | $87.42                        | | |
| Level 4                                |           |             | $46.56      | $69.53  | $92.48                        | | |
| Level 5                                |           |             | $49.10      | $73.33  | $97.56                        | | |

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### Official 2015 Prevailing Wage Rates for State Funded Projects

**Issue Date:** 6/29/2015  
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#### Rigging Work

<table>
<thead>
<tr>
<th>Name</th>
<th>Last Updated</th>
<th>Straight Time and a Half Time Provision</th>
</tr>
</thead>
<tbody>
<tr>
<td>IR-25-RIG</td>
<td>6/3/2015</td>
<td>$62.08 $92.78 $123.47 H H H H D N</td>
</tr>
</tbody>
</table>

**Apprentice Rates:**
- Level 1 & 2: $37.38 $55.69 $74.01
- Level 3: $40.21 $59.94 $79.67
- Level 4: $43.03 $64.17 $85.31
- Level 5: $45.86 $68.42 $90.97
- Level 6: $48.69 $72.67 $96.63

#### Decking

<table>
<thead>
<tr>
<th>Name</th>
<th>Last Updated</th>
<th>Straight Time and a Half Time Provision</th>
</tr>
</thead>
<tbody>
<tr>
<td>IR-25-SD</td>
<td>6/5/2015</td>
<td>$54.04 $80.73 $107.42 X X H D D Y</td>
</tr>
</tbody>
</table>

4 tens may be worked Monday thru Thursday @ straight time. If bad weather, Friday may be a make up day. If holiday celebrated on a Monday, 4 10s may be worked Tuesday thru Friday. Work in excess of 12 hours per day must be paid @ double time.

Make up day allowed

Friday for 4 tens M-Th
Saturday for 5 eights M-F

#### Structural, ornamental, welder and pre-cast

<table>
<thead>
<tr>
<th>Name</th>
<th>Last Updated</th>
<th>Straight Time and a Half Time Provision</th>
</tr>
</thead>
<tbody>
<tr>
<td>IR-25-STR</td>
<td>6/3/2015</td>
<td>$62.21 $92.94 $123.67 H H H D D Y</td>
</tr>
</tbody>
</table>

4 tens may be worked Monday thru Thursday @ straight time. If bad weather, Friday may be a make up day. If holiday celebrated on a Monday, 4 10s may be worked Tuesday thru Friday. Work in excess of 12 hours per day must be paid @ double time.

Make up day allowed

**Apprentice Rates:**
- Levels 1 & 2: $36.79 $55.10 $73.42
- Level 3: $39.62 $59.35 $79.08
- Level 4: $42.44 $63.58 $84.72
- Level 5: $45.27 $67.83 $90.38
- Level 6: $48.10 $72.08 $96.04
- Level 7: $50.92 $76.30 $101.68
- Level 8: $53.75 $80.55 $107.34

---

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---

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<thead>
<tr>
<th>Classification</th>
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<th>Straight Time and a Half</th>
<th>Double Time</th>
<th>Overtime Provision</th>
</tr>
</thead>
<tbody>
<tr>
<td>工業Door erection &amp; construction</td>
<td>6/19/2015</td>
<td>IR-25-STR-D</td>
<td>$42.54</td>
<td>$63.44</td>
<td>H H H H D Y</td>
</tr>
<tr>
<td>Industrial Door erection &amp; construction</td>
<td>6/19/2015</td>
<td>IR-25-STR-D</td>
<td>$42.54</td>
<td>$63.44</td>
<td>H H H H D Y</td>
</tr>
</tbody>
</table>

*Make up day allowed*  
Friday for bad weather when 4 tens scheduled for M-Th. If holiday celebrated on M, 4 tens may be worked T-F. Work in excess of 12 hours per day must be paid @ double time.

### Laborer

- Construction Laborer, Demolition Laborer, Mason Tender, Carpenter Tender, Drywall Handler, Concrete Laborer, Cement Finisher Tender, Concrete Chute, and Concrete Bucket Handler

If conditions beyond the employer/employee's control prevent one or more hours of working during Mon-Fri, the employer may choose to work up to 10 hours straight time weekdays. Work may be scheduled up to 10 hours per Mon-Fri for the purpose of reaching 40 hours @ straight time. Make up days may also include 8.

*Make up day allowed*  
Saturday

### Apprentice Rates:

<table>
<thead>
<tr>
<th>Work Hours</th>
<th>Straight Time</th>
<th>Half Time</th>
<th>Double Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-1,000</td>
<td>$37.60</td>
<td>$53.03</td>
<td>$68.45</td>
</tr>
<tr>
<td>1,001-2,000</td>
<td>$38.79</td>
<td>$54.81</td>
<td>$70.83</td>
</tr>
<tr>
<td>2,001-3,000</td>
<td>$39.98</td>
<td>$56.60</td>
<td>$73.21</td>
</tr>
<tr>
<td>3,001-4,000</td>
<td>$42.35</td>
<td>$60.15</td>
<td>$77.95</td>
</tr>
</tbody>
</table>

### Signal Man (on sewer & caisson work), Air, Electric or Gasoline Tool Operator, Concrete Vibrator Operator, Acetylene Torch & Air Hammer Operator; Scaffold Builder, Caisson Worker

If conditions beyond the employer/employee's control prevent one or more hours of working during Mon-Fri, the employer may choose to work up to 10 hours straight time weekdays. Work may be scheduled up to 10 hours per Mon-Fri for the purpose of reaching 40 hours @ straight time. Make up days may also include 8.

*Make up day allowed*  
Saturday
### Official 2015 Prevailing Wage Rates for State Funded Projects

**Issue Date:** 6/29/2015  
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<table>
<thead>
<tr>
<th>Classification</th>
<th>Name Description</th>
<th>Last Updated</th>
<th>Straight Time and a Half</th>
<th>Double Time</th>
<th>Overtime Provision</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Furnace Battery Heater Tender, Burning Bar &amp; Oxy-Acetylene Gun</td>
<td>7/16/2013</td>
<td>$44.04</td>
<td>$62.69</td>
<td>$81.33</td>
</tr>
<tr>
<td></td>
<td>Expediter Man, Top Man and/or Bottom Man (Blast Furnace Work or Battery Work)</td>
<td>7/16/2013</td>
<td>$44.79</td>
<td>$63.81</td>
<td>$82.83</td>
</tr>
<tr>
<td></td>
<td>Cleaner/Sweeper Laborer; Furniture Laborer</td>
<td>7/16/2013</td>
<td>$38.09</td>
<td>$53.76</td>
<td>$69.43</td>
</tr>
<tr>
<td></td>
<td>Lansing Burner, Blaster &amp; Powder Man; Air, Electric or Gasoline Tool Operator (Blast Furance Work or Battery Work)</td>
<td>7/16/2013</td>
<td>$44.29</td>
<td>$63.06</td>
<td>$81.83</td>
</tr>
</tbody>
</table>

If conditions beyond the employer/employee's control prevent one or more hours of working during Mon-Fri, the employer may choose to work up to 10 hour straight time weekdays. Work may be scheduled up to 10 hours per Mon-Fri for the purpose of reaching 40 hours @ straight time. Make up days may also include 8 hours of work on Saturdays @ straight time.

**Make up day allowed**

A comment is included for each classification.

Saturday: 8 hours of work on Saturdays @ straight time.

Official Request #: 859  
**Official Rate Schedule**  
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Project Description: RFB- Community Arts Gallery Lighting 2015 Replace lighting prevailing wage and fringe benefit rates

Project Number: 039-231828  
County: Wayne  

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# Official 2015 Prevailing Wage Rates for State Funded Projects

**Issue Date:** 6/29/2015  
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<table>
<thead>
<tr>
<th>Classification</th>
<th>Name Description</th>
<th>Updated</th>
<th>Last Straight Time and a Double Overtime Provision</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Hourly Half Time</td>
</tr>
<tr>
<td>----------------</td>
<td>------------------</td>
<td>---------</td>
<td>---------------------------------------------------</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>x x x x h h h h h d y</td>
</tr>
</tbody>
</table>

### Plasterer Tender, Plastering Machine Operator

- **Rate:** $43.54, $61.94, $80.33
- **Last Updated:** 10/25/2013

- **Make up day allowed:** comment

- **Apprentice Rates:**
  - 0 - 1,000 hours: $37.60, $53.03, $68.45
  - 1,001 - 2,000 hours: $38.79, $54.81, $70.83
  - 2,001 - 3,000 hours: $39.98, $56.60, $73.21
  - 3,001 - 4,000 hours: $42.35, $60.15, $77.95

### Laborer - Hazardous

- **Rate:** $43.54, $61.94, $80.33
- **Last Updated:** 11/7/2014

- **Make up day allowed:** comment

- **Apprentice Rates:**
  - 0-1,000 work hours: $37.60, $53.03, $68.45
  - 1,001-2,000 work hours: $38.79, $54.81, $70.83
  - 2,001-3,000 work hours: $39.98, $56.60, $73.21
  - 3,001-4,000 work hours: $42.35, $60.15, $77.95

---

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**Official Rate Schedule**

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Class B performing work in conjunction with the removal, handling, or containment of hazardous waste substances when the use of personal protective equipment levels "A", "B" or "C" is required.

**Make up day allowed comment**

4 10s allowed M-Th or T-F; inclement weather makeup day Friday

### Apprentice Rates:

<table>
<thead>
<tr>
<th>Work Hours</th>
<th>Straight Time</th>
<th>Half Time</th>
<th>Overtime Provision</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-1,000 work hours</td>
<td>$38.36</td>
<td>$54.17</td>
<td>$69.97</td>
</tr>
<tr>
<td>1,001-2,000 work hours</td>
<td>$39.59</td>
<td>$56.01</td>
<td>$72.43</td>
</tr>
<tr>
<td>2,001-3,000 work hours</td>
<td>$40.83</td>
<td>$57.87</td>
<td>$74.91</td>
</tr>
<tr>
<td>3,001-4,000 work hours</td>
<td>$43.30</td>
<td>$61.58</td>
<td>$79.85</td>
</tr>
</tbody>
</table>

**Laborer Underground - Tunnel, Shaft & Caisson**

Class I - Tunnel, shaft and caisson laborer, dump man, shanty man, hog house tender, testing man (on gas), and watchman.

**Apprentice Rates:**

<table>
<thead>
<tr>
<th>Work Hours</th>
<th>Straight Time</th>
<th>Half Time</th>
<th>Overtime Provision</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-1,000 work hours</td>
<td>$33.05</td>
<td>$41.43</td>
<td>$49.80</td>
</tr>
<tr>
<td>1,001-2,000 work hours</td>
<td>$34.02</td>
<td>$42.88</td>
<td>$51.74</td>
</tr>
<tr>
<td>2,001-3,000 work hours</td>
<td>$34.98</td>
<td>$44.32</td>
<td>$53.66</td>
</tr>
<tr>
<td>3,001-4,000 work hours</td>
<td>$36.91</td>
<td>$47.21</td>
<td>$57.52</td>
</tr>
</tbody>
</table>

Class II - Manhole, headwall, catch basin builder, bricklayer tender, mortar man, material mixer, fence erector, and guard rail builder.

**Apprentice Rates:**

<table>
<thead>
<tr>
<th>Work Hours</th>
<th>Straight Time</th>
<th>Half Time</th>
<th>Overtime Provision</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-1,000 work hours</td>
<td>$33.14</td>
<td>$41.56</td>
<td>$49.98</td>
</tr>
<tr>
<td>1,001-2,000 work hours</td>
<td>$34.10</td>
<td>$43.00</td>
<td>$51.90</td>
</tr>
<tr>
<td>2,001-3,000 work hours</td>
<td>$35.07</td>
<td>$44.45</td>
<td>$53.84</td>
</tr>
<tr>
<td>3,001-4,000 work hours</td>
<td>$37.01</td>
<td>$47.37</td>
<td>$57.72</td>
</tr>
</tbody>
</table>
### Official 2015 Prevailing Wage Rates for State Funded Projects

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<thead>
<tr>
<th>Classification</th>
<th>Name Description</th>
<th>Updated</th>
<th>Last Straight Time and Overtime Provision</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class III - Air tool operator (jack hammer man, bush hammer man and grinding man), first bottom man, second bottom man, cage tender, car pusher, carrier man, concrete man, concrete form man, concrete repair man, cement invert laborer, cement finisher, concrete shoveler, conveyor man, floor man, gasoline and electric tool operator, gunnite man, grout operator, welder, heading dinky man, inside lock tender, pea gravel operator, pump man, outside lock tender, scaffold man, top signal man, switch man, track man, tugger man, utility man, vibrator man, winch operator, pipe jacking man, wagon drill and air track operator and concrete saw operator (under 40 h.p.).</td>
<td>LAUCT-Z1-3 9/6/2013</td>
<td>$38.04 $48.91 $59.78 X X X X X X D Y</td>
<td></td>
</tr>
</tbody>
</table>

**Apprentice Rates:**

- 0-1,000 work hours: $33.18 $41.62 $50.06
- 1,001-2,000 work hours: $34.15 $43.07 $52.00
- 2,001-3,000 work hours: $35.12 $44.53 $53.94
- 3,001-4,000 work hours: $37.07 $47.45 $57.84

| Class IV - Tunnel, shaft and caisson mucker, bracer man, liner plate man, long haul dinky driver and well point man. | LAUCT-Z1-4 9/6/2013 | $38.22 $49.18 $60.14 X X X X X X D Y |

**Apprentice Rates:**

- 0-1,000 work hours: $33.32 $41.83 $50.34
- 1,001-2,000 work hours: $34.30 $43.30 $52.30
- 2,001-3,000 work hours: $35.28 $44.77 $54.26
- 3,001-4,000 work hours: $37.24 $47.71 $58.18

---

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Official 2015 Prevailing Wage Rates for State Funded Projects

**Issue Date:** 6/29/2015

**Contract must be awarded by:** 9/27/2015

### Page 15 of 33

<table>
<thead>
<tr>
<th>Classification</th>
<th>Name Description</th>
<th>Last Updated</th>
<th>Straight Time and a Half</th>
<th>Double Time</th>
<th>Overtime Provision</th>
</tr>
</thead>
</table>
| Class V - Tunnel, shaft and caisson miner, drill runner, keyboard operator, power knife operator, reinforced steel or mesh man (e.g. wire mesh, steel mats, dowel bars) | LAUCT-Z1-5 9/6/2013 | $38.47 | $49.56 | $60.64 | X X X X X X Y

**Apprentice Rates:**

- 0-1,000 work hours: $33.50, $42.10, $50.70
- 1,001-2,000 work hours: $34.50, $43.60, $52.70
- 2,001-3,000 work hours: $35.49, $45.09, $54.68
- 3,001-4,000 work hours: $37.48, $48.07, $58.66

Class VI - Dynamite man and powder man. | LAUCT-Z1-6 9/6/2013 | $38.80 | $50.05 | $61.30 | X X X X X X Y

**Apprentice Rates:**

- 0-1,000 work hours: $33.75, $42.47, $51.20
- 1,001-2,000 work hours: $34.76, $43.99, $53.22
- 2,001-3,000 work hours: $35.77, $45.51, $55.24
- 3,001-4,000 work hours: $37.79, $48.53, $59.28

Class VII - Restoration laborer, seeding, sodding, planting, cutting, mulching and topsoil grading and the restoration of property such as replacing mail boxes, wood chips, planter boxes and flagstones. | LAUCT-Z1-7 9/6/2013 | $32.08 | $39.97 | $47.86 | X X X X X X Y

**Apprentice Rates:**

- 0-1,000 work hours: $28.71, $34.91, $41.12
- 1,001-2,000 work hours: $29.38, $35.92, $42.46
- 2,001-3,000 work hours: $30.06, $36.94, $43.82
- 3,001-4,000 work hours: $31.41, $38.97, $46.52
## Official 2015 Prevailing Wage Rates for State Funded Projects

**Issue Date:** 6/29/2015  
**Contract must be awarded by:** 9/27/2015

### Landscape Laborer

Landscape Specialist includes air, gas, and diesel equipment operator, skidsteer (or equivalent), lawn sprinkler installer on landscaping work where seeding, sodding, planting, cutting, trimming, backfilling, rough grading or maintenance of landscape projects occurs.

Sundays paid at time & one half. Holidays paid at double time.

<table>
<thead>
<tr>
<th>Classification</th>
<th>Name</th>
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<th>Overtime Provision</th>
</tr>
</thead>
<tbody>
<tr>
<td>Landscape Laborer</td>
<td>LLAN-Z1-A</td>
<td>Landscape Specialist includes air, gas, and diesel equipment operator, skidsteer (or equivalent), lawn sprinkler installer on landscaping work where seeding, sodding, planting, cutting, trimming, backfilling, rough grading or maintenance of landscape projects occurs.</td>
<td>6/26/2014</td>
<td>$28.58 $39.49 $50.39</td>
<td>X X X X H D Y</td>
</tr>
</tbody>
</table>

| Skilled Landscape Laborer: small power tool operator, lawn sprinkler installers' tender, material mover, truck driver when seeding, sodding, planting, cutting, trimming, backfilling, rough grading or maintaining of landscape projects occurs Sundays paid at time & one half. Holidays paid at double time. | LLAN-Z1-B | 6/26/2014 | $24.36 $33.16 $41.95 | X X X X H D Y |

### Marble Finisher

| Marble Finisher | BR1-MF | 10/20/2014 | $43.48 $54.29 $65.10 | H H D D D D Y |

Marble Finisher  
A 4 ten workweek may be worked Monday thru Thursday or Tuesday thru Friday.

### Apprentice Rates:

<table>
<thead>
<tr>
<th>Level</th>
<th>Rate per Hour</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level 1</td>
<td>$19.04 $25.12 $31.20</td>
</tr>
<tr>
<td>Level 2</td>
<td>$20.24 $26.92 $33.60</td>
</tr>
<tr>
<td>Level 3</td>
<td>$27.01 $33.96 $40.90</td>
</tr>
<tr>
<td>Level 4</td>
<td>$28.47 $36.14 $43.82</td>
</tr>
<tr>
<td>Level 5</td>
<td>$29.99 $37.84 $45.70</td>
</tr>
<tr>
<td>Level 6</td>
<td>$31.61 $39.86 $48.10</td>
</tr>
<tr>
<td>Level 7</td>
<td>$33.30 $41.59 $49.87</td>
</tr>
<tr>
<td>Level 8</td>
<td>$34.79 $43.48 $52.17</td>
</tr>
</tbody>
</table>

Official Request #: 859  
Requestor: Wayne State University  
Project Description: RFB- Community Arts Gallery Lighting 2015 Replace lighting

Official Rate Schedule  
Every contractor and subcontractor shall keep posted on the construction site, in a conspicuous place, a copy of all prevailing wage and fringe benefit rates prescribed in a contract.
### Official 2015 Prevailing Wage Rates for State Funded Projects

**Issue Date:** 6/29/2015

**Contract must be awarded by:** 9/27/2015

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<th>Double Time</th>
<th>Overtime Provision</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marble Mason</td>
<td>Marble Mason</td>
<td>BR1-MM</td>
<td>10/17/2014</td>
<td>$50.29</td>
<td>$64.51</td>
<td>$78.72 H H D D D D Y</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>A 4 ten workweek may be worked Monday thru Thursday or Tuesday thru Friday.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Apprentice Rates:**

- **Level 1**: $25.14 $32.65 $40.15
- **Level 2**: $28.20 $36.49 $44.78
- **Level 3**: $33.41 $41.97 $50.53
- **Level 4**: $36.15 $45.66 $55.17
- **Level 5**: $38.42 $48.17 $57.92
- **Level 6**: $42.07 $53.56 $65.05
- **Level 7**: $42.74 $54.38 $66.02
- **Level 8**: $43.67 $55.78 $67.88

**Operating Engineer**

- **Crane with boom & jib or leads 120’ or longer**: EN-324-A120 6/12/2014 $57.11 $74.62 $92.13 X X H H D D D D Y
  - Double time after 12 hours M-F

- **Crane with boom & jib or leads 140’ or longer**: EN-324-A140 6/12/2014 $57.93 $75.85 $93.77 X X H H D D D D Y
  - Work in excess of 12 per day M-F shall be paid at double time.

- **Crane with boom & jib or leads 220’ or longer**: EN-324-A220 6/12/2014 $58.23 $76.30 $94.37 X X H H D D D D Y
  - Work in excess of 12 per day M-F shall be paid at double time.

- **Crane with boom & jib or leads 300’ or longer**: EN-324-A300 6/12/2014 $59.73 $78.55 $97.37 X X H H D D D D Y
  - Work in excess of 12 per day M-F shall be paid at double time.

---

**Official Request #:** 859

**Requestor:** Wayne State University

**Project Description:** RFB- Community Arts Gallery Lighting 2015 Replace lighting

**Project Number:** 039-231828

**County:** Wayne

---

**Official Rate Schedule**

Every contractor and subcontractor shall keep posted on the construction site, in a conspicuous place, a copy of all prevailing wage and fringe benefit rates prescribed in a contract.

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## Official 2015 Prevailing Wage Rates for State Funded Projects

**Issue Date:** 6/29/2015  
**Contract must be awarded by:** 9/27/2015

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<table>
<thead>
<tr>
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<th>Double Time</th>
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</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Crane with boom &amp; jib or leads 400' or longer Work in excess of 12 per day M-F shall be paid at double time.</td>
<td>EN-324-A400 6/12/2014</td>
<td>$61.23</td>
<td>$80.80</td>
<td>$100.37</td>
<td>X</td>
</tr>
<tr>
<td></td>
<td>Compressor or welding machine Work in excess of 12 per day M-F shall be paid at double time.</td>
<td>EN-324-CW 6/12/2014</td>
<td>$46.26</td>
<td>$58.35</td>
<td>$70.43</td>
<td>X</td>
</tr>
<tr>
<td></td>
<td>Forklift, lull, extend-a-boom forklift Work in excess of 12 per day M-F shall be paid at double time.</td>
<td>EN-324-FL 6/12/2014</td>
<td>$53.57</td>
<td>$69.31</td>
<td>$85.05</td>
<td>X</td>
</tr>
<tr>
<td></td>
<td>Fireman or oiler Work in excess of 12 per day M-F shall be paid at double time.</td>
<td>EN-324-FO 6/12/2014</td>
<td>$45.23</td>
<td>$56.80</td>
<td>$68.37</td>
<td>X</td>
</tr>
<tr>
<td></td>
<td>Regular crane, job mechanic, concrete pump with boom Work in excess of 12 per day M-F shall be paid at double time.</td>
<td>EN-324-RC 6/12/2014</td>
<td>$56.25</td>
<td>$73.33</td>
<td>$90.41</td>
<td>X</td>
</tr>
<tr>
<td></td>
<td>Regular engineer, hydro-excavator, remote controlled concrete breaker Work in excess of 12 per day M-F shall be paid at double time.</td>
<td>EN-324-RE 6/12/2014</td>
<td>$55.28</td>
<td>$71.88</td>
<td>$88.47</td>
<td>X</td>
</tr>
</tbody>
</table>

### Apprentice Rates:

- 0-999 hours: $44.32, $55.94, $67.55
- 1,000-1,999 hours: $45.99, $58.45, $70.89
- 2,000-2,999 hours: $47.64, $60.92, $74.19
- 3,000-3,999 hours: $49.30, $63.41, $77.51
- 4,000-4,999 hours: $50.96, $65.90, $80.83
- 5,000-5,999 hours: $52.62, $68.39, $84.15

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Official Request #:859  
Requestor: Wayne State University  
Project Description: RFB- Community Arts Gallery Lighting 2015 Replace lighting  
Project Number: 039-231828  
County: Wayne  

Official Rate Schedule  
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## Official 2015 Prevailing Wage Rates for State Funded Projects

**Issue Date:** 6/29/2015  
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### Operating Engineer - DIVER

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<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>Operating Engineer - DIVER</td>
<td>Diver/Wet Tender/Tender/Rov Pilot/Rov Tender</td>
<td>GLF D</td>
<td>$52.80</td>
<td>$79.20</td>
<td>H H H H H H D N</td>
</tr>
</tbody>
</table>

**Make up day allowed**

*Subdivision of county*  
all Great Lakes, islands therein, & connecting & tributary waters

<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>Operating Engineer - Marine Construction</td>
<td>Diver/Wet Tender, Engineer (hydraulic dredge)</td>
<td>GLF-1</td>
<td>$65.00</td>
<td>$84.85</td>
<td>X X H H H H D Y</td>
</tr>
</tbody>
</table>

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</tr>
</thead>
<tbody>
<tr>
<td>Crane/Backhoe Operator, 70 ton or over Tug Operator, Mechanic/Welder, Assistant Engineer (hydraulic dredge), Leverman (hydraulic dredge), Diver Tender</td>
<td>GLF-2</td>
<td>$63.50</td>
<td>$82.60</td>
<td>$101.70 X X H H H H D Y</td>
<td></td>
</tr>
</tbody>
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</thead>
<tbody>
<tr>
<td>Friction, Lattice Boom or Crane License Certification</td>
<td>GLF-2B</td>
<td>$64.50</td>
<td>$84.10</td>
<td>$103.70 X X H H H H D Y</td>
<td></td>
</tr>
</tbody>
</table>

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</tr>
</thead>
<tbody>
<tr>
<td>Deck Equipment Operator, Machineryman, Maintenance of Crane (over 50 ton capacity) or Backhoe (115,000 lbs or more), Tug/Launch Operator, Loader, Dozer on Barge, Deck Machinery</td>
<td>GLF-3</td>
<td>$59.30</td>
<td>$76.30</td>
<td>$93.30 X X H H H H D Y</td>
<td></td>
</tr>
</tbody>
</table>

**Make up day allowed**

*Subdivision of county*  
All Great Lakes, islands therein, & connecting & tributary waters

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**Official Rate Schedule**

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# Official 2015 Prevailing Wage Rates for State Funded Projects

## Issue Date: 6/29/2015

**Contract must be awarded by:** 9/27/2015

### Classification Last Straight Double Overtime

<table>
<thead>
<tr>
<th>Name Description</th>
<th>Updated</th>
<th>Hourly</th>
<th>Half Time</th>
<th>Provision</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deck Equipment Operator, (Machineryman/Fireman), (4 equipment units or more), Off Road Trucks, Deck Hand, Tug Engineer, &amp; Crane Maintenance 50 ton capacity and under or Backhoe 115,000 lbs or less, Assistant Tug Operator</td>
<td>2/12/2014</td>
<td>$53.60</td>
<td>$67.75</td>
<td>X X H H H H D Y</td>
</tr>
<tr>
<td>Holiday pay = $96.05 per hour, wages &amp; fringes</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Make up day allowed</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Subdivision of county</td>
<td>All Great Lakes, islands therein, &amp; connecting &amp; tributary waters</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Operating Engineer Steel Work

| Forklift, 1 Drum Hoist | EN-324-ef | 9/5/2014 | $58.16 | $76.37 | $94.58 H H D H H D Y |
| Make up day allowed | comment | |
| 4 10s allowed M-Th with Friday makeup day because of bad weather | |
| Crane w/ 120' boom or longer | EN-324-SW120 | 9/5/2014 | $60.86 | $80.42 | $99.98 H H D H H D D Y |
| Make up day allowed | comment | |
| 4 10s allowed M-Th with Friday makeup day because of bad weather | |
| Crane w/ 120' boom or longer w/ Oiler | EN-324-SW120-O | 9/5/2014 | $61.86 | $81.92 | $101.98 H H D H H D D Y |
| Make up day allowed | comment | |
| 4 10s allowed M-Th with Friday makeup day because of bad weather | |
| Crane w/ 140' boom or longer | EN-324-SW140 | 9/5/2014 | $62.04 | $82.19 | $102.34 H H D H H D D Y |
| Make up day allowed | comment | |
| 4 10s allowed M-Th with Friday makeup day because of bad weather | |
| Crane w/ 140' boom or longer W/ Oiler | EN-324-SW140-O | 9/5/2014 | $63.04 | $83.69 | $104.34 H H D H H D D Y |
| Make up day allowed | comment | |
| 4 10s allowed M-Th with Friday makeup day because of bad weather | |
| Boom & Jib 220' or longer | EN-324-SW220 | 9/5/2014 | $62.31 | $82.60 | $102.88 H H D H H D D Y |
| Make up day allowed | comment | |
| 4 10s allowed M-Th with Friday makeup day because of bad weather | |
| Crane w/ 220' boom or longer w/ Oiler | EN-324-SW220-O | 9/5/2014 | $63.31 | $84.10 | $104.88 H H D H H D D Y |
| Make up day allowed | comment | |
| 4 10s allowed M-Th with Friday makeup day because of bad weather | |

Official Request #: 859

Requestor: Wayne State University

Project Description: RFB- Community Arts Gallery Lighting 2015 Replace lighting

Official Rate Schedule

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# Official 2015 Prevailing Wage Rates for State Funded Projects

**Issue Date:** 6/29/2015  
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## Official Request #: 859  
Requester: Wayne State University  
Project Description: RFB- Community Arts Gallery Lighting 2015 Replace lighting  

### Classification

<table>
<thead>
<tr>
<th>Name Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boom &amp; Jib 300’ or longer</td>
</tr>
<tr>
<td>Crane w/ 300' boom or longer w/ Oiler</td>
</tr>
<tr>
<td>Boom &amp; Jib 400’ or longer</td>
</tr>
<tr>
<td>Crane w/ 400' boom or longer w/ Oiler</td>
</tr>
<tr>
<td>Crane Operator, Job Mechanic, 3 Drum Hoist &amp; Excavator</td>
</tr>
</tbody>
</table>

### Wage Rates

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>EN-324-SW300</td>
<td>9/5/2014</td>
<td>$63.81</td>
<td>$84.85</td>
<td>H H D H H D D Y</td>
</tr>
<tr>
<td>EN-324-SW300-O</td>
<td>9/5/2014</td>
<td>$64.81</td>
<td>$86.35</td>
<td>H H D H H D D Y</td>
</tr>
<tr>
<td>EN-324-SW400</td>
<td>9/5/2014</td>
<td>$65.31</td>
<td>$87.10</td>
<td>H H D H H D D Y</td>
</tr>
<tr>
<td>EN-324-SW400-O</td>
<td>9/5/2014</td>
<td>$66.31</td>
<td>$88.60</td>
<td>H H D H H D D Y</td>
</tr>
<tr>
<td>EN-324-SWCO</td>
<td>9/5/2014</td>
<td>$60.50</td>
<td>$79.88</td>
<td>H H D H H D D Y</td>
</tr>
<tr>
<td>EN-324-SWCO-O</td>
<td>9/5/2014</td>
<td>$61.50</td>
<td>$81.38</td>
<td>H H D H H D D Y</td>
</tr>
</tbody>
</table>

### Apprentice Rates:

- 0-999 hours: $47.87, $61.43, $75.00
- 1,000-1,999 hours: $49.81, $64.35, $78.88
- 2,000-2,999 hours: $51.74, $67.24, $82.74
- 3,000-3,999 hours: $53.68, $70.15, $86.62
- 4,000-4,999 hours: $55.62, $73.07, $90.50
- 5,000 hours: $57.56, $75.97, $94.38

### Compressor or Welder Operator

| EN-324-SWCW  | 9/5/2014 | $53.15 | $68.86 | $84.56 | H H D H H D D Y |

### Official Rate Schedule

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## Official 2015 Prevailing Wage Rates for State Funded Projects

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</thead>
<tbody>
<tr>
<td></td>
<td>Hoisting Operator, 2 Drum Hoist, &amp; Rubber Tire Backhoe</td>
<td>EN-324-SWHO 9/5/2014</td>
<td>$59.86</td>
<td>$78.92</td>
<td>$97.98 H H D H H D Y</td>
</tr>
<tr>
<td></td>
<td><strong>Make up day allowed</strong> comment</td>
<td></td>
<td></td>
<td></td>
<td>4 10s allowed M-Th with Friday makeup day because of bad weather</td>
</tr>
<tr>
<td></td>
<td>Oiler</td>
<td>EN-324-SWO 9/5/2014</td>
<td>$51.64</td>
<td>$66.59</td>
<td>$81.54 H H D H H D Y</td>
</tr>
<tr>
<td></td>
<td><strong>Make up day allowed</strong> comment</td>
<td></td>
<td></td>
<td></td>
<td>4 10s allowed M-Th with Friday makeup day because of bad weather</td>
</tr>
<tr>
<td></td>
<td>Tower Crane &amp; Derrick where work is 50' or more above first level</td>
<td>EN-324-SWTD50 9/5/2014</td>
<td>$61.59</td>
<td>$81.52$101.44 H H D H H D</td>
<td>Y</td>
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<tr>
<td></td>
<td><strong>Make up day allowed</strong> comment</td>
<td></td>
<td></td>
<td></td>
<td>4 10s allowed M-Th with Friday makeup day because of bad weather</td>
</tr>
<tr>
<td></td>
<td>Tower Crane &amp; Derrick 50' or more w/ Oiler where work station is 50' or more above first</td>
<td>EN-324-SWTD50-O 9/5/2014</td>
<td>$62.59</td>
<td>$83.02$103.44 H H D H H D</td>
<td>Y</td>
</tr>
<tr>
<td></td>
<td><strong>Make up day allowed</strong> comment</td>
<td></td>
<td></td>
<td></td>
<td>4 10s allowed M-Th with Friday makeup day because of bad weather</td>
</tr>
<tr>
<td></td>
<td>Operating Engineer Underground Class I Equipment</td>
<td>EN-324A1-UC1 10/14/2014</td>
<td>$51.74</td>
<td>$66.98</td>
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<tr>
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<td>0-999 hours</td>
<td>$41.79</td>
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<td>2,000-2,999 hours</td>
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<td>Class II Equipment</td>
<td>EN-324A1-UC2 10/14/2014</td>
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<td>Class III Equipment</td>
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<td>$46.28</td>
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Official 2015 Prevailing Wage Rates for State Funded Projects

Issue Date: 6/29/2015
Contract must be awarded by: 9/27/2015

<table>
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<tr>
<th>Classification</th>
<th>Name</th>
<th>Description</th>
<th>Last Updated</th>
<th>Straight Time and a Half Time</th>
<th>Double Time</th>
<th>Overtime Provision</th>
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<td>Class IV Equipment</td>
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<td>10/14/2014</td>
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<td>$83.63 H H H H H D</td>
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Painter

Painter (8 hours of repaint work performed on Sunday shall be paid time & one half rate)
PT-22-P 10/8/2014 $42.82 $55.63 $68.43 H H D D D D Y

Four 10s allowed Monday-Thursday with Friday makeup day if job down due to weather, holiday or other conditions beyond the control of the employer.
Make up day allowed comment
Fridays for bad weather or holidays

Apprentice Rates:
First 6 months $30.02 $36.43 $42.83
Second 6 months $33.86 $42.19 $50.51
Third 6 months $35.14 $44.11 $53.07
Fourth 6 months $36.42 $46.03 $55.63
Fifth 6 months $37.70 $47.95 $58.19
Final 6 months $38.98 $49.87 $60.75

Pipe and Manhole Rehab

General Laborer for rehab work or normal cleaning and cctv work-top man, scaffold man, CCTV assistant, jetter-vac assistant
TM247 4/17/2015 $28.20 $38.20 H H H H H H H N

Tap cutter/CCTV Tech/Grout Equipment Operator: unit driver and operator of CCTV; grouting equipment and tap cutting equipment
TM247-2 4/17/2015 $32.70 $44.95 H H H H H H H N

Official Request #: 859
Requestor: Wayne State University
Project Description: RFB- Community Arts Gallery Lighting 2015 Replace lighting

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Official 2015 Prevailing Wage Rates for State Funded Projects

Issue Date: 6/29/2015
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<table>
<thead>
<tr>
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<th>Straight Time and a Half</th>
<th>Double Time</th>
<th>Overtime Provision</th>
</tr>
</thead>
<tbody>
<tr>
<td>CCTV Technician/Combo Unit Operator</td>
<td>TM247-3</td>
<td>unit driver and operator of cctv unit or combo unit in connection with normal cleaning and televising work</td>
<td>4/17/2015</td>
<td>$31.45</td>
<td>$43.07</td>
<td>H H H H H H N</td>
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<tr>
<td>Boiler Operator</td>
<td>TM247-4</td>
<td>unit driver and operator of steam/water heater units and all ancillary equipment associated</td>
<td>4/17/2015</td>
<td>$33.20</td>
<td>$45.70</td>
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<tr>
<td>Combo Unit driver &amp; Jetter-Vac Operator</td>
<td>TM247-5</td>
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<td>$45.70</td>
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<td>Pipe Bursting &amp; Slip-lining Equipment Operator</td>
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<td>Pipefitter</td>
<td>PF-636</td>
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<td>6/30/2014</td>
<td>$66.73</td>
<td>$87.93</td>
<td>$105.13 H H D D D D Y</td>
</tr>
</tbody>
</table>

comment
Four 10s allowed during the week preceding, following and/or the week of a holiday.

Apprentice Rates:

1st & 2nd periods | $26.93 | $35.28 | $42.28
3rd period | $28.93 | $38.28 | $46.28
4th period | $30.18 | $40.16 | $48.78
5th period | $31.43 | $42.03 | $51.28
6th period | $32.68 | $43.90 | $53.78
7th period | $33.93 | $45.78 | $56.28
8th period | $34.93 | $47.28 | $58.28
9th period | $35.93 | $48.78 | $60.28
10th period | $37.36 | $50.92 | $63.14

Official Request #: 859
Requestor: Wayne State University
Project Description: RFB- Community Arts Gallery Lighting 2015 Replace lighting

Official Rate Schedule
Every contractor and subcontractor shall keep posted on the construction site, in a conspicuous place, a copy of all prevailing wage and fringe benefit rates prescribed in a contract.

Page 24 of 33
## Official 2015 Prevailing Wage Rates for State Funded Projects

**Issue Date:** 6/29/2015  
**Contract must be awarded by:** 9/27/2015

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<thead>
<tr>
<th>Classification</th>
<th>Name</th>
<th>Description</th>
<th>Updated</th>
<th>Last</th>
<th>Straight Time and a Half</th>
<th>Double Time</th>
<th>Overtime Provision</th>
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<td>Plasterer</td>
<td>BR1P</td>
<td>11/1/2012</td>
<td>$45.04</td>
<td>$67.56</td>
<td>$90.08</td>
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<td>9/8/2010</td>
<td>$44.72</td>
<td>$60.11</td>
<td>$75.50</td>
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</table>

**Apprentice Rates:**

1st 6 months  
2nd 6 months  
3rd 6 months  
4th 6 months  
5th 6 months  
6th 6 months
## Official 2015 Prevailing Wage Rates for State Funded Projects

**Issue Date:** 6/29/2015  
**Contract must be awarded by:** 9/27/2015

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<table>
<thead>
<tr>
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<th>Name</th>
<th>Description</th>
<th>Last Updated</th>
<th>Straight Time and a Half Time</th>
<th>Double Time</th>
<th>Overtime Provision</th>
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<tbody>
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<td><strong>Plumber</strong></td>
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<tr>
<td></td>
<td>Plumber</td>
<td>PL-98</td>
<td>7/18/2013</td>
<td>$64.45 $84.87 $101.29</td>
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<td><strong>comment</strong></td>
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</tbody>
</table>

- 4 tens allowed M-Th or T-F; OT of time and one half required on 11th & 12th hour of any ten hour days

**Apprentice Rates:**

- **Period 1**: $19.93 $26.43 $32.93
- **Period 2**: $23.90 $31.40 $38.90
- **Period 3**: $30.60 $39.19 $47.77
- **Period 4**: $31.23 $40.13 $49.03
- **Period 5**: $32.39 $41.87 $51.35
- **Period 6**: $33.54 $43.59 $53.65
- **Period 7**: $34.69 $45.32 $55.95
- **Period 8**: $35.86 $47.07 $58.29
- **Period 9**: $37.01 $48.80 $60.59
- **Period 10**: $38.16 $50.53 $62.89

**Roofer**

- **Commercial Roofer** | RO-149-WOM | 8/18/2008 | $48.46 $62.29 $76.62 |

- Straight time is not to exceed ten (10) hours per day or forty (40) hours per week.

**Make up day allowed**

**Apprentice Rates:**

- **Apprentice 1**: $32.62 $39.86 $48.04
- **Apprentice 2**: $36.80 $44.80 $53.30
- **Apprentice 3**: $38.22 $46.93 $56.14
- **Apprentice 4**: $39.25 $48.48 $58.20
- **Apprentice 5**: $40.47 $50.30 $60.64
- **Apprentice 6**: $41.87 $52.40 $63.44

**Sewer Relining**

- **Class I-Operator of audio visual CCTV system** | SR-I | 11/3/2014 | $42.76 $57.75 $72.74 |

- including remote in-ground cutter and other equipment used in conjunction with CCTV

**Official Request #: 859**  
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**Official Rate Schedule**

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Class II-Operator of hot water heaters and circulation system; water jetters; and vacuum and mechanical debris removal systems and those assisting.

Sheet Metal Worker

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Last Updated</th>
<th>Straight Time</th>
<th>Half Time</th>
<th>Overtime Provision</th>
</tr>
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<tr>
<td>SR-II</td>
<td>11/3/2014</td>
<td>$41.23</td>
<td>$55.46</td>
<td>$69.68</td>
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<td>SHM-80</td>
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<td>9/9/2014</td>
<td>$61.83</td>
<td>$78.74</td>
<td>$95.65 H D X H H D Y</td>
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<td>SHM-80-SD</td>
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<td>1/13/2014</td>
<td>$42.07</td>
<td>$54.28</td>
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A 4 10 schedule may be worked, 4 consecutive days Monday thru Friday.

Apprentice Rates:

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<th>Periods</th>
<th>Last Updated</th>
<th>Straight Time</th>
<th>Half Time</th>
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<tbody>
<tr>
<td>1st &amp; 2nd</td>
<td>6-1-11</td>
<td>$39.18</td>
<td>$46.79</td>
<td>$54.40</td>
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<tr>
<td>3rd &amp; 4th</td>
<td>6-1-11</td>
<td>$40.88</td>
<td>$49.34</td>
<td>$57.80</td>
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<tr>
<td>5th &amp; 6th</td>
<td>6-1-11</td>
<td>$42.56</td>
<td>$51.86</td>
<td>$61.16</td>
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<tr>
<td>7th &amp; 8th</td>
<td>6-1-11</td>
<td>$44.25</td>
<td>$54.40</td>
<td>$64.54</td>
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<tr>
<td>9th &amp; 10th</td>
<td>before 6-1</td>
<td>$51.92</td>
<td>$64.44</td>
<td>$76.96</td>
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Make up day allowed
### Sprinkler Fitter

<table>
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<tr>
<th>Name Description</th>
<th>Last Updated</th>
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<tbody>
<tr>
<td>Sprinkler Fitter</td>
<td>12/19/2014</td>
<td>$64.92 $86.15 $107.38 H H D D D D D Y</td>
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4 ten hour days allowed Monday-Friday
Double time pay due after 12 hours worked M-F

#### Apprentice Rates:

1st Period: $28.29 $36.78 $45.27
2nd Period: $41.57 $51.12 $60.68
3rd Period: $43.69 $54.30 $64.92
4th Period: $45.81 $57.48 $69.16
5th Period: $47.94 $60.68 $73.42
6th Period: $50.06 $63.86 $77.66
7th Period: $52.18 $67.04 $81.90
8th Period: $54.30 $70.22 $86.14
9th Period: $56.43 $73.42 $90.40
10th Period: $58.55 $76.60 $94.64

#### Terrazzo Finisher

<table>
<thead>
<tr>
<th>Name Description</th>
<th>Last Updated</th>
<th>Straight Time and a Half Hourly Provision</th>
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<tbody>
<tr>
<td>Terrazzo Finisher</td>
<td>10/17/2014</td>
<td>$43.97 $55.03 $66.08 H H D D D D D Y</td>
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</table>

A 4 ten workweek may be worked Monday thru Thursday or Tuesday thru Friday.

#### Apprentice Rates:

Level 1: $19.04 $25.12 $31.20
Level 2: $20.24 $26.92 $33.60
Level 3: $27.01 $33.96 $40.90
Level 4: $28.47 $36.14 $43.82
Level 5: $29.99 $37.84 $45.70
Level 6: $31.61 $39.86 $48.10
Level 7: $33.30 $41.59 $49.87
Level 8: $34.79 $43.48 $52.17
## Official 2015 Prevailing Wage Rates for State Funded Projects

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<table>
<thead>
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<th>Straight Time and a Half Time</th>
<th>Double Time</th>
<th>Overtime Provision</th>
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<tbody>
<tr>
<td>Terrazzo Worker</td>
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<td>$25.14 $32.65 $40.15</td>
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<tr>
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<tr>
<td>Level 5</td>
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<tr>
<td>Level 8</td>
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<td>Tile</td>
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<tr>
<td>Tile Finisher</td>
<td>BR1-TF</td>
<td>10/17/2014</td>
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<td><strong>A 4 ten workweek may be worked Monday thru Thursday or Tuesday thru Friday.</strong></td>
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<td><strong>Apprentice Rates:</strong></td>
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<tr>
<td>Level 1</td>
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<tr>
<td>Level 2</td>
<td>$20.24 $26.92 $33.60</td>
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<tr>
<td>Level 3</td>
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<td>Level 6</td>
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<tr>
<td>Level 8</td>
<td>$34.79 $43.48 $52.17</td>
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Official Request #: 859  
Requestor: Wayne State University  
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**Official Rate Schedule**

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<th>Straight Time and a Half</th>
<th>Double Time</th>
<th>Overtime Provision</th>
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</thead>
<tbody>
<tr>
<td>Tile Layer</td>
<td>BR1-TL</td>
<td>10/17/2014</td>
<td>$49.68</td>
<td>$63.59</td>
<td>$77.50</td>
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<td>D</td>
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A 4 ten workweek may be worked Monday thru Thursday or Tuesday thru Friday.

### Apprentice Rates:

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<tr>
<th>Level</th>
<th>Rate $</th>
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<td>Level 1</td>
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<td>Level 2</td>
<td>$28.20</td>
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<tr>
<td>Level 3</td>
<td>$33.41</td>
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<td>Level 4</td>
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<td>Level 7</td>
<td>$42.74</td>
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<tr>
<td>Level 8</td>
<td>$43.67</td>
</tr>
</tbody>
</table>

### Truck Driver:

- on all trucks of 8 cubic yard capacity or less (except dump trucks of 8 cubic yard capacity or over, tandem axle trucks, transit mix and semis, euclid type equipment, double bottoms and low boys)

| TM-RB1 | 8/8/2013 | $41.92 | $37.85 | H | H | H | H | H | Y |

- of all trucks of 8 cubic yard capacity or over

| TM-RB1A | 8/8/2013 | $41.30 | $38.00 | H | H | H | H | H | Y |

- on euclid type equipment

| TM-RB1B | 8/8/2013 | $41.45 | $38.23 | H | H | H | H | H | Y |

Make up day allowed

---

**Official Request #:** 859  
**Requestor:** Wayne State University  
**Project Description:** RFB- Community Arts Gallery Lighting 2015 Replace lighting

Every contractor and subcontractor shall keep posted on the construction site, in a conspicuous place, a copy of all prevailing wage and fringe benefit rates prescribed in a contract.
### Official Prevailing Wage Rates for State Funded Projects

**Issue Date:** 6/29/2015  
**Contract must be awarded by:** 9/27/2015

#### Page 31 of 33

<table>
<thead>
<tr>
<th>Classification</th>
<th>Name Description</th>
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<th>Last Updated</th>
<th>Straight Time and a Half Time</th>
<th>Double Time</th>
<th>Overtime Provision</th>
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<td><strong>Underground Laborer Open Cut, Class I</strong></td>
<td>Construction Laborer</td>
<td>9/5/2013</td>
<td>$37.72</td>
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<tr>
<td>0-1,000 work hours</td>
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<td></td>
<td>$32.94</td>
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<td></td>
<td>$36.76</td>
<td>$46.99</td>
<td>$57.22</td>
<td>$57.22</td>
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</tbody>
</table>

**Underground Laborer Open Cut, Class II**

Mortar and material mixer, concrete form man, signal man, well point man, manhole, headwall and catch basin builder, guard rail builders, headwall, seawall, breakwall, dock builder and fence erector.

**Apprentice Rates:**

- 0-1,000 work hours: $33.02, $41.38, $49.74
- 1,001-2,000 work hours: $33.98, $42.82, $51.66
- 2,001-3,000 work hours: $34.95, $44.27, $53.60
- 3,001-4,000 work hours: $36.87, $47.15, $57.44

**Underground Laborer Open Cut, Class III**

Air, gasoline and electric tool operator, vibrator operator, drillers, pump man, tar kettle operator, bracers, rodder, reinforced steel or mesh man (e.g. wire mesh, steel mats, dowel bars, etc.), cement finisher, welder, pipe jacking and boring man, wagon drill and air track operator and concrete saw operator (under 40 h.p.), windlass and tugger man, and directional boring man.

**Apprentice Rates:**

- 0-1,000 work hours: $33.06, $41.44, $49.82
- 1,001-2,000 work hours: $34.02, $42.88, $51.74
- 2,001-3,000 work hours: $34.99, $44.33, $53.68
- 3,001-4,000 work hours: $36.92, $47.23, $57.54

**Official Request #:** 859  
**Requestor:** Wayne State University  
**Project Description:** RFB- Community Arts Gallery Lighting 2015 Replace lighting

**Copy**

**Official Rate Schedule**

Every contractor and subcontractor shall keep posted on the construction site, in a conspicuous place, a copy of all prevailing wage and fringe benefit rates prescribed in a contract.
## Official 2015 Prevailing Wage Rates for State Funded Projects

**Issue Date:** 6/29/2015
**Contract must be awarded by:** 9/27/2015

### Official Request #: 859
Requestor: Wayne State University
Project Description: RFB- Community Arts Gallery Lighting 2015 Replace lighting

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<td>Trench or excavating grade man.</td>
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<td>$54.64</td>
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</tr>
<tr>
<td></td>
<td>Grouting man, top man assistant, audio visual television operations and all other operations in connection with closed circuit television inspection, pipe cleaning and pipe relining work and the installation and repair of water service pipe and appurtenances.</td>
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<td>$32.94</td>
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<td>$34.63</td>
<td>$43.79</td>
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</table>
Underground Laborer Open Cut, Class VII

<table>
<thead>
<tr>
<th>Name</th>
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<th>Double Overtime Provision</th>
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<tbody>
<tr>
<td>LAUC-Z1-7</td>
<td>Restoration laborer, seeding, sodding, planting, cutting, mulching and topsoil grading and the restoration of property such as replacing mail boxes, wood chips, planter boxes, flagstones etc.</td>
<td>9/5/2013</td>
<td>$32.09 $39.99 $47.88</td>
<td>X X X X X X D Y</td>
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Apprentice Rates:

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<tr>
<th>Work Hours</th>
<th>Straight Time</th>
<th>Half Time</th>
<th>Double Time</th>
<th>Overtime Provision</th>
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<tbody>
<tr>
<td>0-1,000 work hours</td>
<td>$28.72</td>
<td>$34.93</td>
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<td>1,001-2,000 work hours</td>
<td>$29.39</td>
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<td>$38.98</td>
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Key Performance Indicator Tracking
Sworn Statement Requirements

The University tracks its level of spend along a number of socio-economic categories. This includes its spend with Diverse organizations, its spend with Detroit based organizations, and its spend with Michigan based organizations. To assist with this, The University has the following requirements for submission of your bid and for Pay Applications submitted by the successful contractor.

Submission of Bid

1. **Diverse or disadvantaged prime contractor:** Please specify in your bid whether ownership of your company is a certified diverse or disadvantaged business, according to the categories listed above. In accordance with guidelines from the MMSDC and GL-WBC, the University considers a business to be diverse when it is at least 51% owned, operated, and controlled by one or more members of a diverse classification. Section 00300 has a place for this information on page 00300-3.

2. **Detroit based and Michigan Based contractor:** It is presumed that the contractor is headquartered at the location we submit our Purchase Orders to, and that it should be the same address as listed in Section 00300 at the signature line. If a supplier is headquartered elsewhere, please make note of this information, so we do not inaccurately include or exclude spend based on a PO address.

Pay Applications and Sworn Statements

1. **Applicability:** The University requires Sworn Statements with Pay Applications for all construction projects that use
   - Subcontractors
   - Significant suppliers (those with a purchase value of $1,000 or more).

2. **Sworn Statements:** The Supplier will submit applicable monthly sworn statements to the Project Manager and the Buyer of Record, in the format shown on page 2 of Section 00420. If sworn statements are required for this project, statements are to be submitted to **(Thomas J. Edwards)**, the project manager, and to **Loretta McClary**

3. **Inclusion:** Statements are to detail the inclusion of recognized diverse and disadvantaged groups in the following 2 categories; Subcontracts or Suppliers. The University recognizes the following groups as diverse or disadvantaged:
   - Minority Business Enterprises (MBE)
   - Women Business Enterprises (WBE)
   - Disabled Veteran Enterprises (DVBE)
   - Disabled Person Enterprises (DBE)
   - Veteran Owned Businesses (VBE)
   - Small Businesses per the US Small Business Administration (SBE)

4. A complete set of the University's Supplier Diversity Program, which includes complete definitions of each of the above, can be downloaded from our website at [http://policies.wayne.edu/administrative/04-02-supplier-diversity.php](http://policies.wayne.edu/administrative/04-02-supplier-diversity.php).
STATE OF MICHIGAN  

COUNTY OF _____________________ } §

________________________, being duly sworn, deposes and says that (s)he makes the Sworn Statement on behalf of ____________, who is the Contractor for an improvement to the following described real property situated in ______________ County, Michigan, and described as follows:

That the following is a statement of each subcontractor and supplier and laborer, for which laborer the payment of wages or fringe benefits and withholdings is due but unpaid, with whom ___________________________ has subcontracted for performance under the contract with the Owner or lessee thereof, and that the amounts due to the persons as of the date thereof are correctly and fully set forth opposite their names, as follows. (Subcontracts or suppliers of values of less than $1,000 are omitted.)

<table>
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<th>NO.</th>
<th>SUBCONTRACTOR</th>
<th>SUPPLIER OR LABORER</th>
<th>TYPE OF IMPROVEMENT</th>
<th>TOTAL CONTRACT PRICE</th>
<th>CONTRACT AMOUNT</th>
<th>AMOUNT PAID TO DATE</th>
<th>AMOUNT CURRENTLY OWING</th>
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</tbody>
</table>

TOTALS

* Type of Entity: MBE=Minority Business Enterprises; WBE=Women Business Enterprises; DVBE=Disabled Veteran Enterprises; DBE=Disabled Person Enterprises; VBE=Veteran Owned Businesses; SBE=Small Businesses per the US Small Business Administration

Please attach additional sheets if the number of items exceeds the page limit.
That ________________________________________________ has not procured material from, or subcontracted with, any person other than those set forth above and owes no money for the improvement.

Deponent further says that ______________________________________ makes the foregoing statement as a representative of __________________________________________, for the purpose of representing to the owner or lessee of the above-described premises and his or her agents that the above-described property is free from claims of construction liens, or the possibility of construction liens, except as specifically set forth above and except for claims of construction liens by laborers which may be provided pursuant to section 109 of the construction lien act, Act No. 497 of the Public Acts of 1980, as amended, being section 570.1109 of the Michigan Compiled Laws.

_____________________________ County, Michigan - My commission expires: ___________________________________

Deponent Signature

WARNING TO DEPONENT: A PERSON, WHO WITH INTENT TO DEFRAUD, GIVES A FALSE STATEMENT IS SUBJECT TO CRIMINAL PENALTIES AS PROVIDED IN SECTION 110 OF THE CONSTRUCTION LIEN ACT, ACT NO. 497 OF THE PUBLIC ACTS OF 1980, AS AMENDED, BEING SECTION 570.2220 IF THE MICHIGAN COMPILED LAWS.

WARNING TO OWNER: AN OWNER OR LESSEE OF THE ABOVE-DESCRIBED PROPERTY MAY NOT RELY ON THIS SWORN STATEMENT TO AVOID THE CLAIM OF A SUBCONTRACTOR, SUPPLIER, OR LABORER WHO HAS PROVIDED A NOTICE OF FURNISHING OR A LABORER WHO MAY PROVIDE A NOTICE OF FURNISHING PURSUANT TO SECTION 109 OF THE CONSTRUCTION LIEN ACT TO THE DESIGNEE IS NOT NAMED OR HAS DIED.

ON RECEIPT OF THIS SWORN STATEMENT, THE OWNER OF LESSEE, OR THE OWNER’S OR LESSEE’S DESIGNEE, MUST GIVE NOTICE OF ITS RECEIPT, EITHER IN WRITING, BY TELEPHONE, OR PERSONALLY, TO EACH SUBCONTRACTOR, SUPPLIER AND LABORER WHO HAS PROVIDED A NOTICE OF FURNISHING UNDER SECTION 109 OR, IF A NOTICE OF FURNISHING IS EXCUSED UNDER SECTION 108 OR 108A, TO EACH SUBCONTRACTOR, SUPPLIER OR LABORER WHO HAS PROVIDED A NOTICE OF FURNISHING OR WHO IS NAMED IN THE SWORN STATEMENT MAKES A REQUEST, THE OWNER, LESSEE, OR DESIGNEE SHALL PROVIDE THE REQUESTER A COPY OF THE SWORN STATEMENT WITHIN 10 BUSINESS DAYS AFTER RECEIVING THE REQUEST.

Subscribed and sworn to before me this ______ day of ________

Notary Public __________________________________________

_________________________ County, Michigan - My commission expires: _____________________________

Rev. 4 06.05.15
WAYNE STATE UNIVERSITY

PAYMENT PACKAGE DOCUMENT REQUIREMENTS (Revised 5-06-2011):

Review and comply with Section 410 of Bid Front End Documents.
Review and comply with Article 15 of the Supplemental General Conditions.

AIA DOCUMENT G702 & G703 – (or facsimile thereof) Payment Application Checklist:
- Correct Project Name – Found on your contract.
- Correct Project Number – Found on your contract.
- Purchase Order Number – Required prior to beginning work.
- Correct Application Number (i.e. 1, 2, 3, etc.)
- Correct Period Reporting Dates – Applications support docs must be sequential and within application range.
- Approved & Executed Change Orders must be listed. (Cannot invoice for unapproved changes.)
- Schedule of values percentages and amounts match the approved Pencil Copy Review – Signed by the Architect, Contractor, and University Project Manager.
- Correct Dates – Back dating not accepted.
- Signed and Notarized.

SWORN STATEMENT – Checklist:
- List all contractors, sub-contractors, suppliers... ≥ $1000.00
- Contractor’s Sworn Statement amounts must coincide with Column “C” of the schedule of values document. Any unassigned or uncommitted value of contract shall be shown on an entry “Contractor – Unassigned” followed by the amount necessary to cause the “contracted to date” column of the sworn statement to equate with the schedule of value column totals.
- Current Date – Back dating not accepted.
- Signed and Notarized.
A Sworn Statement is required from every Sub Contractor on the job with a material purchase or sub-subcontract of $1,000 or more. (all the way down to the bottom tier)

DEPT. of LABOR FORM WH-347 – Certified Payroll Checklist: (Union and Non-Union)
- For every contractor & sub-contractors work, for each week within the application for payment reporting period. (For every “boot” on the floor representing the weeks within the application period)
- Wayne State University Project Number – Found on your contract.
- List ALL workers who have worked on the project site.
- Make sure workers addresses are listed.
- NO Social Security Numbers, if present they MUST be blackened out or listed in XXX-XX-1234 format.
- Work classifications based on the job specific Prevailing Wage Schedule descriptions. If you require rates for additional classifications, contact the Michigan Department of Consumer & Industry Services. (Refer to Section 410 of Bid Front End Documents.)
- http://www.cis.state.mi.us/bwuc/bsr/wbwh/whc_tbl.htm
- Apprenticeship program status – proof of enrolled program and current completion required for any workers paid at Apprenticeship rates.
- Rate of Pay verified against the Prevailing Wage Schedule with an hourly costs breakdown of fringes paid. (Refer to attachment for State of Michigan instructions and example)
- Authorized signatures on affidavit.

APPLICATION PACKAGE SUPPORTING DOCUMENTATION –
Must accompany all package reporting periods: (Union and Non-Union)
- Copies of Pay Stubs may be required for each Certified Payroll period reported – (Social Security Numbers MUST be blackened out or listed in XXX-XX-1234 format. Pay stubs need to reflect claimed participation of fringes like Medical, Dental, Retirement or 1099 classification.)
- Proof of Ownership for any “Owner Operator” (Sole Proprietor) contractors not claiming their time under prevailing wage act – (Must list their hours and dates worked on the WH-347 Form and enter EXEMPT on the income brackets.). The Owner Operator must provide copies of “DBA” registration form confirming status as exempt from prevailing wage requirements.
- Proof of Stored Materials – (Detailed Bill of Sale, certificate of insurance or endorsement page specifically insuring the stored materials, pictures, when large value. WSU reserves the right to on site verification of material. Stored material must be separated from ordinary inventory and labeled for WSU project.)
Partial Unconditional Waivers – Must release the accumulated amount paid for work and be immediately provided, or provided with the subsequent application for payment. Waivers shall be provided for contractors, sub-contractors, and suppliers listed on the Sworn Statements. (This is required at all tiers)

Full Unconditional Waivers – Prime Contractor must deliver fully executed Full Unconditional Waiver upon receipt of final payment. Full Unconditional waivers may be required of sub-contractors and suppliers in advance of final Contractor payment on bonded projects. This requirement shall be determined on a project-by-project basis. Full Unconditional waivers shall be required in advance of or at the time of final payment on all non-bonded projects from all subcontractors and suppliers listed on Sworn Statements, or who have provided a notice of furnishing.

Partial Conditional Waivers – The Contractor shall provide a Partial Conditional Waivers covering the entire amount of the application for payment. For non-bonded Projects – A partial conditional waiver from all subcontractors must accompany any application for payment within which a subcontractor draw is included.

Sworn Statements – Required for all Sub Contractors, and Sub-subcontractors (etc.) with any contracts or purchases exceeding $1,000.

**FINAL PAYMENT EXCHANGE – Checklist:**

- Clear and concise As-Built drawings.
- Operation and Maintenance Manuals.
- Required training must be completed (if applicable).
- Warranty of work in accordance with project documents.
- Certificate of Substantial Completion.
- Full Unconditional Waiver

The Project Manager may provide additional requirements as may apply to individual jobs

Revised 5-6-2011
In an effort to provide continuous process improvement regarding the construction of various university projects, Wayne State University is embarking upon a process of evaluating the contractor’s overall performance following the completion of work. At the conclusion of the construction project a subjective evaluation of the Contractor’s performance will be prepared by the Project Manager and the supervising Director of Construction. The evaluation instrument that will be used in this process is presented below:
# Contractor Evaluation Sheet

**WAYNE STATE UNIVERSITY**

**Community Arts - Gallery Lighting**

**WSU Project No. 039-231828**

---

**Contractor Name:** ____________________________  
**Project Name:** ____________________________

**Contractor’s PM:** ____________________________________  
**PM Name:** ____________________________

**Superintendent:** ____________________________________  
**Project Number:** ____________________________

---

**Evaluator's Signature:** ____________________________  
**Date:** ____________________________

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<table>
<thead>
<tr>
<th>Field Management</th>
<th>Score</th>
<th>Weight</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Work Planning / Schedule:</td>
<td>1 2 3 4 5</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>2) Compliance with Construction Documents:</td>
<td>1 2 3 4 5</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>3) Safety Plan &amp; Compliance:</td>
<td>1 2 3 4 5</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>4) Compliance with WSU procedures:</td>
<td>1 2 3 4 5</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>5) Effectiveness of Project Supervision:</td>
<td>1 2 3 4 5</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>6) Project Cleanliness:</td>
<td>1 2 3 4 5</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>7) Punch List Performance:</td>
<td>1 2 3 4 5</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>8) Contractor Coordination with WSU Vendors:</td>
<td>1 2 3 4 5</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>9) Construction Quality:</td>
<td>1 2 3 4 5</td>
<td>8</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Administrative Management</th>
<th>Score</th>
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<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>10) Responsiveness:</td>
<td>1 2 3 4 5</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>11) Contractor communication:</td>
<td>1 2 3 4 5</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>12) Contractor Professionalism:</td>
<td>1 2 3 4 5</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>13) Subcontractor Professionalism:</td>
<td>1 2 3 4 5</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>14) Compliance with Contract Requirements:</td>
<td>1 2 3 4 5</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>15) Submittal\RFI Process:</td>
<td>1 2 3 4 5</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>16) Close-out - Accuracy of Documents</td>
<td>1 2 3 4 5</td>
<td>7</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Invoice and Change Management</th>
<th>Score</th>
<th>Weight</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>17) Change Management</td>
<td>1 2 3 4 5</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>18) Applications for Payment</td>
<td>1 2 3 4 5</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>19) Timely payment of Subs/Suppliers:</td>
<td>1 2 3 4 5</td>
<td>4</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Level of Self-Performance:</th>
<th>Low</th>
<th>Med</th>
<th>High</th>
</tr>
</thead>
<tbody>
<tr>
<td>Would you work with this Contractor again?</td>
<td>Yes</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Would you work with this team again?</td>
<td>Yes</td>
<td>No</td>
<td></td>
</tr>
</tbody>
</table>

---

**Evaluator's Signature:** ____________________________  
**Date:** ____________________________

---

**Evaluator's Name:** ____________________________

---

**Please Print**

**Rev. 2-17-2015 RGP**
We are providing the evaluation instrument at this time to allow the bidder’s to review and understand the criterion that the University’s project management team will use to evaluate the successful bidder’s performance at the conclusion of the project. It is the intent of the university to utilize the results of this evaluation to determine if it will continue to conduct business with the Contractor in future bidding opportunities.

The scoring range is between 100 to 500 points, with 100 being low and 500 being high. Each question has an associated ‘weight’ factor, and the higher the weight; the greater the importance of satisfactory performance on the final score. At the conclusion of the project, and after the Project Manager and the supervising Director has prepared their independent evaluation, the University’s project representative will meet with the Contractor to review the results. Acceptable contractor performance is essential to avoid having the University decline future work with the Contractor. An appeals process is available for Contractor disagreement with evaluation scores.

Contractors engaged in work are encouraged to maintain an open and regular dialog with the Design and Construction Department over the course of the construction project to ensure that the final evaluation is an accurate representation of the Contractor’s performance.
AGREEMENT BETWEEN THE UNIVERSITY AND CONTRACTOR
FOR CONSTRUCTION SERVICES (rev 6-2013)

Executed as of the _____ day of _________, 2014 by and between:

The Board of Governors, Wayne State University
Detroit, Michigan 48202
(The University),

and

CONTRACTOR’S NAME
CONTRACTOR’S ADDRESS

regarding

Community Arts - Gallery Lighting
450 Reuther Mall
WSU Project No. 039-231828
In consideration of the mutual covenants and conditions contained herein, the Parties agree as follows:

**Article 1 - Scope of Work**

1.1 This Agreement provides for **Replace lighting fixtures in the Art Gallery**, located at **450 Reuther Mall**. The documents listed in Article 4 fully define the scope of work.

1.2 The Contractor shall furnish all the labor, materials, equipment, services, and supervision to perform all the work shown on the drawings and specifications listed in Article 18, including any addenda issued during the bid phase, and approved change orders issued during the construction phase.

1.3 The Contractor shall notify the University in writing within five (5) calendar days when the Contractor discovers any condition that will affect the contract amount or the completion date.

**Article 2 - Time of Completion**

2.1 The work to be performed under this Agreement shall commence upon the Contractor's receipt of a fully-executed Agreement, and substantial completion shall be achieved by **Dec 17, 2015**.

**Article 3 - The Contract Sum**

3.1 The University shall pay the Contractor a "lump sum/not-to-exceed (pick one)" amount of $$$$$$$ ("Amount in words 00" /100 dollars) for the performance of all work associated with the Contractor's Base Bid "and Alternates (List)".

3.2 The University may, at its sole discretion, during the life of the contract, award the following alternates at the amounts indicated: *(If section 3.2 is not used, delete all text and enter Deleted)*

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alternate #1</td>
<td></td>
</tr>
<tr>
<td>Alternate #2</td>
<td></td>
</tr>
<tr>
<td>Alternate #3</td>
<td></td>
</tr>
</tbody>
</table>

3.3 In the event additional work becomes necessary, the following unit prices will apply: *(If section 3.3 is not used, delete all text and enter Deleted)*

<table>
<thead>
<tr>
<th>Work Item</th>
<th>Unit Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td></td>
</tr>
</tbody>
</table>

**Article 4 - The Contract Documents**

4.1 The Contract Documents shall consist of this Agreement, the drawings and specifications as listed in Article 18, the General Conditions of the Contract for Construction as defined by AIA Document A201 1970 Edition, except as otherwise provided herein, and Wayne State University's Supplementary General Conditions 1997 Edition.

4.2 For any inconsistencies found among or between these Contract Documents, the language contained in this Agreement shall prevail over all other documents and the Supplementary General Conditions shall prevail over the General Conditions. In the event of a conflict between the Drawings and Specifications, the requirement for the higher quantity and/or higher quality shall prevail.

**Article 5 – Examination of Premises**

5.1 The Contractor acknowledges that the University provided the opportunity for a thorough examination of the project site and its surroundings and that the Contractor knows of no conditions preventing accomplishment of the full scope of work within the time and for the amount specified in this Agreement.

5.2 The University will deny all claims for additional time and/or cost for conditions that could have been reasonably
Article 6 - The Architect/Engineer

6.1 The Architect/Engineer for this project is:

"(List the Architect and Engineer separately if appropriate)"

Strategic Energy Solutions
4000 W. Eleven Mile Road
Berkley, MI 48072
(Phone No. (248) 399-1900 / Fax No. (248) 399-1901)

6.2 The University will appoint a Project Manager who will be the University’s point of contact for all matters of contract administration including, but not limited to, interpretation of documents, defining the scope of work, approving work schedules, and approving contract payments.

Article 7 - Additional Work

7.1 The University reserves the right to let other Agreements in connection with this work. The Contractor will afford other Contractors or the University’s own workforce reasonable opportunity for the delivery and storage of their material and for the performance of their work and shall properly connect and coordinate its work with theirs.

7.2 If any part of the Contractor’s work depends for proper execution or results upon the work of another Contractor or the University’s own workforce, the Contractor shall inspect and promptly report to the University’s Project Manager any defects in such work that render it unsuitable for such proper execution and results. The Contractor’s failure to so inspect and report shall constitute an acceptance of the work of others as fit and proper for reception of the Contractor’s work and as a waiver of any claim or defense against the University or other contractor which relies in whole or in part upon the contention that such work was unsuitable for proper execution and resolution.

Article 8 – Dispute Resolution

8.1 Jurisdiction over all claims, disputes, and other matters in question arising out of or relating to this contract or the breach thereof, shall rest in the Court of Claims of the State of Michigan. No provision of this agreement may be construed as Wayne State University’s consent to submit any claim, dispute or other matter in question for dispute resolution pursuant to any arbitration or mediation process, whether or not provisions for dispute resolution are included in a document which has been incorporated by reference into this agreement. Specifically, all references to Arbitration contained in the General Conditions are superseded by this Article.

8.2 In any claim or dispute by the Contractor against the University, which cannot be resolved by negotiation, the Contractor shall submit the dispute in writing for an administrative decision by the University’s Vice President for Finance and Administration, within 30 days of the end of negotiations. Any decision of the Vice President shall be made within 45 days of receipt from the Contractor and is final unless it is challenged by the Contractor by filing a lawsuit in the Court of Claims of the State of Michigan within one year of the issuance of the decision. The Contractor agrees that appeal to the Vice President is a condition precedent to filing suit in the Michigan Court of Claims.

8.3 For purposes of this section, the “end of negotiations” shall be deemed to have occurred when:

8.3.1 Either party informs the other that pursuant to this section, negotiations are at an impasse; or

8.3.2 The Contractor submits the dispute in writing to the Vice President.

8.4 Unless otherwise agreed by the University in writing, and notwithstanding any other rights or obligations of either of the parties under any Contract Documents or Agreement, the Contractor shall continue with the performance of its services and duties during the pendency of any negotiations or proceedings to resolve any claim or dispute, and the University shall continue to make payments in accordance with the Contract Documents; however, the University shall not be required or obligated to make payments on or against any such claims or disputes during the pendency of any proceeding to resolve such claims or disputes.
Article 9 - Termination for Convenience

9.1 Upon thirty days written notice to the Contractor, the University may, without cause and without prejudice to any other right or remedy of the University, elect to terminate the contract. In such case, the Contractor shall only be paid (without duplication of any items), using a Close out Change Order, for the following:

9.1.1 For completed and acceptable work executed in accordance with the Contract Documents prior to the effective date of termination, including fair and reasonable sums for overhead and profit on such Work;

9.1.2 For expenses sustained prior to the effective date of termination in performing services and furnishing labor, materials, or equipment as required by the Contract Documents in connection with uncompleted work, including fair and reasonable sums for overhead and profit on such expenses.

9.2 The Contractor shall not be paid on account of loss of anticipated profits or revenue, delay or disruption, or other economic loss arising out of or resulting from such termination. For purposes of this section, “fair and reasonable sums for overhead and profit” shall be determined by reference to Michigan law, without reference to principles used for such determinations in arbitration.

Article 10 - Progress Payments

10.1 On or before the 20th day of each month, the Contractor shall submit a written application for payment, using form AIA G702, to the Architect/Engineer and the University’s Project Manager for review. The Architect/Engineer shall have ten (10) calendar days to accept or reject the Contractor’s application for payment. Acceptable applications for payment shall then be submitted to the University for Payment of authorized amount(s) within thirty (30) calendar days of receipt by the University’s Project Manager.

10.2 The application for payment shall contain a full schedule of values organized and sorted by subcontractor, by Construction Specifications Institute standard work categories, or in another format acceptable to the University.

10.3 Monthly progress payments shall show the percentage of work installed as of the date of the application, less amount previously installed and the amount due for the application period. The Contractor shall deduct a 10% retainage from the balance due for each progress payment and indicate the net amount due on each application.

10.4 When 50% of the work associated with this Agreement is installed, the Contractor shall not deduct additional retainage from the balance due from the University. When substantial completion is achieved and acknowledged by the Architect/Engineer, the Contractor and the University in writing, the University shall remit to the Contractor all but 2% of the retainage. The remaining 2% shall be retained by the University until the final payment is authorized and remitted to the Contractor.

Article 11 - Acceptance and Final Payments

11.1 Final payment shall be due thirty (30) days after the completion of the work, including all punch list items, provided the work is fully completed and the Agreement fully performed.

11.2 Upon receipt of written notice that the work is ready for final inspection and acceptance, the Architect/Engineer shall promptly inspect the work. When the Architect/Engineer concludes that the work is acceptable and the Agreement to be fully performed, the Architect/Engineer shall promptly issue a final certificate with an original signature, stating that the work provided is complete and acceptable and that the entire remaining balance found to be due the Contractor shall be remitted by the University once the final application for payment is received.

11.3 If, after the work has been substantially completed, full completion thereof is materially delayed through no fault of the Contractor, and the Architect/Engineer so certifies, the University shall, upon certificate of the Architect/Engineer, and without terminating the Contract, make payments of the balance due for that portion of the work fully completed and accepted. Such payments shall be made under the terms and conditions governing final payment, except that it shall not constitute a waiver of claims.

Article 12 - Non-Discrimination
12.1 The Contractor agrees that it will not discriminate against any employee or applicant for employment, to be employed in the performance of this Agreement, with respect to hire, tenure, terms, conditions or privileges of employment or any matter directly or indirectly related to employment, because of race, color, religion, sex, age, national origin, or ancestry. Breach of this covenant may be regarded as material breach of this Agreement.

12.2 The Contractor further agrees that it will, in all subcontracts relating to the performance of the work under this Agreement, provide in its subcontracts that the subcontractor will not discriminate against any employee or applicant for employment, to be employed in the performance of such contract, with respect to hire, tenure, terms, conditions or privileges of employment, or any matter directly or indirectly related to employment because of race, sex, age, color, religion, national origin or ancestry. Breach of this covenant may also be regarded as a material breach of this Agreement.

Article 13 – Laborers and Mechanics

13.1 All laborers and mechanics must be covered by Worker’s Compensation and Employer’s Liability Insurance as required by Federal and Michigan law. The Contractor shall also require all of its Subcontractors to maintain this insurance coverage.

13.2 The Contractor acknowledges and shall abide by the University’s prohibition on use of 1099 independent contractors and owner / operator business entities. The Contractor shall ensure that all classifications of laborers and construction mechanics performing Work on the Project job site are employees of the Contractor or any Trade Contractor for any tier thereof, and that each worker is covered by workers compensation insurance.

Article 14 - Prevailing Wages

14.1 The Contractor and each subcontractor shall pay to each class of mechanics and laborers not less than the wage and fringe benefit rates prevailing in the Detroit Metropolitan Area, as determined by the United States Department of Labor. The Contractor shall post on site, in a conspicuous place, a copy of all applicable wage and benefit rates, and shall provide the University with a copy of the applicable wage and benefit rates.

14.2 The Contractor and each subcontractor shall keep an accurate record showing the name and occupation of and the actual benefits and wages paid to each laborer and mechanic employed in connection with this contract. The Contractor and each subcontractor shall make certified payroll records available to the University’s representatives upon request.

14.3 If a Contractor or subcontractor fails to pay the prevailing rates of wages and fringe benefits and does not cure such failure within ten (10) days after notice to do so by the University, the University shall have the right, at its option, to do any or all of the following:

14.3.1 Withhold all or any portion of payments due the Contractor as may be considered necessary by the University to pay laborers and mechanics the difference between the rates of wages and fringe benefits required by this Agreement and the actual wage and fringe benefits paid.

14.3.2 Terminate part or all of this Agreement or any subagreement and proceed to complete the Agreement or subagreement by separate agreement with another Contractor or otherwise, in which case the Contractor and its sureties shall be liable to the University for any excess costs incurred by the University.

14.4 The Contractor shall include terms identical or substantially similar to this section in any Agreement or subagreement pertaining to the project.

Article 15 - Save Harmless (Revised 2-2015)

15.1 To the fullest extent permitted by law, the Contractor shall hold harmless, defend, and indemnify the Board of Governors of Wayne State University, the University, the Architect and Architect’s Consultants, and officers, employees, representatives and agents of each of them, from and against any and all claims or losses arising out of or alleged to be resulting from, or relating to (1) the failure of the Contractor to perform its obligations under the
Contract or the performance of its obligation in a willful or negligent manner; (2) the inaccuracy of any representation or warranty by the Contractor given in accordance with or contained in the Contract Documents; and (3) any claim of damage or loss by any subcontractor, or supplier, or laborer against the University, the Architect or the Architect’s consultants arising out of any alleged act or omission of the Contractor or any other subcontractor, or anyone directly or indirectly employed by the Contractor or any subcontractor.

The Contractor shall also be liable for and hereby agrees to pay, reimburse, fully indemnify and hold the University, the Architect and Architect’s Consultants, harmless from and against all costs and expenses of every nature (including attorney fees and expenses incident thereto) incurred by the University in collecting the amounts due from the Contractor, or otherwise enforcing its rights, under the indemnification described in this Article.

**Article 16 - Liquidated Damages**

16.1 It is understood and agreed that, if the project is not completed within the time specified in the Agreement plus any extension of time allowed pursuant thereto, the actual damages sustained by the University because of any such delay will be uncertain and difficult to ascertain, and it is agreed that the reasonable foreseeable value of the use of said project by the University would be the sum of $500.00, Five Hundred Dollars per day. Therefore, the Contractor shall pay as liquidated damages to the University the sum of $500.00, Five Hundred Dollars per day for each day’s delay in substantially completing said project beyond the time specified in this Agreement and any extensions of time allowed thereunder.

*ENTER N/A FOR ABOVE AMOUNT IF NO LIQUIDATED DAMAGES*

**Article 17 - Interpretation**

17.1 This Agreement shall be interpreted and construed according to the laws of the State of Michigan.

17.2 If one part of this Agreement is found to be void by legal or legislative action, the remainder of the contract remains in full effect.
Article 18 - Drawings and Specifications

18.1 The Technical Specifications and the Project Manual dated July 7, 2015, and the following List of Drawings represents the scope of work as defined in the Contract Documents from Article 4.

<table>
<thead>
<tr>
<th>Drawing No.:</th>
<th>Description</th>
<th>dated</th>
</tr>
</thead>
</table>
IN WITNESS WHEREOF the parties to these presents have hereunto set their hands as of the day and year first written above.

Signed, sealed and delivered in the presence of:

CONTRACTOR’S NAME GOES HERE

By ________________________________
signature

Please print name here

Date signed

Title

Witness

THE BOARD OF GOVERNORS of WAYNE STATE UNIVERSITY

By ________________________________
Richard J. Nork, Vice President for Finance and Facilities

Date signed

Form Contract Approved by OGC 06/13 – LG
File_reference_here
FORM OF GUARANTEE

PROJECT: Community Arts - Gallery Lighting

OWNER: BOARD OF GOVERNORS, WAYNE STATE UNIVERSITY

CONTRACTOR: ________________________________

DATE: ________________________________

Know all men by these presents that, in consideration of my (our) having been awarded the Contract or Subcontract for complete furnishing and installation of:

Community Arts - Gallery Lighting (039-231828)

For: Board of Governors, Wayne State University

In conformity with drawings and specifications prepared by Architect or Engineer, Strategic Energy Solutions, and known as the buildings indicated above, I (we) do hereby agree that, should I (we) be notified that the said work has proved faulty, etc., that I (we) will return to the buildings within three (3) working days of the receipt of such notice, and will furnish the necessary labor and material to repair such work to the satisfaction of the Owner and without cost to the Owner.

The Agreement shall remain in full force and effect for a one year period (DATE TBD)

WITNESS:

signed: ________________________________

Subcontractor

by: ________________________________

address: ________________________________

city/state/zip: ________________________________

signed: ________________________________

General Contractor

by: ________________________________

(THIS FORM TO BE FILED IN DUPLICATE.)
GENERAL CONDITIONS (Revised 10-2009)

A. Although AIA Document A201 - Twelfth Edition (April 1970) - "General Conditions of the Contract for Construction" is not bound herein, it forms a part of these construction documents.

B. A reference copy of AIA Document A201 - Twelfth Edition (April 1970) - "General Conditions of the Contract for Construction" is on file at the following location:

Wayne State University
Finance & Facilities Management
Procurement & Strategic Sourcing
Academic / Administrative Services Building
5700 Cass Avenue
Detroit Michigan 48202
SUPPLEMENTARY GENERAL CONDITIONS

OF

THE CONTRACT FOR CONSTRUCTION

Facilities Planning & Management - Design & Construction Services

Wayne State University
WSU SUPPLEMENTARY GENERAL CONDITIONS
OF THE
CONTRACT FOR CONSTRUCTION

NOTE: The following items related to A.I.A. General Conditions, A.I.A. Document A-201 - Twelfth Edition (April 1970), by specific number being amended to. These items, as amendments, shall have precedence over the article being amended.

ARTICLE 1 - CONTRACT DOCUMENTS

1.1 DEFINITIONS

1.1.5 The Agreement

The Agreement executed by the Contractor and the Owner.

1.2 EXECUTION, CORRELATION, INTENT, AND INTERPRETATIONS

1.2.6 "General Conditions and "Supplementary General Conditions" apply with equal force to all Contractors, Subcontractors work, and extra work required under this Contract.

1.2.7 Precedence of Drawings and Specifications.
The Agreement has precedence over WSU Supplementary General Conditions.

WSU Supplementary General Conditions have precedence over A.I.A. A-201 General Conditions of the Contract.

Specifications have precedence over drawings. Full-size drawings have precedence over scale drawings. Large-scale plans and details have precedence over small-scale plans and details. Figured dimensions have precedence over plans and elevations.

ARTICLE 2 - ARCHITECT

2.1 DEFINITION

2.1.1 The term Architect or Architect/Engineer as used in these specifications refers to Facilities Planning and Management - Design Services, and/or Consulting Architect/Engineer.

2.2 ADMINISTRATION OF THE CONTRACT

2.2.16 The Architect will assign Field Representatives to make periodic visits to the project for the purpose of assisting the Architect in carrying out his field responsibilities at the site. The duties, responsibilities and limitations of authority of any such Field Representative shall be as follows:

a. Explain Contract Documents: Assist the Contractor via the Contractor's Superintendent to understand the intent of the Contract Documents.

b. Observations: Conduct on-site observations and spot checks of the work in progress as a basis for determining conformance of the work, material, and equipment with the Contract Documents.

c. Additional Information: Obtain from the Architect, additional details or information, if and when required, at the job site for proper execution of the work.

d. Modifications: Consider and evaluate suggestions or modifications that may be submitted by the Contractor and report them with recommendations to the Architect for final decision.

e. Construction Schedule and Completion: Be alert to the completion, and report same to the Architect. When the construction work has been completed in accordance with the Contract Documents, advise the Architect that the work is ready for general inspection and acceptance.
f. Job Conferences: Attend and report to the Architect on all required conferences held at the job site.

g. Observe Tests: See that tests which are required by the Contract Documents are actually conducted; observe, record and report to the Architect all details relative to the test procedures; and advise the architect's office in advance of the schedules of tests.

h. Inspection by Others: If inspectors, representing local, state or federal agencies having jurisdiction over the project, visit the job site, accompany such inspectors during their trips through the project, record the outcome of these inspections, and report same to the Architect's office.

i. Shop Drawings: Do not permit the installation of any materials and equipment for which shop drawings are required unless such drawings have been duly approved and issued by the Architect.

j. Contractor's Requisitions for Payment: Review and make recommendations to the Architect for disposition.

k. List of Items for Correction: After substantial completion, make a list of items for correction before final inspection and check each item as it is corrected.

l. Owner's Occupancy of the Building: If the Owner occupies (to any degree) the building prior to actual completion of the work by the Contractor, be especially alert to possibilities of claims for damage to completed work prior to the acceptance of the building.

m. Owner Existing Operation: In the case of additions to or Demolitions of an existing facility, which must be maintained as an operational unit, be alert to conditions on the job site which may have an effect on the Owner's existing operation.

n. Limitations of Authority: Do not become involved in any of the following areas of responsibility unless specific exceptions are established by written instructions issued by the Architect.

   aa. Do not authorize deviations from the Contract Documents.

   bb. Avoid conducting any test personally.

   cc. Do not enter into the area of responsibility of the Contractor's field superintendent.

   dd. Do not expedite job for Contractor unless so instructed by the Architect.

   ee. Do not advise on or issue directions relative to any aspect of the building technique or sequence unless a specific technique or sequence is called for in the Specifications or by written instructions from the Architect.

   ff. Do not approve shop drawings or samples.

   gg. Do not authorize or advise the Owner to occupy the Project, in whole or in part, prior to the final acceptance of the building.

   hh. Do not issue a Certificate for Payment.

**ARTICLE 3 - OWNER**

3.5 OWNER'S RIGHT TO DO WORK

3.5.1 The Owner may exercise his right, which is hereby acknowledged by the Contractor, to let independent of the Contract for the work herein specified, any other work on the premises even if of like character and trades, and the Owner shall not be liable for any damage, loss or expense incurred by the Contractor through the fault of any other Contractor so employed by the Owner. The Contractor acknowledges the necessity of work by others, to be performed at approximately the same time as the work hereunder, and agrees to perform his work in full cooperation with the work of such other trades and/or Contractors, partially or entirely completed, by such other trades and/or Contractors, or by the Owner, when, in the opinion of the Architect, such access or use is necessary for the performance and completion of any portion or all of the...
work of others or of any work on the site.

3.6  
OWNER'S ACCESS AND PARTIAL OCCUPANCY

3.6.1  
The Owner shall have access to the work at all times, and at his election, may from time to time (prior to the stipulated contract completion date) occupy any of the units or parts of the project as the work in connection therewith is complete to such a degree as will, in the opinion of the Owner, permit their temporary or permanent use. The Owner will, prior to any such partial occupancy, give notice to the Contractor thereof and such occupancy shall be upon the following terms:

a. Such occupancy shall not constitute an acceptance of work not performed in accordance with the Contract nor shall such occupancy relieve the Contractor of liability to perform any work by the Contract not complete at the time of occupancy.

b. Except as otherwise provided by an agreement at the time of such partial occupancy, the Contractor shall be relieved of all maintenance costs on units or parts so occupied.

c. The Contractor shall not be responsible for wear and tear or damage resulting from partial occupancy.

d. The Owner shall assume risk of loss with respect to any unit or part so occupied.

e. The Contractor shall, if required by the Owner, furnish heat, light, water, or other such services to the units or parts occupied and the Owner shall make proper remuneration therefore to the Contractor.

3.6.2  
The Contractor agrees that the Owner shall have the right, after seven (7) days' written notice to the Contractor, to place and install as much equipment and machinery during the progress of the work as is possible before the completion of the various parts of the work; and further agrees that such placing and installation of equipment shall not in any way evidence the completion of the work or any portion thereof, nor signify the Owner's acceptance of the work or any portion thereof. Should the Owner place or install such equipment and machinery with his own forces he shall be responsible for any damage to work of the Contractor caused by the Owner's work or workmen. Should the Owner have such placement or installation performed by another Contractor, then the Owner shall require said Contractor to be responsible for all such damage caused by his work, his workers, or his subcontractors.

ARTICLE 4 - CONTRACTOR

4.4  
LABOR AND MATERIALS

4.4.3  
All materials shall be so delivered, stored and handled to prevent the inclusion of foreign materials and the damage of materials by water or breakage. Packaged materials shall be delivered and stored in original packages until ready for use. Packages or materials showing evidence of water or other damage shall be rejected. All materials shall be of the respective qualities specified herein.

4.4.4  
The Contractor shall be responsible for the proper care and protection of all his materials, equipment, etc., delivered at the site. Building materials, equipment, etc., may be stored on the premises subject to the approval of the Architect.

4.4.5  
To insure timely availability of critical materials in case of national emergency, the Contractor may order his subcontractors to proceed with fabrication of the same earlier than required by normal sequence of construction. In the event storage facilities are not available on the site or at the source of fabrication, the Owner will endeavor to provide such storage space as may be available to care for same. Where this is necessary, the Contractor shall be paid for all stored material on the Owner's property or on the properties approved by the Owner upon approval of certified invoices. It shall be the Contractor's obligation to pay for all handling costs and damage to this material. The Contractor shall protect this property against damage.

4.6  
TAXES

4.6.1  
The Bidder shall include in his proposal and make payment of all Federal, State, County and Municipal taxes including Michigan State Sales and Use Taxes, now in force or which may be enacted during the progress and completion of the work covered.
4.7 PERMITS, FEES AND NOTICES

4.7.3 The Contractor shall pay highway or DPW fees for damages to sidewalks, streets, or other public property or to any public utilities.

4.7.4 Permits and licenses of a temporary nature necessary for the execution of the work shall be secured and paid for by the Contractor.

4.7.5 Except for the General Building Permit (which is not required), the Contractor shall secure and pay for all other required permits, including the following:

- Electrical - State of Michigan
- Plumbing - State of Michigan
- Mechanical - State of Michigan
- Elevator - City of Detroit

4.7.6 The Contractor shall secure certificates of inspection and of occupancy that may be required by authorities having jurisdiction over the work. These certificates shall be delivered to the Architect upon completion of the work.

4.9 SUPERINTENDENT

4.9.2 The Contractor shall give sufficient supervision to the work, using his best skill and attention. He shall carefully study and compare all drawings, specifications, and other instructions, and shall at once report to the Architect any error, inconsistency, or omission which he may discover, but he shall not be held responsible for their existence or discovery.

4.9.3 The Contractor's superintendent shall periodically inspect the entire project to make certain that all of the stipulations of all of the articles of the General Conditions are being observed.

4.12 DRAWINGS AND SPECIFICATIONS AT THE SITE

4.12.1.1 Refer to Paragraph 4.12.1, of A.I.A. General Conditions of the Contract for Construction. Modify the last sentence of this paragraph to read:

"The Drawings, marked to record all changes made during construction, shall be incorporated in the Contractor's 'Informational Package'."

4.12.2 As a basic and interim step for the fulfillment of the "Informational Package", accurate records of all non-structural underground and concealed work shall be kept, including, but not limited to, all piping, conduit, equipment, and drainage and tunnel work. In addition, such records shall be available for review during various steps of the project.

4.13 SHOP DRAWINGS AND SAMPLES

4.13.9 Immediately before and as a condition of substantial completion, the Contractor shall provide the Owner an "Informational Package" and instructional sessions on the operation, maintenance, and service of the facility. The "Informational Package" shall include:

1. One (1) set of transparency (sepia) of the approved shop drawings and descriptive material submitted during construction. Any shop documents unobtainable in sepia shall be supplied in three (3) sets.

2. One (1) set of transparency (sepia) of constructional shop drawings with all installation revisions incorporated to reflect the as-built condition. Examples of constructional shop
drawings are dimensioned conduit, piping and ductwork layout drawings.

3. Three (3) sets of instructional manuals on the installation, operation, maintenance and service of equipment and systems, including parts lists.

Examples of Specific Information Required:

1. Electrical
   a. Conduit layout of light, power, and special systems, indicating dimensionally the locations and size of runs; circuit grouping and conductor size and number in conduit runs.
   b. System description and elementary diagrams, connection and interconnection diagrams, and device internal diagrams.

2. Mechanical
   a. Piping and ductwork layout indicating dimensionally the location and size of the runs.
   b. Description and diagrams of control systems.

Following the submittal of the "Informational Package", the Contractor shall schedule and provide, at the Owner's convenience, instructional sessions for Owner's personnel to acquaint them with the operation, maintenance, and service of the system.

3. Elevators
   a. Elementary diagrams and description of sequence of operation of the system control components, connection and interconnection diagrams, and device internal diagrams.

ARTICLE 5 - SUBCONTRACTORS

5.2 AWARD OF SUBCONTRACTS AND OTHER CONTRACTS FOR PORTIONS OF THE WORK

5.2.3 Delete Article 5.2.3 in its entirety.

5.2.4 Delete Article 5.2.4 in its entirety.

ARTICLE 7 - MISCELLANEOUS PROVISIONS (Revised 6-13-2011)

7.5 PERFORMANCE BOND AND LABOR AND MATERIAL PAYMENT BOND

7.5.1 The successful Bidder will be required to furnish a Performance Bond and Labor and Material Payment bond in an amount equal to 100% of the contract award amount, and include such cost in the Proposal, complying with the laws of the State of Michigan. The graduated formula no longer applies.

A. Performance Bond and Labor and Material Payment Bond shall be from a surety company acceptable to the Owner and made payable as follows:

   (1) A Labor and Material Payment bond for 100% of the contract award amount to the Board of Governors of Wayne State University, and guaranteeing the payment of all subcontractors and all indebtedness incurred for labor, materials, or any cause whatsoever on account of the Contractor in accordance with the laws of the State of Michigan relating to such bonds.

   (2) A Performance bond for 100% of the contract award amount to the Board of Governors of Wayne State University to guarantee and insure the completion of work according to the Contract.

B. The only acceptable Performance Bond shall be the AIA A312 – 2010.

C. The Contractor shall include with his bid evidence of his ability to obtain a Performance Bond in the amount of 100% of the bid amount, and in accordance with the terms and conditions outlined in this section, Such
evidence shall be project specific and shall be submitted on a form provided by the Surety or Agent thereof.

7.7 ROYALTIES AND PATENTS

7.7.1 Indemnification and Hold Harmless (Revised 2-2015).
To the fullest extent permitted by law, the Contractor shall hold harmless, defend, and indemnify the Board of Governors of Wayne State University, the University, the Architect and Architect’s Consultants, and officers, employees, representatives and agents of each of them, from and against any and all claims or losses arising out of or alleged to be resulting from, or relating to (1) the failure of the Contractor to perform its obligations under the Contract or the performance of its obligation in a willful or negligent manner; (2) the inaccuracy of any representation or warranty by the Contractor given in accordance with or contained in the Contract Documents; and (3) any claim of damage or loss by any subcontractor, supplier, or laborer against the University, the Architect or the Architect’s consultants arising out of an alleged act or omission of the Contractor or any other subcontractor, or anyone directly or indirectly employed by the Contractor or any subcontractor.

The Contractor shall also be liable for and hereby agrees to pay, reimburse, fully indemnify and hold the University, the Architect and Architect’s Consultants, harmless from and against all costs and expenses of every nature (including attorney fees and expenses incident thereto) incurred by the University in collecting the amounts due from the Contractor, or otherwise enforcing its rights, under the indemnification described in this Article.

7.9 INTEREST

7.9.1 Delete Article 7.9 in its entirety.

ARTICLE 8 - TIME

8.1 DEFINITIONS

8.1.3 The Date of Substantial Completion of the Work is the Date certified by the Architect when construction of the entire work is sufficiently complete, in accordance with the Contract Documents, so the Owner may occupy the Work for the use for which it is intended. It is the beginning date for the guarantees on all the Project Work.

8.3.5 LIQUIDATED DAMAGES

It is understood that if said Contract is not completed within the time specified in the Contract plus any extension of time thereto, the Contractor shall pay Liquidated Damages to the Owner as set forth in Article 11 of the Agreement between Contractor and Owner for Construction.

ARTICLE 9 - PAYMENT AND COMPLETION

9.3 PROGRESS PAYMENTS

9.3.1 On or before the 20th day of each month, the Contractor shall submit to the Architect on the Owner's Standard Form, a written application for payment showing the proportionate value of the work installed to date from which shall be deducted, a reserve of 10% and all previous payments, and the balance of the amount as approved by the Architect shall be due and payable to the Contractor on or about the 15th day of the succeeding month.

9.3.2.2 No payments will be made because of materials or equipment stored off the site, except as provided for in Subparagraph 4.4.5 of the Supplementary General Conditions or other special cases the Owner may approve.

9.6 FAILURE OF PAYMENT

9.6.1 Delete Article 9.6 in its entirety.

ARTICLE 11 - INSURANCE (Revised 2-06-2015)

11.1 CONTRACTOR'S LIABILITY INSURANCE
11.1.2 The insurance required by Subparagraph 11.1.1 shall be written for not less than any limits of liability specified herein, or required by law, whichever is greater, and shall include contractual liability insurance as applicable to the Contractor’s obligations under Paragraph 4.18.

During the life of the Contract, the Contractor shall maintain the following types of insurance:

A. **General Requirements**

<table>
<thead>
<tr>
<th>Type of Insurance</th>
<th>Minimum Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Commercial General Liability (CGL)</td>
<td>$1,000,000 combined single limit per occurrence</td>
</tr>
<tr>
<td></td>
<td>$2,000,000 aggregate</td>
</tr>
<tr>
<td></td>
<td>Umbrella Liability per occurrence and in the annual aggregate of $5,000,000.</td>
</tr>
<tr>
<td>Commercial Automobile Liability (CSL) (including hired and non-owned vehicles)</td>
<td>$1,000,000 combined single limit</td>
</tr>
<tr>
<td>Workers’ Compensation (Employers’ Liability)</td>
<td>Statutory-Michigan $500,000</td>
</tr>
<tr>
<td>Professional Liability insurance</td>
<td>$275,000 Per Occurrence and in the Aggregate annually.</td>
</tr>
</tbody>
</table>

B. **Maximum Acceptable Deductibles**

<table>
<thead>
<tr>
<th>Type of Insurance</th>
<th>Maximum Deductible</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comprehensive General Liability</td>
<td>$5,000</td>
</tr>
<tr>
<td>Fire Legal Liability</td>
<td>$5,000</td>
</tr>
<tr>
<td>Comprehensive Automobile Liability</td>
<td>-0-</td>
</tr>
<tr>
<td>Workers’ Compensation</td>
<td>-0-</td>
</tr>
<tr>
<td>Property - All Risk</td>
<td>$ 500</td>
</tr>
</tbody>
</table>

11.1.3 The Board of Governors, Wayne State University, shall be named as an additional insured but only with respect to accidents arising out of the performance of said contract. The contractor shall prepare a certificate of insurance which shall name the “Office of Risk Management; 5700 Cass Avenue” as the Wayne State University certificate holder.
11.1.3.1 The Contractor shall either 1) require each of his Subcontractors to procure and to maintain during the life of his subcontract, Subcontractors' Comprehensive General Liability, Automobile Liability and Property Damage Liability Insurance of the type and in the same amounts as specified in the Subparagraph, or 2) insure the activity of his subcontractors in his own policy.

11.2 OWNER’S LIABILITY INSURANCE

Delete Article 11.2 in its entirety.

11.3 PROPERTY INSURANCE

Delete Article 11.3 in its entirety and replace with the following:

11.3.1 The Contractor shall purchase and maintain property insurance upon the entire work at the site to the full insurable value thereof. This insurance shall include the interests of the Owner, the Contractor, Subcontractors, and sub-subcontractors in the work and shall insure against the perils of Fire, Extended Coverage, Vandalism, and Malicious Mischief.

11.3.2 The Owner and Contractor waive all rights against each other for damages caused by fires or other perils to the extent covered by insurance provided under Subparagraph 11.3.1. The Contractor shall require similar waivers by Subcontractors and sub-subcontractors in accordance with Clause 5.3.1.5.

11.3.3 Insurance must be issued by an insurance company with an “A rating as denoted in the AM Best Key Rating Guide”.

ARTICLE 12 - CHANGES IN THE WORK

12.1 CHANGE ORDERS

12.1.8 Percentage markups in pricing under Subparagraphs 12.1.3.1, 12.1.3.3, and 1.2.4 shall be as limited in the Contract Documents. Unit price of Subparagraph 12.1.3.2 shall represent total unit cost to the Owner and shall include the Contractor's markup for overhead and profit.

ARTICLE 14 - TERMINATION OF THE CONTRACT

14.1 TERMINATION BY THE CONTRACTOR

14.1.1 If the work is stopped for a period of thirty days under any order of any court or other public authority having jurisdiction, or as a result of any act of government, such as a declaration of a national emergency making materials unavailable, through no act or fault of the contract or a subcontractor or their agents or employees or other persons performing any of the Work under a contract with the contractor, then the contractor may, upon seven days' written notice to the Owner and the Architect, terminate the contract and recover from the Owner payment for all Work executed and for any proven loss sustained upon any materials, equipment, tools, construction equipment, and machinery, including reasonable profit and damages.

ARTICLE 15 - ADDITIONAL CONDITIONS

15.1 SUBSTITUTION OF MATERIALS AND EQUIPMENT

15.1.1 Whenever a material, article, or piece of equipment is identified on the Drawings or in the Specifications by reference to manufacturers' or vendors' names, trade names, catalog numbers, or the like, it is so identified for the purpose of establishing a standard, and any material, article, or piece of equipment of other manufacturers or vendors, which will perform adequately the duties imposed by the general design will be considered equally acceptable provided the material, article, or piece of equipment so proposed is, in the opinion of the Architect, of equal substance, appearance, and function. It shall not be purchased or installed by the Contractor without the Architect's written approval.

15.2 NON-DISCRIMINATION PROVISION AND WAGE AND HOUR ACT

15.2.1 During the performance of this contract, the Contractor agrees as follows:
15.2.1.1 The Contractor shall not discriminate against any employee or applicant for employment because of sex, race, creed, color, age, or national origin. The Contractor will take affirmative action to insure that applicants are employed, and that employees are treated during employment without regard to their sex, race, age, creed, color, or national origin.

15.2.1.2 Such action shall include but not be limited to, the following: employment; upgrading; demotion; or transfer; recruitment or recruitment advertising; layoff or terminations; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided setting forth the provisions of this non-discrimination clause.

15.2.1.3 The Contractor will, in all solicitations, or advertisements for employees, placed by or on behalf of the contractor, state that all qualified applicants will receive consideration for employment without regard to sex, race, color, age or national origin.

15.2.1.4 The Contractor will send to each labor union or representative of workers with which he has a collective bargaining agreement or other contract or understanding, a notice advising the labor union or worker's representative of the Contractor's commitments under Section 202 of Executive Order No. 11246 of October 27, 1965, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

15.2.1.5 The Contractor will comply with all provisions of the Executive Order No. 11246 of October 27, 1965, and of the rules, regulations and relevant orders of the Secretary of Labor or other government agency or authority having jurisdiction.

15.2.1.6 The Contractor will furnish all information and reports required by Executive Order No. 11246 of October 27, 1965, and by the rules, regulations, and orders of the Secretary of Labor or other government agency or authority having jurisdiction, and will permit access to his books, records, and accounts by the administrative agency and the Secretary of Labor for the purposes of investigation to ascertain compliance with such rules, regulations and orders.

15.2.1.7 In the event of the Contractor's noncompliance with the non-discrimination clauses of this contract, or with any of the said rules, regulations, or orders, this Contract may be canceled, terminated or suspended in whole or in part, and the Contractor may be declared ineligible for further University contracts or federally-assisted contracts in accordance with procedure authorized in Executive Order No. 11246 of October 27, 1965, or by rule, regulation, or order of the Secretary of Labor or other government agency or authority having jurisdiction.

15.2.1.8 The Contractor will include in the provisions of Subparagraph 15.2.1.1 through 15.2.1.8 in every subcontract or purchase order unless exempted by rules, regulations or orders of the President's Committee on Equal Employment Opportunity issued pursuant to Section 204 of Executive Order No. 11246 of September 14, 1965, so that provisions will be binding upon each subcontractor or vendor. The Contractor will take such action with respect to any subcontract or purchase order as the administering agency may direct as a means of enforcing such provisions including sanctions for noncompliance: Provided, however, that in the event the Contractor becomes involved as a result of such direction by the administering agency, the Contractor may request the United States to enter into such litigation to protect the interest of the United States.

15.3 Compliance with Copeland Anti-Kickback Act and Regulations

15.3.1 The Contractor shall comply with the Copeland Anti-Kickback Act and Regulations of the Secretary of Labor (29CFR, Part 3) which are herein incorporated by reference.

15.4 Prevailing Wages

15.4.1 Contractors and subcontractors shall pay all mechanics and laborers, including apprentices and trainees, no less than the wage and fringe benefit rates prevailing in the locality in which the work is performed. Wage and fringe benefit rates are determined by the Federal Government Department of Labor.

15.4.2 Classifications not provided in the schedule shall be determined prior to the award of the contract and shall be no less than the wage and fringe benefit rates determined by the Federal Department of Labor.
15.4.3 Contractors and subcontractors shall adhere to the ratios of apprentices to journey workers as determined by the Federal Department of Labor.

15.4.4 Contractors and subcontractors shall keep a copy of the prescribed wage and benefit rates posted at the construction site in a conspicuous place.

15.4.5 Contractors and subcontractors shall keep an accurate record of the name, occupation, and the actual benefits paid to each mechanic or laborer for the contract. This record shall be made available for reasonable inspection by the Federal Department of Labor and the Owner.
The Technical Specifications dated **June 30, 2015** and the following List of Drawings represent the scope of work as defined in the Contract Documents from Article 4.

<table>
<thead>
<tr>
<th>Drawing No.</th>
<th>Description</th>
<th>Dated</th>
</tr>
</thead>
<tbody>
<tr>
<td>A100</td>
<td>Floor Plan and Details</td>
<td>June 30, 2015</td>
</tr>
<tr>
<td>A300</td>
<td>Reflected Ceiling Plans and Details</td>
<td>June 30, 2015</td>
</tr>
<tr>
<td>E000</td>
<td>Electrical General Information</td>
<td>June 30, 2015</td>
</tr>
<tr>
<td>ED100</td>
<td>Lighting Demolition Plan</td>
<td>June 30, 2015</td>
</tr>
<tr>
<td>E100</td>
<td>Lighting Plan</td>
<td>June 30, 2015</td>
</tr>
<tr>
<td>E200</td>
<td>Electrical Schedules and Details</td>
<td>June 30, 2015</td>
</tr>
</tbody>
</table>
GENERAL REQUIREMENTS

GENERAL

A. CONTRACTOR’S RESPONSIBILITY

It is not the responsibility of the Architect/Engineer or Owner’s Representative to notify the Contractor or subcontractors when to commence, to cease, or to resume work; nor in any way to superintend so as to relieve the Contractor of responsibility or of any consequences of neglect or carelessness by him or his subordinates. All material and labor shall be furnished at times best suited for all Contractors and subcontractors concerned, so that the combined work of all shall be properly and fully completed on the date fixed by the Contract.

The Contractor shall be responsible for all items contained in both the specifications and on the drawings for all trades. He shall be responsible for the proper division of labor according to current labor union agreements regardless of the division of responsibility implied in the contract documents.

B. CODES AND STANDARDS

Reference to standard specifications for workmanship, apparatus, equipment and materials shall conform to the requirements of latest specifications of the organization referenced, i.e., American Society for Testing Materials (ASTM), Underwriters Laboratories, Inc. (UL), American National Standards Institute, Inc. (ANSI), and others so listed in the Technical Specifications.

C. PERMITS, FEES AND NOTICES

See Supplementary General Conditions.

D. MEASUREMENTS

Before proceeding with each Work Item, Contractor shall locate, mark and measure any quantity or each item and report quantities to Engineer. If measured quantities exceed Engineer’s estimate, Contractor shall obtain written authorization to proceed from Owner before executing Work required for that Work Item.

Measurement of quantities for individual Work Items will be performed by Contractor and reviewed by Engineer. Coordinate measurements with inspection as required in Section “Coordination.”

Cost of Work included in Work Item for quantities as indicated in Contract Documents shall be included in Base Bid.

1. Additions to or deductions from lump sum price for quantities of each Work Item added to or deducted from Work respectively shall be at unit prices indicated in Bid Form and shall constitute payment or deductions in full for all material, equipment, labor, supervision and incidentals necessary to complete Work.

E. CONTRACTOR’S MEASUREMENTS

Before ordering material, preparing Shop Drawings, or doing any work, each Contractor shall verify, at the building, all dimensions which may affect his work. He assumes full responsibility for the accuracy of his figures. No allowance for additional compensation will be considered for minor discrepancies between dimensions on the drawings and actual field dimensions.

F. CONTINUITY OF SERVICE (Revised 3-26-2012)

Continuity of all existing services in the building shall be maintained throughout the construction period. Where it is necessary to tie into the existing electrical service, water or waste systems, it shall be done as directed by the Architect/Engineer. This Contract shall also provide temporary lines or bypasses that may be required to maintain continuous service in the building. All utility shutdowns must be approved by the Owners Representative / Project Manager, not less than 7 business days prior to the event, so that proper notification can be posted.

G. SUBMITTALS
All submittals (except Shop Drawings) and samples required by the Specifications shall be submitted in triplicate unless otherwise specified for a particular item under an individual Specification Section.

Each sample shall be clearly identified on a tag attached, showing the name of the Project Consultant, the project number and title, the names of the Contractor, manufacturer (and supplier if same is not the manufacturer), the brand name or number identification, pattern, color, or finish designation and the location in the work.

Each submittal shall be covered by a transmittal letter, properly identified with the project title and number and a brief description of the item being submitted.

Contractor shall be responsible for all costs of packing, shipping and incidental expenses connected with delivery of the samples to the Project Consultant or other designated address.

If the initial sample is not approved, prepare and submit additional sets until approval is obtained.

Materials supplied or installed which do not conform to the appearance, quality, profile, texture or other determinant of the approval samples will be rejected, and shall be replaced with satisfactory materials at the Contractor's expense.

H. GENERAL/STANDARD ELECTRONIC EQUIPMENT AND INFRASTRUCTURE REQUIREMENTS (Revised 11-2008)

1. Compliance with WSU Standards for Communications Infrastructure
   A. All applicable work, products, materials and methods shall comply with the latest version of the “WSU Standards for Communications Infrastructure” except as where noted.
   B. This document is available at the following website/URL: [http://networks.wayne.edu/WSU-Communications-Standards.pdf](http://networks.wayne.edu/WSU-Communications-Standards.pdf)

2. Automation System Program Code
   A. All automation system uncompiled and compiled program codes, source codes, custom modules, graphical user interface screen shots and any other automation system programming data and material (Program Code) shall be provided to the UNIVERSITY in hard copy and on CD Rom in an unencrypted format acceptable to the UNIVERSITY.
   B. Copyright for the Program Code shall be assigned to the UNIVERSITY for purposes of system maintenance.

PROTECTION OF OCCUPANCY (Revised 3-2006)

A. FIRE PRECAUTIONS

Take necessary actions to eliminate possible fire hazards and to prevent damage to construction work, building materials, equipment, temporary field offices, storage sheds, and other property. During the construction, provide the type and quantity of fire extinguishers and fire hose to meet safety and fire prevention practices by National Fire Protection Association (NFPA) Codes and Standards (available at [http://www.nfpa.org/](http://www.nfpa.org/)).

In the event that construction includes "hot work", the contractor shall provide the Owner's Representative with a copy of their hot work policy, procedures, or permit program. No hot work activity (temporary maintenance, renovation, or construction by operation of a gas or electrically powered equipment which produces flames, sparks or heat that is sufficient to start a fire or ignite combustible materials) shall be performed until such documents are provided. During such operations, all highly combustible or flammable materials shall be removed from the immediate working area, and if removal is impossible, same shall be protected with flame retardant shield.

Not more than one-half day's supply of flammable liquids such as gasoline, spray paint and paint solvent shall be brought into the building at any one time. Flammable liquids having a flash point of 100 degrees F. or below which must be brought into the building shall be confined in an Underwriters Laboratories (UL) labeled safety cans. The bulk supply of flammables...
shall be stored at least 75 feet from the building and other combustible materials. Spigots on drums containing flammable liquids are prohibited on the project site. Drums shall be equipped with approved vented pumps, and be grounded and bonded.

Only a reasonable working supply of combustible building materials shall be located inside the building.

All oil-soaked rags, papers, and other similar combustible materials shall be removed from the building at the close of each day's work, or more often if necessary, and placed in metal containers, with self-closing lids.

Materials and equipment stored in cardboard cartons, wood crates or other combustible containers shall be stored in an orderly manner and accessibly located, fire-fighting equipment of approved types shall be placed in the immediate vicinity of any materials or equipment stored in this type of crate or carton.

No gasoline, benzene, or like flammable materials shall be poured into sewers, manholes, or traps.

All rubbish shall be removed from the site and legally disposed of. Burning of rubbish, waste materials or trash on the site shall not be permitted.

The contractor shall be responsible for the conduct of employees relative to smoking and all smoking shall be in the area designated by the Architect/Engineer.

B. GENERAL SAFETY AND BUILDING PRECAUTIONS

Provide and maintain in good repair barricades, railings, etc., as required by law for the protection of the Public. All exposed material shall be smoothly dressed.

At dangerous points throughout the work environment provide and maintain colored lights or flags in addition to above guardrails.

Isolate Owner's occupied areas from areas where demolition and alteration work will be done, with temporary, dustproof, weatherproof, and fireproof enclosures as conditions may require and as directed by the Architect/Engineer.

Cover and protect furniture, equipment and fixtures to remain from soiling, dust, dirt, or damage when demolition work is performed in rooms or areas from which such items have not been removed.

Protect openings made in the existing roofs, floors, and other construction with weatherproof coverings, barricades, and temporary fire rated partitions to prevent accidents.

Repair any damage done to existing work caused by the construction and removal of temporary partitions, coverings, and barricades.

The Contractor will be held responsible for all breakage or other damage to glass up to the time the work is completed.

Provide protection for existing buildings, interior and exterior, finishes, walls, drives, landscaping, lawns (see below), etc. All damages shall be restored to match existing conditions to the satisfaction of the Architect/Engineer.

The Contractor and Owner will define the anticipated area of lawn damage at the project Pre-Construction Meeting. Whether the lawn is sparse or fully developed, any lawn damaged due to the Contractor's work will be replaced with sod by the University. The University's unit cost of $10.00 per square yard and landscaping at a rate of 1.5 times the cost of the sod repairs, the full cost of which will be assessed against the Contractor. At the completion of the project, a deductive Change Order reflecting this cost will be issued. The Contractor is to include an allowance in his bid for this corrective work.

C. INTERFERENCE WITH OWNER'S OPERATIONS

The Owner will be utilizing the Building Facilities to carry on his normal business operation during construction. The Contractor shall schedule performance of the work necessary to complete the project in such a way as to interfere as little as possible with the operation during construction. The Contractor shall schedule performance of the work necessary to complete the project in such a way as to interfere as little as possible with the operation of the Owner.
Work which will interfere with the Owner's occupancy, including interruptions to the Owner's mechanical and electrical services, and essentially noisy operations (such as jackhammering) shall be scheduled in advance. The schedule of alterations shall be approved by the Architect/Engineer and the work shall be done in accordance with the approved schedule.

It is understood that the work is to be carried through to completion with the utmost speed consistent with good workmanship and to meet the construction schedule.

The Contractor shall begin work under the Contract without delay upon receipt of the fully-executed contract and shall substantially complete the project ready for unobstructed occupancy and use of the Owner for the purposes intended within the completion time stated in the contract.

The Contractor shall, immediately upon award of contract, schedule his work and expedite deliveries of materials and performance of subcontractors to maintain the necessary pace to meet the construction schedule.

**CONTRACTOR'S REPRESENTATION AND COORDINATION**

A. **FIELD SUPERINTENDENT**

Contractor shall assign a full time project manager/superintendent for the duration of the project. This person shall be experienced and qualified in all phases of the work and shall be present at the site during Contractor's working hours. The project manager shall have Contractor's full authority to represent Contractor in all routine operations including payment, changes to the work, and scheduling. Contractor shall not re-assign this individual without prior written permission of the Owner.

B. **MEETINGS**

When directed by the Architect/Engineer, meetings shall be held for the purpose of coordinating and expediting the work. The invited contractors or subcontractors will be required to have qualified representatives at these meetings, empowered to act in their behalf.

C. **COORDINATION**

The Contractor shall also provide a staff adequate to coordinate and expedite the work properly and shall at all times maintain competent supervision of its own work and that of its subcontractors to insure compliance with contract requirements.

The Contractor shall be solely responsible for all construction means, methods, techniques, sequences, and procedures and for coordinating all portions of the work under the Contractor.

D. **CONSTRUCTION SCHEDULE**

The Construction Schedule shall be prepared after the award of contract. Soon after, a pre-construction meeting is held with the Owner and the Architect/Engineer to determine the areas to which the Contractor will be allowed access at any one time.

The Contractor is alerted to the fact that areas in which he will be working will be occupied by students and employees of the University as well as the general public. The Contractor's access, to and from the project site, will be confined to limited areas so as not to unduly disrupt the normal activities of the University.

**TEMPORARY FACILITIES**

A. **GENERAL**

The following temporary facilities descriptions represent standard conditions. Verify accuracy with Architect/Engineer at time of bids.

B. **CONTRACTOR'S OFFICE**

Provide field offices as required. Locate temporary field offices on site where directed by Architect/Engineer.
Appearance and location of field offices shall be approved by the Architect/Engineer. Provide for all other administrative facilities and storage off the Owner's property.

C. STORAGE OF MATERIALS

All materials shall be stored in areas designated by the Architect/Engineer. All stored materials shall be arranged for the minimum disruption to occupants and to allow full access to and throughout the building. Materials stored outdoors shall be neat and orderly and covered to prevent damage or vandalism.

D. PARKING

1. GENERAL

University parking regulations will be strictly enforced.

Maintain Owner's parking areas free of dirt and debris resulting from operations under the contract.

2. STANDING AND UNLOADING/LOADING VEHICLES

All Contractors are to call Wayne State University Public Safety at 577-2222, and give at least 24 hours advance notice that they have vehicles that must be at the job site.

Vehicles will be permitted at the project site only as long as the vehicles are needed for loading/unloading, and must be immediately moved upon completion.

All unauthorized and/or unattended standing vehicles will be subject to ticketing and removal by University Police. Towed vehicles may be reclaimed by calling 577-2222, and paying any assessed charges.

3. COMPLIMENTARY PARKING

There is no complimentary parking for Contractor's employee vehicles.

4. WAYNE STATE UNIVERSITY PUBLIC/STUDENT PARKING AREAS

Public Parking, on a first-come first-served basis is available. Contact the office of the One Card System, at 313.577.9513 for information on availability of parking on a contractual basis.

E. TOILET FACILITIES

The Owner's designated existing toilet facilities may be used by workers on the project. Contractor shall maintain such facilities in a neat and sanitary condition.

F. TELEPHONE USE

If required, the Contractor shall provide and pay for a temporary telephone within the building for his use and that of his subcontractors.

No use of the Owner's telephone (except pay telephones) will be permitted.

G. ACCESS DEVICES

The Contractor shall furnish and maintain temporary hoists, ladders, railings, scaffolds, runways, and the like as required for safe, normal access to the permanent construction until the permanent facilities are complete. Each trade shall furnish such additional means of access as may be required for the progress and completion of the work. Such temporary access devices shall meet all applicable local, state, and federal codes and regulations.

H. HEAT AND VENTILATION
Provide cold weather protection and temporary heat and ventilation as required during construction to protect the work from freezing and frost damage.

Provide adequate ventilation as required to maintain reasonable interior building air conditions and temperatures, to prevent accumulation of excess moisture, and to remove construction fumes.

Tarpaulins and other materials used for temporary enclosures. Coverings and protection shall be flameproofed.

I. WATER SERVICE

Sources of water are available at the site. The Owner will pay for reasonable amounts of water used for construction purposes.

The Contractor shall provide, at the earliest possible date, temporary connections to the water supply sources and maintain adequate distribution for all construction requirements. The Contractor shall protect sources against damage.

Methods of conveying this water shall be approved by the Architect/Engineer and shall not interfere with the Owner's operations.

J. ELECTRICAL SERVICES

All charges for reasonable amounts of electrical power energy used for temporary lighting and power required for this work will be paid by the Owner.

The Contractor shall provide and maintain any temporary electrical lighting and power required for this work. At the completion of the work, all such temporary electrical facilities shall be removed and disposed of by the Contractor.

Temporary lighting and power shall comply with the regulations and requirements of the National Electrical Code

INSPECTIONS AND TESTS

The Architect/Engineer shall at all times have access to the work wherever it is in preparation or in progress and the Contractor shall provide proper facilities for such access and for observation.

No failure of the Architect/Engineer, during the progress of the work, to discover or reject materials or work not in accordance with the Contract Specifications and Drawings shall be deemed an acceptance thereof nor a waiver of defects therein. Likewise, no acceptance or waiver shall be inferred or implied due to payments made to contractor or by partial or entire occupancy of the work, or installation of materials that are not strictly in accordance with the Contract Specifications and Drawings.

Where tests are specifically called for in the Specifications, the Owner shall pay all costs of such tests and engineering services unless otherwise stated in the contract.

Where tests are not specifically called for in the Specifications, but are required by the Architect/Engineer or Consultant, the Owner shall pay all costs of such tests and engineering services unless the tests reveal that the workmanship or materials used by the Contractor are not in conformity with the Drawings, Specifications, and/or approved shop drawings. In such event, the Contractor shall pay for the tests, shall remove all work and materials so failing to conform and replace with work and materials that are in full conformity.

CLEAN-UP

The Contractor shall at all times keep the Owner's premises and the adjoining premises, driveways and streets clean of rubbish caused by the Contractor's operations and at the completion of the work shall remove all the rubbish, all of his tools, equipment, temporary work and surplus materials, from and about the premises, and shall leave the work clean and ready for use. If the contractor does not attend to such cleaning immediately upon request, the Architect/Engineer may cause such cleaning to be done by others and charge the cost of same to the Contractor.

The Contractor will be responsible for all damage from fire that originates in, or is propagated by, accumulations of rubbish or debris.
All rubbish and debris shall be disposed of off the Owner's property in an approved sanitary landfill site. No open burning of debris or rubbish will be permitted. Job site shall be left neat and clean at the completion of each day's operation.

PROJECT CLOSE-OUT

A. RECORD DRAWINGS

At beginning of job, provide one copy of Working Drawings, and record changes, between Working Drawings and "As Built", including changes made by Addenda, Change Orders, Shop Drawings, etc. These shall be kept up to date. Update to indicate make of all mechanical and electrical equipment and fixtures installed. Keep these Record Prints in good condition and available for inspection by the Architect/Engineer.

Upon completion of the job, turn over to the Architect/Engineer Record Prints of Working Drawings showing all job changes.

B. OPERATING AND MAINTENANCE DATA

Prepare and furnish to the Architect/Engineer three (3) bound copies of "Operating and Maintenance Manual" on all equipment installed under this Contract.

Manual shall include copies of all Manufacturers' "Operating and Service Instructions", including Parts List, Control Diagrams, Description of Control Systems, Operating, Electrical Wiring, and any other information needed to understand, operate and maintain the equipment. The names and addresses of all subcontractors shall be included. These instructions shall be custom-prepared for this job -- catalog cuts will not be accepted. Equipment shall be cross-referenced to Section of Specifications and to location shown and scheduled on drawings.


C. FINAL INSPECTION

Secure final inspections from the State of Michigan as soon as the work is completed and immediately submit such Certificates to the Architect/Engineer.

D. GUARANTEES (See Sections 00510 and 01781)

Guarantees on material and labor from the General Contractor and his subcontractors shall be as required in Sections 00510 and 01781.

E. SWORN STATEMENT AND WAIVER OF LIENS (revised 4-11-2012)

Prior to final payment, the General Contractor shall provide a Contractor's Sworn Statement and Full Unconditional Waivers of Liens from all subcontractors for material and labor and from all suppliers who provide materials exceeding $1,000. Sworn Statements and signed waivers from all Subcontractors must accompany Pay Applications or they will be returned for such documentation prior to approval.

ASBESTOS HAZARD

A. The contractor shall not start any work in any area that has not been inspected for asbestos by the Owner's Industrial Hygiene Department, or a qualified representative of the Owner and approval is given for work to be done. If asbestos is found, safety measures as recommended by the Owner's Industrial Hygiene Department, or a qualified representative of the Owner, shall be completed, or approval given for work to be done before work is started. The contractor shall not perform any asbestos removal or containment work under the contract.

KEYS

A. The Owner shall provide the contractor keys on loan to have access to the various spaces in order to complete the contract. Contractor will sign for and be responsible for each key on loan, returnable to Owner upon completion of the contract. In case of any lost keys, the Owner will backcharge the contract $250.00 for each core change. In the event that a Contractor wants access to a secured area, he shall give the Owner a minimum 48-hour notice.
SUMMARY OF WORK

SUMMARY OF WORK

PROJECT: Community Arts - Gallery Lighting

WSU PROJECT NO.: 039-231828

PROJECT MANAGER: Thomas J. Edwards

1. EXAMINATION

The Contractor shall visit the site and become familiar with conditions under which he will be working. Also meet with the project manager and review site access, storage areas, etc.

2. Description of Work – Project includes Replace lighting fixtures in the Art Gallery.

3. The building is located at

Wayne State University
450 Reuther Mall
Detroit, Michigan 48202
SPECIFICATIONS

FOR THE

WAYNE STATE UNIVERSITY

COMMUNITY ARTS – ART DEPARTMENT GALLERY LIGHTING

AT

DETROIT, MICHIGAN

Prepared by:

STRATEGIC ENERGY SOLUTIONS, INC.
4000 W. ELEVEN MILE ROAD
BERKLEY, MICHIGAN 48072

WSU Project No. 039-231828
SES Project No. 2013 407 01
BIDS – 06/30/15
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SECTION 26 0500
BASIC ELECTRICAL REQUIREMENTS

PART 1 GENERAL

1.01 RELATED DOCUMENTS
   A. Drawings and general provisions of the contract, including General and Supplementary
      Conditions, Special Conditions and Division 1 specification sections, apply to work of this
      section.
   B. Provide all items, articles, materials, operations or methods listed, mentioned or scheduled on
      drawings and/or herein, including all labor, materials, equipment and incidentals necessary and
      required for their completion.
   C. The items in this section are supplementary to the requirements set forth in other portions of the
      specifications as indicated under Item “A” above.

1.02 DRAWINGS
   A. The drawings show the location and general arrangement of equipment, electrical systems and
      related items. They shall be followed as closely as elements of the construction will permit.
   B. Examine the drawings of other trades and verify the conditions governing the work on the job
      site. Arrange work accordingly, providing such fittings, conduit, junction boxes and accessories
      as may be required to meet such conditions.
   C. Deviations from the drawings, with the exception of minor changes in routing and other such
      incidental changes that do not affect the functioning or serviceability of the systems, shall not be
      made without the written approval of the Architect/Engineer.
   D. The architectural and structural drawings take precedence in all matters pertaining to the
      building structure, mechanical drawings in all matters pertaining to mechanical trades and
      electrical drawings in all matters pertaining to electrical trades. Where there are conflicts or
      differences between the drawings for the various trades, report such conflicts or differences to
      the Architect/Engineer for resolution.

1.03 INSPECTION OF SITE
   A. Visit the site, examine and verify the conditions under which the work must be conducted before
      submitting proposal.
   B. The submitting of a proposal implies that the contractor has visited the site and understands the
      conditions under which the work must be conducted.

1.04 TEMPORARY FACILITIES
   A. Contractor will request the need and location for temporary power in the work plan submission
      phase.

1.05 ALTERNATES
   A. See Alternate Section and other applicable parts of the specifications.

1.06 GUARANTEE
   A. Contractor guarantees that the installation is free from defects and agrees to replace or repair,
      any part of this installation which becomes defective within a period of one year following final
      acceptance, unless noted otherwise, provided that such failure is due to defects in the
      equipment, material or installation or to follow the specifications and drawings. File with the
      Owner any and all guarantees from the equipment manufacturers.

1.07 CODES, PERMITS AND FEES
   A. Unless otherwise indicated, all required permits, licenses, inspections, approvals and fees for
      electrical work shall be secured and paid for by the contractor. All work shall conform to all
      applicable codes, rules and regulations.
   B. Rules of local utility companies shall be complied with. Check with the utility company supplying
      service to the installation and determine all devices including, but not limited to, all current and
potential transformers, meter boxes, C.T. cabinets and meters which will be required and include the cost of all such items in proposal.

C. All work shall be executed in accordance with the rules and regulations set forth in local and state codes. Prepare any detailed drawings or diagrams which may be required by the governing authorities. Where the drawings and/or specifications indicate materials or construction in excess of code requirements, the drawings and/or specifications shall govern.

D. Contractor shall provide parking to construction personnel at no cost to the owner.

1.08 STANDARDS OF MATERIAL AND WORKMANSHIP:

A. All materials shall be new. The electrical and physical properties of all materials, and the design, performance characteristics, and methods of construction of all items of equipment, shall be in accordance with the latest issue of the various, applicable Standard Specifications of the following recognized authorities:
   1. A.N.S.I.American National Standards Institute
   2. A.S.T.M.American Society for Testing Materials
   3. I.C.E.A.Insulated Cable Engineers Association
   4. I.E.E.E.Institute of Electrical and Electronics Engineers
   5. N.E.C.National Electrical Code
   6. N.E.M.A.National Electrical Manufacturer's Association
   7. U.L.Underwriters Laboratories, Inc.

B. Perform all work in a first class and workmanlike manner, in accordance with the latest accepted standards and practices for the Trades involved.

C. All equipment of the same or similar systems shall be by the same manufacturer.

1.09 RECORD DRAWINGS

A. Provide complete operating and maintenance instruction manuals covering all electrical equipment herein specified, together with parts lists. All literature shall be furnished in triplicate for Owner and shall be bound in book or ring binder form as directed by Architect/ Engineer.

B. The operating and maintenance instructions shall include a brief, general description for all electrical systems including, but not limited to:

   C. Routine maintenance procedures.
   D. Trouble-shooting procedures.
   E. Shop Drawings

F. Any equipment offered as a substitution shall be equal in quality, durability, appearance, ampacity, and efficiency through all ranges of operation, shall conform with arrangements and space limitations of the equipment shown on the plans and/or specified, shall be compatible with the other components of the system. All costs to make these items of equipment comply with these requirements including, but not limited to, conduit, wiring, bus work, enclosures and building alterations shall be included in the original bid. Similar equipment shall be by one manufacturer.

1.10 SHOP DRAWINGS/SUBMITTALS

A. All shop drawings shall be submitted in groupings of similar and/or related items (lighting fixtures, switchgear, etc.). Incomplete submittal groupings will be returned unchecked.

B. Submit for approval eight (8) copies of shop drawings for all electrical systems or equipment but not limited to the items listed below. Where items are referred to by symbolic designation on the drawings and specifications, all submittals shall bear the same designation (light fixtures). Refer to other sections of the electrical specifications for additional requirements.

   1. Wiring Devices
   2. Lighting Fixtures
   3. Lighting Control Systems
1.11 MANUFACTURERS LISTED
   A. The listing of specific manufacturers does not imply acceptance of their products that do not
      meet the specified ratings, features and functions. Manufacturers listed are not relieved from
      meeting these specifications in their entirety.
   B. Products in compliance with the specification and manufactured by others not named will be
      considered only if pre-approved by the Engineer ten (10) days prior to bid date.

1.12 USE OF EQUIPMENT
   A. The use of any equipment, or any part thereof for purposes other than testing even with the
      Owner's consent, shall not be construed to be an acceptance of the work on the part of the
      Owner, nor be construed to obligate the Owner in any way to accept improper work or defective
      materials.
   B. Do not use Owner's lamps for temporary lighting except as allowed and directed by the Owner.
      Equip lighting fixtures with new lamps when the project is turned over to the Owner.

PART 2 EXECUTION
2.01 INSTALLATION OF EQUIPMENT
   A. Install all equipment in strict accordance with all directions and recommendations furnished by
      the manufacturer. Where such directions are in conflict with the drawings and specifications,
      report such conflicts to the Architect/Engineer for resolution.

2.02 COORDINATION
   A. Install work to avoid interference with work of other trades including, but not limited to,
      architectural and mechanical trades. Remove and relocate any work that causes an
      interference at contractor's expense. Disputes regarding the cause of an interference will be
      resolved by the Construction Manager or Architect/Engineer.

2.03 CHASES AND RECESSES
   A. Provided by the architectural trades, but the contractor shall be responsible for their accurate
      location and size.

2.04 CUTTING, PATCHING AND DAMAGE TO OTHER WORK
   A. Refer to General Conditions for requirements.
   B. All cutting, patching and repair work shall be performed by the contractor through approved,
      qualified subcontractors. Contractor shall include full cost of same in bid.

2.05 EQUIPMENT CONNECTIONS
   A. Make connections to equipment, motors, lighting fixtures, and other items included in the work
      in accordance with the approved shop drawings and rough-in measurements furnished by the
      manufacturers of the particular equipment furnished. All additional connections not shown on
      the drawings, but called out by the equipment manufacturer's shop drawings shall be provided.

2.06 ACCESS DOORS
   A. Provide access doors for installation by architectural trades. In the walls, provide Milcor No.
      "DW" or "M" as required to make all controls, electrical boxes and other equipment installed by
      the contractor accessible. Minimum size 12 inches x 12 inches. In the ceiling, provide Milcor
      No. 3210, 3105 or 3206 for accessibility as mentioned above, 24 inches x 24 inches minimum
      size. The plaster or acoustical tile insert shall be by the architectural trades. Areas with
      accessible ceilings (ceilings where tiles are not fastened in place and can be individually
      removed without removal of adjacent tiles) will not require access doors.
   B. When access doors are in fire resistant wall or ceilings, they must bear the Underwriter's'
      Laboratories, Inc., Label, with time design rating equal to or exceeding that of the wall or ceiling
      unless they were a part of the tested assembly.
2.07 CLEANING
   A. All debris shall be removed daily as required to maintain the work area in a neat, orderly
      condition.
   B. Final cleanup shall include, but not be limited to, washing of fixture lenses or louvers,
      switchboards, substations, motor control centers, panels, etc. Fixture reflectors and lenses or
      louvers shall be left with no water marks or cleaning streaks.

2.08 PROTECTION AND HANDLING OF EQUIPMENT AND MATERIALS
   A. Equipment and materials shall be protected from theft, injury or damage.
   B. Protect conduit openings with temporary plugs or caps.
   C. Provide adequate storage for all equipment and materials delivered to the job site. Location of
      the space will be designated by the Construction Manager or Architect/Engineer. Equipment set
      in place in unprotected areas must be provided with temporary protection.

2.09 NAMEPLATES AND DIRECTORIES
   A. Identify switchgear, motor controls, panelboards, safety switches, etc., with manufacturer's
      nameplate, shop order, where applicable on composite assemblies, and designations used on
      the Drawings. Nameplates shall be laminated phenolic plastic, beveled edged white with
      engraved black letters. Except where impractical, letters and numerals shall be a minimum of
      1/4 inch high. Nameplates shall be mechanically secured. Pressure sensitive nameplates are
      not acceptable. Panel directories shall be neatly typed, showing equipment served and location
      for each breaker or switch with a clear plastic protective cover.
   B. For detailed requirements refer to Section 26 0553 IDENTIFICATION FOR ELECTRICAL
      SYSTEMS.

2.10 EXTRA WORK
   A. For any extra electrical work which may be proposed, this Contractor shall furnish to the
      Construction Manager, an itemized breakdown of the estimated cost of the materials and labor
      required to complete this work. The Contractor shall proceed only after receiving a written order
      from the Construction Manager establishing the agreed price and describing the work to be
      done.

2.11 DRAWINGS AND MEASUREMENTS
   A. These Specifications and accompanying Drawings are intended to describe and provide for
      finished work. They are intended to be cooperative, and what is called for by either shall be as
      binding as if call for by both. The Contractor will understand that the work herein described
      shall be complete in every detail.
   B. The Drawings are not intended to be scaled for rough-in measurements nor to serve as Shop
      Drawings. Field measurements necessary for ordering materials and fitting the installation to
      the building construction and arrangement shall be taken by the Contractor. The Contractor
      shall check latest Architectural drawings and locate light switches from same where door swings
      are different from Electrical Drawings.

END OF SECTION
SECTION 26 0501
MINOR ELECTRICAL DEMOLITION

PART 1 GENERAL

1.01 SECTION INCLUDES
A. Electrical demolition.

1.02 SUMMARY
A. The work covered under this section consists of the furnishing of all necessary labor, supervision, materials, equipment, and services to completely execute the system of minor electrical demolition as described in this specification.
B. The demolition documents plans and specification have been prepared from existing non-as built documents and cursory non-invasive field investigation.
C. It is the contractors obligation to become familiar with the extent of demolition and the existing condition before submitting their bid.
D. During demolition if the contractor discovers unforeseen significant non code compliance conditions of the existing installation they shall notify the Architect and Engineer immediately in writing.
E. During demolition the contractor shall record on the as-builts all demolished circuits numbers that can be used for new circuiting.

PART 2 PRODUCTS

2.01 MATERIALS AND EQUIPMENT
A. Materials and equipment for patching and extending work: As specified in individual sections.

PART 3 EXECUTION

3.01 EXAMINATION
A. Verify field measurements and circuiting arrangements are as shown on Drawings.
B. Verify that abandoned wiring and equipment serve only abandoned facilities.
C. Demolition notes are based on casual field observation and existing record documents.
D. Report discrepancies to Strategic Energy Solutions, Inc. before disturbing existing installation.
E. Beginning of demolition means installer accepts existing conditions.

3.02 PREPARATION
A. Disconnect electrical systems in walls, floors, and ceilings to be removed.
B. Coordinate utility service outages with utility company.
C. Provide temporary wiring and connections to maintain existing systems in service during construction. When work must be performed on energized equipment or circuits, use personnel experienced in such operations.

3.03 DEMOLITION AND EXTENSION OF EXISTING ELECTRICAL WORK
A. Remove, relocate, and extend existing installations to accommodate new construction.
B.Remove abandoned wiring to source of supply.
C. Remove exposed abandoned conduit, including abandoned conduit above accessible ceiling finishes. Cut conduit flush with walls and floors, and patch surfaces.
D. Disconnect and remove abandoned luminaires. Remove brackets, stems, hangers, and other accessories. Turn salvaged fixtures over to owner.
E. Repair adjacent construction and finishes damaged during demolition and extension work.
F. Maintain access to existing electrical installations that remain active. Modify installation or provide access panel as appropriate.
G. Extend existing installations using materials and methods compatible with existing electrical installations, or as specified.

H. Provide additional hangers and supports as required for existing equipment during demolition to make the existing installation code compliant.

3.04 CLEANING AND REPAIR

A. Clean and repair existing materials and equipment that remain or that are to be reused.

B. Panelboards: Clean exposed surfaces and check tightness of electrical connections. Replace damaged circuit breakers and provide closure plates for vacant positions. Provide typed circuit directory showing revised circuiting arrangement.

END OF SECTION
SECTION 26 0519
LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES

PART 1 GENERAL

1.01 SECTION INCLUDES
A. Single conductor building wire.
B. Metal-clad cable.
C. Wiring connectors.
D. Electrical tape.
E. Wire pulling lubricant.

1.02 RELATED REQUIREMENTS
A. Section 07 8400 - Firestopping.
B. Section 26 0501 - Minor Electrical Demolition: Disconnection, removal, and/or extension of existing electrical conductors and cables.
C. Section 26 0526 - Grounding and Bonding for Electrical Systems: Additional requirements for grounding conductors and grounding connectors.
D. Section 26 0553 - Identification for Electrical Systems: Identification products and requirements.

1.03 REFERENCE STANDARDS
F. NECA 1 - Standard for Good Workmanship in Electrical Construction; National Electrical Contractors Association; 2010.
G. NECA 120 - Standard for Installing Armored Cable (AC) and Metal-Clad Cable (MC); National Electrical Contractors Association; 2006.
J. NFPA 70 - National Electrical Code; National Fire Protection Association; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
N. UL 486C - Splicing Wire Connectors; Current Edition, Including All Revisions.
O. UL 510 - Polyvinyl Chloride, Polyethylene, and Rubber Insulating Tape; Current Edition, Including All Revisions.
P. UL 1569 - Metal-Clad Cables; Current Edition, Including All Revisions.
1.04 SUBMITTALS
A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
B. Product Data: Provide manufacturer's standard catalog pages and data sheets for conductors and cables, including detailed information on materials, construction, ratings, listings, and available sizes, configurations, and stranding.
C. Project Record Documents: Record actual installed circuiting arrangements. Record actual routing.

1.05 QUALITY ASSURANCE
A. Conform to requirements of NFPA 70.

PART 2 PRODUCTS
2.01 CONDUCTOR AND CABLE APPLICATIONS
A. Do not use conductors and cables for applications other than as permitted by NFPA 70 and product listing.
B. Provide single conductor building wire installed in suitable raceway unless otherwise indicated, permitted, or required.
C. Nonmetallic-sheathed cable is not permitted.
D. Metal-clad cable is permitted only as follows:
   1. Where not otherwise restricted, may be used:
      a. Where concealed above accessible ceilings for final connections from junction boxes to luminaires.
         1) Maximum Length: 6 feet.
   2. In addition to other applicable restrictions, may not be used:
      a. Unless approved by WSU.
      b. Where exposed to damage.
      c. For damp, wet, or corrosive locations, unless provided with a PVC jacket listed as suitable for those locations.

2.02 CONDUCTOR AND CABLE GENERAL REQUIREMENTS
A. Provide products that comply with requirements of NFPA 70.
B. Provide products listed and classified by Underwriters Laboratories Inc. as suitable for the purpose indicated.
C. Unless specifically indicated to be excluded, provide all required conduit, boxes, wiring, connectors, etc. as required for a complete operating system.
D. Comply with NEMA WC 70.
E. Thermoplastic-Insulated Conductors and Cables: Listed and labeled as complying with UL 83.
F. Thermoset-Insulated Conductors and Cables: Listed and labeled as complying with UL 44.
G. Conductor Material:
   1. Copper Conductors: Soft drawn annealed, 98 percent conductivity, uncoated copper conductors complying with ASTM B3, ASTM B8, or ASTM B787/B 787M unless otherwise indicated.
   2. Tinned Copper Conductors: Comply with ASTM B33.
H. Minimum Conductor Size:
   1. Branch Circuits: 12 AWG.
I. Conductor Color Coding:
   1. Color code conductors as indicated unless otherwise required by the authority having jurisdiction. Maintain consistent color coding throughout project.
   2. Color Coding Method: Integrally colored insulation.
   3. Color Code:
      a. 208Y/120 V, 3 Phase, 4 Wire System:
1) Phase A: Black.
2) Phase B: Red.
3) Phase C: Blue.
4) Neutral/Grounded: White.


2.03 SINGLE CONDUCTOR BUILDING WIRE

A. Manufacturers:
   1. Copper Building Wire:

B. Description: Single conductor insulated wire.

C. Conductor Stranding:
   1. Feeders and Branch Circuits:
      b. Size 8 AWG and Larger: Stranded.

D. Insulation Voltage Rating: 600 V.

E. Insulation:
   1. Copper Building Wire: Type THHN/THWN or THHN/THWN-2, except as indicated below.

2.04 METAL-CLAD CABLE

A. Manufacturers:

B. Description: NFPA 70, Type MC cable listed and labeled as complying with UL 1569, and listed for use in classified firestop systems to be used.

C. Conductor Stranding:
   2. Size 8 AWG and Larger: Stranded.

D. Insulation Voltage Rating: 600 V.

E. Insulation: Type THHN, THHN/THWN, or THHN/THWN-2.

F. Grounding: Full-size integral equipment grounding conductor.

G. Armor: Steel, interlocked tape.

H. Provide PVC jacket applied over cable armor where indicated or required for environment of installed location.

2.05 WIRING CONNECTORS

A. Description: Wiring connectors appropriate for the application, suitable for use with the conductors to be connected, and listed as complying with UL 486A-486B or UL 486C as applicable.

2.06 WIRING ACCESSORIES

A. Electrical Tape:
   1. Manufacturers:
      a. 3M: www.3m.com.
   2. Vinyl Insulating Electrical Tape: Complying with ASTM D3005 and listed as complying with UL 510; minimum thickness of 7 mil; resistant to abrasion, corrosion, and sunlight; conformable for application down to 0 degrees F and suitable for continuous temperature environment up to 221 degrees F.
B. Wire Pulling Lubricant: Listed; suitable for use with the conductors or cables to be installed and suitable for use at the installation temperature.
   1. Manufacturers:
      a. 3M: www.3m.com.

PART 3 EXECUTION

3.01 EXAMINATION
   A. Verify that interior of building has been protected from weather.
   B. Verify that work likely to damage wire and cable has been completed.
   C. Verify that raceways, boxes, and equipment enclosures are installed and are properly sized to accommodate conductors and cables in accordance with NFPA 70.
   D. Verify that field measurements are as shown on the drawings.
   E. Verify that conditions are satisfactory for installation prior to starting work.

3.02 PREPARATION
   A. Clean raceways thoroughly to remove foreign materials before installing conductors and cables.

3.03 INSTALLATION
   A. Circuiting Requirements:
      1. Unless dimensioned, circuit routing indicated is diagrammatic.
      2. When circuit destination is indicated and routing is not shown, determine exact routing required.
      3. Arrange circuiting to minimize splices.
      4. Maintain separation of Class 1, Class 2, and Class 3 remote-control, signaling, and power-limited circuits in accordance with NFPA 70.
      5. Maintain separation of wiring for emergency systems in accordance with NFPA 70.
      6. Circuiting Adjustments: Unless otherwise indicated, when branch circuits are shown as separate, combining them together in a single raceway is permitted, under the following conditions:
         a. Provide no more than six current-carrying conductors in a single raceway. Dedicated neutral conductors are considered current-carrying conductors.
         b. Increase size of conductors as required to account for ampacity derating.
         c. Size raceways, boxes, etc. to accommodate conductors.
   B. Install products in accordance with manufacturer's instructions.
   C. Install conductors and cable in a neat and workmanlike manner in accordance with NECA 1.
   D. Install metal-clad cable (Type MC) in accordance with NECA 120.
   E. Installation in Raceway:
      1. Tape ends of conductors and cables to prevent infiltration of moisture and other contaminants.
      2. Pull all conductors and cables together into raceway at same time.
      3. Do not damage conductors and cables or exceed manufacturer's recommended maximum pulling tension and sidewall pressure.
      4. Use suitable wire pulling lubricant where necessary, except when lubricant is not recommended by the manufacturer.
   F. Paralleled Conductors: Install conductors of the same length and terminate in the same manner.
   G. Secure and support conductors and cables in accordance with NFPA 70 using suitable supports and methods approved by the authority having jurisdiction. Provide independent support from building structure. Do not provide support from raceways, piping, ductwork, or other systems.
   H. Terminate cables using suitable fittings.
1. Metal-Clad Cable (Type MC):
   a. Use listed fittings.
   b. Cut cable armor only using specialized tools to prevent damaging conductors or insulation. Do not use hacksaw or wire cutters to cut armor.

I. Install conductors with a minimum of 12 inches of slack at each outlet.

J. Neatly train and bundle conductors inside boxes, wireways, panelboards and other equipment enclosures.

K. Make wiring connections using specified wiring connectors.
   1. Make splices and taps only in accessible boxes. Do not pull splices into raceways or make splices in conduit bodies or wiring gutters.
   2. Remove appropriate amount of conductor insulation for making connections without cutting, nicking or damaging conductors.
   3. Do not remove conductor strands to facilitate insertion into connector.
   4. Clean contact surfaces on conductors and connectors to suitable remove corrosion, oxides, and other contaminants. Do not use wire brush on plated connector surfaces.

L. Insulate splices and taps that are made with uninsulated connectors using methods suitable for the application, with insulation and mechanical strength at least equivalent to unspliced conductors.

M. Insulate ends of spare conductors using vinyl insulating electrical tape.

N. Install firestopping to preserve fire resistance rating of partitions and other elements, using materials and methods specified in Section 07 8400.

O. Unless specifically indicated to be excluded, provide final connections to all equipment and devices, including those furnished by others, as required for a complete operating system.

3.04 FIELD QUALITY CONTROL

A. Perform inspection, testing, and adjusting in accordance with Section 01 4000.

B. Inspect and test in accordance with NETA ATS, except Section 4.

C. Perform inspections and tests listed in NETA ATS, Section 7.3.2. The insulation resistance test is required for all conductors. The resistance test for parallel conductors listed as optional is not required.

D. Correct deficiencies and replace damaged or defective conductors and cables.

END OF SECTION
SECTION 26 0526
GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.01 SECTION INCLUDES
A. Grounding and bonding requirements.
B. Conductors for grounding and bonding.
C. Connectors for grounding and bonding.
D. Ground bars.

1.02 RELATED REQUIREMENTS
A. Section 26 0519 - Low-Voltage Electrical Power Conductors and Cables: Additional requirements for conductors for grounding and bonding, including conductor color coding.
   1. Includes oxide inhibiting compound.
B. Section 26 0553 - Identification for Electrical Systems: Identification products and requirements.

1.03 REFERENCE STANDARDS
A. NECA 1 - Standard for Good Workmanship in Electrical Construction; National Electrical Contractors Association; 2010.
C. NFPA 70 - National Electrical Code; National Fire Protection Association; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
D. UL 467 - Grounding and Bonding Equipment; Current Edition, Including All Revisions.

1.04 SUBMITTALS
A. See Section 01 3000 - Administrative Requirements for submittals procedures.
B. Product Data: Provide manufacturer's standard catalog pages and data sheets for grounding and bonding system components.
C. Field quality control test reports.
D. Project Record Documents: Record actual locations of grounding electrode system components and connections.

1.05 QUALITY ASSURANCE
A. Conform to requirements of NFPA 70.

PART 2 PRODUCTS

2.01 GROUNDING AND BONDING REQUIREMENTS
A. Existing Work: Where existing grounding and bonding system components are indicated to be reused, they may be reused only where they are free from corrosion, integrity and continuity are verified, and where acceptable to the authority having jurisdiction.
B. Do not use products for applications other than as permitted by NFPA 70 and product listing.
C. Unless specifically indicated to be excluded, provide all required components, conductors, connectors, conduit, boxes, fittings, supports, accessories, etc. as necessary for a complete grounding and bonding system.
D. Where conductor size is not indicated, size to comply with NFPA 70 but not less than applicable minimum size requirements specified.

2.02 GROUNDING AND BONDING COMPONENTS
A. General Requirements:
1. Provide products listed, classified, and labeled by Underwriter's Laboratories Inc. (UL) or testing firm acceptable to authority having jurisdiction as suitable for the purpose indicated.
2. Provide products listed and labeled as complying with UL 467 where applicable.

B. Conductors for Grounding and Bonding, in addition to requirements of Section 26 0519:
1. Use insulated copper conductors unless otherwise indicated.
   a. Exceptions:
      1) Use bare copper conductors where installed underground in direct contact with earth.
      2) Use bare copper conductors where directly encased in concrete (not in raceway).

C. Connectors for Grounding and Bonding:
1. Description: Connectors appropriate for the application and suitable for the conductors and items to be connected; listed and labeled as complying with UL 467.
2. Unless otherwise indicated, use exothermic welded connections for underground, concealed and other inaccessible connections.
3. Unless otherwise indicated, use mechanical connectors, compression connectors, or exothermic welded connections for accessible connections.
4. Manufacturers - Mechanical and Compression Connectors:
5. Manufacturers - Exothermic Welded Connections:

D. Ground Bars:
1. Description: Copper rectangular ground bars with mounting brackets and insulators.
2. Size: As indicated.
3. Holes for Connections: As indicated or as required for connections to be made.
4. Manufacturers:

E. Oxide Inhibiting Compound: Comply with Section 26 0519.

PART 3 EXECUTION

3.01 EXAMINATION
A. Verify that work likely to damage grounding and bonding system components has been completed.
B. Verify that field measurements are as shown on the drawings.
C. Verify that conditions are satisfactory for installation prior to starting work.

3.02 INSTALLATION
A. Install products in accordance with manufacturer’s instructions.
B. Install grounding and bonding system components in a neat and workmanlike manner in accordance with NECA 1.
C. Make grounding and bonding connections using specified connectors.
   1. Remove appropriate amount of conductor insulation for making connections without cutting, nicking or damaging conductors. Do not remove conductor strands to facilitate insertion into connector.
   2. Remove nonconductive paint, enamel, or similar coating at threads, contact points, and contact surfaces.
3. Exothermic Welds: Make connections using molds and weld material suitable for the items to be connected in accordance with manufacturer's recommendations.

4. Mechanical Connectors: Secure connections according to manufacturer's recommended torque settings.

5. Compression Connectors: Secure connections using manufacturer's recommended tools and dies.

D. Identify grounding and bonding system components in accordance with Section 26 0553.

END OF SECTION
SECTION 26 0529
HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Support and attachment components for equipment, conduit, cable, boxes, and other electrical work.

1.02 RELATED REQUIREMENTS

A. Section 26 0534 - Conduit: Additional support and attachment requirements for conduits.
B. Section 26 0537 - Boxes: Additional support and attachment requirements for boxes.
C. Section 26 5100 - Interior Lighting: Additional support and attachment requirements for interior luminaires.

1.03 REFERENCE STANDARDS

D. MFMA-4 - Metal Framing Standards Publication; Metal Framing Manufacturers Association; 2004.
E. NECA 1 - Standard for Good Workmanship in Electrical Construction; National Electrical Contractors Association; 2010.
F. NFPA 70 - National Electrical Code; National Fire Protection Association; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

1.05 QUALITY ASSURANCE

A. Comply with NFPA 70.
B. Comply with applicable building code.

PART 2 PRODUCTS

2.01 SUPPORT AND ATTACHMENT COMPONENTS

A. General Requirements:
   1. Provide all required hangers, supports, anchors, fasteners, fittings, accessories, and hardware as necessary for the complete installation of electrical work.
   2. Provide products listed, classified, and labeled by Underwriter's Laboratories Inc. (UL) or testing firm acceptable to authority having jurisdiction as suitable for the purpose indicated, where applicable.
   3. Where support and attachment component types and sizes are not indicated, select in accordance with manufacturer's application criteria as required for the load to be supported with a minimum safety factor of ______. Include consideration for vibration, equipment operation, and shock loads where applicable.
   4. Do not use products for applications other than as permitted by NFPA 70 and product listing.
   5. Steel Components: Use corrosion resistant materials suitable for the environment where installed.
      a. Zinc-Plated Steel: Electroplated in accordance with ASTM B633.
b. Galvanized Steel: Hot-dip galvanized after fabrication in accordance with ASTM A123/A123M or ASTM A153/A153M.

B. Conduit and Cable Supports: Straps, clamps, etc. suitable for the conduit or cable to be supported.
   1. Conduit Straps: One-hole or two-hole type; steel or malleable iron.
   2. Conduit Clamps: Bolted type unless otherwise indicated.
   3. Manufacturers:

C. Outlet Box Supports: Hangers, brackets, etc. suitable for the boxes to be supported.
   1. Manufacturers:

D. Metal Channel (Strut) Framing Systems: Factory-fabricated continuous-slot metal channel (strut) and associated fittings, accessories, and hardware required for field-assembly of supports.
   2. Manufacturers:

E. Hanger Rods: Threaded zinc-plated steel unless otherwise indicated.
F. Anchors and Fasteners:
   1. Unless otherwise indicated and where not otherwise restricted, use the anchor and fastener types indicated for the specified applications.

PART 3 EXECUTION

3.01 EXAMINATION
   A. Verify that field measurements are as shown on the drawings.
   B. Verify that mounting surfaces are ready to receive support and attachment components.
   C. Verify that conditions are satisfactory for installation prior to starting work.

3.02 INSTALLATION
   A. Install products in accordance with manufacturer's instructions.
   B. Install support and attachment components in a neat and workmanlike manner in accordance with NECA 1.
   C. Provide independent support from building structure. Do not provide support from piping, ductwork, or other systems.
   D. Unless specifically indicated or approved by Strategic Energy Solutions, Inc., do not provide support from suspended ceiling support system or ceiling grid.
   E. Unless specifically indicated or approved by Strategic Energy Solutions, Inc., do not provide support from roof deck.
   F. Do not penetrate or otherwise notch or cut structural members without approval of Structural Engineer.
   G. Equipment Support and Attachment:
1. Use metal fabricated supports or supports assembled from metal channel (strut) to support equipment as required.
2. Use metal channel (strut) secured to studs to support equipment surface-mounted on hollow stud walls when wall strength is not sufficient to resist pull-out.
3. Use metal channel (strut) to support surface-mounted equipment in wet or damp locations to provide space between equipment and mounting surface.
4. Securely fasten floor-mounted equipment. Do not install equipment such that it relies on its own weight for support.

H. Secure fasteners according to manufacturer's recommended torque settings.
I. Remove temporary supports.

3.03 FIELD QUALITY CONTROL
A. Inspect support and attachment components for damage and defects.
B. Repair cuts and abrasions in galvanized finishes using zinc-rich paint recommended by manufacturer. Replace components that exhibit signs of corrosion.
C. Correct deficiencies and replace damaged or defective support and attachment components.

END OF SECTION
SECTION 26 0534
CONDUIT

PART 1  GENERAL

1.01  SECTION INCLUDES
A. Flexible metal conduit (FMC).
B. Electrical metallic tubing (EMT).
C. Conduit fittings.
D. Conduit, fittings and conduit bodies.

1.02  RELATED REQUIREMENTS
A. Section 07 8400 - Firestopping.
B. Section 26 0526 - Grounding and Bonding for Electrical Systems.
C. Section 26 0529 - Hangers and Supports for Electrical Systems.
D. Section 26 0553 - Identification for Electrical Systems.
E. Section 26 0537 - Boxes.

1.03  REFERENCE STANDARDS
A. ANSI C80.1 - American National Standard for Electrical Rigid Steel Conduit (ERSC); 2005.
B. ANSI C80.3 - American National Standard for Steel Electrical Metallic Tubing (EMT); 2005.
C. NECA 1 - Standard for Good Workmanship in Electrical Construction; National Electrical Contractors Association; 2010.
D. NEMA FB 1 - Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit, Electrical Metallic Tubing, and Cable; National Electrical Manufacturers Association; 2012 (ANSI/NEMA FB 1).
E. NEMA TC 2 - Electrical Polyvinyl Chloride (PVC) Conduit; National Electrical Manufacturers Association; 2003.
G. NFPA 70 - National Electrical Code; National Fire Protection Association; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
H. UL 1 - Flexible Metal Conduit; Current Edition, Including All Revisions.
I. UL 514B - Conduit, Tubing, and Cable Fittings; Current Edition, Including All Revisions.
J. UL 797 - Electrical Metallic Tubing-Steel; Current Edition, Including All Revisions.

1.04  SUBMITTALS
A. See Section 01 3000 - Administrative Requirements for submittals procedures.
B. Project Record Documents: Accurately record actual routing of conduits larger than 2 inches.

1.05  QUALITY ASSURANCE
A. Conform to requirements of NFPA 70.
B. Products: Listed and classified by Underwriters Laboratories Inc. as suitable for purpose specified and shown.

1.06  DELIVERY, STORAGE, AND HANDLING
A. Receive, inspect, handle, and store conduit and fittings in accordance with manufacturer's instructions.
B. Accept conduit on site. Inspect for damage.
C. Protect conduit from corrosion and entrance of debris by storing above grade. Provide appropriate covering.
D. Protect PVC conduit from sunlight.

PART 2 PRODUCTS

2.01 CONDUIT REQUIREMENTS

A. Provide all conduit, fittings, supports, and accessories required for a complete raceway system.
B. Do not re-use existing conduits that have been demolished. All products shall be new.
C. Provide products listed, classified, and labeled by Underwriter's Laboratories Inc. (UL) or testing firm acceptable to authority having jurisdiction as suitable for the purpose indicated.
D. Where conduit size is not indicated, size to comply with NFPA 70 but not less than applicable minimum size requirements specified.

2.02 METAL CONDUIT

A. Rigid Steel Conduit: ANSI C80.1.
B. Fittings and Conduit Bodies: NEMA FB 1; material to match conduit.

2.03 FLEXIBLE METAL CONDUIT (FMC)

A. Manufacturers:
B. Description: NFPA 70, Type FMC standard wall steel flexible metal conduit listed and labeled as complying with UL 1, and listed for use in classified firestop systems to be used.
C. Fittings:
   1. Description: Fittings complying with NEMA FB 1 and listed and labeled as complying with UL 514B.
   2. Material: Use steel or malleable iron.
D. Description: Interlocked aluminum construction.
E. Fittings: NEMA FB 1.

2.04 ELECTRICAL METALLIC TUBING (EMT)

A. Manufacturers:
B. Description: NFPA 70, Type EMT steel electrical metallic tubing complying with ANSI C80.3 and listed and labeled as complying with UL 797.
C. Fittings:
   1. Description: Fittings complying with NEMA FB 1 and listed and labeled as complying with UL 514B.
   2. Material: Use steel or malleable iron.
   3. Connectors and Couplings: Use compression (gland) or set-screw type.
      a. Do not use indenter type connectors and couplings.
D. Factory painted conduit: Allied Tube & Conduit "True Color EMT"

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that field measurements are as shown on drawings.
B. Verify that mounting surfaces are ready to receive conduits.
C. Verify that conditions are satisfactory for installation prior to starting work.
D. Verify routing and termination locations of conduit prior to rough-in.
E. Conduit routing is shown on drawings in approximate locations unless dimensioned. Route as required to complete wiring system.

3.02 INSTALLATION

A. Install products in accordance with manufacturer’s instructions.
B. Install conduit in a neat and workmanlike manner in accordance with NECA 1.
C. Conduit Routing:
   1. Unless dimensioned, conduit routing indicated is diagrammatic.
   2. When conduit destination is indicated and routing is not shown, determine exact routing required.
   3. Conceal all conduits unless specifically indicated to be exposed.
   4. Conduits in the following areas may be exposed, unless otherwise indicated:
      a. Electrical rooms.
      b. Mechanical equipment rooms.
      c. Within joists in areas with no ceiling.
   5. Arrange conduit to maintain adequate headroom, clearances, and access.
   6. Arrange conduit to provide no more than the equivalent of four 90 degree bends between pull points.
   7. Route conduits above water and drain piping where possible.
D. Conduit Support:
   1. Secure and support conduits in accordance with NFPA 70 and Section 26 0529 using suitable supports and methods approved by the authority having jurisdiction.
   2. Provide independent support from building structure. Do not provide support from piping, ductwork, or other systems.
   3. Installation Above Suspended Ceilings: Do not provide support from ceiling support system. Do not provide support from ceiling grid or allow conduits to lay on ceiling tiles.
E. Connections and Terminations:
   1. Use suitable adapters where required to transition from one type of conduit to another.
   2. Provide insulating bushings or insulated throats at all conduit terminations to protect conductors.
   3. Secure joints and connections to provide maximum mechanical strength and electrical continuity.
F. Penetrations:
   1. Do not penetrate or otherwise notch or cut structural members, including footings and grade beams, without approval of Structural Engineer.
   2. Make penetrations perpendicular to surfaces unless otherwise indicated.
   3. Provide sleeves for penetrations as indicated or as required to facilitate installation. Set sleeves flush with exposed surfaces unless otherwise indicated or required.
   4. Conceal bends for conduit risers emerging above ground.
   5. Seal interior of conduits entering the building from underground at first accessible point to prevent entry of moisture and gases.
   6. Where conduits penetrate waterproof membrane, seal as required to maintain integrity of membrane.
   7. Make penetrations for roof-mounted equipment within associated equipment openings and curbs where possible to minimize roofing system penetrations. Where penetrations are necessary, seal as indicated or as required to preserve integrity of roofing system and maintain roof warranty. Include proposed locations of penetrations and methods for sealing with submittals.
   8. Install firestopping to preserve fire resistance rating of partitions and other elements, using materials and methods specified in Section 07 8400.
G. Conduit Movement Provisions: Where conduits are subject to movement, provide expansion and expansion/deflection fittings to prevent damage to enclosed conductors or connected equipment. This includes, but is not limited to:
1. Where conduits cross structural joints intended for expansion, contraction, or deflection.
2. Where conduits are subject to earth movement by settlement or frost.

H. Condensation Prevention: Where conduits cross barriers between areas of potential substantial temperature differential, provide sealing fitting or approved sealing compound at an accessible point near the penetration to prevent condensation. This includes, but is not limited to:
   1. Where conduits pass from outdoors into conditioned interior spaces.
   2. Where conduits pass from unconditioned interior spaces into conditioned interior spaces.

I. Provide grounding and bonding in accordance with Section 26 0526.

3.03 FIELD QUALITY CONTROL
A. See Section 01 4000 - Quality Requirements, for additional requirements.
B. Repair cuts and abrasions in galvanized finishes using zinc-rich paint recommended by manufacturer. Replace components that exhibit signs of corrosion.
C. Correct deficiencies and replace damaged or defective conduits.

3.04 INTERFACE WITH OTHER PRODUCTS
A. Install conduit to preserve fire resistance rating of partitions and other elements, using materials and methods specified in Section 07 8400.

END OF SECTION
SECTION 26 0537
BOXES

PART 1 GENERAL

1.01 SECTION INCLUDES
A. Outlet and device boxes up to 100 cubic inches, including those used as junction and pull boxes.
B. Cabinets and enclosures, including junction and pull boxes larger than 100 cubic inches.
C. Wall and ceiling outlet boxes.
D. Pull and junction boxes.

1.02 RELATED REQUIREMENTS
A. Section 07 8400 - Firestopping.
B. Section 26 0526 - Grounding and Bonding for Electrical Systems.
C. Section 26 0529 - Hangers and Supports for Electrical Systems.
D. Section 26 0553 - Identification for Electrical Systems: Identification products and requirements.
E. Section 26 2726 - Wiring Devices:
   1. Wall plates.
F. Section 26 2726 - Wiring Devices: Wall plates in finished areas.

1.03 REFERENCE STANDARDS
A. NECA 1 - Standard for Good Workmanship in Electrical Construction; National Electrical Contractors Association; 2010.
B. NECA 130 - Standard for Installing and Maintaining Wiring Devices; National Electrical Contractors Association; 2010.
C. NEMA FB 1 - Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit, Electrical Metallic Tubing, and Cable; National Electrical Manufacturers Association; 2012 (ANSI/NEMA FB 1).
D. NEMA OS 1 - Sheet-Steel Outlet Boxes, Device Boxes, Covers, and Box Supports; National Electrical Manufacturers Association; 2008 (Revised 2010) (ANSI/NEMA OS 1).
E. NEMA OS 2 - Nonmetallic Outlet Boxes, Device Boxes, Covers and Box Supports; National Electrical Manufacturers Association; 2008 (Revised 2010) (ANSI/NEMA OS 2).
F. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum); National Electrical Manufacturers Association; 2008.
G. NFPA 70 - National Electrical Code; National Fire Protection Association; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

1.04 SUBMITTALS
A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
B. Project Record Documents: Record actual locations and mounting heights of outlet, pull, and junction boxes on project record documents.
1.05 QUALITY ASSURANCE
   A. Conform to requirements of NFPA 70.

PART 2 PRODUCTS

2.01 BOXES
   A. General Requirements:
      1. Do not use boxes and associated accessories for applications other than as permitted by NFPA 70 and product listing.
      2. Provide all boxes, fittings, supports, and accessories required for a complete raceway system and to accommodate devices and equipment to be installed.
      3. Provide products listed, classified, and labeled by Underwriter's Laboratories Inc. (UL) or testing firm acceptable to authority having jurisdiction as suitable for the purpose indicated.
      4. Where box size is not indicated, size to comply with NFPA 70 but not less than applicable minimum size requirements specified.
      5. Provide grounding terminals within boxes where equipment grounding conductors terminate.
   B. Outlet and Device Boxes Up to 100 cubic inches, Including Those Used as Junction and Pull Boxes:
      1. Use sheet-steel boxes for dry locations unless otherwise indicated or required.
      2. Use cast iron boxes or cast aluminum boxes for damp or wet locations unless otherwise indicated or required; furnish with compatible weatherproof gasketed covers.
      3. Use suitable masonry type boxes where flush-mounted in masonry walls.
      4. Use raised covers suitable for the type of wall construction and device configuration where required.
      5. Use shallow boxes where required by the type of wall construction.
      6. Do not use "through-wall" boxes designed for access from both sides of wall.
      7. Sheet-Steel Boxes: Comply with NEMA OS 1, and list and label as complying with UL 514A.
      8. Cast Metal Boxes: Comply with NEMA FB 1, and list and label as complying with UL 514A; furnish with threaded hubs.
      9. Boxes for Supporting Luminaires and Ceiling Fans: Listed as suitable for the type and weight of load to be supported; furnished with fixture stud to accommodate mounting of luminaire where required.
     11. Wall Plates: Comply with Section 26 2726.
   C. Cabinets and Enclosures, Including Junction and Pull Boxes Larger Than 100 cubic inches:
      1. Comply with NEMA 250, and list and label as complying with UL 50 and UL 50E, or UL 508A.
      2. NEMA 250 Environment Type, Unless Otherwise Indicated:
         a. Junction and Pull Boxes Larger Than 100 cubic inches:
            i. Provide screw-cover or hinged-cover enclosures unless otherwise indicated.

2.02 MANUFACTURERS
   C. Thomas & Betts Corporation.
   D. Raco, A Hubbell Company.

2.03 WALL & CEILING OUTLET BOXES
   A. Sheet Metal Outlet Boxes: NEMA OS 1, galvanized steel.
      1. Luminaire and Equipment Supporting Boxes: Rated for weight of equipment supported; include 1/2 inch male fixture studs where required.
2. Minimum size for communications, fire alarm, sound system and security system rough-ins shall be 4” square, 3-1/2” deep unless otherwise noted.

B. Cast Boxes: NEMA FB 1, Type FD, cast ferroalloy. Provide gasketed cover by box manufacturer. Provide threaded hubs.

C. Wall Plates for Finished Areas: As specified in Section 26 2726.

2.04 PULL AND JUNCTION BOXES

A. Sheet Metal Boxes: NEMA OS 1, galvanized steel.

B. Hinged Enclosures: As specified in Section 26 2716.

C. Surface Mounted Cast Metal Box: NEMA 250, Type 4; flat-flanged, surface mounted junction box:
   1. Material: Galvanized cast iron.
   2. Cover: Furnish with ground flange, neoprene gasket, and stainless steel cover screws.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that field measurements are as shown on drawings.

B. Verify that mounting surfaces are ready to receive boxes.

C. Verify that conditions are satisfactory for installation prior to starting work.

D. Verify locations of floor boxes and outlets in offices and work areas prior to rough-in.

3.02 INSTALLATION

A. Install products in accordance with manufacturer's instructions.

B. Perform work in a neat and workmanlike manner in accordance with NECA 1 and, where applicable, NECA 130, including mounting heights specified in those standards where mounting heights are not indicated.

C. Arrange equipment to provide minimum clearances in accordance with manufacturer's instructions and NFPA 70.

D. Box Supports:
   1. Secure and support boxes in accordance with NFPA 70 and Section 26 0529 using suitable supports and methods approved by the authority having jurisdiction.
   2. Provide independent support from building structure except for cast metal boxes (other than boxes used for fixture support) supported by threaded conduit connections in accordance with NFPA 70. Do not provide support from piping, ductwork, or other systems.

E. Install boxes plumb and level.

F. Flush-Mounted Boxes:
   1. Install boxes in noncombustible materials such as concrete, tile, gypsum, plaster, etc. so that front edge of box or associated raised cover is not set back from finished surface more than 1/4 inch or does not project beyond finished surface.
   2. Install boxes in combustible materials such as wood so that front edge of box or associated raised cover is flush with finished surface.
   3. Repair rough openings around boxes in noncombustible materials such as concrete, tile, gypsum, plaster, etc. so that there are no gaps or open spaces greater than 1/8 inch at the edge of the box.

G. Install boxes as required to preserve insulation integrity.

H. Install permanent barrier between ganged wiring devices when voltage between adjacent devices exceeds 300 V.

I. Install firestopping to preserve fire resistance rating of partitions and other elements, using materials and methods specified in Section 07 8400.

J. Close unused box openings.
K. Install blank wall plates on junction boxes and on outlet boxes with no devices or equipment installed or designated for future use.
L. Provide grounding and bonding in accordance with Section 26 0526.
M. Identify boxes in accordance with Section 26 0553.
N. Install boxes securely, in a neat and workmanlike manner, as specified in NECA 1.
O. Install in locations as shown on Drawings, and as required for splices, taps, wire pulling, equipment connections, and as required by NFPA 70.
P. Coordinate installation of outlet boxes for equipment connected under Section 26 2717.
Q. Set wall mounted boxes at elevations to accommodate mounting heights indicated.
R. Electrical boxes are shown on Drawings in approximate locations unless dimensioned.
   1. Adjust box locations up to 10 feet if required to accommodate intended purpose.
S. Orient boxes to accommodate wiring devices oriented as specified in Section 26 2726.
T. Maintain headroom and present neat mechanical appearance.
U. Install pull boxes and junction boxes above accessible ceilings and in unfinished areas only.
V. Inaccessible Ceiling Areas: Install outlet and junction boxes no more than 6 inches from ceiling access panel or from removable recessed luminaire.
W. Install boxes to preserve fire resistance rating of partitions and other elements, using materials and methods specified in Section 07 8400.
X. Coordinate mounting heights and locations of outlets mounted above counters, benches, and backsplashes.
Y. Locate outlet boxes to allow luminaires positioned as shown on reflected ceiling plan.
Z. Align adjacent wall mounted outlet boxes for switches, thermostats, and similar devices.
AA. Use flush mounting outlet box in finished areas.
AB. Locate flush mounting box in masonry wall to require cutting of masonry unit corner only. Coordinate masonry cutting to achieve neat opening.
AC. Provide separate boxes for emergency power and normal power systems.
AD. Do not install flush mounting box back-to-back in walls; provide minimum 6 inches separation. Provide minimum 24 inches separation in acoustic rated walls.
AE. Secure flush mounting box to interior wall and partition studs. Accurately position to allow for surface finish thickness.
AF. Use stamped steel bridges to fasten flush mounting outlet box between studs.
AG. Install flush mounting box without damaging wall insulation or reducing its effectiveness.
AH. Use adjustable steel channel fasteners for hung ceiling outlet box.
AI. Do not fasten boxes to ceiling support wires.
AJ. Support boxes independently of conduit, except cast box that is connected to two rigid metal conduits both supported within 12 inches of box.
AK. Use gang box where more than one device is mounted together. Do not use sectional box.
AL. Use gang box with plaster ring for single device outlets.
AM. Set floor boxes level.

3.03 ADJUSTING

A. Adjust flush-mounting outlets to make front flush with finished wall material.
B. Install knockout closures in unused box openings.
3.04 CLEANING

A. Clean interior of boxes to remove dirt, debris, plaster and other foreign material.

END OF SECTION
SECTION 26 0553
IDENTIFICATION FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.01 SECTION INCLUDES
   A. Electrical identification requirements.
   B. Identification for raceways.
   C. Identification for conductors and communication and control cables.
   D. Warning signs and labels.
   E. Equipment identification labels

1.02 RELATED REQUIREMENTS
   A. Section 09 9000 - Painting and Coating.
   B. Section 26 0519 - Low-Voltage Electrical Power Conductors and Cables: Color coding for power conductors and cables 600 V and less; vinyl color coding electrical tape.

1.03 REFERENCE STANDARDS
   C. NFPA 70 - National Electrical Code; National Fire Protection Association; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

1.04 SUBMITTALS
   A. See Section 01 3000 - Administrative Requirements for submittals procedures.
   B. Product Data: Provide catalog data for nameplates, labels, and markers.
   C. Manufacturer's Instructions: Indicate application conditions and limitations of use stipulated by product testing agency specified under Quality Assurance. Include instructions for storage, handling, protection, examination, preparation and installation of product.

1.05 QUALITY ASSURANCE
   A. Conform to requirements of NFPA 70.

1.06 COORDINATION
   A. Coordinate identification names, abbreviations, colors, and other features with requirements in the Contract Documents, Shop Drawings, manufacturer's wiring diagram, and the Operation and Manual, and with those required by codes, standards, and 29 CFR 1910.145. Use consistent designations throughout Project.
   B. Coordinate installation of identifying devices with completion of covering and painting of surfaces where devices are to applied.
   C. Coordinate installation of identifying devices with location of access panels and doors.

PART 2 PRODUCTS

2.01 IDENTIFICATION REQUIREMENTS
   A. Identification for Equipment:
      1. Use identification nameplate to identify each piece of electrical distribution and control equipment and associated sections, compartments, and components.
   B. Identification for Conductors and Cables:
      1. Color Coding for Power Conductors 600 V and Less: Comply with Section 26 0519.
      2. Use identification nameplate or identification label to identify color code for ungrounded and grounded power conductors inside door or enclosure at each piece of feeder or
branch-circuit distribution equipment when premises has feeders or branch circuits served by more than one nominal voltage system.

C. Conduit: Conduit markers.
D. Control Device Station: Labels.
E. Electrical Distribution and Control Equipment Enclosures: Nameplates.
F. Junction Box Load Connections: Wire markers.
G. Outlet Box Load Connections: Wire markers.
I. Pull Box Load Connections: Wire markers.

2.02 MANUFACTURERS
A. Brady Corp B-500 Series.
B. Panduit
C. Thomas & Betts.
D. Substitutions: See Section 01 6000 - Product Requirements.

2.03 RACEWAY IDENTIFICATION MATERIALS
A. Comply with ANSI A13.1 for minimum size letters for legend and for minimum length of color field for each raceway and cable size.
B. Color for printed Legend:
   1. Power Circuits: Black letters on an orange field.
   2. Legend: Indicate system or service and voltage, if applicable
C. Snap -Around labels: Slit, pretensioned, flexible, preprinted, color-coded acrylic sleeves, with diameter sized to suite diameter of raceway or cable it identifies and to stay in place by gripping action.
D. Snap-Around, Color-Coding Bands: Slit, pretensioned, flexible, solid-colored acrylic sleeves, 2 inches (50 mm) long, with diameter sized to suite diameter of raceway or cable it identifies and to stay in place by gripping action.

2.04 CONDUCTOR AND COMMUNICATION-AND CONTROL-CABLE IDENTIFICATION MATERIALS
A. Aluminum Wraparound Marker Labels: Cut from 0.014-inch- (0.35 mm) thick aluminum sheet, with stamped, embossed, or scribed legend, and fitted with tabs and matching slots for permanently securing around wire or cable jacket or around groups of conductors.
B. Metal Tags: Brass or aluminum, 2x2x0.5 inch, with stamped legend, punched for use with self-locking nylon tie fastener.
C. Write-On tags: Polyester tag, 0.01 inch 0.015 inch thick, with corrosion-resistant grommet and polyester or nylon tie for attachment to conductor or cable.
   1. Master for Tags: Permanent, waterproof, black ink marker recommended by tag manufacturer.

2.05 EQUIPMENT IDENTIFICATION LABELS
A. Engraved, Laminated Acrylic or Melamine Labels: Punched or drilled for screw mounting. White letters on a dark-gray background. Minimum letter height shall be 3/8 inch (10 mm).
B. Nameplates: Engraved three-layer laminated plastic, white letters on black background. Mechanically secured nameplates
C. Letter Size:
   1. Use 1/8 inch letters for identifying individual equipment and loads.
   2. Use 1/4 inch letters for identifying grouped equipment and loads.
D. Information: List the name of the equipment or electrical board, voltage, phase, number of wires. For branch overcurrent devices list the breaker or switch number, what it feeds, size of breaker or fuse, type of fuse.
E. Labels: Embossed adhesive tape, with 3/16 inch black letters on white background. Use only for identification of individual wall switches and receptacles, control device stations, and __________.

F. WIRE AND CABLE MARKERS

G. Markers for Conductors and Cables: Use wrap-around self-adhesive vinyl cloth, wrap-around self-adhesive vinyl self-laminating, heat-shrink sleeve, plastic sleeve, plastic clip-on, or vinyl split sleeve type markers suitable for the conductor or cable to be identified.

H. Markers for Conductor and Cable Bundles: Use plastic marker tags secured by nylon cable ties.

I. Legend: Power source and circuit number or other designation indicated.

J. Text: Use factory pre-printed or machine-printed text, all capitalized unless otherwise indicated.

K. Minimum Text Height: 1/8 inch.

L. Color: Black text on white background unless otherwise indicated.

M. Color: Black on white.
   1. Legend:
      a. Power and Lighting Circuits: Branch circuit or feeder number indicated on drawings.
         1) Control Circuits: Control wire number indicated on schematic and interconnection diagrams on drawings.

2.06 WARNING SIGNS AND LABELS

A. Comply with ANSI Z535.2 or ANSI Z535.4 as applicable.

B. Warning Signs:
   1. Materials:
   2. Minimum Size: 7 by 10 inches unless otherwise indicated.

C. Warning Labels:
   1. Materials: Use factory pre-printed or machine-printed self-adhesive polyester or self-adhesive vinyl labels; UV, chemical, water, heat, and abrasion resistant; produced using materials recognized to UL 969.
   3. Minimum Size: 2 by 4 inches unless otherwise indicated.

PART 3 EXECUTION

3.01 PREPARATION

A. Clean surfaces to receive adhesive products according to manufacturer's instructions.

B. Degrease and clean surfaces to receive nameplates and labels.

3.02 APPLICATION

A. Install products in accordance with manufacturer's instructions.

B. Install identification products to be plainly visible for examination, adjustment, servicing, and maintenance. Unless otherwise indicated, locate products as follows:
   3. Free-Standing Equipment: Enclosure front; also enclosure rear for equipment with rear access.
   4. Elevated Equipment: Legible from the floor or working platform.
   5. Interior Components: Legible from the point of access.
   6. Conductors and Cables: Legible from the point of access.

C. Install identification products centered, level, and parallel with lines of item being identified.

D. Install self-adhesive labels and markers to achieve maximum adhesion, with no bubbles or wrinkles and edges properly sealed.
3.03 INSTALLATION

A. Verify identity of each item before installing identification products.
B. Location: Install identification materials and devices at locations for most convenient viewing without interference with operation and maintenance of equipment.
C. Apply identification devices to surfaces that require finish after completing finish work.
D. Attach non adhesive signs and plastic labels with screws and auxiliary hardware appropriate to the location and substrate.
E. Color-Coding for phase and voltage level identification. 600V and less: Use the colors listed below for ungrounded service, feeder, and branch-circuit conductors
   1. Color shall be factory applied.
   2. Colors for 208/120V circuits:
      a. Phase A: Black
      b. Phase B: Red
      c. Phase C: Blue
   3. Colors for 480/277 circuits:
      a. Phase A: Brown
      b. Phase B: Orange
      c. Phase C: Yellow
F. Painted Identification: Prepare surface and apply paint according to Division 09 painting sections.

END OF SECTION
SECTION 26 0926
LIGHTING CONTROL SYSTEM RELAY PANELS & DEVICES

PART 1 - GENERAL

1.01 SUMMARY
A. Section Includes:
   1. Lighting control systems.
B. Related Sections:
   1. Section [262726 - Wiring Devices]
   2. Section [260553 - Identification for Electrical Systems]
   3. Section [265100 - Interior Lighting]

1.02 REFERENCES
A. American National Standards Institute/Institute of Electrical and Electronic Engineers (ANSI/IEEE) (www.ansi.org and www.ieee.org)
B. ASTM International (ASTM) (www.astm.org)
C. International Organization for Standardization (ISO) (www.iso.ch)
D. National Electrical Manufacturers Association (NEMA) (www.nema.org)
   1. WD1 (R2005) - General Color Requirements for Wiring Devices.
E. Underwriters Laboratories, Inc. (UL) (www.ul.com)
   2. UL 489 is the UL Standard for Safety for Molded-Case Circuit Breakers, Molded-Case Switches and Circuit-Breaker Enclosures that Underwriters Laboratories uses to independently evaluate, test and List circuit breakers for use on lighting and other branch circuits in compliance with the NEC code. It is important that circuit breakers used for branch circuit over current protection are UL 489 listed to ensure that all NEC code requirements are met.

1.03 SYSTEM DESCRIPTION
A. Lighting Control System
   1. Factory assembled switching panels and interfaces and modules.
   2. Low voltage wall stations and control interfaces and sensors.

1.04 SUBMITTALS
A. Submit under provisions of Section 013300.
B. Specification Conformance Document: Indicate whether the submitted equipment either:
   1. Meets specification exactly as stated.
   2. Meets specification via an alternate means and indicate the specific methodology used.
C. Shop Drawings; include:
   1. Load schedule indicating actual connected load, load type, and voltage per circuit, circuits and their respective control zones, circuits that are on emergency, and capacity, phase, and corresponding circuit numbers.
   2. Schematic of system.
D. Product Data: Catalog cut sheets with performance specifications demonstrating compliance with specified requirements.

1.05 QUALITY ASSURANCE
A. Manufacturer: Minimum 10 years experience in manufacture of architectural lighting controls.
B. Manufacturer’s Quality System: Registered to ISO 9001:2000 Quality Standard, including in-house engineering for product design activities.

C. Architectural Lighting Control System:
   1. Listed by [CE] [CSA] [NOM] [UL] specifically for the required loads. Provide evidence of compliance upon request.

1.06 PROJECT CONDITIONS
A. Do not install equipment until following conditions can be maintained in spaces to receive equipment:
   1. Ambient temperature: 0 degrees to 40 degrees C (32 degrees to 104 degrees F).
   2. Relative humidity: Maximum 90 percent, non-condensing.
   3. Lighting control system must be protected from dust during installation.

1.07 WARRANTY
A. Provide Manufacturer’s Warranty:
   1. Standard 2-year warranty, Includes:
      a. 100 Percent Replacement Parts for Manufacturer Lighting System Components
      b. 100 Percent Manufacturer Labor Coverage to Troubleshoot and Diagnose a Lighting Issue
      c. First-Available Onsite or Remote Response Time
      d. 24 Hours Per Day, 7 Days Per Week Telephone Technical Support, Excluding Manufacturer Holidays
      e. Remote Diagnostics for Applicable Systems

1.08 MAINTENANCE MATERIAL SUBMITTALS
A. Make ordering of new equipment for expansions, replacements, and spare parts available to end user.

B. Make new replacement parts available for minimum of 10 years from date of manufacture.

PART 2 - PRODUCTS
2.01 MANUFACTURERS
A. Basis of design product: Lutron Softswitch128 or subject to compliance and prior approval with specified requirements of this section, one of the following manufacturers:
   1. Lutron Softswitch128
   2. Wattstopper
   3. Lighting Control & Design
   4. Leviton

B. Substitutions: Under provisions of Division 1.
   1. All proposed substitutions (clearly delineated as such) must be submitted in writing for approval by the design professional a minimum of 10 working days prior to the bid date and must be made available to all bidders. Proposed substitutes must be accompanied by a review of the specification noting compliance on a line-by-line basis.
   2. Any substitutions provided by the contractor shall be reviewed at the contractor’s expense by the electrical engineer at a rate of [$200.00] per hour.
   3. By using pre-approved substitutions, the contractor accepts responsibility and associated costs for all required modifications to circuitry, devices, and wiring. The contractor shall provide complete engineered shop drawings (including power wiring) with deviations for the original design highlighted in an alternate color to the engineer for review and approval prior to rough-in.

2.02 GENERAL
A. Provide hardware that is designed, tested, manufactured, and warranted by a single manufacturer.

B. Typical switching equipment is rated for 40 degrees C (104 degrees F). This is the maximum ambient temperature that can exist while the switching equipment is operating at full load.
conditions. The following statement ensures that the operating equipment is designed to operate at worst case environmental conditions without affecting product life.

C. Lighting Controls: Ten-year operational life while operating continually at any temperature in an ambient temperature range of 0 degrees C (32 degrees F) to 40 degrees C (104 degrees F) and 90 percent non-condensing relative humidity.

D. Electrostatic Discharge (ESD) testing is done according to the IEC 801-2 standard (human body model). This testing is completed on all user accessible points such as terminal blocks, buttons, and control inputs.

E. Designed and tested to withstand discharges without impairment of performance when subjected to discharges of 15,000 volts per IEC 801-2.

2.03 PANEL / RELAY PERFORMANCE REQUIREMENTS

A. Electrolytic capacitors are typically the component most sensitive to heat in a lighting circuit. Their expected lifetime doubles for every 10 degrees C that the component operates below the capacitor’s rated operating temperature.

B. Electrolytic capacitors to operate at least 20 degrees C below the component manufacturer’s maximum temperature rating when device is under fully-loaded conditions in 40 degrees C (104 degrees F) ambient temperature.

C. Capable of withstanding repetitive inrush current of 50 times operating current without impacting lifetime of dimmer/relay.

D. Design and test relays to withstand line-side surges without impairment to performance.
   1. Panels are typically installed near electrical service entrance points which are subject to more severe surges than equipment mounted far from the electrical service entrance points. Panels need to survive surges equivalent to a Category B near lightning strike without failure.
   2. Panels: Withstand surges without impairment of performance when subjected to surges of 6,000 volts, 3,000 amps per ANSI/IEEE C62.41B.

E. Utilize air gap off, activated when user selects “off” at any control to disconnect the load from line supply.

F. Possess power failure memory such that if power is interrupted and subsequently returned, lights will automatically return to same levels (on or off) prior to power interruption within 3 seconds.

G. Non-dim circuits to meet the following requirements:
   1. Rated life of relay: Minimum 1,000,000 cycles.
   2. Load switched in manner that prevents arcing at mechanical contacts when power is applied to load circuits.
   3. Fully rated output continuous duty for inductive, capacitive, and resistive loads.

2.04 POWER PANELS

A. Product: Lutron Softswitch128

B. Listed to UL 508 (United States) as industrial control equipment. CSA (Canada) certified, NOM (Mexico) approved, or CE (EU) marked as applicable.

C. Delivered and installed as a UL listed factory assembled panel.

D. Field wiring accessible from front of panel without need to remove dimmer assemblies or other components.

E. Panels passively cooled via free-convection, unaided by fans or other means.

F. Ship panels with each relay in mechanical bypass position by means of jumper bar inserted between input and load terminals. Jumpers to carry full rated load current and be reusable at any time. Mechanical bypass device to allow for switching operation of connected load with relay removed by means of circuit breaker.

G. Flush into wall or Surface mounted.
2.05 ELECTRICAL:
A. Panels contain branch circuit protection for each circuit unless the panel is a dedicated feed-through type panel or otherwise indicated on the drawings.
B. Minimum UL listed Short Circuit Current Rating (SCCR) of 22,000 A.
C. Rated life of relay: Minimum 1,000,000 cycles.
D. Load switched in manner that prevents arcing at mechanical contacts when power is applied to load circuits.
E. Fully rated output continuous duty for inductive, capacitive, and resistive loads.
F. No laptop or external hardware is required for setup or operation. All programming is completed at the panel via an integral LCD Panel Processor. The LCD panel processor allows end users to make simple changes to the system (temporary overrides, modify pattern values, move time clock events, adjust fade rates, etc.).

2.06 LCD PANEL PROCESSOR
A. System to be password protected.
B. Language selection: English.
C. Integral contact closure inputs.

2.07 PROGRAMMING AND SYSTEM OPERATION:
A. Control stations, control interfaces, and contact closure inputs
   1. Assign functionality of each control station button or infrared interface
      a. Select patterns
      b. Select customized pattern
      c. Enable/Disable time clock
      d. Initiate delay to off
      e. Toggle one, some, or all zones
   2. RS232 interface or Ethernet interface
   3. Contact closure output: Momentary or maintained
B. Time clock
   1. Integral astronomical time clock
      a. Geographic location (city or latitude/longitude).
      b. Adjustable date and time format.
      c. Adjustable starting and ending of daylight savings time.
      d. Review and modify time clock schedule to add, copy, modify, and delete events.
C. Overrides:
   1. Set circuit status
   2. Select pattern
   3. Time clock override
   4. Control station overrides
   5. After-hours override

2.08 DIAGNOSTICS AND SERVICE:
A. Replacing relay does not require re-programming of system or processor.
B. Relays: Include diagnostic LED’s to verify proper operation and assist in system troubleshooting.
C. Relay panels: Include tiered control scheme for dealing with component failure that minimizes loss of control for occupant.
   1. If lighting control system fails, lights to remain at current level. Panel processor provides local control of lights until system is repaired.
   2. If panel processor fails, lights to remain at current level. Circuit breakers can be used to turn lights off or to full light output, allowing non-dim control of lights until panel processor is repaired.
3. If relay fails, factory-installed mechanical bypass jumpers to allow each relay to be mechanically bypassed. Mechanical bypass device to allow for switching operation of connected load with relay removed by means of circuit breaker.

2.09 LOW-VOLTAGE WALL STATIONS
   A. Product: see Touch.

2.10 ELECTRONICS:
   A. The following statement provides for reliable wired communication.
   B. Use RS485 wiring for low voltage communication.

2.11 FUNCTIONALITY:
   A. Time delays inherent in large systems can cause short delays between button press and system confirmation. To avoid any confusion and preventing multiple button presses, keypads should immediately show that the button has been pressed for visual confirmation.
   B. Upon button press, LEDs to immediately illuminate.
   C. Allow for easy reprogramming without replacing unit.
   D. Replacement of units does not require reprogramming.
   E. Color: White.
   F. Color variation in same product family: Maximum \( E=1 \), CIE \( L^*a^*b^* \) color units.
   G. Visible parts: Exhibit ultraviolet color stability when tested with multiple actinic light sources as defined in ASTM D4674. Provide proof of testing upon request.
   H. Provide faceplates with concealed mounting hardware.
   I. Engrave wall stations with appropriate button, zone, and scene engraving descriptions furnished prior to fabrication.
   J. Engraving must be durable when exposed to cleaning, and normal wear.
   K. Silk-screened borders, logos, and graduations to use graphic process that chemically bonds graphics to faceplate, resistant to removal by scratching and cleaning.

2.12 LOW VOLTAGE CONTROL INTERFACES

2.13 SENSORS
   A. Ceiling and Wall Mount Occupancy/Vacancy Sensors
      2. Sensing mechanism:
         1. [Dual technology]:
            a. Utilize multiple segmented lens, with internal grooves to eliminate dust and residue build-up.
            b. Utilize an operating frequency of 32kHz or 40kHz that shall be crystal controlled to operate within plus or minus 0.005 percent tolerance.
      C. Sensors shall turn off or reduce lighting automatically after reasonable time delay when a room or area is vacated by the last person to occupy the space
      D. Sensor shall accommodate all conditions of space utilization and all irregular work hours and habits.
      E. Sensors shall be [UL], [CUL], [NOM] listed (as appropriate)
F. Sensors shall be fully adaptive and adjust their sensitivity and timing to ensure optimal lighting control for any use of the space.

G. Sensors shall have field adjustable controls for time delay and sensitivity to override any adaptive features.

H. Power failure memory:

I. Controls incorporate non-volatile memory. Should power be interrupted and subsequently restored, settings and learned parameters saved in protected memory shall not be lost.

J. Provide all necessary mounting hardware and instructions.

K. Sensors shall be Class 2 devices.

L. Indicate viewing directions on mounting bracket for all Ceiling mount sensors.

M. Provide customizable mask to block off unwanted viewing areas for all ceiling mounted sensors using infrared technology.

N. Provide swivel mount base for all wall mount sensors.

2.14 SENSOR POWER PACKS

A. For ease of mounting, installation and future service, power pack(s) shall be able to mount through a 1/2" knock-out in a standard electrical enclosure and be an integrated, self-contained unit consisting internally of an isolated load switching control relay and a transformer to provide low-voltage power. Transformer shall provide power to a minimum of three (3) sensors.

B. Power pack shall be plenum rated.

2.15 SOURCE QUALITY CONTROL

A. Perform full-function testing on completed assemblies at end of line. Statistical sampling is not acceptable.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install equipment in accordance with manufacturer’s installation instructions.

B. Provide complete installation of system in accordance with Contract Documents.

C. Provide equipment at locations and in quantities indicated on Drawings. Provide any additional equipment required to provide control intent.

3.02 SERVICE AND SUPPORT

A. STARTUP AND PROGRAMMING

1. Provide factory-certified field service engineer to make a site visit to ensure proper system installation and operation under following parameters:

   a. Qualifications for factory-certified field service engineer:

      1) Minimum experience of 2 years training in the electrical/electronic field.
      2) Certified by the equipment manufacturer on the system installed.

   b. Make a visit upon completion of installation of lighting control system:

      1) Verify connection of power feeds and load circuits.
      2) Verify connection and location of controls.
      3) Verify proper connection of panel links (low voltage/data) and address panel.
      4) Check load currents and remove by-pass jumpers.
      5) Verify system operation control by control, circuit by circuit.
      6) Verify proper operation of manufacturers interfacing equipment.
      7) Obtain sign-off on system functions.
      8) User to be trained on system operation.

2. Startup

B. Tech Support

1. Provide factory direct technical support hotline 24 hours per day, 7 days per week.
3.03 FIELD QUALITY CONTROL

3.04 CLOSEOUT ACTIVITIES

A. Standard start-up procedure for XPS includes training of customer representatives. Additional training visits may be requested for reasons such as when not all required attendees are available at the same time.

3.05 MAINTENANCE

A. Capable of providing on-site service support within 24 hours anywhere in continental United States and within 72 hours worldwide except where special visas are required.

B. Offer renewable service contract on yearly basis, to include parts, factory labor, and annual training visits. Make service contracts available up to ten years after date of system startup.

END OF SECTION
SECTION 26 5100
INTERIOR LIGHTING

PART 1 GENERAL

1.01 SECTION INCLUDES
A. Interior luminaires.
B. Emergency lighting units.
C. Exit signs.
D. Lamps.
E. Luminaire accessories.

1.02 RELATED REQUIREMENTS
A. Section 26 0537 - Boxes.
B. Section 26 5201 - Emergency Lighting Inverters
C. Section 26 5702 - Network Lighting Control System.

1.03 REFERENCE STANDARDS
A. NECA 1 - Standard for Good Workmanship in Electrical Construction; National Electrical Contractors Association; 2010.
D. NEMA WD 6 - Wiring Devices - Dimensional Requirements; National Electrical Manufacturers Association; 2002 (R2008).
E. NFPA 70 - National Electrical Code; National Fire Protection Association; 2005
G. UL 1598 - Luminaires; Current Edition, Including All Revisions.

1.04 ADMINISTRATIVE REQUIREMENTS
A. Coordination:
   1. Coordinate the installation of luminaires with mounting surfaces installed under other sections or by others. Coordinate the work with placement of supports, anchors, etc. required for mounting. Coordinate compatibility of luminaires and associated trims with mounting surfaces at installed locations.
   2. Coordinate the placement of luminaires with structural members, ductwork, piping, equipment, diffusers, fire suppression system components, and other potential conflicts installed under other sections or by others.
   3. Notify Strategic Energy Solutions, Inc. of any conflicts or deviations from the contract documents to obtain direction prior to proceeding with work.

1.05 SUBMITTALS
A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
B. Shop Drawings:
   1. Indicate dimensions and components for each luminaire that is not a standard product of the manufacturer.
   2. Provide photometric calculations where luminaires are proposed for substitution upon request.
C. Shop Drawings: Indicate dimensions and components for each fixture that is not a standard product of the manufacturer.
D. Product Data: Provide manufacturer's standard catalog pages and data sheets including detailed information on luminaire construction, dimensions, ratings, finishes, mounting requirements, listings, service conditions, photometric performance, installed accessories, and ceiling compatibility; include model number nomenclature clearly marked with all proposed features.
E. Manufacturer's Installation Instructions: Indicate application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, and installation of product.
F. Operation and Maintenance Data: Instructions for each product including information on replacement parts.
G. Maintenance Materials: Furnish the following for WSU's use in maintenance of project.
   1. See Section 01 6000 - Product Requirements, for additional provisions.
   2. Extra Lamps: Ten percent of total quantity installed for each type, but not less than two of each type.
   3. Extra Ballasts: Two percent of total quantity installed for each type, but not less than one of each type.

H. Ballast product specification sheet from manufacturer.

1.06 QUALITY ASSURANCE
A. Conform to requirements of NFPA 70.
B. Conform to requirements of NFPA 70 and NFPA 101.
C. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.

1.07 DELIVERY, STORAGE, AND PROTECTION
A. Receive, handle, and store products according to NECA/IESNA 500 (commercial lighting), NECA/IESNA 502 (industrial lighting), and manufacturer's written instructions.
B. Keep products in original manufacturer's packaging and protect from damage until ready for installation.

1.08 FIELD CONDITIONS
A. Maintain field conditions within manufacturer's required service conditions during and after installation.

1.09 WARRANTY
A. Provide two year manufacturer warranty for all linear fluorescent ballasts.
B. Provide ten year pro-rata warranty for batteries for self-powered exit signs.
C. Products: Listed and classified by Underwriters Laboratories Inc. as suitable for the purpose specified and indicated.

1.10 COORDINATION
A. Coordinate layout and installation of lighting fixtures and suspension system with other construction that penetrates ceilings or is supported by them, including HVAC equipment, fire-suppression system, and partition assemblies.

1.11 WARRANTY
A. Special warranty for ballasts: Manufacturer's standard form in which ballast manufacturer agrees to repair or replace ballasts that fail in materials or workmanship within specified warranty period.
   1. Warranty period for electronic ballasts: Five years from date of substantial completion.
B. Special warranty for T5, T5HO, and T8 fluorescent lamps: Manufacturer's standard form, made out to Owner and signed by lamp manufacturer agreeing to replace lamps that fail in materials
and workmanship, f.o.b. the nearest shipping point to project site, within specified warranty period specified below.

1. Warranty period: Two years from date of substantial completion

1.12 EXTRA MATERIALS
A. See Section 01 6000 - Product Requirements, for additional provisions.
B. Furnish two of each plastic lens type.
C. Furnish ten replacement lamps for each lamp type.
D. Furnish two of each ballast type.
E. Furnish two of each emergency battery type.

PART 2 PRODUCTS

2.01 MANUFACTURERS
A. Refer to Luminaire Schedule on Sheet E-000.

2.02 LUMINAIRES
A. Provide products that comply with requirements of NFPA 70.
B. Provide products that are listed and labeled as complying with UL 1598, where applicable.
C. Provide products that comply with requirements of NFPA 70 and NFPA 101.
D. Provide products listed and classified by Underwriters Laboratories Inc. as suitable for the purpose specified and indicated.
E. Unless otherwise indicated, provide complete luminaires including lamp(s) and all sockets, ballasts, reflectors, lenses, housings and other components required to position, energize and protect the lamp and distribute the light.
F. Unless specifically indicated to be excluded, provide all required conduit, boxes, wiring, connectors, hardware, supports, trims, accessories, etc. as necessary for a complete operating system.
G. Provide products suitable to withstand normal handling, installation, and service without any damage, distortion, corrosion, fading, discoloring, etc.
H. Fluorescent Luminaires:
   1. Provide ballast disconnecting means complying with NFPA 70 where required.
I. LED Luminaires: Listed and labeled as complying with UL 8750.

2.03 LUMINAIRES
A. Furnish products as indicated in the Luminaire Schedule included on the Drawings.

3.01 BALLASTS AND CONTROL UNITS
A. Fluorescent Ballasts General: high power factor, electronic, suitable for lamps specified
   1. Voltage: Match luminaire voltage. (refer to fixture schedule)
B. Manufacturers for Linear fluorescent ballasts:
   1. Philips Advance.
   2. Lighting Technologies Inc.
   3. Osram Sylvania
   4. General Electric
C.
D. Fluorescent Program Rapid-Start Ballasts
   1. Physical Characteristics
      a. the ballast shall be physically interchangeable with a standard electromagnetic and standard electronic ballast.
b. The electronic ballast shall be provided with integral leads, color-coded to ANSI standard C82.11 (latest version).

2. Performance Requirements
   a. Ballast shall operate from a nominal line voltage of 120, 277 volts (verify with schedule) +/-10%, 60Hz.
   b. The electronic ballast’s input current shall have a Total Harmonic Distortion (THD) of less then 10% when used with primary lamp.
   c. The electronic ballast shall have a Power Factor greater than 98% when used with primary lamp.
   d. The electronic ballast shall support a sustained short to ground or open circuit of any output leads.
   e. The electronic ballast shall be sound rated A.
   f. Ballast output frequency to the lamps shall be above 80kHz to minimize interference with infrared control systems, and eliminate visible flicker.
   g. Ballast shall be rated to start lamps at 32 degree F (0 degree C).
   h. Ballast shall be wire for parallel operation of lamps.

3. Regulatory Requirements
   a. Ballast shall meet the requirements of the Federal Communications Commission rules and regulations, part 18, for Non-Consumer equipment.
   b. The electronic ballast shall comply with all applicable state and federal efficiency standards.
   c. The electronic ballast shall be Underwriters Laboratories (UL) listed (Class P) and CSA Certified where applicable.
   d. Ballast shall be UL listed type HL for hazardous locations.

4. Other & Warranty
   a. The electronic ballast shall not contain Polychlorinated Biphenyl (PCB’s).
   b. The electronic ballast shall carry a five year warranty. Submit copy of warranty with project record documents.

E. Fluorescent Instant-Start Ballasts

1. Physical Characteristics
   a. The ballast shall be physically interchangeable with standard electromagnetic and standard electronic ballast.
   b. The electronic ballast shall be provided with integral leads, color-coded to ANSI standard C82.11 (latest version).

2. Performance Requirements
   a. Ballast shall operate from a 60Hz input source of 120, 277 volts (verify with schedule) +/-10%, with no damage to the ballast.
   b. The electronic ballast’s input current shall have a Total Harmonic Distortion (THD) of less then 10% when used with primary lamp.
   c. The electronic ballast shall have a Power Factor greater than 98% when used with primary lamp.
   d. Ballast shall have a minimum ballast factor for primary lamp application as follows: 0.85 or 0.88 for normal light output.
   e. Ballast shall provide for a Lamp Current Crest Factor of 1.7 or less in accordance with lamp manufacturer recommendations.
   f. The electronic ballast shall support a sustained short to ground or open circuit of any output leads.
   g. The electronic ballast shall be sound rated A.
   h. Ballast output frequency to the lamps shall be above 80kHz to minimize interference with infrared control systems, and eliminate visible flicker.
   i. Ballast shall have a minimum starting temperature of 0 degree F (-18 degree C).
   j. Ballasts shall provide Independent Lamp Operation (ILO) allowing remaining lamps(s) to maintain full light output when one or more lamps fail.
   k. Ballast shall contain auto restart circuitry in order to restart lamps without resetting power.
3. Regulatory Requirements
   a. Ballast shall meet the requirements of the Federal Communications Commission rules and regulations, part 18, for Non-Consumer equipment.
   b. The electronic ballast shall comply with all applicable state and federal efficiency standards.
   c. The electronic ballast shall be Underwriters Laboratories (UL) listed (Class P) and CSA Certified where applicable.
   d. Ballast shall be UL listed type HL for hazardous locations.
4. Other & Warranty
   a. The electronic ballast shall not contain Polychlorinated Biphenyl (PCB's).
   b. The electronic ballast shall carry a five year warranty. Submit copy of warranty with project record documents.

F. Ballasts for Compact fluorescent lamps
1. Description: Electronic programmed rapid-start type, complying with ANSI C 82.11, designed for type and quantity of lamps indicated.
   a. Lamp end-of-life detection and shut down circuit
   b. Automatic lamp starting after lamp replacement
   c. Sound Rating: A
   d. Total harmonic Distortion Rating: Less than 10 percent
   e. Transient Voltage Protection: IEEE C62.41, category A or better.
   f. Operating Frequency: 20 KHz or higher.
   g. Lamp Current Crest Factor: 1.7 or less
   h. BF: 0.95 or higher, unless otherwise indicated
   i. Power Factor: 0.95 or higher

3.02 LAMPS
A. Manufacturers:
   1. Philips Lighting Company
   2. Osram Sylvania
   4. BlueColt Lighting
B. All Lamps:
   1. Unless explicitly excluded, provide new, compatible, operable lamps in each luminaire.
   2. Verify compatibility of specified lamps with luminaires to be installed. Where lamps are not specified, provide lamps per luminaire manufacturer's recommendations.
   3. Minimum Efficiency: Provide lamps complying with all current applicable federal and state lamp efficiency standards.
   4. Color Temperature Consistency: Unless otherwise indicated, for each type of lamp furnish products which are consistent in perceived color temperature. Replace lamps that are determined by the Strategic Energy Solutions, Inc. to be inconsistent in perceived color temperature.
C. Compact Fluorescent Lamps: Wattage and bulb type as indicated, with base type as required for luminaire.
   1. Low Mercury Content: Provide lamps that pass the EPA Toxicity Characteristic Leaching Procedure (TCLP) test for characteristic hazardous waste.
   2. Correlated Color Temperature (CCT): 3,000 K unless otherwise indicated.
   3. Color Rendering Index (CRI): Not less than 80.
   4. Average Rated Life: Not less than 10,000 hours for an operating cycle of three hours per start.
D. Linear Fluorescent Lamps: Wattage and bulb type as indicated, with base type as required for luminaire.
   1. Low Mercury Content: Provide lamps that pass the EPA Toxicity Characteristic Leaching Procedure (TCLP) test for characteristic hazardous waste.
   2. T8 Linear Fluorescent Lamps:
a. Correlated Color Temperature (CCT): 3,000 K unless otherwise indicated.
b. Color Rendering Index (CRI): Not less than 80.
c. Average Rated Life: Not less than 20,000 hours for an operating cycle of three hours per start.

E. Lamp Types: As specified for each fixture.

PART 3 EXECUTION

4.01 EXAMINATION

A. Verify that field measurements are as shown on the drawings.
B. Verify that outlet boxes are installed in proper locations and at proper mounting heights and are properly sized to accommodate conductors in accordance with NFPA 70.
C. Verify that suitable support frames are installed where required.
D. Verify that branch circuit wiring installation is completed, tested, and ready for connection to luminaires.
E. Verify that conditions are satisfactory for installation prior to starting work.

4.02 PREPARATION

A. Provide extension rings to bring outlet boxes flush with finished surface.
B. Clean dirt, debris, plaster, and other foreign materials from outlet boxes.

4.03 INSTALLATION

A. Coordinate locations of outlet boxes provided under Section 26 0537 as required for installation of luminaires provided under this section.
B. Install products according to manufacturer's instructions.
C. Install luminaires securely, in a neat and workmanlike manner, as specified in NECA 1 (general workmanship), NECA 500 (commercial lighting), and NECA 502 (industrial lighting).
D. Install luminaires plumb and square and aligned with building lines and with adjacent luminaires.
E. Suspended Luminaires:
   1. Install using the suspension method indicated, with support lengths and accessories as required for specified mounting height.
   2. Provide minimum of two supports for each luminaire equal to or exceeding 4 feet in length, with no more than 4 feet between supports.
   3. Install canopies tight to mounting surface.
F. Install fixtures securely, in a neat and workmanlike manner, as specified in NECA 500 (commercial lighting).
G. Support luminaires independent of ceiling framing.
H. Locate recessed ceiling luminaires as indicated on reflected ceiling plan.
I. Install surface mounted luminaires and exit signs plumb and adjust to align with building lines and with each other. Secure to prevent movement.
J. Exposed Grid Ceilings: Support surface mounted luminaires in grid ceiling directly from building structure.
K. Install clips to secure recessed grid-supported luminaires in place.
L. Install accessories furnished with each luminaire.
M. Make wiring connections to branch circuit using building wire with insulation suitable for temperature conditions within fixture; use flexible conduit.
N. Connect luminaires and exit signs to branch circuit outlets provided under Section 26 0537 using flexible conduit.
O. Make wiring connections to branch circuit using building wire with insulation suitable for temperature conditions within luminaire.
P. Bond products and metal accessories to branch circuit equipment grounding conductor.
Q. Install specified lamps in each luminaire.
R. Remote Ballasts: Install in accessible location as indicated or as required to complete installation, using conductors per manufacturer's recommendations not exceeding manufacturer's recommended maximum conductor length to luminaire.
S. Install lamps in each luminaire.

4.04 FIELD QUALITY CONTROL
A. See Section 01 4000 - Quality Requirements, for additional requirements.
B. Inspect each product for damage and defects.
C. Perform field inspection in accordance with Section 01 4000.
D. Operate each luminaire after installation and connection to verify proper operation.
E. Correct wiring deficiencies and repair or replace damaged or defective products. Repair or replace excessively noisy ballasts as determined by Strategic Energy Solutions, Inc.
F. Test for Emergency Lighting: Interrupt power supply to demonstrate proper operation. Verify transfer from normal power to battery and retransfer to normal.

4.05 ADJUSTING
A. Aim and position adjustable luminaires to achieve desired illumination as indicated or as directed by Strategic Energy Solutions, Inc.. Secure locking fittings in place.
B. Aim and adjust fixtures as indicated.
C. Position exit sign directional arrows as indicated.

4.06 CLEANING
A. Clean surfaces according to NECA 500 (commercial lighting), NECA 502 (industrial lighting), and manufacturer's instructions to remove dirt, fingerprints, paint, or other foreign material and restore finishes to match original factory finish.
B. Clean electrical parts to remove conductive and deleterious materials.
C. Remove dirt and debris from enclosures.
D. Clean photometric control surfaces as recommended by manufacturer.
E. Clean finishes and touch up damage.

4.07 PROTECTION
A. Protect installed luminaires from subsequent construction operations.

4.08 PROTECTION
A. Relamp luminaires that have failed lamps at Substantial Completion.

4.09 SCHEDULE - SEE DRAWINGS

END OF SECTION
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PART 1   GENERAL

1.1 DESCRIPTION
A. This section is the Interior Lighting Systems Specification for Luminaires, Lamps, Ballasts, Drivers, and Low Voltage or other Lighting Devices for Wayne State University Community Arts Gallery, Detroit, MI.
B. This specification is generated to assure lighting design compliance with lighting criteria. This is not intended nor does it presume to cover Mechanical, Electrical, Civil or Structural Engineering nor any Architectural or Landscape Architectural issues. These areas shall be addressed by the respective disciplines and coordinated by Contractor to assure safe, aesthetic, and operationally complete lighting installations.
C. **Revisions to this specification are indicated by bold purple text in the area(s) which have been revised, as shown here.**
D. **Deletions to this specification are indicated by strikeout of the area(s) which have been deleted, as shown here.**
E. All equipment and parts specified herein shall bear the “UL Approved” label (or other NRTL label) indicating compliance with UL requirements or as otherwise allowed in Section 1.6.L. All luminaires shall be UL/NRTL listed and labeled for installation in fireproof or non-fireproof construction, dry, damp, or wet locations as required.
F. Products identified herein and cutsheets which may be attached or referenced represent copyrighted and/or patented and/or trademarked material and may not be freely copied nor distributed for any purposes other than the purchase of the specified products.

1.2 RELATED WORK
A. All work of this Section shall comply with the requirements of the terms and conditions of the contract, with the Drawings, and with all other Contract Documents.
B. Electrical installation in accordance with the electrical drawings and specifications.
C. Low voltage electrical power conductors and cables in accordance with electrical drawings and specifications.
D. Wiring devices used as part of the lighting systems in accordance with electrical drawings and specifications.
E. Grounding and bonding requirements for personnel safety and to provide a low impedance path to ground for possible ground fault currents in accordance with electrical drawings and specifications.
F. Lighting controls in accordance with electrical drawings and specifications.
G. Commissioning of electrical systems in accordance with electrical drawings and specifications.

1.3 WORK INCLUDED
A. This work consists of furnishing all labor, materials, mounting hardware, and equipment required for an operationally and aesthetically complete installation of luminaires, including power and control wiring, and including accessories, in accordance with the contract documents. Contractor shall coordinate all infrastructure requirements with all approved lighting equipment prior to infrastructure installation, including, but not limited to appropriately sized, positioned, and located junction boxes, structural supports, feeds, power and control conduits, and remote code-compliant power-supply enclosures all in appropriate quantities.
B. Any and all exceptions related to coordination by the Contractor with other trades necessary to complete the work herein shall be identified by the Contractor at time of bid or otherwise shall be considered included in the bid.
C. Contractor shall include with bid quotation all notes, qualifications, exceptions, and pricing variants offered by Manufacturer(s) to avoid any post-bid misunderstandings and/or expectation shortfalls.
D. Contractor shall establish all material quantities independently. Any counts and quantities referenced by others or in schedules or this specification or bill of materials shall not be considered complete or final in accordance with the released bid documents. Any area, count, or space
references within this specification are subject to confirmation by the Contractor. Where room numbering changes throughout the course of a project, Contractor shall maintain a spreadsheet cross-reference of the original-bid-document room numbers and the changed room numbers.

E. Contractor shall supply all materials in quantities and as specified according to the latest approved bid document plans and specifications.

F. Contractor shall supply listed Manufacturers with a copy of this entire document which shall be used as basis for pricing.

G. Conformance: All luminaires shall be manufactured in strict accordance with the contract documents.

H. Specifications and scale drawings are intended to convey salient features, functions and characters of the luminaires and do not undertake to illustrate or set forth every item or detail necessary for the work. Contractor shall coordinate with Manufacturer(s) and other Trades in advance of and to define all infrastructure and installation work.

I. Minor details, not usually indicated on the drawings nor specified, but that are necessary for the proper execution and completion of the design intent, shall be included, the same as if they were herein specified or indicated on the drawings, and expected to be commensurate with a project of this significance.

J. In accordance with the above and the criteria established herein, the Contractor is responsible for assuring the final design, fabrication and installation which fulfills the requirements of the Contract Documents.

1.4 QUALITY ASSURANCE

A. Refer to electrical drawings and specifications.

B. Additionally, materials, equipment, and appurtenances as well as workmanship provided under this Section shall conform to the highest commercial standard as specified and as indicated on drawings.

C. Additionally, for luminaires to be procured by Contractor, the Contractor shall submit a notarized affidavit with supporting spreadsheet(s) confirming listed manufacturers were copied with this entire document and confirming quotations were sought and received for all specified products. Include citations of quoted cost values.

D. Additionally, the Contractor shall submit with the bid, a spreadsheet with the names of the lighting manufacturers, respective luminaire series name and respective local representation in accordance with Section 2.3 to be used for each luminaire type contained within the bid, along with line-item unit equipment prices for each luminaire type. Fixed lot or packaged pricing and/or unidentified Vendors and representatives are not acceptable. Any deviation(s) from specification shall be clearly noted by Contractor.

E. Additionally, where groups of luminaire types exhibit the same list of acceptable Vendors, such as downlights, accents, and wallwashers, the intent is to have a final installation with the same Vendor’s equipment across the groupings as specified for consistency of optics, aesthetics, and similarity of maintenance procedures. Mixing/matching across groups is unacceptable except where specified or in the event of extenuating circumstances identified in writing by the Contractor at time of bid and accepted by Owner in writing. This also applies to multi-phased projects with single or multiple, but related luminaire types exhibiting the same list of acceptable Vendors, except where products have subsequently been discontinued or significantly redesigned in size, appearance, lamping, or gear.

F. Unless exceptions are clearly indicated by the Contractor at time of bid submittal and meet the requirements of Submittals Section 1.5.H and are accepted by the Owner in writing at time of award, the Contractor commits to meeting the specification and plan requirements in a timely manner as scheduled with the Owner. Substitutions after award, late submittals, lack of communication and coordination with Vendors on leadtimes and deposits, component or raw material shortages, and other techniques are not acceptable methods to attempt delay of the project or forced acceptance of non-specified material unless arranged with Owner in writing at

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time of award or, in the situation of raw material shortages or discontinued material, arranged with Owner within 24 hours of said shortage or discontinuation made known to the Contractor.

1.5 SUBMITTALS

A. In accordance with Section 26 05 11, REQUIREMENTS FOR ELECTRICAL INSTALLATIONS, if cited in the Electrical Engineering Documents, and for luminaires to be procured by Contractor, submit the following:

B. Shop Drawings:
   1. Sufficient information, clearly presented, shall be included to determine compliance with drawings and specifications. Equipment product data lacking sufficient detail to indicate compliance with contract documents will not be acceptable.
   2. Include electrical ratings, dimensions, mounting details, materials, required clearances, terminations, wiring and connection diagrams, photometric data, ballasts, lenses, louvers, lamps, and controls.
   3. When catalog data and/or shop drawings for luminaires are submitted for approval, photometric data from an independent testing laboratory or one participating in the NIST National Voluntary Laboratory Accreditation Program (NVLAP) shall be included with the submittal, indicating average brightness and efficiency of the luminaire specified in specification or as shown on the drawings. This information is unnecessary if it is for specified luminaire(s) and is identical to that which had been available online or on cutsheets for the specified luminaires on the date of specification. Coefficient of utilization data is unacceptable.

C. Additionally, the Contractor shall be responsible for supplying complete equipment product data, and as indicated in the Luminaire Specification Section 4.1, casting/stamping master patterns and component, partial, or complete working samples of the specified equipment in a timely fashion for design team approval, prior to releasing orders on equipment. Specifically for sample submittals:
   1. The Contractor shall furnish components, partial mockups, operational samples, and/or one complete luminaire, including specified lamp, for each type so designated as requiring such for submittal(s).
   2. For specified Vendors, this shall occur after the equipment product data review process is complete and approved for such designated luminaires and prior to their fabrication.
   3. Operational components, partial mockups, operational samples, and/or complete review sample luminaires shall be delivered to the project’s designated Resident Engineer, Owner’s Representative, or other such advocate (“Resident Engineer”) and, as directed by the Resident Engineer, shall be installed by Contractor in the location so directed.
   4. Within two weeks of sample installation, the Resident Engineer shall notify the Contractor in writing of approval/rejection/comments necessary for manufacturing or resubmittal.
   5. Contractor shall remove, repackage, and turn over to the Resident Engineer all samples after final inspection and disposition. All review samples shall become the property of the Owner, but may be used as a prototype by the Manufacturer during the fabrication process or by the Contractor during installation. UL/NRTL listed and labeled approved review samples may be counted as project quantities providing these remain in as-new condition during the process and are not visibly, optically, or electrically different from the final manufactured lot.
   6. Review samples must be made from parts to be used on project luminaires and according to equipment product data and specifications. For example, extruded components are unacceptable if final parts are to be stamped metal components.
   7. Restoration and custom luminaire Vendor(s) shall provide access to the factory for the Owner, Architect, and/or Lighting Designer and Construction Manager to review work in progress and to review partial and complete luminaire mockups as identified in the Luminaire Specification Section 4.1.

D. Additionally, Contractor shall be responsible for coordinating all aspects of order placement, deposits, shop drawing and sample procurement, order release, order follow-up, delivery tracking, etc. with Distributor in a timely fashion to maintain project schedule commitments.
Some luminaires may require at least 6 to 8 weeks of lead time or more - the Contractor is responsible for allowing sufficient time for the order/deposit process, shop drawing procurement, submittal, and review process. Substitutions in whole or part will not be accepted on the basis of the contractor's obligation to make any deadlines, contractual or otherwise, agreed by the Contractor toward the completion of this project. Lamp submittals are as important and necessary as luminaire submittals and must be supplied by the Contractor to assure correct lamp wattage, color and efficacy. Where lamps are integral as part of the OEM luminaire, this shall be so stated and evident on submittals.

E. Additionally, all submittals shall be generated by respective factories and each submittal sheet shall be clearly labeled with UL/NRTL listing and labeling, input wattage, weight, catalogic relevant to submitted luminaire for this specific project, date of submittal generation and name/phone number/email address of submittal author certifying provenance of information. The Architect (including, but not limited to the Lighting Designer) or Owner may contact respective factory submittal source or contact directly at his/her discretion. Any submittals made by a factory's agency representative rather than directly by the factory, shall be considered the same as if made by the factory and does not obviate specification requirements or Architect's or Owner's submittal comments from factory's responsibilities in meeting the specification.

F. Additionally, submittals shall be made in electronic PDF format on factory-authorized submittal drawings or datasheets. Equipment product data shall clearly indicate a drawing number as established by the Vendor for convenient reference and shall include luminaire type designation, name of Project, Owner, Architect, Electrical Engineer, Lighting Designer, Contractor, and Factory-direct Contact (at place of manufacture), and the Factory’s Local-to-project Representative Contact capable of addressing delivery, installation, and warranty aspects. Equipment product data shall be complete.

G. Additionally, the lighting equipment specified herein has been carefully chosen for its ability to meet the luminous environment requirements of this project. Calculations (with AGi32 or other such software) are generally performed to determine luminances, luminance ratios, and horizontal and vertical illuminances and respective ratios and to assess glare and reflected glare. In some instances, virtual reality “images” have been generated (with AGi32 or other such software) to assist the Lighting Designer, the Architect and/or the Owner in assessing the lighting quality of the space(s). Equipment and/or manufacturers which have been shown to comply with established criteria, including ASHRAE/IES 90.1 and IES guidelines and normal-power lighting requirements as applicable by ordinance, code, Federal law, mandate, or directive, and/or intended LEED certification or other building-rating system, and other lighting standards as deemed appropriate for this specific project is specified herein. Substitutions of specific product attributes, products, and/or Vendors in all likelihood will be unable to meet all or some of the salient criteria as the specified equipment.

H. Additionally, where permitted, substitution submittals shall consist of:
1. Date of submittal.
2. Submitting firm's name, address, representative's name and contact information.
3. Vendor's name, address, representative's name and contact information.
4. A physical description, detailed dimensioned drawing and complete photometric and electric data of the proposed lamp, ballast, driver, or transformer as required, and luminaire.
5. Heat test data with specified lamp/ballast/driver/transformer at 23°C ambient for 8 hours or as otherwise codified in recognized industry standards intended to address heat effects on light output, degradation and failure of electrical and electronic components, and safety.
6. Heat test on in-grade/in-floor uplight lenses at 23°C ambient for 8 hours.
7. Total quantity of originally-specified units involved
8. Total quantity of proposed substitution equipment necessary to meet all of the same criteria as originally-specified equipment.
9. Unit equipment cost of lowest-cost originally-specified equipment.
10. Unit installation labor cost of lowest-cost originally-specified equipment.
11. Connected load of originally-specified equipment.
12. Unit cost of proposed substitution equipment.
13. Unit installation labor cost of proposed substitution equipment.
14. Connected load of proposed substitution equipment.
15. Affect on controls of proposed substitution equipment.
16. Total initial cost savings of proposed substitution equipment.
17. Total connected load difference between originally-specified equipment and proposed substitution equipment.
18. UL/NRTL certification paperwork.
20. Number of years substitution Vendor has been in business and has manufactured proposed substitution equipment and manufactured similar equipment.
21. Place of manufacture and primary country(ies) of manufacturer of at least 51% of components.
22. Identify specifics of purchasing chain and warranty support, including local distributor, factory-direct, and local representative.
23. Signed affidavit from submitter warranting that proposed substitution will perform as well as or better than originally-specified equipment and that submitter will replace substitutions with originally-specified equipment at no cost should any deficiencies arise within the first year of their installation.
24. Additionally, working samples of lamp and luminaire substitutions must also be supplied at time of substitution submittal for visual check of finish, operating and photometric characteristics, and functional and aesthetic design. Photometric reports must list the actual candela values of the luminaire’s distribution with specified or similar lamp in at least five horizontal planes with elevation angles in increments not greater than 5° from nadir to zenith and shall be formatted in accordance with IES standards for said lamp/luminaire type. Candela curves, footcandle and lumen tables and iso-footcandle contours are not acceptable.
   a. The Contractor shall be responsible for negotiation with the Client, Lighting Designer, Architect, and Electrical Engineer prior to substitution submittal to assure fees are available to redesign entire project, including other phases if those are so impacted, based on proposed substitutions; or to review by Lighting Designer, Architect or Owner, and Electrical Engineer all photometric, sample, design and calculation documentation and virtual reality renderings (provided by Contractor) for proposed substitutions. Such reviews do not assure approval and rejection does not relieve Contractor from providing specified equipment on project schedule. All substitutions must be identified and approved prior to bid date; and all contractor negotiations re: additional fees for redesign/review work due to substitutions must occur prior to bid date. Otherwise such negotiations during submittals may delay the review and disposition of such submittals for which Design Team shall not be responsible. In addition to the requirements outlined here, substitution requests shall be in accordance with project product approval procedures.
   b. No substitutions will be considered without compliance with the above paragraph.
H. Contractor’s bid value and/or project schedule commitments shall not be based on an expectation of design team approval, nor on Contractor estimated value of specified equipment, nor on protracted submittals and resubmittals of rejected products in an effort to deplete the schedule for timely procurement of specified equipment. If submitted substitution fails to comply with any specification requirements or is rejected for any or no reason whatsoever, Contractor will furnish specified equipment at no additional cost or delay to the Owner.
I. Additionally, the Contractor shall coordinate all luminaire drawings with the drawings and details of the architectural, structural, electrical, mechanical, and other related trades to assure a perfect and efficient installation.
J. Additionally, review of equipment product data or samples does not waive contract requirements.
K. Manuals:
   1. Simultaneously with the shop drawings, submit companion copies of complete maintenance and operating manuals including technical data sheets, and information for ordering replacement parts.
2. Two weeks prior to the final inspection or in accordance with Section 26 08 00 Commissioning of Electric Systems, if cited in the Electrical Engineering Documents, submit four copies of the final updated maintenance and operating manuals, including any changes, to the Resident Engineer. Provide at least three (3) CDs/DVDs with high resolution PDF files of all equipment product data for Owner’s use in equipment identification and maintenance with recommended maintenance manuals including, at a minimum:
   a. Vendor and local representative’s contact information
   b. Tools required
   c. Types of cleaners to be used
   d. Replacement parts identification lists
   e. Equipment product data (high-quality reproducible copies)
   f. Warranty documentation

L. Certifications:
   1. Two weeks prior to final inspection or in accordance with Section 26 08 00 Commissioning of Electric Systems, if cited in the Electrical Engineering Documents, submit four copies of the following certifications to the Resident Engineer:
      a. Certification by the Contractor that the equipment has been properly installed, adjusted, and tested.
      b. Include with shop drawings, certification from the manufacturers that all electronic high-frequency ballasts meet the transient protection required by IEEE C62.41, Cat. A. Include with initial shop drawing submittal.

1.6 APPLICABLE PUBLICATIONS AND REFERENCES
   A. Any references in this specification to lighting mounted in, on, or to the exterior of the building or site are additionally governed by Specification Section 26 56 00 EXTERIOR LIGHTING, if cited in the Electrical Engineering Documents.
   B. Publications listed below (including amendments, addenda, revisions, supplements, and errata) form a part of this specification and may be referenced in the text by their alphanumeric designations. With the continual and rapid advancement of LED sources, any ANSI, IEC, IES, NEMA, and UL standards and practices relevant to the manufacture of LED lamps, modules, arrays, power supplies, luminaires, and related controls, but not listed, are considered a part of this specification. Legacy light-source documents are cited as these may relate to various aspects of LEDs not yet codified in LED standards.
   C. American National Standards Institute (ANSI):
      1. ANSI C62.41 - Recommended Practice in Low Power Circuits
      2. ANSI C78 Series - Physical and Electrical Characteristics of High-Intensity Discharge Lamps
      3. ANSI C78.1 - Dimensional and Electrical Characteristics of Fluorescent Lamps - Rapid Start Types
      4. ANSI C78.1-91 - Fluorescent Lamps - Rapid-Start Types - Dimensional and Electrical Characteristics
      5. ANSI C78.2-91 - Fluorescent Lamps - Preheat-Start Types - Dimensional and Electrical Characteristics
      6. ANSI C78.3-91 - Fluorescent Lamps - Instant Start and Cold-Cathode Types - Dimensional and Electrical Characteristics
      7. ANSI C78.376-91 - Chromaticity of Fluorescent Lamps (ANSI/NEMA C78/376-96)
      8. ANSI C78.377 - Specifications for the Chromaticity of Solid State Lighting Products
      9. ANSI C81 Series - Electric Lamp Bases and Holders
      10. ANSI C82.1 - Specifications for Fluorescent Lamp Ballasts
      11. ANSI C82.4 - Specifications for High Intensity Discharge Lamp Ballasts (Multiple Supply Type)
      12. ANSI C82.11 - Performance Requirements for High Frequency Ballasts
      13. ANSI C82.77 - Harmonic Emission Limits - Related Power Quality Requirements for Lighting Equipment
      14. ANSI E1.20 - Remote Device Management Over DMX512 Networks
      15. ANSI/IES RP-16-10 - Nomenclature and Definitions for Illuminating Engineering
D. Certified Ballast Manufacturers Association (CBM):
   1. Requirements for Ballast Certification.
E. Federal Communications Commission (FCC):
   1. Code of Federal Regulations (CFR), Title 47, Part 18
   2. Part 15 Class B: Radio Frequency Devices, Commercial Rated
F. Entertainment Services and Technology Association:
   1. ESTA E1.3 - Entertainment Technology - Lighting Control System - 0 to 10V Analog Control Protocol
G. International Electrotechnical Commission (IEC)
   1. IEC 61000-3-2 - Harmonic Current Emissions
   2. IEC 61347-1 - General and Safety Requirements for Lamp Control Gear
   3. IEC 61347-2-13 - Particular Requirements for Electronic Control Gear for LED Modules
   4. IEC 61547 - EMC Immunity Requirements
   5. IEC 62384 - DC and AC Supplied Electronic Control Gear for LED Modules - Performance Requirements
   7. IEC 62386-102 - Digital Addressable Lighting Interface - Part 102: General Requirements - Control Gear
   8. IEC 62386-207 - Digital Addressable Lighting Interface - Part 207: Particular Requirements for Control Gear - LED Modules (device type 6)
H. Illuminating Engineering Society of North America (IESNA):
   5. IES Approved Method for Life Testing of High Intensity Discharge Lamps, LM-47.
I. Institute of Electrical and Electronic Engineers (IEEE):
   1. C62.41-91 - Recommended Practice on Surge Voltage in Low Voltage AC Power Circuits
J. National Fire Protection Association (NFPA):
   1. 70-02 - National Electrical Code (NEC)
   2. 101-00 - Life Safety Code
K. National Electrical Manufacturer's Association (NEMA)
   1. C82.1-97 - Ballasts for Fluorescent Lamps - Specifications
   2. C82.2-02 - Method of Measurement of Fluorescent Lamp Ballasts
   3. C82.4-02 - Ballasts for High-Intensity-Discharge and Low-Pressure Sodium Lamps
   4. C82.11-02 - High Frequency Fluorescent Lamp Ballasts
   5. NEMA LE1, - Fluorescent Luminaires
   6. NEMA LE2, - HID Lighting System Noise Criterion (LS-NC) Ratings
7. NEMA FA1, - Outdoor Flood Lighting Equipment  
8. NEMA SH5, - Tubular Steel, Aluminum and Prestressed Concrete Roadway Lighting Poles  
10. NEMA LL9-2009, - Dimming of T8 Fluorescent Lighting Systems  
11. NEMA SSL1, - Electronic Drivers for LED Devices, Arrays, or Systems  
12. NEMA SSL3, - High-Power White LED Binning for General Illumination  
13. NEMA SSL7A, - Phase Cut Dimming for Solid State Lighting: Basic Compatibility  
14. NEMA 410, - Performance Testing for Lighting Controls and Switching Devices with Electronic Drivers and Discharge Ballasts  

L. Underwriters Laboratories, Inc. (UL):  
1. Underwriters Laboratories (UL) Standards  
2. Underwriters Laboratories (UL) Standard for Class 2 Power Units  

M. Codes: Materials and installations shall be in accordance with the latest revision of the National Electrical Code and any applicable Federal, State and local codes and regulations.  

N. Listing: All luminaires shall be manufactured in strict accordance with the appropriate and current requirements of the National Electrical Code as verified by Underwriters Laboratories, Inc. (UL), or tested to UL standards by other nationally recognized testing laboratory (NRTL) as acceptable to Building Officials and Code Administrators International (BOCAI); the International Conference of Building Officials (ICBO); or other relevant code authority recognized by the jurisdiction within which the project is being constructed. Such a listing shall be provided for each luminaire type, and the appropriate label or labels shall be affixed to each luminaire in a location as required by code or law.  

1.7 PRODUCT DELIVERY, STORAGE AND HANDLING  
A. The Contractor shall provide, receive, unload, uncrate, store, protect and install lamps, luminaires and auxiliary equipment as specified herein in accordance with respective manufacturers’ project conditions of temperature and humidity and with appropriate protection against dust and dirt. Lamps for miscellaneous equipment shall be provided and installed by the Contractor according to equipment manufacturers’ guidelines.  

PART 2 PRODUCTS  

2.1 LUMINAIRES  
A. Shall be in accordance with NFPA 70, UL 1598 and shall be as shown on drawings and as specified.  
B. Sheet Metal:  
1. Shall be formed to prevent warping and sagging. Housing, trim and lens frame shall be true, straight (unless intentionally curved) and parallel to each other as designed.  
2. Wireways and fittings shall be free of burrs and sharp edges and shall accommodate internal and branch circuit wiring without damage to the wiring.  
3. Where luminaires are detailed with minimum 20 gauge housing, minimum 22 gauge housings will be acceptable provided they have strengthening embossed rib and break formations, which give the equivalent rigidity of a 20 gauge housing.  
4. When installed, any exposed fixture housing surface, trim frame, door frame and lens frame shall be free of light leaks; lens doors shall close in a light tight manner.  
5. Hinged door closure frames shall operate smoothly without binding when the fixture is in the installed position, and latches shall function easily by finger action without the use of tools, unless otherwise specified.  
C. Ballasts, drivers, or transformers, unless otherwise specified, shall be field replaceable and shall be serviceable while the fixture is in its normally installed position, and shall not be mounted to removable reflectors or wireway covers unless so specified.
D. Lamp Sockets:
   1. Light Emitting Diode (LED): Unless otherwise specified, a dedicated means of connecting light source to power shall be used in all luminaires and shall meet all UL requirements. LED modules shall be field replaceable.

E. Luminaire Vendor shall be responsible for operating lamps, ballast, drivers, and other components at or below the respective required component warranty- and recommended-operating temperatures in an interior ambient of 77°F.

F. Recessed luminaires mounted in an insulated ceiling shall be listed for use in insulated ceilings or provisions made to maintain code-compliant air-space around luminaires in accordance with Vendors’ instructions.

G. Unless otherwise specified, luminaires with louvers or light transmitting panels shall have hinges, latches and safety catches to facilitate safe, convenient cleaning and relamping. Vapor tight luminaires shall have pressure clamping devices in lieu of the latches.

H. Mechanical Safety: Unless otherwise specified, luminaire closures (lens doors, trim frame, hinged housings, etc.) shall be retained in a secure manner by captive screws, chains, captive hinges or fasteners such that they cannot be accidentally dislodged during normal operation or routine maintenance.

I. Metal Finishes:
   1. The manufacturer shall apply factory-standard finish (unless otherwise specified) over a corrosion resistant primer, after cleaning to free the metal surfaces of rust, grease, dirt and other deposits. Edges of pre finished sheet metal exposed during forming, stamping or shearing processes shall be finished in a similar corrosion resistant manner to match the adjacent surface(s). Fixture finish shall be free of stains or evidence of rusting, blistering, or flaking and shall be free from defects such as scratches, discolorations, sand and dust spots, cracks, chips and paint runs.
   2. Interior-to-body light reflecting finishes shall be white with not less than 85 percent reflectances, except where otherwise specified or shown on the drawing.
   3. Exterior-to-body finishes shall be as specified or shown on the drawings.

J. Provide all luminaires with a specific means for grounding their metallic wireways and housings to an equipment grounding conductor and ground accordingly upon installation.

K. Light Transmitting Components for Luminaires:
   1. Shall be 100 percent virgin acrylic plastic or water white, annealed, crystal glass, unless otherwise specified. The quality of the raw material shall meet ASTM standards as tested by an independant test laboratory. Acrylic plastic lenses and diffusers shall be properly cast, molded or extruded as necessary to meet the intent of the specified optics, and shall remain free of any dimensional instability, discoloration, embrittlement, or loss of light transmittance for the period of the Manufacturer’s warranty. Where optical lenses are used, they shall be free from spherical and chromatic aberrations and other imperfections which may hinder the optic performance.
   2. Large-area flat lens panels shall have not less than 3.2 mm (1/8 inch) of average thickness. The average thickness shall be determined by adding the maximum thickness to the minimum unpenetrated thickness and dividing the sum by 2.
   3. All lenses or other light diffusing elements shall be removable for access to lamp and electrical and electronic components and luminaire cleaning, however, they must otherwise be positively and securely held in-place, unless otherwise specified.
   4. There shall be no light leaks between the lens and the lens frame.
   5. There shall be no light leaks around the interface between lens door or holder trim flanges and the ceiling or wall.
   6. All lens door or holder trim flanges shall fit plumb and flush with the ceiling or wall surface.
   7. All lenses for all luminaires shall be installed and turned over to the Owner clean and free of dust, bugs, scratches, smudges and fingerprints. All cleaning shall be in accordance with respective manufacturers’ instructions (securing of which is the responsibility of the Contractor).
L. Luminaires in Hazardous Areas: Luminaires shall be suitable for installation in flammable atmospheres (Class and Group) as defined in NFPA 70 and shall comply with UL 844.

M. LED luminaires shall be manufactured specifically for their respective light source with dedicated electrical connections and with ballasts/drivers/transformers integral to the fixture, except where remote devices are specified. Assemblies designed to retrofit incandescent luminaires are prohibited except when specifically indicated for renovation of existing luminaires. Luminaires shall be designed for lamps as specified.

N. Luminaires shall be entirely factory wired by the luminaire manufacturer in accordance with code and UL requirements and shall be furnished fully compatible with the project electrical wiring and controls system for smooth, continuous, dimming or on/off flicker-free operation.

O. Castings shall exactly replicate the approved pattern(s) and shall be free of sand pits, blemishes, scales and rust, and shall be smoothly finished, except as necessary for an authentic historic appearance and as agreed by Architect or Owner. Tolerance shall be provided for any shrinkage in order that the finished castings accurately fit their locations resulting in plumb and level fittings and consistently tight-seamed fittings.

P. The Contractor shall assure that all trims and canopies and escutcheons fit snugly and securely to the ceiling and/or wall so that no light leaks occur and so that no gaps or uneven waves are evident.

Q. Yokes, brackets and supplementary supporting members necessary for mounting lighting equipment shall be furnished and installed by the Contractor and approved by the Architect or Owner. All materials, accessories, and any other equipment necessary for the complete and proper installation of luminaires, lamps, ballasts/neon transformers included in the contract shall be furnished and installed by the Contractor. All yokes, brackets and supplementary supports shall provide a neat, square, plumb and level appearance, and shall not sag, droop, snake or otherwise appear out of plumb or alignment in finished installation with all lamps, globes, lenses, lens frames or doors etc. in place.

R. All components of luminaires shall be compatible visually with each other and shall be compatible structurally.

S. All tubing shall be brass of diameter and wall thickness necessary to provide a structurally integral, plumb and level, flush finished product. Tubing shall provide a neat, square, plumb appearance, and shall not sag, droop, snake or otherwise appear out of plumb or alignment in finished installation with all lamps, globes, lenses, lens frames or doors, etc. in place.

T. Castings for historic luminaires shall be bronze or brass with at least 80% copper component. Aluminum shall be unacceptable unless otherwise specified or unless explicitly approved during submittal reviews for reasons of weight and with cost savings identified accordingly. All castings shall provide a neat, square, plumb and level appearance, and shall not sag, droop, snake or otherwise appear out of plumb or alignment in finished installation with all lamps, globes, lenses, lens frames or doors, etc. in place.

U. Stampings for custom historic replicas shall be brass with at least 80% copper component. All stampings shall provide a neat, square, plumb and level appearance, and shall not sag, droop, snake or otherwise appear out of plumb or alignment in finished installation with all lamps, globes, lenses, lens frames or doors, etc. in place.

V. All connections shall be fixed rigid by screws, rivets and/or soldering. Screws and rivets shall not be visible except as necessary for maintenance and/or aesthetic appearance. Soldering shall be ground smooth to a clean, contiguous surface. All connections shall provide a neat, square, plumb and level appearance, and shall not sag, droop, snake or otherwise appear out of plumb or alignment in finished installation with lamps, globes, lenses, lens frames or doors etc. in place. No double-sided tape or Velcro shall be an acceptable means of connection of any luminaire component.

W. All materials, accessories, and other related luminaire parts shall be new and free from any defects, except where recycled, restored, or natural materials are specified, and shall be effectively protected from any damage from time of fabrication until final acceptance of the work by the Architect or Owner.

X. Sheet Metal Work: All sheet metal work shall be free from tool marks and dents, and shall have accurate angles bent as sharp as compatible with the gauges of the required metal and the
luminaire styling. All intersections and joints shall be formed true and of adequate strength and structural rigidity to prevent any distortion after assembly.

Y. All lamp sockets in luminaires shall be suitable for the indicated lamps and shall be set so that lamps are positioned in optically correct relation to all luminaire components. If adjustable sockets are provided, socket shall be preset in factory for lamp specified. If different socket positions are specified for the same luminaire, sockets shall be preset for each type, and cartons marked accordingly.

Z. Mounting Frames and Rings: If ceiling system and luminaire type requires, each recessed and semi-recessed luminaire shall be furnished with a mounting frame or ring compatible with the ceiling in which they are to be installed as coordinated by Contractor. The frames and rings shall be one piece or constructed with electrically-welded butt joints, and of sufficient size and strength to sustain the weight of the luminaire and maintain plumb.

AA. Pendant Supports: Contractor shall be responsible for coordination with Manufacturer, Architect, Structural Engineer and related trades to ensure that proper and adequate structural reinforcement is provided within ceilings to support pendant mounted lighting equipment for a secure, neat, square, plumb appearance. Pendants shall not sag, droop, snake or otherwise appear out of plumb or alignment in finished installation with lamps, globes, lenses, lens frames or doors etc. in place.

AB. Wall Bracket (Sconce) Supports: Contractor shall be responsible for coordination with Manufacturer, Architect, Structural Engineer and related trades to ensure that proper and adequate structural reinforcement is provided within walls to support wall mounted lighting equipment for a secure, neat, square, plumb appearance. Wall brackets shall not sag, droop, snake or otherwise appear out of plumb or alignment in finished installation with lamps, globes, lenses, lens frames or doors etc. in place.

AC. Outdoor Luminaires: Luminaires shall be suitably gasketed and vented according to manufacturers instructions. All dissimilar metal materials shall be separated by non-conductive materials to prevent galvanic action.

AD. For steel and aluminum luminaires, all screws, bolts, nuts and other fastening and latching hardware shall be a cadmium or equivalent plated. For stainless steel luminaires, all hardware shall be stainless steel. For all bronze luminaires, all hardware shall be bronze.

AE. All materials, accessories, and any other equipment necessary for the complete and proper installation, wiring and controls of all luminaires included in this Contract shall be furnished by the Contractor.

AF. Welding shall be in accordance with recommendations of the American Welding Society and shall be done with electrodes and/or methods recommended by the manufacturers of the metals being welded. Welds shall be continuous, except where spot welding is specifically permitted. Welds exposed to view shall be ground flush and dressed smooth. All welds on or behind surfaces which will be exposed to view shall be done so that finished surface will be free of imperfections such as pits, runs, splatter, cracks, warping, dimpling, depressions or other forms of distortion and discoloration. Remove weld splatter and welding oxides from all welded surfaces.

AG. Extruded aluminum frames and trims shall be rigid and manufactured from quality aluminum without blemishes in the installed product. Miter cuts shall be accurate, joints shall be flush and without burrs and cut alignment maintained with the luminaire located in its final position.

AH. Warranty: The Contractor shall warrant the luminaire, its finishes, and all of its component parts, except ballasts/drivers/transformers, to be free from defects for a period of at least one year from date of acceptance as installed if operated within rated voltage range. Replacement of faulty materials and the cost of labor to make the replacement shall be the responsibility of the Contractor.

AI. Junction Boxes: All luminaires supplied for recessing in suspended ceilings shall be supplied with pre-wired junction boxes, unless otherwise specified.

AJ. All luminaires, new and restored/refurbished, shall be furnished with a ground wire and grounded accordingly upon installation.

AK. All suspended luminaires with a weight in excess of 174 pounds shall be fitted with safety cable of sufficient strength and length to meet all UL safety cable load-bearing requirements. Cable
shall exhibit a finish (but not painted) compatible with that of the metal finish of the stem/chain/suspension-cable assembly or alternatively finished in black as approved by Architect or Owner. Shop drawings shall indicate luminaire weight. Contractor shall coordinate structural support/attachment requirements including independent structure for safety cable attachment with Vendor, Architect, and Structural Engineer and all respective trades. Safety cable shall exhibit sufficient length to wrap tightly and entirely around structural member at least twice before attachment subject to Vendor confirmation of UL requirements and pending Structural Engineer review. Contractor shall provide labor necessary for the stem/chain-assembly-wiring-threading and safety-cable-attachment as instructed by Vendor.

AL. Additionally, for all restoration and replication work, unless otherwise specified in the Luminaire Specification Section 4.1:

1. Use materials to match the original or with matching equivalent physical characteristics of strength, finish, resistance to corrosion, and the like.
2. Use gauges and thicknesses and contours required to provide the structural integrity and performance, durability, and appearance appropriate to the restoration era.
3. Restoration of existing luminaires shall consist of the following:
   a. Physical restoration consisting of repair or replacement of any parts that are missing, broken, or damaged. Replacement shall match original parts in strength and appearance, including all detail.
   b. Electrical restoration shall be a complete electrical update to support the specified lamp(s)/driver(s)/ballast(s). Components and the entire assembly shall be UL/NRTL listed and labeled.
4. Applied ornamentation components shall be cast, spun, stamped, or hand-wrought as necessary to achieve an authentic appearance and shall be of a material similar to or sympathetic with that to which they are attached, unless otherwise determined during research and approved by Lighting Designer. In any event, components shall be finished in contrasting or matching finish to fixture body components to which they attach as research indicates and approved by Lighting Designer. Applied namentation shall be attached with mechanical fasteners in discreet locations and finished to match the material into which they are set. Fasteners shall be sufficiently affixed to prevent casual loss/theft of ornamentation.
5. Finishes, whether re-finished or new for restorations or replications, shall be authentic metal or bronzing powder with hand-relieved and/or patinated detailing based on Vendor(s) research and proposed palette approved by Lighting Designer through submittals, samples, and mockups prior to any finish production work at factory. BIDS SHALL BE BASED ON A PRELIMINARY PRESUMPTION OF AUTHENTIC METAL FINISHES. Pending Vendor(s) research, findings, recommendations, and mockups, finishes shall be appropriately sealed with a UV-resistant clear-coat lacquer in matte, semi-gloss, or gloss if/as approved by Lighting Designer. Final finishes on installation shall be consistent, free of runs, specks, smudges, checking, rainbowing, milkiness, or other flaw.
6. Diffusers (globes) shall match the original diffuser glass as shown in extant luminaires, historic photos, and historic cutsheets subject to approval by Lighting Designer. Size, thickness, material, color, texture, shape/configuration (as much as practical and environmentally-compliant) shall be used as matching metrics. Proposed piece/portion samples shall be submitted for Lighting Designer’s recommended disposition prior to development of molds. After patterns, glass, and molds are fully reviewed and approved by Lighting Designer, full diffuser samples shall be submitted for Lighting Designer’s recommended disposition. Where extant diffusers remain in good condition and providing new matches are exact in appearance when illuminated, re-use shall be acceptable. Attic stock of spare diffusers shall consist of 10% of each diffuser type/style/size, but not to be fewer than 4 diffusers nor more than 10 diffusers of each type/style/size.
7. Luminaires shall be free of light leaks except as necessary to meet heat-temperature-requirements and/or where originally-intended on historic equipment. Fitters shall consistently mate with diffusers and fitter thumbscrews shall be sized and arranged to allow for a uniform
engagement and plumb/true diffuser arrangement. Thumbscrews shall be finished
to match fitter and shall be self-retaining type.

2.2 LUMINAIRE REFLECTORS AND TRIMS:

A. Alzak cones, reflectors, baffles and louvers shall be warranted against discoloration.
B. Aluminum cones, reflectors, baffles and louvers shall be finished specular, semi-specular
or diffuse as specified and shall meet or exceed Alzak specifications. All material shall be
low-iridescent type.
C. All cones, reflectors, baffles and louvers shall be removable for lamp access and
luminaire cleaning, however, they must otherwise be positively and securely held in-
place.
D. There shall be no light leaks around the interface between cone/reflector/shade trim
flanges and the ceiling or wall.
E. All cone/reflector trim flanges shall fit plumb and flush with the ceiling surface—there
shall be no gaps.
F. All cones, reflectors, baffles and louvers and visible trim of all luminaires shall be turned
over to the Owner clean and free of scratches, dirt, smudges and fingerprints. All
cleaning shall be in accordance with respective manufacturers’ instructions (securing of
which is the responsibility of the Contractor.
G. For trimless or flangeless luminaires, Contractor shall coordinate with other Trades to
achieve a trimless/flangeless installation acceptable to the Architect or Owner. Where
ceilings are drywall or plaster, this involves Level 5 finishes or as otherwise directed by
the Architect or Owner. In drywall, plaster, wood, or stone ceilings, special luminaire
collars and exacting coordination are required of Contractor.

2.3 LUMINAIRE AND LAMP VENDOR(S) WARRANTY, PROFICIENCY, AND SUPPORT:

A. Contractor shall coordinate all warranty aspects with respective Vendors. Where
components are an integral part of the luminaires as shipped from factory, the
Contractor shall coordinate warranty aspects with the Luminaire Vendor(s) who shall be
responsible for addressing such warranty aspects.
B. Historical restoration and re-creation luminaires shall be warranted for a minimum
period of two years from date of shipment from factory unless otherwise noted in the
luminaire description in Section 4.1 Luminaire Specification.
C. Modern luminaires shall be warranted for a minimum period of one year from date of
shipment from factory unless otherwise noted in the luminaire description in Section 4.1
Luminaire Specification.
D. Luminaire Vendors shall provide a level of support consistent with industry practice and
expectations on a project of this scale and prominence regardless of point of actual sale
and/or chain of sale.
E. Luminaire Vendors shall provide factory representation support at the specification
locale, the procurement locale, and the installation locale.
F. Vendors shall identify factory and local representation to provide immediate qualified
assistance as necessary during the project. One local representative shall be based
within 100 miles of project and, if project is located outside the Ann Arbor area, one
local representative shall be based within 100 miles of Ann Arbor, Michigan. Both local
representatives shall have working knowledge of respective Vendor’s product line and
capabilities and shall respond to project needs within one business day. Both local
representatives shall coordinate respective efforts and respective Vendor’s work to
satisfy Contractor and Owner. Additionally, a factory account executive shall be based
at respective Vendor’s United States factory and shall have authority to make design
and engineering decisions related to the luminaire(s), shall report factory costs (aka
distributor net or DN pricing) if and when requested by Lighting Designer, and shall
be capable of responding to project needs within two business days. Provide contact
information as outlined in Section 1.5.H.3.

G. Restoration and custom luminaire Vendor(s) shall coordinate scheduling of all efforts with Contractor and shall meet the project schedule requirements agreed to between Vendor and Contractor, indicating same on bid. Contractor shall coordinate with Vendor, Owner, and/or Architect as necessary to meet the project requirements.

H. Restoration and custom luminaire Vendor(s) shall provide written warranty of parts and labor on entire luminaire assembly in accordance with 2.3.B and, as applicable, in accordance with 2.4.J, 2.5.B, 2.6.A.6, and 2.6.B.5.

I. Restoration and custom luminaire Vendor(s) shall provide documentation indicating firm’s continual operation under the same DBA name as a custom luminaire manufacturer for a period of at least thirty five [35] years and citing fifteen [15] historic landmark projects, including state capitols and federal courthouses. Additionally, Vendor(s) shall submit qualification data of five [5] of these historic restoration projects within the last ten [10] years of similar scope and magnitude, at least three [3] of which shall be lamped with dedicated-socket, other-than incandescent/ halogen lamping, including photographic documentation of the completed work along with project references (an individual’s name and contact information for each of the five project).

2.4 FLUORESCENT LAMP BALLASTS

A. Ballasts shall comply with NEMA 82.1, 82.2 and 82.11, NFPA 70, and UL 935 unless otherwise specified.

B. Unless otherwise specified, all lamps shall be operated by electronic, high frequency ballasts.

C. Electronic high-frequency ballasts:
   1. Ballasts shall operate the lamps at a frequency between 20 and 60 KHz from an input frequency of 60Hz.
   2. Ballast package:
      a. Size: The ballast case shall be sized to fit the intended luminaire housing.
      b. Case marking: Mark the ballast to indicate the required supply voltage, frequency, RMS current, current surge during starting, input watts, and power factor at the design center voltage, open circuit voltage, crest factor and efficacy.
   3. Performance:
      a. Starting: The ballast shall be capable of starting and maintaining operation of lamps at an ambient temperature of 10 degrees C (50 degree F) or more for an input voltage of plus or minus 10 percent about the center design voltage unless otherwise indicated. The ballast shall never be started in the instant start mode at any temperature.
      b. Operation:
         1) Unless otherwise specified, the ballast shall safely and reliably operate in a room ambient temperature from 10 degrees C (50 degree F) to 40 degrees C (105 degrees F).
         2) The light output shall not vary by more than plus or minus 5 percent for a plus or minus 10 percent variation of the input voltage about the center design voltage. Light output shall remain constant for a plus or minus 5 percent variation of the input voltage.
         3) The ballast shall operate the lamps in a manner that will not adversely curtail the normal life of the lamp.
      c. Transient protection: The ballast shall comply with ANSI/IEEE C62.41, Cat. A.
      d. Flicker: The flicker shall be less than 5 percent at all frequencies below 1000 Hz and without visible flicker.
      e. Noise: The audible noise levels should be equivalent to or better than the Class A rating of CBM certified ballasts.
      f. Electromagnetic Interference (EMI) and Radio Frequency Interference (RFI): The EMI and RFI limits shall meet the requirements of the Federal Communications Commission Rules and Regulations (CFR 47 Part 18).
      g. Rated life: The ballast shall have a rated life of at least 10 years or 30,000 hours (based on a 10 hour day).
h. The two-lamp T8 ballast shall safely operate two F32T8 RS, 32- watt lamps or two F32T8/U lamps. The single lamp T8 ballast shall safely operate one F32T8 RS, 32-watt lamp or one F32T8/U lamp.

i. Power factor: Not less than 95 percent, for primary ballast/lamp application.

j. Reliability:
   1) Labels: Ballasts must be labeled or listed by UL and CBM/ETL.
   2) Submit, simultaneously with shop drawings, a certified test report by an independent testing laboratory or one participating in the NIST National Voluntary Laboratory Accreditation Program (NVLAP) showing that the electronic ballasts meet or exceed all the performance requirements in this specification.

k. Total harmonic distortion (THD) shall be less than 10 percent for primary ballast/lamp application.

D. Core-and-coil ballasts (for lamps other than F32T8 and F32T8/U or where shown on drawings as “core-and-coil”):
   1. Shall be rapid starting type.
   2. Shall comply with NEMA 82.1 and UL 935.
   3. Shall be UL Class P with automatic resetting, internal, thermal protection.
   4. Shall be CBM/ETL certified.
   5. Power factor shall be not less than 95 percent. Capacitors in ballasts shall not contain PCB (Polychlorinated Biphenyl) fluids or other fluids recognized as hazardous when discharged into the environment.
   6. Sound ratings shall be Class A or better, except for ballast sizes which are not available with Class A ratings, as standard products from any manufacturer. Ballasts which are not available with Class A ratings shall have the quietest ratings available.
   7. Where core-and-coil ballasts are specified or detailed in lieu of the normally required electronic high frequency types, two lamp ballasts shall be energy saving type, UL/NRTL listed to operate F40T12 rapid start lamps for both standard 40 watt lamps and the reduced wattage 35/34 watts energy-saving lamps. Lamp output shall be within 5 percent of nominal rating. When operating energy saving lamps, the input watts to the ballast shall not exceed 78 watts at 120 V.A.C. or 79 watts at 277 V.A.C. Energy saving type ballasts should not be used in ambient temperatures below manufacturer’s recommendations.

E. Ballasts for luminaires controlled by dimming devices shall be the electronic, high frequency type as specified herein, equipped for dimming and conform to the recommendations of the manufacturer of the associated dimming devices to assure satisfactory operation of the lighting system. Contractor shall coordinate all wiring infrastructure to accommodate final-selected ballasts and controls systems for smooth, continuous, and flicker-free operation.

F. All ballasts serving straight or “U” type lamps shall be mounted by four non turning studs (or captive bolts) equipped with lock washers and nuts or locking type nuts, or by four thread cutting (TC) sheet metal screws which are firmly secured against the fixture body (or wireway) to maximize dissipation of heat and minimize noise. Exception: electronic high-frequency ballasts may be mounted at a minimum of two points, one at each end of unit.

G. Ballasts shall be serviceable while the fixture is in its normally installed position, and shall not be mounted to removable reflectors or wireway covers unless so specified.

H. Unless otherwise specified, to facilitate multi level lamp switching, lamps within fixture shall be wired with the outermost lamp at both sides of the fixture on the same ballast, the next inward pair on another ballast and so on to the innermost lamp (or pair of lamps). Within a given room, each switch shall uniformly control the same corresponding lamp (or lamp pairs) in all fixture units that are being controlled.

I. Where three lamp luminaires are indicated, unless switching arrangements or ballast tandem-wiring limitations dictate otherwise, utilize a common two lamp ballast to operate the center lamp in pairs of adjacent units that are mounted in a continuous row. The ballast fixture and slave lamp fixture shall be factory wired with leads or plug devices to facilitate this circuiting. Individually mounted luminaires and the odd fixture in a row shall utilize a single lamp ballast for operation of the center
lamp.

J. Fluorescent ballasts shall be warranted for a minimum of three years unless otherwise noted in the Luminaire Schedule or on submittals.

K. All fluorescent luminaires shall be fused on the primary side of the ballast as recommended by the respective luminaire manufacturers unless otherwise directed by the Electrical Engineer or such fusing is an integral part of the ballast.

L. Unless otherwise noted in the Luminaire Specification Section 4.1, for all fluorescent ballasts, Contractor shall supply a quantity of 5% of each ballast type required for each luminaire, but no fewer than 2 and no more than 24 replaceable ballast. These ballasts shall constitute the Owner’s initial replacement stock and are not to be used as warranty replacements in compliance with section 2.6.F.

2.5 LED LAMP AND MODULE POWER SUPPLIES:

A. At a minimum, LED power supplies shall comply with NEMA SSL 1, NFPA 70, and UL 8750 unless otherwise specified.

B. LED power supplies shall be warranted for a minimum of five years unless otherwise noted in Section 4.2 Luminaire Specification or on submittals.

C. All LED luminaires shall use power supplies integral to luminaires or as otherwise required by the luminaire manufacturer.

D. Power supplies remote from luminaires shall be housed in NEMA enclosures so rated for the power supply(ies) and located in code-compliant, sound-isolated, well-ventilated, easily-accessible areas. Wire shall be sized according to run length and LED Manufacturer’s size and distance-of-run requirements and all in accordance with all code requirements.

E. All LED power supplies shall be suitably sized to accommodate the LED array consistent with industry standards, including IEC standard 60929 Annex E.

F. All LED luminaires shall be fused on the primary side of the power supply(ies) as recommended by the respective luminaire manufacturers unless otherwise directed by the Electrical Engineer or such fusing is an integral part of the driver.

G. All LED installations shall be suitably protected from electrical surges unless otherwise directed by the Electrical Engineer.

H. LED power supply(ies) shall withstand up to a 1,000-volt surge without impairment of performance as defined by ANSI C62.41 Category A.

I. LED power supply(ies) total harmonic distortion (THD) shall be less than 20 percent for power supplies unless otherwise specified. For dimming drivers, THD shall at no point in the dimming curve allow imbalance current to exceed full output THD.

J. LED power supply(ies) power factor shall be 0.9 or greater unless otherwise specified.

K. LED power supply(ies) rated life shall be at least 30,000 hours.

L. LED power supply(ies) shall tolerate ±10 percent supply voltage fluctuation with no adverse effects to power supply(ies) or LED.

M. LED power supply(ies) shall exhibit no visible change in light output with a variation of ±10 percent line voltage input.

N. LED power supply(ies) forward voltage (VF) shall be matched to LED board.

O. Power supplies for luminaires controlled by dimming devices shall be as specified herein and equipped for dimming and conform to the recommendations of the manufacturer of the associated dimming devices to assure satisfactory operation of the lighting system. Contractor shall coordinate all wiring infrastructure to accommodate final-selected power supplies and controls systems for smooth, continuous, and flicker-free operation.

1. Power supplies for DALI protocol control systems shall be consistent with digital addressable lighting interface standards including, but not limited to IEC 62386-101/102/207.

2. Unless otherwise specified, power supplies shall use the constant current reduction (CCR) method of dimming regardless of dimming protocol and Contractor shall coordinate control system architecture accordingly.
P. Flicker: The flicker shall be less than 5 percent at all frequencies below 1000 Hz and without visible flicker.
   1. Power supplies shall meet or exceed NEMA 410 power supply(ies) inrush standard.
Q. Power supply(ies) shall be capable of providing zero (no) light output when set to OFF by the control system.
R. Power supply(ies) shall consume no more than 0.5W in the OFF or STANDBY mode.
S. Unless otherwise noted in the Luminaire Specification Section 4.2, for all LED drivers, Contractor shall supply a quantity of 5% of each power supply type required for each luminaire, but no fewer than 2 and no more than 24 replaceable power supplies unless power supplies are an inherent/integral non-replaceable part of the entire luminaire in which case no spares are required. These power supplies shall constitute the Owner's initial replacement stock and are not to be used as warranty replacements in compliance with section 2.6.G.

2.6 LAMPS AND LED MODULES
A. Fluorescent Lamps:
   1. Rapid start fluorescent lamps shall comply with ANSI C78.1; preheat-start type shall comply with ANSI C78.2; and instant-start and cold-cathode lamps shall comply with ANSI C78.3.
   2. Chromaticity of fluorescent lamps shall comply with ANSI C78.376.
   3. The lamps shall include the F32T8, F32T8/U 32 watt energy saving type and EPACT approved F40T12 type if specifically required by contract drawings for special applications.
   4. Lamp color temperature shall be as defined in the schedule and specification.
   5. Lamp color rendering shall be as defined in the schedule and specification.
   6. Fluorescent lamps shall be warranted for a minimum of 1 year unless otherwise noted in the Luminaire Specification Section 4.2.
B. LED Lamps and Modules:
   1. LED lamps and modules shall comply with ANSI C78.1.
   2. Chromacity of LED lamps shall comply with ANSI C78.377A and NEMA SSL-3.
   3. Lamp color temperature shall be as defined in the schedule and specification.
   4. Lamp color rendering shall be as defined in the schedule and specification.
   5. LED lamps shall be warranted for a minimum of 5 years unless otherwise noted in the Luminaire Specification Section 4.2.
C. Incandescent lamps shall not be used except in special circumstances as defined in the schedule and specification.
D. Halogen lamps shall not be used except in special circumstances as defined in the schedule and specification.
E. High Intensity Discharge Lamps:
   1. Mercury vapor lamps shall not be used.
   2. Multi vapor lamps shall be as defined in the schedule and specification.
   3. High pressure sodium lamps shall be as defined on the detail drawings.
F. For color consistency, lamp maintenance consistency and for light output consistency, mixed lamps of the same lamp type from different Manufacturers are unacceptable. Use the same brand and date code for all lamps except as otherwise specified. Contractor shall be responsible for coordinating all lamps and brand among all luminaire Manufacturer(s) and Contractor's respective distributor(s).
G. Lamps which fail within 90 days after acceptance by the Owner shall be replaced by Contractor at no cost to the Owner.
H. Unless otherwise noted in the Luminaire Specification Section 4.2, for all but LED lamps, Contractor shall supply a quantity of lamps equal to 5% of each lamp type required for each luminaire, but no fewer than 12 of each lamp type and no more than 72 lamps of each type unless otherwise indicated in the Luminaire Specification Section 4.2. For LED lamps, Contractor shall supply a quantity of spare LED lamp-array-modules in quantities sufficient to re-lamp 2% of the luminaires, but no fewer than 2 luminaires and no more than 24 luminaires of all luminaire types using the same, identical LEDs unless LEDs are an irreplaceable and inherent/integral part of the entire
luminaire in which case no spares are required unless otherwise indicated in the Luminaire Specification Section 4.2. These lamps shall constitute the Owner's initial replacement stock and are not to be used as warranty replacements in compliance with section 2.7.G.

I. Lamps shall conform to ANSI C78 Series Dimensional and Electrical Characteristics of Lamps.

J. Lamp performance (initial lumen output, life, color and lumen maintenance) shall be as specified in the Luminaire Specification Section 4.2.

K. Initial lumen output shall be as measured after 100 hours of operation.

L. Lamp color for light sources shall be as specified in either color temperature (Kelvin) or CIE chromaticity coordinates measured by means of spectroradiometry.

M. Lamp performance shall be in accordance with the Manufacturer's latest published data for the lamp types and respective Manufacturers specified.

N. Manufacturer for respective lamps and modules shall be as indicated below and may not be cross-substituted (e.g., where GE is specified for one luminaire type and Osram is specified for another luminaire type, the GE lamp may not be substituted with Osram and the Osram lamp may not be substituted with GE). All lamps shall be dedicated-socket unless specified otherwise. Where more than one lamp Manufacturer is cited across luminaire types, final lamping for all such luminaire types shall be assigned to a single lamp Manufacturer in order to assure color and output consistency. All lamps of a given type shall be supplied by the same Manufacturer with same lot/due date codes for color consistency.

1. Fluorescent lamps shall be manufactured by General Electric or Philips or Osram as specified in and meeting the requirements of Section 4.1 Luminaire Schedule, if used, and Section 4.2 Luminaire Specification, unless specified otherwise.

2. Not used.

3. Not used.

4. HID lamps shall be manufactured by General Electric or Philips or Osram as specified in and meeting the requirements of Section 4.1 Luminaire Schedule, if used, and Section 4.2 Luminaire Specification, unless specified otherwise.

O. If specific lamp or LED module Manufacturer(s) is/are noted in Section 4.2 Luminaire Specification, only that Manufacturer shall be acceptable.

P. Where specified in Section 4.2 Luminaire Specification, work shall include the provision and installation of lamps and, for all adjustable luminaires, orientation/aiming/adjustment of lamps and LED modules for all luminaires capable of such adjustment.

Q. Incandescent and tungsten halogen lamps shall not be operated during construction, other than for initial testing, prior to final inspection by the Architect.

R. Replace defective and burned out lamps at the date of substantial completion as determined by the Architect.

PART 3 EXECUTION

3.1 INSTALLATION

A. Installation shall be in accordance with the NEC, manufacturer’s instructions and as shown on the drawings and specifications.

B. Installed luminaires shall be provided with protective covering by Contractor until such time as the space(s) is cleaned and ready for occupancy.

C. Align, mount and level the luminaires uniformly. All luminaires shall be installed plumb/true and level as viewed from all directions unless specifically identified otherwise in the Luminaire Specification Section 4.1. Luminaires shall remain plumb and true without continual adjustment or visibly obvious means beyond what is shown on luminaire submittal drawings.

D. The Contractor shall coordinate the lighting system installation with the relevant trades so as
to eliminate interferences with hangers, mechanical ducts, sprinklers, pipes, steel, etc. Avoid interference with and provide clearance for equipment. Where the indicated locations for the luminaires conflict with the locations for equipment, coordinate relocations with the Architect or Owner.

E. For suspended luminaires, the mounting heights and configuration of the luminaires shall be as specified in the Luminaire Specification Section 4.1 and/or indicated on the drawings, and where conflicts exist, as approved by the Architect or Owner.

F. Suspended luminaires shall be installed plumb/true and level unless specifically identified otherwise in the Luminaire Schedule and at a height from finished floor as specified on the drawings, details and Luminaire Schedule. In cases where this is impractical, refer to the Architect or Owner for a decision. All appurtenances shall be consistently organized for a neat, uniform appearance.

G. Lighting Fixture Supports:
   1. Shall provide support for all of the fixtures. Supports may be anchored to channels of the ceiling construction, to the structural slab or to structural members within a partition, or above a suspended ceiling.
   2. Shall maintain the fixture positions after cleaning and relamping.
   3. Shall support the luminaires without causing the ceiling or partition to deflect
   4. For installation in suspended ceilings, ensure that the luminaires are supported such that there is no resultant bowing or deflection of the ceiling system greater than 1/360 of the length of the total span of the ceiling member.

H. Luminaires shall be integrated with controls in accordance with respective luminaire manufacturers’ and controls manufacturers’ recommendations and instructions and Controls Specification Section and to provide a complete, trouble-free/flicker-free/smooth-and-continuous-dimming operation without compromising safety, code and/or UL requirements.

I. Contractor shall be responsible for sealing all luminaires for wet locations (i.e. all knock-outs, all pipe and wire entrances, etc.) to prevent water wicking.

J. Unless otherwise installed at the Luminaire Vendor’s factory, furnish and install the specified lamps for all luminaires installed and all existing luminaires reinstalled under this project.

K. Coordinate between the electrical and ceiling trades to ascertain that approved luminaires are furnished in the proper sizes, with the proper flange details, and installed with the proper devices (hangers, clips, trim frames, flanges), to match the ceiling system being installed.

L. Bond luminaires and metal accessories to the grounding system as specified in Section 26 05 26, GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS if cited in the Electrical Engineering Documents.

M. Luminaire finishes which are disturbed in any way during construction shall be touched up or refinished in a manner satisfactory to the Architect or Owner and which do not void warranty.

N. Reflector cones, louvers, baffles, lenses, trims and other decorative elements shall be installed after completion of ceiling tile installation, plastering, painting and general cleanup.

O. Whenever a luminaire or its hanger canopy is installed directly to a surface mounted junction box, a finishing ring painted to match the ceiling, shall be used to conceal the junction box.

P. All lamps shall be seasoned for a minimum of 12 hours and a maximum of 100 hours in full-on mode without dimming prior any dimming and prior to turn-over to Owner. All lamps used for convenience lighting during construction for periods collective operation longer than 100 hours and any lamps which have failed/burned-out shall be replaced with identical new lamps, which shall then be seasoned as described above, immediately prior to the date of substantial completion as determined by the Architect or Owner.

3.2 TESTING AND ADJUSTMENT:

A. Contractor shall coordinate lighting operations with commissioning (Section 26 08 00, COMMISSIONING OF ELECTRICAL SYSTEMS, if cited in the Electrical Engineering Documents) and controls (SECTION 26 09 23 LIGHTING CONTROLS, if cited in the Electrical Engineering Documents). The lighting and lighting controls systems shall be synchronized and fully operable to address the lighting operation in a complete and code-compliant manner.
B. All adjustable luminaires shall be aimed, focused, locked, etc., by the Contractor under the observation of the Architect or Owner. As aiming and adjusting is completed, locking setscrews and bolts and nuts shall be tightened securely by the Contractor.

C. Contractor shall coordinate with Architect or Owner to establish the number of two-member crews required for aiming and adjusting. All aiming and adjusting shall be performed after the entire installation is complete for each phase or area. The Contractor shall be responsible for notifying the Architect or Owner of appropriate time for final luminaire adjustment.

D. All ladders, scaffolds, lifts, gloves, cleaning cloths, access/adjustment tools, etc. required for aiming and adjusting luminaires shall be furnished by the Contractor.

E. Where possible, units shall be focused during the normal working day. However, where daylight interferes with seeing lighting effects, aiming shall be accomplished at night.

3.3 CLEANING:
A. At completion of each phase or area all luminaires and accessories shall be thoroughly cleaned. All fingerprints, dirt, tar, smudges, drywall mud and dust, etc. shall be removed by the Contractor from the luminaire bodies, reflectors, trims, and lens/louvers prior to final acceptance. All reflectors shall be free of paint other than factory-applied, if any. All reflectors, cones and lenses shall be cleaned only according to manufacturers’ instructions.

PART 4 LUMINAIRES

4.1 LUMINAIRE SCHEDULE
A. This document constitutes the luminaire schedule.

4.2 LUMINAIRE SPECIFICATION (DESCRIPTIONS AND CUTSHEETS)
A. Salient luminaire features and details are described and illustrated on the following pages.
B. Products identified herein and cutsheets which may be attached or referenced represent copyrighted and/or patented and/or trademarked material and may not be freely copied nor distributed for any purposes other than the purchase of the specified products.
C. Cutsheets, where included, represent the luminaire concept. Refer to listed Manufacturers’ latest datasheets for exact relevant information.

(DESCRIPTIONS AND CUTSHEETS ON FOLLOWING PAGES)
[THIS PAGE LEFT BLANK INTENTIONALLY.]
Provide line-item pricing for Owner’s consideration.

Recessed (ceiling substrate as detailed on the architectural drawings) mounted light-emitting-diode (LED) downlight luminaire shall exhibit an aperture nominally 0 feet/4 inches in diameter with a recessed housing and suspension bracketry and wiring footprint above the ceiling of about 1 foot/3 inches in width by 1 foot/4 inches in length with an overall recess depth of about 7¼ inches (see respective vendor’s current datasheet for exact dimensions). Luminaire shall be installed flat/flush/plumb and shall exhibit no light leaks at ceiling juncture. As with all recessed luminaires, luminaire housing shall be appropriately secured to meet code and to prevent settlement shifting over time and to prevent inadvertent heating or rotation of housing during servicing and/or aiming. stapling, nailing, screwing, or otherwise attaching ceiling substrates or supports to luminaire housing which precludes complete access to lamp and driver mechanisms or which is not code compliant shall not be permitted. Reflector cone shall be finished in satin clear aluminum with an overlap trim flange in matching finish. Luminaire optic shall consist of a nominal 30-watt LED array consisting of 3000K LEDs exhibiting 90+CRI, R9 of 80+, color consistency binning within 1x2 MacAdam Ellipses, and total delivered lumens of at least 1150, with a medium distribution beam spread including beam smoothing lens media, center beam candlepower of at least 1550 cd, and rated life of 50,000 hours to 70% output. Luminaire shall be furnished with an edloLED Brand driver with 5-year written warranty, pending Vendor confirmation of electrical, fit, and UL compliance appropriate for the LED array and which shall exhibit high power factor (>0.9), nondim flicker-free operation, and universal voltage. Luminaire shall be warranted for 5 years. LED array shall be warranted for 10 years. Driver and light engine shall be replaceable components through luminaire aperture without replacing entire luminaire and/or without removing ceiling. Luminaire shall be wired for nondim operation. Luminaire and all components shall be UL/NRTL listed and labeled for use in dry application.

- Kirlin LRR-04002-30K-70-FS-99(XicatoAXSM1300lmsMFL)-99(eldoLED SOLOdriveSYRwnty)
- Kurt Versen A1135-1300AS-SSC-D(eldoLED SOLOdriveSYRwnty)-F

........................................
**DL LED XSM/4**

**recessed LED downlight**

**FULLY SUSTAINABLE**

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**FEATURES**

DL LED XSM/4 is an efficient, 4" aperture, LED downlight powered by one of a number of Xicato® LED modules – including Artix Series and Vibrant Series modules – all of which are distinguished by extraordinary color consistency (within 1x2-step MacAdam ellipse). See tables on the reverse for wattages and efficiencies. Luminaire includes an internal reflector to produce a 20° spot, 40° flood or 60° wide flood beam spread. To allow beam spread to be changed after installation, internal reflectors are also available as accessories. Precise external reflector design minimizes aperture brightness and provides a shielding angle of 40°. Recess depth is 8¾". Luminaire may be ordered with one of a number of drivers. An optional integral holder permits the use of one or two of a number of Optical Accessories including lenses and color filters. External reflectors are available in three clear natural aluminum finishes — semi-specular (C), slightly diffuse (V) or fully diffuse (EC) — as well as champagne gold or black Alzak®. Other finishes available on special order. A LightPlate trim may be used instead of an external reflector. Luminaire includes a pair of mounting bars (3/4" x 27" C channel). Specialty bars for wood joists and T-bar installations are also available.

**APPLICATIONS**

Luminaire is recommended for downlighting in commercial, retail and residential spaces. Luminaire is listed as an inherently protected luminaire and does not require a thermal protector. Luminaire is prewired, approved for ten #12 wire 90° branch circuit pull-through wiring and suitable for use in a fire rated ceiling. Luminaire is listed for Damp Location and is RoHS compliant. Removal of the reflector allows access to the junction box.

---

**SPACING REQUIREMENT**

The 2000A model of this luminaire must be spaced 36" apart and 18" from walls, and must have ½" clearance above housing.

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**MODIFICATIONS AVAILABLE**

See next page

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**PRODUCT CODE**

For complete product code, list basic unit and select one item from each following box.

<table>
<thead>
<tr>
<th>Basic Unit</th>
<th>DLXSM2-4DL</th>
</tr>
</thead>
</table>

**Driver**

dimmable to 1% by a 0-10V dimmer on 120v or 277v service; not available for 2000A Artix LED

dimmable to 10% by a 0-10V dimmer on 120v or 277v service; for 2000A Artix LED only...

**Light Output**

| 700 lumens / CRI 97 Artist | 107A |
| 1000 lumens / CRI 97 Artist | 110A |
| 1000 lumens / CRI 80+ | 110S |
| 1300 lumens / CRI 97 Artist | 113A |
| 1500 lumens / CRI 97 Vibrant | 115V |
| 1500 lumens / CRI 80+ | 115S |
| 2000 lumens / CRI 97 Artix* | 120A |
| 2000 lumens / CRI 80+ | 120V |
| 2200 lumens / CRI 80+ | 122S |

**Light Color**

| 2700 K | 27K |
| 3000 K | 30K |
| 3500 K | 35K |
| 4000 K | 40K |

**Beam Spread Reflector**

(specify one to ship with fixture)

| 20° spot | 20D |
| 40° flood | 40D |
| 60° wide flood | 60D |

**Voltage**

standard luminaire operates on either 120 or 277 service

**Reflector Color and Detail**

<table>
<thead>
<tr>
<th>Overlap</th>
<th>Flash</th>
<th>Trim Flush*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Semi-specular Clear</td>
<td>COIL</td>
<td>CFP</td>
</tr>
<tr>
<td>Slightly diffuse Clear</td>
<td>WCOL</td>
<td>WFL</td>
</tr>
<tr>
<td>Fully diffuse Clear</td>
<td>ECOL</td>
<td>EFL</td>
</tr>
<tr>
<td>Champagne Gold</td>
<td>GOL</td>
<td>GFL</td>
</tr>
<tr>
<td>White</td>
<td>WOL</td>
<td>WFL</td>
</tr>
</tbody>
</table>

**Options**

Specify by adding to the basic unit.

**Integral holder for one or two Optical Accessories**

| see over | G |

**Emergency battery pack**

(see next page)

**ACCESSORIES**

Specify as separate line item.

**Plaster ring**

allows use of 4 7/8" OD Trim Flush [TF]

| reflector in sheetrock ceiling: 5 ½" dia hole required | TF RING/4 |

**EXTRA REFLECTORS**

Specify as separate line items.

**OPTICAL ACCESSORIES**

**NORMAL POWER ARCHITECTURAL INTERIOR LIGHTING**

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4150 22nd ST, LIC, NY 11101, tel 718.685.0700, fax 718.786.8500 www.epl.com


*Copyright, Edison Price Lighting 2015

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DD1
**DD1**

**DL LED XSM/4**

*recessed LED downlight*

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**FEATURES**

DL LED XSM/4 is an efficient, 4" aperture, LED downlight powered by one of a number of Xicato® LED modules – including Artlist Series and Vibrant Series modules – all of which are distinguished by extraordinary color consistency (within 1 x 2-step MacAdam ellipse). See tables on the reverse for wattages and efficacies.

Luminaire includes an internal reflector to produce a 20° spot, 40° flood or 60° wide flood beam spread. To allow beam spread to be changed after installation, internal reflectors are also available as accessories.

Precise external reflector design minimizes aperture brightness and provides a shielding angle of 40°. Recess depth is 8¾”.

Luminaire may be ordered with one of a number of drivers.

An optional integral holder permits the use of one or two of a number of Optical Accessories including lenses and color filters.

External reflectors are available in three clear natural aluminum finishes – semi-specular (C), slightly diffuse (V) or fully diffuse (EC) – as well as champagne gold or black Alzak®. Other finishes available on special order.

A LightPlate trim may be used instead of an external reflector.

Luminaire includes a pair of mounting bars (3/4" x 27" C channel). Specialty bars for wood joists and T-bar installations are also available.

**APPLICATIONS**

Luminaire is recommended for downlighting in commercial, retail and residential spaces.

Luminaire is listed, as an inherently luminaire and does not require a thermal protector. Luminaire is prewired, approved for ten #12 wire 90° branch circuit pull-through wiring and suitable for use in a fire rated ceiling. Luminaire is listed for Damp Location and is RoHS compliant. Removal of the reflector allows access to the junction box.

---

**PRODUCT CODE**

For complete product code, list basic unit and select one item from each following box.

<table>
<thead>
<tr>
<th>Basic Unit</th>
<th>DLXSM2-4DL</th>
</tr>
</thead>
</table>

- **Driver**
  - dimmable to 1% by a 0-10V dimmer on 120v or 277v service; not available for 2000L Artist LED
  - dimmable to 10% by a 0-10V dimmer on 120v or 277v service; not available for 2000L Artist LED only
  - dimmable to 1%; Lutron® driver compatible with Lutron® 3-wire fluorescent dimmer or EcoSystem Bus Control; on 120v or 277v

- **Light Output**
  - 700 lumens / CRI 97 Artist
  - 1000 lumens / CRI 97 Artist
  - 1500 lumens / CRI 80+ 3000K
  - 1500 lumens / CRI 97 Artist
  - 2100 lumens / CRI 97 Artist
  - 2600 lumens / CRI 80+ 2000W

- **Light Color**
  - 2700K
  - 3000K
  - 3500K
  - 4100K
  - 5000K
  - 6500K

- **Beam Spread Reflector**
  - 20° spot reflector
  - 40° flood reflector
  - 60° wide flood

- **Voltage**
  - standard luminaire operates on either 120 or 277 service

<table>
<thead>
<tr>
<th>Reflector Color and Detail</th>
<th>Overlap</th>
<th>Flush</th>
<th>Trim Flush*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Specimenary Clear (specify one to ship with fixture)</td>
<td>COL</td>
<td>CFL</td>
<td>CTF</td>
</tr>
<tr>
<td>Slightly diffuse Clear</td>
<td>VOL</td>
<td>VFL</td>
<td>VF</td>
</tr>
<tr>
<td>Fully diffuse Clear</td>
<td>ECOL</td>
<td>ECF</td>
<td>ECTF</td>
</tr>
<tr>
<td>Champagne Gold</td>
<td>GOL</td>
<td>GFL</td>
<td>GIT</td>
</tr>
<tr>
<td>White</td>
<td>WOL</td>
<td>WFL</td>
<td>WFT</td>
</tr>
</tbody>
</table>

Other reflector finishes available on special order.

**OPTIONS**

- **Integral holder for one or two Optical Accessories**
  - Specify as separate line items.

- **Emergency battery pack**
  - Fixture footprint increases to 21 1/2" x 12 1/2"...

**ACCESSORIES**

- **Spec as separate line item.**

- **EXTRA REFLECTORS**
  - Specify as separate line items.

**OPTICAL ACCESSORIES**

- See next page

---

**MODIFICATIONS AVAILABLE**

- See next page

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**SPACING REQUIREMENT**

The 2000A model of this luminaire must be spaced 36” apart and 18” from walls, and must have ½” clearance above housing.
DT1

Busway-mounted

Accent Gallery

22W-nondim-120V

DT1

Surface (busway track, coordinated with type TZ1 series) mounted LED track luminaire shall be about 5½ inches in diameter by about 10¼ inches in length and shall be furnished with a track adapter matched to type TZ1 series busway track. Luminaire shall consist of a spun aluminum housing with a swivel stem mounting to track adapter. Luminaire shall be finished in factory standard silver paint or brushed aluminum. Luminaire shall be furnished with an integral On/Off switch located either on the luminaire housing or track adapter. Luminaire shall be furnished with an integral 120V primary, 24V secondary power supply and driver. Driver shall be warranted for a period of 5 years. Luminaire shall be furnished with a complete set of reflectors, consisting of one narrow flood (~20-degree) beam spread reflector and one medium flood (~40-degree) beam spread reflector, and one wide flood (~60-degree) beam spread reflector; and a complete set of spread lenses, consisting of one spread lens (~55 degrees), one linear spread lens (~5x55 degrees), and one beam softener. Luminaire shall be shipped with 20-degree reflector installed with all other optical accessories packaged together in clearly labelled boxes and delivered to the owner for storage. Luminaire optic shall consist of a nominal 22-watt LED array consisting of tunable color temperature and variable color LEDs exhibiting a color temperature range of 2700K to 6000K with a total delivered lumens of at least 950 lumens, with a center beam candlepower of at least 4000 cd using a narrow flood distribution reflector with no spread lens, and rated life of 50,000 hours to 70% output. Luminaire color temperature, dimming, and hue and saturation tuning shall be controlled with a hand-held “Light Commissioning Tool” (LCT) device and luminaire manufacturer shall provide a project total quantity of five [5] LCT devices as part of project. Luminaire and LED array shall be warranted for a period of 5 years. Luminaire and all components shall be UL/NRTL listed and labeled for use in dry application.


==================================
**DT1**

**MIDIMAX™ LMT O LH**

*track mounted tunable LED open-aperture accent light*

**FEATURES**

MidiMax LMT O LH is a track mounted accent light equipped with a Lumenetix® Araya® broad spectrum LED module that delivers tunable 90+ CRI white light with extraordinary consistency (within 2-step MacAdam ellipses). Luminaire may be powered by 120-volt or 277-volt track. See tables on the reverse for wattages and efficacies.

Luminaire is available in a choice of two color tuning ranges: 1650K to 4000K and 2700K to 6000K. Tuning is controlled by a wireless ‘Light Commissioning Tool’ (LCT) ordered as a separate item. Tunable parameters include:

- on/off
- correlated color temperature (CCT)
- dimming to 5%
- hue
- saturation

LCT also permits one to 'copy and paste' settings from one luminaire to another.

MidiMax luminaires may be configured to mount to any of eighteen undimmed 20-amp, 120-volt track systems – or – to any of six undimmed 277-volt track systems.

Beam spread is changed by removing the spring-mounted lens holder assembly, replacing one ‘twist and lock’ reflector with another, and reinserting the lens holder assembly. Luminaire is ordered with a single reflector, one or both of the other reflectors may be ordered as accessories.

A concealed swivel provides 385° horizontal rotation and vertical adjustment from 0° to 90°. The swivel is permanently tensioned, allowing the luminaire to remain fixed at any aiming angle.

Luminaires accept one or two of a number of spread lenses. A Solite prismatic lens is included.

MidiMax luminaires have seamless aluminum housings and cast aluminum tops for lightweight durability and heat dissipation.

**APPLICATIONS**

Luminaire is suitable for highlighting vertical or horizontal surfaces, as well as objects in museums, galleries, showrooms, residences, offices and stores.

Luminaire is listed for mounting on Edison Price Lighting 120-volt or 277-volt track.

**PRODUCT CODE**

For complete product code, list basic unit and select one item from each following box.

<table>
<thead>
<tr>
<th>Basic Unit</th>
<th>Track Configuration</th>
<th>Beam Spread Reflector</th>
<th>Finish</th>
<th>Light Output/Light Color Tuning Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>LX-LMT-OH</td>
<td>120-volt track (e.g. SightLine)</td>
<td>20° spot</td>
<td>white paint finish</td>
<td>1200 lumens; 1650K-4000K</td>
</tr>
<tr>
<td></td>
<td>277-volt track (e.g. HighLine)</td>
<td>40° flood</td>
<td>black paint finish</td>
<td>1350 lumens; 2700K-6000K</td>
</tr>
<tr>
<td></td>
<td></td>
<td>60° wide flood</td>
<td>custom color paint finish</td>
<td>60K112</td>
</tr>
</tbody>
</table>

**OPTIONS** Specify by adding to the product code.

- equipped for outlet box mounting with a 4” (114mm) dia matt white box cover; mounts directly to a standard 4” (102mm) octagonal outlet box
- For luminaries modified for 50A or 60A track system, contact factory

**NECESSARY ACCESSORY**

Specify as separate line items.

- Light Commissioning Tool

**EXTRA REFLECTORS** Specify as separate line items.

- 20° spot reflector
- 40° flood reflector
- 60° wide flood reflector

**OPTICAL ACCESSORIES** Specify as separate line items.

- All are 3 3/8” (95mm) dia. Lenses and filters are glass; screens are aluminum.
- 55° spread lens
- 40° x 70° spread lens
- prismatic lens (Solite)
- beam smoother included with fixture

**Edison Price Lighting**

4150 22nd Street, LIC NY 11101

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Wayne State University Community Arts - Art Department Gallery Lighting

WSU Project Number: 039-231828

Bids

June 30, 2015

©07/02/2015 - 26 51 01 WSU Community Arts Gallery N PAL-GSLD-11813_Relaunch_Bids_20150702
DT1

MIDIMAX LMT O LH

PHOTOMETRIC REPORT (tested per IESNA LM-79-2008)
Data prorated from Verification Services Report No. 182709. Original report furnished upon request.
Luminaire: track-mounted LED accent light with a 20° reflector and black cross-baffle (NO LENS)
Lamp: Lumenetix CTM 019, 1650-4000K, 1200 lumens (peak light output at 2800K)

CANDLEPOWER DISTRIBUTION (Candela)

<table>
<thead>
<tr>
<th>Vertical Angle (°)</th>
<th>Horizontal Angle (°)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>37.22</td>
</tr>
<tr>
<td>5</td>
<td>30.55</td>
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<td>15</td>
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<tr>
<td>85</td>
<td></td>
</tr>
<tr>
<td>90</td>
<td></td>
</tr>
</tbody>
</table>

LUMINAIRE LIGHT OUTPUT AND EFFICIENCY (AT 2800K)

<table>
<thead>
<tr>
<th>LED Module Type</th>
<th>Luminaire Light Output</th>
<th>Luminaire Efficacy (lm/watt)</th>
<th>System Wattage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1650K-4000K Color Tuning Range –1200 lumens</td>
<td>847*</td>
<td>39</td>
<td>22</td>
</tr>
<tr>
<td>2700K-6000K Color Tuning Range –1350 lumens</td>
<td>949*</td>
<td>43</td>
<td>22</td>
</tr>
</tbody>
</table>

*estimated values

DRIVER INFORMATION

| Voltage | 120 | 277 |
| Input Watts (1200L, 4000K/1350L, 6000K) | 22 | 22 |
| Input Current (A) (1200L, 4000K/1350L, 6000K) | 18 | 0.08 |
| Min. Power Factor | 0.99 | 0.99 |
| Operating Temperature Range (F) | –13 to 122 | –13 to 122 |

*estimated values
**TZ1a**

**Track**

- **Gallery**

**nondim-120V**

**TZ1a**

Surface (ceiling as detailed by Owner) mounted 2-circuit busway shall be matched with Type DT1 to provide a complete, code-compliant system of track busway and busway-mounted accent lighting. Busway layout shall consist of a closed rectangular pattern with two legs nominally 6 feet/8 inches length and two legs nominally 24 feet/0 inches in length with a power feed at two opposing corners as shown on plan.

Busway shall be about 1 inch wide by 2 inches in height and shall consist of an extruded aluminum channel with copper conductors providing two nominal 20 Amp circuits with a shared neutral, but fitted with current limiters no less than 10A and no greater than 12A. Pattern shall be formed with straight in-line connectors, 90-degree corner connectors, power feeds, canopies, and other auxiliary equipment as necessary to provide a complete, operational, secure, and code-compliant installation. Busway mounting shall accommodate the normal activity of museum show lighting mounting and aiming adjustment. Where necessary, busway shall be carefully, neatly, and consistently field cut in accordance with Manufacturer's instructions to achieve pattern dimensions. Busway shall exhibit a factory standard silver painted or brushed aluminum finish. Any scrapes, nicks or marks in the painted finish shall be touched up as necessary with Manufacturer-supplied paint before project completion. Busway shall be supplied with power at 120V. Busway shall be warranted for a period of at least 5 years. Busway and all components shall be UL/NRTL listed and labeled for use in dry application.

- Edison Price Sightline S SLS/8S-SLS/4S-SLS/LJS-SLS/LJFS-SLS/LS-SLS/DSS-SLS/LIM10S in pattern described above and with any auxiliary equipment as necessary to provide complete, operational, code-compliant pattern
- Litelab BUS-08S2AXX2-288by80-NT-CL12.0A in pattern described above and with any auxiliary equipment as necessary to provide complete, operational, code-compliant pattern

**TZ1b**

**Track**

- **Gallery**

**nondim-120V**

**TZ1b**

Surface (ceiling as detailed by Owner) mounted 2-circuit busway shall be similar to Type TZ1a, except shall consist of a closed rectangular pattern with two legs nominally 6 feet/8 inches length and two legs nominally 20 feet/0 inches in length with a power feed at two opposing corners as shown on plan.

- Edison Price Sightline S SLS/8S-SLS/4S-SLS/LJS-SLS/LJFS-SLS/LS-SLS/DSS-SLS/LIM10S in pattern described above and with any auxiliary equipment as necessary to provide complete, operational, code-compliant pattern
- Litelab BUS-08S2AXX2-240by80-NT-CL12.0A in pattern described above and with any auxiliary equipment as necessary to provide complete, operational, code-compliant pattern
FEATURES

SightLine S is a surface mounted track system suitable for wiring with one or two 20 amp circuits. Tracks can be cut to length in the field. Tracks are mounted to ceilings or walls by means of heavy-duty hanger assemblies which separate the track only ¼” from the mounting surface.

Extruded aluminum tracks, feeds and joints offer a number of benefits:
• elegant appearance, with hairline joints between components
• 6’ spans between attachment points, rather than the usual 4’
• exceptional durability for heavy use and long life.

SightLine S is designed so that it completely contains the adapter of the fixture. This feature allows track fixtures to hang from simple ½” diameter stems free of unsightly screws, levers or knobs.

The SightLine S system consists of 15 components, including L, T and X joints and seven kinds of electrical feed. All outlet box feeds include a unique tool-free cover. Standard finish for Sightline S components is matte white; also available in black and Industrial Silver matte paint finishes (see over).

APPLICATIONS

System is recommended for museums, galleries, showrooms, retail stores, offices, schools or residences – wherever adjustable wallwash or accent lighting is required and especially where the lighting program is changed often.

SightLine S is designed to be mounted to ceilings and vertical surfaces and to support and power Edison Price Lighting track fixtures prepared for 20-amp, 120-volt service only.

System is 3-conductor, continuously grounded. It may be supplied by one or two individually switched, 120 volt, 20 amp branch circuits. Total capacity is 40 amps when supplied by a single phase, 120/240 volt, three-wire branch circuit. Prewired feeds use #12 stranded wire. Service wire brought directly to feed terminals must be #12 AWG solid wire.

All components are listed for indoor use only.

WIRING

Sightline can be wired in two ways.

**Single Circuit** limited to 120 volts, 20 amps, single phase.

**Two-Circuit** limited to 20 amps each, 120/240 volts, split single phase.
## TZ1-series

**SIGHTLINE S**

### TRACK

<table>
<thead>
<tr>
<th>Component</th>
<th>Product Codes</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>4' Track</td>
<td>SLS/4 SLS/4B SLS/4S</td>
<td>Individual 4'0&quot; length of track with one end cap and two hangers.</td>
</tr>
<tr>
<td>8' Track*</td>
<td>SLS/8 SLS/8B SLS/8S</td>
<td>Individual 8'0&quot; length of track with one end cap and three hangers.</td>
</tr>
<tr>
<td>End Feed</td>
<td>SLS/EF SLS/EFB SLS/EFS</td>
<td>Prewired feed for electrical service from an outlet box at the end of a track. Includes outlet box cover.</td>
</tr>
<tr>
<td>In-Line Feed</td>
<td>SLS/IF SLS/IFB SLS/IFS</td>
<td>Prewired feed for electrical service between tracks, from an outlet box above. Includes outlet box cover.</td>
</tr>
<tr>
<td>Conduit Feed</td>
<td>SLS/CF SLS/CFB SLS/CFS</td>
<td>Feed for electrical service directly into end of track. Includes adapter for 3/8&quot; conduit or BX.</td>
</tr>
<tr>
<td>Boxless Feed</td>
<td>SLS/BLf SLS/BLfB SLS/BLFS</td>
<td>Feed for electrical service directly through ceiling without an outlet box. For use with End Feed, In-Line Feed, L-Joint, T-Joint or X-Joint.</td>
</tr>
<tr>
<td>Live Splice</td>
<td>SLS/LS SLS/LSB SLS/LSS</td>
<td>Components for joining two tracks and connecting their electrical conductors. Fits within track.</td>
</tr>
<tr>
<td>Dead Splice</td>
<td>SLS/DS SLS/DSB SLS/DSS</td>
<td>Component for joining two tracks without connecting their electrical conductors. Adds 4&quot; to length of track.</td>
</tr>
<tr>
<td>L-Joint</td>
<td>SLS/LJ SLS/LJB SLS/LJS</td>
<td>90° joint prewired to connect circuits of adjacent tracks. Includes loose wire leads and an outlet box cover which allow conversion to an electrical feed.</td>
</tr>
<tr>
<td>L-Joint Feed</td>
<td>SLS/LJF SLS/LJFB SLS/LJFS</td>
<td>90° joint prewired to connect circuits of adjacent tracks and provide electrical service. Incl. outlet box cover.</td>
</tr>
<tr>
<td>T-Joint</td>
<td>SLS/TJ SLS/TJB SLS/TJS</td>
<td>T-joint prewired to connect circuits of adjacent tracks. Includes loose wire leads and an outlet box cover which allow conversion to an electrical feed.</td>
</tr>
<tr>
<td>T-Joint Feed</td>
<td>SLS/TJF SLS/TJFB SLS/TJFS</td>
<td>T-joint prewired to connect circuits of adjacent tracks and provide electrical service. Incl. outlet box cover.</td>
</tr>
<tr>
<td>X-Joint</td>
<td>SLS/XJ SLS/XJB SLS/XJS</td>
<td>X-joint prewired to connect circuits of adjacent tracks. Includes loose wire leads and an outlet box cover which allow conversion to an electrical feed.</td>
</tr>
<tr>
<td>X-Joint Feed</td>
<td>SLS/XJF SLS/XJFB SLS/XJFS</td>
<td>X-joint prewired to connect circuits of adjacent tracks and provide electrical service. Incl. outlet box cover.</td>
</tr>
<tr>
<td>5A Limiter</td>
<td>SLS/LIM5 SLS/LIM5B SLS/LIM5S</td>
<td>5-amp capacity current limiter with one reset button for each circuit. California Energy Commission approved.</td>
</tr>
<tr>
<td>10A Limiter</td>
<td>SLS/LIM10 SLS/LIM10B SLS/LIM10S</td>
<td>10-amp capacity current limiter with one reset button for each circuit. California Energy Commission approved.</td>
</tr>
</tbody>
</table>

*Note: • 12' lengths of track are available on special order; contact factory.

For wall-mounted installations specify "double hangers" and mount hangers at 24" intervals.

---

**Component Product Codes Description**

- **White**
- **Black**
- **Silver**
### TZ1-series

#### SIGHTLINE S

**layout examples**

1. **6' RUN**
   - SLS-EF 5" long; includes end cap and outlet box cover
   - SLS-8 cut down to 5'7"
   - END CAP

2. **12' RUN**
   - SLS-EF
   - SLS-8 cut down to 7'7"
   - SLS-LS mechanical and electrical splice
   - SLS-4
   - END CAP

3. **12' RUN**
   - SLS-EF
   - SLS-8 cut down to 7'6"
   - SLS-IF 6" long; includes outlet box cover
   - SLS-4
   - END CAP

4. **12' RUN**
   - SLS-EF
   - SLS-8 cut down to 5'3"
   - SLS-DS 4" long mechanical splice, separates adjacent circuits
   - SLS-8 cut down to 5'5"
   - SLS-EF

**more examples**

**REMEMBER:** You can cut Sightline S to the lengths you need for your project.

- **20'5" RUN**
  - Layout example

- **20'6" RUN**
  - Layout example

- **53'3" RUN**
  - Layout example

- **25'3" x 25'3" GRID**
  - Layout example

---

**TZ1-series**

**SIGHTLINE S**

**layout examples**

1. **6' RUN**
   - SLS-EF 5" long; includes end cap and outlet box cover
   - SLS-8 cut down to 5'7"
   - END CAP

2. **12' RUN**
   - SLS-EF
   - SLS-8 cut down to 7'7"
   - SLS-LS mechanical and electrical splice
   - SLS-4
   - END CAP

3. **12' RUN**
   - SLS-EF
   - SLS-8 cut down to 7'6"
   - SLS-IF 6" long; includes outlet box cover
   - SLS-4
   - END CAP

4. **12' RUN**
   - SLS-EF
   - SLS-8 cut down to 5'3"
   - SLS-DS 4" long mechanical splice, separates adjacent circuits
   - SLS-8 cut down to 5'5"
   - SLS-EF

**more examples**

**REMEMBER:** You can cut Sightline S to the lengths you need for your project.

- **20'5" RUN**
  - Layout example

- **20'6" RUN**
  - Layout example

- **53'3" RUN**
  - Layout example

- **25'3" x 25'3" GRID**
  - Layout example

---

**TZ1-series**

**SIGHTLINE S**

**layout examples**

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   - SLS-EF 5" long; includes end cap and outlet box cover
   - SLS-8 cut down to 5'7"
   - END CAP

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   - SLS-EF
   - SLS-8 cut down to 7'7"
   - SLS-LS mechanical and electrical splice
   - SLS-4
   - END CAP

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   - SLS-EF
   - SLS-8 cut down to 7'6"
   - SLS-IF 6" long; includes outlet box cover
   - SLS-4
   - END CAP

4. **12' RUN**
   - SLS-EF
   - SLS-8 cut down to 5'3"
   - SLS-DS 4" long mechanical splice, separates adjacent circuits
   - SLS-8 cut down to 5'5"
   - SLS-EF

**more examples**

**REMEMBER:** You can cut Sightline S to the lengths you need for your project.

- **20'5" RUN**
  - Layout example

- **20'6" RUN**
  - Layout example

- **53'3" RUN**
  - Layout example

- **25'3" x 25'3" GRID**
  - Layout example

---

**TZ1-series**

**SIGHTLINE S**

**layout examples**

1. **6' RUN**
   - SLS-EF 5" long; includes end cap and outlet box cover
   - SLS-8 cut down to 5'7"
   - END CAP

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   - SLS-EF
   - SLS-8 cut down to 7'7"
   - SLS-LS mechanical and electrical splice
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   - END CAP

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   - SLS-EF
   - SLS-8 cut down to 5'3"
   - SLS-DS 4" long mechanical splice, separates adjacent circuits
   - SLS-8 cut down to 5'5"
   - SLS-EF

**more examples**

**REMEMBER:** You can cut Sightline S to the lengths you need for your project.

- **20'5" RUN**
  - Layout example

- **20'6" RUN**
  - Layout example

- **53'3" RUN**
  - Layout example

- **25'3" x 25'3" GRID**
  - Layout example
TZ1c
Tracks

Surface (ceiling as detailed by Owner) mounted 2-circuit busway shall be similar to Type TZ1a, except shall consist of a closed rectangular pattern with two legs nominally 6 feet/8 inches length and two legs nominally 16 feet/0 inches in length with a power feed at two opposing corners as shown on plan.

- Edison Price Sightline S SLS/8S-SLS/4S-SLS/LJS-SLS/LJFS-SLS/LS-SLS/DSS-SLS/LIM10S in pattern described above and with any auxiliary equipment as necessary to provide complete, operational, code-compliant pattern.
- Litelab BUS-08S2AXX2-192by80-NT-CL12.0A in pattern described above and with any auxiliary equipment as necessary to provide complete, operational, code-compliant pattern.

TZ1d
Track

Surface (ceiling as detailed by Owner) mounted 2-circuit busway shall be similar to Type TZ1a, except shall consist of a single straight run nominally 16 feet/0 inches in length with a single power feed at one end as shown on plan.

- Edison Price Sightline S SLS/8S-SLS/4S-SLS/EFS-SLS/LS-SLS/LIM10S in pattern described above and with any auxiliary equipment as necessary to provide complete, operational, code-compliant pattern.
- Litelab BUS-08S2AXX2-144-NT-CL12.0A in pattern described above and with any auxiliary equipment as necessary to provide complete, operational, code-compliant pattern.

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