

HOUSTON COMMUNITY COLLEGE SYSTEM

**INVITATION FOR BID
(COMPETITIVE SEALED BID - CONSTRUCTION)**

**LED LIGHTING RETROFIT – MULTIPLE FACILITIES
(LOANSTAR NO. II)**

IFB NO.: 18-38

ISSUED BY:

Procurement Operations Department

FOR:

Facilities Department

PROCUREMENT OFFICER:

Marilyn Vega, Sr. Buyer

Telephone: (713) 718-7410

E-mail: marilyn.vega@hccs.edu

BIDS ARE DUE AT THE ADDRESS SHOWN BELOW

NO LATER THAN:

July 12, 2018 by 2:00 p.m. (local time)

at

Houston Community College

Procurement Operations Department

3100 Main Street, 11th Floor

Houston, Texas 77002

IFB No. 18-38: LED Lighting Retrofit – Multiple Facilities
(LoanStar No. II)

Visit the [HCC Procurement Operations Department website](#) to get more information on this and other business opportunities. While at our website we invite you to [Register as a Vendor](#), if already registered, please confirm your contact information is current.

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Attachment Number	Attachment Title
Attachment No. 1	Contract Award Form
Attachment No. 2	Determination of Good Faith Effort Form
Attachment No. 3	Small Business Unavailability Certificate
Attachment No. 4	Contractor & Subcontractor Participation Form
Attachment No. 5	Bidder's Certifications
Attachment No. 6	Conflict of Interest Questionnaire
Attachment No. 7	Financial Interests and Potential Conflicts of Interests
Exhibit Number	Exhibit Title
Exhibit No. 1	Project Plan Book Specification Manual (attached)
Exhibit No. 2	HCC Division 001 Construction Specifications (attached)
Exhibit No. 3	Detail Itemized Equipment Unit Cost Table (attached)
Exhibit No. 4	Facilities List Cost Table (attached)
Exhibit No. 5	Sample HCC Construction Contract, Uniform General Conditions For Houston Community College Building Construction Contracts & Construction Bonds (attached)

NOTE: All noted Attachments are to be completed and submitted with Bid, Attachments 1, 5 and 7 must be signed and notarized.

SOLICITATION SCHEDULE

The following is the anticipated solicitation schedule including a brief description for milestone dates:

Solicitation Milestone	Date & Time
IFB released and posted to HCC's & ESBD's websites	June 22, 2018
Pre-Bid Meeting & Site Visit (Non-Mandatory) will be held Central Campus, San Jacinto Building, Room No. 112, Houston, Texas 77004. A Site Visit will follow after the Pre-Bid Conference.	July 2, 2018 at 10:00 am (local time)
Deadline to receive written question/inquiries	July 5, 2018 by 2:00 pm
Responses to written questions/inquiries (estimated)	July 6, 2018
Bid Submittal Due Date	July 12, 2018 by 2:00 pm (local time)
Anticipated Board Recommendation and Approval	August 2018

NOTE: Houston Community College reserves the right to revise this schedule. Any such revision will be formalized by the issuance of an addendum to the IFB and posted on Procurement Operations web site for your convenience.

Section 1 – Bid Overview & Scope of Work

1. Bid Overview

The Houston Community College, ("HCC") or ("College") is seeking competitive sealed bids from qualified firms to provide LED Lighting Retrofit Replacements (LoanStar No. II) for Multiple Facilities in accordance with the plans and specifications referenced herein. Qualified firms are invited to submit a written response outlining your bid to provide goods, equipment and services as described in the Scope of Work, and in accordance with the terms, conditions and requirements set forth in the Invitation for Bid (IFB). The successful bidder will provide the scope of work in accordance with all applicable laws, regulations and professional standards.

Pre-Bid Conference / Site Visit

A pre-bid conference and site visit will be held at a time and location as indicated in the *Solicitation Schedule* above. Attendance at this conference is advised if your firm wishes to ask any questions in connection with this IFB. *Please print a copy of the IFB and bring it with you, as no additional copies will be provided at the conference.* The College intends to present general information, which may be helpful in the preparation of proposals, and to offer firms the opportunity to ask questions concerning this IFB.

The pre-bid conference also provides opportunities for respondents to network and establish SBE and/or subcontracting relationships.

Immediately following the Pre-Bid meeting there will be a walk through and site visits at multiple facilities and locations. It is highly encouraged that all vendors participate in the site visit also.

Note: The Contractor shall be responsible for supplying any Personal Protective Equipment (PPE) necessary to conduct inspection of rooftops.

Disposal of Existing Lighting Fixtures

The Contractor shall be required to remove and properly dispose of approximately 20,500 existing florescent light fixtures. The Contractor is responsible for disposing of any materials in accordance with all federal, state and local laws and regulations. The Contractor shall also be required to provide and complete a turnkey lighting retrofit of approximately, 20,500 new LED Lighting Retrofit (LoanStar No. II) Lighting Retrofit – Multiple Facilities. (Exhibit No. 1)

Houston Community College intends to sell scrap lighting fixtures in addition to copper, steel, tin, stainless steel as well as other nonferrous scrap to South Post Oak Recycling Center (SPORC). Materials will be either delivered to SPORC by the contractor or placed in a roll off container provided and hauled by SPORC. The recycling facility contact will be: *Brandi Harleaux, brandi@southpostoakrecycling.com, or, 713.433.9944.*

Any smaller lightfixtures can be placed in a roll off container provided my SPORC at the project site. Materials should be placed in the container in a way that maximizing weight and material capacity in the container. Once the container is filled, a project representative will call SPORC to request a container pick up. SPORC will deliver an empty container to the project site as well as pick up the filled container within 48 hours.

With HCC delivered scrap metals, the vendor (South Post Oak Recycling Center) will furnish a scale receipt (proof of delivery) to the truck driver (vendor shall NOT pay driver cash) delivering scrap metal which states the quantity in pounds and describes each applicable category of material.

Copies of scale receipts, invoice receipts and the full amount due to HCC shall be furnished to the HCC Treasurers Office.

Prices of any recycled or scrapped material will be based on the American Metal Market rates negotiated in the contract.

Term of Agreement

The award resulting from this solicitation, if any, will be a one (1) time purchase as required from the bid schedule.

Performance and Payment Bonds

The successful Contractor(s) shall be required to provide a Performance and Payment Bond in the total amount (100%) of the Contract. If the award is in excess of \$25,000.00, only the Payment Bond will only be required. If award is in excess of \$100,000.00, both Performance and Payment Bonds are required.

The Performance and Payment Bonds shall be in the same form as that distributed by HCC, and attached hereto, all duly executed by this bidder (as "Principal") and by an incorporated surety company licensed to do business in the State of Texas. If the amount of the bond is greater than \$100,000.00, the surety must hold a certificate of authority from the United States Secretary of the Treasury.

2. Scope of Work

The Contractor shall furnish all labor, material, tools, equipment, transportation, insurance, bonds, permits, all applicable taxes, incidentals, and other facilities to perform all work for the said LED Lighting Retrofit Replacements. The project for the LED Lighting Retrofit Replacements (LoanStar No. II) covers multiple facilities and locations. The scope of work covers the requirements for the contractor to provide LED Lighting Retrofit Replacements as outlined in the plans and specifications described in Exhibit No. 1, Project Plan Book Specification Manual, attached.

a. Detailed Supporting Documents

- i. **Exhibit No. 1** – Project Plan Book Specification Manual. (attached)
- ii. **Exhibit No. 2** – HCC, Division One Construction Specifications. (attached)
- iii. **Exhibit No. 3** – Detail Itemized Equipment Unit Cost Table. (attached)
- iv. **Exhibit No. 4** – Line Item Facility List Cost Spreadsheet. (attached)
- v. **Exhibit No. 5** – HCC's Sample Construction Contract, Uniform General Conditions for Houston Community College Building Construction Contracts & Construction Bonds. (attached)

The installation of a portion of project components that may potentially disrupt normal day to day activities shall be accomplish after normal business hours, weekends and/or holiday periods.

3. Additional Information

A bid award, if any, will be through the issuance of a HCC purchase order (PO) and shall be governed by the general terms and conditions of purchase outlined in the HCC PO document unless such terms and conditions are superseded by the content of this IFB or contract (if terms are in conflict, the terms of the IFB will take precedence).

By submitting a response to this request, the offer or accepts the responsibility for downloading, reading and abiding by the terms and conditions set forth in the General Terms and Conditions found on the HCC web site at: <https://HCC General-Terms-and-Conditions-of-Purchase-Orders.pdf>

The final authority to approve or disapprove delivered products and/or services lies with HCC.

In the event products delivered do not meet specification quality level, or do not perform as specified in this proposal, the supplier will replace the items, at no additional cost to HCC.

The bidder shall be responsible for all claims against the manufacturer for manufacturing defects.

Any correspondence regarding a HCC PO, specifically an invoice, must include the PO number to ensure correct and timely processing. Invoices must reference HCC's PO number.

HCC will not be responsible for products delivered or services rendered in advance of a supplier's receipt of a purchase order.

In the event the supplier fails to deliver the products and/or services as and when promised in the bid, HCC reserves the right to proceed in any one or combination of the following ways:

- a. Cancel all or any part of the PO;
- b. Return all or any part of the products and/or services delivered to date and charge the supplier for any loss or cost incurred as a result of the failure to deliver as promised or
- c. Purchase all or any part of the products and/or services at current market price and charge the supplier the difference between the total of the market price, freight and the supplier's bid price.

The bidder must notify HCC immediately upon knowing that products and/or services will not be delivered / rendered as promised.

If HCC, in the exercise of its best judgment, determines the supplier's process for the delivery of products and/or services is unsafe or hazardous to life or property, HCC will suspend the process until the supplier takes corrective action.

No allowance will be made for a supplier' waste, loss, breakage, damage or difficulties.

Trash or refuse generated because of the operations or activities of the supplier delivering products will be properly disposed of at supplier's expense.

All claims against a carrier or for freight and/or damages shall be the bidder's responsibility.

4. Additions and Deletions

HCC, by written notice to the Contractor, at any time during the term of this contract, may add or delete like or similar equipment, locations and/or services to the list of equipment, locations and/or services to be performed. Any such written notice shall take effect on the date stated in the notice from the College. The Contractor will be requested to provide a monthly fee equal to their normal and customary charges or rates for the equipment, locations and/or services requested.

5. Estimated Quantities Not Guaranteed

The estimated quantities specified herein are not a guarantee of actual quantities, as HCC does not guarantee any particular quantity of *LED Lighting Fixtures* during the term of this contract. The quantities may vary depending upon the actual needs of the user department. The quantities specified herein are good faith estimates of usage during the term of this contract. Therefore, HCC

shall not be liable for any contractual agreements/obligations the Contractor enters into based on all the quantities specified herein. There is no guaranteed amount of business, expressed or implied, to be purchased or contracted for by HCC.

6. First Year Warranty and Maintenance Service

A full one-year warranty shall be provided after delivery. The first year warranty should include all parts and labor, including all necessary on-site labor and all travel expenses for technicians.

The Contractor warrants all items acquired shall conform to all contractors' representations, the requirements of this contract, and all published documentation.

The Contractor shall provide the following Warranty details:

- i. Describe the warranty period including a detailed description of what is covered and what is/or excluded from coverage.
- ii. Provide detailed description of what is covered and what is/or excluded from coverage under the optional maintenance.
- iii. Identify what type and kind of field support you will provide under this solicitation; if any.
- iv. Clearly explain what is included, covered, and what is excluded from coverage.

7. Added Value

HCC is interested in maximizing the value of expenditures as it relates to achieving additional value that would further benefit HCC and its operation, as well as its community of citizens and their tax based funding. As such, bidders are encouraged to consider, develop and propose added value concepts, programs, components and the like that would further enhance the proposed acquisition represented in this solicitation request.

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Section 2 – Sealed Bid Form

1. Instructions

The Bidder shall furnish necessary resources and services required to complete the project, in accordance with the scope of work and project specifications hereby incorporated and made a part of this IFB and the contract documents, for the prices listed below.

Please provide a Total Proposed Price reflecting all project costs to successfully complete the project. Work requirements will be specified in individual purchase orders issued by Houston Community College.

Please submit this form, as well as, Exhibit No. 3 & Exhibit No. 4, in a separate sealed envelope and label it "Price Bid".

2. Pricing

The subsequent contract will be a firm-fixed price agreement. The pricing proposed in the attached Exhibit. No. 3, Detail Itemized Equipment Unit Cost Table and Exhibit No. 4, Facilities List Cost Table, for the specified services may be negotiated into the subsequent contract.

For services that were not specifically requested in the Facilities List Cost Table form the negotiated contract pricing shall be used as a basis, when applicable, to arrive at a fair and reasonable price.

3. Estimated cost of the Work

The estimated cost of work for this project is between \$2,750,000.00 and \$3,250,000.00.

NOTE: Bidders must respond to and complete the entire Exhibit No. 4, Facilities List Cost Table and the total for all line items.

Total Proposed Project Cost: \$ _____

Bidder's maximum project duration (in calendar days) _____ Days
(Including after-hours work schedule)

4. Cooperative Contract

List the following information for any cooperative contract that your proposal is being submitted under (if applicable):

Cooperative Contract Name:	
Cooperative Contract No.	
Cooperative Contract Term	
Cooperative Contract Website link:	

5. Sealed Bid Signature

I have received and thoroughly examined the plans, specifications, and project schedule and have visited and examined the work site. I have also received and considered all solicitation amendments as posted on the solicitation website and have included those provisions in my Bid.

I understand the work to be done as provided in the plans and specifications. I further understand that the work is subject to the review and approval of Houston Community College System and submit the following Bid.

In submitting this Bid, the undersigned agrees and accepts all provisions and exhibits within this IFB.

Name:	
Title:	
Date:	
Signature:	

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Section 3 – Bid Evaluations

1. Evaluation of Bids

The general selection criteria for this IFB in order of precedence are as follows:

- a. Responsible low bid meeting specifications and being responsive to the requirements of this IFB.
- b. Compliance with HCC's Small Business Enterprise (SBE) goal will be considered as part of the bidders' responsibility. Failure to meet the goal may be grounds for determination that a bidder is not a responsible bidder.

Finalists may be asked to make a presentation to HCC prior to a final decision being made.

2. Eligibility for Award

In order for a bid to be eligible to be awarded the contract, the bid must be responsive to the solicitation and HCC must be able to determine that the bidder is responsible and has the resources and capacity to perform the resulting contract satisfactorily. Responsive bids are those that comply with all material aspects of the solicitation, conform to the solicitation documents, and meet the requirements set forth in this solicitation. Bids, which do not comply with all the terms and conditions of this solicitation, will be rejected as non-responsive.

- c. Responsible bids, at a minimum, must meet the following requirements:
 - i. Have adequate financial resources, or the ability to obtain such resources as required during the performance of any resulting contract;
 - ii. Be able to comply with the required performance schedule, taking into consideration all existing business commitments;
 - iii. Have a satisfactory record of past performance;
 - iv. Have necessary personnel and management capability to perform any resulting contract;
 - v. Be qualified as an established firm regularly engaged in the type of business necessary to fulfill the contract requirements;
 - vi. Certify that the firm is not delinquent in any tax owed the State of Texas under Chapter 171, Tax Code; and is not delinquent in taxes owed to the Houston Community College System; signing and submitting the bid is so certifying to such non-delinquency; and
 - vii. Be otherwise qualified and eligible to receive an award under applicable laws and regulations.
- d. Bid(s) may be requested to submit additional written evidence verifying that the firm meets the minimum requirements described above and as necessary, to perform the requirements of the solicitation and be determined a responsible bidder. Failure to provide any requested additional information may result in the bidder being declared non-responsive and the bid being rejected.

- e. A person is not eligible to be considered for award of this solicitation or any resulting contract or to be a subcontractor of the bidder or prime contractor if the person assisted in the development of this solicitation or any part of this solicitation or if the person participated in a project related to this solicitation when such participation would give the person special knowledge that would give that person or a prime contractor an unfair advantage over other bidders.
- f. A person or bidder shall not be eligible to be considered for this solicitation if the person or bidder engaged in or attempted to engage in prohibited communications as described in Section 5.17 - Prohibited Communications and Political Contributions.
- g. Only individual firms or lawfully formed business organizations may apply (This does not preclude a respondent from using subcontractors or contractors.) HCC will contract only with the individual firm or formal organization that submits a response to this IFB.

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Section 4 – Instructions to Proposers

1. General Instructions

- a. Proposers should carefully read the information contained herein and submit a complete response to all requirements and questions as directed.
 - b. Proposals and any other information submitted by Proposers in response to this Invitation for Bid (IFB) shall become the property of HCC.
 - c. HCC will not provide compensation to Proposers for any expenses incurred by the Proposer(s) for proposal preparation or for any demonstrations that may be made, unless otherwise expressly stated. Proposers submit proposals at their own risk and expense.
 - d. Proposals, which are qualified with conditional clauses, or alterations, or items, not called for in the IFB documents, or irregularities of any kind are subject to disqualification by HCC, at its option.
 - e. Each proposal should be prepared simply and economically, providing a straightforward, concise description of your firm's ability to meet the requirements of this IFB. Emphasis should be on completeness, clarity of content, responsiveness to the requirements, and an understanding of HCC's needs.
 - f. HCC makes no guarantee that an award will be made as a result of this IFB, and reserves the right to accept or reject any or all proposals, waive any formalities or minor technical inconsistencies, or delete any item/requirements from this IFB or resulting Agreement when deemed to be in HCC's best interest. Representations made within the proposal will be binding on responding firms. HCC will not be bound to act by any previous communication or proposal submitted by the firms other than this IFB.
 - g. Firms wishing to submit a "No-Response" are requested to return the first page of the Contact Award Form (ref. Attachment No. 1). The returned form should indicate your company's name and include the words "No-Response" in the right-hand column.
 - h. Failure to comply with the requirements contained in this Request for Proposal may result in the rejection of your proposal.
- a. Proposal must be signed by Proposer's company official(s) authorized to commit such proposals. Failure to sign and return these forms will subject your proposal to disqualification.
 - b. Responses to this IFB must include a response to the proposal requirements set forth in the Scope of Services, above.
 - c. Proposals must be typed on letter-size (8-1/2" x 11") paper. HCC requests that proposals be submitted in a binder. Preprinted material should be referenced in the proposal and included as labeled attachments. Sections should be divided by tabs for ease of reference. An electronic copy of the proposal must be provided in an Adobe Acrobat (.pdf) format.
 - d. Table of Contents: Include with the proposal a Table of Contents that includes page number references. The Table of Contents should be in sufficient detail to facilitate easy reference of the sections of the proposal as well as separate attachments (which should be included in the main Table of Contents). Supplemental information and attachments included by your firm (i.e., not required) should be clearly identified in the Table of Contents and provided as a separate section.
 - e. Pagination: All pages of the proposal should be numbered sequentially in Arabic numerals (1, 2, 3, etc.) Attachments should be numbered or referenced separately.
 - f. Number of Copies: Submit one (1) original printed and one (1) electronic copy of your Proposal including all required HCC Forms and documents. An original (manual) signature must appear on the original printed copy and must be reflected in the original electronic copy. The electronic copies should be in non-editable .PDF format and should include the entire submission, including an individual separate file containing your price proposal. The front cover of the binder containing your response should be clearly marked with the Project Name and Number.
- a. Proposals must be submitted and received in the HCC Procurement Operations Department on or before the time and date specified in the Solicitation Schedule.
 - b. The envelope containing a proposal shall be addressed as follows:
 - i. Name, Address and Telephone Number of Proposer;
 - ii. Project Description/Title; Project Number; and Proposal Due Date/Time.

2. Preparation and Submittal Instructions

All Attachments noted are to be completed and submitted with Proposal, Attachments 1, 5 and 7 must be signed and notarized.

3. Document Format and Content

- c. Late proposals properly identified will be returned to Proposer unopened. Late proposals will not be considered under any circumstances.
- d. Telephone, Facsimile ("FAX") or electronic (email) proposals are not acceptable when in response to this Request for Proposal.

4. Proposer Response

General: Your Technical Proposal should clearly define (i) your Firm's total capacity and capabilities, (ii) your qualifications to perform the work, (iii) your ability to perform the services outlined in the Scope of Services, (iv) your understanding of HCC, and (v) what differentiates you from your competitors. At a minimum, your Technical Proposal shall include the following:

- a. Cover letter
The cover letter shall not exceed 1 page in length, summarizing key points in the proposal and shall briefly furnish background information about your firm, including date of founding, legal form (sole proprietorship, partnership, corporation/state of incorporation), number and location of offices, location of company headquarters/main office, total number of employees' company-wide and total number of employees in the State of Texas, and principal lines of business. Certify that the firm is legally permitted or licensed to conduct business in the State of Texas for the services offered.

Only individual firms or lawfully formed business organizations may apply (This does not preclude a respondent from using consultants.) HCC will contract only with the individual firm or formal organization that submits a response to this IFB.

- b. Table of Contents
Immediately following the cover letter and introduction, include a complete table of contents for material included in the response documents.
- c. Tab 1: Firm's Qualification and Experience
 - i. Qualifications & Experience of the Firm:
Provide a brief description of your firm, including the total number of supporting personnel related to providing the services of the type and kind required in this IFB.
 1. Provide firm's principal(s) and staff commitment in providing the services required in this solicitation.
 2. Provide firm's overall ability in providing the services required in this solicitation.
 3. Demonstrate firm's understanding, knowledge and experience of the solicitation requirements.

- 4. Provide examples of your firm civic activities including awards and recognitions.
- ii. Provide a detailed list where your firm has provided services of the type and kind required in this IFB during the past 3 years including but not limited to public and private organizations including: state agencies, state institutions of higher education, cities, counties, school districts, junior colleges, or other special authorities and districts.

HCC may verify all information furnished. As a minimum, include the following per project experience:

1. Project Name, Location – Year Completed.
2. Brief project description describing your experience, work performed by your firm and work subcontracted.
3. Owner's Name, title, and current phone number.
4. Identify firm's role; completion date; and contract name(s).
5. The methods of delivery used and how the firm maintains quality control.
6. Provide documented experience in providing the types of services described herein especially related to community or junior college experience or higher education facilities experience and with regard to accomplishment of past engagements involving services of the type and kind required in this IFB. List if firm was prime or subcontractor.

d. Tab 2 – Demonstrated Qualifications of Personnel and Team

This section should discuss the proposed designated staff of the responding firm (key personnel) committed to HCC and providing the services described in this solicitation.

- i. Key Personnel: Identify key personnel that would be assigned to HCC and that will provide the services described in the Scope of Services. Include an organizational chart, which identifies key personnel and their particular roles in furnishing the services required under this IFB. Describe how the team will be organized to deliver the services defined in this IFB.
- ii. Provide brief resumes (not more than one (1) page) for each key personnel. The resumes must clearly specify the number of years the personnel has been providing the type of services as described in this IFB.

1. Please include the following: A brief description of their unique qualifications, experience and education as it pertains to services of the type and kind required in this IFB.
 2. Availability and commitment of the respondent, its principal(s) and assigned professionals to undertake the services described in this IFB.
 3. Personnel's job functions, role, percent of time to be assigned to this account and physical office location.
 4. Designate the individual, who is authorized to sign and enter into any resulting contract.
 5. Provide a list of similar accounts where they have provided services of the type and kind required in this solicitation and include detailed description of their particular role in the account and length of time on the account.
- e. Tab 3 – Proposed Approach & Methodology
This section should describe and discuss your proposed approach and methodology in providing the services of the type and kind required in this IFB. By reading the proposed approach and methodology overview, HCC must be able to gain a comfortable grasp and clear understanding of the level of services to be provided and the methods proposed by the firm to provide them. A detailed explanation shall be included to understand how the services comply with the requirements of this IFB.
- i. Bidder shall respond to all requirements in Section 1.
 - ii. Provide a detailed implementation plan with projected start and end dates of completion for each task from delivery of service to HCC. List any required HCC resources or expectations needed in order to meet the proposed timeline.
 - iii. Proposer must provide an approach and methodology overview which consists of a concise and detailed description of the requested services proposed in response to this IFB.
 - iv. HCC intends that each proposer provide a detailed and comprehensive description of all services that the proposer will provide if it enters into a contract pursuant to the IFB.
 - v. Quality: Please identify the key metrics you propose to use to measure your performance in delivering services of the type and kind required in this IFB to HCC. Your response should indicate the frequency of the measurement, how it will be used to continually improve performance, and how this information will be shared with HCC. Your response should include how do you measure and monitor quality of work, ensure delivery is met, and how problems are tracked, escalated (if required) both internally and with the customer.
- vi. Customer Satisfaction: How do you measure and monitor customer satisfaction; describe the method used, frequency, and how results are reported.
- vii. Capabilities and Capacity: Proposer shall clearly define its in-house capability and capacity to perform the work identified in the Scope of Services of this IFB. Your response must describe the various technologies, tools, methods, and technical expertise that you will provide to HCC and/or that will be used in the delivery of the services and how that will be of benefit in the delivery of services to HCC.
- f. Tab 4 - Past Performance and References
This section should establish the ability of the respondent (and its sub-consultant), if any to satisfactorily perform the required work.
- i. Provide contact information for the list of accounts noted in Tab 1 above, HCC may verify all information furnished.
 - ii. Describe lessons learned from previous clients for services of the type and kind required in this IFB that were not successful and what steps your firm has taken to effectively identify and mitigate from recurring.
 - iii. Demonstrate the capability and successful past performance of the firm with respect to producing high quality services, maintaining good working relations for services of the required in this IFB.
 - iv. Provide a list of all contracts that may have ended during the past 3 years; including contracts that may have been terminated or not renewed when a renewal was available. Include a detailed explanation of the circumstances related therein for any such contracts noted.
 - v. Provide a list of any work that your firm may have completed for Houston Community College during the past 3 years, including a detailed description of the work effort, performance and define if the work was completed as a contractor directly with HCC or as a subcontractor under an engagement.

- vi. Provide letters of recommendations from other public junior or community colleges or higher education clients or other relevant references listing recently completed engagements for the services of the type and kind required in this IFB.
- g. Tab 5 – Price Proposal
The Proposer/Contractor shall furnish all resources and services necessary and required to provide the services of the type and kind required in this IFB, in accordance with the Scope of Services, and the governing terms and conditions for the proposed price(s) listed in Section 2 – Price Proposal.
- i. Please include a description of any discount offered to HCC and an outline of any other fees or charges.
 - ii. For the purposes of this IFB, Houston Community College will review the overall rate structure to evaluate its reasonableness for the anticipated work. Failure to fully disclose any fees or cost and to comply with the requirements herein may be cause for HCC to reject, as non-compliant, a proposal from further consideration.
- h. Tab 6 - Small Business Practices
This section shall include a clear statement of the firm’s commitment and plan to meet the small business goal specified in this solicitation, if any.
- i. Describe your previous experience, involvement and approach in working with certified Small Business firms; including level of effort, division of duties and providing opinions. Provide a statement detailing small business participation commitment.
 - ii. For this solicitation, HCC has a small business participation goal of **Best Effort**.
 - iii. At a minimum, your response must include: (a) Firm’s commitment to meeting the small business participation goal for the solicitation (b) a description of previous engagements where your firm has successfully subcontracted work to small businesses including the percentage (%) of work subcontracted to these firms under each engagement; (c) a narrative outlining your overall approach to subcontracting and how you will solicit small businesses for participation as part of this solicitation; and (d) indicate what challenges you anticipate in attaining HCC’s goal.
- iv. Describe your company’s process for the selection of subcontractors in accordance with the statutory procedures required for the solicitation of subcontractors, including your process for evaluating subcontractors’ performance while also incorporating a Small Business Development Program.
 - v. Provide a reference list of all customers noted in Tab 4 above that included a Small Business or similar program where you have performed work similar to the type of work described in this IFB. Provide the contact person and the representative who served as the Small Business Development liaison (or equivalent), telephone number and email address.
- i. Tab 7 - Firm’s Financial Status
- i. Please provide a statement from the president, owner or financial officer on company letterhead certifying that the company is in good financial standing and current in payment of all taxes and fees including but not limited to state franchise fees.
 - ii. Is your company currently in default on any loan agreement or financing agreement with any bank, financial institution, or other entity? If yes, specify date(s), details, circumstances, and prospects for resolution.
- j. Tab 8 – Business Relationship Strength
“Business Relationship Strength” for the purpose of this IFB shall mean the definition and commitment of the respondent towards a mutually successful “relationship” between the selected contractor and HCC for the duration of the contract. Respondent’s Statement of Qualification must include their definition, proposal and commitment to forge, foster and maintain a mutually successful “relationship” with HCC. At a minimum, your response must include:
- i. your definition of a mutually successful “relationship” between your firm and HCC; and
 - ii. your firm’s commitment to a mutually successful “relationship” in the form of at least three, and not more than five, specific, obtainable criteria, activities, agreements or requirements that shall, at the discretion of HCC, become features of the awarded contract and shall guide the HCC-Contractor relationship for the duration of the contract.
 - iii. Student Internship: HCC is expanding its student internship program. Proposers are encouraged to describe how they envision using HCC students as part of their

delivered service to support the application of relevant educational programs as aligned with real world work experience. Proposers willing to participate in this educational enrichment opportunity should provide the following information in the proposal response:

1. Number of HCC students proposed to be used as student interns in delivering the scope of services as defined in this IFB.
2. Proposed task and objectives that HCC student interns shall perform under the resulting contract.
3. Proposed number of hours and length of engagement for HCC student interns shall perform under the resulting contract.
4. Proposed work location where HCC student interns shall perform under

the resulting contract. If not on site as part of the project team, any proposed work locations must be within Houston, Texas given student class schedules.

5. Proposed mentor/representative that will be responsible in working with and leading HCC student interns under the resulting contract.

k. Tab 9 – Required Attachments

This section shall include all Attachments noted in Section 6, all forms shall be completed, signed and submitted with Proposal. Attachments 1, 5 and 7 must be signed and notarized.

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Section 5 – General Information

PROPOSERS ARE CAUTIONED TO READ THE INFORMATION CONTAINED IN THIS IFB CAREFULLY AND TO SUBMIT A COMPLETE RESPONSE TO ALL REQUIREMENTS AND QUESTIONS AS DIRECTED.

1. General Information

Houston Community College's service area is Houston Independent School District, Katy, Spring Branch, Alief Independent School Districts, Stafford Municipal District, and the Fort Bend portion of Missouri City. The System is accredited by the Commission on Colleges of the Southern Association of Colleges and Schools to award the associate degree.

Houston Community College serves its students each semester, by offering associate degrees, certificates, academic preparation, workforce training, and lifelong learning opportunities that prepares students in our diverse community to compete in an increasingly technological and international society. Houston Community College plays an integral role in transforming the lives of its students and making our community work.

More information regarding HCC can be found in the annual [HCC Fact Book](#).

HCC Mission - Houston Community College is an open-admission, public institution of higher education offering a high-quality, affordable education for academic advancement, workforce training, career development, and lifelong learning to prepare individuals in our diverse communities for life and work in a global and technological society.

HCC Vision - Houston Community College will be a leader in providing high quality, innovative education leading to student success and completion of workforce and academic programs. We will be responsive to community needs and drive economic development in the communities we serve.

Additional information about Houston Community College may be found by visiting [HCC Website](#).

Visit the [HCC Procurement Operations Department website](#) to get more information on this and other business opportunities. While at our website we invite you to [Register as a Vendor](#), if already registered, please confirm your contact information is current.

2. Overview

The Houston Community College, ("HCC") or ("College") is seeking proposals from qualified firms in accordance with the Scope of Services noted above. Qualified respondents are invited to submit a written response outlining your qualifications and willingness to provide the services as described in the Scope of Services, and in accordance with the terms, conditions and requirements set forth in the Request for Proposal (IFB). The successful proposer will provide the scope of services in accordance with all applicable laws, regulations and professional standards.

HCC reserves the right to make single, multiple or no award for the services described herein and as deemed in its own best interests.

HCC reserves the right to reject any or all proposals or to accept any proposals it considers most favorable to HCC, or to waive irregularities in the Request for Proposal (IFB) and submittal process. HCC further reserves the right to reject all proposals or submittals and terminate the solicitation process or seek new proposals when such procedure is reasonably in the best interest of HCC.

This IFB solicitation does not in any way obligate HCC to award a contract or pay any expense or cost incurred in the review and submission of proposals responding to this IFB.

All applicable attachments contained in the IFB shall be completed. Failure to do so may result in the firm's proposal or submittal being declared non-responsive to the solicitation requirements.

Information provided in response to the IFB is subject to the Texas Public Information Act and may be subject to public disclosure.

By submitting its proposal in response to this IFB, respondent accepts the evaluation process and acknowledges and accepts that determination of "most-qualified" and "best valued" firm(s) will require subjective judgments by the Evaluation Committee.

Any exceptions taken to the terms of the IFB must be specific, and the respondent must indicate clearly what alternative is being offered to allow HCC a meaningful opportunity to evaluate and rank proposals and implications of the exception (if any).

Where exceptions are taken, HCC shall determine the acceptability of the proposed exceptions. HCC may accept or reject the exceptions. Where exceptions are rejected, HCC may insist that the respondent furnish the services described herein or negotiate an acceptable alternative.

All exceptions shall be referenced by utilizing the corresponding Section, paragraph and page number in this IFB. However, HCC is under no obligation to accept any exceptions. Respondent shall be deemed to have accepted

all terms and conditions to which no exceptions have been taken.

The IFB provides information necessary to prepare and submit proposals or responses for consideration by HCC based on the listed criteria. HCC may request additional clarification and oral interviews solely on the written responses to this request for proposals.

3. Award / Contract Approval

This Procurement, any award under this procurement, and the resulting contract, if any, is subject to approval by HCC Board of Trustees. Subsequent to Board approval, the only person authorized to commit HCC contractually is the Chancellor or designee. This solicitation is a request for proposals and neither this solicitation nor the response or proposal from any prospective proposer shall create a contractual relationship that would bind HCC until such time as both HCC and the selected proposer sign a legally binding contract, which includes, without limitation, the terms required by HCC as set forth in the Scope of Work/Services and this IFB.

4. Pre-Proposal Meeting

The purpose of the meeting is to briefly describe the procurement process and specifications while allowing interested firms to ask general questions. Nothing said in the pre-proposal meeting shall be binding to HCC; any changes to the requirements of this IFB shall be made by way of written solicitation amendment.

If applicable, the Pre-Proposal Meeting date and time is noted in the Solicitation Schedule (see Page 2)

5. HCC Contact

Any questions or concerns regarding this Request for Qualification shall be directed to the Procurement Officer listed on the cover page. HCC specifically requests that proposer restrict all contact and questions regarding this IFB to the Procurement Officer. The Procurement Officer must receive all questions or concerns no later than the date and time listed in the Solicitation Schedule.

6. Inquiries and Interpretations

Responses to inquiries, which directly affect an interpretation or change to this IFB, will be issued in writing by addendum (amendment) and all addenda will be posted on the HCC Website www.hccs.edu. All such addenda issued by HCC prior to the time that proposals are received shall be considered part of the IFB, and the Proposer shall be required to consider and acknowledge receipt of such in their proposal.

Only those HCC replies to inquiries, which are made by formal written addenda, shall be binding. Oral and other interpretations or clarification will be without legal effect. Proposer must acknowledge receipt of all addenda in Attachment No. 1 of this IFB (Contract Award Form).

7. Commitment

Proposer understands and agrees that this IFB and any resulting Agreement is issued predicated on anticipated

requirements for the materials or services described herein and that HCC has made no representation, guarantee or commitment with respect to any specific quantity of or dollar value to be furnished under any resulting Agreement. Further Proposer recognizes and understands that any cost borne by the Proposer, which arises from Proposer's performance under any resulting agreement, shall be at the sole risk and responsibility of Proposer.

8. Acquisition from Other Sources

HCC reserves the right and may, from time to time as required by HCCs operational needs, acquire services of equal type and kind from other sources during the term of the agreement without invalidating in whole or in part, the agreement or any rights or remedies HCC may have hereunder.

9. Vendor Registration

The Houston Community College Procurement Operations Department has developed an online vendor application. This is designed to allow firms or individuals that are interested in doing business with HCC to register online and become part of our vendor database. Once registered, you will receive a password and personal login information that will allow you to modify your vendor information anytime a change occurs with your company. You will have the flexibility to add or delete commodity lines, update phone numbers, and contact information, etc. This database will allow HCC to notify, via email, all companies that match the desired commodity criteria for procurement opportunities within Houston Community College. What a great way to never miss out on an HCC bid or proposal opportunity again.

Please take a moment to go to the Houston Community College Procurement Operations Department website and register as a vendor. The website address to access the vendor registration form is:

<https://hccs.sbcompliance.com/FrontEnd/VendorsIntroduction.asp>

If you do not have internet access, you are welcome to use a computer at any HCC library to access the website and register.

10. Obligation and Waivers

THIS IFB IS A SOLICITATION FOR PROPOSAL AND IS NOT A CONTRACT OR AN OFFER TO CONTRACT.

A PROPERLY COMPLETED VENDOR APPLICATION IS REQUIRED AND IS A CONDITION OF CONTRACT AWARD.

THIS REQUEST FOR PROPOSAL DOES NOT OBLIGATE HCC TO AWARD A CONTRACT OR PAY ANY COSTS INCURRED BY THE PROPOSER IN THE PREPARATION AND SUBMITTAL OF A PROPOSAL.

HCC, IN ITS SOLE DISCRETION, RESERVES THE RIGHT TO ACCEPT ANY PROPOSAL AND/OR REJECT

ANY AND ALL PROPOSALS OR A PART OF A PROPOSAL, WITHOUT REASON OR CAUSE, SUBMITTED IN RESPONSE TO THIS SOLICITATION.

HCC RESERVES THE RIGHT TO REJECT ANY NON-RESPONSIVE OR CONDITIONAL PROPOSAL. HCC RESERVES THE RIGHT TO WAIVE ANY INFORMALITIES, IRREGULARITIES AND/OR TECHNICALITIES IN THIS SOLICITATION, THE PROPOSAL DOCUMENTS AND /OR PROPOSALS RECEIVED OR SUBMITTED.

BY SUBMITTING A PROPOSAL, PROPOSER AGREES TO WAIVE ANY CLAIM IT HAS, OR MAY HAVE, AGAINST HOUSTON COMMUNITY COLLEGE SYSTEM AND ITS TRUSTEES OR AGENTS ARISING OUT OF OR IN CONNECTION WITH (1) THE ADMINISTRATION, EVALUATION OR RECOMMENDATIONS OF ANY PROPOSAL; (2) ANY REQUIREMENTS UNDER THE SOLICITATION, PROPOSAL PACKAGE, OR RELATED DOCUMENTS; (3) THE REJECTION OF ANY PROPOSAL OR ANY PART OF ANY PROPOSAL; AND/OR (4) THE AWARD OF A CONTRACT, IF ANY.

HCC RESERVES THE RIGHT TO WITHDRAW THIS SOLICITATION AT ANY TIME FOR ANY REASON; REMOVE ANY SCOPE COMPONENT FOR ANY REASON AND TO ISSUE SUCH CLARIFICATIONS, MODIFICATIONS AND/OR AMENDMENTS AS DEEMED APPROPRIATE.

HCC RESERVES THE RIGHT TO NEGOTIATE TERMS AND CONDITIONS INCLUDING SCOPE, STAFFING LEVELS, AND FEES WITH THE HIGHEST RANKED RESPONDER. IF AGREEMENT CANNOT BE REACHED WITH THE HIGHEST RANKED RESPONDER, HCC RESERVES THE RIGHT TO NEGOTIATE WITH THE NEXT HIGHEST RANKED RESPONDER AND SO ON UNTIL AGREEMENT IS REACHED. WHEN AN AGREEMENT IS REACHED, HCC WILL SUBMIT ITS RECOMMENDATIONS TO THE BOARD OF TRUSTEES FOR APPROVAL AND AWARD OF THE CONTRACT.

HCC IS AN EQUAL OPPORTUNITY/EDUCATIONAL INSTITUTION, WHICH DOES NOT DISCRIMINATE ON THE BASIS OF RACE, COLOR, RELIGION, NATIONAL ORIGIN, GENDER, AGE, DISABILITY, SEXUAL ORIENTATION, OR VETERAN STATUS.

11. Contract Award

Award of a contract, if awarded, will be made to the proposer who (a) submits a responsive proposal; (b) is a responsible proposer; and (c) offers the best value to HCC, price and other factors considered.

A responsive proposal and a responsible proposer are those that meet the requirements of and are as described in this solicitation. HCC may award a contract, based on initial proposals received, without discussion of such proposals. Accordingly, each initial proposal should be submitted on the most favorable terms from a price and technical standpoint, which the proposer can submit to HCC. Except as otherwise may be set forth in this solicitation, HCC reserves the right to waive any informalities, non-material errors, technicalities, or

irregularities in the proposal documents submitted and consider the proposal for award.

12. Postponement of Proposals Due Date/Time:

Notwithstanding the date/time for receipt of proposals established in this solicitation, the date and time established herein for receiving proposals may be postponed solely at HCCs discretion.

13. Oral Presentations:

During the process of selecting a company to provide the required services, oral presentations may or may not be held. Each proposer should be prepared to make a presentation to HCC. The presentations must show that the proposer clearly understands the requirements of the solicitation, and has a strategic plan and approach to complete the work.

14. Small Business Development Program (SBDP):

The Houston Community College System's Small Business Development Program ("SBDP" or the "Program") was created to provide business opportunities for local small businesses to participate in contracting and procurement at Houston Community College (HCC).

The SBDP is a goal-oriented program, requiring Contractors who receive Contracts from HCC to use Good Faith Efforts to utilize certified small businesses. The Program applies to all Contracts over \$50,000, except Contracts for sole-source items, federally funded Contracts, Contracts with other governmental entities, and those Contracts that are otherwise prohibited by applicable law or expressly exempted by HCC. The SBDP is a race and gender-neutral program, however HCC actively encourages the participation of minority and women-owned small businesses in the SBDP.

To participate, small businesses must be certified by an agency or organization whose certification is recognized by HCC. Certification is based on the firm's gross revenues or number of employees averaged over the past three years, inclusive of any affiliates as defined by 13 C.F.R. § 121.103, does not exceed the size standards as defined pursuant to Section 3 of the Small Business Act and 13 C.F.R. § 121.201.

HCC recognizes certification by the following governmental and private agencies: Metropolitan Transit Authority of Harris County (METRO) SBE Certification, City of Houston SBE, MWPDBE and DBE Certifications, Texas Department of Transportation SBE Certification, City of Austin SBE Certification, South Central Texas Regional Certification Agency SBE Certification, Small Business Administration 8(a). HCC has the right to revoke acceptance of a business as a certified or qualifying small business and to conduct certification reviews.

Good Faith Efforts: HCC will make a good faith effort to utilize small businesses in all contracts. The annual program

goals may be met by contracting directly with small businesses or indirectly through subcontracting opportunities. Therefore, any business that contracts with HCC will be required to make a good faith effort to award subcontracts to small businesses. The subcontracting goal applies to all vendors regardless of their status. By implementing the following procedures, a contractor shall be presumed to have made a good faith effort:

- a. To the extent consistent with industry practices, divide the contract work into reasonable lots.
- b. Give notice to SBDP eligible firms of subcontract opportunities or post notices of such opportunities in newspapers and other circulars.
- c. Document reasons for rejecting a firm that bids on subcontracting opportunities.

Points shall be awarded in accordance with the Proposal Response based on the prime vendor's certifications and/or commitment to small business subcontracting stated in the solicitation document and the published point distribution sliding scale.

A copy of the complete SBDP Procedure may be found on our [Small Business Website](#).

- a. Certified small business prime contractor – automatically eligible for maximum available points. However, HCC reserves the right to deny the points, and look only to the prime contractor's use of subcontractors, if HCC, in evaluating solicitation responses, makes a determination that the prime contractor will not have a legitimate and active role in the performance of the contract;
- b. Non-certified small business prime contractor with certified small business subcontractor – eligible for points proportionate to proposed subcontracting commitment (sliding scale);
- c. Non-small business prime contractor with non-small business subcontractor – no points; and
- d. Non-small business prime contractor self-performing work – no points.

Proposed SBE Subcontracting	Available Points
Best Effort	N/A

15. Prime Contractor/Contracts for Services:

The prime contractor must perform a minimum of 30% of any contract for services with its labor force and or demonstrate management of the contract for services to the satisfaction of HCC.

16. Internship Program:

HCC is expanding its student internship program. All vendors are encouraged to make a commitment to utilize certain HCC student(s) in an internship capacity with the company under any resulting contract for services required

under this solicitation. At the sole discretion of the vendor, the internship opportunity may be paid or unpaid and shall be intended to serve as a relevant and meaningful educational enrichment opportunity for the HCC students involved. HCC will provide the selected contractor with the name of student(s) eligible to participate in the internship program.

For additional information regarding the internship program, please contact Mr. Miguel San Juan, Executive Director of External and Institutional Initiatives at 713-718-8035.

17. Prohibited Communications and Political Contributions:

Except as provided in exceptions below, political contributions and the following communications regarding this solicitation or any other invitation for bids, requests for proposal, requests for qualifications, or other solicitation are prohibited:

- [1] Between a potential vendor, subcontractor to vendor, service provider, respondent, Offeror, lobbyist or consultant and any Trustee;
- [2] Between any Trustee and any member of a selection or evaluation committee; and
- [3] Between any Trustee and administrator or employee.

The communications prohibition shall be imposed from the day the solicitation is first advertised through thirty (30) days after the contract is executed by the Chancellor or his/her designee, or when a determination is made that the contract will not be awarded. During this period, no HCC Trustee and no vendor shall communicate in any way concerning any pending Solicitation involving the Vendor, subject to the penalties stated herein.

In the event the Board refers the recommendation back to the staff for reconsideration, the communication prohibition shall be re-imposed.

The communications prohibition shall not apply to the following:

- [1] Duly noted pre-bid or pre-proposal conferences.
- [2] Communications with the HCC General Counsel.
- [3] Emergency contracts.
- [4] Presentations made to the Board during any duly-noticed public meeting.
- [5] Unless otherwise prohibited in the solicitation documents, any written communications between any parties, provided that the originator shall immediately file a copy of any written communication with the Board Services Office. The Board Services Office shall make copies available to any person upon request.
- [6] Nothing contained herein shall prohibit any person or entity from publicly addressing the Board during any duly-noticed public meeting in accordance with applicable Board policies, regarding action on the contract.

Any potential vendor, subcontractor vendor, service provider, proposer, offeror, lobbyist or consultant who engages or attempts to engage in prohibited communications shall not be eligible for the award of any resulting contract under this solicitation. Any other direct or indirect actions taken to unduly influence competitive purposes, to circumvent equal consideration for competitive proposers, or to disregard ethical and legal trade practices will disqualify proposers, vendors, service providers, lobbyist, consultants, and contractors from both this current and any future consideration for participation in HCC orders and contracts.

18. Drug Policy:

HCC is a drug-free workforce and workplace. The manufacture, sale, distribution, dispensation, possession or use of illegal drugs (except legally prescribed medications under physician's prescription and in the original container) or alcohol by vendors or contractors while on HCC's premises is strictly prohibited.

19. Taxes:

HCC is tax exempt as a governmental subdivision of the State of Texas under Section 501C (3) of the Internal Revenue Code. Limited Sales Tax Number: 1-74-1709152-1. No proposal shall include any costs for taxes to be assessed against HCC. The Contractor shall be responsible for paying all applicable taxes and fees, including but not limited to, excise tax, state and local income tax, payroll and withholding taxes for Contractor Employees. The contract shall hold HCC harmless for all claims arising from payment of such taxes and fees.

20. Texas Public Information Act:

HCC considers all information, documentation and other materials requested to be submitted in response to this solicitation to be of a non-confidential and/or non-proprietary nature, and therefore, shall be subject to public disclosure under the Texas Public Information Act (Texas Government Code, Chapter 552.001, et seq.) ("The Act") after a contract if any, is awarded. If the proposer considers any information submitted in response to this request for proposal to be confidential under law or constitute trade secrets or other protected information, the proposer must identify such materials in the proposal response. Notwithstanding the foregoing, the identification of such materials would not be construed or require HCC to act in contravention of its obligation to comply with the Act and the proposer releases HCC from any liability or responsibility for maintaining the confidentiality of such documents.

21. Appropriated Funds:

The purchase of service or product, which arises from this solicitation, is contingent upon the availability of appropriated funds. HCC shall have the right to terminate the resulting contract at the end of the current or each succeeding fiscal year if funds are not appropriated by the HCC Board of Trustees for the next fiscal year that would permit continuation of the resulting contract. If funds are withdrawn or do not become available, HCC reserves the right to terminate the resulting contract by giving the selected contractor a thirty (30) day written notice of its

intention terminate without penalty or any further obligations on the part of HCC or the contractor. Upon termination of the contract HCC shall not be responsible for any payment of any service or product received that occurs after the end of the current contract period or the effective date of termination, whichever is the earlier to occur. HCC's fiscal year begins on September 1 and ends on August 31st.

22. Conflict of Interest:

If a firm, proposer, contractor, or other person responding to this solicitation knows of any material personal interest, direct or indirect, that any member, official, or employee of HCC would have in any contract resulting from this solicitation, the firm must disclose this information to HCC. Persons submitting a proposal or response to this solicitation must comply with all applicable laws, ordinances, and regulations of the State of Texas Government Code, including, without limitation, Chapter 171 and 176 of the Local Government Code. The person /proposer submitting a response to this solicitation must complete (as applicable), sign and submit **Attachment No. 6, Conflict of Interest Questionnaire Form, and Attachment No. 7, Financial Interest and Potential Conflict of Interests** with the proposal package. HCC expects the selected contractor to comply with Chapter 176 of the Local Government Code and that failure to comply will be grounds for termination of the contract.

Note: **Attachment No. 6 and Attachment No. 7** shall be completed signed and returned to HCC. Enter N/A in those areas on the Attachments that are not applicable to your company. Failure to complete, sign and notarize (if applicable) these Attachments may render your proposal non-responsive.

23. Ethics Conduct:

Any direct or indirect actions taken to unduly influence competitive purposes, to circumvent equal consideration for competitive proposers, or to disregard ethical and legal trade practices will disqualify vendors and contractors from current and future consideration for participation in HCC orders and contracts.

24. No Third Party Rights:

This Contract is made for the sole benefit of HCC and the Contractor and their respective successors and permitted assigns. Nothing in this Contract shall create or be deemed to create a relationship between the Parties to this Contract and any third person, including a relationship in the nature of a third party beneficiary or fiduciary.

25. Withdrawal or Modification:

No proposal may be changed, amended, modified by telegram or otherwise, after the same has been submitted or filed in response to this solicitation, except for obvious errors in extension. However, a proposal may be withdrawn and resubmitted any time prior to the time set for receipt of proposals. No proposal may be withdrawn after the submittal deadline without approval by HCC, which shall be based on Respondent's submittal, in writing, of a reason acceptable to HCC.

26. Validity Period:

Proposals are to be valid for HCCs acceptance for a minimum of 180 days from the submittal deadline date to allow time for evaluation, selection, and any unforeseen delays. Proposals, if accepted, shall remain valid for the life of the Agreement.

27. Terms and Conditions:

The HCC Services Agreement shall govern any Purchase Order issued as a result of this solicitation.

Proposer may offer for HCC's consideration alternate provisions to the Terms and Conditions. Alternates proposed must refer to the specific article(s) or section(s) concerned. General exceptions such as "company standard sales terms apply" or "will negotiate" are not acceptable. Bidder's silence as to the terms and conditions shall be construed as an indication of complete acceptance of these conditions as written.

28. Submission Waiver:

By submitting a response to this Solicitation, the Offeror or respondent agrees to waive any claim it has or may have against Houston Community College System and its trustees, employees or agents arising out of or in connection with (1) the Administration, evaluation or recommendation of any offer or response; (2) any requirements under the solicitation, the solicitation or response package or related documents; (3) the rejection of any offer or any response or any part of any offer or response; and/or (4) the award of a contract, if any.

29. Indemnification:

Contractor shall indemnify, pay for the defense of, and hold harmless the College and its officers, agents and employees of and from any and all liabilities, claims, debts, damages, demands, suits, actions and causes of actions of whatsoever kind, nature or sort which may be incurred by reason of Contractor's negligence, recklessness, or willful acts and/or omission in rendering any services hereunder. Contractor shall assume full responsibility for payments of federal, state and local taxes or contributions imposed or required under the social security, Workers' Compensation or income tax law, or any disability or unemployment law, or retirement contribution of any sort whatever, concerning Contractor or any employee and shall further indemnify, pay for the defense of, and hold harmless the College of and from any such payment or liability arising out of or in any manner connected with Contractor's performance under this Agreement.

30. Delegation:

Unless delegated, HCC Board of Trustees must approve all contracts valued at over \$100,000. The Board has granted the Chancellor authority to initiate and execute contracts valued up to \$100,000. The procurement of goods and services, including professional services and construction services shall be completed as per any applicable HCC policy and procedure and shall be in accordance with

Section 44.031 of the Texas Education Code for the purchase of goods and services, Section 2254 of the Texas Government Code for the purchase of Professional and Consulting Services, and Section 2269 of the Texas Government Code for the purchase of construction services. The Board delegates its authority to the administration and the designated evaluation committee to evaluate score and rank the proposals. This includes the evaluation of all bids, proposals, or statements of qualification under procurement, regardless of contract amount, including the final ranking and selection which shall be made on the evaluation and scoring as per the published selection criteria and the final evaluation ranking. The Board of Trustees shall approve the final award of contracts to the firm based on the published selection criteria and as evidenced in the final evaluation, scoring and ranking.

31. Invoice:

To facilitate payment, invoices for goods or services delivered in accordance with the resulting contract and purchase order shall be emailed to the Accounts Payable Department with copy to the Small Business Development Program. Pursuant to Texas Law, payment terms shall be net thirty (30) days.

All invoices shall include certified documentation noting any small business participation activity including but not limited to: small business firm's name, certification number, certification expiration date, description of work performed for the corresponding period noted on the invoice and amount being paid to the certified small business. Such documentation shall be certified by the small business and be used to monitor the ongoing small business commitment in accordance with the original proposed commitment and governing contract.

32. Cooperative Purchasing Agreement:

As permitted under Interlocal Cooperation Act C Texas Government Code, Chapter 791, other governmental entities may wish to also participate under the same terms and conditions contained in this contract. If this solicitation does not specifically list additional entities, each entity wishing to participate must have prior authorization from Houston Community College and the vendor. If such participation is authorized, all purchase orders will be issued directly from and shipped directly to the entity requiring the goods or services. Houston Community College shall not be held responsible for any orders placed, deliveries made or payment for goods or services ordered by the entities. Proposer is to state their willingness to allow other governmental entities to participate in this contract, if awarded.

33. W9 Form

Bidder shall include a W9 Form with their bid submission. This may be done electronically by clicking on the "Response attachments" tab and clicking on *New under "Response Attachments". I acknowledge that a copy of my company's W9 Form has been included with this submission.

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Section 6 – Required Attachments

Proposers shall complete all noted Attachments and submit with Proposal, Attachments 1, 5 and 7 must be signed and notarized.

Attachment Number	Attachment Title
Attachment No. 1	Contract Award Form
Attachment No. 2	Determination of Good Faith Effort Form
Attachment No. 3	Small Business Unavailability Certificate
Attachment No. 4	Contractor & Subcontractor Participation Form
Attachment No. 5	Proposer's Certifications
Attachment No. 6	Conflict of Interest Questionnaire
Attachment No. 7	Financial Interests and Potential Conflicts of Interests
Exhibit No. 1	Project Plan Book Specification Manual (attached)
Exhibit No. 2	HCC Division One Construction Specifications (attached)
Exhibit No. 3	Detail Itemized Equipment Unit Cost Table (attached)
Exhibit No. 4	Facilities List Cost Table (attached)
Exhibit No. 5	Sample HCC Construction Contract, Uniform General Conditions For Houston Community College Building Construction Contracts & Construction Bonds (attached)

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ATTACHMENT NO. 1
CONTRACT AWARD FORM
HCC PROJECT NO. IFB 18-38

PROJECT TITLE: LED Lighting Retrofit – Multiple Campus - (LoanStar No. II)

PROJECT NO.: IFB 18-38

Name of Bidder/Contractor: _____

Federal Employer Identification Number: _____
(Note: please refer to Section 5.9 Vendor Registration)

Address: _____

Telephone: _____

Fax: _____

E-mail: _____

Where did you learn of this IFB (please be specific): HCC Website Other _____;

SBDP event _____; Newspaper _____; Other _____.

In compliance with the requirements of this Request for Proposal for providing _____, the undersigned hereby proposes to furnish all necessary resources required to perform the services in accordance with the Technical Proposal and Price Form dated _____ and as mutually agreed upon by subsequent negotiations, if any.

The undersigned certifies that he/she has read, understands, and agrees to be bound by the requirements and terms and conditions and any and all amendments issued by HCC and made a part of this solicitation as set forth or referenced in this solicitation. The undersigned understands and agrees that any award resulting from this offer will be made in the form of an HCC Purchase Order and will have the following order of precedence: 1) HCC Terms and Conditions of Purchase Order, 2) HCC referenced solicitation including all amendments issued by HCC, 3) the IFB response as accepted and awarded by HCC. The undersigned further certifies that he/she is legally authorized to make the statements and representations in its response to this solicitation and that said statements and representations are true and accurate to the best of his/her knowledge. The undersigned understands and agrees that when evaluating bids and making an award decision, HCC relies on the truth and accuracy of the statements and representations presented in the bid response. Accordingly, HCC has the right to suspend or debar the undersigned from its procurement process and/or terminate any contract award that may have resulted from this solicitation if HCC determines that any statements or representations made were not true and accurate.

Signed By: _____ Name: _____

Title: _____ State of: _____

Sworn to and subscribed before me at _____ (City) _____ (State)

this _____ day of _____, 2018.

Notary Public of the State of: _____

**ATTACHMENT NO. 2
DETERMINATION OF GOOD FAITH EFFORT
HCC PROJECT NO. IFB 18-38**

Bidder _____

Address _____

Phone _____

Fax Number _____

In making a determination that a good faith effort has been made, HCC requires the Bidder to complete this form as directed below:

Section 1.

After having divided the contract work into reasonable lots or portions to the extent consistent with prudent industry practices, the Bidder must determine what portion(s) of work, including goods or services, will be subcontracted. Check the appropriate box that identifies your subcontracting intentions:

_____ Yes, I will be subcontracting portion(s) of the contract.
(If Yes, please complete Section 2, below and Attachments No. 3 and No. 4)

_____ No, I will not be subcontracting any portion of the contract, and will be fulfilling the entire contract with my own resources.
(If No, complete Section 3, below.)

Section 2.

In making a determination that a good faith effort has been made, HCC requires the Bidder to complete this form Section and submit supporting documentation explaining in what ways the Bidder has made a good faith effort to attain the goal. The Bidder will respond by answering "yes" or "no" to the following and provide supporting documentation.

_____ (1) Whether the Bidder provided written notices and/or advertising to at least five (5) certified small businesses or advertised in general circulation, trade association and/or small businesses focus media concerning subcontracting opportunities.

_____ (2) Whether the Bidder divided the work into the reasonable portions in accordance with standard industry practices.

_____ (3) Whether the Bidder documented reasons for rejection or met with the rejected small business to discuss the rejection.

_____ (4) Whether the Bidder negotiated in good faith with small businesses, not rejecting qualified subcontractors who were also the lowest responsive bidder.

NOTE: If the Bidder is subcontracting a portion of the work and is unable to meet the solicitation goal or if any of the above items, (1-4) are answered "no", the Bidder must submit a letter of justification.

Section 3

SELF-PERFORMANCE JUSTIFICATION

If you responded "No" in SECTION 1, please explain how your company will perform the entire contract with its own equipment, supplies, materials, and/or employees.

Section 4

CERTIFIED SMALL BUSINESS CLASSIFICATION

Please list the small business certification type for all proposed vendors included in the proposed offer; proposer shall include the prime contractor and sub-contractor details as noted below.

See Section 5.14 Small Business Development Program

Vendor Name (Prime and Subcontractor)	Certification Type	Certification Number	Certification Expiration Date

Signature of Bidder Title

Date

**ATTACHMENT NO. 3
 SMALL BUSINESS UNAVAILABILITY CERTIFICATE
 HCC PROJECT NO. IFB 18-38**

I, _____, _____, of _____
(Name) (Title) (Name of Bidder's Company)

Certify that on the date(s) shown, the small businesses listed herein were contacted to solicit Proposals for Materials or Services to be used on this project.

DATE CONTACTED	SMALL BUSINESS NAME	TELEPHONE NO.	CONTACT PERSON	MATERIALS OR SERVICES	RESULTS
1.					
2.					
3.					
4.					
5.					
6.					

To the best of my knowledge and belief, said small business was unavailable for this solicitation, unable to prepare a proposal or prepared a proposal that was rejected for the reason(s) stated in the RESULTS column above.

The above statement is a true and accurate account of why I am unable to commit to awarding subcontract(s) or supply order(s) to the small business listed above.

NOTE: This form to be submitted with all Proposal documents for waiver of small business participation. (See Instructions to Bidders)

Signature: _____

**ATTACHMENT NO. 4
 CONTRACTOR AND SUBCONTRACTOR PARTICIPATION FORM
 HCC PROJECT NO. IFB 18-38**

Bidder/offeror presents the following participants in this solicitation and any resulting Contract. All Bidders/Offerors, including small businesses submitting proposals as prime contractors, are required to demonstrate good faith efforts to include eligible small businesses in their proposal submissions.

CONTRACTOR	Specify in Detail Type of Work to be Performed	List ALL Small Business Certification Status including Agency and Number (i.e. SB – COH, METRO, etc.)	Percentage of Contract Effort	Price
Business Name: Business Address: Telephone No. : Contact Person Name/E-mail:				
SMALL BUSINESS SUBCONTRACTOR(S) (Attach separate sheet if more space is needed.)				
Business Name: Business Address: Telephone No. : Contact Person:				
Business Name: Business Address: Telephone No. : Contact Person:				
NON-SMALL BUSINESS SUBCONTRACTOR(S) (Attach separate sheet if more space is needed.)				
Business Name: Business Address: Telephone No. : Contact Person:				
Business Name: Business Address: Telephone No. : Contact Person:				

Business Name: _____ Submitted (Name): _____

Address: _____

Telephone/Fax: _____ Date: _____

Contractor's Price/Total: \$ _____
 Small Business
 Subcontractor (s) Price/Total: \$ _____
 Non-Small Business
 Subcontractors Price/Total: \$ _____
 Grand Total: \$ _____

**ATTACHMENT NO. 5
PROPOSER'S CERTIFICATIONS
HCC PROJECT NO. IFB 18-38**

1. NON-DISCRIMINATION STATEMENT:

The undersigned certifies that he/she will not discriminate against any employee or applicant for employment or in the selection of subcontractors because of race, color, age, religion, gender, national origin or disability. The undersigned shall also take action to ensure that applicants are employed, and treated during employment, without regard to their race, color, religion, gender, age, national origin or disability. Such action shall include, but shall not be limited to, the following: non-discriminatory employment practices: employment, upgrading or transfer, recruitment or recruitment advertising, layoff or termination, rates of pay or other compensation and selection for training, including apprenticeship.

2. BLACKOUT PERIOD COMPLIANCE:

The undersigned certifies that he/she has read, understands and agrees to be bound by the Prohibited Communications and Political Contributions provision set forth in the solicitation. The undersigned further understands that the Bidder shall not communicate with a HCC Trustee, employee, or any member of the selection/evaluation committee in any way concerning this Solicitation from the day it is first advertised through thirty (30) days after the contract is executed by the Chancellor or his/her designee, or when a determination is made that the contract will not be awarded.

This period is known as the "Blackout Period," as further defined in Section 1.7.10 and 3.3 of the Procurement Operations Manual. Violation of the Blackout Period is considered unethical conduct and will be handled as such with regard to a Trustee and all applicable federal and state laws and regulations, local ordinances, board policies and procurement procedures with respect to their conduct as public officials involved in the procurement process.

With regard to a Bidder, violation of the Blackout Period may result in the cancellation of the referenced transaction, debarment, and disqualification from future procurement solicitations and prosecution in accordance with the Laws of the State of Texas.

3. ASSURANCE OF SBDP GOAL:

The undersigned certifies that he/she has read, understands and agrees to be bound by the small

business provisions set forth in this Solicitation. The undersigned further certifies that he/she is legally authorized to make the statements and representations in the Solicitation and that said statements and representations are true and accurate to the best of his/her knowledge. The undersigned will enter into formal agreement(s) for work identified on the CONTRACTOR AND SUBCONTRACTOR PARTICIPATION form conditioned upon execution of a contract with HCC. The undersigned agrees to attain the small business utilization percentages of the total offer amount as set forth below:

Small Business Participation Goal =

The undersigned certifies that the firm shown below has not discriminated against any small business or other potential subcontractor because of race, color, religion, gender, age, veteran's status, disability or national origin, but has provided full and equal opportunity to all potential subcontractors irrespective of race, color, religion, gender, age, disability, national origin or veteran status.

The undersigned understands that if any of the statements and representations are made knowing them to be false or there is a failure to implement any of the stated commitments set forth herein without prior approval of HCC's Chancellor or the duly authorized representative, the Bidder may be subject to the loss of the contract or the termination thereof.

4. CERTIFICATION AND DISCLOSURE STATEMENT:

A person or business entity entering into a contract with HCC is required by Texas Law to disclose, in advance of the contract award, if the person or an owner or operator of the business entity has been convicted of a felony. The disclosure should include a general description of the conduct resulting in the conviction of a felony as provided in section 44.034 of the Texas Education Code. The requested information is being collected in accordance with applicable law. This requirement does not apply to a publicly held corporation.

If an individual:

Have you been convicted of a felony?
YES or NO

If a business entity:
YES or NO

Has any owner of your business entity been convicted of a felony?

Has any operator of your business entity been convicted of a felony?

If you answered yes to any of the above questions, please provide a general description of the conduct resulting in the conviction of the felony, including the Case Number, the applicable dates, the State and County where the conviction occurred, and the sentence.

5. DISCLOSURE OF OWNERSHIP INTERESTS:

The undersigned certifies that he/she has accurately completed the attached Exhibit 1 "Ownership Interest Disclosure List." For the purposes of this section, in accordance with Board Bylaws, the term "Contractors" shall include any member of the potential vendor's board of directors, its chairperson, chief executive officer, chief financial officer, chief operating officer, and any person with an ownership interest of 10% or more. This requirement shall also apply to any Subcontractor listed on the "Contractor and Subcontractor Participation Form."

6. PROHIBITED CONTRACTS/PURCHASES:

The undersigned certifies that he/she has read, understands and is eligible to receive a contract in accordance with HCC Board of Trustees Bylaw regarding Prohibited Contracts/Purchases as further defined in the attached Exhibit 2.

7. HOUSE BILL 89 ACKNOWLEDMENT:

Pursuant to the provisions of Subtitle F, Title 10, Government Code Chapter 2270, by acknowledging this attribute, vendor verifies that their company:

- 1. Does not boycott Israel currently, and
- 2. Will not boycott Israel during the term of the contract

Pursuant to Section 2270.001, Texas Government Code:

- 1. "Boycott Israel" means refusing to deal with,

terminating business activities with, or otherwise taking any action that is intended to penalize, inflict economic harm on, or limit commercial relations specifically with Israel, or with a person or entity doing business in Israel or in an Israeli-controlled territory, but does not include an action made for ordinary business purposes; and

2. "Company" means a for-profit sole proprietorship, organization, association, corporation, partnership, joint venture, limited partnership, limited liability partnership, or any limited liability company, including a wholly owned subsidiary, majority-owned subsidiary, parent company or affiliate of those entities or business associations that exist to make a profit.

8. SENATE BILL 252 ACKNOWLEDGE:

Pursuant to the provisions of Subtitle F, Title 10, Texas Government Code 2252.152 (CONTRACTS WITH COMPANIES ENGAGED IN BUSINESS WITH IRAN, SUDAN, OR FOREIGN TERRORIST ORGANIZATION PROHIBITED)a governmental entity may not enter into a governmental contract with a company that is identified on a list prepared and maintained under Texas Government Code Section 806.051, 807.051, or 2252.153.

Sec. 2252.153. LISTED COMPANIES. The comptroller shall prepare and maintain, and make available to each governmental entity, a list of companies known to have contracts with or provide supplies or services to a foreign terrorist organization.

Sec. 2252.154. EXCEPTION. Notwithstanding any other law, a company that the United States government affirmatively declares to be excluded from its federal sanctions regime relating to Sudan, its federal sanctions regime relating to Iran, or any federal sanctions regime relating to a foreign terrorist organization is not subject to contract prohibition under this subchapter.

9. DIVESTMENT STATUTE LISTS:

<https://comptroller.texas.gov/purchasing/publications/divestment.php>

10. CERTIFICATE OF INTERESTED PARTIES FORM

Beginning January 1, 2016, successful bidders awarded contracts that are valued at \$50,000 or more shall be required by state law to complete online the Certificate of Interested Parties Form 1295 and submit an unsworn declaration of completion to the Purchasing staff member listed in the solicitation before the purchase/contract will be presented to the Board of

Trustees for approval. For a list of Frequently Asked Questions you can go to:

https://www.ethics.state.tx.us/whatsnew/FAQ_Form1295.html

The form must be submitted at:

https://www.ethics.state.tx.us/whatsnew/elf_info_for_m1295.htm

The law applies only to a contract of a governmental entity or state agency that either:

- (1) requires an action or vote by the governing body of the entity or agency before the contract may be signed; or
- (2) has a value of at least \$1 million.

A completed Form 1295 is not required for:

- (1) a sponsored research contract of a state agency or an institution of higher education;
- (2) an interagency contract of a state agency or an institution of higher education;
- (3) a contract related to health and human services, if:
 - *The values of the contract cannot be determined at the time the contract is executed; and
 - *any qualified vendor is eligible for the contract;
- (4) a contract with a publicly traded business entity, including a wholly owned subsidiary of the business entity;
- (5) a contract with an electric utility, as that term is defined by Section 31.002, Utilities Code, or
- (6) a contract with a gas utility, as that term is defined by Section 121.001, Utilities Code.

Gov't Code § 2252.908. The disclosure requirement applies to a contract entered into on or after January 1, 2016. The District may not enter into a contract with a business entity that fails to submit the form as required.

If your company qualifies for one of the exemptions listed in the Certificate of Interested Parties attribute, please indicate which exemption applies.

11. CRIMINAL BACKGROUND CHECK

No person shall be engaged by the vendor to work on District property where students are present who have charges pending, or who have been convicted, received probation or deferred adjudication. The following is a list of offenses which apply: 1) Any offense against a child; 2) Any sex offense; 3) Any crimes against persons involving weapons or violence; 4) Any felony offense involving controlled substances; 5) Any felony offense against property; or 6) Any other offense that the District believes might compromise the safety of students, staff or property.

It shall be the responsibility of the vendor to ensure compliance with this provision.

Prior to the start of the contract vendor shall submit a NATIONAL criminal background investigation report for all employees with an updated report to include any new hires working on District property to the facility manager or District Chief of Police. During the duration of the contract the District reserves the right to request additional reports from the vendor if any employee is suspected of a criminal offense as stated above. Report must be in accordance with Texas Education Code 22.0834.

12. DEBARMENT

The Contractor certifies that neither it nor its principals are presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in this transaction (contract), by any governmental department or agency. If the Contractor cannot certify this statement, attach a written explanation for review by the District. The Contractor must notify the District Director of Strategic Sourcing within 30 days if debarred by any governmental entity during the Contract period.

13. EQUAL OPPORTUNITY EMPLOYER (EOE)

Personnel relations of the Vendor's employees shall be the Vendor's responsibility, including compliance with all applicable government regulations related to the employment of personnel. The Vendor shall be an Equal Opportunity Employer and shall neither discriminate nor permit discrimination in its operations or employment practices against any person or group of persons on the grounds of race, color, religion, national origin, gender, age, disability, or veteran status. The vendor shall hire only persons who may legally work in the United States, to include citizens and nationals of the United States and foreign citizens who have the necessary authorization to work. It is the vendor's responsibility to verify the identity and employment eligibility of anyone hired for performance under this contract. Furthermore, all persons performing work under this contract must be an employee of the company.

14. NON COLLUSION STATEMENT

The Contractor certifies that you are duly authorized to execute this contract, that this company, corporation or firm has not prepared this bid in collusion with any other bidder, and that the contents of this bid as to prices, terms or conditions of said bid have not been communicated by the undersigned nor by any employee

or agent to any other person engaged in this type of business prior to the official opening of this bid.

15. DELINQUENT FRANCHISE TAXES CERTIFICATION

As required by §2252.903, Government Code, bidder's official certifies that it is not currently delinquent in the payment of any franchise taxes owed the State of Texas under Chapter 171, Tax Code, or that it is exempt from, or not subject to, such tax. Please indicate your status:
A. The corporation is exempt from payment of franchise

taxes or is an out-of-state corporation not subject to franchise tax; therefore, I am submitting a certified statement to that effect.

B. The corporation is subject to Texas franchise tax. I hereby certify that there is no delinquent Texas franchise tax pending against the corporation.

C. I hereby certify that there is delinquent Texas franchise tax pending against the corporation.

I attest that I have answered the questions truthfully and to the best of my knowledge.

Signed By: _____ Name: _____

Title: _____ State of: _____

Sworn to and subscribed before me at _____ (City) _____ (State)

this _____ day of _____, 2018.

Notary Public of the State of: _____

**EXHIBIT 1 - TO ATTACHMENT NO. 5
OWNERSHIP INTEREST DISCLOSURE LIST
HCC PROJECT NO. IFB 18-38**

Instruction: Using the following table, please fill in the names of any member of the Respondent's company who is a "Contractor" (as defined in Section 5 above); any person with an ownership interest of 10% or more; and any Subcontractor listed on the "Contractor and Subcontractor Participation Form."

Name	Title	Company Name

Company Name: _____

Authorized Company Representative: _____

Authorized Representative's Title: _____

Authorized Representative's Signature: _____

Date: _____

If **NO** Ownership Interest Discloser has been stated above, check

Balance of page intentionally left blank.

**EXHIBIT 2 - TO ATTACHMENT NO. 5
PROHIBITED CONTRACTS/PURCHASES
HCC PROJECT NO. IFB 18-38**

The College shall not contract with a business entity in which a Board Member, Senior Staff Member, or a relative of a Board member or Senior Staff Member within the first degree of consanguinity or affinity, has any pecuniary interest. All such contracts executed prior to June 21, 2012 shall continue to be in full force and effect.

Further, the College shall not contract with a business entity that employs, hires, or contracts with, in any capacity, including but not limited to, a subcontractor, employee, contractor, advisor or independent contractor, a Board Member or a Senior Staff Member.

Further, the College shall not contract with a business entity that employs an officer or director who is a relative of a Board member or a Senior Staff Member within the first degree of consanguinity or affinity.

Definitions:

"Business entity" shall not include a corporation or a subsidiary or division of a corporation whose shares are listed on a national or regional stock exchange or traded in the over-the-counter market. "Business entity" shall not include non-profit corporations or religious, educational, and governmental institutions, except that private, for-profit educational institutions are included in the definition of Business entity.

"Director" is defined as an appointed or elected member of the board of directors of a company who, with other directors, has the responsibility for determining and implementing the company's policy, and as the company's agent, can bind the company with valid contracts.

"Officer" is defined as a person appointed by the board of directors of a company to manage the day-to-day business of the company and carry out the policies set by the board. An officer includes, but is not limited to, a chief executive officer (CEO), president, chief operating officer (COO), chief financial officer (CFO), vice-president, or other senior company official, as determined by the Board.

"Senior Staff Member" shall have the meaning as defined in Article A, Section 3 of the Board Bylaws which includes:

- a. Any member of the Chancellor's Advisory Council;
- b. HCC employees classified as E-10 and above;
- c. All procurement and purchasing personnel;
- d. Any employee who participates on an evaluation or selection committee for any HCC solicitation for goods or services; and
- e. Any employee who participates in the evaluation of goods or services provided by a vendor or contractor.

Absent other legal requirements, all contracts entered into by the College in violation of this policy shall be voided within 30 days of notice of the violation.

I attest that I have answered the questions truthfully and to the best of my knowledge.

**ATTACHMENT NO. 6
CONFLICT OF INTEREST QUESTIONNAIRE
HCC PROJECT NO. IFB 18-38**

CONFLICT OF INTEREST QUESTIONNAIRE	FORM CIQ
For vendor doing business with local governmental entity	
<p>This questionnaire reflects changes made to the law by H.B. 23, 84th Leg., Regular Session.</p> <p>This questionnaire is being filed in accordance with Chapter 176, Local Government Code, by a vendor who has a business relationship as defined by Section 176.001(1-a) with a local governmental entity and the vendor meets requirements under Section 176.006(a).</p> <p>By law this questionnaire must be filed with the records administrator of the local governmental entity not later than the 7th business day after the date the vendor becomes aware of facts that require the statement to be filed. See Section 176.006(a-1), Local Government Code.</p> <p>A vendor commits an offense if the vendor knowingly violates Section 176.006, Local Government Code. An offense under this section is a misdemeanor.</p>	OFFICE USE ONLY
1 Name of vendor who has a business relationship with local governmental entity.	Date Received
2 <input type="checkbox"/> Check this box if you are filing an update to a previously filed questionnaire. (The law requires that you file an updated completed questionnaire with the appropriate filing authority not later than the 7th business day after the date on which you became aware that the originally filed questionnaire was incomplete or inaccurate.)	
3 Name of local government officer about whom the information is being disclosed.	
<hr style="width: 50%; margin: auto;"/> Name of Officer	
4 Describe each employment or other business relationship with the local government officer, or a family member of the officer, as described by Section 176.003(a)(2)(A). Also describe any family relationship with the local government officer. Complete subparts A and B for each employment or business relationship described. Attach additional pages to this Form CIQ as necessary.	
<p>A. Is the local government officer or a family member of the officer receiving or likely to receive taxable income, other than investment income, from the vendor?</p> <p style="text-align: center;"><input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>B. Is the vendor receiving or likely to receive taxable income, other than investment income, from or at the direction of the local government officer or a family member of the officer AND the taxable income is not received from the local governmental entity?</p> <p style="text-align: center;"><input type="checkbox"/> Yes <input type="checkbox"/> No</p>	
5 Describe each employment or business relationship that the vendor named in Section 1 maintains with a corporation or other business entity with respect to which the local government officer serves as an officer or director, or holds an ownership interest of one percent or more.	
6 <input type="checkbox"/> Check this box if the vendor has given the local government officer or a family member of the officer one or more gifts as described in Section 176.003(a)(2)(B), excluding gifts described in Section 176.003(a-1).	
7	
<hr style="width: 50%; margin: auto;"/> Signature of vendor doing business with the governmental entity	<hr style="width: 50%; margin: auto;"/> Date

NOTE: When completing this Questionnaire, please be certain to answer each and every question; indicate "Not Applicable", if appropriate. Please sign and date.

**ATTACHMENT NO. 7
FINANCIAL INTERESTS AND POTENTIAL CONFLICTS OF INTERESTS
HCC PROJECT NO. IFB 18-38**

Texas Local Government Code Chapter 176 requires that vendors desiring to enter into certain contracts with a local governmental entity must disclose the financial and potential conflict of interest information as specified below.

Vendor shall disclose the financial interest and potential conflict of interest information identified in Sections one (1) through three (3) below as a condition of receiving an award or contract. Submit this information along with your bid, proposal, or offer. **This form must be received by HCC Office of Systemwide Compliance before the vendor's bid, proposal, or offer will be considered received or evaluated.** Completed forms must be **NOTARIZED** and delivered to:

This requirement applies to contracts with a value exceeding \$50,000.

Section 1 - Disclosure of Financial Interest in the Vendor

a. If any officers or employees of HCC ("individuals") have one of the following financial interests in the vendor (or its principal) or its subcontractor(s), please show their name and address and check all that apply and (include additional documents if needed):

Name: _____
Address: _____

b. For each individual named above, show the type of ownership/distributable income share:

- | | |
|---|-----------|
| Ownership interest of at least 10% | (_____) |
| Ownership interest of at least \$15,000 or more of the fair market value of vendor | (_____) |
| Distributive Income Share from Vendor exceeding 10% of individual's gross income | (_____) |
| Real property interest with fair market value of at least \$2,500 | (_____) |
| Person related within first degree of affinity to individual has the following ownership or real property interest in Vendor: | (_____) |
| 1. Ownership interest of at least 10% | |
| 2. Ownership interest of at least \$15,000 or more of the fair market value of vendor | |
| 3. Distributive Income Share from Vendor exceeding 10% of the individual's gross income | |
| 4. Real property interest with fair market value of at least \$2,500 | |
| No individuals have any of the above financial interests (If none go to Section 4) | (_____) |

c. For each individual named above, show the **dollar value or proportionate share** of the ownership interest in the vendor (or its principal) or its subcontractor (s) as follows:

If the proportionate share of the named individual(s) in the ownership of the vendor (or its principal) or subcontractor of vendor is 10% or less, and if the value of the ownership interest of the named individual(s) is \$15,000 or less of the fair market value of vendor, check here (_____).

If the proportionate share of ownership exceeds 10%, or the value of the ownership interest exceeds \$15,000 of the fair market value of vendor, show either:

the percent of ownership _____ %, or
the value of ownership interest \$ _____ .

Section 2 - Disclosure of Potential Conflicts of Interest

For each of the individuals having the level of financial interest identified in Section 1 above, and for any other HCC individual not identified in Section 1 above check "Yes" or "No" to indicate which, if any, of the following potential conflict of interest relationships apply. If "Yes", please describe (use space under applicable section-attach additional pages as necessary).

a. Employment, currently or in the previous 3 years, including but not limited to contractual employment for services for vendor.

Yes _____ No _____

b. Employment of individual's spouse, father, mother, son, or daughter, including but not limited to contractual employment for services for vendor in the previous 2 years.

Yes _____ No _____

Section 3- Disclosure of Gifts

For each of the individuals having the level of financial interest identified in Section 1 above, and for any other HCC individual not identified in Section 1 above check "Yes" or "No" to indicate which, if any, of the following potential conflict of interest relationships apply. If "Yes", please describe (use space under applicable section-attach additional pages as necessary).

a. Received a gift from vendor (or principal), or subcontractor of vendor, of \$250 or more within the preceding 12 months.

Yes _____ No _____

b. Individual's spouse, father, mother, son, or daughter has received a gift from vendor (or principal), or subcontractor of vendor, of \$250 of more within the preceding 12 months.

Yes _____ No _____

Section 4- Other Contract and Procurement Related Information

Vendor shall disclose the information identified below as a condition of receiving an award or contract.

This requirement is applicable to only those contracts with a value exceeding \$50,000. You must submit this information along with your bid, proposal, or offer.

a. Vendor shall identify whether vendor (or its principal), or its subcontractor(s), has current contracts (including leases) with other government agencies of the State of Texas by checking:

Yes _____ No _____

b. If "yes" is checked, identify each contract by showing agency name and other descriptive information such as purchase order or contract reference number (attach additional pages as necessary).

c. Vendor shall identify whether vendor (or its principal) or its subcontractor(s) has pending contracts (including leases), bids, proposal, or other ongoing procurement relationships with other government agencies of the State of Texas by checking:

Yes _____ No _____

d. If "yes" is checked, identify each such relationship by showing agency name and other descriptive information such as bid or project number (attach additional pages as necessary).

This disclosure is submitted on behalf of:

(Name of Vendor)

Certification. I hereby certify that to the best of my knowledge and belief the information provided by me in this disclosure statement is true and correct. I understand that failure to disclose the information requested may result in my bid, proposal, or offer, being rejected, and/or may result in prosecution for knowingly violating the requirements of **Texas Local Government Code Chapter 176**. I understand that it is my responsibility to comply with the requirements set forth by HCC as it relates to this disclosure. I also understand that I must submit an updated disclosure form within seven (7) days of discovering changes in the significant financial interests of the individuals I identified in Section 1 of this disclosure or if individuals that were not identified, later receive a financial interest in my company or is a subcontractor of my company.

Official authorized to sign on behalf of vendor:

Name (Printed or Typed) _____ Title _____

Signature _____ Date _____

"NOTE: BIDDER MUST COMPLETE THE ABOVE "FINANCIAL INTERESTS AND POTENTIAL CONFLICTS OF INTERESTS" FORM. FAILURE TO COMPLETE AND RETURN THIS FORM WITH YOUR OFFER SHALL RESULT IN YOUR OFFER BEING CONSIDERED AS "NON-RESPONSIVE" TO THIS SOLICITATION."

Signed By: _____ Name: _____

Title: _____ State of: _____

Sworn to and subscribed before me at _____ (City) _____ (State)

this _____ day of _____, 2018.

Notary Public of the State of: _____

Exhibit 1
HCC PROJECT NO. IFB 18-38
LED LIGHT RETROFIT – MULTIPLE FACILITIES
(LOANSTAR NO. II)

PROJECT PLAN BOOK SPECIFICATION MANUAL

Provided as separate document (Exhibit 1) to IFB

SCOPE OF WORK AND PROJECT SPECIFICATION MANUAL

Houston Community College LoanSTAR II 2018 Lighting Retrofit

(Multiple Facilities)

Prepared for:

HOUSTON COMMUNITY COLLEGE
3100 Main
Houston, Texas 77002

May 29, 2018

Engineering Services Provided By:



ESA Energy Systems Associates, Inc.
1111 N IH35, Suite 212
Round Rock, Texas 78664



Texas Registered Engineering Firm F-4882

The Contractor will perform a turn-key, lighting retrofit of approximately 22,895 fixtures as detailed on the drawings and specifications for the HCC LoanSTAR II 2018 Lighting Renovation at the following buildings:

College	Building	Address
Central	Central Plant	1318 Alabama Street
Central	College Bus. Careers 1st Floor	1215 Holman Street B
Central	Crawford Annex	3412 Crawford Street
Central	Educational Development	3214 Austin Street
Central	Fashion Fannin 1st Floor	3601 Fannin
Central	Fine Arts 1st Floor	3517 Austin Street C
Central	Heinen Basement	3517 Austin Street A
Central	JB Whitely 1st Floor	1301 Alabama Street
Central	JD Boney / CIC	1215 Holman Street A
Central	Learning HUB 1st Floor	1300 Holman Street B
Central	Parking Garage	3517 Austin Street D
Central	San Jacinto Memorial Summary Chart	1300 Holman Street
Central	Staff Instructional Services	3821 Caroline Street
Central	Theater One Basement	3816 Caroline Street
Central	Willie Lee Gay Hall	1990 Airport Blvd
Coleman	HSC Basement	1900 Galen Drive
NE	Auto Training Bldg A 1st Floor	4638 Airline Drive
NE	Burn Building	555 Community College Dr
NE	DPS Training Center	555 Community College Dr
NE	Learning HUB 1st Floor	555 Community College Dr
NE	North Forest Bldg A	6010 Little York Rd
NE	Science Building	555 Community College Dr
NE	Training Tower	555 Community College Dr
NE	Truck Driving	555 Community College Dr
NW	Spring Branch	1010 W Sam Houston Pkwy
NW	Science Building	1010 W Sam Houston Pkwy
NW	PAC	1010 W Sam Houston Pkwy
NW	Katy	1550 Foxlake Drive
NW	Alief Workforce Building	13803 Bissonet
NW	Hayes Rd	2811 Hayes Road
SW	Gulfton 1st Floor	5407 Gulfton
SW	Stafford Fine Arts	9910 Cash Road
SW	Stafford Main Campus	10041 Cash Road

The scope of work includes supplying all material, labor, equipment to install, storage and handling of said material. The scope also includes all removal, disposal and recycling of all old lamps, ballasts and any lighting materials removed as a result of the project, and to include appropriate documentation of proper disposal where appropriate.

Scope of Work and Specification Manual Table of Contents

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Proposed Lighting Project Equipment

PROJECT TAG	Make	Model	LED Retrofit Classification (Type)	NEW Tombstones Required?	CCT (K)	CRI	Watts	Lumens	Estimated Life (hours)	Warranty (Years)	Buy American ⁽²⁾	Quantity in Project ⁽¹⁾
A	Energy Focus	LEDFLT8-840-208-2B2F	B	Non-shunted	4000	>80	8	960	L70>60,000	10	Yes	813
B	Energy Focus	LEDFLT8-840-413-IT3BF	A	NO	4000	>80	13	1,560	L70>60,000	10	Yes	456
C	GE	LED19GX24Q-H/840	A	n/a	4000	80	18.5	1,950	L70=50,000	5	Waiver	622
D	Energy Focus	LEDWP-656VFL-RFK	Retrofit Kit	n/a	5000	73	54	4,345	L70>50,000	?	Yes	22
E	Sylvania	LED13WA19	N/A	n/a	2700	80+	11	800	L70>25,000	3+	Waiver	260
F	Green Creative	97895-12T8/3F/840/BYP	B	Non-shunted	4000	82	13	1,550	L70>50,000	5	Waiver	340
G	GE	LED19GX224Q-V/840	A	n/a	4000	80	18.5	1,950	L70=50,000	5	Waiver	1,052
H	Energy Focus	LEDFLT8-840-413-3B2F	B	Non-shunted	4000	>80	13	1,560	L70>60,000	10	Yes	24,300
J	Energy Focus	LEDFLT8-840-415-2B2F	B	Non-shunted	4000	>80	15	1,800	L70>60,000	10	Yes	8,576
K	Energy Focus	LEDFLT8-840-418-3B2C	B	Non-shunted	4000	>80	18	2,340	L70>60,000	10	Yes	2,363
L	GlobalTechLED	GTR-UNVSB-1x5498-BL-MH-SV-T2-E40	A	n/a	4000	70+	85	Unknown	100,000+	5	Yes	73
N	Sylvania	LED17WA21	N/A	n/a	2700	80+	17	1,600	L70>25,000	3+	Waiver	248
O	GlobalTechLED	GTR-UNVSB-1x5498-BL-HO-SV-T2-E40	A	n/a	4000	70+	135	13,164	100,000+	5	Yes	52
P	Sylvania	LED13PAR30/PRO/935/FL40/P3	N/A	n/a	3500	94	13	875	50,000	5	Waiver	48
R	GlobalTechLED	GTSOL5498-BL-SOLY-120/277-HO-L2-MGL	Per Instructions	n/a	4000	?	135	13,164	L70>100,000	10	Yes	337
S	GlobalTechLED	GTR-YK-30W-25%-SV-BL-T2-E40	A	n/a	4000	?	30	2,679	L70>100,000	10	Yes	38
T	GlobalTechLED	GTR-YK-50W-75%-SV-BL-T2-E40	A	n/a	4000	?	50	4,594	L70>100,000	10	Yes	93
U	GlobalTechLED	GTSOL5498-BL-SOLY-120/277-ML-L2-MGL	A	n/a	4000	?	75	7,814	L70>100,000	10	Yes	99
V	AAMSCO	LED20CWMG-DOME	B	n/a	4000	85	23	3,400	50,000	7	Waiver	18
X	RAB	VXLED26NDG	New Fixture	n/a	4000	82	27	1,735	LM80>100,000	5	Yes	517
Y	RAB	VANLED20NF USA	New Fixture	n/a	4000	78	23	2,811	L70>100,000	5	Yes	5
Z	RAB	FFLED39N	New Fixture	n/a	4000	71	42	5,651	L80>100,000	5	Yes	9
BB	RAB	WPLED3T105N/PCT	New Fixture	n/a	4000	72	105	12,042	L80>100,000	5	Yes	2
CC	RAB	WPLED26N	New Fixture	n/a	4000	71	29	3,468	L80>100,000	5	Yes	6
DD	RAB	WPLED2T50N/PCT	New Fixture	n/a	4000	72	55	6,824	L80>100,000	5	Yes	1
TS	Energy Focus	LEDFLSLH-G13NS-SNETGW	NS tombstones	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Yes	36,558
FF	AAMSCO	LED20CWMD	N/A	n/a	4000	85	23	2,600	50,000	7	Waiver	72
GG	LIFEBULB	LBU6B16411	B	Non-shunted	4100	83	16	2100	n/a	5	Waiver	166
HH	GlobalTechLED	GTR-YK-40W-50%-SV-BL-T2-E40	A	n/a	4000	?	40	3,742	L70>100,000	10	Yes	10
LL	DECO	VINCI-LED-10-40-UNV-BZ-PC	New Fixture	n/a	4000	82	10.3	1200	L70>125,000	10	Yes	12
EL	Energy Focus	Red Cap Emergency LED Lighting System	B	Included	4000	>80	11	1560	L70>50,000	5	Yes	282
96CK	Texas Fluorescents	8RB-422 OR 502-S48W5650L-MV-40K	Retrofit Kit	N/A	4000	N/A	48	5650	N/A	N/A	Waiver	1
96CKHO	Texas Fluorescents	8RB-422 OR 502-H72W8200L-MV-40K	Retrofit Kit	N/A	4000	N/A	72	8200	N/A	N/A	Waiver	8
VV	DECO	VINCI-LED-30-40-UNV-BZ-PC	New Fixture	n/a	4000	82	28	3310	L70>125,000	10	Yes	76
MM	GlobalTechLED	GTR-YK-30W-25%-SV-BL-T2-E27	A	n/a	4000	?	30	2,679	L70>100,000	10	Yes	16
PG	NEPTUN	LED-12-040-UNV-010VDIM-740-BRZ	New Fixture	N/A	4000	>80	41	4400	L70>100,000	5	Yes	257
NN	Lifecbulb	LBT5F1641	A	N/A	4100	N/A	13	1650	L70>50,000	5	Waiver	161
HO	Lifecbulb	LBT5F3341	A	N/A	4100	N/A	31	3300	L70>50,000	5	Waiver	126
PP	TCP	LED13A21DOD41K	A	N/A	4100	82	13	1150	25,000	5	Waiver	55
QQEB	Lithonia	WL4-30L-LP840-EL7L	New Fixture	N/A	4000	82	28.2	3251	60,000	5	Waiver	12
RR	Satco	9WPLH/LED/835/DR/2P	A	N/A	3500	82	9	850	50,000	5	Waiver	8
SS	Green Creative	8.5PLH/840/DIR	A	N/A	4000	82	8.5	1020	50,000	5	Waiver	27
TT	GlobalTechLED	GTR-AR-112-G2-HI(300w)-SV-BL(4000K)-NL-GT-LSP-240	A	N/A	4000	n/a	300	35,000	L70>150,000	5	Yes	69
UU	TCP	LED14P30D30KSP (Dimmable narrow spot)	A	n/a	3000	80	14	1100	L70>25,000	5	Waiver	20
XX	STRAITS	SL923FLF-150W	A	n/a	4000	n/a	60	7200	n/a	1	Yes	8
WW	SATCO	4CTA/AMB/LED/E12/22K/120V Antique Filament 4 watt LED AMBER C11 candelabra and platinum E12 to E26 medium base adapter	A	n/a	2200	n/a	4	n/a	15,000	N/A	Waiver	TBD
YY	TCP	LED14P30D24KFL (Dimmable LOW CT Flood)	A	n/a	2400	80	14	950	L70>25,000	5	Waiver	18
ZZ	TCP	LED12P30SD41KFL (Dimmable MED CT Flood)	A	n/a	4100	80	12	925	L70>25,000	5	Waiver	31
BBB	Orion	LDRE1-A1-UNV-FDXX-840-22 2x2 fixture conv kit/EB	n/a	n/a	4000	>80	22	2331	L70>100,000	5	Yes	29
BBBE	Orion	LDRE1-A1-UNV-FDXX-840-22-BB 2x2 fixture conv kit/EB	n/a	n/a	4000	>80	22	2331	L70>100,000	5	Yes	5
CCC	Orion	LDRE1-EA-UNV-FDXX-840-24-M-ST 2x4 fixture conv kit	n/a	n/a	4000	>80	37	3968	L70>100,000	5	Yes	500

Notes:

(1) Quantity on project is the total number of items expected to be required of this equipment.

(2) Buy American requirements are in effect for this project. No person, the Owner, or the Funding Authority has the authority to waive this requirement. "Waiver" has been applied to products that cannot satisfy Buy American and a statement of exemption will be required.

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GENERAL

00 10 00	General Requirements
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DIVISION 26 ELECTRICAL

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SECTION 00 10 00**GENERAL REQUIREMENTS****1. GENERAL****A. Work included:**

- 1) Furnishing of all coordination, labor, superintendence, materials, tools, cranes, equipment and sources necessary for the complete installation or modification of the following systems as shown on the plans and as herein specified. It is the intent of these specifications that the Contractor(s) shall furnish and install a system complete in every respect and ready to operate. All miscellaneous items and accessories required for such installation and for the correct and convenient operation of the entire installation whether or not each such item or accessory is shown on the plans or mentioned in these specifications shall be furnished and installed. Drawings, Divisions 1, Division 26, and the Appendix apply to this Section.

2. CODES, STANDARDS, AND PERMITS**A. Comply with all local requirements. All work shall be in strict accordance with all applicable laws and codes, including but not limited to the following:**

- 1) Occupational Safety and Health Administration Standards including (but not limited to) OSHA Standard 2207 - Construction Industry Standards Applicable State Codes & Laws.
- 2) Applicable State Codes & Laws.
- 3) City Codes and Code Modifications, Adopted Codes & Ordinances.
- 4) International Building Code - 2012 Edition.
- 5) National Electrical Code – 2014 Edition.
- 6) Uniform Mechanical Code - 2012 Edition.
- 7) Uniform Plumbing Code - 2012 Edition.
- 8) International Fire Code – 2012 Edition.
- 9) International Energy Conservation Code – 2012 Edition.
- 10) National Fire Protection Association.
- 11) Texas Department of Health.
- 12) Environmental Protection Agency.
- 13) Texas Department of Labor Boiler Rules and Regulations.
- 14) Clean Air Act and Amendments.
- 15) American Society of Heating, Refrigerating and Air Conditioning Engineers. Standards 15, 16, and 90.1.

- B. Nothing in the plans or specifications shall be construed to permit work not conforming to these codes. In all cases of difference between minimum requirements of the various laws, codes and authorities, it is intended that the work shall meet the more stringent requirements.
- C. The Contractor shall procure all necessary permits or licenses to carry out his work and pay the lawful fees therefore; he shall also obtain and pay for all the necessary certificates of approval which must be delivered to the Owner before final acceptance of the work.
- D. The Contractor and Subcontractors shall contact the City and obtain and verify all codes, ordinances, and regulations before beginning work. The Contractor and Subcontractors are responsible for complying with all codes, ordinances, and regulation requirements, and ensuring that current codes are used.

3. GUARANTEE

- A. The Contractor shall guarantee his work against defective materials and workmanship for a period of one year from date of acceptance of the job. Neither the final payment nor any provisions in Contract documents shall relieve the Contractor of the responsibility for faulty materials and workmanship; he shall remedy any defects due thereto, and pay for any damage to other work resulting therefrom.

4. SUBMITTALS

- A. The Contractor shall submit to the Engineer for review one electronic copy of the manufacturer's product data and specifications for materials and equipment to be used in this project. Submit shop drawings for review when required in these Specifications or upon request of the Owner or Engineer.
- B. Review is only for general conformance with design concept of project and general compliance with the Contract Documents. Contractor is responsible for conforming and correlating equipment dimensions at job site; for information which pertains to fabrication processes or construction techniques; and for coordination of work of all trades. Review of submittals shall not relieve the Contractor any Subcontractor, and/or Material Supplier of responsibility for deviation from requirements of Contract Documents, nor for errors or omissions in submittals.
- C. Organize data in a hardback, 3-ring binder ($\frac{1}{2}$ " minimum) with the project title shown on the spine and front cover and sections indexed by specification number. Show any revisions to equipment layouts required by use of selected equipment. Type of submittal data is listed in the individual sections of this Division

5. PROJECT CLOSEOUT

- A. Cleaning up:
 - 1) Upon completion of the work, remove surplus materials and rubbish of every kind from the site of the work.
- B. Documents required prior to final payment:
 - 1) Prior to final payment, and before the issuance of a final certificate for payment in accordance with the provisions of the NSPE General conditions, file the following papers with the Engineer.
- C. Documents:

- 1) Final Certificate for Payment.
 - 2) Contractor's Affidavit of Payment of Debts and Claims.
 - 3) Contractor's Affidavit of Release of Liens.
 - 4) Release of Claims and Waiver of Lien for Subcontractor(s), Material Supplier(s) and/or Material Fabricator(s).
- D. Guarantees:
- 1) The guarantee required by the General Conditions and any other extended guarantee stated in the technical sections of the specifications. Start date of warranty shall be the date of final completion.
- E. Operation and Maintenance Manuals:
- 1) Furnish as specified under the various sections of the Specifications.
 - 2) Asbestos certification letter that no asbestos work was provided in this project.
 - 3) Manifest of hazardous waste disposal: Contractor to provide manifest.
- F. Project Record documents:
- 1) As the work progresses, keep a complete and accurate record of changes or deviations from the Contract Documents and the shop drawings, indicating the work as actually installed. Changes shall be neatly and correctly shown on the respective portion of the affected document, using prints of the Drawings affected or the Specifications, with appropriate supplementary notes. This record set of Drawings, shop drawings, and Specifications shall be kept at the job site for inspection by the Engineer and Owner.
 - 2) The records above shall be arranged in order, in accordance with the various sections of the specifications, and properly indexed. At the completion of the work, certify by endorsement thereon that each of the revised prints of the Drawings and Specifications is complete and accurate. Prior to application for final payment, and as a condition to its approval by the Engineer and Owner, deliver the record set of Drawings and Specifications, arranged in proper order, indexed, and endorsed as herein before specified.
 - 3) No review or receipt of such records by the Engineer or Owner shall be a waiver of any deviation from the Contract Documents or the shop drawings or in any way relieve the Contractor from his responsibility to perform the work in accordance with the Contract Documents and the shop drawings to the extent that they are in accordance with the Contract Documents.

6. PROJECT CLEAN-UP

- A. The project site shall be kept free of accumulation of surplus materials and rubbish during construction. Upon the completion of the project all debris shall be removed and the site shall be left clean. The contractor and subcontractors shall clean-up daily the area where work is performed. If it is necessary for the Owner to clean-up after the contractor or

subcontractor, the Owner reserves the right to keep track of costs and bill the Contractor. The Contractor and Subcontractors shall cooperate with the Owner.

- B. The project sites shall be cleaned-up before final inspection and payment.
- C. Spillage, over spray, collections of dust and debris, and damage to Owner occupied spaces shall be cleaned or remedied immediately by the responsible trade. Clean up all surfaces, remove equipment, salvage and debris, and return in condition suitable for use by the Owner as quickly as possible.

7. ASBESTOS

- A. Upon completion of the project the Contractor and all Subcontractors shall provide Owner with a letter stating that no asbestos and asbestos containing materials were provided on the project.

8. CONTRACTOR'S AFFIDAVIT

- A. After completion of the work set forth in this Contract, the Contractor shall file with the Owner his affidavit, sworn to before a Notary Public, stating that all workmen and persons employed, all firms supplying the materials and all subcontractors upon the project have been paid in full and that there are no bills outstanding against the project for either labor or materials, except certain items, if any, to be set forth in such affidavit covering disputed claims.
- B. The filing of such affidavit by the Contractor shall be prerequisite to the making by the Owner of the final payment to the Contractor.

9. LICENSES

- A. All trades shall have proper licenses by the City where the project is located. It is the responsibility of the Contractor awarded a contract by the Owner to verify that all subcontractors have proper required licenses.

10. PRE-CONSTRUCTION SITE VISIT WITH OWNER

- A. Contractor shall make a pre-construction site visit with Owner and note any existing damage in work areas. Contractor shall be responsible for any damage to property, building, equipment, furnishings, site or other items not specifically designated as pre-construction damage.

11. SCHEDULE, REPORTS, MEETINGS, AND PAYMENTS

- A. Contractor shall provide and keep current a construction schedule.
- B. Contractor shall prepare a schedule of values on AIA forms. Payment schedule may be submitted no more than one per month.
- C. After completion date, no partial payments will be made until all work is one-hundred percent complete and accepted by Engineer and Owner.

12. SPECIAL SITE CONDITIONS

- A. All work is to be carried out as quietly and dust free as possible. Noises, vibration, and disturbance shall be kept to a minimum and work shall be accomplished in accordance with

local ordinances. Keep the premises free of accumulations of surplus materials and rubbish, and in an orderly condition at all times.

- B. In the event any work is accomplished during occupied hours, work shall be conducted in a manner that will not interfere with, be disruptive, or distracting to the occupants. Contractor work schedules during office hours shall be coordinated with the Owner's representative. Entrance to buildings after normal operating hours or during times when the building is normally closed is the responsibility of the Contractor. The Contractor is responsible for obtaining keys or coordinating with Owner personnel to obtain access and to secure the building. The Contractor shall become familiar with space limitations and traffic patterns.
- C. Work accomplished during the non-regular hours shall be coordinated with Owner's Representative for building security, and routine cleaning and maintenance. Contractors shall coordinate and cooperate with Owner to ensure building is ready for the next scheduled use. The Contractor shall be responsible for building security and coordinating security with Owner's Representative. The Contractor shall coordinate and cooperate with any Owner activities and schedule.
- D. The Owner reserves the right to have their personnel and other Contractors working in the building. The Owner reserves the right to partially occupy the building in completed areas prior to Completion.
- E. Keep public areas such as halls, stairs, etc., free from accumulation of waste and construction debris. Smoking or open fires will not be permitted within the building enclosure or on the premises.
- F. Use of the Owner specified existing toilets within the building by the Contractor, and his personnel will be permitted, however, the Contractor will be responsible for cleaning after his employees and subcontractors.
- G. Maintain the building in a safe and weather tight condition at all times.

15. CUTTING AND PATCHING

- A. "Cutting and patching" includes cutting into existing construction to provide for the installation or performance of other work and subsequent fitting and patching required to restore surfaces to their original condition.
- B. "Cutting and patching" is performed for coordination of the work, to uncover work for access or inspection, to obtain samples for testing, to permit alterations to be performed or for other similar purposes.
- C. Do not cut structural members.

16. PROTECTION OF OWNER'S OPERATIONS

- A. The Contractor is herewith advised that his operations and the operations of any and all subcontractors will be required to be coordinated with the Owner. Other services shall be limited to non-occupied hours.
- B. Should the Contractor damage Owner's utility lines or apparatus and the Owner be called to make timely repairs, the Contractor will be invoiced based upon current Owner's overtime expenses.

- C. Protection of Carpet, Other Floor Coverings, All Surfaces, Equipment and Property shall be the responsibility of the Contractor.
- D. Rooftop Work (if applicable): The Contractor and Subcontractors shall accomplish the work in such a manner so as to protect the roof. The Contractor shall be responsible for any damage to the roof. Contractor shall determine bonding status of each facility roof and comply with existing bond requirements.
- E. Protect the building and contents (security, rain, etc.) at all times. Provide all materials and labor. The Contractor shall protect all surfaces, equipment, and property. Any damage shall be repaired or replaced. Contractor shall also protect from scratches. Any ceilings or ceiling tiles damaged shall be replaced with identical material.

13. FIRE PROTECTION

- A. The Contractor and Subcontractors shall be responsible for providing temporary fire protection, and accomplishing work in a fire prevention manner. The Contractor shall be solely responsible for means and methods.

18. TELEPHONE

- A. The Contractor shall not make any long distance phone calls. Use of Owner's telephone shall be only after specific prior approval of Owner.

19. TEMPORARY FACILITIES

- A. Temporary construction and support facilities and/or services required for the project include but are not limited to the following:
 - 1) Drinking water.
 - 2) Temporary enclosures as required for First aid station.
 - 3) Project identification, bulletin boards and all required local, state and federal signs.
 - 4) Waste disposal services.
 - 5) Rodent and pest control.
 - 6) Construction.
- B. Security and protection facilities and services for the project include but are not limited to the following:
 - 1) Temporary fire protection.
 - 2) Barricades, warning signs, lights.
 - 3) Environmental protection.

20. QUALITY CONTROL AND WORKMANSHIP

- A. Maintain quality control and supervision over subcontractors, suppliers, manufacturers, products, services, site conditions, and workmanship to produce work of specified quality.

Perform all work to the level of quality by Standards in individual specification Section. All work may be inspected by the Engineer and Owner's Representative for compliance with approved submittals and level of quality specified. The Work, or any part of the Work, deemed unsuitable or below the required level quality by the Engineer or Director of Maintenance shall be replaced or repaired by the Contractor at no additional cost to the Owner.

- B. Comply with industry standards required for high quality commercial and institutional buildings, except when more restrictive tolerances or specified requirements indicate more rigid standards or more precise workmanship. Perform work by persons qualified to produce workmanship of specified quality. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibrations, and racking.
- 21.** The Contractor shall be responsible for and insure that the mechanical equipment, controls, and electrical work are fully compatible and coordinated.
- 22.** All components, devices, and systems shall be U.L. listed.

End of Section 00 10 00

1. GENERAL**A. Purpose:**

- 1) The Owner has chosen to finance the project as an ARRA funded LoanSTAR Loan project. As such, there are specific project paperwork requirements mandated through the program for the Owner, Engineer and Contractor. This specification section will document the paperwork requirements expected from the Contractor during this project.

2. DOCUMENTATION REQUIRED FROM CONTRACTOR**A. Pay Application.**

Each pay application will have to follow the following requirements, in addition to other stated requirements of payment applications documented in this general specification document:

- 1) Payment applications and Schedules of Value must be supplied on AIA G702 and G703 documentation. Document(s) must be completely filled out.
- 2) Document must be signed and dated by a representative of the Contractor.
- 3) Payment application must be notarized (stamp, signature and date).

B. Invoice Support Documentation

All invoices supporting the reimbursement must be submitted. The invoices must be clearly itemized:

- 1) Be on Contractor/Vendor letterhead.
- 2) Show amounts being billed/paid on a calculator tape.
- 3) Give a description and location of the work performed.
- 4) List equipment with quantity, is applicable.
- 5) List the cost of labor, if applicable.

C. Davis Bacon Act and Certified Payrolls (Department of Labor form WH347)

- 1) Name and address of Contractor.
- 2) Payroll number.
- 3) Week ending.
- 4) Project location.
- 5) Employee names with last four digits of social security number.
- 6) Work classification as listed on Wage Determination PDF found at website <http://www.dol.gov/dba.aspx>. A copy must be provided with the reimbursement. If not in the PDF, complete a SF1444 form.
- 7) Prevailing wage rates from the Wage Determination PDF were paid.
- 8) Fringe benefits were included, if applicable.
- 9) Calculations are correct.

- 10) Second page of the form is completely filled.
- 11) Form is signed by the Contractor.
- 12) Notes on apprenticeships. The use of Apprentices are encouraged, but additional paperwork is required to appropriately document their status. The Contractor must submit copies of their Apprentice Program, as well a copy of the Apprentice's TDLR Apprentice License.

Note: A copy of the WH347 form has been supplied in this document for the Contractor's use if desired. Electronic versions are available at <https://www.dol.gov/whd/forms/wh347.pdf>.

Also note that the numerical day (1-31, as appropriate) and a letter abbreviation (M, T, W Th, F, Sa, Su, as appropriate), must be inserted in the Day and Date section.

D. Buy American Certification

Contractor must certify that products purchased were manufactured in the United States. Contractor must provide manufacturer's specifications as backup documentation. Borrower should contact Loan Coordinator to obtain Buy American Certification document template if Contractor does not have the document.

- 1) Manufacturer's Specifications.

E. Contract Attachment B-2

Contractor must complete and sign Contract Attachment B-2 (Subcontractor Nondiscrimination).

- 1) Note: A copy of this form has been supplied in the following pages for Contractor's use. The document is only required to be submitted with the first payment application. Engineer will re-insert the document in subsequent payment applications on behalf of the Contractor.
- 2) Note: Document has a watermark stating "Sample" on the form. No other version of this form without the watermark has ever been located by the Engineer. SECO has accepted this version of the document from several Contractors, including ESA, without issue in the past and until such time that SECO states the form is unacceptable in its present form, trusts the form is acceptable to SECO in its present form with the watermark present.

F. Contract Attachment O-2

Contractor must complete and sign Contract Attachment O-2 (Subcontractor Affidavit).

- 1) Note: A copy of this form has been supplied in the following pages for Contractor's use. The document is only required to be submitted with the first payment application. Engineer will re-insert the document in subsequent payment applications on behalf of the Contractor.
- 2) Document must be notarized.

G. Waste Disposal.

Provide a letter on Contractor letterhead stating that procedures for proper disposal of project waste were followed. Provide invoices of expenses for waste disposal if applicable.

Attachment 1
Certified Payroll Form
Department of Labor WH-347

Attachment 2
Contract Attachment B-2

ATTACHMENT B-2

DOE F 1600.5
(06-94)
All Other Editions Are Obsolete

OMB Control No.
1910-0400

U.S. DEPARTMENT OF ENERGY Assurance of Compliance Nondiscrimination in State Assisted Programs OMB Burden Disclosure Statement

Public reporting burden for this collection of information is estimated to average 15 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Office of Information Resources Management Policy, Plans, and Oversight, Records Management Division, HR-422-GTN, Paperwork Reduction Project (1910-0400), U.S. Department of Energy, 1000 Independence Avenue, S.W., Washington, DC 20585; and to the Office of Management and Budget (OMB), Paperwork Reduction Project (1910-0400), Washington, DC 20503.

(Enter name of Borrower's Subcontractor) __ESA Energy Systems Associates (Hereinafter called the "Applicant") HEREBY AGREES to comply with Title VI of the Civil Rights Act of 1964 (Pub. L. 88-352), Section 16 of the Federal Energy Administration Act of 1974 (Pub. L. 93-275), Section 401 of the Energy Reorganization Act of 1974 (Pub. L. 93-438), Title IX of the Education Amendments of 1972, as amended (Pub. L. 92-318, Pub. L. 93-568, and Pub. L. 94-482), Section 504 of the Rehabilitation Act of 1973 (Pub. L. 93-112), the Age Discrimination Act of 1977 (Pub. L. 94-135), Title VIII of the Civil Rights Act of 1968 (Pub. L. 90-284), the Department of Energy Organization Act of 1977 (Pub. L. 95-91), the Energy Conservation and Production Act of 1976, as amended, (Pub. L. 94-385) and Title 10 Code of Federal Regulations, Part 1040. In accordance with the above laws and regulations issued pursuant thereto, the Applicant agrees to assure that no person in the United States shall, on the ground of race, color, national origin, sex, age, or disability, be excluded from participation in, be denied the benefits of, or be otherwise subjected to discrimination under any program or activity in which the Applicant receives Federal assistance from the Department of Energy.

Applicability and Period of Obligation

In the case of any service, financial aid, covered employment, equipment, property, or structure provided, leased, or improved with Federal assistance funding extended to the Applicant by the Department of Energy, this assurance obligates the Applicant for the period during which the Federal assistance is extended. In the case of any transfer of such service, financial aid, equipment, property, or structure, this assurance obligates the transferee for the period during which Federal assistance is extended. If any personal property is so provided, this assurance obligates the Applicant for the period during which it retains ownership or possession of the property. In all other cases, this assurance obligates the Applicant for the period during which the Federal assistance is extended to the Applicant by the Department of Energy.

Employment Practices

Where a primary objective of the Federal assistance is to provide employment or where the Applicant's employment practices affect the delivery of services in programs or activities resulting from Federal assistance extended by the Department of Energy, the Applicant agrees not to discriminate on the ground of race, color, national origin, sex, and disability, in its employment practices. Such employment practices may include, but are not limited to, recruitment, advertising, hiring, layoff or termination, promotion, demotion, transfer, rates of pay, training and participation in upward mobility programs, or other forms of compensation and use of facilities.

Subrecipient Assurance

The Applicant shall require any individual, organization, or other entity with which it subcontracts, subgrants, or subleases for the purpose of providing any service, financial aid, equipment, property, or structure to comply with laws cited above. To this end, the subrecipient shall be required to sign a written assurance form; however, the obligation of both recipient and subrecipient to ensure compliance is not relieved by the collection or submission of written assurance forms.

Data Collection and Access to Records

The Applicant agrees to compile and maintain information pertaining to programs or activities developed as a result of the Applicant's receipt of Federal assistance from the Department of Energy. Such information shall include, but is not limited to the following: (1) the manner in which services are or will be provided and related data necessary for determining whether any persons are or will be denied such services on the basis of prohibited discrimination; (2) the population eligible to be serviced by race, color, national origin, sex, and disability; (3) data regarding covered employment, including use or planned use of bilingual public contact employees serving beneficiaries of the program where necessary to permit effective participation by beneficiaries unable to speak or understand English; (4) the location of existing or proposed facilities connected with the program and related information adequate for determining whether the location has or will have the effect of unnecessarily denying access to any person on the basis of prohibited discrimination; (5) the present or proposed membership by race, color, national origin, sex, and disability, in any planning

or advisory body which is an integral part of the program; and (6) any additional written data determined by the Department of Energy to be relevant to the obligation to assure compliance by recipients with laws cited in the first paragraph of this assurance.

The Applicant agrees to submit requested data to the Department of Energy regarding programs and activities developed by the Applicant from the use of Federal funds extended by the Department of Energy. Facilities of the Applicant (including the physical plants, buildings, or other structures) and all records, books, accounts, and other sources of information pertinent to the Applicant's compliance with the civil rights laws shall be made available for inspection during normal business hours of request of an officer or employee of the Department of Energy specifically authorized to make such inspections. Instructions in this regard will be provided by the Director, Office of Civil Rights, U. S. Department of Energy.

This assurance is given in consideration of and for the purpose of obtaining any and all Federal grants, loans, contracts (excluding procurement contracts), property, discounts or other Federal assistance extended after the date hereto, to the Applicants by the Department of Energy, including installment payments on account after such date of application for Federal assistance which are approved before such date. The Applicant recognizes and agrees that such Federal assistance will be extended in reliance upon the representations and agreements made in this assurance and that the United State shall have the right to seek judicial enforcement of this assurance. This assurance is binding on the Applicant, its successors, transferees, and assignees, as well as the person(s) whose signature appears below and who is authorized to sign this assurance on behalf of the Applicant.

Applicant Certification

The Applicant certifies that it has complied, or that, within 90 days of the date of the grant, it will comply with all applicable requirements of 10 C.F.R. § 1040.5 (a copy will be furnished to the Applicant upon written request to DOE.)

Designated Responsible Employee of Subcontractor

Name and Title (Printed or Typed)

Telephone Number

Signature

Date

Subcontractor:

Telephone Number

Address

Authorized Official of Subcontractor:

Name and Title (Printed or Typed)

Telephone Number

Signature

Date

Attachment 3
Contract Attachment O-2

ATTACHMENT O-2

American Recovery & Reinvestment Act – Borrower/Subrecipient’s Contractor Affidavit
This Affidavit must be signed and sworn (notarized)

I, _____, an authorized representative of: _____, a [person, sole proprietorship, partnership, corporation, limited liability company, nonprofit organization, governmental entity, political subdivision, or other entity] (circle one) that is receiving ARRA funding, hereby swear and affirm that, to the best of my knowledge, internal controls, processes and procedures have been designed and implemented to help ensure that the Subrecipient Subcontractor and its use of these funds complies with the following: applicable state law; federal law, including federal reporting requirements under Section 1512 of the Act, if applicable; rules; regulations; and other relevant guidance. I further swear and affirm that all of the statements made and information provided herein, including statements made and information provided in any exhibits are true, complete, and correct, to the best of my knowledge.

I understand that I am receiving ARRA funding from a governmental entity through the Texas Comptroller of Public Accounts, a Texas state agency. I understand that non-compliance with reporting requirements could be treated as a violation of the award agreement resulting in the withholding of funds, debarment, or award termination or suspension, as appropriate.

I understand that it is a federal crime under 18 U.S.C. Section 1001 to, in any matter within the jurisdiction of the executive branch of the U.S. Government, knowingly and willfully make any materially false, fictitious, or fraudulent statement or representation, or to make or use any false writing or document knowing that it contains the same.

I understand that presenting a false or fraudulent claim, in whole or in part, or causing same, may subject me to civil penalties as provided for in 31 U.S.C. Section 3729.

I understand that it is a felony offense under Section 37.10, Texas Penal Code, to knowingly make a false entry in, or false alteration of, a governmental record, or to make, present, or use a governmental record with knowledge of its falsity, when the actor has the intent to harm or defraud another. I understand that the offense of perjury, under Section 37.02, Texas Penal Code, is committed when a person, with intent to deceive and with knowledge of the statement’s meaning, makes a false statement under oath or swears to the truth of a false statement previously made and the statement is required or authorized by law to be made under oath.

I understand my obligation to track all ARRA funds and that ARRA funds cannot be comingled with Non-ARRA funds. I also understand my obligation to immediately report any known or suspected waste, fraud, and abuse of funds received under the Act to the United States Government Accountability Office at (800) 424-5454 and the Texas State Auditor’s Office at (800) 892-8348. I further understand that I will require all subcontractors with whom I contract using funds made available under the Act to sign a similar affidavit swearing to all of the above. I hereby swear and affirm that I have read the entire affidavit, and I understand its contents.

Borrower/Subrecipient Name

Affiant Signature

Full Name

Title

Date

Sworn and subscribed before me by the said

(Printed Name of Recipient’s Authorized Representative)

this _____ day of _____, 20_____.

Notary Public, State of Texas

Notary’s printed name: _____ **My commission expires:** _____ **(Seal)**

End of Section 00 10 01

SECTION 26 05 01

SELECTIVE DEMOLITION

1.0 GENERAL

1.1 RELATED DOCUMENTS:

- A. Drawings and general provisions of contract, including General and Supplementary Conditions. Specification sections apply to the work of this section.

1.2 DESCRIPTION OF WORK:

- A. Extent of selective demolition is indicated on drawings.

1.3 TYPES OF SELECTIVE DEMOLITION WORK:

- A. Demolition requires the selective removal and subsequent off site disposal in a legal manner of existing building materials and equipment that is no longer required.
- B. Contractor shall visit the site prior to bid and compare the new project documents to existing conditions and include in his bid items required to be removed, relocated and re-installed to accommodate the installation of new equipment.
- C. Related work specified elsewhere:
 - 1) Remodeling construction work and patching is included within the respective sections of specifications, including the removal of materials for re-use and incorporated into remodeling or new construction.
 - 2) Relocation of pipes, conduits, ducts, and other mechanical or electrical work are specified by respective trades.
 - 3) Should any asbestos containing material be encountered, contractor shall stop work immediately and contact the Owner and the Owner's representative before proceeding with work. The cost of asbestos abatement and removal is not included as part of this contract. The Owner will provide separate contractors for this work should it be required. However, should the contractor fail to comply with above stated requirements, he/she will be charged the costs incurred to the Owner for the asbestos cleanup process due to the contractor's actions in disturbing asbestos containing materials. Contact the Owner regarding any asbestos information required for this project.

1.4 SUBMITTALS:

- A. Schedule – Submit a schedule indicating proposed methods and sequence of operations for selective demolition work to the Owner's representative for review prior to commencement of work. Include coordination for shut-off, capping, continuation of services, noise protection, and dust control details as required.
- B. Provide detailed sequence of demolition and removal work to ensure uninterrupted progress of the Owner's onsite operations.

1.5 JOB CONDITIONS:

- A. Owner may be continuously occupying areas of the building. Conduct selective demolition work in a manner that will minimize need for disruption of the Owner's normal operations. Provide a minimum 72 hour advance notice to the Owner of demolition activities which will impact the Owner's operations.
- B. Condition of Structures - Owner and Engineer assume no responsibility for actual conditions of items or structures to be demolished.
- C. Partial Demolition and Removal - Items indicated to be removed but of salvable value to contractor and not elected to be retained by Owner, may be removed from structure as work progresses. Transport salvage items from site as they are removed.
- D. Storage and sale of removed items on-site will not be permitted.
- E. Provide temporary barricades and other forms of protection as required to protect Owner's personnel and general public from injury due to selective demolition.
- F. Provide protective measures as required to provide free and safe passage of Owner's personnel and general public to and from occupied areas.
- G. Erect temporary covered passageways as required by Authorities Having Jurisdiction.
- H. Provide interior and exterior shoring, bracing, and support to prevent movement, settlement, and collapse of structure/element to be demolished and work to remain after demolition.
- I. Protect from damage any finish work that is to remain in place and becomes exposed during the demolition process.
- J. Protect floors with suitable covering when necessary.
- K. Protect all equipment, furnishings and Owner's property.
- L. Construct temporary insulated solid dustproof partitions where required to separate areas where noisy or extensive dirt or dust operations are performed. Equip with dustproof doors and security locks if needed.
- M. Provide temporary weather protection to insure that no water leakage or damage occurs to structure or interior areas of existing buildings.
- N. Remove protections at the completion of the work.
- O. Promptly repair damage caused to adjacent facilities by demolition work at no cost to the Owner.
- P. Traffic - Conduct selective demolition operations and debris removal in a manner to ensure minimum interference with roads, streets, walkways, and other adjacent facilities.
- Q. Explosives/Fires - Use of explosives or fires will not be permitted.
- R. Utility Services - Maintain existing utilities and keep all in service and operational. Protect against damage during demolition operations.

- S. Do not interrupt existing utilities serving occupied or used facilities, except when authorized in writing by those having jurisdiction. Provide temporary services during interruptions to existing utilities, as required by and acceptable to the Owner and utility suppliers.
- T. Environmental Control/Protection- Comply with governing regulations.

2.0 EXECUTION

2.1 EXAMINATION AND PREPARATION:

- A. Visit the site prior to bid and start of construction to determine the existing condition of the building including existing mechanical, electrical, plumbing, and special systems. Contractor will be responsible for reviewing any documents which reflect existing conditions.
- B. Provide the Owner a written list of any uncovered or surveyed construction and/or code deficiencies not indicated on the documents. Obtain written direction from the Owner on how address deficiencies prior to starting any work.
- C. Contractor shall plan any necessary utility shut-off. Contractor shall prepare a written procedure and timeline to be followed for each shut-off to complete the planned work. Contractor shall provide Owner/Engineer details of utility interruption locations and shall coordinate with the Owner to determine timeline for all outages.
- D. Verify and/or determine existing circuiting/wiring arrangements for all equipment to be removed, including fire alarm, security, public address, data, telephone, BMS, special systems etc., before de-energizing/disabling any wiring/circuits. Existing circuit/wiring for equipment to be removed or replaced shall be circuit traced to determine panel connections. Verify that abandoned wiring and equipment serve only abandoned facilities and areas.
- E. The contractor shall note any existing fire rating/prevention methods employed at each facility - fire caulk, lighting fixture "fire boxes", etc. Maintain and/or restore the original fire rating (using same method as originally provided) at each location affected by the work performed in this renovation. Final installation approval shall be by the AHJ and the Owner.
- F. Immediately notify the Owner of any discovered facility deficiencies that could potentially cause a life safety hazard to building occupants. For example, equipment not properly supported, broken ceiling grids or tiles, damaged equipment, exposed conductors, etc. After notifying the Owner, wait for a notice of how to proceed prior to working in the affected area.
- G. Contractor shall maintain access to existing electrical equipment or devices which remain active. Contractor shall extend installations using materials and methods specified.
- H. Maintain electrical service, air conditioning, fire alarm system, telephone system, and other systems in areas deemed critical to be operational by Owner or Engineer in service until new system is ready to operate. Minimize the duration time of outage by only disabling the systems when performing the switchover and connections to the new system.

- I. Beginning of demolition indicates that Contractor accepts existing conditions. No additional project time or additional money shall be allowed for issues arising from coordination with existing conditions upon submission of Bid.

2.2 DEMOLITION:

- A. Perform selective demolition work in a systematic manner. Use methods as required to complete work indicated on drawings in accordance with demolition schedule and governing regulations.
- B. Demolish concrete and masonry in small sections. Cut concrete and masonry at junctures with construction to remain using power driven masonry saw or hand tools; do not use power driven impact tools.
- C. Promptly remove debris to avoid imposing excessive loads on supporting walls, floors or framing.
- D. Provide services for effective air and water pollution control as required by local, state, and federal authorities having jurisdiction.
- E. Submit a detailed written report to the Owner if any unanticipated problems are found which conflict with the intended function of the design. After notifying the Owner, wait for a notice of how to proceed prior to working in the affected area. Reschedule the selective demolition agenda as necessary to proceed with work and overall progress without delay.
- F. Upon completion of renovation, contractor shall provide continuity of any wiring/circuits to existing outlets or equipment to remain including fire alarm, security, BMS, PA, special systems that may have been interrupted due to the demolition of walls or the removal of existing devices. Contractor shall circuit trace all existing devices and equipment to remain to confirm panel/interface and terminal/circuit number, provide 'as built' drawings indicating final circuiting. New type written panel directories shall be provided for existing panels and shall be corrected to reflect circuiting changes due to renovation.
- G. Contractor shall disconnect and remove equipment no longer indicated on the new project documents and/or abandoned, including supports, hangers and other accessories.
- H. Contractor shall remove abandoned piping and conduit, including abandoned piping and conduit above accessible ceiling finishes. Contractor shall cut piping and conduit flush with walls and floors. Contractor shall patch surfaces to match existing.
- I. Contractor shall disconnect and remove devices, appliances, and outlets no longer indicated on the new project documents and/or abandoned, including power, fire alarm, communication, security, special systems, etc, in walls or ceilings shown to remain. Contractor shall remove abandoned outlet boxes if conduit servicing them is abandoned and removed. Contractor shall provide a blank cover to match existing/new types, for all outlet boxes not removed.
- J. Contractor shall be responsible for confirming all power and low voltage wiring including special systems (fire alarm, security, intercom, data, telephone, etc.) remaining in renovated areas is active upon completion of renovation. Any existing wiring which is inactive and not required shall be removed back to its panel or source.

- K. Contractor shall remove, relocate and extend existing electrical/fire/security/intercom/PA/etc. systems to accommodate new construction. All work to be performed on energized equipment or circuits shall be by qualified personnel. Work required for special systems (fire alarm, security, etc) to be performed by qualified personnel certified for these systems.
- L. Contractor shall use any existing equipment or building standard vendors as necessary to modify existing equipment due to demolition to insure proper, continuing operation of equipment or systems which have been affected by the demolition but must remain operational. System vendors shall include, but not be limited to, fire alarm, BMS, security, and data/telephone.

2.3 DISPOSAL OF DEMOLITION MATERIALS:

- A. If hazardous materials are encountered during demolition operations, comply with applicable regulations, laws and ordinances concerning removal handling and protection against exposure or environmental pollution. If asbestos is encountered, do not disturb it, contact the Owner immediately.
- B. Refrigerants shall not be released into the environment. Refrigerants shall be captured, stored, transported, and handled in a legal manner. Documentation indicating legal refrigerant disposal shall be presented to the Owner.
- C. Remove debris, rubbish, and other materials resulting from demolition operations from building site.
- D. All materials and equipment being removed by the Contractor and deemed unwanted by the Owner becomes property of the Contractor and shall be removed from the premises and disposed of by recycling or other environmentally safe manner.

2.4 CLEAN-UP AND REPAIR:

- A. Upon completion of demolition work, remove tools, equipment and demolished materials from site. Remove protections and sweep clean all interior areas.
- B. Contractor shall clean and repair existing material and equipment or devices which remain and/or to be reused. Contractor shall restore any damaged material, equipment, and/or finishes to remain to original condition upon completion of renovation. Contractor shall employ crafts that originally performed the work.

End of Section 02 41 19

SECTION 26 05 00ELECTRICAL GENERAL PROVISIONS**1.0 GENERAL****1.1 SCOPE:**

- A. The work covered by Division 26 includes the furnishing of all materials, labor, transportation, tools, permits, fees, utilities, and incidentals necessary and the complete installation of all electrical work required in the Contract Documents and specified herein. The intent of the Contract Documents is to provide an installation complete in every respect. In the event that additional details or special construction may be required for the work indicated or specified in Division 26 or work specified in other Divisions of the Specifications, it is the responsibility of the Contractor to provide all material and labor which is usually furnished with such systems in order to make the installation complete and operational. Include all cost associated with a power system study and the required testing.
- B. The Contractor is responsible for the coordination and proper relation of his work to the building structure and to the work of other trades. The Contractor shall advise the Architect/Engineer of any discrepancy prior to bidding.

1.2 CODES AND STANDARDS:

- A. All work shall comply with the latest adopted edition of the applicable rules and regulations of the National Electrical Code (NEC), the National Electrical Safety Code (NESC), Americans with Disabilities Act (ADA), the terms and conditions of service of the electrical utility, as well as any other authorities that may have lawful jurisdiction pertaining to the work specified. None of the terms or provisions of this specification shall be construed as waiving any of the rules, regulations, or requirements of these codes or authorities.
- B. The Contractor shall resolve any code violation discovered in the Contract Documents with the Architect/Engineer prior to award of the contract. Any code violation in the Contract Documents discovered after award of the Contract shall be corrected to the satisfaction of the Engineer and Owner at no additional cost.
- C. In any instance where the Drawings or Specifications call for materials of a better quality or larger size than required by the codes, those provisions of the Drawings or Specifications shall take precedence. The codes shall govern in case of direct conflict between the codes and the Drawings or Specifications.

1.3 RELATED DOCUMENTS:

- A. The Drawings and Specifications, any provided General Conditions, any provided Supplementary General Conditions and other provided requirements of Division 01, apply to the work specified in Division 26, and shall be complied with in every respect. The Contractor shall examine all of the documents which make up the Contract Documents, and shall coordinate them with the work on the Electrical Plans and in Division 26 of these Specifications.

1.4 DRAWINGS AND SPECIFICATIONS:

- A. The Specifications are accompanied by Drawings for the project and details of the installations indicating the locations of equipment, outlets, light fixtures, switches, controls, receptacles, etc. The Drawings and Specifications are complementary to each

other, and what is required by one shall be as binding as if required by both. Should the drawings or specifications conflict, the Contractor shall install/comply with the larger or more stringent requirement.

- B. If any departures from the Contract Documents are deemed necessary by the Contractor, details of such departures and the reasons therefore shall be submitted in writing to the Architect/Engineer for review. No departures from the Contract Documents shall be made without prior written approval of the Architect/Engineer.
- C. The interrelation of the Specifications, Drawings, and Schedules is as follows: The Specifications determine the nature, installation procedures, and quality of the materials, the Drawings show in schematic form, with the use of symbols and notes, the quantity, general location, sizes, and interconnections of the various devices required to accomplish the electrical system for this project, and the Schedules give the performance characteristics. Should the Drawings disagree in themselves, or with the Specifications, the better quality or greater quantity of work or materials shall be estimated upon, and unless otherwise directed by the Architect/Engineer in writing, shall be performed or furnished. In case the Specifications should not fully agree with the Schedules, the latter shall govern. Figures indicated on Drawings govern scale measurements and large scale details govern small scale Drawings.
- D. Items specifically mentioned in the Specifications but not shown on the Drawings and/or items shown on the Drawings but not specifically mentioned in the Specifications shall be installed by the Contractor under the appropriate section of work as if they were both specified and shown.
- E. Contractor will be responsible for determining the actual dimensions, equipment connection requirements, proper routing and coordinate with other divisions of work so that the electrical system is an integral part of the project. Architectural and Mechanical drawings shall be used to determine exact locations of fixtures, devices and equipment.

1.5 ELECTRICAL UTILITIES:

- A. The contract documents reflect the general location, voltage, ampacity, size and manner of routing for all utilities known to be required on this project. The exact design, including but not limited to: conduit types, sizes, quantities and routing, concrete encasement specifications, pull rope(s), ground rod(s), concrete pad(s), physical protection such as bollard(s), etc. is per each individual utility. It is the responsibility of the Contractor to visit the site and confirm with each individual utility the exact requirements for all electrical, telephone and cable television utilities. The bid submitted by the Contractor shall include costs for all such coordination work as well as any and all electrical, telephone and cable television company charges and/or fees.

1.6 TEMPORARY SERVICES:

- A. If no electrical service exists on this site which may be used for construction power, it is the responsibility of the Contractor to furnish and install a complete system for temporary construction power and lighting. Temporary services shall be installed in accordance with requirements of the National Electrical Code (NEC), the National Electrical Safety Code (NESC), and the Occupational Safety and Health Act (OSHA). The Contractor shall pay for the cost of the temporary construction power and lighting systems.
- B. The Contractor shall pay for all electrical energy consumed by the temporary systems on the job site throughout the entire construction period.
- C. Remove all temporary services upon completion of the work.

1.7 BUILDING CONSTRUCTION:

- A. It is the responsibility of the Contractor to review the Drawings and Specifications so as to thoroughly familiarize himself with the type and quality of construction to be provided on this project.
- B. The electrical drawings are diagrammatic in character and cannot show every connection in detail or every line or conduit in its exact location. The Contractor shall carefully investigate structural and finish conditions and shall coordinate with all other trades and existing conditions in order to avoid interference between the various phases of work.
- C. The approximate location of electrical items is indicated on the electrical drawings. These drawings are not intended to give complete and exact details in regard to location of outlets, apparatus, etc. Exact locations are to be determined by actual measurements at the job site and will in all cases be subject to the approval of the Architect/Engineer. The Architect/Engineer reserves the right to make any reasonable changes in the location indicated without additional cost. In this situation, "reasonable" shall be defined as relocation of the electrical work in question or conflict to the nearest location that will resolve the conflict and satisfy the Owner.
- D. No asbestos will be installed at this site.

1.8 CONTRACTOR QUALIFICATIONS:

- A. An acceptable Contractor for the work under this Division shall be a specialist in this field and have the personal experience, training, skill and the organization to provide a practical working system. If required, he shall be able to furnish acceptable evidence of having contracted for and installed not less than three systems of comparable size and type to this one, that have served their Owners satisfactorily for not less than three years.
- B. The foreman or superintendent for this work shall have had experience in installing not less than three such systems and shall be approved by the Architect/Engineer before the work is begun. Adequate and competent supervision shall be provided to ensure first class workmanship and installation.
- C. Work shall be executed and all materials installed to present a neat appearance when completed in accordance with the best practice of the trades in a thorough, substantial, workmanlike manner by competent workmen.
- D. The Contractor is responsible for all construction techniques required for all systems specified and shown on the drawings.

1.9 OBSERVATION OF THE WORK:

- A. Engineer's and/or Owner's authorized representative shall have the right to observe the work at any time. The Contractor shall have a representative present when his work is being observed, and he shall give assistance, as may be required, to the Architect/Engineer's representative. Recommendations made by observer shall be promptly carried out, and all unsatisfactory material and/or workmanship shall be replaced to the satisfaction of the Architect/Engineer.

1.10 SUBMITTALS:

- A. Comply with the requirements of Division 01.

- B. Review is only for general conformance with design concept of project and general compliance with the Contract Documents. Contractor is responsible for conforming and correlating equipment dimensions at job site; for information which pertains to fabrication processes or construction techniques; and for coordination of work of all trades. Review of submittals shall not relieve the Contractor any Subcontractor, and/or Material Supplier of responsibility for deviation from requirements of Contract Documents, nor for errors or omissions in submittals. Any material provided by the Contractor without submittals reviewed by the Architect/Engineer is at the Contractor's risk and constitutes the Contractor's agreement to comply with the Architect/Engineer's intent whether specified, shown, or implied.
- C. Submittal of shop drawings, product data, and samples will be accepted only when they are submitted by the Contractor. Each submittal shall indicate by signed stamp that the submittals have been checked and that they are in accordance with contract documents and that dimensions and relationship with work of other trades have been checked. Submittals that have not been checked and signed by the Contractor will be returned for checking before being reviewed.
- D. Organize data in a hardback, 3-ring binder (1/2" minimum) with the project title shown on the spine and front cover and sections indexed by specification number. Show any revisions to equipment layouts required by use of selected equipment. Type of submittal data is listed in the individual sections of this Division.
- E. Submittals provided for light fixtures and renovation lamps, safety switches/disconnects, motor starters, switchboards, panelboards, and transformers shall explicitly indicate, by use of unique identifier, equipment for which device is proposed to be utilized with or on. Examples of acceptable identifiers include, but are not limited to, Equipment Connection Schedule I.D. Tags/Marks, Lighting Fixture Schedule Fixture Types, Switchboard/ Panelboard I.D. tags, etc. Submittals provided without these identifying marks clearly denoted on equipment cutsheets and Bill of Material shall constitute acceptable grounds for submittal rejection without review. The Contractor shall refer to each individual specification section for additional submittal requirements.

1.11 SUBSTITUTIONS AND PRODUCT OPTIONS:

- A. Within 30 days after contract date, submit to Architect/Engineer a complete list of major products proposed to be used, with the name of the manufacturer and the installing Subcontractor.
- B. Contractor's Options:
 - 1) For products specified only by reference standard, select any product meeting that standard.
 - 2) For products specified by naming several products or manufacturers, select any one of the products or manufacturers named, which complies with the specifications.
 - 3) For products specified by naming one or more products or manufacturers and "or equivalent," Contractor must submit a request for substitutions for any product or manufacturer not specifically named.
 - 4) For products specified by naming only one product and manufacturer, there is no option, unless explicitly allowed in an individual section of these Specifications.

- C. "Basis of Design" manufacturers' names and catalog numbers specified within the drawings or in sections of Division 26 are used to establish standards of design, performance, quality and serviceability and not to limit competition. Equipment of equivalent design to that specified for listed and approved manufacturers will be acceptable upon approval by the Architect/Engineer. The Architect/Engineer will consider written requests for substitution of specified products, if received fourteen business days prior to bid date and allowed by the Owner and these Specifications. After bid date, request for substitution will be considered only in cases of product unavailability or other conditions beyond control of the Contractor. It is the Contractor's responsibility to:
- 1) Personally investigate the proposed substitute product to determine that it has all the same accessories and is equivalent or superior in all respects to that specified.
 - 2) Provide the same guarantee for the substitution that he would for that specified.
 - 3) Coordinate the installation of the equipment which he proposes to substitute with all trades and includes the costs for any changes required for the work to be complete in all respects. The Contractor will prepare shop drawings where required by the Architect/Engineer or where dimensions vary.
 - 4) Provide itemized cost breakdown including material and labor for the proposed product substitutions.
 - 5) Submit complete design and performance data.

NOTE: Substitution requests are not allowed for select items. Refer to each individual Specification Section for more information.

1.12 PROJECT RECORD DOCUMENTS:

- A. Throughout progress of the work of this Contract, maintain an accurate record of all changes in the Contract Documents. Upon completion of the Work of this Contract, transfer the recorded changes to a set of reproducible Record Documents. Delegate the responsibility for maintenance of Record Documents to one person on the Contractor's staff. Thoroughly coordinate all changes within the Record Documents, making adequate and proper entries on each page of Specifications and each sheet of Drawings and other Documents where such entry is required to properly show the change. Accuracy of records shall be such that future search for items shown in the Contract Documents may reasonably rely on information obtained from the approved Record Documents. Make all entries within 24 hours after receipt of information.
- B. The Contractor will mark all deviations on a daily basis. The Architect/Engineer will visit the site periodically and may request to see the "As-Built" documentation. If the Contractor does not keep an accurate set of as-built drawings, the pay request may be altered or delayed at the request of the Architect/Engineer. Mark the drawings with a colored pencil. Record installed feeder conduits, dimensioning the exact location and elevation of the conduit.
- C. Deliver record drawings to the Architect/Engineer in the number and manner specified in Division 01, General Requirements.

1.13 OPERATION AND MAINTENANCE DATA:

- A. Prepare and submit sets of product data, shop drawings, wiring diagrams, instructions and parts lists for operating and maintaining equipment and systems installed. Include in the instructions a description of normal adjustments and a list of items to be lubricated. Specify the type and frequency of lubrication required. Provide special servicing tools as required for this equipment. Deliver manuals and tools to the Architect/Engineer as a condition of final acceptance. Refer to Division 01 for other requirements. The manual shall include:
- 1) Manufacturer's installation instruction brochures.
 - 2) Manufacturer's local representative and/or distributor's name and address.
 - 3) Manufacturer's operating and maintenance brochures.
 - 4) Manufacturer's internal wiring diagram.
 - 5) Contractor's installation wiring diagram.
 - 6) Control system installation drawings.
 - 7) Replacement part number listings and/or descriptions.
 - 8) Framed operating instructions when required.
 - 9) Manufacturer's warranties and guarantees.
- B. The manual shall include all of the above listed data bound into a permanent hard-back, three ring binder(s) identified on the cover as "Operating and Maintenance Manual" with additional cover display of the names and location of Building, the Owner, the Architect, the Engineer, the General Contractor, and the Contractors installing equipment represented in the brochure.
- C. Contents of the manual shall be grouped in sections according to the various sections of Division 26, and shall be listed in a Table of Contents. Sections shall be organized as follows:
- 1) Each "tab" in the brochure shall identify the grouping of all literature required for a single class of equipment; i.e., "transformers", "lighting fixtures", "switchgear", etc., for all types of equipment on the job.
 - 2) Contents under each "tab" shall refer to a single class of equipment, and shall be arranged in the following sequence: First, the manufacturer's installation brochure; second, the manufacturer's operating and maintenance brochure; third, the manufacturer's installation wiring diagram; fourth, the Contractor's field wiring diagram, if different; and fifth, the manufacturer's brochure listing replacement part numbers and description.
 - 3) Provide final tab "Warranties and Guarantees" behind which all such items will be located.
- D. Upon completion of the work and at a time designated by the Architect/Engineer, instruct the Owner's operating personnel in operation and maintenance of electrical equipment and systems. Before proceeding with instruction, prepare a typed outline in triplicate listing the subjects that will be covered. Submit the outline for review by the Architect/Engineer. At the conclusion of the instruction, obtain the signatures of the people instructed on each copy of the outline to signify that they have a proper

understanding of the operation and maintenance of the system. Submit the signed outlines to the Architect/Engineer as a condition of final acceptance. Provide a minimum of 8 hours of general instruction in addition to any time specified in other sections of Division 26.

- E. Deliver operations and maintenance data to the Architect/Engineer in the number and manner specified in Division 01, General Requirements.

1.14 Permits:

- A. Contractor shall obtain and pay for all permits required by the "Authority Having Jurisdiction" as pertains to Division 26 work.

2.0 PRODUCTS

2.1 CONSTRUCTION MATERIALS:

- A. All materials shall be new and shall conform to the requirements of the National Electrical Code and/or the Standards Organizations regulating those products and shall be listed or labeled by Underwriters Laboratories. The listing or labeling by Underwriters Laboratories will be accepted as evidence that the materials or equipment conform to the applicable standards of that agency. In lieu of a UL listing, the Contractor may submit a statement from a nationally recognized, independent testing agency acceptable to the local authority and Owner's insurance company, indicating that the items have been tested in accordance with required procedures, and that the materials and equipment comply with all contract requirements.
- B. Any asbestos that has been previously identified at the site will be clearly identified. If the contractor encounters any suspect asbestos containing material, the contractor shall stop work and immediately contact the owner and engineer.

2.2 STANDARD PRODUCTS:

- A. All materials and equipment shall be standard catalog products of domestic manufacturers regularly engaged in the manufacture of products conforming to these specifications. Materials and equipment shall have been in satisfactory use at least two years prior to bid opening. Where custom or special items are required, these shall be fully described by drawings and/or material list which detail the item proposed for use on this project.

2.3 MANUFACTURERS INSTRUCTIONS:

- A. The Contractor is fully responsible for furnishing the proper electrical equipment and/or material and for seeing that it is installed as intended by the manufacturer's written instructions. If needed for proper installation, operation, or start up, the Contractor shall request advice and assistance from a representative of the specific manufacturer. The manufacturers' published instructions shall be followed for preparing, assembling, installing, erecting, and cleaning all materials and equipment. The Contractor shall promptly notify the Architect/Engineer in writing of any conflict between the requirements of the contract documents and the manufacturer's directions and shall obtain the Architect/Engineer's instructions before proceeding with the work. Should the Contractor perform any work that does not comply with the manufacturer's directions or instructions from the Architect/Engineer, he shall bear all costs arising in connection with correcting the deficiencies to the satisfaction of the Engineer and Owner.

2.4 RUST PREVENTION:

- A. All metallic materials shall be protected against corrosion. Exposed metallic parts of outdoor apparatus shall be given a rust inhibiting treatment and standard finish by the manufacturer. All parts such as boxes, bodies, fittings, guards, and miscellaneous parts shall be protected by galvanizing, except where other equivalent protective treatment is specifically approved in writing.

2.5 DELIVERY AND STORAGE:

- A. The Contractor shall not deliver any equipment to the job site until the equipment is ready to be installed or until there is suitable space provided to properly protect equipment from weather, humidity, dust, and physical damage.
- B. All equipment shall be protected in accordance with the manufacturer's recommendations and the requirements of NFPA 70B, Annex J, titled "Equipment Storage and Maintenance During Construction."
- C. All equipment injured or damaged in transit from factory, during delivery to premises, while in storage on premises, while being erected and installed, and while being tested, until time of final acceptance, shall be replaced by the Contractor at no additional expense to the Owner.

2.6 CAPACITIES AND SPACE LIMITATIONS:

- A. Capacities shall be not less than those indicated but shall be such that no component or system becomes inoperative or is damaged because of start-up or other overload conditions. Where approved equipment requires electrical power other than that indicated in the contract documents for the specified equipment, the Contractor is responsible for adjusting protective devices, starter sizes, conductors, conduits, etc., to accommodate the approved device's electrical requirements.
- B. The Contractor is responsible to verify that the equipment he proposes to provide will physically fit within the space indicated on the contract documents and that the required code clearances and maintenance access are maintained. Any space conflicts shall be noted in the submittals. Provide scale drawings to the Architect/Engineer indicating proposed solutions to any space conflict for the Architect/Engineer's review and approval.

2.7 NAMEPLATES:

- A. Each piece of equipment shall have a nameplate from the manufacturer with the following information: name, address, catalog number, voltage, phase, full load amperes or horsepower, and/or other pertinent information on a plate securely attached to the equipment. All data on nameplates shall be legible at the time of final observation. Refer to specification Section 26 05 53, Electrical Identification.
- B. All electrical distribution equipment shall have mechanically fastened, engraved phenolic panel labels and typed directories of the loads served.

3.0 EXECUTION**3.1 PROTECTION OF EQUIPMENT:**

- A. During construction, protect switchgear, transformers, motors, control equipment, and other items from insulation moisture absorption and metallic component corrosion by

appropriate use of strip heaters, lamps or other suitable means. Apply protection immediately upon receiving the products and maintain continuously.

- B. Keep products clean by elevating above ground or floor and by using suitable coverings.
- C. Take such precautions as are necessary to protect apparatus and materials from damage. Failure to protect materials is sufficient cause for rejection of the apparatus or material in question.
- D. Protect factory finish from damage during construction operations and until acceptance of the project. Restore any finishes that become marred or damaged to the satisfaction of the Owner and Architect/Engineer.

3.2 INSTALLATION:

- A. Cooperation with trades of adjacent, related or affected materials or operations, and of trades performing continuations of this work under subsequent contracts, is considered a part of this work. The Contractor is responsible to coordinate with other trades in order to effect timely and accurate placing of work and to bring together, in proper and correct sequence, the work of such trades. Provide coordination drawings showing exact size and location of sleeves, openings or inserts for electrical equipment in slabs, walls, partitions and chases.
- B. Install minimum 3-1/2-inch thick concrete housekeeping pads for indoor floor-mounted equipment, except where direct floor mounting is required. Pour pads on roughened floor slabs, sized so that outer edges extend a minimum of 3-inches beyond equipment. Trowel pads smooth and chamfer edges to a 1-inch bevel. Secure equipment to pads as recommended by the manufacturer. Refer to the structural engineering documents for all housekeeping pad structural requirements, including, but not limited to: rebar or other reinforcements, concrete strength, etc.
- C. All equipment shall be installed level and plumb. Sheet metal enclosures shall be separated from walls a minimum 1/2-inch by installing corrosion-resistant spacers or metal framing. Provide corrosion-resistant bolts, nuts and washers to anchor equipment.
- D. Permanently seal outdoor equipment at the base using concrete grout. Seal or screen openings into equipment to prevent entrance of animals, birds and insects. Use galvanized steel or copper mesh with openings not larger than 1/16-inch for screened openings. Seal small cracks and openings from the inside with a silicone sealing compound.
- E. Conceal electrical work in walls, floors, chases, under floors, underground and above ceilings except:
 - 1) Where shown or specified to be exposed. Exposed is understood to mean open to view.
 - 2) Where exposure is necessary to the proper function.
 - 3) Where size of materials and equipment preclude concealment.
 - 4) Where replacing and/or reusing exposed electrical work.
- F. All equipment shall be installed in accordance with NECA 1. All electrical equipment shall be installed in such a manner as to allow removal for service without disassembly of

other equipment. Manufacturer's required access shall be provided in addition to any code required clearances.

- G. Install all electrical equipment so that clearances are adhered to as required by the latest adopted version of the National Electrical Code.

3.3 HOISTING, SCAFFOLDING, AND TRANSPORTATION:

- A. The Contractor shall provide his own hoisting, scaffolding and ladders as required to set his materials and equipment in place.
- B. The Contractor shall provide all necessary transportation to facilitate the delivery of all materials, equipment, tools, and labor to the job.

3.4 CLEANING:

- A. The Contractor shall, at all times, keep the premises free from accumulations of waste material or rubbish caused by him, his employees, or his work. Debris shall be removed, not only from the building, but also from the site and from any public area adjacent to the site.
- B. At completion of the project, the Contractor shall remove all of his tools, scaffolding, and surplus materials.

3.5 CONDUIT SLEEVES AND PENETRATION SEALS:

- A. Where conduits pass through walls or floors not on fill, galvanized sheet metal sleeves shall be used. In walls, they shall be flush with each finished surface. In floor slabs, sleeves shall extend 1-1/2" above floor slab and be cemented in a water tight manner. Size of sleeves shall be at least 1/2" greater than outside diameter of the conduit.
- B. For conduits passing through outside walls into interior spaces, furnish and install galvanized steel sleeves having an inside diameter at least 4" greater than the outside diameter of contained conduit. Where sleeves occur in walls having a waterproof coating applied, the sleeves shall have flanges welded onto them to build into the waterproofing. After conduits are installed, the annular space between the conduit and sleeve shall be effectively sealed with an approved mastic sealer as directed by the Architect/Engineer.
- C. Sleeves and flashings compatible with the roofing installation shall be provided for roof penetrations or anchorage of supports. All roof penetrations and anchorage details shall be reviewed and approved by the Roofing Consultant and/or Architect/Engineer.

3.6 FIREPROOFING:

- A. All raceways, cables, cable tray, etc. passing through fire rated floors and/or walls shall have the void area between the material passing through floor and/or wall sealed with an approved fire-stop material to maintain the fire rating of the floor and/or wall.

3.7 COORDINATION:

- 1) Prior to bid, the Contractor shall obtain a complete set of project documents, including any and all addenda, and carefully review and coordinate the requirements and provisions specified by each individual trade. Where items requiring electrical connections are explicitly or implicitly specified by other consultants and not explicitly shown or noted on the electrical documents, the Contractor shall provide the necessary circuit(s) from the nearest panelboard of

the correct voltage and phase with sufficient spare capacity. The Contractor shall provide all necessary items required by all other consultants and trades to form complete and operable systems. This includes, but is not limited to all: junction boxes, raceway systems, face plates, identifying tags and labels, conductors, terminations, circuit breakers, transformers, disconnects, fuses, enclosures, etc.

3.8 ELECTRICAL CONNECTIONS TO MOTORS AND EQUIPMENT:

- A. Contractor shall coordinate with all other Divisions of these Specifications as required to verify all electrical requirements of those Divisions. This is to include but not be limited to verification of power, voltage, phase and other characteristics as being compatible with that called for on the electrical drawings and Division 26 Specifications, as well as that called for in other Divisions of the Specifications requiring electrical connections. This shall be done prior to placing orders for equipment or material, and prior to any rough-in, etc. Changes arising from this coordination exercise shall not create any cost to the project.
- B. Motors are specified in other Divisions of the Specifications. Electrical work includes the electrical connection of all motors, except those which are pre-wired by the manufacturer as a part of equipment. Connection of motors specified in other Divisions of the Specifications or Drawings, but not reflected on electrical drawings shall be included in Division 26 scope of work. Where connections are not shown on electrical drawings, include in bid supply circuiting from nearest panel of required voltage and unless indicated otherwise:
- 1) Motors, less than 3/4 hp: 120Vac single-phase. (See Motor Schedule on drawings.)
 - 2) Motors, 3/4 hp and above: 480Vac three-phase. (See Motor Schedule on drawings.)
 - 3) Space heating elements up to 1.8 kW: 120Vac single-phase.
 - 4) Space heating elements rated 1.8 kW to 4 kW: 277Vac single-phase.
 - 5) Space heating elements rated above 4 kW: 480Vac three-phase.
 - 6) Point-of-use water heaters less than 3 kW: 120Vac single-phase.
 - 7) Domestic water heaters greater than 3 kW and less than 4.5 kW: 208Vac single-phase.
 - 8) Domestic water heaters greater than 4.5 kW: 480Vac three-phase.
 - 9) Kitchen equipment, hardwired: coordinate with kitchen consultant Contract Documents.
 - 10) Fluorescent lighting: 277Vac single-phase, unless noted otherwise on the drawings or if lighting fixture is installed below 8'-0" above the finished floor.
 - 11) Exterior lighting above twenty-two feet: 480Vac single-phase.
 - 12) Special purpose receptacles: Verify with each individual piece of equipment.
 - 13) General purpose receptacles: 120Vac single-phase.

- 14) All others as required to provide a complete and operable system.
- C. Contractor shall be responsible for providing, installing and locating a magnetic motor starter with overloads, disconnect or VFD for each motor or Div. 23 piece of equipment provided on the project unless device is integral to the motor/equipment or provided by the vendor supplying the motor/equipment. Overloads shall be sized for the motor HP or as recommended by the manufacturer for the piece of equipment to be provided. Motors or equipment located interior to the building shall be provided with a combination starter/disconnect switch located within sight and no more than 15' from motor/equipment. Exterior mounted motors or equipment shall be provided with a separate magnetic motor starter located inside of the building in a conditioned and accessible location acceptable to the engineer and owner, plus a separate enclosed disconnect switch mounted adjacent to the exterior motor or equipment. Disconnect shall not be mounted or screwed into the unit housing but mounted on a galvanized steel channel support assembly securely attached to the adjacent roof, wall or slab. Motor overloads may be removed from the magnetic motor starters if provided integral to the local disconnect supplied by the vendor or another Division. See Division 23 Documents for additional information. Contractor shall provide all required code clearances and coordinate with Division 23 Contractor for device location recommendations. Separately enclosed and mounted starters will not be required when shown on the drawings as part of a Motor Control Center assembly.
- D. Contractor shall provide and install a fused disconnect at each of the following locations:
- 1) Each piece of Division 23's equipment where the manufacturer or nameplate requires fuses.
 - 2) On the secondary side of each dry type transformer where the low voltage panel main breaker is out of sight or has more than 25' of secondary conductor length. Disconnect shall be mounted adjacent to the transformer. Contractor is responsible for maintaining all code clearances.
- 3.9 EMERGENCY POWER DISTRIBUTION:
- A. Emergency Feeder-Circuit wiring as defined by the National Electrical Code Article 700, shall be installed in areas fully protected by a automatic fire suppression system, or protected by a listed thermal barrier, or installed in a minimum 1 hour listed assembly, or embedded in not less than 2 inches of concrete, or be a cable UL listed for a minimum 1 hour fire rated integrity when installed in accordance with the listing requirements.
- B. Emergency Distribution System Equipment, such as transfer switches, transformers, panelboards or other enclosed overcurrent devices shall be located in spaces fully protected by an approved automatic fire suppression system or in spaces with a minimum 1 hour fire resistance rating.
- 3.10 CUTTING AND PATCHING:
- A. When it becomes necessary to cut through any wall, floor, or ceiling to install any work under the Contract, or to repair any defects that may appear up to the expiration of the guarantee period, such cutting shall be done by the Contractor. The Contractor will not be permitted to cut or modify any structural members without the written permission of the Owner.
- B. Patching of all openings cut by the Contractor, or repairing of any damage to the work of other trades caused by cutting or by the failure of any part of the work installed under this

Contract, shall be performed by the appropriate trade and shall be paid for by the Contractor. Restore the surface to match the adjacent surfaces to the satisfaction of the Owner, Architect and Engineer. Obtain approval of restoration prior to submitting Substantial Completion Pay Application. Failure to do so may result in the contracting of a third party to perform the work. This Contractor will be held responsible for complete payment of third party Contractor.

- C. Any openings cut through exterior walls or roofs shall be provided with suitable covers while they are left open to protect the property or materials involved. Any openings cut through walls below grade shall be properly protected to prevent entrance of water or other damaging elements. All openings shall be waterproofed upon completion of the work as specified by the Architect/Engineer. Any openings through fire rated walls or floors shall be sealed to maintain the minimum fire rating of wall or floor penetrated.

3.11 VIBRATION ISOLATION:

- A. The Contractor shall furnish and install vibration isolation means for all equipment and materials furnished under the Contract to prevent the transmission of perceptible vibration and structure borne or air borne noise to occupied areas. Items requiring vibration isolation shall include:

- 1) All transformers shall be mounted on one inch (1") thick cork rib pads and/or rubber or steel spring isolator units properly sized, spaced, and loaded, which in turn shall rest on a 3 1/2" minimum concrete base.
- 2) Where transformers are to be suspended from the structure above, each hanger shall be equipped with double-deflecting steel spring and rubber in-shear anti-vibration hangers. The rubber in shear mounting for each hanger shall provide a static deflection at least equivalent to the static deflection for a 1/4" rubber pad. Anti-vibration mountings shall be equipped with adequate leveling mechanisms which do not interfere with proper hanger operation.
- 3) Raceway systems shall be isolated from all dry type transformers and rotating or reciprocating machinery. Install 12" of flexible metal conduit per 1" of conduit diameter. The minimum length of flexible conduit used for isolation shall be 12" and the maximum length shall not exceed 36".

3.12 CONDITIONS OF EQUIPMENT AT FINAL ACCEPTANCE:

- A. At time of acceptance, the Contractor shall have inspected all installed systems to assure the following have been completed:
- 1) Fixtures are operating; lamps, lenses and reflectors are free of dust, debris, and fingerprints.
 - 2) Panelboards have all conductors neatly formed, laced and made up tight. Enclosures shall be vacuum cleaned, surfaces clean of stray paint, dust, grease and fingerprints. All circuit directories to be typewritten, completed, and in place.
 - 3) Wall plates and exposed switch and receptacle parts to be clean, free of paint, plaster, etc.
 - 4) Disconnect switches and motor starters shall be vacuum cleaned, surfaces clean of stray paint, dust, grease and fingerprints.

- 5) Service entrance equipment, transformers, generators, automatic transfer switches, and system devices shall be cleaned internally and externally and have all surfaces restored to initial surface conditions.
- 6) Touch-up all scratched surfaces using paint matching the existing equipment paint. Where paint cannot be matched the entire surface shall be repainted in a color and manner approved by the Architect/Engineer.
- 7) All electrical equipment shall be identified as specified under these Specifications.
- 8) All electrical system testing requirements have been performed, verified, documented, and reviewed by the Architect/Engineer.

3.13 WARRANTIES:

- A. Provide warranties for the new light fixtures and replacement lamps per the manufacturer's offerings.

3.14 GUARANTEE:

- A. The Contractor shall guarantee all materials and workmanship for a period of twelve (12) months after the final acceptance of work.

End of Section 26 05 00

1.0 GENERAL**1.1 SCOPE:**

- A. This section specifies the equipment and methods for retrofitting existing fluorescent, incandescent and HID fixtures to LED. The scope of work specifies both Type A and Type B retrofits to convert existing linear fluorescent fixtures to LED fixtures. Type A retrofits are commonly referred to as "plug and play" in which the existing fluorescent lamps are replaced with new LED lamps and continue to operate in conjunction with an instant start ballast. Type B retrofits are defined as retrofits where the ballasts are removed from the fixture and new LED lamps with internal drivers are energized directly with line voltage through new non-shunted tombstones (lamp holders). Contractor will provide the type of LED retrofit that is specified for each fixture type. **No substitutions or changes in scope to provide Type A retrofits where Type B retrofits have been scheduled, or vice versa, will be accepted.**
- B. The funding resource for the project is an ARRA loan through the State Energy Conservation Office. Buy American requirements are in effect for this project.

1.2 REFERENCE STANDARDS:

- A. ANSI C78 Series - Lamps.
- B. ANSI C82 Series - Ballasts.
- C. IEEE C62.41.1 - IEEE Guide on the Surge Environment in Low-Voltage (1000V and Less) AC Power Circuits.
- D. IEEE C62.41.2 - IEEE Recommended Practice on Characterization of Surges in Low-Voltage (1000V and Less) AC Power Circuits.
- E. NECA/IESNA 500-1998 - Recommended Practice for Installing Indoor Commercial Lighting Systems (ANSI).
- F. NECA/IESNA 501-2000 - Recommended Practice for Installing Exterior Lighting Systems (ANSI).
- G. NECA/IESNA 502-1999 - Recommend Practice for Installing Industrial Lighting Systems (ANSI).
- H. UL 924 - Emergency Lighting and Power Equipment.
- I. UL 935 - Fluorescent Lamp Ballasts.
- J. UL 1598 - Luminaires.

1.3 APPLICABLE PROVISIONS:

- A. Refer to Section 26 05 00, Electrical General Provisions.

1.4 SUBMITTALS:

- A. Submit manufacturer's technical product data for all light fixtures, lamps, ballasts and accessories. Include published photometric data, coefficients of utilization and candlepower distribution curves for light fixtures. The funding resource for the project is an ARRA loan through the State Energy Conservation Office. Buy American requirements are in effect for this project and evidence of compliance with Buy American requirements needs to be provided during the submittal process. If a product does not comply with the Buy American requirements, then the Contractor must provide evidence of a waiver excluding that particular product, or family of products, from the Buy American requirements.

1.5 DELIVERY, HANDLING AND STORAGE:

- A. Deliver all lighting products in factory-fabricated containers or wrappings, which properly protect products from damage.
- B. Handle all lighting products carefully to prevent damage, breaking, and scarring of finishes. Do not install damaged units or components.
- C. Store all lighting fixtures in original packaging. Store laid flat and blocked off ground inside a well-ventilated area protected from weather, moisture, soiling, extreme temperatures and humidity.

1.6 DISCONNECTING MEANS:

- A. In luminaries that use double-ended lamps that can be serviced in place, provide an internal disconnecting means to disconnect simultaneously the source of supply all conductors of the ballast, including any grounded conductor if any. The line side terminals of the disconnecting means shall be guarded. The disconnecting means shall be located so as to be accessible to qualified persons before servicing or maintaining the fixture. Disconnects shall be Ideal PowerPlug Luminaire Disconnect or Engineer approved equal.

1.7 OPERATION AND MAINTENANCE DATA:

- A. Submit manufacturer's standard operation and maintenance data/manuals in accordance with Section 26 05 00, Electrical General Provisions. Provide lamp ordering information for each type of lamp and the local lamp distributor's address and phone number.

1.8 COORDINATION:

- A. The facilities involved the lighting retrofit are occupied during standard business hours and lighting retrofit activity must be conducted after standard operating hours for the facility. It is possible that HVAC renovations may also be concurrently installed during the lighting retrofit activity. Access to locked spaces will be coordinated through the Engineer or assigned HCC contact. Coordination of HVAC and Lighting renovation activities in similar work spaces will be coordinated through the Engineer.

1.9 EXTRA STOCK LAMPS AND EQUIPMENT

- A. Contractor will supply extra stock of selected lamps and equipment in designated quantities as indicated in the Proposed Lighting Equipment Chart on Page 4 of this specification section for HCC Maintenance's use at the completion of the installation of the project. Contractor will deliver extra stock to the HCC Warehouse at 9424 Fannin Street. Contractor must coordinate time of delivery and arrange for escort to perform the delivery with John Robertson, HCC Assistant Director of Maintenance. Contact the Engineer for Mr. Robertson's contact information.

2.0 PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS:

- A. New light fixtures and existing fixture renovations are indicated in the attached spreadsheets and/or on the drawings. Lamp and fixture specifications are as follows on Page 4 and in this specification.
- B. Lamps: (Note: all lamps noted below serve as the basis of design and Engineer approved equal products will be considered through a submittal process).

Lighting Project Equipment and Extra Stock Requirements				
PROJECT TAG	Make	Model	Quantity in Project ⁽¹⁾	Extra Stock Quantity
A	Energy Focus	LEDFLT8-840-208-2B2F	813	40
B	Energy Focus	LEDFLT8-840-413-IT3BF	456	20
C	GE	LED19GX24Q-H/840	622	30
D	Energy Focus	LEDWP-656VFL-RFK	22	0
E	Sylvania	LED11WA19	260	20
F	Green Creative	97895-12T8/3F/840/BYP	340	20
G	GE	LED19GX224Q-V/840	1,052	50
H	Energy Focus	LEDFLT8-840-413-3B2F	24,300	200
J	Energy Focus	LEDFLT8-840-415-2B2F	8,576	200
K	Energy Focus	LEDFLT8-840-418-3B2C	2,363	100
L	GlobalTechLED	GTR-UNVSB-1x5498-BL-MH-SV-T2-E40	73	0
N	Sylvania	LED17WA21	248	12
O	GlobalTechLED	GTR-UNVSB-1x5498-BL-HO-SV-T2-E40	52	0
P	Sylvania	LED13PAR30/PRO/935/FL40/P3	48	0
R	GlobalTechLED	GTSOL5498-BL-SOLY-120/277-HO-L2-MGL	337	20
S	GlobalTechLED	GTR-YK-30W-25%-SV-BL-T2-E40	38	0
T	GlobalTechLED	GTR-YK-50W-75%-SV-BL-T2-E40	93	0
U	GlobalTechLED	GTSOL5498-BL-SOLY-120/277-ML-L2-MGL	99	0
V	AAMSCO	LED20CWVG-DOME	18	5
X	RAB	VXLED26NDG	517	10
Y	RAB	VANLED20NF USA	5	0
Z	RAB	FFLED39N	9	0
BB	RAB	WPLED3T105N/PCT	2	0
CC	RAB	WPLED26N	6	0
DD	RAB	WPLED2T50N/PCT	1	0
TS	Energy Focus	LEDFLSLH-G13NS-SNETGW	36,558	0
FF	AAMSCO	LED20CWMD	72	0
GG	LIFEBULB	LBU6B16411	166	10
HH	GlobalTechLED	GTR-YK-40W-50%-SV-BL-T2-E40	10	0
LL	DECO	VINCI-LED-10-40-UNV-BZ-PC	12	0
EL	Energy Focus	Red Cap Emergency LED Lighting System	282	40
96CK	Texas Fluorescents	8RB-422 OR 502-S48W5650L-MV-40K	1	0
96CKHO	Texas Fluorescents	8RB-422 OR 502-H72W8200L-MV-40K	8	0
VV	DECO	VINCI-LED-30-40-UNV-BZ-PC	76	0
MM	GlobalTechLED	GTR-YK-30W-25%-SV-BL-T2-E27	16	0
PG	NEPTUN	LED-12-040-UNV-010VDIM-740-BRZ	257	0
NN	Lifebulb	LBT5F1641	161	20
HO	Lifebulb	LBT5F3341	126	10
PP	TCP	LED13A21DOD41K	55	0
QQEB	Lithonia	WL4-30L-LP840-EL7L	12	0
RR	Satco	9WPLH/LED/835/DR/2P	8	0
SS	Green Creative	8.5PLH/840/DIR	27	0
TT	GlobalTechLED	GTR-AR-112-G2-HI(300w)-SV-BL(4000K)-NL-GT-LSP-240	69	0
UU	TCP	LED14P30D30KSP (Dimmable narrow spot)	20	5
XX	STRAITS	SL923FLF-150W	8	0
WW	SATCO	4CTA/AMB/LED/E12/22K/120V Antique Filament 4 watt LED AMBER C11 candelabra and platinum E12 to E26 medium base adapter	TBD	10
YY	TCP	LED14P30D24KFL (Dimmable LOW CT Flood)	18	5
ZZ	TCP	LED12P30SD41KFL (Dimmable MED CT Flood)	31	5
BBB	Orion	LDRE1-A1-UNV-FDXX-840-22 2x2 fixture conv kit/EB	29	0
BBBE	Orion	LDRE1-A1-UNV-FDXX-840-22-BB 2x2 fixture conv kit/EB	5	0
CCC	Orion	LDRE1-EA-UNV-FDXX-840-24-M-ST 2x4 fixture conv kit	500	0

Notes:

(1) Quantity on project is the total number of items expected to be required of this equipment.

(2) Buy American requirements are in effect for this project. No person, the Owner, or the Funding Authority has the authority to waive this requirement. "Waiver" has been applied to products that cannot satisfy Buy American and a statement of exemption will be required.

2.2 LIGHTING FIXTURES:

- A. Light fixtures are specified by type and manufacturer in the schedule above. All light fixtures shall be installed complete with lamps, ballasts and accessories.

2.3 LAMPS:

- A. Light-emitting diode (LED) lamps shall have the wattage and color temperature as indicated in the Light Fixture Schedule and shall have a Color Rendering Index (CRI) of 80 or greater. Lamps shall have minimum 70% lumen maintenance (L70) at 50,000 hours, unless otherwise specified. LED lamps/fixtures shall have a three, five or ten-year warranty from date of installation against defects in materials and workmanship as per basis of design manufacturer's published warranty data.

2.4 BALLASTS:

- A. All fluorescent ballasts must conform to the following:
 - 1) Where required by Public Law 100-357, comply with the Energy Policy and Conservation Act of 1987 and the National Appliance Energy Conservation Amendments of 1988.
 - 2) Operate from a minimum input voltage range of 120 to 277 volts and 60 hertz.
 - 3) Have a power factor equal to or greater than 0.98.
 - 4) Be thermally protected Class P.
 - 5) Have a class "A" sound rating.
 - 6) Contain no PCBs.
 - 7) Have a ballast factor of 0.88.
- B. Fixtures with three or more lamps designated on the drawings as having dual switched circuits shall have two ballasts to accommodate dual level switching. Provide 1 or 2 lamp ballasts. Do not use 3 and 4 lamp ballasts unless otherwise specified. All ballasts are to be installed within the fixture of the lamps served.
- C. Ballasts shall be electronic instant-start type and parallel-connected.

2.5 EMERGENCY BATTERY SYSTEM:

- A. Where indicated on the drawings, furnish fixtures with a factory installed emergency battery system consisting of a sealed rechargeable maintenance-free nickel cadmium battery, battery charger, converter circuit, test switch, and charge indicator light, all installed within the fixture. System shall be suitable for use in both normal and emergency operational modes. System shall operate one lamp in each fixture at not less than 33% light output initially to not less than 25% light output after 90 minutes of operation. Furnish Energy Focus Model LEDES-PWR25-90M-BA2 or approved equivalent for T8-LED lamps or Bodine B84C or approved equivalent for compact fluorescent lamps. The project uses Type "EL" lamps with integral drivers and emergency battery backup to satisfy requirements for existing emergency lighting.

- B. Test switch and pilot light mounted on the ballast channel cover.
- C. Label emergency lighting power packs, using a black marking pen, with the identity of the un-switched circuit.

2.6 LENS:

- A. Lenses for fluorescent fixtures shall be acrylic pattern 12 with nominal thickness of .125 inches unless otherwise indicated in the Lighting Fixture Schedule.
- B. Furnish one lens retaining hold-down clip on all sides of fluorescent light fixtures with length exceeding two feet.

2.7 LINEAR FLUORESCENT LAMP HOLDERS:

- A. New non-shunted tombstones provided and installed for Type B LED retrofits will be Energy Focus LEDFLSLH-G13NS-SNETGW complete with 3' 18AWG, 600V, 105 degree, conductors pre-attached to the new tombstone, or Engineer approved equal.
- B. Shunted tombstones if required to be provided and installed with Type A LED retrofits to operate with instant-start ballasts will be Leviton #23351 low-profile, shunted, turn-type, G13 bi-pin fluorescent sockets rated for 660W and 600V with quick connect for 18AWG conductors, or Engineer approved equal.

3.0 EXECUTION

3.1 INSTALLATION OF NEW FIXTURES:

- A. Install lighting fixtures at locations and heights as indicated and allowed by existing conditions, in accordance with fixture manufacturer's written instructions and applicable requirements of NEC.
- B. Install fixtures and/or fixture outlet boxes with hangers to properly support fixture weight.
- C. Install hangers and support members for fixtures as required for proper installation. Install appurtenances which include stud supports, stems, mounting brackets, frames and plaster rings.
- D. Support fixtures from the building structure or from furring channels. Furring channels must be a minimum size of $\frac{3}{4}$ inches. Lay-in (recessed) lighting fixtures shall be supported from building structure by minimum 12-gauge galvanized carbon steel soft temper hanger wires. Install two hangers at diagonally opposite corners of each lay-in light fixture 2'x4' or smaller and one hanger at each corner of each lay-in light fixture larger than 2'x4'. Supporting of light fixtures from ceiling system is not acceptable.
- E. Install support members for exit fixtures as required to provide rigid installation.
- F. Each recessed lighting fixture shall be separately connected to an above ceiling junction box (i.e. daisy chaining from fixture to fixture with flexible conduit is not allowed). In a "master-slave" fixture arrangement, "slave" fixtures are to be connected to their respective "master" fixture with a factory furnished connector. Flexible metal conduit from junction box to lighting fixture shall not touch the ceiling as finally installed.

- G. Install flush mounted fixtures properly to eliminate light leakage between fixture frame and finished surface.
- H. Tighten connectors and terminals, including screws and bolts, in accordance with equipment manufacturer's published torque tightening values for equipment connectors. Where manufacturer's torque requirements are not indicated, tighten connectors and terminals to comply with tightening torques specified in UL Standard 486A.
- I. Install a reinforced concrete base or foundation for all outdoor lighting fixtures requiring one.
- J. Boxes to which light fixtures or pendants are mounted shall NOT contain any conductors foreign to the operation of such light or pendant application. Removal of lights, pendants and cord drops to access other branch circuits is NOT acceptable.
- K. Install high or low bay light fixtures between the joists with the bottom of the reflector flush with the bottom cord of the joist. Engineer will direct if obstructions such as ducts, beams, etc. are permanently installed below the joist.
- L. Locate mechanical, electrical equipment, etc. room light fixtures to provide the best coverage and clear all obstructions such as ducts, piping, bracing and supports.
- M. Provide supplemental overcurrent protection at each pole base's hand hole.
- N. Lighting fixtures and power receptacles shall not be connected to a common circuit unless shown and noted specifically on the drawings.

3.2 EXECUTION OF LAMP AND/OR BALLAST RETROFIT:

- A. For Type A LED retrofits, remove existing fluorescent lamps. Verify existing ballast is instant-start and compatible with new lamps. If ballast is not compatible, supply and install new compatible ballast. Clean interior components of fixture including lens and reflective surfaces. Verify tombstones are not broken. Install designated LED lamps and close lens frame. Clean occupant-exposed exterior components including lens and frame. Check for proper operation.
- B. For Type B LED retrofits, remove existing lamps and ballast. Re-wire circuit directly to new non-shunted tombstones with quick disconnect. Clean interior components of fixture including lens and reflective surfaces. Install designated LED lamps and close lens frame. Clean occupant-exposed exterior components including lens and frame. Check for proper operation.
- C. For screw-in lamp replacement, remove existing lamp(s). Clean interior reflective surfaces. Install new lamp(s). Check for proper operation.
- D. If counts of fixtures in the field differ from the counts identified on the contract documents, Contractor will retrofit the quantity of fixtures in the field, document the differences in counts on the as-built documents and contact the Engineer for verification of the differences in counts. After the Engineer has verified the differences in counts for the performed work, unit costs provided with the submission of the proposal will be used to compensate the Contractor for the extra work performed as a contingency expense. Unit costs submitted with the proposal will also serve as the basis for a deductive change order for work not performed according to the contract documents if the counts in the contract documents exceed the counts in the field. Contingency expenses must be recommended by the Engineer and approved in writing by the Owner prior to payment to the Contractor. Contingency expenses will be prepared reviewed and authorized one time per 30 days during the installation of the



ENLIGHTEN AND INSPIRE



300D Series LED Tube

LINEAR FLUORESCENT RETROFIT LAMP

For: T8 and T12 lamp replacement

FEATURES AND BENEFITS

- Integrated driver, Type-B (Direct-Wire)
- Single-ended power; INPUT end is electrically connected, other end has no internal connections.
- Non-shunted lamp holder required
- Replacement of existing tombstones recommended when retrofitting
- Lowest Flicker LED Lighting



Must use non-shunted lamp holders

For more information please see Accessories section.



PRODUCT SPECIFICATIONS

Length	2' and 4' versions. Meets ANSI standards
Body	Oval extruded aluminum/ polycarbonate lens
Lens	Frosted (Clear/striated available in 18W)
Connection	Medium bi-pin (G13) end cap
Input Voltage	100-277vac, 50/60hz
Driver	Single end power; integrated LED driver
Available colors	Warm white 3500K Neutral white 4000K Cool white 5000K
CRI	>80
Dimming	Non-dimmable
Lifetime	10-year warranty
Environmental Requirements	Operating temp: -20° to 50°C Storage temp: -30° to 60°C Working humidity: 30% to 85% Storage humidity: 10% to 90% Non-corrosive environments
Power Factor	>0.9
Beam Angle	120°

PRODUCT SPECIFICATION

PART NUMBER	SIZE NOMINAL	POWER	LUMINOUS FLUX	UL PART NUMBER	DLC FAMILY
LEDFLT8-8XX-208-228F	(24") 2'	8W	960lm	3AJ810086	YYYBSA
LEDFLT8-8XX-413-338F	(48") 4'	13W	1560lm	3AJ81013635	YYYBSB
LEDFLT8-8XX-415-228F	(48") 4'	15W	1800lm	3AJ810156	YYYBSG
LEDFLT8-8XX-418-388F	(48") 4'	18W	2160lm	3AJ810186	N/A
LEDFLT8-8XX-418-388C	(48") 4'	18W	2340lm	3AJ810186	XXXXRF

*BUY AMERICAN P/N	SIZE NOMINAL	POWER	LUMINOUS FLUX	UL PART NUMBER	DLC FAMILY
LEDFLT8-840-208-2B2F	(24") 2'	8W	960lm	3AJ810086	YYYBSA
LEDFLT8-8XX-413-3B2F	(48") 4'	13W	1560lm	3AJ81013635	YYYBSB
LEDFLT8-8XX-415-2B2F	(48") 4'	15W	1800lm	3AJ810156	YYYBSG
LEDFLT8-8XX-418-3B2F	(48") 4'	18W	2160lm	3AJ810186	N/A
LEDFLT8-8XX-418-3B2C	(48") 4'	18W	2340lm	3AJ810186	NNNMIE

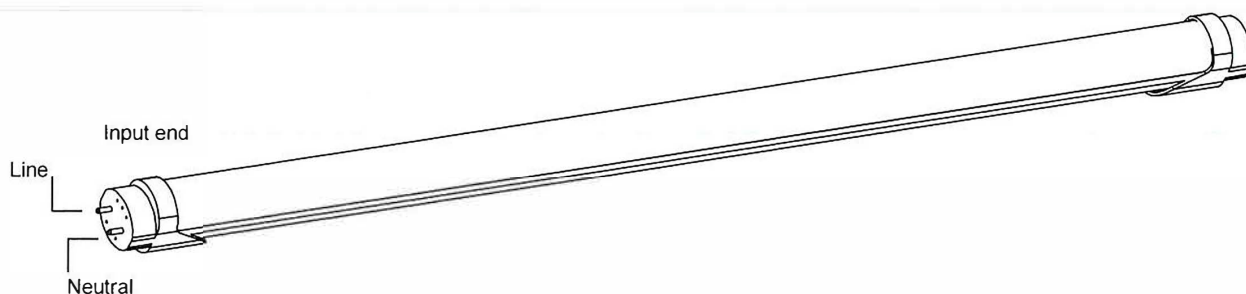
XX refers to the option for 3500K, 4000K or 5000K color temperature. (Replace XX with 35, 40 or 50 when selecting).

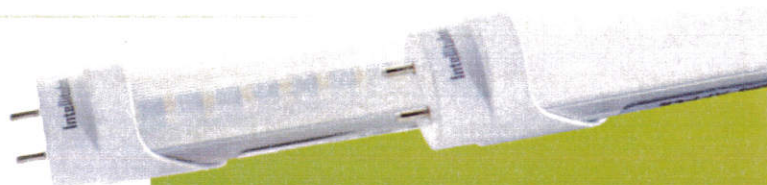
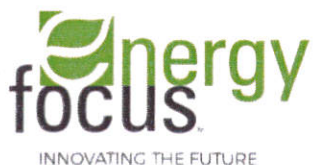
*Clear options available with extended lead times.

ACCESSORIES

- Single lampholder, no wires (model no. LEDFLSLH-G13NS-SBOG)
- Pair of two (2) lampholders, one with 3' wires (Model no. LEDFLSLH-G13NS-SNETGW)
- Single lampholder, with 3' wires (Model no. LEDFLSLH-G13NS-SBOGW)

WIRING DIAGRAM





Intellitube®

LINEAR FLUORESCENT RETROFIT LAMP

For: T8 lamp replacement

FEATURES AND BENEFITS

- Proprietary Universal Design- Direct Fit or Direct Wire Application
- Direct Fit for plug-and-play replacement of a fluorescent lamp. For ballast compatibility visit energyfocus.com
- Direct Wire for highest efficiency and lowest energy cost
- Quick and simple lighting upgrade

Intellitube® is a universal all-in-one lamp that offers both Direct Fit and Direct Wire functions. In Direct Fit mode, it serves as a one-for-one replacement of an existing fluorescent lamp. In the event of a ballast failure, **Intellitube®** in Direct Wire mode can offer superior efficiency and eliminate the expense of replacing the ballast.



Must use non-shunted lamp holders in Direct Wire Mode

PRODUCT SPECIFICATIONS

Length	2' and 4' versions. Meets ANSI standards
Body	Oval extruded aluminum/ polycarbonate lens
Lens	Frosted
Connection	Medium bi-pin (G13) end cap
Input Voltage	100-277vac, 50/60hz
Driver	Integrated LED driver for Direct-Wire mode or external electronic ballast for Direct-Fit mode
Available colors	Neutral white 4000K
CRI	>80
Dimming	Direct Fit: compatible with dimming ballast Direct Wired: Non-dimmable
Lifetime	L70 ≥ 60,000 hours
Warranty	10-year warranty
Environmental Requirements	Operating temp: -20° to 50°C Storage temp: -30° to 60°C Working humidity: 30% to 85% Storage humidity: 10% to 90% Non-corrosive environments
Power Factor	>0.9
Beam Angle	120°

Direct Wire Mode: LED tube lamp requires single end power only, wiring to one side of the fixture is sufficient. Ensure lamp end labeled "INPUT" is installed to the live circuit and must use non-shunted lamp holders

PRODUCT SPECIFICATION

PART NUMBER	SIZE NOMINAL	POWER	LUMINOUS FLUX	UL PART NUMBER	DLC FAMILY
LEDFLT8-840-208-IT3F	(24") 2'	8W	960lm	3AV10086	JJMBA
LEDFLT8-840-413-IT3F	(48") 4'	13W	1615lm	3AV10136	JJMBG
LEDFLT8-840-415-IT3F	(48") 4'	15W	1800lm	3AV10156	JJMBH

*BUY AMERICAN P/N	SIZE NOMINAL	POWER	LUMINOUS FLUX	UL PART NUMBER	DLC FAMILY
LEDFLT8-840-208-IT3BF	(24") 2'	8W	960lm	3AV10086	JJMBA
LEDFLT8-840-413-IT3BF	(48") 4'	13W	1560lm	3AV10136	JJMBG
LEDFLT8-840-415-IT3BF	(48") 4'	15W	1800lm	3AV10156	JJMBH

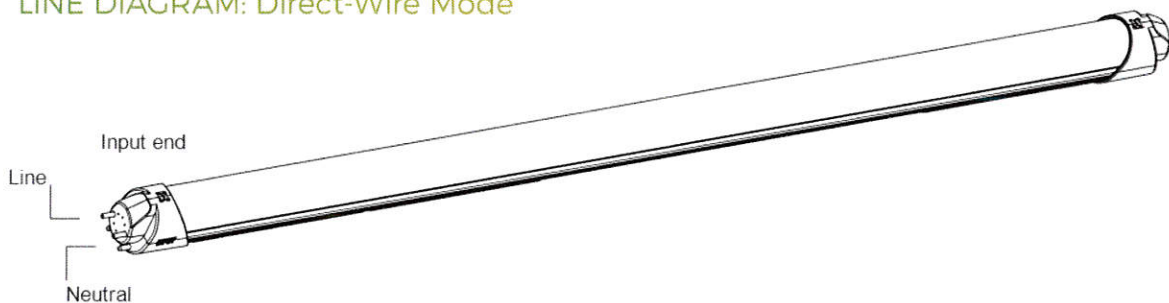
ACCESSORIES

- Single lampholder, no wires (model no. LEDFLSLH-G13NS-SBOG)
- Pair of two (2) lampholders, one with 3' wires (Model no. LEDFLSLH- G13NS-SNETGW)
- Single lampholder, with 3' wires (Model no. LEDFLSLH-G13NS-SBOGW)

BATTERY PACK COMPATIBILITY

- Energy Focus Emergency Battery Pack in Direct Wire installations (model no. LEDES-PWR25-90M)
- See list for emergency ballast compatibility at www.energyfocus.com

LINE DIAGRAM: Direct-Wire Mode



Simplicity



Application Illustration only, subject lamps not used in photo.



Plug into a new kind of energy savings.

LED replacement for CFL plug-in downlights

GE's LED plug-in lamps allow you to replace inefficient CFL 4 pin G24q/GX24 without tools or costly upgrades. Simply plug the replacement lamp into the existing ballast.

LOW-COST OPERATION

- Uses 50% less energy than CFL
- 9W LED saves over \$93 in energy vs 26 watt CFL
- 18.5W LED saves over \$129 in energy vs 42 watt CFL
- Energy savings based on \$0.11 per kWh over the rated life of the lamp.
- Advanced optics eliminate wasted light to deliver a more targeted beam with fewer lumens (950 vs. 1800)
- Energy efficiency and long life mean fewer lamp replacements versus CFL light sources.

COLOR RENDERING

- Available with a CRI of 80

COLOR TEMPERATURE

- Available in 2700K, 3000K, 3500K and 4000K

LONG LIFE

- Lasts 2.5X longer than CFL
- 50,000 hours rated life (L70)

ENVIRONMENTALLY CONSCIOUS

- These lamps are energy efficient, contain no lead or mercury, and meet the material restriction requirements of RoHS

GE QUALITY AND RELIABILITY

- 5-year limited warranty

ecomaginationSM

To learn more about saving money and energy, go to: <http://products.currentbyge.com>.

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current
powered by GE



LED replacement for CFL Plug-in lamps

Bulb Shape	Base Type	Watts	Order Code	Description	Volts	Case Qty**	MOL (in)	Lumens Initial	CBCP	Initial Color Temp	CRI	Wattage Replacement	*Rated Life L70 (Hrs)	Dimmable	DLC®	#Location Rating	Additional Information		
Vertical																			
	Plug-In G24q/GX24q	9	33956	LED9G24Q-V/827	#	6	5.31	1100		2700	80		50,000	-	-	Damp	Requires Electronic Ballast, Fully Enclosed		
			33969	LED9G24Q-V/830	#	6	5.31	1200		3000	80		50,000	-	-	Damp	Requires Electronic Ballast, Fully Enclosed		
			33974	LED9G24Q-V/835	#	6	5.31	1200		3500	80		50,000	-	-	Damp	Requires Electronic Ballast, Fully Enclosed		
			33975	LED9G24Q-V/840	#	6	5.31	1200		4000	80		50,000	-	-	Damp	Requires Electronic Ballast, Fully Enclosed		
	GX24q	18.5	39288	LED19GX24Q-V/827	##	6	6.42	1800		2700	80		50,000	-	-	Damp	Requires Electronic Ballast, White		
			39277	LED19GX24Q-V/830	##	6	6.42	1850		3000	80		50,000	-	-	Damp	Requires Electronic Ballast, White		
			39275	LED19GX24Q-V/835	##	6	6.42	1950		3500	80		50,000	-	-	Damp	Requires Electronic Ballast, White		
			39279	LED19GX24Q-V/840	##	6	6.42	1950		4000	80		50,000	-	-	Damp	Requires Electronic Ballast, White		
Horizontal																			
	Plug-In G24q/GX24q	9	33994	LED9G24Q-H/827	#	6	5.31	1100		2700	80		50,000	-	-	Damp	Requires Electronic Ballast, Fully Enclosed		
			33997	LED9G24Q-H/830	#	6	5.31	1200		3000	80		50,000	-	-	Damp	Requires Electronic Ballast, Fully Enclosed		
			33998	LED9G24Q-H/835	#	6	5.31	1200		3500	80		50,000	-	-	Damp	Requires Electronic Ballast, Fully Enclosed		
			33999	LED9G24Q-H/840	#	6	5.31	1200		4000	80		50,000	-	-	Damp	Requires Electronic Ballast, Fully Enclosed		
			GX24q	18.5	39289	LED19GX24q-H/827	##	6	6.70	1800		2700	80		50,000	-	-	Damp	Requires Electronic Ballast, White
					39282	LED19GX24q-H/830	##	6	6.70	1850		3000	80		50,000	-	-	Damp	Requires Electronic Ballast, White
					39276	LED19GX24q-H/835	##	6	6.70	1950		3500	80		50,000	-	-	Damp	Requires Electronic Ballast, White
					39283	LED19GX24q-H/840	##	6	6.70	1950		4000	80		50,000	-	-	Damp	Requires Electronic Ballast, White

Check compatibility at: GELighting.com/LED4pin-compatibility

Approximate performance when replacing listed CFL Plug-In lamps with a GE LED Plug-In

Original 4-Pin CFL Plug-In (DBX, TBX) Performance		Subsequent performance when replaced with a 9W 4-Pin LED Plug-In (DBX, TBX)		Subsequent performance when replaced with a 18.5W 4-Pin LED Plug-In (TBX)	
Watts	Approximate Lumens	Watts	Approximate Lumens	Watts	Approximate Lumens
13	900	5	750	-	-
18	1200	6.5	900	-	-
26	1800	9	1200	-	-
32	2400	9	1200	16	1700
42	3200	-	-	18.5	1800



Compatible with 1 or 2 lamp configuration

HORIZONTAL CONFIGURATION



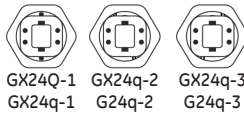
9 Watt



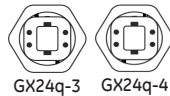
18.5 Watt

4-PIN REPLACEMENT

9 Watt Replacement Bases



18.5 Watt Replacement Bases



VERTICAL CONFIGURATION



9 Watt



18.5 Watt

Check compatibility at GELighting.com/LED4pin-compatibility

Information provided is subject to change without notice. Please verify all details with GE. All values are design or typical values when measured under laboratory conditions, and GE makes no warranty or guarantee, expressed or implied, that such performance will be obtained under end-use conditions.

* The life rating is based on the hours of operation the lamp will provide before reaching 70% of its original rating (L70)

** Minimum order quantity = 6

UL 1993 Environmental Requirements for LED LAMPS

Location, damp - Exterior or interior location that is normally or periodically subject to condensation of moisture in, on, or adjacent to, electrical equipment, and includes partially protected locations.

Location, dry - Location not normally subject to dampness, may include a location subject to temporary dampness, i.e., building under construction, provided ventilation is adequate to prevent an accumulation of moisture.

Location, wet - Location in which water or other liquid can drip, splash, or flow on or against electrical equipment.

Check ballast compatibility at: GELighting.com/LED4Pin-Compatibility

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Product is compliant with material restriction requirements of RoHS

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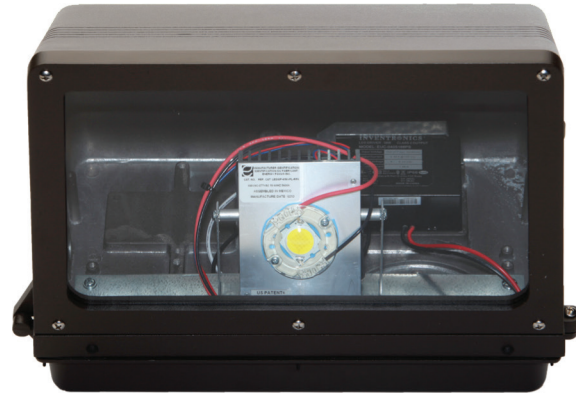
ENLIGHTEN AND INSPIRE

Product Specifications

Product Number	LEDWP-656VFL-RFK
UL Rating	Dry location only. Complete installation exposure rating is dependent upon the integrity of the existing enclosure
CCT (K)	5000K
Input Voltage	100-240VAC, 0.5A 50/60Hz 277VAC, 0.2A 50/60Hz
Lumen Output	4345 Lumen
Lifetime	50,000 hours (L70)
Efficacy	80 LPW
Power	50 W
Weight	Complete package = 2.3lb (36.8oz) LED Light Engine assembly w/ yoke = .90lb (14.4 oz) Driver = .85lb (13.6 oz) Main bracket = .55lb (8.8oz)
Operating temperature	-20°C ~ +50°C
Electrical Connection	Hardwire into electrical, existing connection. Molex polarized 3 pin connector plugs between Light Engine and Driver
Universal Mounting Bracket	Galvanized steel. Multiple mounting configurations allow for perfect placement in many standard housings. Swivel yoke allows for perfect aiming
Driver	AC-to-DC constant current Class 2 power supply
Fastener	Steel, non-corrosive bright zinc plate
LED Light Engine	(1) Bridgelux LED array chip (1) Extruded aluminum heat sink (1) LED holder w/ protective polycarbonate lens (1) Thermal interface compound (1) 24VAC Air circulation fan (2,100rpm max, 34cfm max, 26dba max)
Optical System	Very wide flood 120° beam spread
ETL Class	LED retrofit class, ETL listed for North America Recognition label
CRI	≥ 70

LED Retrofit Kit

Medium- 50 Watt



Note: Drilling through the enclosure wall is not required or recommended, thus preserving the original IP / outdoor rating of the enclosure

LED RETROFIT KIT- WALLPACK ORDERING GUIDE

MODEL	COLOR TEMP	BEAM SPREAD	SIZE
LEDRFK	DW = 70 CRI 5000K	VFL = 120° Beam	MD = Medium



Energy Focus, Inc. 32000 Aurora Road, Suite B, Solon, OH 44139 800.327.7877 // energyfocus.com

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LED Retrofit Kit Series

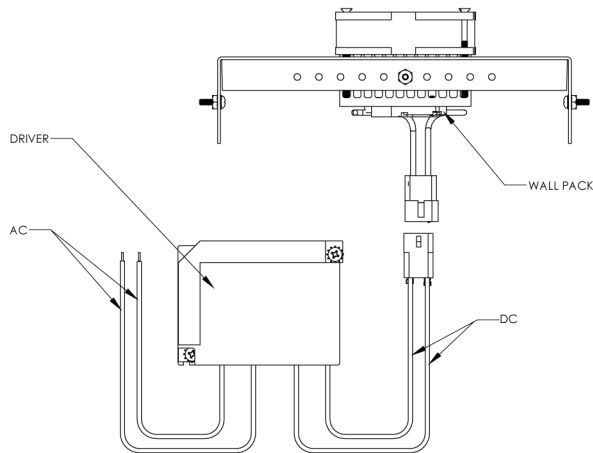
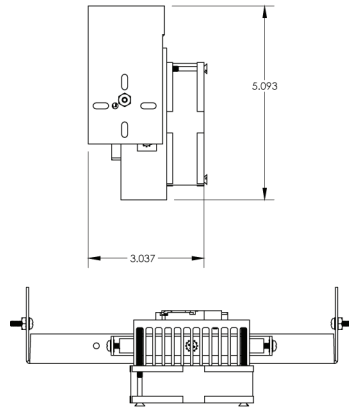
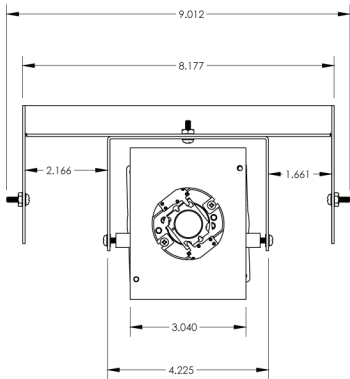
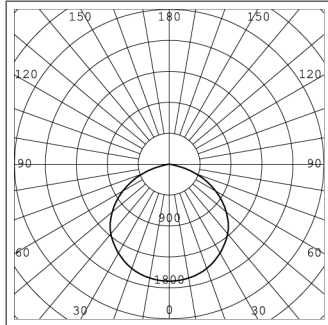
Medium- 50 Watt

LEDRFK-DW-VFL-MD

Lighting Facts

LEDWP-656VFL-RFK

Lumen output	4,345
Wattage	54
Efficacy	80.46 lm/W
CRI	73
CCT	5,000 K



SCHEMATIC

ZONAL LUMEN SUMMARY PER IES PUBLICATION TM-15-07

FORWARD LIGHT	LUMENS	% OF LUMINAIRES
Forward Low Zone (0 to 30 Deg.)	578.17	14.2%
Forward Mid Zone (30 to 60 Deg.)	1070.83	26.3%
Forward High Zone (60 to 80 Deg.)	256.51	6.3%
Forward Very High Zone (80 to 90 Deg.)	0.00	0.0%
	2035.8	46.8%

BACK LIGHT	LUMENS	% OF LUMINAIRES
Back Light Low Zone (0 to 30 Deg.)	317.04	14.6%
Back Light Mid Zone (30 to 60 Deg.)	638.68	29.1%
Back Light High Zone (60 to 80 Deg.)	374.59	9.2%
Back Light Very High Zone (80 to 90 Deg.)	8.14	0.2%
	2308.8	53.1%

UPLIGHT	LUMENS	% OF LUMINAIRES
Uplight Low Zone (90 to 100 Deg.)	0.00	0.0%
Uplight High Zone (100 to 180 Deg.)	0.00	0.0%

IES "BUG" RATING PER IES TM-15-11

BACK LIGHT	LUMENS	SECONDARY SOLID ANGLE RATING
BH (60-80 Deg.)	400.4	B 1
BM (30-60 Deg.)	1265.3	B 1
BL (0-30 Deg.)	635.9	B 1

UPLIGHT	LUMENS	SECONDARY SOLID ANGLE RATING
UH (100-180 Deg.)	0.0	U 0
UL (90-100 Deg.)	0.0	U 0

GLARE LIGHT	LUMENS	SECONDARY SOLID ANGLE RATING
FVH (80-90 Deg.)	1.4	G 0
BVH (80-90 Deg.)	7.2	G 0
FH (60-80 Deg.)	275.6	G 0
BH (60-80 Deg.)	400.4	G 0

IES BUG RATING: B1 U0 G0

ULTRA LED A-line Lamps

Omnidirectional



Rated up to 25,000 hours at 70% lumen maintenance, SYLVANIA ULTRA LED A-line omnidirectional lamps offer years of service and reduce energy and maintenance costs. SYLVANIA ULTRA LED lamps are environmentally preferred products. They are RoHS compliant and contain no mercury, lead or other hazardous materials. They emit no UV or IR radiation. A CRI of 80+ ensures good color definition and with warm white 2700K and cool 5000K color temperature, these lamps can be used in many applications in both homes and businesses.

Application Information

Applications

- Downlights
- Pendant fixtures
- Table lamps
- Wall sconces

Market Segments

- Healthcare
- Hospitality
- Residential
- Retail

Key Features & Benefits

- Dimmable down to 10%*
- Long life: up to 25,000 hours (L70)
- UV and IR free
- Mercury and lead free
- RoHS compliant
- Available in 2700K and 5000K color temperatures
- Suitable for indoor/outdoor environments
- Reduces energy consumption up to 83%
- Last up to 33 times longer than incandescent lamps
- No warm-up time, instant-on with full light output and stable color

* Performance may vary depending on dimmer used in application. Please refer to Dimmer Compatibility List (RETRO-DIM) for a list of compatible dimmers or visit www.SYLVANIA.com/LEDretrofit



Product Offering

Ordering Abbreviation	Wattage	Color Temperature	Typical Lumens
LED7W A19	7	2700K & 5000K	450
LED11W A19	11	2700K	800
LED12W A19	12	5000K	900
LED13W A19	13	2700K & 5000K	1100 & 1250
LED17W A21	17	2700K & 5000K	1600 & 1750

Application Notes

1. Operating temperature range between -20°C and +45°C (-4°F and + 113°F)
2. Not for use with emergency light fixtures or exit lights
3. Use in open fixture
4. Suitable for damp locations

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation. For FCC Part 15 user information, please see www.sylvania.com/fcc15b.



Catalog #	Type
Project	
Comments	
Prepared by	

Ordering Information

Item Number	Ordering Abbreviation	Wattage (W)	Base Type	Replaces	Input Voltage (V)	Average Rated Life (hrs.) ¹	CCT ³	Typical Lumens (lm) ²	CRI ⁴	Power Factor	Bulb Finish	ENERGY STAR [®]
79099	LED7A19/DIM/O/827/G3	7	Medium	40W A19	120	25,000	2700K	450	83	.92	Frosted	Yes
79102	LED7A19/DIM/O/850/G3/RP	7	Medium	40WA19	120	25,000	5000K	450	85	.91	Frosted	Yes
79103	LED11A19/DIM/O/827/G3	11	Medium	60W A19	120	25,000	2700K	800	82	.89	Frosted	Yes
72557	LED12A19/DIM/O/850/RP	12	Medium	60WA19	120	25,000	5000K	900	84	.98	Frosted	Yes
79082	LED13A19/DIM/O/827/G3	13	Medium	75W A19	120	25,000	2700K	1100	82	.87	Frosted	Yes
79125	LED13A19/DIM/O/850/G3/BL	13	Medium	75WA19	120	25,000	5000K	1250	80	.86	Frosted	Yes
79105	LED17A21/DIM/O/827/G3	17	Medium	100W A19	120	25,000	2700K	1600	80	.87	Frosted	Yes
75166	LED17A21/DIM/850/RP/G3	17	Medium	100WA19	120	25,000	5000K	1750	82	.87	Frosted	Yes

OSRAM SYLVANIA submits most lamps for ENERGY STAR testing. Early qualification for ENERGY STAR lamps begin at 25,000 hours (L₇₀) regardless that the design of the lamp is manufactured for a greater life expectancy. As the lamps pass ENERGY STAR qualifications, manufacturers are able to increase rated life as dictated by ENERGY STAR guidelines becoming either provisionally qualified or fully qualified. Please visit EnergyStar.gov for more information about testing requirements for ENERGY STAR qualified products.

1. Hours lifetime with 70% (L70) lumen maintenance 2. Thermally stable typical lumens (±10%) 3. Thermally stable typical CCT (±10%) 4. CRI – Color Rendering Index

Ordering Guide

LED	11	A19	/	DIM	/	O	/	8	27
LED Lamps	Wattage	Lamp Type A19/A21		Dimmable		Omnidirectional		CRI 80+	CCT 2700K, 5000K

Energy Savings

Basic Product Description	LED Life (hrs.)	LED Lumens	Similar Incandescent	Incandescent Life (hrs.)	Incandescent Lumens	Watts Saved	Energy Savings*	LED Life vs. Incandescent
LED7A19	25,000	450	40W A19	1500	465	33	\$90.75	>16x
LED11A19	25,000	800	60W A19	1000	850	49	\$134.75	25x
LED12A19	25,000	900	60W A19	1000	850	48	\$132.00	25x
LED13A19	25,000	1100	75W A19	750	1170	62	\$170.50	>33x
LED17A21	25,000	1600	100W A19	750	1600	83	\$228.25	>33x

*Energy savings over life of lamp calculated at \$0.11/kWh

Lamp Dimensions

	(A) MOL (inches)	(B) Diameter (inches)
LED7A19	4.33	2.36
LED11A19	4.56	2.36
LED12A19	4.42	2.44
LED13A19	4.41	2.36
LED17A21	5.43	2.91

OSRAM

Americas Headquarters

OSRAM SYLVANIA Inc.

100 Endicott Street

Danvers, MA 01923 USA

Phone 1-800-LIGHTBULB (1-800-544-4828)

www.sylvania.com

SYLVANIA is a registered trademark of OSRAM SYLVANIA Inc.
 LED CREATING TOMORROW is a registered trademark of OSRAM GmbH.
 ENERGY STAR is a registered trademark of the U.S. Government.
 Specifications subject to change without notice.



T8 12W 3FT. BYP TITANIUM LED SERIES

PRO



- Wide beam design: 310° light emitting area
- Suitable for use in totally enclosed fixtures
- End-to-end lighting with no dark spots
- Frosted glass tube for increased light diffusion efficiency
- Meets NSF requirements
- Built-in universal voltage driver - Bypass installation

12W REPLACES

25W Fluor.

55% Energy Savings

\$117 Savings per fixture*

50,000 H	UNIVERSAL	EFFICACY
WARRANTY	CRI (Ra)	ENCLOSED**



TUBE FEATURES

Extra Wide Beam Design - Frosted Glass Body

This lamp uses an innovative coated glass design that diffuses heat and light more evenly than plastic. As a result of its compact light engine, this lamp produces a light emitting area of 310°. This wider beam angle improves a fixture's total light distribution and creates a more complete lighting effect.



Lamp Front View



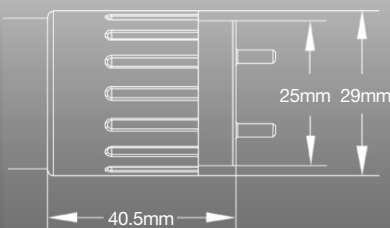
Lamp Back View

End-to-End Lighting - Micro-Designed Driver

GREEN CREATIVE

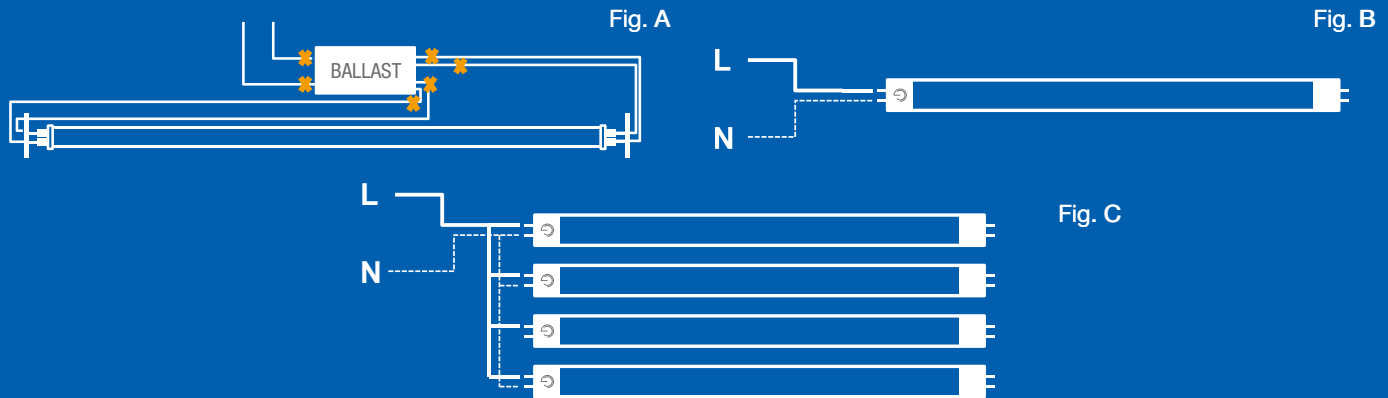


Other LED Tubes



The lamp's micro-designed driver is located within the tube end cap which allows for better thermal performance and no dark spots. The result is powerful and seamless light from end to end.

BYPASS INSTALLATION



- 🕒 Bypass ballast by cutting all wires as in Fig. A
- 🕒 Directly wire Live + Neutral on a single end as in Fig. B for single tube or as in Fig. C for multiple tubes
- 🕒 Replace shunted lamp holder with non-shunted one if applicable (Instant Start)
- 🕒 Existing fixture maintains original UL compliance thanks to UL1598C tube

SPECIFICATIONS

Product Model	97893 12T8/3F/830/BYP	97894 12T8/3F/835/BYP	97895 12T8/3F/840/BYP
Type	T8	T8	T8
Base	Medium Bi-Pin G13	Medium Bi-Pin G13	Medium Bi-Pin G13
Power (W)	13	13	13
Voltage - Frequency	120-277V 50-60Hz	120-277V 50-60Hz	120-277V 50-60Hz
Color Temp. (ANSI)	Warm White 3000K	Neutral White 3500K	Cool White 4000K
CRI (Ra)	82	82	82
Typical lumens (lm)	1500	1500	1550
Efficacy (LPW)	125	125	129
Light Emitting Area	310°	310°	310°
Beam Angle	160°	160°	160°
Dimmable	No	No	No
Power Factor	0.9	0.9	0.9
THD	<20%	<20%	<20%
Rated Lifetime - L70 (hrs.)	50,000	50,000	50,000
Dia. x MOL	1.14"x35.75"(29x908mm)	1.14"x35.75"(29x908mm)	1.14"x35.75"(29x908mm)
Weight (lb. / g)	0.40lb. / 180g	0.40lb. / 180g	0.40lb. / 180g

* Savings per fixture based on \$0.11 / kw energy cost, 12 hrs / day lamp usage, 2x36W fixture / \$10 fluorescent tube, \$45 ballast with 15,000 hr lifetime, \$30 LED tube with 50,000 hr lifetime

** Suitable for use in totally enclosed fixtures

*** Suitable for damp locations. Not for use where directly exposed to the weather or water

**** Full installation guide and more details available on website

Simplicity



Application Illustration only, subject lamps not used in photo.



Plug into a new kind of energy savings.

LED replacement for CFL plug-in downlights

GE's LED plug-in lamps allow you to replace inefficient CFL 4 pin G24q/GX24 without tools or costly upgrades. Simply plug the replacement lamp into the existing ballast.

LOW-COST OPERATION

- Uses 50% less energy than CFL
- 9W LED saves over \$93 in energy vs 26 watt CFL
- 18.5W LED saves over \$129 in energy vs 42 watt CFL
- Energy savings based on \$0.11 per kWh over the rated life of the lamp.
- Advanced optics eliminate wasted light to deliver a more targeted beam with fewer lumens (950 vs. 1800)
- Energy efficiency and long life mean fewer lamp replacements versus CFL light sources.

COLOR RENDERING

- Available with a CRI of 80

COLOR TEMPERATURE

- Available in 2700K, 3000K, 3500K and 4000K

LONG LIFE

- Lasts 2.5X longer than CFL
- 50,000 hours rated life (L70)

ENVIRONMENTALLY CONSCIOUS

- These lamps are energy efficient, contain no lead or mercury, and meet the material restriction requirements of RoHS

GE QUALITY AND RELIABILITY

- 5-year limited warranty

ecomaginationSM

To learn more about saving money and energy, go to: <http://products.currentbyge.com>.

Information provided is subject to change without notice. Please verify all details with GE. All values are design or typical values when measured under laboratory conditions, and GE makes no warranty or guarantee, expressed or implied, that such performance will be obtained under end-use conditions.

current
powered by GE



LED replacement for CFL Plug-in lamps

Bulb Shape	Base Type	Watts	Order Code	Description	Volts	Case Qty**	MOL (in)	Lumens Initial	CBCP	Initial Color Temp	CRI	Wattage Replacement	*Rated Life L70 (Hrs)	Dimmable	DLC®	#Location Rating	Additional Information	
Vertical																		
	Plug-In	G24q/GX24q	9	33956	LED9G24Q-V/827	#	6	5.31	1100		2700	80	50,000	-	-	Damp	Requires Electronic Ballast, Fully Enclosed	
				33969	LED9G24Q-V/830	#	6	5.31	1200	3000	80	50,000	-	-	Damp	Requires Electronic Ballast, Fully Enclosed		
				33974	LED9G24Q-V/835	#	6	5.31	1200	3500	80	50,000	-	-	Damp	Requires Electronic Ballast, Fully Enclosed		
				33975	LED9G24Q-V/840	#	6	5.31	1200	4000	80	50,000	-	-	Damp	Requires Electronic Ballast, Fully Enclosed		
				GX24q	18.5	39288	LED19GX24Q-V/827	##	6	6.42	1800	2700	80	50,000	-	-	Damp	Requires Electronic Ballast, White
				39277	LED19GX24Q-V/830	##	6	6.42	1850	3000	80	50,000	-	-	Damp	Requires Electronic Ballast, White		
				39275	LED19GX24Q-V/835	##	6	6.42	1950	3500	80	50,000	-	-	Damp	Requires Electronic Ballast, White		
		39279	LED19GX24Q-V/840	##	6	6.42	1950	4000	80	50,000	-	-	Damp	Requires Electronic Ballast, White				
Horizontal																		
	Plug-In	G24q/GX24q	9	33994	LED9G24Q-H/827	#	6	5.31	1100		2700	80	50,000	-	-	Damp	Requires Electronic Ballast, Fully Enclosed	
				33997	LED9G24Q-H/830	#	6	5.31	1200	3000	80	50,000	-	-	Damp	Requires Electronic Ballast, Fully Enclosed		
				33998	LED9G24Q-H/835	#	6	5.31	1200	3500	80	50,000	-	-	Damp	Requires Electronic Ballast, Fully Enclosed		
				33999	LED9G24Q-H/840	#	6	5.31	1200	4000	80	50,000	-	-	Damp	Requires Electronic Ballast, Fully Enclosed		
				GX24q	18.5	39289	LED19GX24q-H/827	##	6	6.70	1800	2700	80	50,000	-	-	Damp	Requires Electronic Ballast, White
				39282	LED19GX24q-H/830	##	6	6.70	1850	3000	80	50,000	-	-	Damp	Requires Electronic Ballast, White		
				39276	LED19GX24q-H/835	##	6	6.70	1950	3500	80	50,000	-	-	Damp	Requires Electronic Ballast, White		
						39283	LED19GX24q-H/840	##	6	6.70	1950	4000	80	50,000	-	-	Damp	Requires Electronic Ballast, White

Check compatibility at: GELighting.com/LED4pin-compatibility

Approximate performance when replacing listed CFL Plug-In lamps with a GE LED Plug-In

Original 4-Pin CFL Plug-In (DBX, TBX) Performance		Subsequent performance when replaced with a 9W 4-Pin LED Plug-In (DBX, TBX)		Subsequent performance when replaced with a 18.5W 4-Pin LED Plug-In (TBX)	
Watts	Approximate Lumens	Watts	Approximate Lumens	Watts	Approximate Lumens
13	900	5	750	-	-
18	1200	6.5	900	-	-
26	1800	9	1200	-	-
32	2400	9	1200	16	1700
42	3200	-	-	18.5	1800



Compatible with 1 or 2 lamp configuration

HORIZONTAL CONFIGURATION



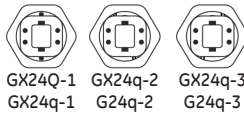
9 Watt



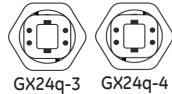
18.5 Watt

4-PIN REPLACEMENT

9 Watt Replacement Bases



18.5 Watt Replacement Bases



VERTICAL CONFIGURATION



9 Watt



18.5 Watt

Check compatibility at GELighting.com/LED4pin-compatibility

Information provided is subject to change without notice. Please verify all details with GE. All values are design or typical values when measured under laboratory conditions, and GE makes no warranty or guarantee, expressed or implied, that such performance will be obtained under end-use conditions.

* The life rating is based on the hours of operation the lamp will provide before reaching 70% of its original rating (L70)

** Minimum order quantity = 6

UL 1993 Environmental Requirements for LED LAMPS

Location, damp - Exterior or interior location that is normally or periodically subject to condensation of moisture in, on, or adjacent to, electrical equipment, and includes partially protected locations.

Location, dry - Location not normally subject to dampness, may include a location subject to temporary dampness, i.e., building under construction, provided ventilation is adequate to prevent an accumulation of moisture.

Location, wet - Location in which water or other liquid can drip, splash, or flow on or against electrical equipment.

Check ballast compatibility at: GELighting.com/LED4Pin-Compatibility

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Product is compliant with material restriction requirements of RoHS

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<http://products.currentbyge.com>

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ENLIGHTEN AND INSPIRE



300D Series LED Tube

LINEAR FLUORESCENT RETROFIT LAMP

For: T8 and T12 lamp replacement

FEATURES AND BENEFITS

- Integrated driver, Type-B (Direct-Wire)
- Single-ended power; INPUT end is electrically connected, other end has no internal connections.
- Non-shunted lamp holder required
- Replacement of existing tombstones recommended when retrofitting
- Lowest Flicker LED Lighting



Must use non-shunted lamp holders

For more information please see Accessories section.



PRODUCT SPECIFICATIONS

Length	2' and 4' versions. Meets ANSI standards
Body	Oval extruded aluminum/ polycarbonate lens
Lens	Frosted (Clear/striated available in 18W)
Connection	Medium bi-pin (G13) end cap
Input Voltage	100-277vac, 50/60hz
Driver	Single end power; integrated LED driver
Available colors	Warm white 3500K Neutral white 4000K Cool white 5000K
CRI	>80
Dimming	Non-dimmable
Lifetime	10-year warranty
Environmental Requirements	Operating temp: -20° to 50°C Storage temp: -30° to 60°C Working humidity: 30% to 85% Storage humidity: 10% to 90% Non-corrosive environments
Power Factor	>0.9
Beam Angle	120°

PRODUCT SPECIFICATION

PART NUMBER	SIZE NOMINAL	POWER	LUMINOUS FLUX	UL PART NUMBER	DLC FAMILY
LEDFLT8-8XX-208-228F	(24") 2'	8W	960lm	3AJ810086	YYYBSA
LEDFLT8-8XX-413-338F	(48") 4'	13W	1560lm	3AJ81013635	YYYBSB
LEDFLT8-8XX-415-228F	(48") 4'	15W	1800lm	3AJ810156	YYYBSG
LEDFLT8-8XX-418-388F	(48") 4'	18W	2160lm	3AJ810186	N/A
LEDFLT8-8XX-418-388C	(48") 4'	18W	2340lm	3AJ810186	XXXXRF

*BUY AMERICAN P/N	SIZE NOMINAL	POWER	LUMINOUS FLUX	UL PART NUMBER	DLC FAMILY
LED FLT8-8XX-208-2B2F	(24") 2'	8W	960lm	3AJ810086	YYYBSA
LED FLT8-840-413-3B2F	(48") 4'	13W	1560lm	3AJ81013635	YYYBSB
LEDFLT8-840-415-2B2F	(48") 4'	15W	1800lm	3AJ810156	YYYBSG
LED FLT8-8XX-418-3B2F	(48") 4'	18W	2160lm	3AJ810186	N/A
LEDFLT8-840-418-3B2C	(48") 4'	18W	2340lm	3AJ810186	NNNMIE

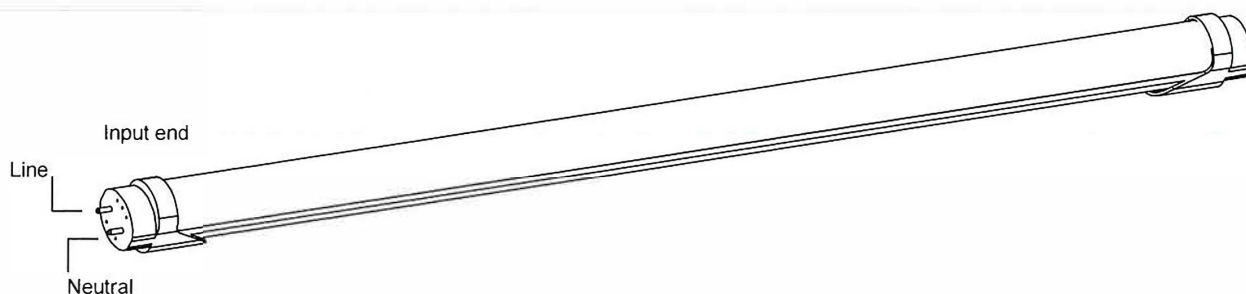
XX refers to the option for 3500K, 4000K or 5000K color temperature. (Replace XX with 35, 40 or 50 when selecting).

*Clear options available with extended lead times.

ACCESSORIES

- Single lampholder, no wires (model no. LEDFLSLH-G13NS-SBOG)
- Pair of two (2) lampholders, one with 3' wires (Model no. LEDFLSLH-G13NS-SNETGW)
- Single lampholder, with 3' wires (Model no. LEDFLSLH-G13NS-SBOGW)

WIRING DIAGRAM





ENLIGHTEN AND INSPIRE



300D Series LED Tube

LINEAR FLUORESCENT RETROFIT LAMP

For: T8 and T12 lamp replacement

FEATURES AND BENEFITS

- Integrated driver, Type-B (Direct-Wire)
- Single-ended power; INPUT end is electrically connected, other end has no internal connections.
- Non-shunted lamp holder required
- Replacement of existing tombstones recommended when retrofitting
- Lowest Flicker LED Lighting



Must use non-shunted lamp holders

For more information please see Accessories section.



PRODUCT SPECIFICATIONS

Length	2' and 4' versions. Meets ANSI standards
Body	Oval extruded aluminum/ polycarbonate lens
Lens	Frosted (Clear/striated available in 18W)
Connection	Medium bi-pin (G13) end cap
Input Voltage	100-277vac, 50/60hz
Driver	Single end power; integrated LED driver
Available colors	Warm white 3500K Neutral white 4000K Cool white 5000K
CRI	>80
Dimming	Non-dimmable
Lifetime	10-year warranty
Environmental Requirements	Operating temp: -20° to 50°C Storage temp: -30° to 60°C Working humidity: 30% to 85% Storage humidity: 10% to 90% Non-corrosive environments
Power Factor	>0.9
Beam Angle	120°

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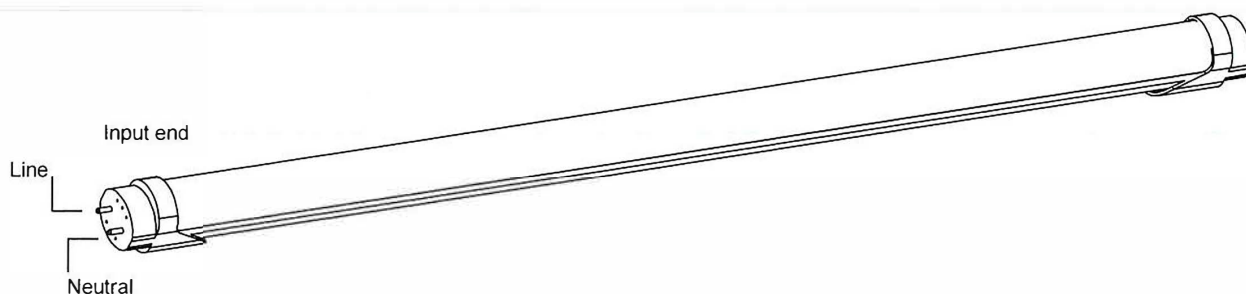
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WIRING DIAGRAM





ENLIGHTEN AND INSPIRE



300D Series LED Tube

LINEAR FLUORESCENT RETROFIT LAMP

For: T8 and T12 lamp replacement

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- Single-ended power; INPUT end is electrically connected, other end has no internal connections.
- Non-shunted lamp holder required
- Replacement of existing tombstones recommended when retrofitting
- Lowest Flicker LED Lighting



Must use non-shunted lamp holders

For more information please see Accessories section.



PRODUCT SPECIFICATIONS

Length	2' and 4' versions. Meets ANSI standards
Body	Oval extruded aluminum/ polycarbonate lens
Lens	Frosted (Clear/striated available in 18W)
Connection	Medium bi-pin (G13) end cap
Input Voltage	100-277vac, 50/60hz
Driver	Single end power; integrated LED driver
Available colors	Warm white 3500K Neutral white 4000K Cool white 5000K
CRI	>80
Dimming	Non-dimmable
Lifetime	10-year warranty
Environmental Requirements	Operating temp: -20° to 50°C Storage temp: -30° to 60°C Working humidity: 30% to 85% Storage humidity: 10% to 90% Non-corrosive environments
Power Factor	>0.9
Beam Angle	120°

PRODUCT SPECIFICATION

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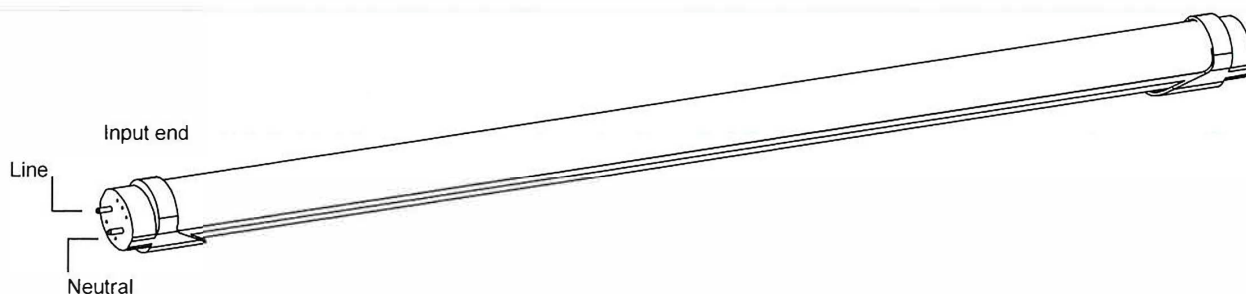
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- Single lampholder, with 3' wires (Model no. LEDFLSLH-G13NS-SBOGW)

WIRING DIAGRAM



Client: _____ Project Name: _____

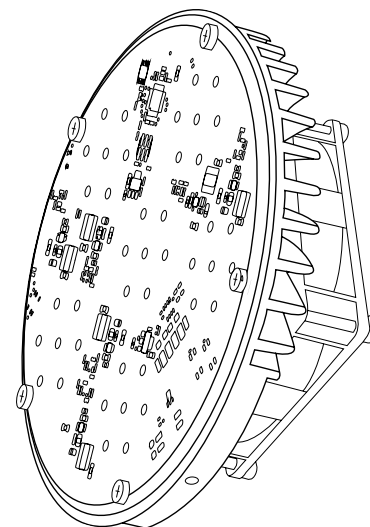
Order #: _____ Qty: _____

Features:

- Made in the USA
- 100,000+ Hr expected life
- Lumen Depreciation Maintenance: 120,000+ Hrs
- Soft start - ramps up to 100% output in 5 seconds
- 0-10V dimming/control compatible
- Life Sync thermal protection system

Physical:

- Module Diameter: 6.0625"
- Module Weight: 1 lb 11 $\frac{3}{8}$ oz
- Vortex heat sink for optimum heat dissipation
- Moisture sealed circuit board
- Long life fan utilizing Magnetic Levitation
- 7 available mounting methods
- 42 premium high output LED chips

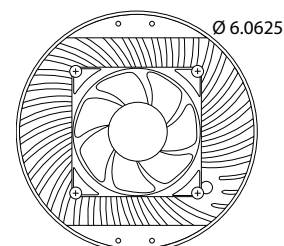
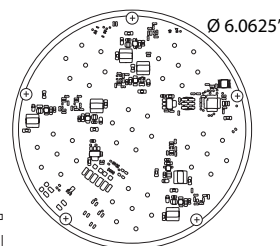
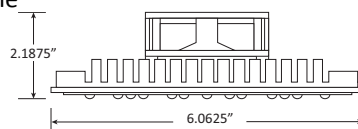


Performance:

- Available in 75W, 85W, 95W, and 135W
- Replaces up to 400W HID
- 7 available standard color temperatures and 4 specialty color outputs
- 5-6-1 energy saver option (built in)
- 9 optical light distribution options - Type II, Type III, Type V
- Operating Temperature: -40°C - +85°C
- Minimum CRI: 70
- Maximum Lumen Output: 13,164Lm
- IP67 Rated (Optional)
- Smart thermal protection system adjusts current based on self monitoring of temperature (Life Sync)

Electrical:

- Driver input voltages: 120V-277V or 347V-480V
- Module input voltage: 24VDC
- Max chip drive: 900mA
- Solar applications: 24VDC direct to module
- 5 year warranty on driver



1/6

T: 1.877.748.5533
 P: 1.239.676.1970
 F: 1.239.774.9358
 E: info@GlobalTechLED.com
 8901 Quality RD.
 Bonita Springs, FL 34135

10 Year Warranty
 Made in the USA

For more info on specific
 products, please visit:
www.GlobalTechLED.com



Screw in Yoke

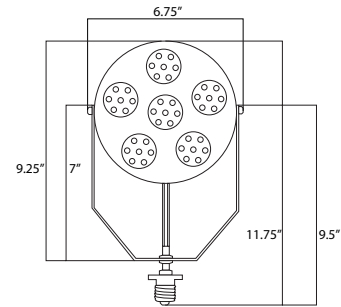
Features:

- Mounts for E27 and E40 bases available
- Fully rotatable and tilt-able
- Module slides on bracket for centering in fixture
- For horizontal and vertical applications

Note: does not qualify for DLC rebates

Applications:

- Recessed Cans
- Area
- Roadway
- Acrylic High Bay/Low Bay
- Aluminum High Bay/Low Bay
- Flood
- Wall Pack
- Post Top
- Garage
- Canopy



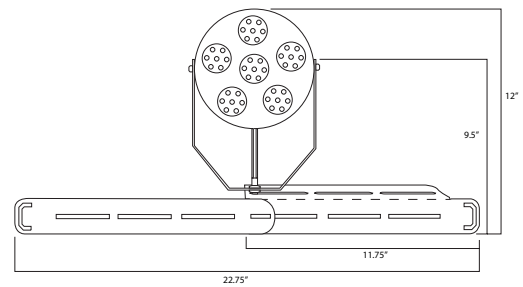
Universal Bracket

Features:

- Adjustable arms fit fixtures from 11.75" to 22.75" across
- Mounts to fixture reflector mounting points
- Fully rotatable and tilt-able module
- Slides on bracket for centering in fixture
- Driver mounts to bracket in most applications

Applications:

- Area
- Shoe box
- Flood



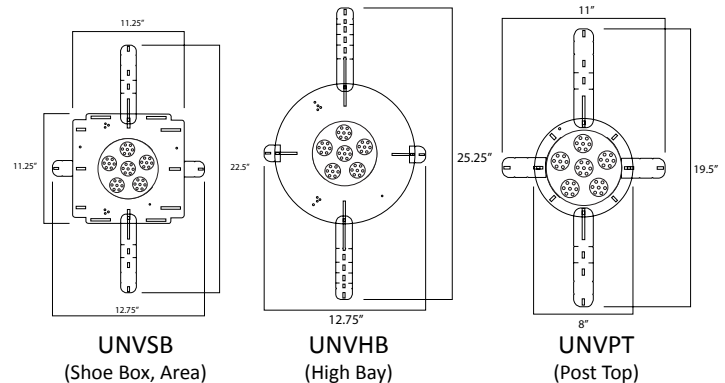
Universal Plates

Features:

- Fully adjustable
- Arms slide, rotate, and shorten
- Multiple arm mounting points for optimum versatility
- Driver mounted on plate (for high bay and shoe box)

Applications/Made For:

- Aluminum High Bay/Low Bay
- Shoe box
- Post top



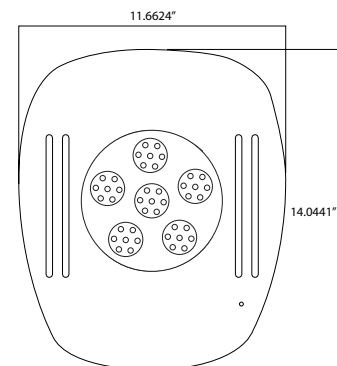
Custom Plates

Features:

- Customized to fixture
- Mounts to reflector mounting points
- Glass mount option available
- Powder coated finish
- Driver mounted to plate
- Send in dimensions or reference fixture for new design

Applications:

- Area
- Roadway
- Acrylic High Bay
- Aluminum High Bay
- Flood
- Wall Pack
- Post Top
- Garage
- Canopy
- Explosion proof fixtures
- And more...



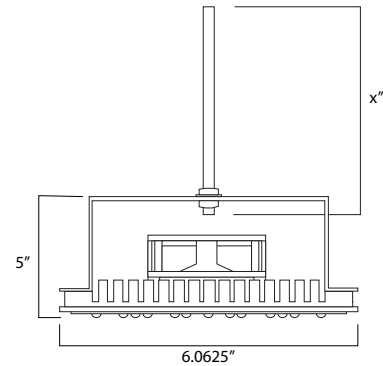
Threaded Rod

Features:

- Perfect for fixtures with acrylic refractors
- Mounts to ballast box
- No weight placed on reflector/refractor
- Sleek industrial look
- 1/8" Diameter Rod

Applications:

- Acrylic High bay/low bay
- Aluminum High bay/low bay



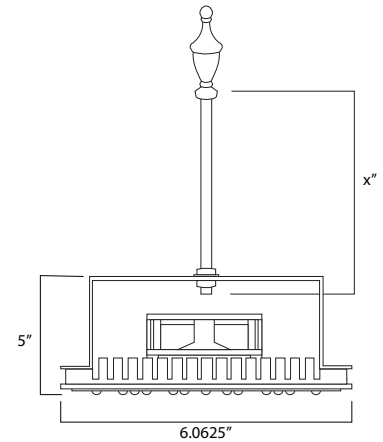
Finial Mount for Post Top Luminaires

Features:

- Mounts using threaded rod connected to finial
- Perfect for acorn and lanterns with finials
- Module mounts at top of fixture for wide distribution

Applications:

- Post Tops with finials



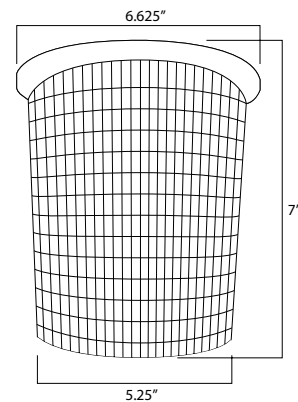
Reflector Mount for Post Top Luminaires

Features:

- Mounts to reflector
- Type 2 and Type 3 distribution available

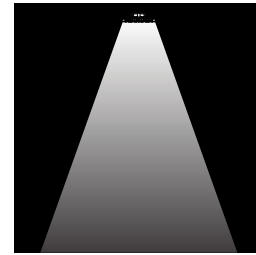
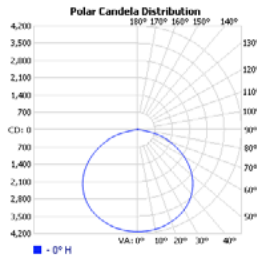
Applications/Made For:

- Post Tops



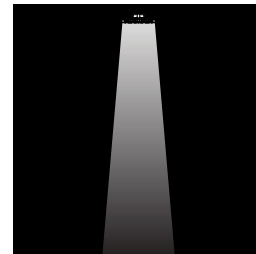
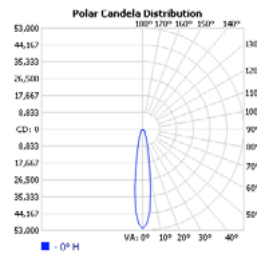
No Lens

Beam Angle: 122.9°
Field Angle: 122.9°
Type V
Nema 7



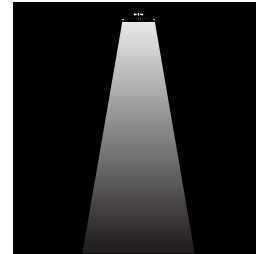
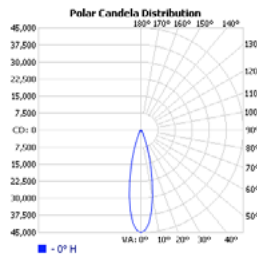
10D Lens

Beam Angle: 17.5°
Field Angle: 17.5°
Type V
Nema 3



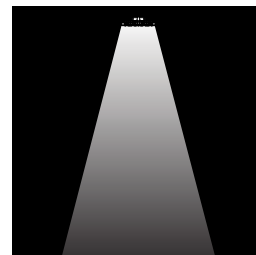
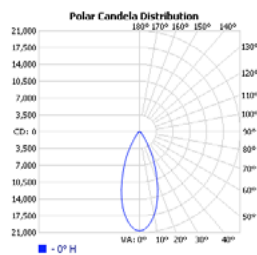
25D Lens

Beam Angle: 25.2°
Field Angle: 25.2°
Type V
Nema 4



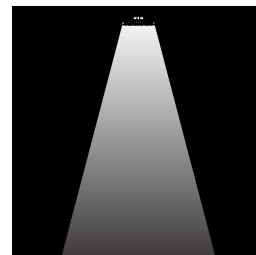
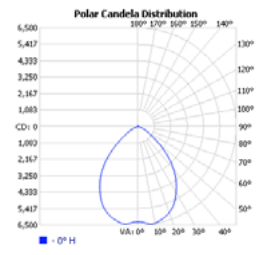
50D Lens

Beam Angle: 41.1°
Field Angle: 41.1°
Type V
Nema 5



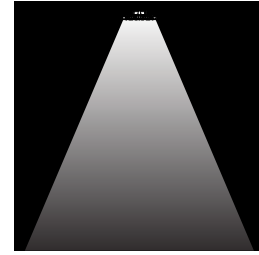
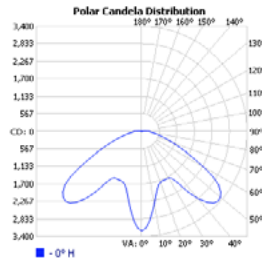
75D Lens

Beam Angle: 83.9°
Field Angle: 85.0°
Type V
Nema 6



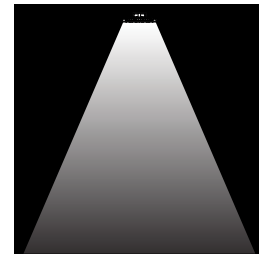
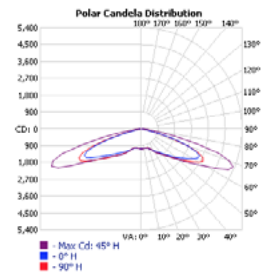
360D Lens

Beam Angle: 100.1°
Field Angle: 128.6°
Type V
Nema 7



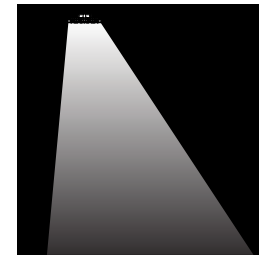
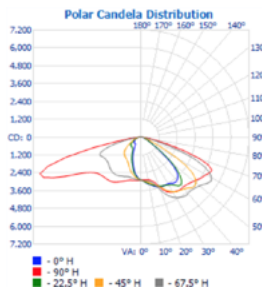
360s Lens

Beam Angle: 121.6°
Field Angle: 121.6°
Type VS
Nema 7



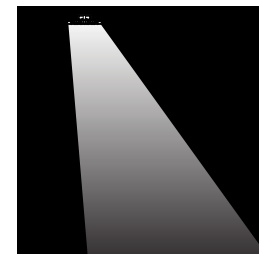
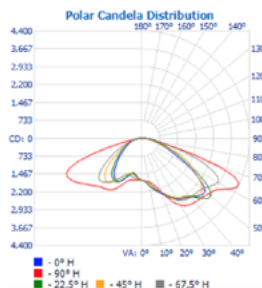
Type II Lens

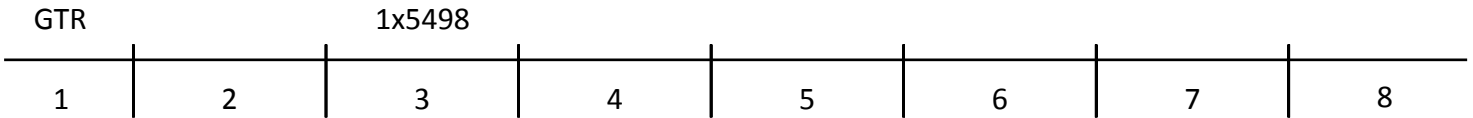
Nema 7



Type III Lens

Nema 7





1) Global Tech Retrofit:

GTR = Global Tech Retrofit

2) Mounting Options:

- YK** = Screw in Yoke
- UNVBR** = Universal Bracket
- UNVSB** = Universal Shoe Box Plate
- UNVHB** = Universal High Bay Plate
- UNVPT** = Universal Post Top Plate
- PLATE** = Custom Plate
- ROD** = Threaded Rod
- PTF** = Finial Mount
- PTR** = Refractor Mount

3) # of Modules:

1X5498 = One 5498 Solstice Module

4) CCT:

- GR** = (5700K)
- BR** = (5000K)
- YW** = (4100K)
- BL** = (4000K)
- RD** = (3500K)
- PR** = (3000K)
- OR** = (2700K)
- AMB** = Amber (Turtle Lighting)
- GRO** = Grow Light
- RYB** = Royal Blue Light
- AQU** = Aquarium Light

5) Wattage Output:

- HO** = 135W
- HI** = 95W
- MH** = 85W
- ML** = 75W

6) Voltage:

- SV** = 120-277V
- HV** = 347-480V

7) Optics:

- NL** = No Lens
- 10D** = 10 Degree Optics
- 25D** = 25 Degree Optics
- 50D** = 50 Degree Optics
- 75D** = 75 Degree Optics
- 360D** = 360 Degree Side Emitting Optics
- 360s** = 360 Degree Square Side Emitting Optics
- T2** = Type II Optics
- T3** = Type III Optics

8) Options (Determined by Mounting Option):

- | | | |
|--|-----------------------------------|-----------------------------|
| YK | PTF | UNVSB, UNVHB, UNVPT, |
| E27 = Medium Base (E27) | FINIAL = Finial | UNVBR & PLATE |
| E40 = Mogul Base (E40) | N/A = No Accessory | N/A = Not Available |
| NB = No Base | | |
| ROD | PTR | |
| EXT__IN = Rod Length (in Inches)
(Enter an Even Integer) | GLR63 = Type III Refractor | |
| | GLR65 = Type V Refractor | |

ULTRA LED A-line Lamps

Omnidirectional



Rated up to 25,000 hours at 70% lumen maintenance, SYLVANIA ULTRA LED A-line omnidirectional lamps offer years of service and reduce energy and maintenance costs. SYLVANIA ULTRA LED lamps are environmentally preferred products. They are RoHS compliant and contain no mercury, lead or other hazardous materials. They emit no UV or IR radiation. A CRI of 80+ ensures good color definition and with warm white 2700K and cool 5000K color temperature, these lamps can be used in many applications in both homes and businesses.

Key Features & Benefits

- Dimmable down to 10%*
- Long life: up to 25,000 hours (L70)
- UV and IR free
- Mercury and lead free
- RoHS compliant
- Available in 2700K and 5000K color temperatures
- Suitable for indoor/outdoor environments
- Reduces energy consumption up to 83%
- Last up to 33 times longer than incandescent lamps
- No warm-up time, instant-on with full light output and stable color

* Performance may vary depending on dimmer used in application. Please refer to Dimmer Compatibility List (RETRO-DIM) for a list of compatible dimmers or visit www.SYLVANIA.com/LEDretrofit



Product Offering

Ordering Abbreviation	Wattage	Color Temperature	Typical Lumens
LED7W A19	7	2700K & 5000K	450
LED11W A19	11	2700K	800
LED12W A19	12	5000K	900
LED13W A19	13	2700K & 5000K	1100 & 1250
LED17W A21	17	2700K & 5000K	1600 & 1750

Application Information

Applications

- Downlights
- Pendant fixtures
- Table lamps
- Wall sconces

Market Segments

- Healthcare
- Hospitality
- Residential
- Retail

Application Notes

1. Operating temperature range between -20°C and +45°C (-4°F and + 113°F)
2. Not for use with emergency light fixtures or exit lights
3. Use in open fixture
4. Suitable for damp locations

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation. For FCC Part 15 user information, please see www.sylvania.com/fcc15b.



Catalog #	Type
Project	
Comments	
Prepared by	

Ordering Information

Item Number	Ordering Abbreviation	Wattage (W)	Base Type	Replaces	Input Voltage (V)	Average Rated Life (hrs.) ¹	CCT ³	Typical Lumens (lm) ²	CRI ⁴	Power Factor	Bulb Finish	ENERGY STAR [®]
79099	LED7A19/DIM/O/827/G3	7	Medium	40W A19	120	25,000	2700K	450	83	.92	Frosted	Yes
79102	LED7A19/DIM/O/850/G3/RP	7	Medium	40WA19	120	25,000	5000K	450	85	.91	Frosted	Yes
79103	LED11A19/DIM/O/827/G3	11	Medium	60W A19	120	25,000	2700K	800	82	.89	Frosted	Yes
72557	LED12A19/DIM/O/850/RP	12	Medium	60WA19	120	25,000	5000K	900	84	.98	Frosted	Yes
79082	LED13A19/DIM/O/827/G3	13	Medium	75W A19	120	25,000	2700K	1100	82	.87	Frosted	Yes
79125	LED13A19/DIM/O/850/G3/BL	13	Medium	75WA19	120	25,000	5000K	1250	80	.86	Frosted	Yes
79105	LED17A21/DIM/O/827/G3	17	Medium	100W A19	120	25,000	2700K	1600	80	.87	Frosted	Yes
75166	LED17A21/DIM/850/RP/G3	17	Medium	100WA19	120	25,000	5000K	1750	82	.87	Frosted	Yes

OSRAM SYLVANIA submits most lamps for ENERGY STAR testing. Early qualification for ENERGY STAR lamps begin at 25,000 hours (L₇₀) regardless that the design of the lamp is manufactured for a greater life expectancy. As the lamps pass ENERGY STAR qualifications, manufacturers are able to increase rated life as dictated by ENERGY STAR guidelines becoming either provisionally qualified or fully qualified. Please visit EnergyStar.gov for more information about testing requirements for ENERGY STAR qualified products.

1. Hours lifetime with 70% (L70) lumen maintenance 2. Thermally stable typical lumens (±10%) 3. Thermally stable typical CCT (±10%) 4. CRI – Color Rendering Index

Ordering Guide

LED	11	A19	/	DIM	/	0	/	8	27
LED Lamps	Wattage	Lamp Type A19/A21		Dimmable		Omnidirectional		CRI 80+	CCT 2700K, 5000K

Energy Savings

Basic Product Description	LED Life (hrs.)	LED Lumens	Similar Incandescent	Incandescent Life (hrs.)	Incandescent Lumens	Watts Saved	Energy Savings*	LED Life vs. Incandescent
LED7A19	25,000	450	40W A19	1500	465	33	\$90.75	>16x
LED11A19	25,000	800	60W A19	1000	850	49	\$134.75	25x
LED12A19	25,000	900	60W A19	1000	850	48	\$132.00	25x
LED13A19	25,000	1100	75W A19	750	1170	62	\$170.50	>33x
LED17A21	25,000	1600	100W A19	750	1600	83	\$228.25	>33x

*Energy savings over life of lamp calculated at \$0.11/kWh

Lamp Dimensions

	(A) MOL (inches)	(B) Diameter (inches)
LED7A19	4.33	2.36
LED11A19	4.56	2.36
LED12A19	4.42	2.44
LED13A19	4.41	2.36
LED17A21	5.43	2.91

OSRAM

Americas Headquarters

OSRAM SYLVANIA Inc.

100 Endicott Street

Danvers, MA 01923 USA

Phone 1-800-LIGHTBULB (1-800-544-4828)

www.sylvania.com

SYLVANIA is a registered trademark of OSRAM SYLVANIA Inc.
 LED CREATING TOMORROW is a registered trademark of OSRAM GmbH.
 ENERGY STAR is a registered trademark of the U.S. Government.
 Specifications subject to change without notice.



Client: _____ Project Name: _____

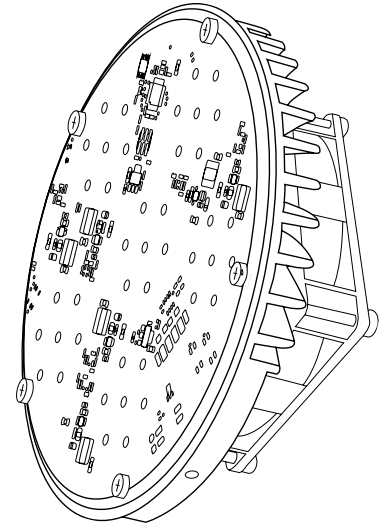
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- Life Sync thermal protection system

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- Vortex heat sink for optimum heat dissipation
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- 42 premium high output LED chips

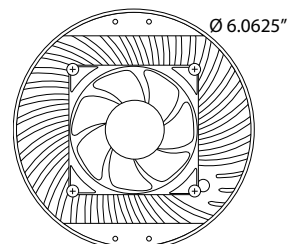
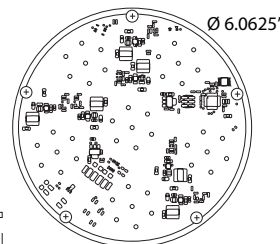
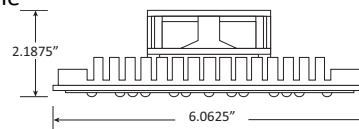


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- 9 optical light distribution options - Type II, Type III, Type V
- Operating Temperature: -40°C - +85°C
- Minimum CRI: 70
- Maximum Lumen Output: 13,164Lm
- IP67 Rated (Optional)
- Smart thermal protection system adjusts current based on self monitoring of temperature (Life Sync)

Electrical:

- Driver input voltages: 120V-277V or 347V-480V
- Module input voltage: 24VDC
- Max chip drive: 900mA
- Solar applications: 24VDC direct to module
- 5 year warranty on driver



1/6

T: 1.877.748.5533
P: 1.239.676.1970
F: 1.239.774.9358
E: info@GlobalTechLED.com
8901 Quality RD.
Bonita Springs, FL 34135

10 Year Warranty
Made in the USA

For more info on specific
products, please visit:
www.GlobalTechLED.com



SR15-7R1

Screw in Yoke

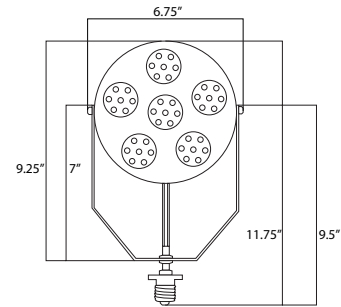
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Note: does not qualify for DLC rebates

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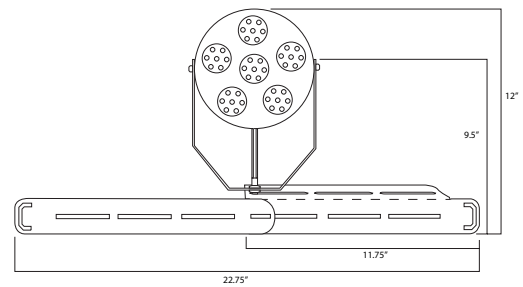
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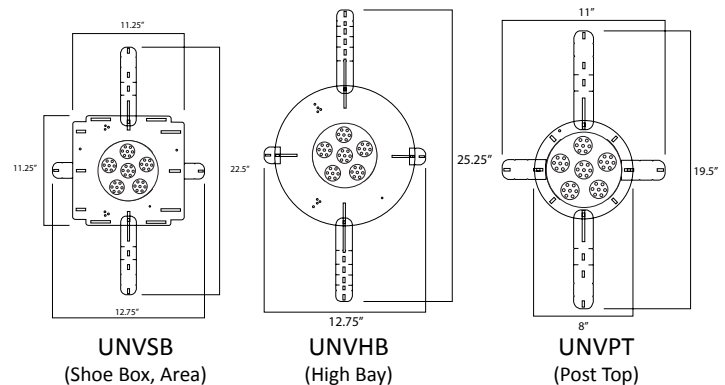
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Features:

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Applications/Made For:

- Aluminum High Bay/Low Bay
- Shoe box
- Post top



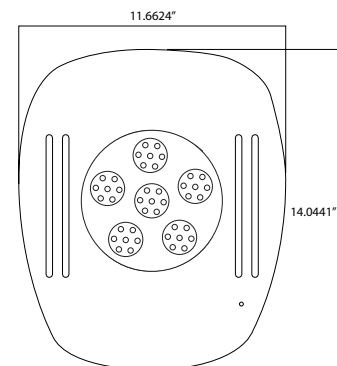
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Features:

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- Explosion proof fixtures
- And more...



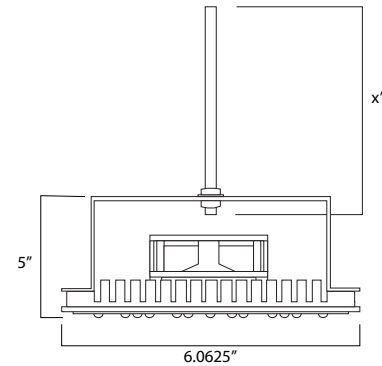
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Features:

- Perfect for fixtures with acrylic refractors
- Mounts to ballast box
- No weight placed on reflector/refractor
- Sleek industrial look
- 1/8" Diameter Rod

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- Acrylic High bay/low bay
- Aluminum High bay/low bay



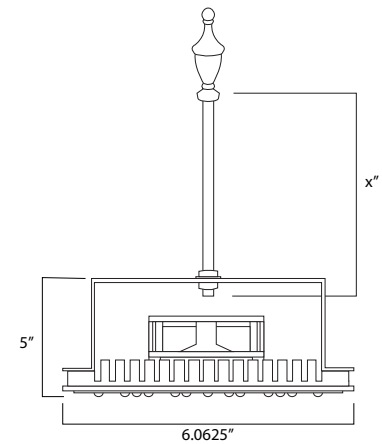
Finial Mount for Post Top Luminaires

Features:

- Mounts using threaded rod connected to finial
- Perfect for acorn and lanterns with finials
- Module mounts at top of fixture for wide distribution

Applications:

- Post Tops with finials



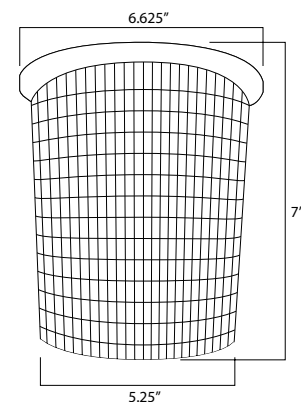
Reflector Mount for Post Top Luminaires

Features:

- Mounts to refractor
- Type 2 and Type 3 distribution available

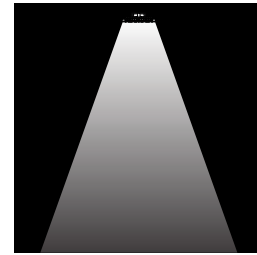
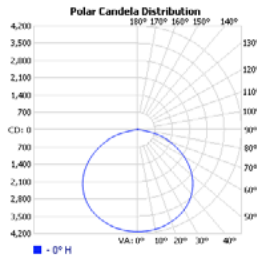
Applications/Made For:

- Post Tops



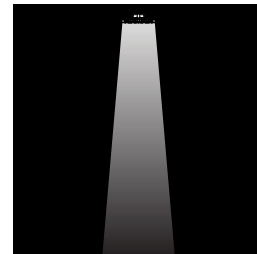
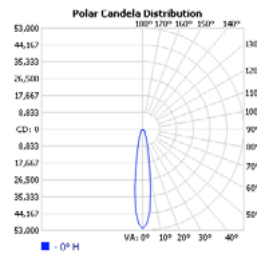
No Lens

Beam Angle: 122.9°
Field Angle: 122.9°
Type V
Nema 7



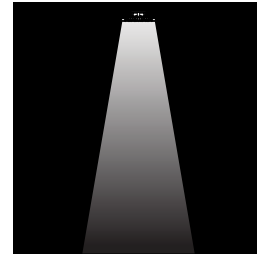
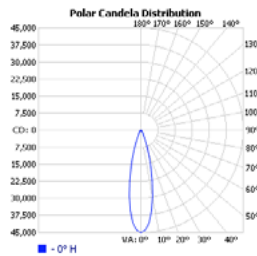
10D Lens

Beam Angle: 17.5°
Field Angle: 17.5°
Type V
Nema 3



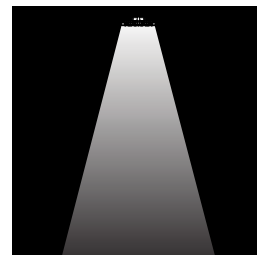
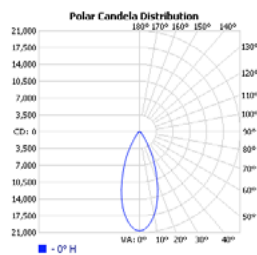
25D Lens

Beam Angle: 25.2°
Field Angle: 25.2°
Type V
Nema 4



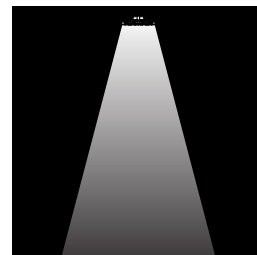
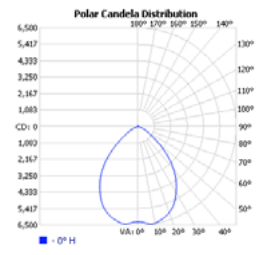
50D Lens

Beam Angle: 41.1°
Field Angle: 41.1°
Type V
Nema 5



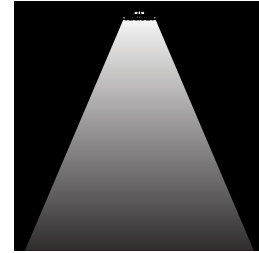
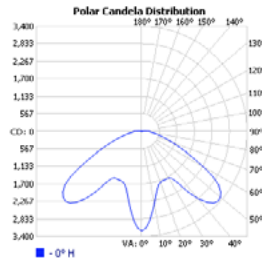
75D Lens

Beam Angle: 83.9°
Field Angle: 85.0°
Type V
Nema 6



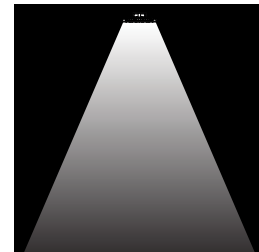
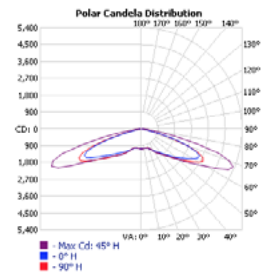
360D Lens

Beam Angle: 100.1°
Field Angle: 128.6°
Type V
Nema 7



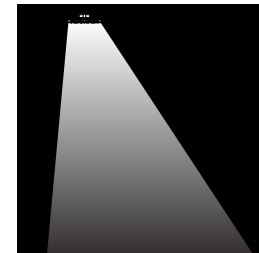
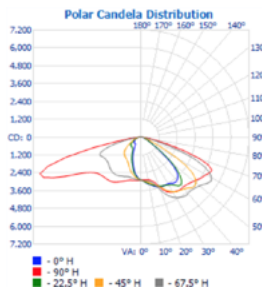
360s Lens

Beam Angle: 121.6°
Field Angle: 121.6°
Type VS
Nema 7



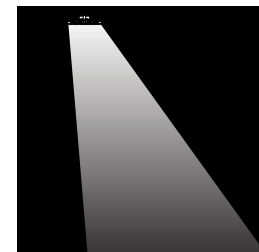
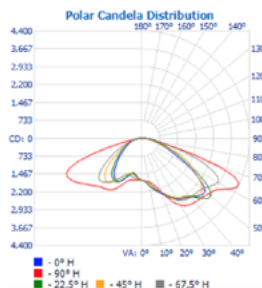
Type II Lens

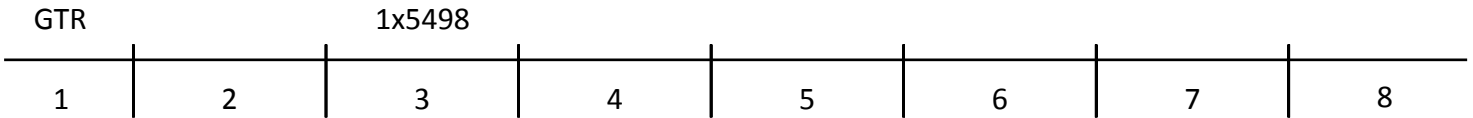
Nema 7



Type III Lens

Nema 7





1) Global Tech Retrofit:

GTR = Global Tech Retrofit

2) Mounting Options:

- YK** = Screw in Yoke
- UNVBR** = Universal Bracket
- UNVSB** = Universal Shoe Box Plate
- UNVHB** = Universal High Bay Plate
- UNVPT** = Universal Post Top Plate
- PLATE** = Custom Plate
- ROD** = Threaded Rod
- PTF** = Finial Mount
- PTR** = Refractor Mount

3) # of Modules:

1X5498 = One 5498 Solstice Module

4) CCT:

- GR** = (5700K)
- BR** = (5000K)
- YW** = (4100K)
- BL** = (4000K)
- RD** = (3500K)
- PR** = (3000K)
- OR** = (2700K)
- AMB** = Amber (Turtle Lighting)
- GRO** = Grow Light
- RYB** = Royal Blue Light
- AQU** = Aquarium Light

5) Wattage Output:

- HO** = 135W
- HI** = 95W
- MH** = 85W
- ML** = 75W

6) Voltage:

- SV** = 120-277V
- HV** = 347-480V

7) Optics:

- NL** = No Lens
- 10D** = 10 Degree Optics
- 25D** = 25 Degree Optics
- 50D** = 50 Degree Optics
- 75D** = 75 Degree Optics
- 360D** = 360 Degree Side Emitting Optics
- 360s** = 360 Degree Square Side Emitting Optics
- T2** = Type II Optics
- T3** = Type III Optics

8) Options (Determined by Mounting Option):

- | | | |
|--|---|--|
| <p>YK</p> <p>E27 = Medium Base (E27)</p> <p>E40 = Mogul Base (E40)</p> <p>NB = No Base</p> | <p>PTF</p> <p>FINIAL = Finial</p> <p>N/A = No Accessory</p> | <p>UNVSB, UNVHB, UNVPT,</p> <p>UNVBR & PLATE</p> <p>N/A = Not Available</p> |
| <p>ROD</p> <p>EXT__IN = Rod Length (in Inches)
<i>(Enter an Even Integer)</i></p> | <p>PTR</p> <p>GLR63 = Type III Refractor</p> <p>GLR65 = Type V Refractor</p> | |

ULTRA PRO™ & ULTRA PRO HD™ LED PAR Lamps



Key Features & Benefits

- Attractive directional light
- Extensive new portfolio
- CRI: 80+ and 90+
- CCT: 2700K, 3000K, 3500K, 4000K
- Beam angles: 12°, 15°, 25°, 40°
- Dimmable down to 5% on select dimmers*
- Design life: 50,000 hours (L₇₀)**
- Damp rated
- Energy savings up to 86%
- Longer life than traditional halogen lamps
- No warm-up time, instant on with full light output and stable color
- 90+ CRI product offering compliant with "California Quality" specification
- 5 year warranty

* Performance may vary depending on dimmer used in application. Please refer to Dimmer Compatibility List (RETRO-DIM) for a list of compatible dimmers or visit www.sylvania.com/LEDRetrofit

** Rated life: 25,000 hours (L₇₀)

Note: Made-To-Order Products available. Refer to RETRO069R4-MTO for details.

ULTRA PRO & ULTRA PRO HD LED PAR lamps offer extreme energy efficiency, high power factor and beam characteristics that closely match halogen PAR lamps featuring a high center beam candlepower and soft edges. This lamp family offers an extensive selection of lamps with four PAR lamp categories, four color temperatures and four beam angles. For those color critical applications, this offering provides a 90+, as well as an 80+ color rendering index. The high R9 (R9 up to 85) feature enhances warm color palettes and makes whites more crisp, making them ideal for hospitality, healthcare and retail applications. With efficiencies up to 90 lumens per watt, ULTRA PRO and ULTRA HD PRO LED lamps are an ideal part of any energy conservation strategy.

Application Information

Applications

- General lighting
- Recessed downlights
- Track lighting
- Wall washer

Market Segments

- Art galleries
- Hospitality
- Museums
- Offices
- Residential
- Restaurants
- Retail



Product Offering

Ordering Abbreviation	Wattage	Beam Angle	Color Temperature	CRI
PAR20 LED	7, 8	15°, 25°, 40°	2700K, 3000K, 3500K	80+, 90+
PAR30 LED	10, 11	15°, 25°, 40°	2700K, 3000K, 3500K, 4000K	80+, 90+
PAR30LN LED	13	12°, 15°, 25°, 40°	2700K, 3000K, 3500K, 4000K	80+, 90+
PAR38 LED	17	15°, 25°, 40°	2700K, 3000K, 3500K, 4000K	80+, 90+

Application Notes

1. Operating Temperature: -4°F to 104°F (-20°C to +40°C)
2. Not for use with emergency light fixtures or exit lights
3. Can be used in enclosed fixtures
4. Suitable for use in UL rated fixture where protected from the weather
5. Consult sales representative for alternative heat sink color
6. For lamp warranty information please visit: www.sylvania.com/warranty
7. All PAR lamps from OSRAM SYLVANIA use polymethyl methacrylate (PMMA) for their lenses. It is a transparent thermoplastic often used as a lightweight, shatter-resistant alternative to glass.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:
(1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation. For FCC Part 15 user information, please see www.sylvania.com/fcc15b



Catalog #	Type
Project	
Comments	
Prepared by	

Ordering Information

Item Number	Ordering Abbreviation	Wattage (W)	Replaces	Input Volts	CCT	Typical Lumens	LPW	CBCP	CRI	Beam Angle	R9	Power Factor	ENERGY STAR®
PAR20 CRI 80+													
79024	LED7PAR20/PRO/827/NFL25/P3	7	50W	120	2700K	520	74	2300cd	84	25°	10	0.95	Yes
79025	LED7PAR20/PRO/827/FL40/P3	7	50W	120	2700K	520	74	1100cd	84	40°	10	0.95	Yes
79020	LED7PAR20/PRO/830/NFL25/P3	7	50W	120	3000K	550	79	2550cd	84	25°	5	0.95	Yes
79021	LED7PAR20/PRO/830/FL40/P3	7	50W	120	3000K	550	79	1200cd	84	40°	5	0.95	Yes
79034	LED7PAR20/PRO/835/NFL25/P3	7	50W	120	3500K	575	82	2600cd	84	25°	10	0.95	Yes
79035	LED7PAR20/PRO/835/FL40/P3	7	50W	120	3500K	575	82	1250cd	84	40°	10	0.95	Yes
PAR20 CRI 90+													
78998	LED7PAR20/PRO/927/FL40/P3	7	50W	120	2700K	445	64	935cd	94	40°	55	0.95	Yes
79066	LED8PAR20/PRO/930/WSP15/P3	8	50W	120	3000K	500	63	5300cd	92	15°	55	0.95	Pending
79067	LED7PAR20/PRO/930/NFL25/P3	7	50W	120	3000K	470	67	2200cd	94	25°	65	0.95	Yes
79068	LED7PAR20/PRO/930/FL40/P3	7	50W	120	3000K	470	67	1000cd	94	40°	65	0.95	Yes
79063	LED8PAR20/PRO/935/WSP15/P3	8	50W	120	3500K	570	71	5700cd	92	15°	55	0.95	Pending
79064	LED7PAR20/PRO/935/NFL25/P3	7	50W	120	3500K	500	71	2200cd	94	25°	65	0.95	Yes
79065	LED7PAR20/PRO/935/FL40/P3	7	50W	120	3500K	500	71	1020cd	94	40°	65	0.95	Yes
79061	LED7PAR20/PRO/940/NFL25/P3	7	50W	120	4000K	530	76	2275cd	94	25°	75	0.95	Yes
79062	LED7PAR20/PRO/940/FL40/P3	7	50W	120	4000K	530	76	1070cd	94	40°	75	0.95	Yes
PAR30 CRI 80+													
79005	LED10PAR30/PRO/827/NFL25/P3	10	50W	120	2700K	720	72	2850cd	84	25°	10	0.97	Yes
79006	LED10PAR30/PRO/827/FL40/P3	10	50W	120	2700K	720	72	1650cd	84	40°	10	0.97	Yes
79022	LED10PAR30/PRO/830/NFL25/P3	10	50W	120	3000K	785	79	3100cd	84	25°	5	0.97	Yes
78999	LED10PAR30/PRO/830/FL40/P3	10	50W	120	3000K	785	79	1750cd	84	40°	5	0.97	Yes
79031	LED10PAR30/PRO/835/NFL25/P3	10	50W	120	3500K	790	79	3200cd	84	25°	10	0.97	Yes
79032	LED10PAR30/PRO/835/FL40/P3	10	50W	120	3500K	790	79	1850cd	84	40°	10	0.97	Yes
PAR30 CRI 90+													
79045	LED11PAR30/PRO/930/WSP15/P3	11	50W	120	3000K	675	61	6500cd	95	15°	85	0.97	Pending
79046	LED10PAR30/PRO/930/NFL25/P3	10	50W	120	3000K	650	65	2500cd	94	25°	65	0.97	Yes
79047	LED10PAR30/PRO/930/FL40/P3	10	50W	120	3000K	650	65	1480cd	94	40°	65	0.97	Yes
79057	LED11PAR30/PRO/935/WSP15/P3	11	50W	120	3500K	775	70	7700cd	92	15°	55	0.97	Pending
79058	LED10PAR30/PRO/935/NFL25/P3	10	50W	120	3500K	680	68	2680cd	94	25°	65	0.97	Yes
79059	LED10PAR30/PRO/935/FL40/P3	10	50W	120	3500K	680	68	1280cd	94	40°	65	0.97	Yes
PAR30LN CRI 80+													
78715	LED13PAR30LN/PRO/827/NFL25/P3	13	75W	120	2700K	930	72	4000cd	84	25°	10	0.97	Yes
78716	LED13PAR30LN/PRO/827/FL40/P3	13	75W	120	2700K	930	72	1900cd	84	40°	10	0.97	Yes
79109	LED13PAR30LN/PRO/830/NFL25/P3	13	75W	120	3000K	1000	77	4500cd	84	25°	5	0.97	Yes
79110	LED13PAR30LN/PRO/830/FL40/P3	13	75W	120	3000K	1000	77	2100cd	84	40°	5	0.97	Yes
78682	LED13PAR30LN/PRO/835/SP12/P3	13	75W	120	3500K	900	69	13000cd	82	12°	15	0.97	Pending
78698	LED13PAR30LN/PRO/835/NFL25/P3	13	75W	120	3500K	1050	80	4400cd	84	25°	10	0.97	Yes
78699	LED13PAR30LN/PRO/835/FL40/P3	13	75W	120	3500K	1050	80	2200cd	84	40°	10	0.97	Yes
PAR30LN CRI 90+													
79012	LED13PAR30LN/PRO/930/WSP15/P3	13	65W	120	3000K	850	65	6100cd	94	15°	65	0.97	Yes
79013	LED13PAR30LN/PRO/930/NFL25/P3	13	75W	120	3000K	850	65	3500cd	94	25°	65	0.97	Yes
79014	LED13PAR30LN/PRO/930/FL40/P3	13	75W	120	3000K	850	65	1780cd	94	40°	65	0.97	Yes
79042	LED13PAR30LN/PRO/935/NFL25/P3	13	75W	120	3500K	875	67	3380cd	94	25°	65	0.97	Yes
79043	LED13PAR30LN/PRO/935/FL40/P3	13	75W	120	3500K	875	67	1800cd	94	40°	65	0.97	Yes
PAR38 CRI 80+													
78456	LED17PAR38/PRO/827/NFL25/P3	17	90W	120	2700K	1150	68	5000cd	84	25°	10	0.97	Yes
78457	LED17PAR38/PRO/827/FL40/P3	17	90W	120	2700K	1150	68	2350cd	84	40°	10	0.97	Yes
78452	LED17PAR38/PRO/830/NFL25/P3	17	90W	120	3000K	1275	75	5500cd	84	25°	5	0.97	Yes
78453	LED17PAR38/PRO/830/FL40/P3	17	90W	120	3000K	1275	75	2630cd	84	40°	5	0.97	Yes
78478	LED17PAR38/PRO/835/NFL25/P3	17	90W	120	3500K	1300	76	5600cd	84	25°	10	0.97	Yes
78479	LED17PAR38/PRO/835/FL40/P3	17	90W	120	3500K	1300	76	2670cd	84	40°	10	0.97	Yes
PAR38 CRI 90+													
78463	LED17PAR38/PRO/930/WSP15/P3	17	75W	120	3000K	1050	62	7400cd	94	15°	65	0.97	Yes
78464	LED17PAR38/PRO/930/NFL25/P3	17	90W	120	3000K	1050	62	4600cd	94	25°	65	0.97	Yes
78465	LED17PAR38/PRO/930/FL40/P3	17	90W	120	3000K	1050	62	2150cd	94	40°	65	0.97	Yes
78482	LED17PAR38/PRO/935/NFL25/P3	17	90W	120	3500K	1075	63	4700cd	94	25°	65	0.97	Yes
78483	LED17PAR38/PRO/935/FL40/P3	17	90W	120	3500K	1075	63	2310cd	94	40°	65	0.97	Yes

* Additional beam angles and color temperatures available as made-to-order.

Ordering Guide

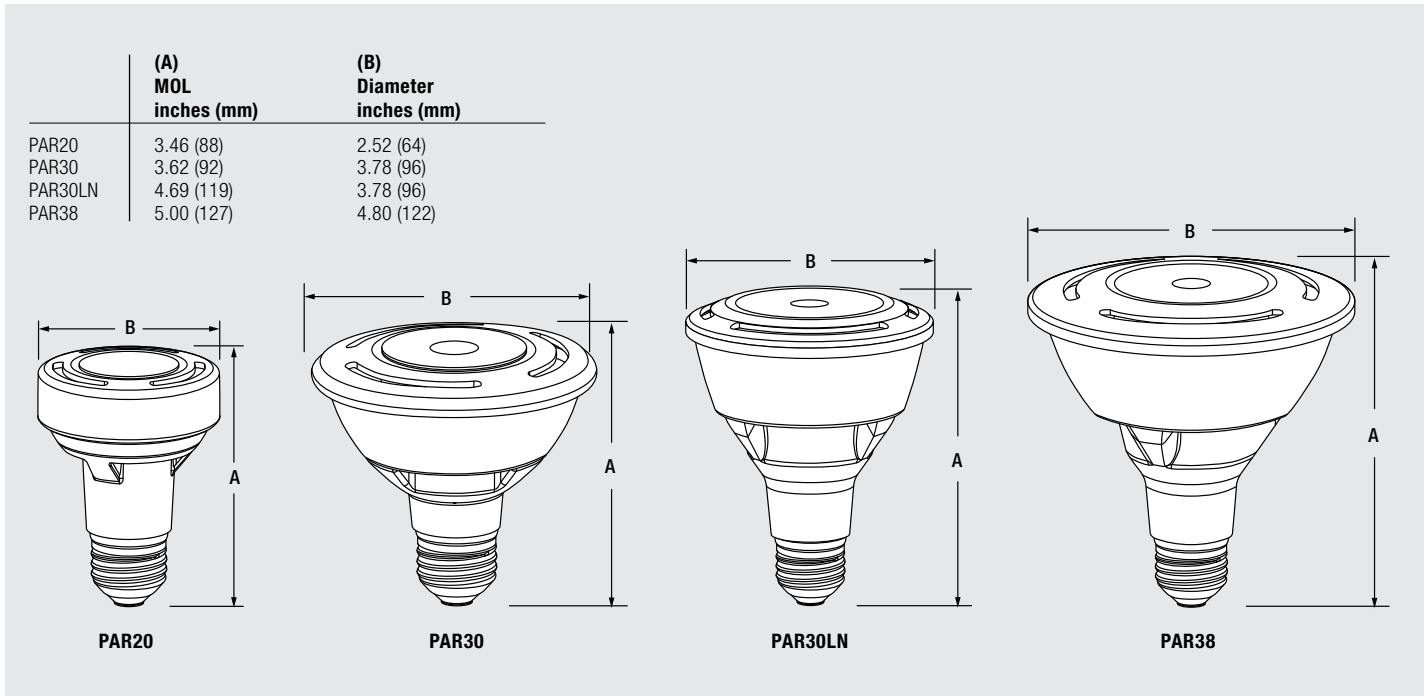
LED	17	PAR38	/	PRO	/	827	/	FL	40	/	P3
LED Lamps	Wattage: 7, 8, 10, 11, 13, 17, 18	Lamp type: PAR38, PAR30LN, PAR30, PAR20		Professional Series		CRI=80 Color Temp. 2700K 3000K 3500K 4000K		Flood	Beam Angle		PRO 3

Energy Savings

Product Description	LED Life (hrs.)	Similar Halogen	Halogen Lumens	Watts Saved	Energy Savings*	Energy Savings per Year	LED Life vs. Incandescent
LED7PAR20	50,000	50W PAR20	460	43	\$236.50	\$24.10	33X
LED8PAR20	50,000	50W PAR20	460	42	\$231.00	\$23.60	33X
LED10PAR30	50,000	50W PAR30	660	40	\$220.00	\$22.48	33X
LED11PAR30	50,000	50W PAR30	660	39	\$214.50	\$21.92	33X
LED13PAR30LN	50,000	75W PAR30LN	1130	62	\$341.00	\$34.85	33X
LED17PAR38	50,000	90W PAR38	1310	73	\$401.50	\$41.03	33X
LED18PAR38	50,000	90W PAR38	1310	72	\$396.00	\$40.47	33X

*Energy savings over life of lamp calculated at \$0.11/kWh at 50,000 hours

Lamp Dimensions



OSRAM

Americas Headquarters

OSRAM SYLVANIA Inc.

100 Endicott Street

Danvers, MA 01923 USA

Phone 1-800-LIGHTBULB (1-800-544-4828)

www.sylvania.com

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LED CREATING TOMORROW is a registered trademark of OSRAM GmbH.
ENERGY STAR is a registered trademark of the U.S. Government.
Specifications subject to change without notice.

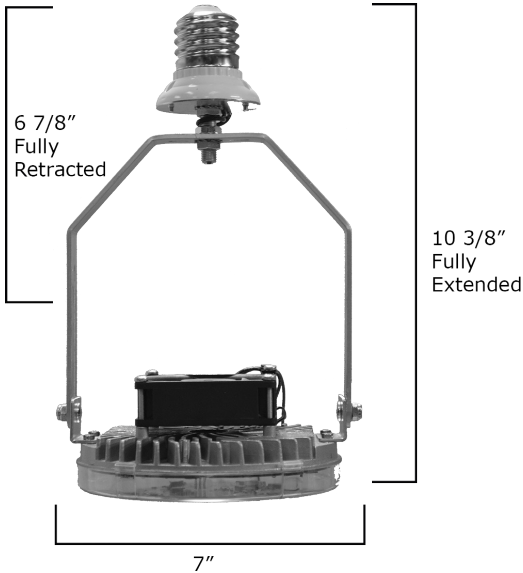
/sylvania

/sylvania



GTSOL5498-SOLY [75w-135w Yoke Mounted LED Module]

Mogul E40 Base



Medium E26 Base

Description and Application:

Global Tech LED's Solstice units are designed to retrofit into almost any HID fixture using custom fabricated brackets and plates for easy plug and play installation. We can articulate our units and offer a wide array of innovative optics to deliver the light precisely where it's needed. Four way switchable power options on board. This unit also comes with an Energy Saver program that is accessed via a switch on the board.

Key Features:

- Multiple temperature control values. Over temperature protection, shut down at critical temperature and resume operation temperature.
- Under voltage lockout for power off or brownout
- Soft start
- Medium E26 and Mogul E40 bases
- 0-10VDC Dimming compatible
- 0-10VDC Input Port.
- Current accuracy over the LED operating temperature range +/- 3%.

Driver and Wattage:

50/60Hz
Input voltage 120-277VAC

480VAC driver also available.
24VDC operation without driver.

Additional Information:

MagLev® Fan Technology
By using magnetic levitation force, these fans feature zero friction with no contact between shaft and bearing. 100,000 hours rated operating life, providing an exceptionally cool running LED unit -42° Celsius at ambient temperatures.

Lensing
Multiple lensing options available for maximum light distribution, if needed.

Distribution Pattern
Multiple mounting positions for a broad range of narrow to spread symmetrical lighting distribution choices.

Operating Temperature Range:
-40 to +85 degrees Celsius

Warranty
10 Year Limited Warranty

Photometrics:
Visit our web site at www.globaltechled.com for detailed photometrics.

Product	Rated Life [L70] [Hrs]	Output Setting	Drive Current [mA]	Rated Lumens [lm]	Rated Watts [W]
GTSOL5498 x 1	100,000	HO	900	13164	135
GTSOL5498 x 1	100,000	HI	700	9447	95
GTSOL5498 x 1	100,000	MH	525	8999	85
GTSOL5498 x 1	100,000	ML	350	7814	75

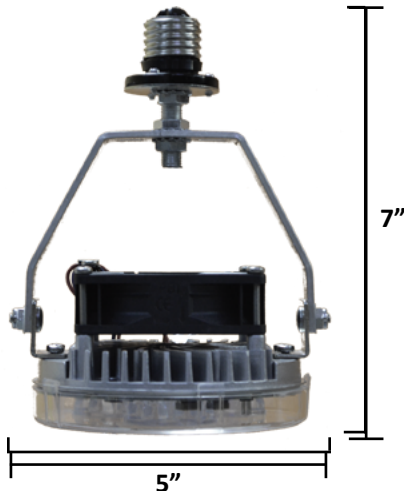


Ordering Information:

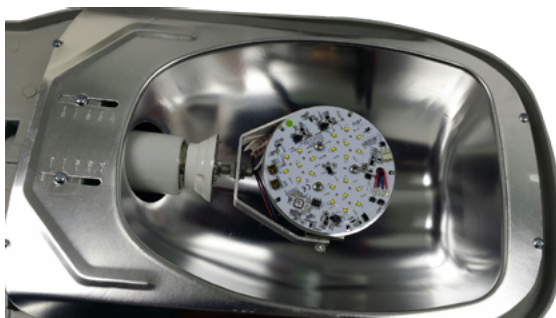
Example: GTSOL5498-GR-SOLY-120/277-HI-L2-MED

GTSOL5498		SOLY				
Series	Color Temperature	Mounting Options	Input Voltage	Output Setting	Optics	Base Options
GTSOL5498	GR (5700K) BR (5000K) YW (4100K) BL (4000K) RD (3500K) PU (3000K) OR (2700K)	SOLY (Yoke Mount)	120/277 V 340/480 V	[Select for 5498] HO (135W) HI (95W) MH (85W) ML (75W)	L2 (Type II) L3 (Type III) L10 (10 Degree) L25 (25 Degree) L50 (50 Degree) L75 (75 Degree) L360 (360 Degree) NL (No Lens)	BUB (No Base) MGL (Mogul E40) MED (Medium E26)

GTR-YK-1xM21 [30W-60W Yoke Mounted LED Module]



Medium E26 Base



Bolt on Yoke Mounted GTSOLM21

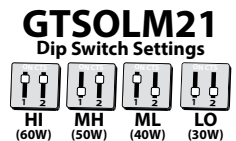


Description and Application:

Global Tech LED's Solstice units are designed to retrofit into almost any HID fixture using custom fabricated brackets and plates for easy plug and play installation. We can articulate our units and offer a wide array of innovative optics to deliver the light precisely where it's needed. Four way switchable power options on board. This unit also comes with an Energy Saver program that is accessed via a switch on the board.

Key Features:

- Multiple temperature control values. Over temperature protection, shut down at critical temperature and resume operation temperature.
- Under voltage lockout for power off or brownout
- Soft start
- Medium E26 and Mogul E40 bases
- 0-10VDC Dimming compatible
- 0-10VDC Input Port
- Current accuracy over the LED operating temperature range +/- 3%.



Driver and Wattage:

50/60Hz
Input voltage 120/277VAC 60W
347-480VAC driver also available.

24VDC operation without driver.
GTSOLM21 – 30W, 40W, 50W, 60W
per Solstice unit.

On Board Programs:

- Standard
- 5-6-1
- 0-10VDC Dimming*
- *If dimming is desired please specify when ordering

Additional Information:

MagLev® Fan Technology:
By using magnetic levitation force, these fans feature zero friction with no contact between shaft and bearing. 100,000 hours rated operating life, providing an exceptionally cool running LED unit -42° Celsius at ambient temperatures.

Distribution Pattern:
Multiple mounting positions for a broad range of narrow to spread symmetrical lighting distribution choices.

Warranty:
10 Year Limited Warranty

Operating Temperature Range:
-40 to +85 degrees Celsius

Photometrics:
Visit our web site at www.GlobalTechLED.com for detailed photometrics.

Lensing:
Multiple lensing options available for maximum light distribution, if needed. Without lensing beam angle is 120°

LED Module Compatibility

Product	Rated Life [L70] [Hrs]	Output Setting	LED Chip Drive Current [mA]	Rated Lumens [lm]	Rated Watts [W]
GTSOLM21 x 1	100,000	LO	400	2679	30
GTSOLM21 x 1	100,000	ML	500	3742	40
GTSOLM21 x 1	100,000	MH	600	4594	50
GTSOLM21 x 1	100,000	HI	700	5910	60

Base Options

Catalog #	Description
E40	Mogul Base
E27	Medium Base
NB	U-Bracket (No Base)

*Available in stock-able packaging



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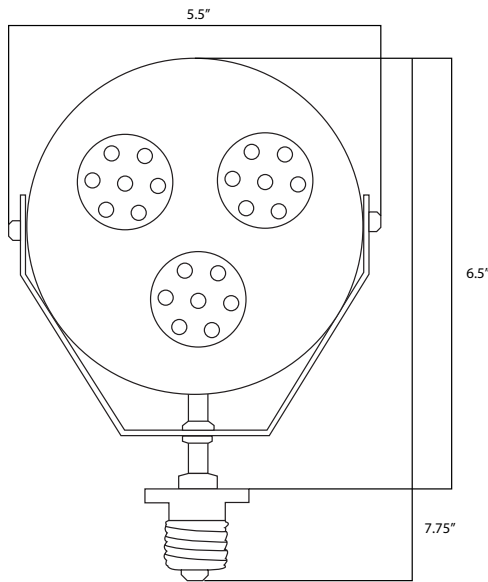


Product Information

GTR-YK-1xM21

[30W-60W Yoke Mounted LED Module]

Details



Features



- Life Sync
- Module Temp Protection
- Lumen Depreciation Maintenance
- Wattage Selections (on board)
- On Board Programming
 - 5-6-1 Energy Saving Program
 - 0-10V Dimming
- Lumiled Luxeon LED chips
- Active Thermal Management
- Optical Distribution Options
- -45°C to 85°C Operating Temperature
- 10 Year Warranty

Ordering Code Example:

GTR-YK - 1XM21 - GR - 100% - SV - NL - E40

Retrofit		Wattage			Color Temp	Optics	Base
Retrofit	Wattage	# of Modules	Setting	Input Voltage	Kelvin	Optics	Base
GTR-YK	30W	1xM21	25%	SV = 120-277V	GR = 5700K	NL = No Lens	E40
				HV = 347-480V	BR = 5000K	10D = Degree	E27
	40W	1xM21	50%	SV = 120-277V	YW = 4100K	25D = Degree	NB
				HV = 347-480V	BL = 4000K	50D = Degree	
	50W	1xM21	75%	SV = 120-277V	RD = 3500K	75D = Degree	
				HV = 347-480V	PR = 3000K	360D = Side Emitters	
	60W	1xM21	100%	SV = 120-277V	OR = 2700K	360s = Square Side Emitters	
				HV = 347-480V	AMB = Amber	T2 = Type II	
					GRO = Grow	T3 = Type III	
					RYB = Royal Blue		
					AQU = Aquarium		

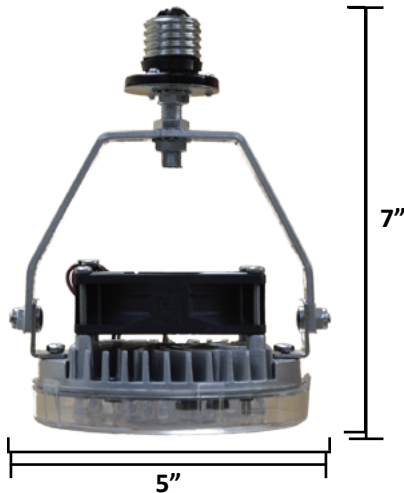
* Please see previous page for Base option information

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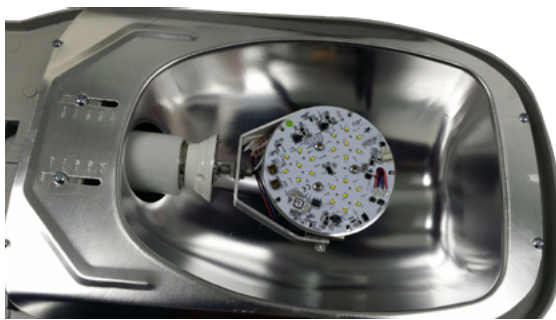
Simply Universal

The World Leader in LED Retrofits

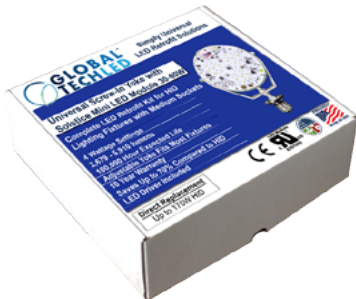
GTR-YK-1xM21 [30W-60W Yoke Mounted LED Module]



Medium E26 Base



Bolt on Yoke Mounted GTSOLM21

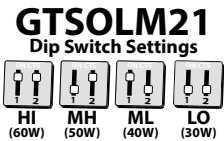


Description and Application:

Global Tech LED's Solstice units are designed to retrofit into almost any HID fixture using custom fabricated brackets and plates for easy plug and play installation. We can articulate our units and offer a wide array of innovative optics to deliver the light precisely where it's needed. Four way switchable power options on board. This unit also comes with an Energy Saver program that is accessed via a switch on the board.

Key Features:

- Multiple temperature control values. Over temperature protection, shut down at critical temperature and resume operation temperature.
- Under voltage lockout for power off or brownout
- Soft start
- Medium E26 and Mogul E40 bases
- 0-10VDC Dimming compatible
- 0-10VDC Input Port
- Current accuracy over the LED operating temperature range +/- 3%.



Driver and Wattage:

50/60Hz
Input voltage 120/277VAC 60W
347-480VAC driver also available.

24VDC operation without driver.
GTSOLM21 – 30W, 40W, 50W, 60W
per Solstice unit.

On Board Programs:

- Standard
- 5-6-1
- 0-10VDC Dimming*
- *If dimming is desired please specify when ordering

Additional Information:

MagLev® Fan Technology:
By using magnetic levitation force, these fans feature zero friction with no contact between shaft and bearing. 100,000 hours rated operating life, providing an exceptionally cool running LED unit -42° Celsius at ambient temperatures.

Distribution Pattern:
Multiple mounting positions for a broad range of narrow to spread symmetrical lighting distribution choices.

Warranty:
10 Year Limited Warranty

Operating Temperature Range:
-40 to +85 degrees Celsius

Photometrics:
Visit our web site at www.GlobalTechLED.com for detailed photometrics.

Lensing:
Multiple lensing options available for maximum light distribution, if needed. Without lensing beam angle is 120°

LED Module Compatibility

Product	Rated Life [L70] [Hrs]	Output Setting	LED Chip Drive Current [mA]	Rated Lumens [lm]	Rated Watts [W]
GTSOLM21 x 1	100,000	LO	400	2679	30
GTSOLM21 x 1	100,000	ML	500	3742	40
GTSOLM21 x 1	100,000	MH	600	4594	50
GTSOLM21 x 1	100,000	HI	700	5910	60

Base Options

Catalog #	Description
E40	Mogul Base
E27	Medium Base
NB	U-Bracket (No Base)

*Available in stock-able packaging



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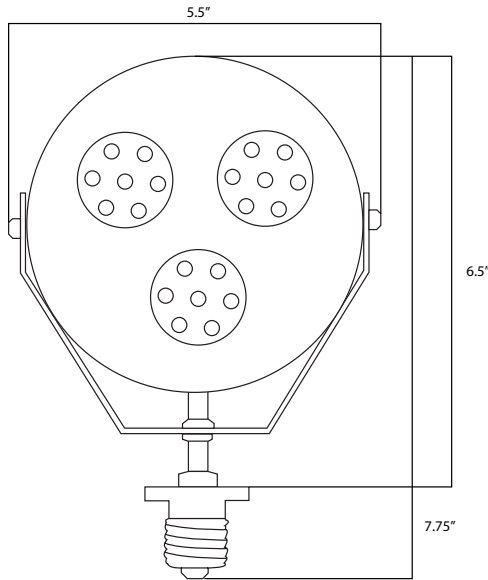


Product Information

GTR-YK-1xM21

[30W-60W Yoke Mounted LED Module]

Details



Features



- Life Sync
- Module Temp Protection
- Lumen Depreciation Maintenance
- Wattage Selections (on board)
- On Board Programming
 - 5-6-1 Energy Saving Program
 - 0-10V Dimming
- Lumiled Luxeon LED chips
- Active Thermal Management
- Optical Distribution Options
- -45°C to 85°C Operating Temperature
- 10 Year Warranty

Ordering Code Example:

GTR-YK - 1XM21 - GR - 100% - SV - NL - E40

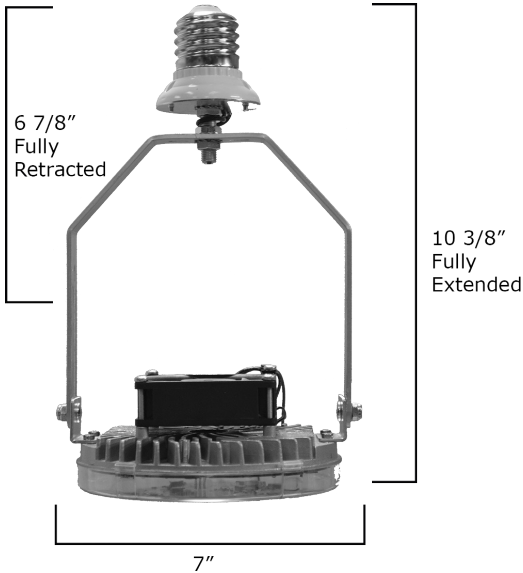
Retrofit		Wattage			Color Temp	Optics	Base
Retrofit	Wattage	# of Modules	Setting	Input Voltage	Kelvin	Optics	Base
GTR-YK	30W	1xM21	25%	SV = 120-277V HV = 347-480V	GR = 5700K BR = 5000K	NL = No Lens 10D = Degree	E40 E27
	40W	1xM21	50%	SV = 120-277V HV = 347-480V	YW = 4100K BL = 4000K	25D = Degree 50D = Degree	NB
	50W	1xM21	75%	SV = 120-277V HV = 347-480V	RD = 3500K PR = 3000K	75D = Degree 360D = Side Emitters	
	60W	1xM21	100%	SV = 120-277V HV = 347-480V	OR = 2700K AMB = Amber GRO = Grow RYB = Royal Blue AQU = Aquarium	360s = Square Side Emitters T2 = Type II T3 = Type III	

* Please see previous page for Base option information

Fully Compliant with ARRA Buy American Requirements. Made in the USA.

GTSOL5498-SOLY [75w-135w Yoke Mounted LED Module]

Mogul E40 Base



Medium E26 Base

Description and Application:

Global Tech LED's Solstice units are designed to retrofit into almost any HID fixture using custom fabricated brackets and plates for easy plug and play installation. We can articulate our units and offer a wide array of innovative optics to deliver the light precisely where it's needed. Four way switchable power options on board. This unit also comes with an Energy Saver program that is accessed via a switch on the board.

Key Features:

- Multiple temperature control values. Over temperature protection, shut down at critical temperature and resume operation temperature.
- Under voltage lockout for power off or brownout
- Soft start
- Medium E26 and Mogul E40 bases
- 0-10VDC Dimming compatible
- 0-10VDC Input Port.
- Current accuracy over the LED operating temperature range +/- 3%.

Driver and Wattage:

50/60Hz
Input voltage 120-277VAC

480VAC driver also available.
24VDC operation without driver.

Additional Information:

MagLev® Fan Technology
By using magnetic levitation force, these fans feature zero friction with no contact between shaft and bearing. 100,000 hours rated operating life, providing an exceptionally cool running LED unit -42° Celsius at ambient temperatures.

Lensing
Multiple lensing options available for maximum light distribution, if needed.

Distribution Pattern
Multiple mounting positions for a broad range of narrow to spread symmetrical lighting distribution choices.

Operating Temperature Range:
-40 to +85 degrees Celsius

Warranty
10 Year Limited Warranty

Photometrics:
Visit our web site at www.globaltechled.com for detailed photometrics.

Product	Rated Life [L70] [Hrs]	Output Setting	Drive Current [mA]	Rated Lumens [lm]	Rated Watts [W]
GTSOL5498 x 1	100,000	HO	900	13164	135
GTSOL5498 x 1	100,000	HI	700	9447	95
GTSOL5498 x 1	100,000	MH	525	8999	85
GTSOL5498 x 1	100,000	ML	350	7814	75



Ordering Information:

Example: GTSOL5498-GR-SOLY-120/277-HI-L2-MED

GTSOL5498		SOLY				
Series	Color Temperature	Mounting Options	Input Voltage	Output Setting	Optics	Base Options
GTSOL5498	GR (5700K) BR (5000K) YW (4100K) BL (4000K) RD (3500K) PU (3000K) OR (2700K)	SOLY (Yoke Mount)	120/277 V 340/480 V	[Select for 5498] HO (135W) HI (95W) MH (85W) ML (75W)	L2 (Type II) L3 (Type III) L10 (10 Degree) L25 (25 Degree) L50 (50 Degree) L75 (75 Degree) L360 (360 Degree) NL (No Lens)	BUB (No Base) MGL (Mogul E40) MED (Medium E26)

LED Corncob Retrofit Lamps

PREMIUM PLUS DESIGN

The Simplest LED Retrofit Around!



Main Features:

- No ballast necessary
- Fast turn on; no warm-up or cold start problems
- Estimated life hours: >50,000
- Sturdy PCB housing with internal cooling fan
- 80% more energy savings compared with conventional HID lamps, CFL, and incandescent bulbs
- >85 CRI with great directionality
- Up to 150 lumens per watt
- Universal burning positions
- Light Weight



Commercial – Hospitality – Retail – Residential – Custom

AAMSCO LIGHTING, INC.

100 Lamp Light Circle | Summerville, SC 29483

Phone 843-278-0000 | Fax 843-278-0001 | www.aamsco.com



Corncob LED



Aamsco supplies high quality LED retrofits to replace conventional HID & CFL lamps.

Main Features:

- Built in surge protection with automatic shut off
- Equipped with overheating protection. Automatically reduces to 1/2 power
- Aluminum fin heat sink & internal cooling fan allow for greater heat dissipation
- No ballast necessary. Fast turn on; no warm-up or cold start problems
- Estimated life hours: >50,000
- Sturdy PCB housing with internal cooling fan on 40W and higher
- 80% more energy saving compared with conventional HID, CFL, and incandescent lamps
- >85 CRI with great directionality
- 130 lumens per watt
- Universal burning positions

Specifications:

- Operating voltage: 100-277V & 480V
- Frequency range: 50-60hz
- Color Temperatures: WW3000-3500K, CW4000-4500K, D6000-6500K
- Integrated Heat-Sink Design
- 7 year warranty*
- UL, CE, DLC & ROHS CERTIFIED
- Not for use on a dimmer or remote controls
- For use in open or enclosed fixtures***

***In enclosed fixtures, ensure the lamp has enough space for heat dissipation. This will ensure lumen maintenance and extend its working life. When products are used in outdoor fixtures, ensure the space is waterproof and well ventilated. If there is a ballast in the existing fixture, simply disconnect or bypass when installing Corncob LED retrofit lamps.

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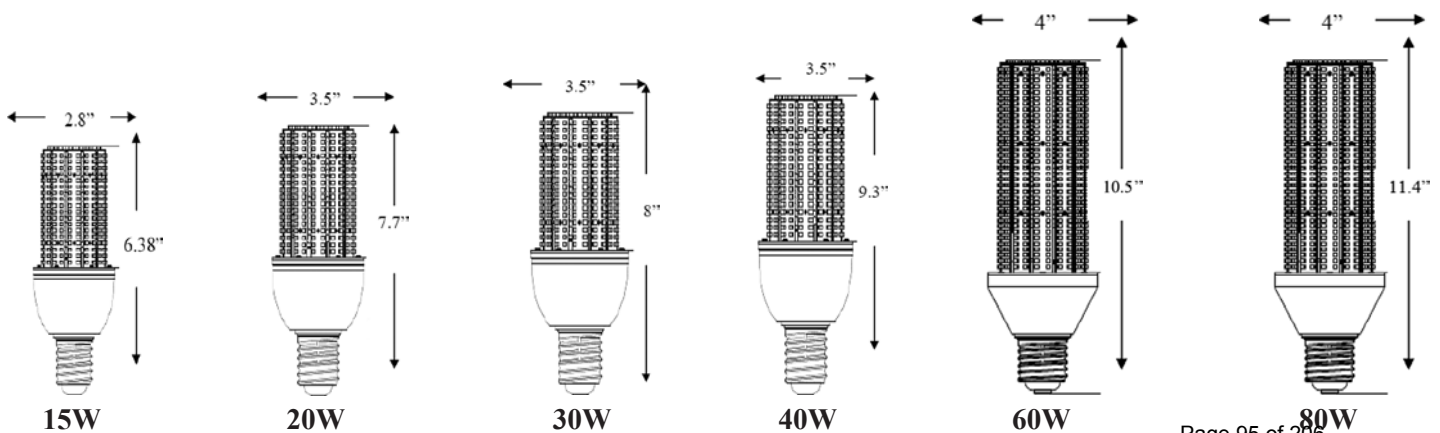


Corncob LED



MODEL	LED15	LED20	LED30	LED40	LED60	LED80
Wattage	15W	20W	30W	40W	60W	80W
Beam Angle	360 Degree	360 Degree	360 Degree	360 Degree	360 Degree	360 Degree
Light Source Count	216 LEDs	300 LEDs	486 LEDs	660 LEDs	900 LEDs	1160 LEDs
Lamp Base	Medium (MD) or Mogul (MG)	Medium (MD) or Mogul (MG)	Medium (MD) or Mogul (MG)	Medium (MD) or Mogul (MG)	Medium (MD) or Mogul (MG)	Medium (MD) or Mogul (MG)
Power Usage	17W +/-10%	22W +/-10%	33W +/-10%	44W +/-10%	67W +/-10%	88W +/-10%
Luminous Flux	1800lm	2600lm	3900lm	5200lm	7800lm	10400lm
Color Temp	WW 3000-3500K CW 4000-4500K D 6000-6500K	WW 3000-3500K CW 4000-4500K D 6000-6500K	WW 3000-3500K CW 4000-4500K D 6000-6500K	WW 3000-3500K CW 4000-4500K D 6000-6500K	WW 3000-3500K CW 4000-4500K D 6000-6500K	WW 3000-3500K CW 4000-4500K D 6000-6500K
Input Voltage	100-277V 480V	100-277V 480V	100-277V 480V	100-277V 480V	100-277V 480V	100-277V 480V
Life Hours	50,000	50,000	50,000	50,000	50,000	50,000
Dimensions	2.8" x 6.38"	3.5" x 7.7"	3.5" x 8"	3.5" x 9.3"	4" x 10.5"	4" x 11.4"

ORDER CODE CONFIGURATION: LED(Watts)(Color Temp)(Base)
 Example: LED20W 3000-3500K Medium Base = LED20WWMD



Super Corncob LED



Aamsco supplies Super High Wattage LED retrofits to replace conventional HID & CFL lamps.

Main Features:

- Built in surge protection with automatic shut off
- Equipped with overheating protection. Automatically reduces to ½ power
- Aluminum fin heat sink & internal cooling fan allow for greater heat dissipation
- No ballast necessary. Fast turn on; no warm-up or cold start problems
- Estimated life hours: >50,000
- Sturdy PCB housing with internal cooling fan
- 80% more energy saving compared with conventional HID, CFL, and incandescent lamps
- 150 lumens per watt
- Universal burning positions

Specifications:

- Operating voltage: 100-277V & 480V
- Frequency range: 50-60hz
- Color Temperatures: WW3000-3500K, CW4000-4500K, D6000-6500K
- Integrated Heat-Sink Design
- 7 year warranty*
- UL, CE, DLC & ROHS CERTIFIED
- Not for use on a dimmer or remote controls
- For use in open or enclosed fixtures***

***In enclosed fixtures, ensure the lamp has enough space for heat dissipation. This will ensure lumen maintenance and extend its working life. When products are used in outdoor fixtures, ensure the space is waterproof and well ventilated. If there is a ballast in the existing fixture, simply disconnect or bypass when installing Corncob LED retrofit lamps.

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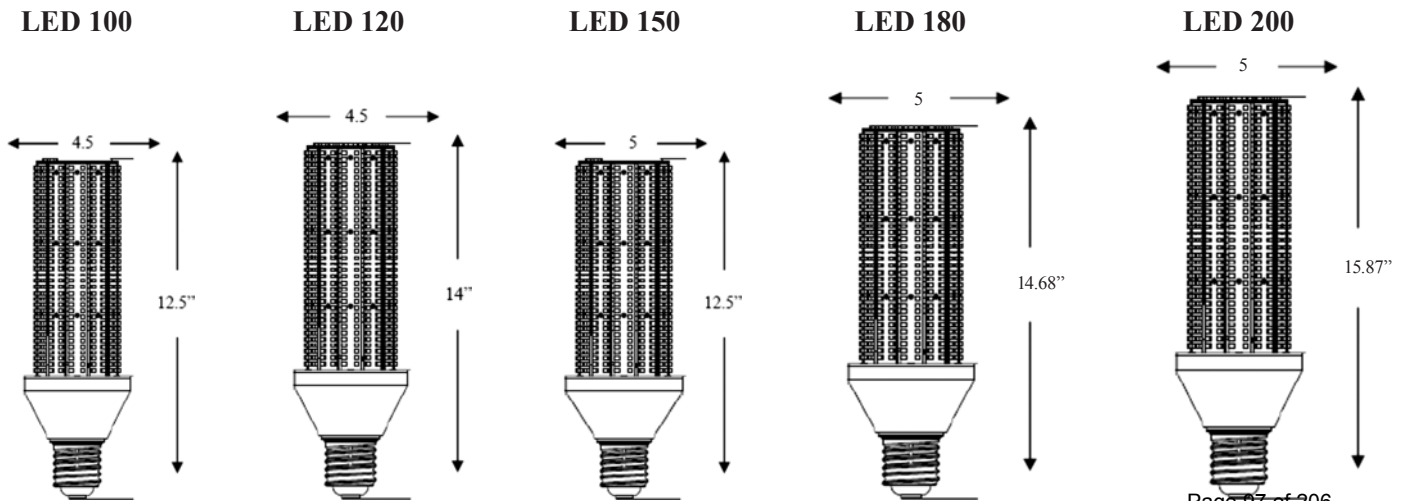


Super Corncob LED



MODEL	LED100	LED120	LED150	LED180	LED200
Wattage	100W	120W	150W	180W	200W
Beam Angle	360 Degree	360 Degree	360 Degree	360 Degree	360 Degree
Light Source Count	1040 LEDs	1040 LEDs	1440 LEDs	780 LEDs	832 LEDs
Lamp Base	Medium (MD) or Mogul (MG)	Medium (MD) or Mogul (MG)	Mogul (MG)	Mogul (MG)	Mogul (MG)
Power Usage	113W +/- 10%	135W +/- 10%	169W +/- 10%	183W +/- 10%	204W +/- 10%
Luminous Flux	15000lm	18000lm	22500lm	27000lm	30000lm
Color Temp	WW 3000-3500K CW 4000-4500K D 6000-6500K	WW 3000-3500K CW 4000-4500K D 6000-6500K	WW 3000-3500K CW 4000-4500K D 6000-6500K	WW 3000-3500K CW 4000-4500K D 6000-6500K	WW 3000-3500K CW 4000-4500K D 6000-6500K
Input Voltage	100-277V 480V	100-277V 480V	100-277V	100-277V	100-277V
Life Hours	50,000	50,000	50,000	50,000	50,000
Dimensions	4.5" x 12.5"	4.5" x 14"	5" x 12.5"	5" x 14.68"	5" x 15.87"

ORDER CODE CONFIGURATION: LED(Watts)(Color Temp)(Base)
 Example: LED100W 3000-3500K Medium base = LED100WWMD



Corncob Mini



An energy smart alternative to incandescent lamps and an ecological light source to help the environment. Aamsco's Mini Corncob LEDs are an affordable light source for both residential and commercial areas.

Main Features:

- Fast turn on; no warm-up or cold start problems
- Estimated life hours: >50,000
- Sturdy PCB housing
- 80% more energy saving compared with conventional CFLs and incandescent lamps
- >85 CRI with great directionality
- 120 lumens per watt
- Universal burning positions

Specifications:

- Operating voltage: 100-277V
- Frequency range: 50-60hz
- Color Temperatures: WW3000-3500K, CW4000-4500K, D6000-6500K
- Integrated Heat-Sink Design
- 7 year warranty*
- UL, CE & ROHS Certified
- Not for use on a dimmer or remote controls
- For use in open or enclosed fixtures***

***In enclosed fixtures, ensure the lamp has enough space for heat dissipation. This will ensure lumen maintenance and extend its working life. When products are used in outdoor fixtures, ensure the space is waterproof and well ventilated. If there is a ballast in the existing fixture, simply disconnect or bypass when installing Corncob LED retrofit lamps.

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Corncob Mini



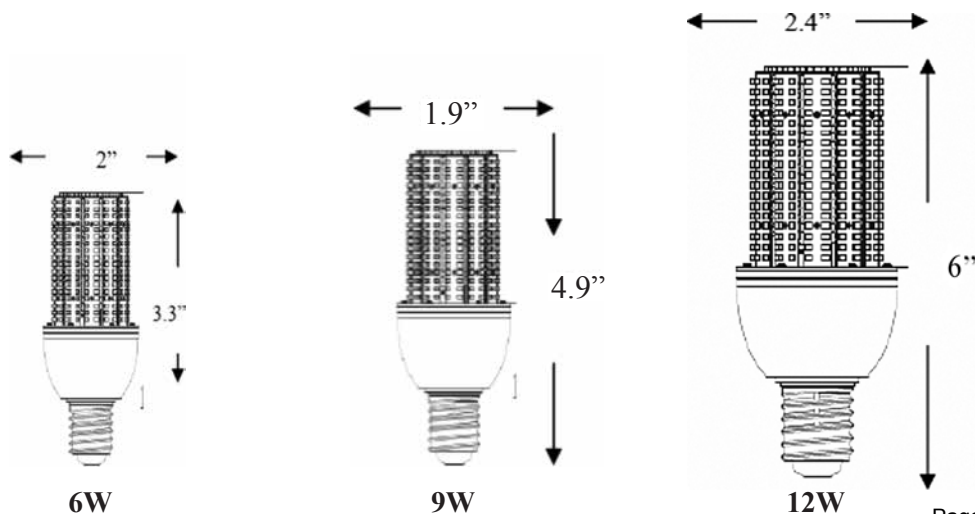
MODEL	LED6W	LED9W	LED12W
Wattage	6W	9W	12W
Beam Angle	360 Degree	360 Degree	360 Degree
Light Source Count	133 LEDs	150 LEDs	180 LEDs
Lamp Base	Medium (MD)	Medium (MD)	Medium (MD)
Power Consumption	8W +/-10%	10W +/-10%	13W +/-10%
Luminous Flux	720lm	1080lm	1440lm
Color Temperature	WW 3000-3500K CW 4000-4500K D 6000-6500K	WW 3000-3500K CW 4000-4500K D 6000-6500K	WW 3000-3500K CW 4000-4500K D 6000-6500K
Input Voltage	100-277V	100-277V	100-277V
Life Hours	50,000	50,000	50,000
Dimensions	2" x 3.3"	1.9" x 4.9"	2.4" x 6"

ORDERING NUMBER CONFIGURATION:

LED(Watt)(color temp)(base type)

Example: LED9W, 3000-3500K, medium base= LED9WWMD

Recommended minimum 6" diameter spacing in enclosed fixtures



Corncob Dome LED



Uniquely designed to create a better light to ground ratio. Easy ballast free installation and low power consumption for energy savings. Can be used in indoor and outdoor applications.

Main Features:

- Built in surge protection with automatic shut off
- Equipped with overheating protection. Automatically reduces to ½ power
- Fast turn on; no warm-up or cold start problems
- Estimated life hours: >50,000
- Sturdy PCB housing with internal cooling fan on 40W & higher
- 80% more energy saving compared with conventional HID, CFL, and incandescent lamps
- >85 CRI with great directionality
- 140-150 lumens per watt
- Universal burning positions

Specifications:

- Operating voltage: 100-277V
- Frequency range: 50-60hz
- Color Temperatures: WW3000-3500K, CW4000-4500K, D6000-6500K
- Integrated Heat-Sink Design
- 7 year warranty*
- UL, CE, DLC & ROHS Certified
- Not for use on a dimmer or remote controls
- For use in open or enclosed fixtures***

****In enclosed fixtures, ensure the lamp has enough space for heat dissipation. This will ensure lumen maintenance and extend its working life. When products are used in outdoor fixtures, ensure the space is waterproof and well ventilated. If there is a ballast in the existing fixture, simply disconnect or bypass when installing Corncob LED retrofit lamps.*

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Corncob Dome LED



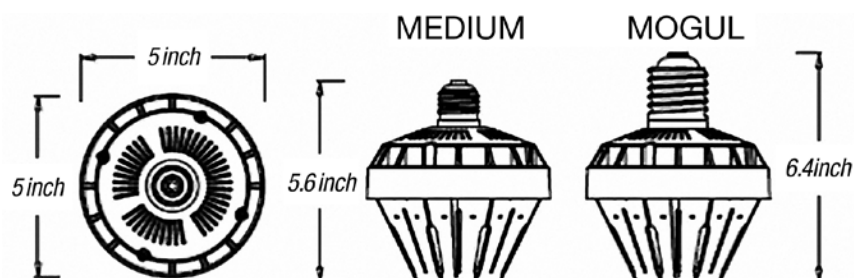
MODEL	LED20W-DOME	LED30W-DOME
Wattage	20W	30W
Beam Angle	360 Degree	360 Degree
Light Source Count	100 LEDs	180 LEDs
Lamp Base	Medium (MD) or Mogul (MG)	Medium (MD) or Mogul (MG)
Power Usage	23W +/-10%	33W +/-10%
Luminous Flux	3400lm	4946lm
Color Temperature	WW 3000-3500K CW 4000-4500K D 6000-6500K	WW 3000-3500K CW 4000-4500K D 6000-6500K
Input Voltage	100-277V	100-277V
Life Hours	50,000	50,000
Dimensions	Medium (MD) 5" x 5.6" Mogul (MG) 5" x 6.4"	Medium (MD) 5" x 5.6" Mogul (MG) 5" x 6.4"

ORDERING CODE CONFIGURATION:

LED(Watts)(Color Temp)(Base)-DOME

Example: LED20W 3000-3500K Medium Base = LED20WWMD-DOME

Recommended minimum 11" diameter spacing in enclosed fixtures





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Corncob Dome LED High Wattage



MODEL	LED40W-DOME	LED50W-DOME	LED60W-DOME
Wattage	40W	50W	60W
Beam Angle	360 Degree	360 Degree	360 Degree
Light Source Count	190 LEDs	260 LEDs	270 LEDs
Lamp Base	Medium (MD) or Mogul (MG)	Medium (MD) or Mogul (MG)	Medium (MD) or Mogul (MG)
Power Usage	40-45W +/-10%	50-55W +/-10%	60-65W +/-10%
Luminous Flux	6300lm	7711lm	9150lm
Color Temperature	WW 3000-3500K CW 4000-4500K D 6000-6500K	WW 3000-3500K CW 4000-4500K D 6000-6500K	WW 3000-3500K CW 4000-4500K D 6000-6500K
Input Voltage	100-277V	100-277V	100-277V
Life Hours	50,000	50,000	50,000
Dimensions	Medium (MD) 5" x 5.6" Mogul (MG) 5" x 6.4"	Medium (MD) 5" x 5.6" Mogul (MG) 5" x 6.4"	Medium (MD) 5" x 5.6" Mogul (MG) 5" x 6.4"

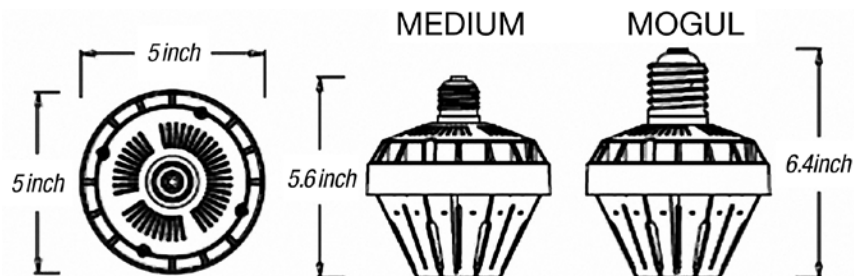
These models have an internal cooling fan.

ORDERING CODE CONFIGURATION:

LED(Watts)(Color Temp)(Base)-DOME

Example: LED40W 3000-3500K Medium Base = LED40WWMD-DOME

Recommended minimum 11" diameter spacing in enclosed fixtures



LED CFL Types



Aamsco can provide a Corncob LED with Medium and 4-pin bases. These self-ballasted LEDs can be used in place of CFL lamps; simply bypass the existing ballast when installing.

Main Features:

- Fast turn on; no warm-up or cold start problems
- Estimated life hours: >50,000
- Sturdy PCB housing
- 80% more energy saving compared with conventional CFLs and incandescent lamps
- >85 CRI with great directionality
- 120 lumens per watt
- Universal burning positions

Specifications:

- Operating voltage: 100-277V
- Frequency range: 50-60hz
- Color Temperatures: WW3000-3500K, CW4000-4500K, D6000-6500K
- Integrated Heat-Sink Design
- 2 year warranty
- Not for use on a dimmer or remote controls
- For use in open or enclosed fixtures***

***In enclosed fixtures, ensure the lamp has enough space for heat dissipation. This will ensure lumen maintenance and extend its working life. When products are used in outdoor fixtures, ensure the space is waterproof and well ventilated. If there is a ballast in the existing fixture, simply disconnect or bypass when installing Corncob LED retrofit lamps.

Commercial – Hospitality – Retail – Residential – Custom

AAMSCO LIGHTING, INC.

100 Lamp Light Circle | Summerville, SC 29483

Phone 843-278-0000 | Fax 843-278-0001 | www.aamsco.com

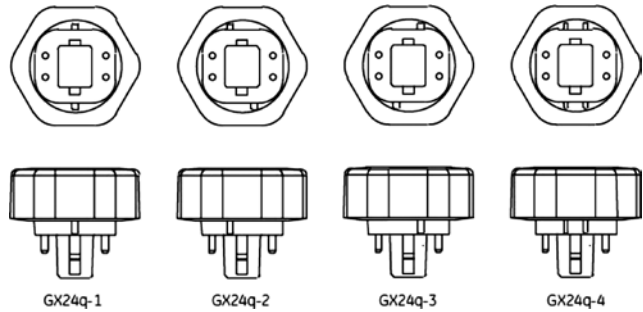




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LED-GX24Q

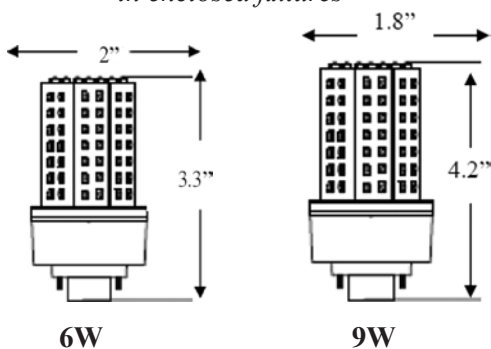
Aamsco can provide a Corncob LED with GX24Q base to take the place of a 4 pin CFL. These self-ballasted LEDs can be used in place of CFL lamps; simply bypass the existing ballast when installing.



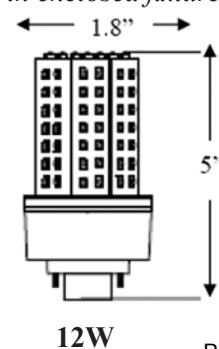
MODEL	LED6W-GX24Q	LED9W-GX24Q	LED12W-GX24Q
Wattage	6W	9W	12W
Beam Angle	360 Degree	360 Degree	360 Degree
Light Source Count	133 LEDs	140 LEDs	189 LEDs
Lamp Base	GX24Q	GX24Q	GX24Q
Power Consumption	8W +/-10%	10W +/-10%	13W +/-10%
Luminous Flux	720lm	1080lm	1440lm
Color Temperature	WW 3000-3500K CW 4000-4500K D 6000-6500K	WW 3000-3500K CW 4000-4500K D 6000-6500K	WW 3000-3500K CW 4000-4500K D 6000-6500K
Input Voltage	100-277V	100-277V	100-277V
Life Hours	50,000	50,000	50,000
Dimensions	2" x 3.3"	1.8" x 4.2"	1.8" x 5"

ORDERING NUMBER CONFIGURATION:
 LED(WATTS)(COLOR TEMP)-GX24Q
 Example: LED12W 3000-3500K=LED12WW-GX24Q

*Recommended minimum 6" diameter spacing
 in enclosed fixtures*



*Recommended minimum 8" diameter spacing
 in enclosed fixtures*

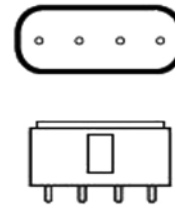




AAMSCO LIGHTING, INC.

100 Lamp Light Circle | Summerville, SC 29483
 Phone 843-278-0000 | Fax 843-278-0001 | www.aamsco.com

Corncob CFL 2G11



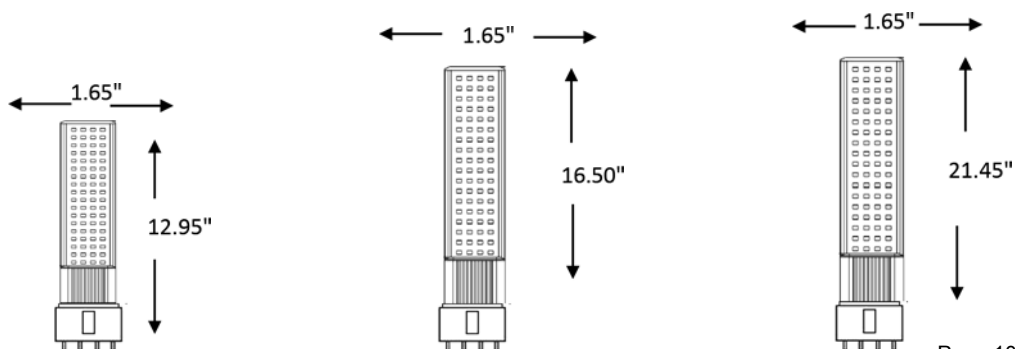
MODEL	LED12W-2G11	LED15W-2G11	LED18W-2G11	LED24W-2G11
Wattage	12W	15W	18W	24W
Beam Angle	180 Degree	180 Degree	180 Degree	180 Degree
Light Source Count	60 LEDs	72 LEDs	96 LEDs	120 LEDs
Lamp Base	2G11	2G11	2G11	2G11
Luminous Flux	1080lm	1350lm	1620lm	2160lm
Color Temperature	WW 3000-3500K CW 4000-4500K D 6000-6500K	WW 3000-3500K CW 4000-4500K D 6000-6500K	WW 3000-3500K CW 4000-4500K D 6000-6500K	WW 3000-3500K CW 4000-4500K D 6000-6500K
Input Voltage	100-277V	100-277V	100-277V	100-277V
Life Hours	50,000	50,000	50,000	50,000
Dimensions	1.65" x 12.95"	1.65" x 16.50"	1.65" x 21.45"	1.65" x 21.45"

ORDERING NUMBER CONFIGURATION:

LED(WATTS)(COLOR TEMP)-2G11

Example: LED18W 3000-3500K=LED18WW-2G11

Not recommended for enclosed fixtures



Flat Panel LED



Introducing the LED Flat Panel retrofit designed with a large, radiating area to illuminate larger spaces.

Main Features:

- Built in surge protection with automatic shut off
- Equipped with overheating protection. Automatically reduces to ½ power
- Fast turn on; no warm up or cold start problems
- Estimated Life hours >50,000
- Sturdy PCB housing
- 80% more energy savings compared with conventional CFL or HID lamps
- Optional steel support wires for safe ceiling mount
- Cylinder available in silver or black
- Optional opaque or transparent cover available

Specifications:

- Operating voltage: 100-280V
- Frequency range: 50-60hz
- Color temperatures: WW 3000-3500K, CW 4000-4500K, D 6000-6500K
- 7 year warranty*
- Not for use on a dimmer or remote controls
- For use in open or enclosed fixtures***

***In enclosed fixtures, ensure the lamp has enough space for heat dissipation. This will ensure lumen maintenance and extend its working life. When products are used in outdoor fixtures, ensure the space is waterproof and well ventilated. If there is ballast in the existing fixture, simply disconnect or bypass when installing Corncob LED retrofit lamps.

Commercial – Hospitality – Retail – Residential – Custom

AAMSCO LIGHTING, INC.

100 Lamp Light Circle | Summerville, SC 29483

Phone 843-278-0000 | Fax 843-278-0001 | www.aamsco.com





Flat Panel LED

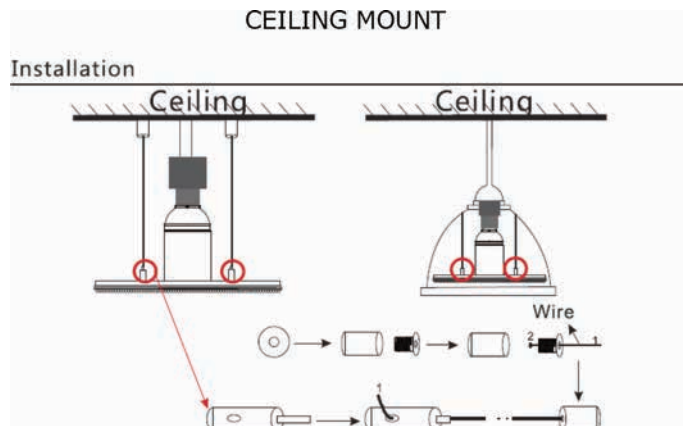
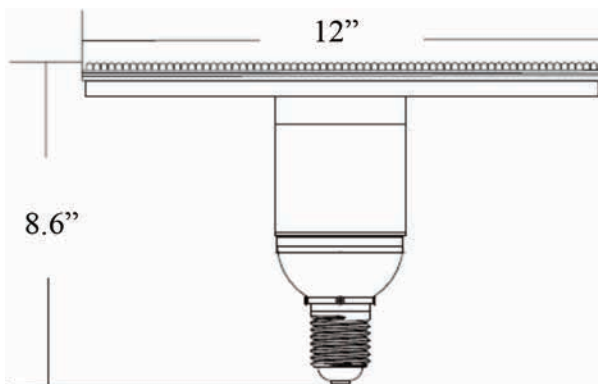


MODEL	LED40-PANEL	LED60-PANEL	LED80-PANEL
Wattage	40W	60W	80W
Beam Angle	120 Degree	120 Degree	120 Degree
Light Source Count	140 LEDs	200 LEDs	300 LEDs
Lamp Base	Mogul (MG)	Mogul (MG)	Mogul (MG)
Power Usage	43W +/-10%	67W +/-10%	80W +/-10%
Luminous Flux	4200lm	5800lm	8300lm
Color Temp	WW 3000-3500K CW 4000-4500K D 6000-6500K	WW 3000-3500K CW 4000-4500K D 6000-6500K	WW 3000-3500K CW 4000-4500K D 6000-6500K
Input Voltage	100-280V	100-280V	100-280V
Life Hours	50,000	50,000	50,000
Dimensions	12" x 8.6"	12" x 8.6"	12" x 8.6"

ORDER CODE CONFIGURATION: LED(Watt)(Color temp)-PANEL

Example: LED40 PANEL 3000-3500K = LED40WW-PANEL

Optional cover available in clear or translucent finish.











Commercial – Hospitality – Retail – Residential – Custom

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SUGGESTED REPLACEMENT GUIDE FOR LED CORNCOB

						
	LED CORNCOB	CORNCOB MINI	LED 2G11	LED GX24Q	CORNCOB DOME	LED PANEL
Incandescent						
60 Watt-890lm	N/A	6 Watt	N/A	6 Watt	N/A	N/A
75 Watt-1150lm	N/A	9 Watt	N/A	9 Watt	N/A	N/A
100 Watt-1600lm	15 Watt	12 Watt	12 Watt	12 Watt	20 Watt	N/A
150 Watt-2700lm	20 Watt	N/A	15 Watt	N/A	20 Watt	N/A
200 Watt-2900lm	30 Watt	N/A	18 Watt	N/A	20 Watt	N/A
300 Watt-5000lm	60 Watt	N/A	24 Watt	N/A	30 Watt	N/A
500 Watt-8700lm	80 Watt	N/A	N/A	N/A	40 Watt	N/A
Metal Halide						
70 Watt	20 Watt	N/A	N/A	N/A	20 Watt	N/A
100 Watt	30 Watt	N/A	12 Watt	N/A	30 Watt	N/A
150 Watt	40 Watt	N/A	15 Watt	N/A	30 Watt	40 Watt
175 Watt	60 Watt	N/A	18 Watt	N/A	40 Watt	60 Watt
250 Watt	80 Watt	N/A	24 Watt	N/A	60 Watt	80 Watt
400 Watt	100 Watt 120 Watt	N/A	N/A	N/A	80 Watt	N/A
100 Watt	180 Watt 200 Watt	N/A	N/A	N/A	80 Watt	N/A
High Pressure Sodium						
50 Watt	15 Watt	N/A	N/A	N/A	N/A	N/A
70 Watt	20 Watt	N/A	N/A	N/A	20 Watt	N/A
100 Watt	30 Watt	N/A	12 Watt	N/A	30 Watt	40 Watt
150 Watt	40 Watt	N/A	18 Watt	N/A	30 Watt	60 Watt
250 Watt	60 Watt	N/A	24 Watt	N/A	60 Watt	80 Watt
400 Watt	80 Watt	N/A	N/A	N/A	80 Watt	N/A
Mercury Vapor						
80 Watt	20 Watt	N/A	N/A	N/A	20 Watt	N/A
125 Watt	40 Watt	N/A	12 Watt	N/A	30 Watt	40 Watt
175 Watt	60 Watt	N/A	18 Watt	N/A	40 Watt	60 Watt
250 Watt	100 Watt	N/A	24 Watt	N/A	60 Watt	80 Watt
400 Watt	120 Watt	N/A	N/A	N/A	80 Watt	N/A
CFL						
7 Watt-400lm	N/A	N/A	N/A	N/A	N/A	N/A
13 Watt-825lm	N/A	6 Watt	N/A	6 Watt	N/A	N/A
18 Watt-1250lm	N/A	9 Watt	N/A	9 Watt	N/A	N/A
24-26 Watt-1800lm	15 Watt	12 Watt	12 Watt	12 Watt	N/A	N/A
32-36 Watt-2500lm	20 Watt	N/A	18 Watt	N/A	N/A	N/A
42 Watt-3200lm	30 Watt	N/A	12 Watt	N/A	N/A	N/A
55 Watt-4300lm	40 Watt	N/A	N/A	N/A	N/A	N/A
80 Watt-6000lm	60 Watt	N/A	N/A	N/A	N/A	40 Watt
105 Watt-6900lm	60 Watt	N/A	N/A	N/A	N/A	60 Watt
150 Watt-8200lm	80 Watt	N/A	N/A	N/A	N/A	80 Watt

*Please note that this information is only intended to be used as a guideline. It is recommended that the LED CornCob be field tested to determine a suitable light source for your application.

VXLED26NDG



High performance LED Vaporproof fixture. A classic design with cutting edge LED technology. Comes with die cast guard and frosted globe.

Color: Natural

Weight: 4.4 lbs

Project:	Type:
Prepared By:	Date:

Driver Info		LED Info	
Type:	Constant Current	Watts:	26W
120V:	0.25A	Color Temp:	4000K
208V:	0.14A	Color Accuracy:	82 CRI
240V:	0.13A	L70 Lifespan:	100000
277V:	0.11A	Lumens:	1735
Input Watts:	27W	Efficacy:	65 LPW
Efficiency:	98%		

Technical Specifications

Listings

UL Listing:

Suitable for wet locations as downlight

IESNA LM-79 & LM-80 Testing:

RAB LED luminaires have been tested by an independent laboratory in accordance with IESNA LM-79 and LM-80, and have received the Department of Energy "Lighting Facts" label

LED Characteristics

Lifespan:

100,000-hour LED lifespan based on IES LM-80 results and TM-21 calculations

LED:

Multi-chip 26W high-output, long-life LED

Color Temperature:

4000K

Color Consistency:

3-step MacAdam Ellipse binning to achieve consistent fixture-to-fixture color

Color Stability:

LED color temperature is warrantied to shift no more than 200K in CCT over a 5 year period

Color Uniformity:

RAB's range of CCT (Correlated Color Temperature) follows the guidelines of the American National Standard for Specifications for the Chromaticity of Solid State Lighting (SSL) Products, ANSI C38.377-2011.

Construction

Globes and Guards:

Vaporproof LEDs are compatible with RAB Globes and Guards

Cold Weather Starting:

Minimum starting temperature is -40°C (-40°F)

Ambient Temperature:

Suitable For use in 40°C (104°F) ambient temperatures

Housing:

All die-cast aluminum construction

Gaskets:

High temperature silicone

Finish:

Natural shot blasted aluminum

Mounting:

(3) 1/2" NPS conduit entry points

Guard and Globe:

Shot blasted guard with frosted globe

Green Technology:

Mercury and UV-free. RoHS compliant components. Polyester powder coat finish formulated without the use of VOCs or toxic heavy metals.

Electrical

Driver:

Constant Current, 100V-277V, 50/60 Hz, 0.48 Amp, Power Factor 97.9%.

Other

Patents:

The design of the LVAPOR is protected by the following patents US D653,795; D651738 CN ZL201130028359.7; ZL201130028360.X, TW pat. pending MX 35699; pat. pending CA.

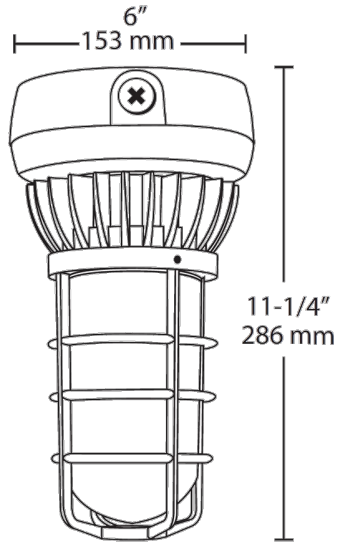
Warranty:

RAB warrants that our LED products will be free from defects in materials and workmanship for a period of five (5) years from the date of delivery to the end user, including coverage of light output, color stability, driver performance and fixture finish.

Buy American Act Compliance:

RAB values USA manufacturing! Upon request, RAB may be able to manufacture this product to be compliant with the Buy American Act (BAA). Please contact customer service to request a quote for the product to be made BAA compliant.

Dimensions



Features

- Vaporproof LED Ceiling Mount
- Superior Thermal Management (Patent Pending)
- All Die-Cast Aluminum Construction
- 100,000 hour life based on LM-80 tests
- Thermal Shock-Resistant Frosted Glass Globe
- Traditional Look, Cutting-Edge Technology
- 5-year LED warranty



Low-profile vandal-resistant fixture covers the footprint of most traditional canopy lights. Available in flat or drop lens with frosted and unfrosted options.

Color: Bronze

Weight: 12.0 lbs

Project:	Type:
Prepared By:	Date:

Driver Info		LED Info	
Type:	Constant Current	Watts:	20W
120V:	0.30A	Color Temp:	4000K
208V:	0.20A	Color Accuracy:	78 CRI
240V:	0.17A	L70 Lifespan:	100000
277V:	0.15A	Lumens:	2811
Input Watts:	23W	Efficacy:	124 LPW
Efficiency:	88%		

Technical Specifications

Listings

UL Listing:

Suitable for Wet Locations. Covered Ceiling Mount Only.

DLC Listed:

This product is on the Design Lights Consortium (DLC) Qualified Products List and is eligible for rebates from DLC Member Utilities.

DLC Product Code: PCGZYNJZ

IESNA LM-79 & LM-80 Testing:

RAB LED luminaires have been tested by an independent laboratory in accordance with IESNA LM-79 and LM-80, and have received the Department of Energy "Lighting Facts" label

Electrical

Driver:

Class 2, Constant Current, 100-277V, 50-60Hz, 500mA

THD:

6.1% at 120V, 10.1% at 277V

Construction

Maximum Ambient Temperature:

Suitable for use in 40°C (104°F) ambient temperatures

Cold Weather Starting:

Minimum starting temperature is -40°C (-40°F)

Housing:

Die-cast aluminum housing and lens frame with (4) 1/2" NPS side conduit entries and weatherproof rear wire plug and access plate

Mounting:

Ceiling mount to recessed junction with knockout template or directly to ceiling surface, utilizing side conduit entry points

IP Rating:

Ingress Protection rating of IP66 for dust and water

Lens:

Vandal-resistant polycarbonate textured opaque for low glare flat lens

Reflector:

Semi-specular, vacuum-metalized polycarbonate

Gaskets:

High-temperature silicone gaskets

Finish:

Our environmentally friendly polyester powder coatings are formulated for high-durability and long-lasting color

Green Technology:

Mercury and UV-free. RoHS compliant components. Polyester powder coat finish formulated without the use of VOCs or toxic heavy metals.

LED Characteristics

LEDs:

Discreet LEDs on PCB board

Color Stability:

RAB LEDs exceed industry standards for chromatic stability

Color Uniformity:

RAB's range of CCT (Correlated Color Temperature) follows the guidelines of the American National Standard for Specifications for the Chromaticity of Solid State Lighting (SSL) Products, ANSI C78.377-2017.

Other

Warranty:

RAB warrants that our LED products will be free from defects in materials and workmanship for a period of five (5) years from the date of delivery to the end user, including coverage of light output, color stability, driver performance and fixture finish. See our full warranty

Replacement:

Replaces up to 70W Metal Halide

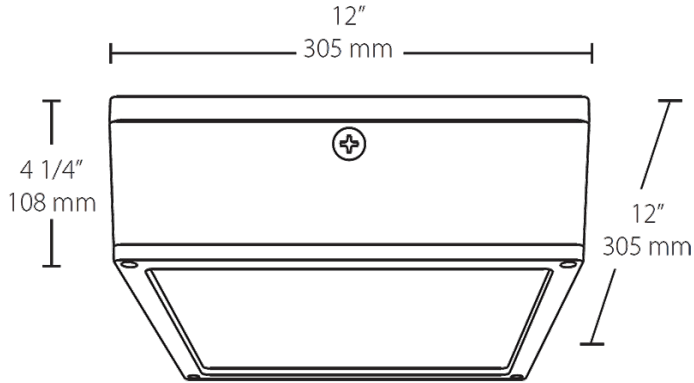
FTC Country of Origin:

This product was assembled in the USA by RAB using imported components

Buy American Act Compliance:

This product complies with the Buy American Act

Dimensions



Features

- Fits the footprint of older canopy lights
- Vandal resistant and UV resistant lens
- Ultra-high efficiency
- Clean, contemporary, low-profile design
- Available with drop lens or flat lens
- IP66 rated, keeps dust, bugs and water out
- Photo and motion sensor options available

Ordering Matrix

Family	Wattage	Color Temp	Lens	Motion Sensor & Finish	Driver Options	Photocell Options
VANLED						
	10 = 10W	Blank = 5000K (Cool)	Blank = Drop lens	Blank = Bronze, no sensor W = White, no sensor	Blank = On/Off driver /D10 = 0-10V Dimming (not available for 10w)	/PCS = 120V Swivel
	20 = 20W	N = 4000K (Neutral)	F = Flat lens	MS = Bronze w/ SMS500 mini-sensor (not available w/ D10 models)	/480 = 480V (not available for 10W or 20W)	/PCS2 = 277V Swivel
	40 = 40W	Y = 3000K (Warm)	FR = Frosted Drop Lens FFR = Frosted Flat Lens	MSW = White w/ SMS500 mini-sensor (not available w/ D10 models)	/480/D10 = 480V w/ 0-10V dimming (not available for 10W or 20W)	/PCS4 = 480V Swivel
	52 = 52W					
	65 = 65W					
	75 = 75W					

FFLED39N USA



Rectangular shaped LED floodlight designed to replace 150W Metal Halide. Patent Pending airflow technology ensures long LED and driver lifespan. Use for building facade lighting, sign lighting, LED landscape lighting and instant-on security lighting.

Color: Bronze

Weight: 12.5 lbs

Project:

Type:

Prepared By:

Date:

Driver Info

Type:	Constant Current
120V:	0.35A
208V:	0.20A
240V:	0.18A
277V:	0.15A
Input Watts:	42W
Efficiency:	92%

LED Info

Watts:	39W
Color Temp:	4000K
Color Accuracy:	71 CRI
L70 Lifespan:	100000
Lumens:	5651
Efficacy:	134 LPW

Technical Specifications

LED Characteristics

Lifespan:

100,000-hour LED lifespan based on IES LM-80 results and TM-21 calculations

LEDs:

Two multi-chip, 26Watt high performance LEDs

Color Consistency:

3-step MacAdam Ellipse binning to achieve consistent fixture-to-fixture color

Color Stability:

LED color temperature is warranted to shift no more than 200K in CCT over a 5 year period

Color Uniformity:

RAB's range of CCT (Correlated Color Temperature) follows the guidelines of the American National Standard for (SSL) Products, ANSI C78.377-2017.

Listings

DLC Listed:

This product is on the Design Lights Consortium (DLC) Qualified Products List and is eligible for rebates from DLC Member Utilities.
DLC Product Code: P0000173J

IESNA LM-79 & LM-80 Testing:

RAB LED luminaires have been tested by an independent laboratory in accordance with IESNA LM-79 and LM-80, and have received the Department of Energy "Lighting Facts" label

UL Listing:

Suitable For Wet Locations. Suitable for ground mounting.

Construction

IP Rating:

Ingress Protection rating of IP66 for dust and water

Ambient Temperature:

Suitable For use in 40°C (104°F) ambient temperatures

Cold Weather Starting:

Minimum starting temperature is -40°C (-40°F)

Thermal Management Housing:

Superior heat sinking with external Air-Flow fins

Mounting:

Heavy-duty mounting arm with "O" ring seal & stainless steel screw

Effective Projected Area:

EPA = 0.65

Reflector:

Specular vacuum-metallized polycarbonate

Gaskets:

High-temperature silicone gaskets

Finish:

Formulated for high-durability and long lasting color

Green Technology:

Mercury and UV-free. RoHS compliant components. Polyester powder coat finish formulated without the use of VOCs or toxic heavy metals.

Threaded Size:

1/2" threaded arm

Optical

NEMA Type:

NEMA Beam Spread of 7H x 6V

Electrical

Driver:

Constant Current, Class 2, 1050mA, 100-277V, 50/60Hz, 0.6A, Power Factor 99%

Surge Protection:

4kV

Other

Warranty:

RAB warrants that our LED products will be free from defects in materials and workmanship for a period of five (5) years from the date of delivery to the end user, including coverage of light output, color stability, driver performance and fixture finish.

Patents:

The FFLED design is protected by U.S. Pat. D643,147, Canada Pat. 140798, China Pat. ZL201130171304.1, Mexico Pat. 36757 and pending patent in Taiwan.

American Bureau of Shipping (ABS) :

For use on Mobile Offshore Drilling Units (MODU) and shipping vessels

Equivalency:

Equivalent to 150W Metal Halide

Technical Specifications (continued)

Other _____

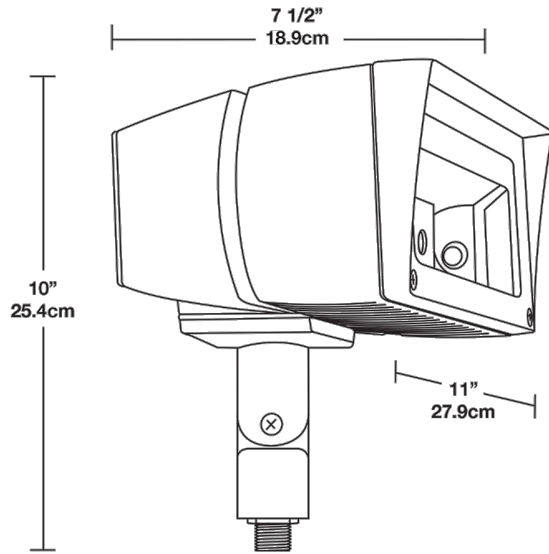
Buy American Act Compliance:

FTC Country of Origin:

This product complies with the Buy American Act

This product was assembled in the USA by RAB using imported components

Dimensions



Features

- Ultra efficient LED and optical design
- Replaces 150W MH floodlights
- 100,000 hour life based on LM-80 tests
- Air-flow technology heatsink
- 5-year warranty

Ordering Matrix

Family	Wattage	Mounting	Color Temp	NEMA Type	Finish	Driver	Photocell Options
FFLED	39		N				
	80 = 80W	Blank = Swivel Arm	Blank = 5000K (Cool)	Blank = 7H x 6V	Blank = Bronze	Blank = On/Off /D10 = 0-10V Dimming	Blank = No Option /PC = 120V Photocell
	52 = 52W	SF = Slipfitter T = Trunnion	N = 4000K (Neutral)	B55 = 5H x 5V B44 = 4H x 4V	W = White	/480 = 480V On/Off (not available for 80W models)	/PC2 = 277V Photocell /PCS = 120V Swivel Photocell
	39 = 39W		Y = 3000K (Warm)				/PCS2 = 277V Swivel Photocell
	26 = 26W						/PCS4 = 480V Swivel Photocell

WPLED3T105N/PCT



Ultra high output, high efficiency 105 Watt LED wallpacks. Patent Pending airflow technology ensures long LED and driver lifespan. 5 Year Warranty.

Color: Bronze

Weight: 34.8 lbs

Project:	Type:
Prepared By:	Date:

Driver Info		LED Info	
Type:	Constant Current	Watts:	105W
120V:	0.89A	Color Temp:	4000K
208V:	0.58A	Color Accuracy:	72 CRI
240V:	0.50A	L70 Lifespan:	100000
277V:	0.44A	Lumens:	12042
Input Watts:	108W	Efficacy:	112 LPW
Efficiency:	97%		

Technical Specifications

Electrical

Photocell:

120-277V twistlock photocell included. Photocell is compatible with 120-277V.

Drivers:

Two Drivers, Constant Current, Class 2, 1400mA, 100-277V, 50/60Hz, 0.8A, Power Factor 99%

THD:

7.9% at 120V, 16.8% at 277V

Listings

DLC Listed:

This product is on the Design Lights Consortium (DLC) Qualified Products List and is eligible for rebates from DLC Member Utilities.

DLC Product Code: P0000179C

UL Listing:

Suitable for wet locations

IESNA LM-79 & LM-80 Testing:

RAB LED luminaires have been tested by an independent laboratory in accordance with IESNA LM-79 and LM-80, and have been received the Department of Energy "Lighting Facts" label

Dark Sky Approved:

The International Dark Sky Association has approved this product as a full cutoff, fully shielded luminaire

LED Characteristics

Lifespan:

100,000-hour LED lifespan based on IES LM-80 results and TM-21 calculations

LEDs:

Multi-chip, high-output, long-life LEDs

Color Consistency:

3-step MacAdam Ellipse binning to achieve consistent fixture-to-fixture color

Color Stability:

LED color temperature is warranted to shift no more than 200K in CCT over a 5 year period

Color Uniformity:

RAB's range of CCT (Correlated Color Temperature) follows the guidelines of the American National Standard for Specifications for the Chromaticity of Solid State Lighting (SSL) Products, ANSI C78.377-2017.

Construction

IES Classification:

The Type III distribution is ideal for roadway, general parking and other area lighting applications where a larger pool of lighting is required. It is intended to be located near the side of the area, allowing the light to project outward and fill the area.

IP Rating:

Ingress Protection rating of IP66 for dust and water

Maximum Ambient Temperature:

Suitable for use in 40°C (104°F) ambient temperatures

Cold Weather Starting:

Minimum starting temperature is -40°C (-40°F)

Thermal Management:

Superior thermal management with external "Air-Flow" fins

Housing:

Die-cast aluminum housing, lens frame and mounting arm

Mounting:

Heavy-duty mounting arm with "O" ring seal & stainless steel screws

Reflector:

Specular vacuum-metallized polycarbonate

Gaskets:

High-temperature silicone gaskets

Finish:

Formulated for high-durability and long lasting color

Green Technology:

Mercury and UV-free. RoHS compliant components. Polyester powder coat finish formulated without the use of VOCs or toxic heavy metals.

For use on LEED Buildings:

IDA Dark Sky Approval means that this fixture can be used to achieve LEED Credits for Light Pollution Reduction

Other

Warranty:

RAB warrants that our LED products will be free from defects in materials and workmanship for a period of five (5) years from the date of delivery to the end user, including coverage of light output, color stability, driver performance and fixture finish.

Patents:

The design of WPLED105 is protected by patents pending in US, Canada, China, Taiwan and Mexico

Technical Specifications (continued)

Other

Buy American Act Compliance:

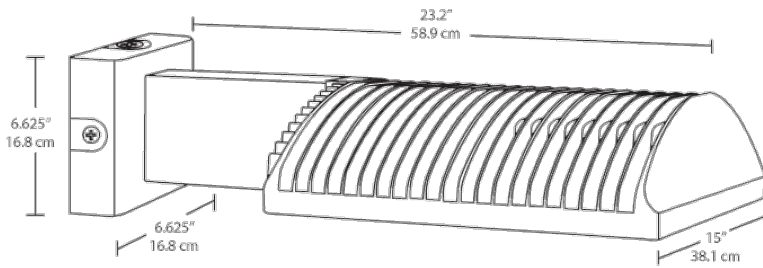
RAB values USA manufacturing! Upon request, RAB may be able to manufacture this product to be compliant with the Buy American Act (BAA). Please contact customer service to request a quote for the product to be made BAA compliant.

Optical

BUG Rating:

B1 U0 G2

Dimensions



Features

- High output, high efficiency LED
- Maintains 70% of initial lumens at 100,000 hours
- Weatherproof high temperature silicone gaskets
- Superior heat sinking with die cast aluminum housing and external fins
- 100 up to 277 Volts
- 5-year warranty

Ordering Matrix

Family	Distribution	Wattage	Color Temp	Mount	Finish	Voltage	Photocell	Dimming	Sensor	Bi-Level
WPLED										
	2T = Type II 3T = Type III 4T = Type IV	105 = 105W	Blank = 5000K (Cool) Y = 3000K (Warm) N = 4000K (Neutral)	Blank = Standard FX = Flat Wall	Blank = Bronze W = White	Blank = 120-277V /480 = 480V	Blank = No Photocell /PC = 120V Button /PC2 = 277 Button /PCS = 120V Swivel /PCS2 = 277V Swivel /PCT = 120-277V Twistlock /PCS4 = 480V Swivel /PCT4 = 480V Twistlock	Blank = No Dimming /D10 = Dimmable	/WS2 = Multi-Level Motion Sensor (Only available for 120-277V with /D10 for 105W)	Blank = No Bi-Level /BL = Bi-Level

WPLED26N USA



LED 26W Wallpacks. Patent Pending thermal management system. 100,000 hour L70 lifespan. 5 Year Warranty.

Color: Bronze

Weight: 7.2 lbs

Project:	Type:
Prepared By:	Date:

Driver Info		LED Info	
Type:	Constant Current	Watts:	26W
120V:	0.26A	Color Temp:	4000K
208V:	0.16A	Color Accuracy:	71 CRI
240V:	0.14A	L70 Lifespan:	100000
277V:	0.12A	Lumens:	3468
Input Watts:	29W	Efficacy:	118 LPW
Efficiency:	88%		

Technical Specifications

Listings

UL Listing:

Suitable for wet locations. Suitable for mounting within 1.2m (4ft) of the ground.

DLC Listed:

This product is on the Design Lights Consortium (DLC) Qualified Products List and is eligible for rebates from DLC Member Utilities.

DLC Product Code: P0000175P

Dark Sky Approved:

The International Dark Sky Association has approved this product as a full cutoff, fully shielded luminaire

LED Characteristics

Lifespan:

100,000-hour LED lifespan based on IES LM-80 results and TM-21 calculations

Color Consistency:

3-step MacAdam Ellipse binning to achieve consistent fixture-to-fixture color

Color Stability:

LED color temperature is warranted to shift no more than 200K in CCT over a 5 year period

Color Uniformity:

RAB's range of CCT (Correlated Color Temperature) follows the guidelines of the American National Standard for Specifications for the Chromaticity of Solid State Lighting (SSL) Products, ANSI C78.377-2017.

Construction

IP Rating:

Ingress Protection rating of IP66 for dust and water

Finish:

Formulated for high-durability and long lasting color

Ambient Temperature:

Suitable for use in 40°C (104°F) ambient temperatures

Cold Weather Starting:

Minimum starting temperature is -40°C (-40°F)

Green Technology:

Mercury and UV-free. RoHS compliant components. Polyester powder coat finish formulated without the use of VOCs or toxic heavy metals.

For use on LEED Buildings:

IDA Dark Sky Approval means that this fixture can be used to achieve LEED Credits for Light Pollution Reduction

Electrical

Driver:

Multi-chip 26W high output long life LED Driver Constant Current, 720mA, Class 2, 6kV Surge Protection, 100V-277V, 50-60 Hz, 100-240V.4 Amps.

Other

Patents:

The WPLED design is protected by U.S. Pat. D634878, Canada Pat 134878, China Pat. CN301649064S.

Equivalency:

Equivalent to 175W Metal Halide

FTC Country of Origin:

This product was assembled in the USA by RAB using imported components

Buy American Act Compliance:

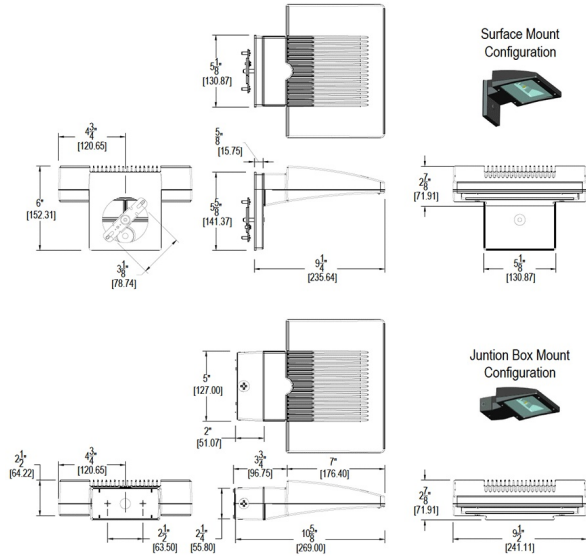
This product complies with the Buy American Act

Optical

BUG Rating:

B1 U0 G0

Dimensions



Features

- High performance LED light engine
- Maintains 70% of initial lumens at 100,000 hours
- Weatherproof high temperature silicone gaskets
- Superior heat sinking with die cast aluminum housing and external fins
- 100 up to 277 Volts
- 5-year warranty

Ordering Matrix

Family	Wattage	Color Temp	Sensor	Finish	Photocell	Dimming
WPLED	26 = 26W	Blank = 5000K (Cool) Y = 3000K (Warm) N = 4000K (Neutral)	Blank = No Sensor MS = Mini Sensor	Blank = Bronze W = White	Blank = No Photocell /PC = 120V Button /PCS = 120V Swivel /PC2 = 277V Button	Blank = No Dimming /D10 = Dimmable

WPLED2T50N/PCT



Ultra high output, high efficiency 50 Watt LED wallpacks. Patent Pending airflow technology ensures long LED and driver lifespan. 5 Year Warranty.

Color: Bronze

Weight: 34.8 lbs

Project:	Type:
Prepared By:	Date:

Driver Info		LED Info	
Type:	Constant Current	Watts:	50W
120V:	0.46A	Color Temp:	4000K
208V:	0.27A	Color Accuracy:	72 CRI
240V:	0.23A	L70 Lifespan:	100000
277V:	0.20A	Lumens:	6824
Input Watts:	55W	Efficacy:	123 LPW
Efficiency:	90%		

Technical Specifications

Electrical

Photocell:

120-277V twistlock photocell included. Photocell is compatible with 120-277V.

Driver:

Constant Current, Class 2, 1400mA, 100-277V, 50-60Hz, 0.8A, Power Factor 99%

Surge Protection:

6kV surge suppression protection tested in accordance with IEEE/ANSI C62.41.2.

THD:

6.1% at 120V, 9.4% at 277V

Power Factor:

99.6% at 120V, 96% at 277V

Listings

DLC Listed:

This product is on the Design Lights Consortium (DLC) Qualified Products List and is eligible for rebates from DLC Member Utilities.
DLC Product Code: P00001790

UL Listing:

Suitable for wet locations as a downlight

IESNA LM-79 & IESNA LM-80 Testing:

RAB LED fixtures have been tested by an independent laboratory in accordance with IESNA LM-79 and 80, and have received the Department of Energy "Lighting Facts" label

Dark Sky Approved:

The International Dark Sky Association has approved this product as a full cutoff, fully shielded luminaire

LED Characteristics

Lifespan:

100,000-hour LED lifespan based on IES LM-80 results and TM-21 calculations

LEDs:

Multi-chip, high-output, long-life LEDs

Color Consistency:

3-step MacAdam Ellipse binning to achieve consistent fixture-to-fixture color

Color Stability:

LED color temperature is warrantied to shift no more than 200K in CCT over a 5 year period

Color Uniformity:

RAB's range of CCT (Correlated Color Temperature) follows the guidelines of the American National Standard for Specifications for the Chromaticity of Solid State Lighting (SSL) Products, ANSI C78.377-2017.

Construction

IES Classification:

The Type II distribution is ideal for wide walkways, on ramps and entrance roadways, bike paths and other long and narrow lighting applications. This type is meant for lighting larger areas and usually is located near the roadside. This type of lighting is commonly found on smaller side streets or jogging paths.

IP Rating:

Ingress Protection rating of IP66 for dust and water

Ambient Temperature:

Suitable For use in 40°C (104°F) ambient temperatures

Cold Weather Starting:

Minimum starting temperature is -40°C (-40°F)

Thermal Management:

Superior thermal management design with external Air-Flow fins provides maximum operational life, even in high ambient temperature environments

Housing:

Die cast aluminum housing, lens frame and mounting arm

Mounting:

Heavy-duty mounting arm with "O" ring seal & stainless steel screws

Reflector:

Specular vacuum-metallized polycarbonate

Gaskets:

High temperature silicone gaskets

Finish:

Formulated for high-durability and long lasting color

Green Technology:

Mercury and UV-free. RoHS compliant components. Polyester powder coat finish formulated without the use of VOCs or toxic heavy metals.

Other

Patents:

The WPLED™ design is protected by patents pending in the U.S., Canada, China, Taiwan and Mexico.

Technical Specifications (continued)

Other

Warranty:

RAB warrants that our LED products will be free from defects in materials and workmanship for a period of five (5) years from the date of delivery to the end user, including coverage of light output, color stability, driver performance and fixture finish.

Equivalency:

Replaces 200W Metal Halide

Buy American Act Compliance:

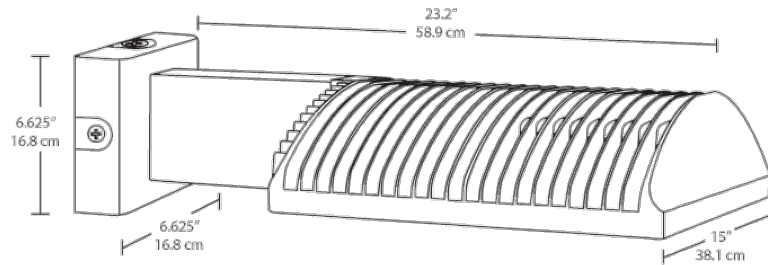
RAB values USA manufacturing! Upon request, RAB may be able to manufacture this product to be compliant with the Buy American Act (BAA). Please contact customer service to request a quote for the product to be made BAA compliant.

Optical

BUG Rating:

B1 U0 G1

Dimensions



Features

High output, high efficiency LED

Maintains 70% of initial lumens at 100,000 hours

Weatherproof high temperature silicone gaskets

Superior heat sinking with die cast aluminum housing and external fins

100 up to 277 Volts

5-year warranty

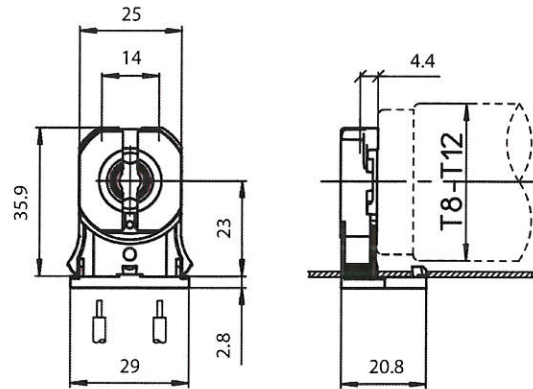
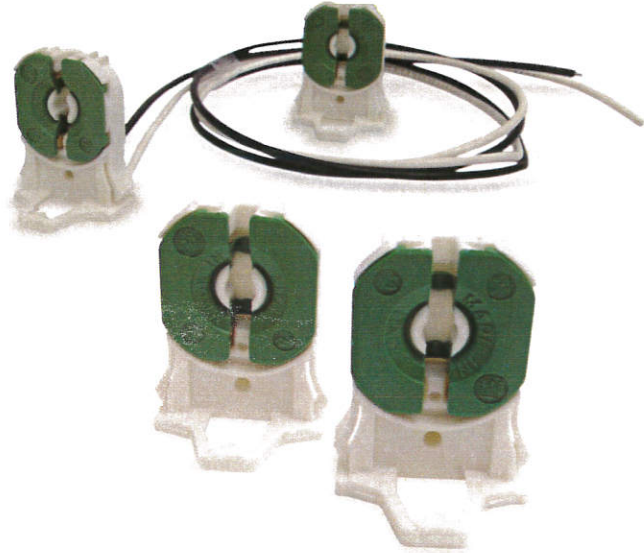
Ordering Matrix

Family	Distribution	Wattage	Color Temp	Mount	Finish	Voltage	Photocell	Dimming	Sensor	Bi-Level
WPLED										
	2T = Type II 3T = Type III 4T = Type IV	50 = 50W	Blank = 5000K (Cool) Y = 3000K (Warm) N = 4000K (Neutral)	Blank = Standard FX = Flat Wall	Blank = Bronze W = White	Blank = 120-277V /480 = 480V	Blank = No Photocell /PC = 120V Button /PC2 = 277 Button /PCS = 120V Swivel /PCS2 = 277V Swivel /PCT = 120- 277V Twistlock /PCS4 = 480V Swivel /PCT4 = 480V Twistlock	Blank = No Dimming /D10 = Dimmable	/WS2 = Multi-Level Motion Sensor (Only available for 120-277V with /D10 for 50W)	Blank = No Bi-Level /BL = Bi- Level

Product Specifications

Housing	White polycarbonate body
Rotor	PBT green
Contacts	Copper alloy
Net Weight	5.5 gram
Metal Plate Thickness	0.4-2
Lamp Center Height (From Bottom Of Metal Plate)	23 mm
Characteristics	Easy push through fitting; Push-wire terminals with 2 holes
Lamp Style	G13
Rated Current And Voltage	2A-500V
Wire	3 ft solid, 18 AWG, 600V, 105 deg, 1 x black and 1 x white (w/kit only)
Maximum Operating Temperature (IEC)	T140, Tm110
Impulse Withstand Category	II
UL/IP Protection	cUL listed, IP 20

Tombstone Lampholder (Socket) - For LED Tubes



NOTE: suitable for use in linear fluorescent fixtures for the purpose of retrofitting to energy focus TLED

MANUFACTURER: A.A.G. STUCCHI
 "We (A.A.G. STUCCHI) can conclude that this lampholder is suitable to be wired directly connected to line voltage up to 277V. All other installation conditions of the lampholders must remain as specified in the A.A.G. STUCCHI catalogue; datasheets and technical documentation."

TOMBSTONE LAMPHOLDER FOR LED TUBES ORDERING GUIDE

LEDFLSLH-G13NS-SBOG	Single lampholder, no wires
LEDFLSLH-G13NS-SNETGW	Pair of two (2) lamp holders; one (1) with 3' wires pre-attached

LED Corncob Retrofit Lamps

PREMIUM PLUS DESIGN

The Simplest LED Retrofit Around!



Main Features:

- No ballast necessary
- Fast turn on; no warm-up or cold start problems
- Estimated life hours: >50,000
- Sturdy PCB housing with internal cooling fan
- 80% more energy savings compared with conventional HID lamps, CFL, and incandescent bulbs
- >85 CRI with great directionality
- Up to 150 lumens per watt
- Universal burning positions
- Light Weight



Commercial – Hospitality – Retail – Residential – Custom

AAMSCO LIGHTING, INC.

100 Lamp Light Circle | Summerville, SC 29483

Phone 843-278-0000 | Fax 843-278-0001 | www.aamsco.com



Corncob LED



Aamsco supplies high quality LED retrofits to replace conventional HID & CFL lamps.

Main Features:

- Built in surge protection with automatic shut off
- Equipped with overheating protection. Automatically reduces to 1/2 power
- Aluminum fin heat sink & internal cooling fan allow for greater heat dissipation
- No ballast necessary. Fast turn on; no warm-up or cold start problems
- Estimated life hours: >50,000
- Sturdy PCB housing with internal cooling fan on 40W and higher
- 80% more energy saving compared with conventional HID, CFL, and incandescent lamps
- >85 CRI with great directionality
- 130 lumens per watt
- Universal burning positions

Specifications:

- Operating voltage: 100-277V & 480V
- Frequency range: 50-60hz
- Color Temperatures: WW3000-3500K, CW4000-4500K, D6000-6500K
- Integrated Heat-Sink Design
- 7 year warranty*
- UL, CE, DLC & ROHS CERTIFIED
- Not for use on a dimmer or remote controls
- For use in open or enclosed fixtures***

***In enclosed fixtures, ensure the lamp has enough space for heat dissipation. This will ensure lumen maintenance and extend its working life. When products are used in outdoor fixtures, ensure the space is waterproof and well ventilated. If there is a ballast in the existing fixture, simply disconnect or bypass when installing Corncob LED retrofit lamps.

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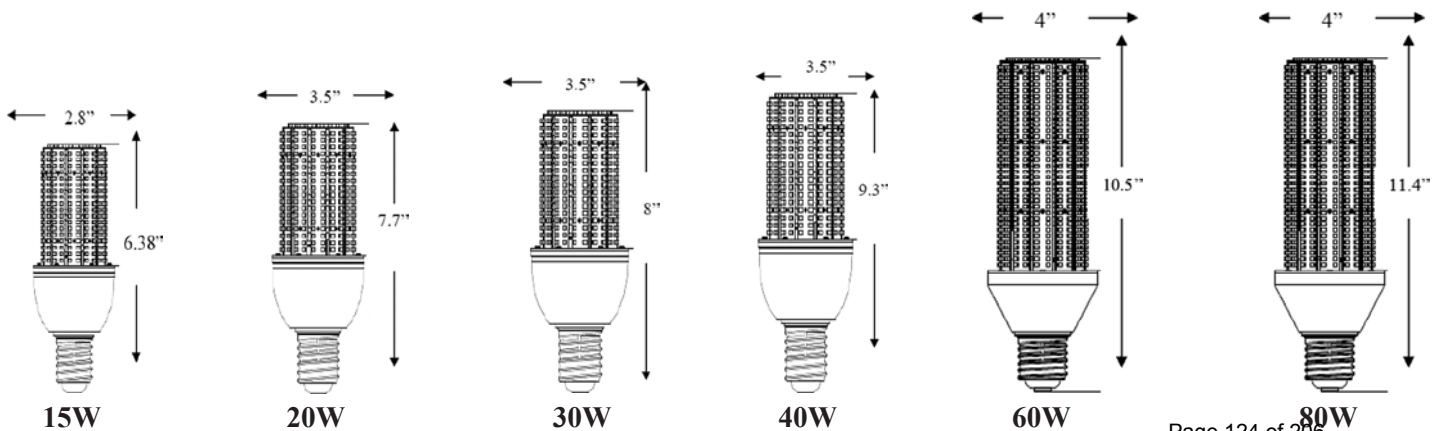
Corncob LED



MODEL	LED15	LED20	LED30	LED40	LED60	LED80
Wattage	15W	20W	30W	40W	60W	80W
Beam Angle	360 Degree	360 Degree	360 Degree	360 Degree	360 Degree	360 Degree
Light Source Count	216 LEDs	300 LEDs	486 LEDs	660 LEDs	900 LEDs	1160 LEDs
Lamp Base	Medium (MD) or Mogul (MG)	Medium (MD) or Mogul (MG)	Medium (MD) or Mogul (MG)	Medium (MD) or Mogul (MG)	Medium (MD) or Mogul (MG)	Medium (MD) or Mogul (MG)
Power Usage	17W +/-10%	22W +/-10%	33W +/-10%	44W +/-10%	67W +/-10%	88W +/-10%
Luminous Flux	1800lm	2600lm	3900lm	5200lm	7800lm	10400lm
Color Temp	WW 3000-3500K CW 4000-4500K D 6000-6500K	WW 3000-3500K CW 4000-4500K D 6000-6500K	WW 3000-3500K CW 4000-4500K D 6000-6500K	WW 3000-3500K CW 4000-4500K D 6000-6500K	WW 3000-3500K CW 4000-4500K D 6000-6500K	WW 3000-3500K CW 4000-4500K D 6000-6500K
Input Voltage	100-277V 480V	100-277V 480V	100-277V 480V	100-277V 480V	100-277V 480V	100-277V 480V
Life Hours	50,000	50,000	50,000	50,000	50,000	50,000
Dimensions	2.8" x 6.38"	3.5" x 7.7"	3.5" x 8"	3.5" x 9.3"	4" x 10.5"	4" x 11.4"

ORDER CODE CONFIGURATION: LED(Watts)(Color Temp)(Base)

Example: LED20W 3000-3500K Medium Base = LED20WWMD



Super Corncob LED



Aamsco supplies Super High Wattage LED retrofits to replace conventional HID & CFL lamps.

Main Features:

- Built in surge protection with automatic shut off
- Equipped with overheating protection. Automatically reduces to ½ power
- Aluminum fin heat sink & internal cooling fan allow for greater heat dissipation
- No ballast necessary. Fast turn on; no warm-up or cold start problems
- Estimated life hours: >50,000
- Sturdy PCB housing with internal cooling fan
- 80% more energy saving compared with conventional HID, CFL, and incandescent lamps
- 150 lumens per watt
- Universal burning positions

Specifications:

- Operating voltage: 100-277V & 480V
- Frequency range: 50-60hz
- Color Temperatures: WW3000-3500K, CW4000-4500K, D6000-6500K
- Integrated Heat-Sink Design
- 7 year warranty*
- UL, CE, DLC & ROHS CERTIFIED
- Not for use on a dimmer or remote controls
- For use in open or enclosed fixtures***

***In enclosed fixtures, ensure the lamp has enough space for heat dissipation. This will ensure lumen maintenance and extend its working life. When products are used in outdoor fixtures, ensure the space is waterproof and well ventilated. If there is a ballast in the existing fixture, simply disconnect or bypass when installing Corncob LED retrofit lamps.

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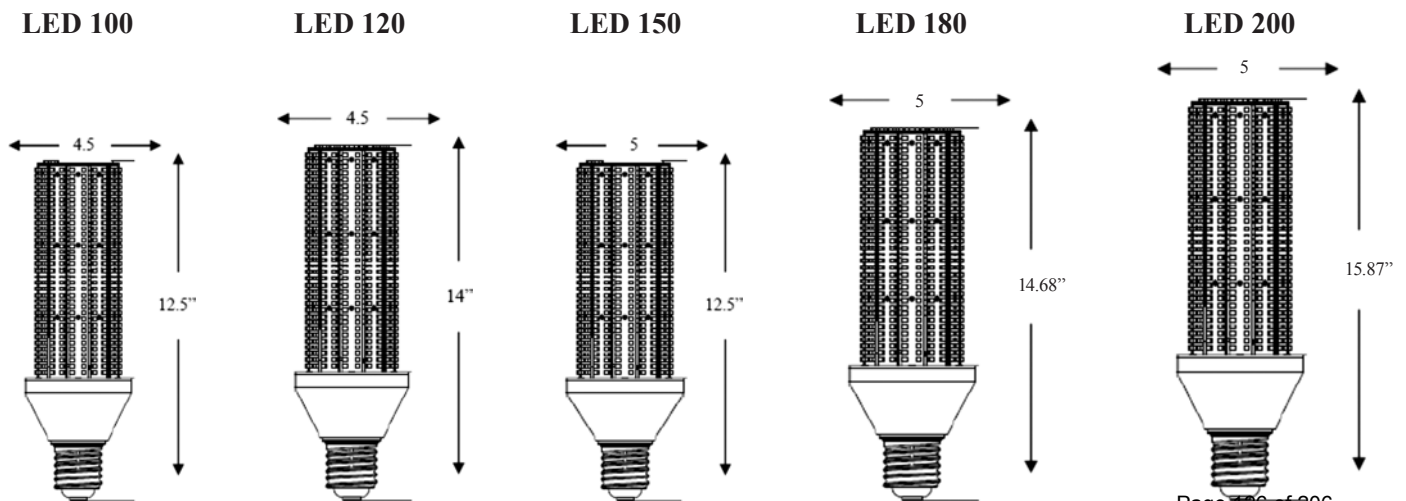
Super Corncob LED



MODEL	LED100	LED120	LED150	LED180	LED200
Wattage	100W	120W	150W	180W	200W
Beam Angle	360 Degree	360 Degree	360 Degree	360 Degree	360 Degree
Light Source Count	1040 LEDs	1040 LEDs	1440 LEDs	780 LEDs	832 LEDs
Lamp Base	Medium (MD) or Mogul (MG)	Medium (MD) or Mogul (MG)	Mogul (MG)	Mogul (MG)	Mogul (MG)
Power Usage	113W +/- 10%	135W +/- 10%	169W +/- 10%	183W +/- 10%	204W +/- 10%
Luminous Flux	15000lm	18000lm	22500lm	27000lm	30000lm
Color Temp	WW 3000-3500K CW 4000-4500K D 6000-6500K	WW 3000-3500K CW 4000-4500K D 6000-6500K	WW 3000-3500K CW 4000-4500K D 6000-6500K	WW 3000-3500K CW 4000-4500K D 6000-6500K	WW 3000-3500K CW 4000-4500K D 6000-6500K
Input Voltage	100-277V 480V	100-277V 480V	100-277V	100-277V	100-277V
Life Hours	50,000	50,000	50,000	50,000	50,000
Dimensions	4.5" x 12.5"	4.5" x 14"	5" x 12.5"	5" x 14.68"	5" x 15.87"

ORDER CODE CONFIGURATION: LED(Watts)(Color Temp)(Base)

Example: LED100W 3000-3500K Medium base = LED100WWMD



Corncob Mini



An energy smart alternative to incandescent lamps and an ecological light source to help the environment. Aamsco's Mini Corncob LEDs are an affordable light source for both residential and commercial areas.

Main Features:

- Fast turn on; no warm-up or cold start problems
- Estimated life hours: >50,000
- Sturdy PCB housing
- 80% more energy saving compared with conventional CFLs and incandescent lamps
- >85 CRI with great directionality
- 120 lumens per watt
- Universal burning positions

Specifications:

- Operating voltage: 100-277V
- Frequency range: 50-60hz
- Color Temperatures: WW3000-3500K, CW4000-4500K, D6000-6500K
- Integrated Heat-Sink Design
- 7 year warranty*
- UL, CE & ROHS Certified
- Not for use on a dimmer or remote controls
- For use in open or enclosed fixtures***

***In enclosed fixtures, ensure the lamp has enough space for heat dissipation. This will ensure lumen maintenance and extend its working life. When products are used in outdoor fixtures, ensure the space is waterproof and well ventilated. If there is a ballast in the existing fixture, simply disconnect or bypass when installing Corncob LED retrofit lamps.

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Corncob Mini

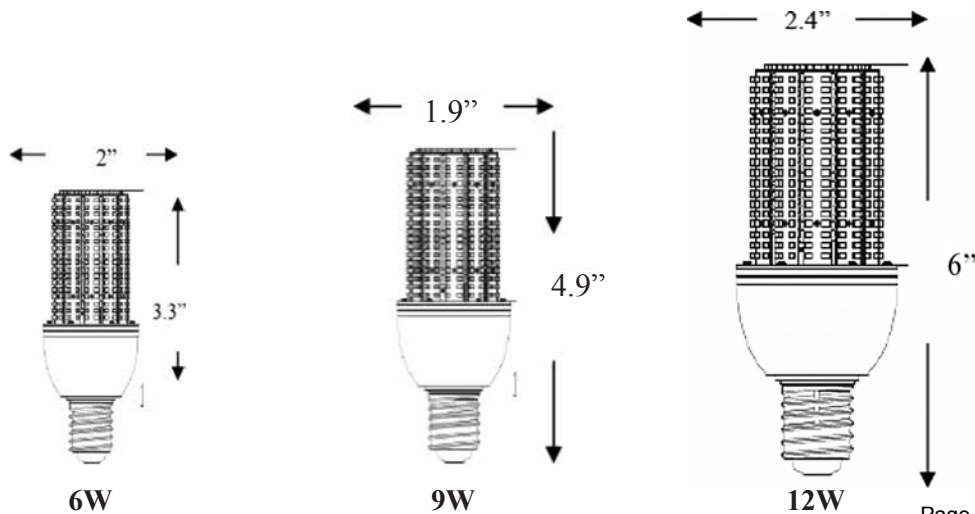


MODEL	LED6W	LED9W	LED12W
Wattage	6W	9W	12W
Beam Angle	360 Degree	360 Degree	360 Degree
Light Source Count	133 LEDs	150 LEDs	180 LEDs
Lamp Base	Medium (MD)	Medium (MD)	Medium (MD)
Power Consumption	8W +/-10%	10W +/-10%	13W +/-10%
Luminous Flux	720lm	1080lm	1440lm
Color Temperature	WW 3000-3500K CW 4000-4500K D 6000-6500K	WW 3000-3500K CW 4000-4500K D 6000-6500K	WW 3000-3500K CW 4000-4500K D 6000-6500K
Input Voltage	100-277V	100-277V	100-277V
Life Hours	50,000	50,000	50,000
Dimensions	2" x 3.3"	1.9" x 4.9"	2.4" x 6"

ORDERING NUMBER CONFIGURATION:

LED(Watt)(color temp)(base type)
 Example: LED9W, 3000-3500K, medium base= LED9WWMD

Recommended minimum 6" diameter spacing in enclosed fixtures



Corncob Dome LED



Uniquely designed to create a better light to ground ratio. Easy ballast free installation and low power consumption for energy savings. Can be used in indoor and outdoor applications.

Main Features:

- Built in surge protection with automatic shut off
- Equipped with overheating protection. Automatically reduces to ½ power
- Fast turn on; no warm-up or cold start problems
- Estimated life hours: >50,000
- Sturdy PCB housing with internal cooling fan on 40W & higher
- 80% more energy saving compared with conventional HID, CFL, and incandescent lamps
- >85 CRI with great directionality
- 140-150 lumens per watt
- Universal burning positions

Specifications:

- Operating voltage: 100-277V
- Frequency range: 50-60hz
- Color Temperatures: WW3000-3500K, CW4000-4500K, D6000-6500K
- Integrated Heat-Sink Design
- 7 year warranty*
- UL, CE, DLC & ROHS Certified
- Not for use on a dimmer or remote controls
- For use in open or enclosed fixtures***

***In enclosed fixtures, ensure the lamp has enough space for heat dissipation. This will ensure lumen maintenance and extend its working life. When products are used in outdoor fixtures, ensure the space is waterproof and well ventilated. If there is a ballast in the existing fixture, simply disconnect or bypass when installing Corncob LED retrofit lamps.

Commercial – Hospitality – Retail – Residential – Custom

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Corncob Dome LED



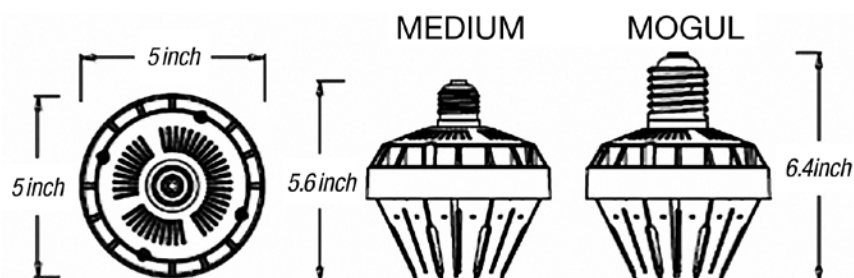
MODEL	LED20W-DOME	LED30W-DOME
Wattage	20W	30W
Beam Angle	360 Degree	360 Degree
Light Source Count	100 LEDs	180 LEDs
Lamp Base	Medium (MD) or Mogul (MG)	Medium (MD) or Mogul (MG)
Power Usage	23W +/-10%	33W +/-10%
Luminous Flux	3400lm	4946lm
Color Temperature	WW 3000-3500K CW 4000-4500K D 6000-6500K	WW 3000-3500K CW 4000-4500K D 6000-6500K
Input Voltage	100-277V	100-277V
Life Hours	50,000	50,000
Dimensions	Medium (MD) 5" x 5.6" Mogul (MG) 5" x 6.4"	Medium (MD) 5" x 5.6" Mogul (MG) 5" x 6.4"

ORDERING CODE CONFIGURATION:

LED(Watts)(Color Temp)(Base)-DOME

Example: LED20W 3000-3500K Medium Base = LED20WWMD-DOME

Recommended minimum 11" diameter spacing in enclosed fixtures





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Corncob Dome LED High Wattage



MODEL	LED40W-DOME	LED50W-DOME	LED60W-DOME
Wattage	40W	50W	60W
Beam Angle	360 Degree	360 Degree	360 Degree
Light Source Count	190 LEDs	260 LEDs	270 LEDs
Lamp Base	Medium (MD) or Mogul (MG)	Medium (MD) or Mogul (MG)	Medium (MD) or Mogul (MG)
Power Usage	40-45W +/-10%	50-55W +/-10%	60-65W +/-10%
Luminous Flux	6300lm	7711lm	9150lm
Color Temperature	WW 3000-3500K CW 4000-4500K D 6000-6500K	WW 3000-3500K CW 4000-4500K D 6000-6500K	WW 3000-3500K CW 4000-4500K D 6000-6500K
Input Voltage	100-277V	100-277V	100-277V
Life Hours	50,000	50,000	50,000
Dimensions	Medium (MD) 5" x 5.6" Mogul (MG) 5" x 6.4"	Medium (MD) 5" x 5.6" Mogul (MG) 5" x 6.4"	Medium (MD) 5" x 5.6" Mogul (MG) 5" x 6.4"

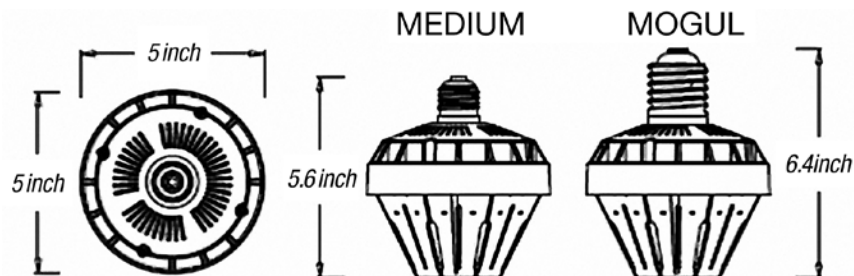
These models have an internal cooling fan.

ORDERING CODE CONFIGURATION:

LED(Watts)(Color Temp)(Base)-DOME

Example: LED40W 3000-3500K Medium Base = LED40WWMD-DOME

Recommended minimum 11" diameter spacing in enclosed fixtures



LED CFL Types



Aamsco can provide a Corncob LED with Medium and 4-pin bases. These self-ballasted LEDs can be used in place of CFL lamps; simply bypass the existing ballast when installing.

Main Features:

- Fast turn on; no warm-up or cold start problems
- Estimated life hours: >50,000
- Sturdy PCB housing
- 80% more energy saving compared with conventional CFLs and incandescent lamps
- >85 CRI with great directionality
- 120 lumens per watt
- Universal burning positions

Specifications:

- Operating voltage: 100-277V
- Frequency range: 50-60hz
- Color Temperatures: WW3000-3500K, CW4000-4500K, D6000-6500K
- Integrated Heat-Sink Design
- 2 year warranty
- Not for use on a dimmer or remote controls
- For use in open or enclosed fixtures***

***In enclosed fixtures, ensure the lamp has enough space for heat dissipation. This will ensure lumen maintenance and extend its working life. When products are used in outdoor fixtures, ensure the space is waterproof and well ventilated. If there is a ballast in the existing fixture, simply disconnect or bypass when installing Corncob LED retrofit lamps.

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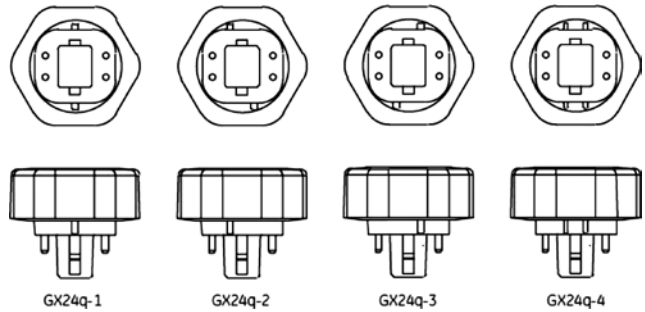




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LED-GX24Q

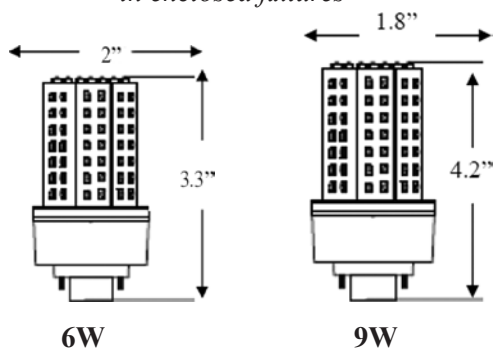
Aamsco can provide a Corncob LED with GX24Q base to take the place of a 4 pin CFL. These self-ballasted LEDs can be used in place of CFL lamps; simply bypass the existing ballast when installing.



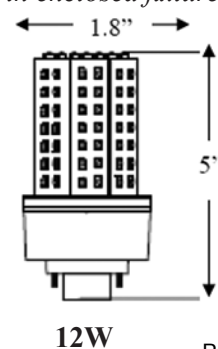
MODEL	LED6W-GX24Q	LED9W-GX24Q	LED12W-GX24Q
Wattage	6W	9W	12W
Beam Angle	360 Degree	360 Degree	360 Degree
Light Source Count	133 LEDs	140 LEDs	189 LEDs
Lamp Base	GX24Q	GX24Q	GX24Q
Power Consumption	8W +/-10%	10W +/-10%	13W +/-10%
Luminous Flux	720lm	1080lm	1440lm
Color Temperature	WW 3000-3500K CW 4000-4500K D 6000-6500K	WW 3000-3500K CW 4000-4500K D 6000-6500K	WW 3000-3500K CW 4000-4500K D 6000-6500K
Input Voltage	100-277V	100-277V	100-277V
Life Hours	50,000	50,000	50,000
Dimensions	2" x 3.3"	1.8" x 4.2"	1.8" x 5"

ORDERING NUMBER CONFIGURATION:
 LED(WATTS)(COLOR TEMP)-GX24Q
 Example: LED12W 3000-3500K=LED12WW-GX24Q

*Recommended minimum 6" diameter spacing
 in enclosed fixtures*



*Recommended minimum 8" diameter spacing
 in enclosed fixtures*

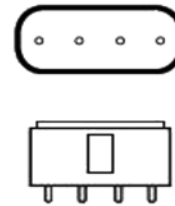




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Corncob CFL 2G11



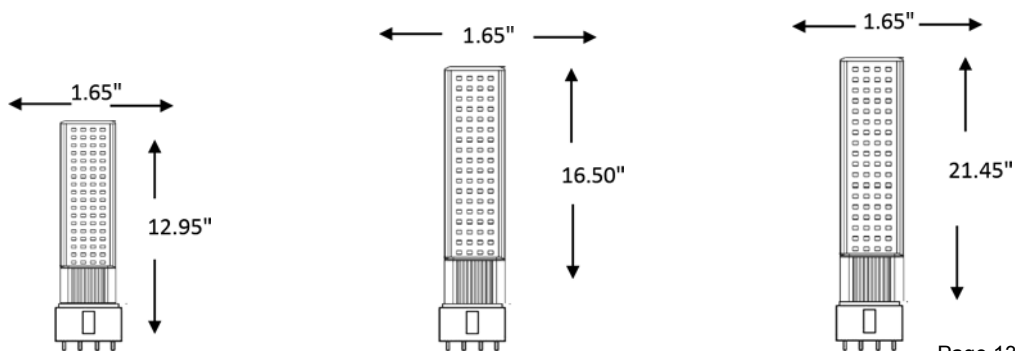
MODEL	LED12W-2G11	LED15W-2G11	LED18W-2G11	LED24W-2G11
Wattage	12W	15W	18W	24W
Beam Angle	180 Degree	180 Degree	180 Degree	180 Degree
Light Source Count	60 LEDs	72 LEDs	96 LEDs	120 LEDs
Lamp Base	2G11	2G11	2G11	2G11
Luminous Flux	1080lm	1350lm	1620lm	2160lm
Color Temperature	WW 3000-3500K CW 4000-4500K D 6000-6500K	WW 3000-3500K CW 4000-4500K D 6000-6500K	WW 3000-3500K CW 4000-4500K D 6000-6500K	WW 3000-3500K CW 4000-4500K D 6000-6500K
Input Voltage	100-277V	100-277V	100-277V	100-277V
Life Hours	50,000	50,000	50,000	50,000
Dimensions	1.65" x 12.95"	1.65" x 16.50"	1.65" x 21.45"	1.65" x 21.45"

ORDERING NUMBER CONFIGURATION:

LED(WATTS)(COLOR TEMP)-2G11

Example: LED18W 3000-3500K=LED18WW-2G11

Not recommended for enclosed fixtures



Flat Panel LED



Introducing the LED Flat Panel retrofit designed with a large, radiating area to illuminate larger spaces.

Main Features:

- Built in surge protection with automatic shut off
- Equipped with overheating protection. Automatically reduces to ½ power
- Fast turn on; no warm up or cold start problems
- Estimated Life hours >50,000
- Sturdy PCB housing
- 80% more energy savings compared with conventional CFL or HID lamps
- Optional steel support wires for safe ceiling mount
- Cylinder available in silver or black
- Optional opaque or transparent cover available

Specifications:

- Operating voltage: 100-280V
- Frequency range: 50-60hz
- Color temperatures: WW 3000-3500K, CW 4000-4500K, D 6000-6500K
- 7 year warranty*
- Not for use on a dimmer or remote controls
- For use in open or enclosed fixtures***

***In enclosed fixtures, ensure the lamp has enough space for heat dissipation. This will ensure lumen maintenance and extend its working life. When products are used in outdoor fixtures, ensure the space is waterproof and well ventilated. If there is ballast in the existing fixture, simply disconnect or bypass when installing Corncob LED retrofit lamps.

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Flat Panel LED

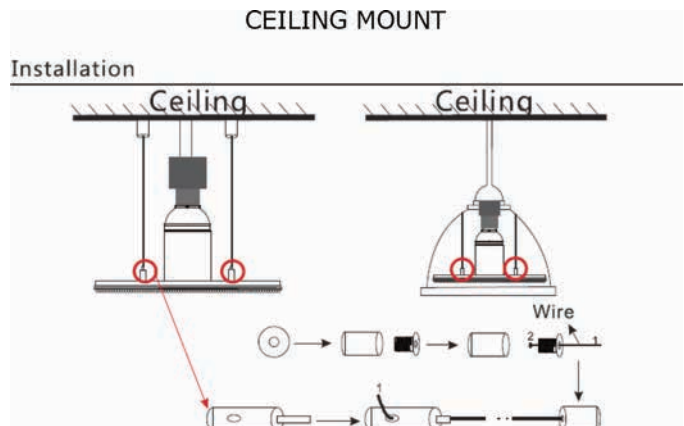
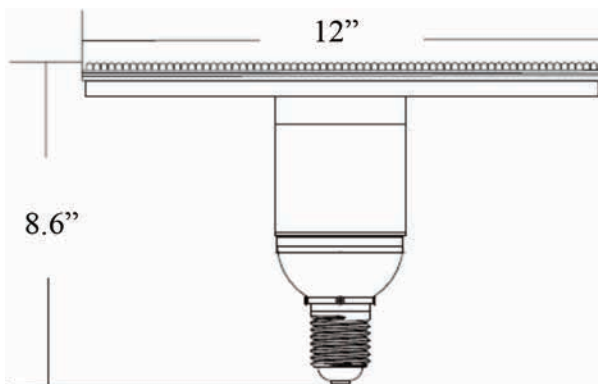


MODEL	LED40-PANEL	LED60-PANEL	LED80-PANEL
Wattage	40W	60W	80W
Beam Angle	120 Degree	120 Degree	120 Degree
Light Source Count	140 LEDs	200 LEDs	300 LEDs
Lamp Base	Mogul (MG)	Mogul (MG)	Mogul (MG)
Power Usage	43W +/-10%	67W +/-10%	80W +/-10%
Luminous Flux	4200lm	5800lm	8300lm
Color Temp	WW 3000-3500K CW 4000-4500K D 6000-6500K	WW 3000-3500K CW 4000-4500K D 6000-6500K	WW 3000-3500K CW 4000-4500K D 6000-6500K
Input Voltage	100-280V	100-280V	100-280V
Life Hours	50,000	50,000	50,000
Dimensions	12" x 8.6"	12" x 8.6"	12" x 8.6"

ORDER CODE CONFIGURATION: LED(Watt)(Color temp)-PANEL

Example: LED40 PANEL 3000-3500K = LED40WW-PANEL

Optional cover available in clear or translucent finish.











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SUGGESTED REPLACEMENT GUIDE FOR LED CORNCOB

						
	LED CORNCOB	CORNCOB MINI	LED 2G11	LED GX24Q	CORNCOB DOME	LED PANEL
Incandescent						
60 Watt-890lm	N/A	6 Watt	N/A	6 Watt	N/A	N/A
75 Watt-1150lm	N/A	9 Watt	N/A	9 Watt	N/A	N/A
100 Watt-1600lm	15 Watt	12 Watt	12 Watt	12 Watt	20 Watt	N/A
150 Watt-2700lm	20 Watt	N/A	15 Watt	N/A	20 Watt	N/A
200 Watt-2900lm	30 Watt	N/A	18 Watt	N/A	20 Watt	N/A
300 Watt-5000lm	60 Watt	N/A	24 Watt	N/A	30 Watt	N/A
500 Watt-8700lm	80 Watt	N/A	N/A	N/A	40 Watt	N/A
Metal Halide						
70 Watt	20 Watt	N/A	N/A	N/A	20 Watt	N/A
100 Watt	30 Watt	N/A	12 Watt	N/A	30 Watt	N/A
150 Watt	40 Watt	N/A	15 Watt	N/A	30 Watt	40 Watt
175 Watt	60 Watt	N/A	18 Watt	N/A	40 Watt	60 Watt
250 Watt	80 Watt	N/A	24 Watt	N/A	60 Watt	80 Watt
400 Watt	100 Watt 120 Watt	N/A	N/A	N/A	80 Watt	N/A
100 Watt	180 Watt 200 Watt	N/A	N/A	N/A	80 Watt	N/A
High Pressure Sodium						
50 Watt	15 Watt	N/A	N/A	N/A	N/A	N/A
70 Watt	20 Watt	N/A	N/A	N/A	20 Watt	N/A
100 Watt	30 Watt	N/A	12 Watt	N/A	30 Watt	40 Watt
150 Watt	40 Watt	N/A	18 Watt	N/A	30 Watt	60 Watt
250 Watt	60 Watt	N/A	24 Watt	N/A	60 Watt	80 Watt
400 Watt	80 Watt	N/A	N/A	N/A	80 Watt	N/A
Mercury Vapor						
80 Watt	20 Watt	N/A	N/A	N/A	20 Watt	N/A
125 Watt	40 Watt	N/A	12 Watt	N/A	30 Watt	40 Watt
175 Watt	60 Watt	N/A	18 Watt	N/A	40 Watt	60 Watt
250 Watt	100 Watt	N/A	24 Watt	N/A	60 Watt	80 Watt
400 Watt	120 Watt	N/A	N/A	N/A	80 Watt	N/A
CFL						
7 Watt-400lm	N/A	N/A	N/A	N/A	N/A	N/A
13 Watt-825lm	N/A	6 Watt	N/A	6 Watt	N/A	N/A
18 Watt-1250lm	N/A	9 Watt	N/A	9 Watt	N/A	N/A
24-26 Watt-1800lm	15 Watt	12 Watt	12 Watt	12 Watt	N/A	N/A
32-36 Watt-2500lm	20 Watt	N/A	18 Watt	N/A	N/A	N/A
42 Watt-3200lm	30 Watt	N/A	12 Watt	N/A	N/A	N/A
55 Watt-4300lm	40 Watt	N/A	N/A	N/A	N/A	N/A
80 Watt-6000lm	60 Watt	N/A	N/A	N/A	N/A	40 Watt
105 Watt-6900lm	60 Watt	N/A	N/A	N/A	N/A	60 Watt
150 Watt-8200lm	80 Watt	N/A	N/A	N/A	N/A	80 Watt

*Please note that this information is only intended to be used as a guideline. It is recommended that the LED CornCob be field tested to determine a suitable light source for your application.



TAG GG LED U6 SERIES

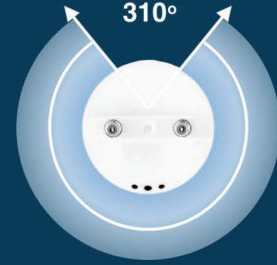
BYPass LED U6 - FB34

COMMERCIAL SPEC GRADE

Replaces 32W FB34 Fluorescent U6



Superior All-Around Light Distribution



Shatter-Resistant



Designed for high efficiency and versatility, the IC-Driver allows for exceptional BYPass performance

Seamless output from end-to-end, Light Engine allows for fully uniform light output.



FEATURES

- Easy BYPass the Ballast for Easy Installation
- Universal Input Voltage - 120-277V
- Uniform Light Output From End-to-End
- Instant-ON with No Flicker
- 5-Year Warranty
- DLC 4.1 Listed
- UL Listed

Specifications and Technical (U6 | BYPass)

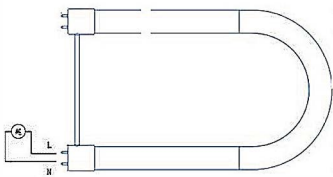
MODEL	BASE TYPE	WATTS / EQV.	LUMEN	CCT	DIMENSION	VOLTAGE	CRI	THD	CARTON QTY	LIGHT DISTRIBUTION
LBU6B16301	Bi-Pin G13	16W / 32W	2100LM	3000K	6.0" x 22.5"	120-277V	83	<20%	16	310°
LBU6B16351	Bi-Pin G13	16W / 32W	2100LM	3500K	6.0" x 22.5"	120-277V	83	<20%	16	310°
LBU6B16411	Bi-Pin G13	16W / 32W	2100LM	4100K	6.0" x 22.5"	120-277V	83	<20%	16	310°
LBU6B16501	Bi-Pin G13	16W / 32W	2100LM	5000K	6.0" x 22.5"	120-277V	83	<20%	16	310°

* Suitable for use in totally enclosed fixtures

** Suitable for damp locations. Not for use where exposed to the weather or moisture

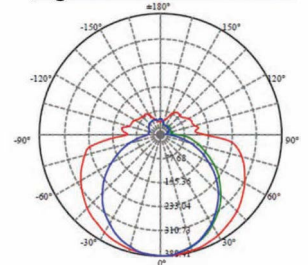
*** See Installation Instructions PDF for installation instructions

Installation Configuration



BYPass

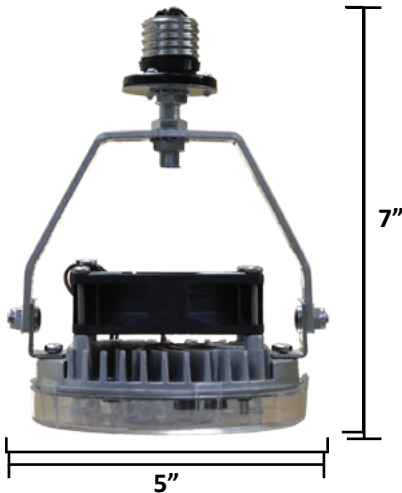
Light Distribution Curve



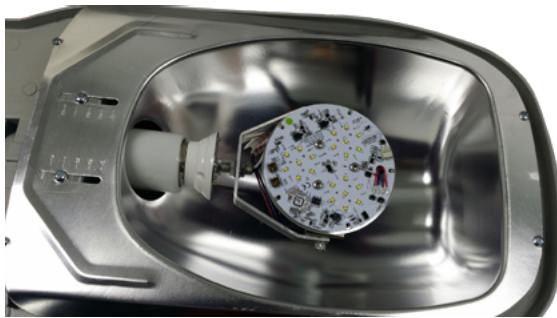
Simply Universal

The World Leader in LED Retrofits

GTR-YK-1xM21 [30W-60W Yoke Mounted LED Module]



Medium E26 Base



Bolt on Yoke Mounted GTSOLM21

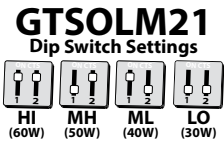


Description and Application:

Global Tech LED's Solstice units are designed to retrofit into almost any HID fixture using custom fabricated brackets and plates for easy plug and play installation. We can articulate our units and offer a wide array of innovative optics to deliver the light precisely where it's needed. Four way switchable power options on board. This unit also comes with an Energy Saver program that is accessed via a switch on the board.

Key Features:

- Multiple temperature control values. Over temperature protection, shut down at critical temperature and resume operation temperature.
- Under voltage lockout for power off or brownout
- Soft start
- Medium E26 and Mogul E40 bases
- 0-10VDC Dimming compatible
- 0-10VDC Input Port
- Current accuracy over the LED operating temperature range +/- 3%.



Driver and Wattage:

50/60Hz
Input voltage 120/277VAC 60W
347-480VAC driver also available.

24VDC operation without driver.
GTSOLM21 – 30W, 40W, 50W, 60W
per Solstice unit.

On Board Programs:

- Standard
- 5-6-1
- 0-10VDC Dimming*
- *If dimming is desired please specify when ordering

Additional Information:

MagLev® Fan Technology:
By using magnetic levitation force, these fans feature zero friction with no contact between shaft and bearing. 100,000 hours rated operating life, providing an exceptionally cool running LED unit -42° Celsius at ambient temperatures.

Distribution Pattern:
Multiple mounting positions for a broad range of narrow to spread symmetrical lighting distribution choices.

Warranty:
10 Year Limited Warranty

Operating Temperature Range:
-40 to +85 degrees Celsius

Photometrics:
Visit our web site at www.GlobalTechLED.com for detailed photometrics.

Lensing:
Multiple lensing options available for maximum light distribution, if needed. Without lensing beam angle is 120°

LED Module Compatibility

Product	Rated Life [L70] [Hrs]	Output Setting	LED Chip Drive Current [mA]	Rated Lumens [lm]	Rated Watts [W]
GTSOLM21 x 1	100,000	LO	400	2679	30
GTSOLM21 x 1	100,000	ML	500	3742	40
GTSOLM21 x 1	100,000	MH	600	4594	50
GTSOLM21 x 1	100,000	HI	700	5910	60

Base Options

Catalog #	Description
E40	Mogul Base
E27	Medium Base
NB	U-Bracket (No Base)

*Available in stock-able packaging



Fully Compliant with ARRA Buy American Requirements. Made in the USA.

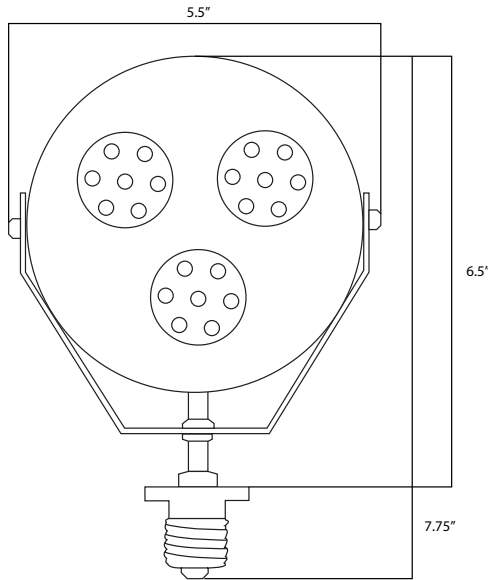


Product Information

GTR-YK-1xM21

[30W-60W Yoke Mounted LED Module]

Details



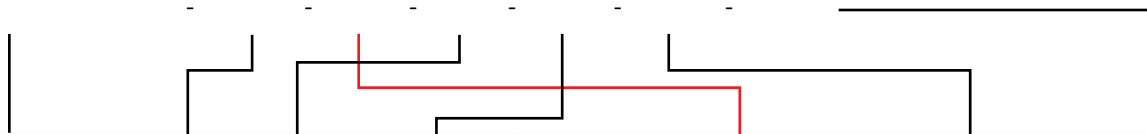
Features



- Life Sync
- Module Temp Protection
- Lumen Depreciation Maintenance
- Wattage Selections (on board)
- On Board Programming
 - 5-6-1 Energy Saving Program
 - 0-10V Dimming
- Lumiled Luxeon LED chips
- Active Thermal Management
- Optical Distribution Options
- -45°C to 85°C Operating Temperature
- 10 Year Warranty

Ordering Code Example:

GTR-YK - 1XM21 - GR - 100% - SV - NL - E40



Retrofit	Wattage			Color Temp	Optics	Base	
Retrofit	Wattage	# of Modules	Setting	Input Voltage	Kelvin	Optics	Base
GTR-YK	30W	1xM21	25%	SV = 120-277V	GR = 5700K	NL = No Lens	E40
				HV = 347-480V	BR = 5000K	10D = Degree	E27
	40W	1xM21	50%	SV = 120-277V	YW = 4100K	25D = Degree	NB
				HV = 347-480V	BL = 4000K	50D = Degree	
	50W	1xM21	75%	SV = 120-277V	RD = 3500K	75D = Degree	
				HV = 347-480V	PR = 3000K	360D = Side Emitters	
	60W	1xM21	100%	SV = 120-277V	OR = 2700K	360s = Square Side Emitters	
				HV = 347-480V	AMB = Amber	T2 = Type II	
					GRO = Grow	T3 = Type III	
					RYB = Royal Blue		
					AQU = Aquarium		

* Please see previous page for Base option information

Fully Compliant with ARRA Buy American Requirements. Made in the USA.



VINCI-LED

Wall/Area/Flood Lighting

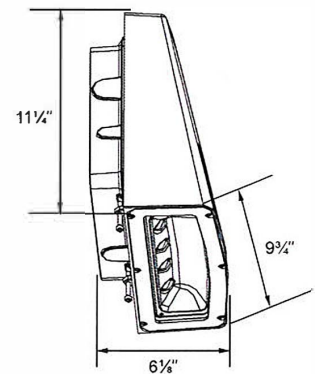
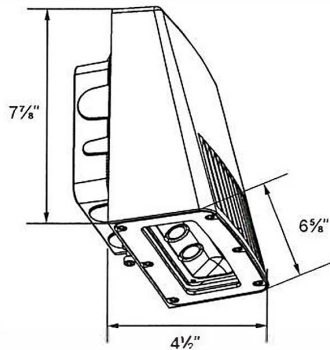
Job Information

Type:	
Catalog #:	2
Project:	
Comments:	
Prepared by:	



Vinci

Vinci Large



Applications

- Wall/Surface
- Post/Bollard
- Low Level
- Flood Lighting
- Inverted
- Site Lighting

Description

The Vinci is an architectural style LED wall luminaire providing efficient light output using high performance, long-life LED chipsets. With a sturdy die-cast aluminum construction, this low-profile fixture includes a universal back box, stainless steel hardware and a sealed, gasketed optical compartment which secures the Vinci from outside contaminants. Designed for floodlight, pathway illumination, wall/surface applications, inverted mount for canopy lighting, post and bollard and site lighting. Common applications include school and institution, warehouse, apartment and condominium complexes, loading docks and more. Rated lifetime is 125,000 Hours (L70)

Ordering Information

Example: (VINCI-LED-80-40-UNV-BZ-YM)

VINCI-LED	50	40	UNV	BZ	PC
-----------	----	----	-----	----	----

Series	Wattage/Lumen	Color Temp.	Voltage	Finish	Option	
Wall/Area/Flood Lighting	10	10W/1200 ^{3,4}	30	3000K	UNV 120-277V	PC Photozell (120-277V) ^{2,5}
	20	20W/2490 ^{3,4}	40	4000K		HK Heavy Duty Adjustable Knuckle
	30	30W/3310 ^{3,4}	50	5000K	YM Yoke Mount ^{2,5}	
	50	50W/6400 ^{2,3,4}			SF Slip Fitter ^{2,5}	
	80	80W/8950 ^{2,3,4}			PM Pole Mount ^{2,5}	

¹ Standard for fixture
² Vinci Large Model Only
³ Delivered Lumens (5000K) – See table on Page 2

⁴ DLC Listed Wattage – See DLC matrix on Page 2
⁵ 10W, 20W, 30W Require Pencil Photozell (See Page 2)

Deco Lighting practices a program of continuous product development, and as a result product specifications change frequently. We reserve the right to change product specifications without notice. Contact Deco for the latest product information.

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 Rev Date: 04/23/18 #9



Digitize your light.®

Features

Construction

Low-profile die-cast aluminum LED fixture with hinged, removable door and back box. Available from 10W up to 80W. Three half-inch, NP threaded conduit entry points included in back box, which mounts to standard 3 1/2" to 4" round and octagonal, 4" square, single gang and masonry junction boxes. Key hole gasket adapts to j-box and wall. Silicone gasket seals the door and back box. Compliance to FDA/USDA requirements and/or NSF splash-zone certification. CSA Listed for Wet Locations - IP67

Optical

Mirrored, anodized reflector located inside silicone-sealed optical chamber to provide maximum efficiency and high illumination. Impact-resistant tempered glass included in optical assembly, meeting IESNA requirements for full cutoff. Solid state LEDs thermally optimized with multiple lumen packages from a warm 3000K LED color temp to a cool 5000K (CCT).

Electrical

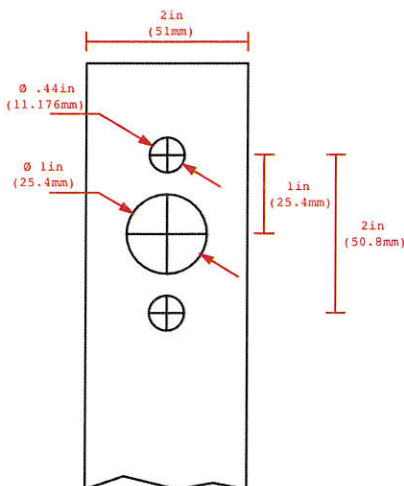
120-277V 50/60Hz. Heat sinking optimization due to LED driver mounted to fixture's die-cast housing. Thermal management system uses conduction and natural convection to transfer heat away from LED source. Three half-inch NPT threaded conduit entry points allow thru-branch wiring and the back box is an authorized electrical wiring compartment. Vinci-LED luminaires maintain greater than 70% of initial light output after 120,000 hours of operation.

Line-Line Surge Protection: 1kV (10W), 2kV (20W-30W), 4kV (50W-80W)

Finish

The Vinci features a super durable DECO Guard carbon bronze powder coat finish which can withstand extreme climate conditions while still maintaining optimal color and gloss retention during the installed life of the fixture.

Pole Mount Drilling Pattern



Universal Pencil Photocell (10-30W Models)



Performance Data

CRI:	82+			
CCT:	3000K, 4000K, 5000K			
Warranty:	10 yr. Warranty with Labor Allowance			
Dimming:	0-10V Dimming Standard, 100% down to 10%			
Operating Temperature:	-40°C to +50°C Max Ambient			
Projected Lifetime:	125,000 Hours (L70); 75,000 Hours (L80)			
IP Rating:	IP67			
Power Factor	> 0.90			
Total Harmonic Distortion (THD):	< 20%			
Sound Rating:	Class A (inaudible in a 24dB ambient environment)			
BUG Rating (10-30W):	Type III	B2	U1	G1
BUG Rating (50-80W):	Type III	B3	U1	G1

Lumen Output

Lumen Chart			
Nominal Wattage	System Wattage	5000K Lumens	LPW (lm/W)
10W	10.3	1200	117
20W	21.1	2490	118
30W	28.0	3310	118
50W	53.0	6400	121
80W	80.4	8950	111

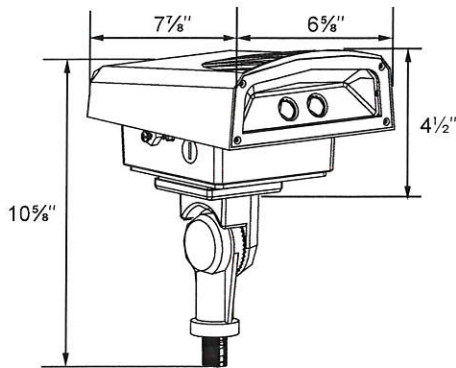
CCT Multiplier Factors: 5000K - 1.00; 4000K - 0.95; 3000K - 0.90

DLC Listed

	10W	20W	30W	50W	80W
3000K					
4000K	X	X	X	X	X
5000K	X	X	X	X	X

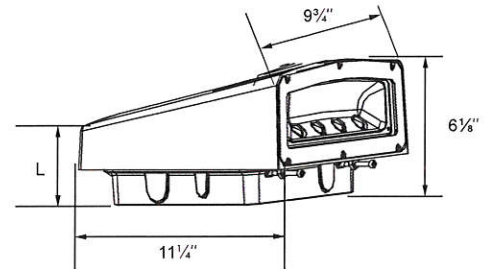
DLC-listed models above are listed under Flood, Area, and Wall-Mount primary use categories

Vinci



Vinci Large

Length with mount (L):
 Yoke (YM): 11⁷/₈"
 Knuckle (HK): 11⁷/₈"
 Slipfitter (SF): 13³/₈"
 6" Pole Mount Arm (PM): 13"



Heavy Duty Adjustable Knuckle



Heavy Duty Adjustable Knuckle



Yoke Mount



Slip Fitter

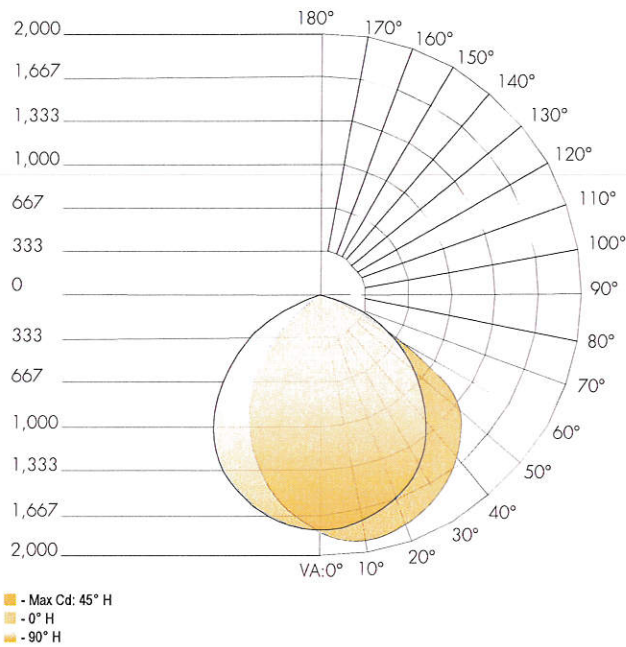


6" Pole Mount Arm

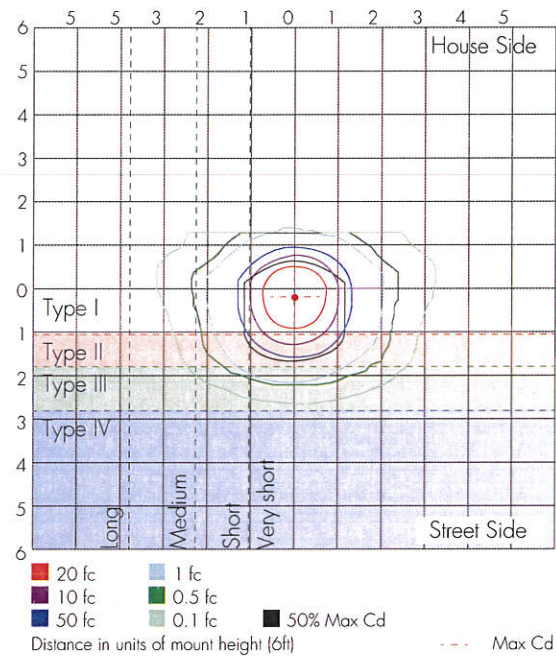
Photometric Data

30W 4000K

Polar Candela Distribution



Isolux Plot



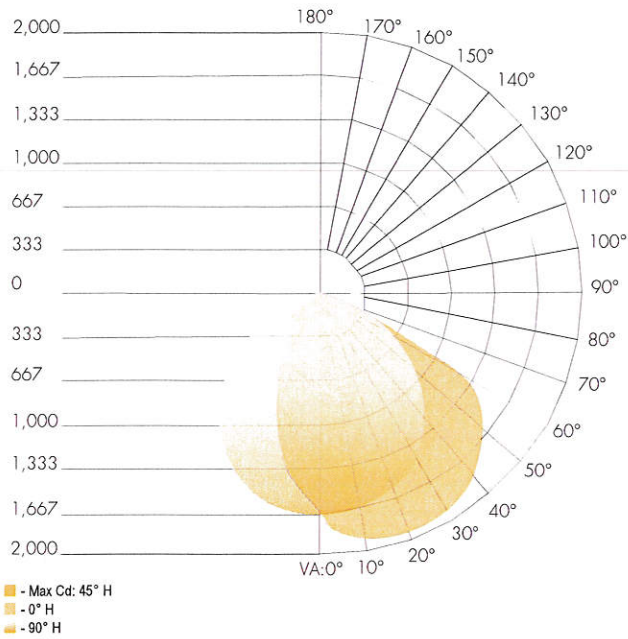
Zonal Lumen Summary

Zone	Lumens	%Luminaire
0-30	1,085.4	34.5%
0-40	1,746.1	55.5%
0-60	2,867.4	91.2%
50-90	277.2	8.8%
70-100	47.3	1.5%
90-120	0.001	0%
0-90	3,144.6	100%
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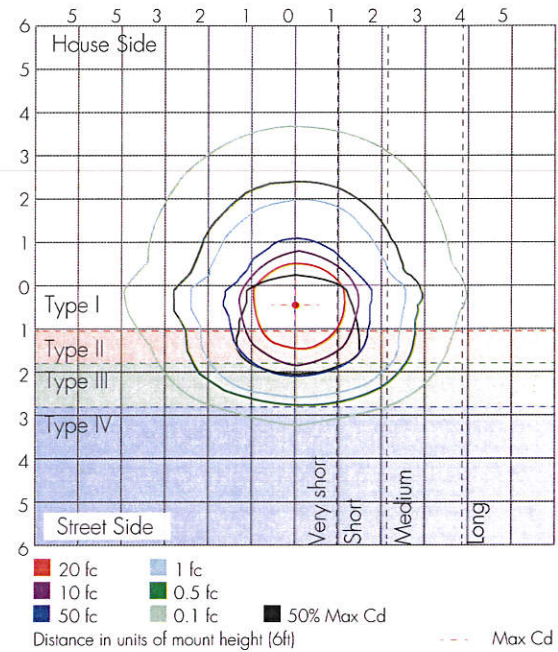
Photometric Data

80W 4000K

Polar Candela Distribution



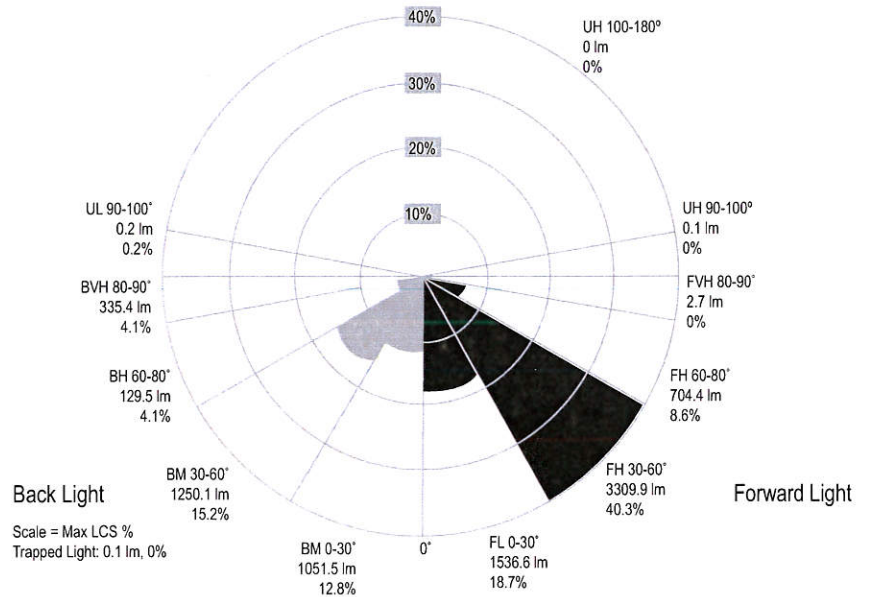
Isolux Plot



Zonal Lumen Summary

Zone	Lumens	%Luminaire
0-30	2,587.5	31.5%
0-40	2,149.5	50.5%
0-60	7,147.0	87.1%
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LCS Graph





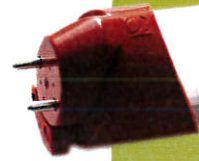
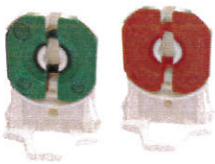
RedCap™ Emergency LED Lighting System

T8 EMERGENCY BATTERY BACKUP

For: Replacement of T8 and T12 lamps and backup ballast

FEATURES AND BENEFITS

- The Energy Focus Redcap™ Emergency Battery Backup is an all-in-one general purpose lighting AND battery powered emergency backup TLED solution. The tube acts as a normal lamp, providing high lm/W and supporting on/off switching operation. Upon loss of power, the integrated batteries and emergency driver provide a minimum of 90 minutes of light.
- The standard input end powers the lamp in normal mode, and the emergency input end charges the batteries and senses the presence of AC power. Batteries charge even when lamps are off.
- Emergency and standard fluorescent ballasts can be removed.
- Kit includes one lamp with two lampholders - one with red rotor, one with green rotor.



PRODUCT SPECIFICATIONS

Size	4'
Body	Oval extruded aluminum/ polycarbonate lens
Lens	Frosted
Connection	Medium bi-pin (G13) end cap
Input Voltage	120-277vac, 50/60hz
Driver	Single end power; integrated LED driver
Power Factor	>0.9
Available colors	3500K 4000K 5000K
CRI	>80
Dimming	non-dimmable
Lifetime	L70 ≥50,000 hours
Warranty	5 Year
Environmental Requirements	Operating temp: 20° to 40°C Storage temp: -20° to 30°C Relative Humidity: 45%-85% Non-corrosive environments
Beam Angle	120°
Battery Charge Power	3.5W (charging) <1W (battery full/standby)

For more information please see Accessories section.

32000 Aurora Road, Suite B, Solon, OH 44139 • energyfocus.com • 800.327.7877

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REDCAP™ PRODUCT SPECIFICATION

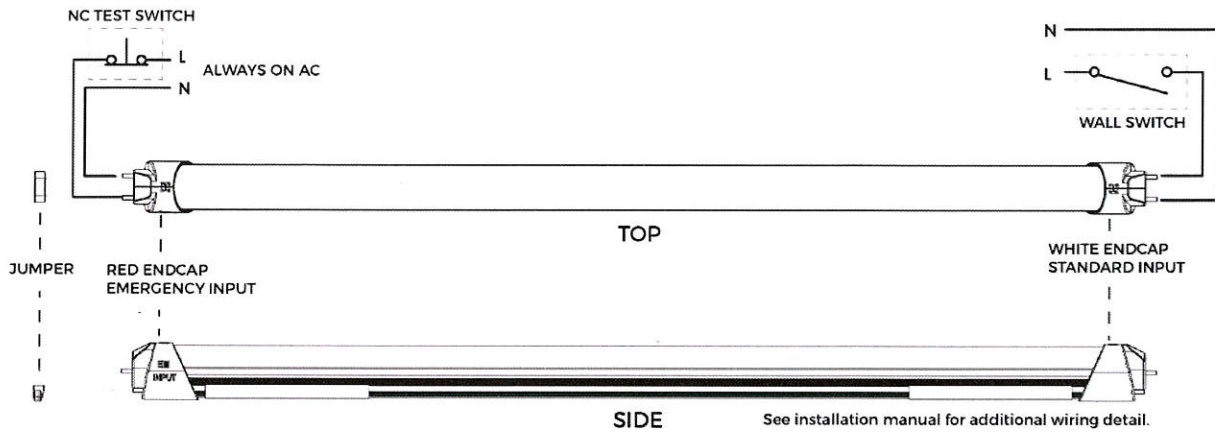
PART NUMBER	NOMINAL SIZE	POWER	LUMINOUS FLUX	UL PART NUMBER
LEDFLT8-8XX-411-BBUF	48" (4')	11W	1,560 lm	3BD50116

XX refers to the option for 3500K, 4000K or 5000K color temperature. (Replace XX with 35, 40 or 50 when selecting).
 For more options please contact Energy Focus at 800-327-7877

ACCESSORIES

- Battery Enable Jumper (p/n: EF-RC-JUMP)
- Emergency Test Switch (p/n: EF-RC-NCSW)

LINE DIAGRAM





8RB Series

96 in. LED Retrofit Kit

FEATURES & SPECIFICATIONS

INTENDED USE

Ballast retrofit kit, 96 in. long, converts an existing strip to carry standard lamps. Material is die-formed 22 gage steel, with high reflectance baked white enamel finish.



ORDERING INFORMATION

STANDARD

Example: **8RB422S48W4800LDMV40K**

8RB	422	S48W4800L	DMV	40K
Series	Width	Wattage and Lumen	Driver	Kelvin Temperature
8RB 96 in.	421 4.25 in. 1 row LEDs module	S48W5650L* 48 System Watts, 5650 Delivered Lumens	DMV 0-10V	30K 3000K
	422 4.25 in. 2 row LEDs module	S60W7600L** 60 System Watts, 7600 Delivered Lumens	MV Multi - Volt 120V-277V	35K 3500K
	501 5.00 in. 1 row LEDs module	S97W11300L** 97 System Watts, 11300 Delivered Lumens		40K 4000K
	502 5.00 in. 2 row LEDs module	S114W12800L** 114 System Watts, 12800 Delivered Lumens		50K 5000K
		*48W - 1 Row LED module **60W,97W,114W - 2 Rows LED module		

HIGH OUTPUT

8RB	422	H72W8200L	DMV	40K
Series	Width	Wattage and Lumen	Driver	Kelvin Temperature
8RB 96 in.	421 4.25 in. 1 row LEDs module	H72W8200L* 72 System Watts, 8200 Delivered Lumens	DMV 0-10V	30K 3000K
	422 4.25 in. 2 row LEDs module	H144W16400L** 144 System Watts, 16400 Delivered Lumens	MV Multi - Volt 120V-277V	35K 3500K
	501 5.00 in. 1 row LEDs module	*72W - 1 Row LED module		40K 4000K
	502 5.00 in. 2 row LEDs module	**144W - 2 Rows LED module		50K 5000K

* Consult for more options

Texas Fluorescents
2055 Luna Rd. Suite 142 Carrollton, TX 75006
Phone: 972-247-3171 Fax: 972-247-0200
www.texasfluorescents.com email: sales@texasfluorescents.com

Catalog Number:

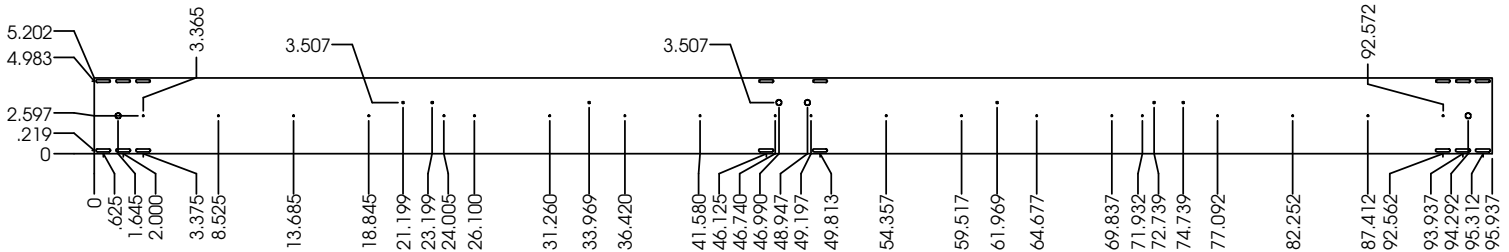
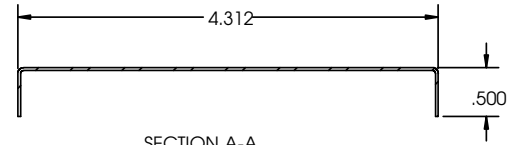
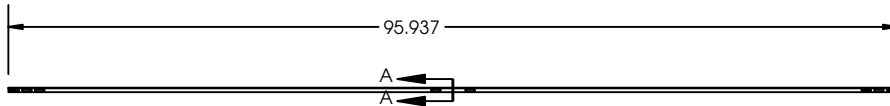
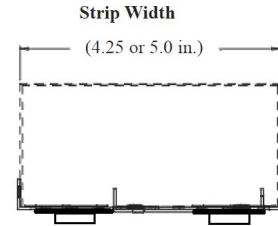
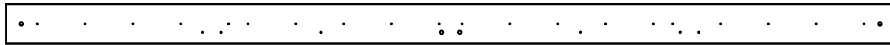
Notes:

8RB Series

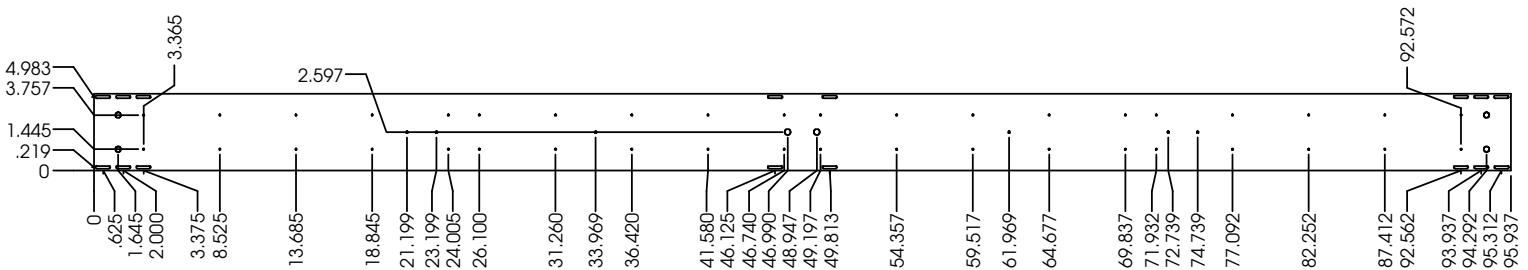
96 in. LED Retrofit Kit

DIMENSIONS

All dimensions are inches. Specifications subject to change without notice.



1 Row LED boards



2 Rows LED boards



Catalog Number: _____
Notes: _____



8RB Series

96 in. LED Retrofit Kit

FEATURES & SPECIFICATIONS

INTENDED USE

Ballast retrofit kit, 96 in. long, converts an existing strip to carry standard lamps. Material is die-formed 22 gage steel, with high reflectance baked white enamel finish.



ORDERING INFORMATION

STANDARD

Example: **8RB422S48W4800LDMV40K**

8RB	422	S48W4800L	DMV	40K
Series	Width	Wattage and Lumen	Driver	Kelvin Temperature
8RB 96 in.	421 4.25 in. 1 row LEDs module	S48W5650L* 48 System Watts, 5650 Delivered Lumens	DMV 0-10V	30K 3000K
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	501 5.00 in. 1 row LEDs module	S97W11300L** 97 System Watts, 11300 Delivered Lumens		40K 4000K
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	502 5.00 in. 2 row LEDs module			50K 5000K

* Consult for more options

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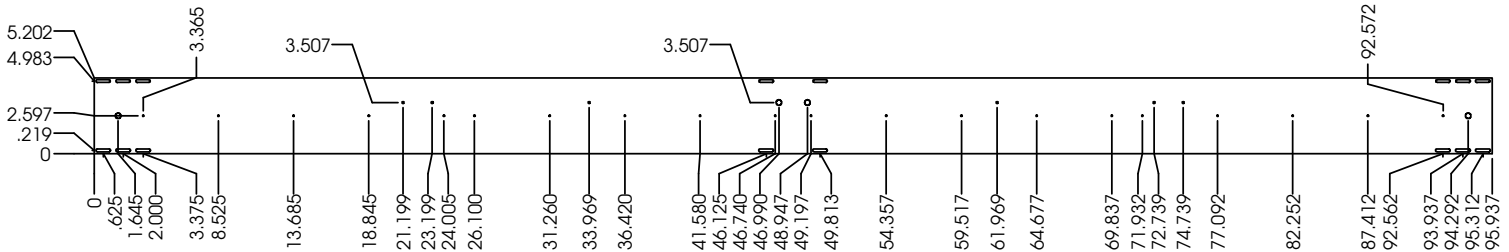
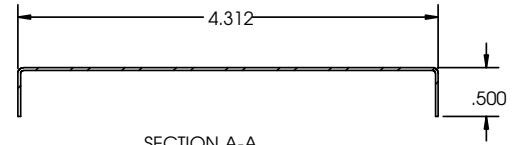
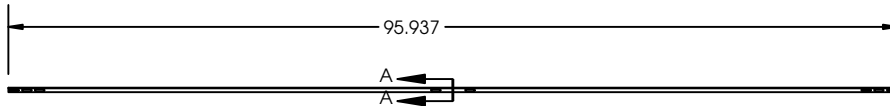
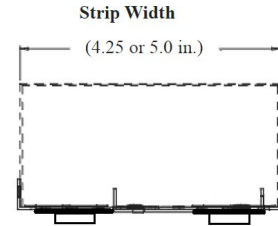
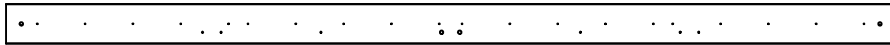
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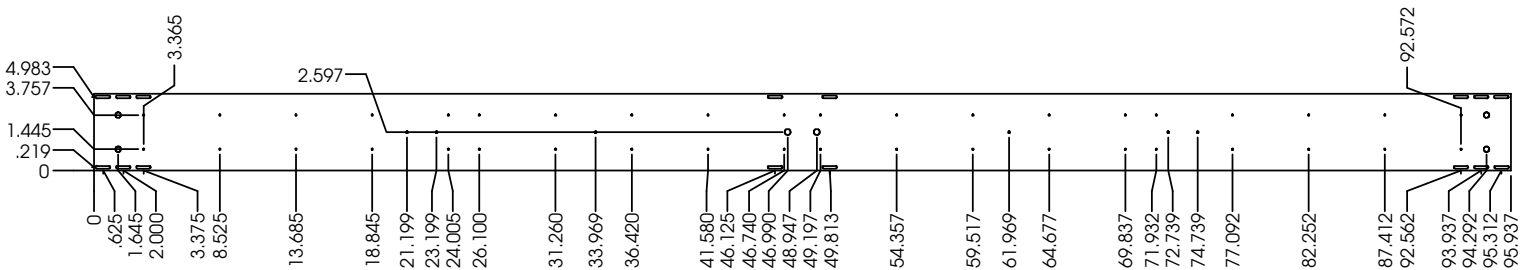
96 in. LED Retrofit Kit

DIMENSIONS

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1 Row LED boards



2 Rows LED boards





VINCI-LED

Wall/Area/Flood Lighting

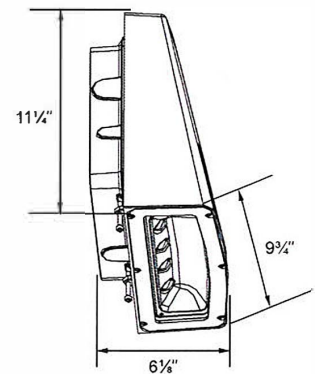
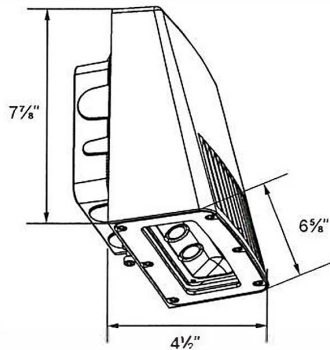
Job Information

Type:	
Catalog #:	3
Project:	
Comments:	
Prepared by:	



Vinci

Vinci Large



Applications

- Wall/Surface
- Post/Bollard
- Low Level
- Flood Lighting
- Inverted
- Site Lighting

Description

The Vinci is an architectural style LED wall luminaire providing efficient light output using high performance, long-life LED chipsets. With a sturdy die-cast aluminum construction, this low-profile fixture includes a universal back box, stainless steel hardware and a sealed, gasketed optical compartment which secures the Vinci from outside contaminants. Designed for floodlight, pathway illumination, wall/surface applications, inverted mount for canopy lighting, post and bollard and site lighting. Common applications include school and institution, warehouse, apartment and condominium complexes, loading docks and more. Rated lifetime is 125,000 Hours (L70)

Ordering Information

Example: (VINCI-LED-80-40-UNV-BZ-YM)

VINCI-LED	50	40	UNV	BZ	PC
------------------	----	----	-----	----	----

Series	Wattage/Lumen	Color Temp.	Voltage	Finish	Option
Wall/Area/Flood Lighting	10	10W/1200 ^{3,4}	UNV 120-277V	BZ Bronze ¹ WH White	PC Photocell (120-277V) ^{2,5} HK Heavy Duty Adjustable Knuckle
	20	20W/2490 ^{3,4}			
	30	30W/3310 ^{3,4}			
	50	50W/6400 ^{2,3,4}			
	80	80W/8950 ^{2,3,4}			YM Yoke Mount ^{2,5} SF Slip Fitter ^{2,5} PM Pole Mount ^{2,5}

¹ Standard for fixture
² Vinci Large Model Only
³ Delivered Lumens (5000K) – See table on Page 2

⁴ DLC Listed Wattage – See DLC matrix on Page 2
⁵ 10W, 20W, 30W Require Pencil Photocell (See Page 2)



Deco Lighting practices a program of continuous product development, and as a result product specifications change frequently. We reserve the right to change product specifications without notice. Contact Deco for the latest product information.

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 Rev Date: 04/23/18 #9

Digitize your light.

Features

Construction

Low-profile die-cast aluminum LED fixture with hinged, removable door and back box. Available from 10W up to 80W. Three half-inch, NP threaded conduit entry points included in back box, which mounts to standard 3 1/2" to 4" round and octagonal, 4" square, single gang and masonry junction boxes. Key hole gasket adapts to j-box and wall. Silicone gasket seals the door and back box. Compliance to FDA/USDA requirements and/or NSF splash-zone certification. CSA Listed for Wet Locations - IP67

Optical

Mirrored, anodized reflector located inside silicone-sealed optical chamber to provide maximum efficiency and high illumination. Impact-resistant tempered glass included in optical assembly, meeting IESNA requirements for full cutoff. Solid state LEDs thermally optimized with multiple lumen packages from a warm 3000K LED color temp to a cool 5000K (CCT).

Electrical

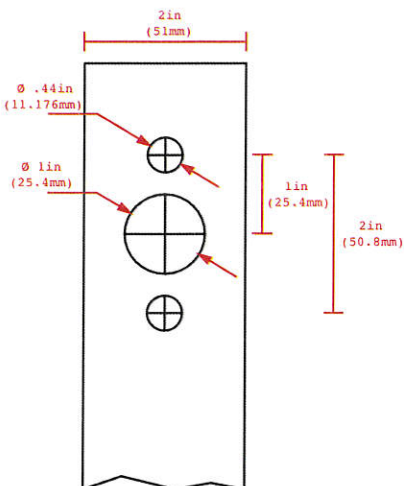
120-277V 50/60Hz. Heat sinking optimization due to LED driver mounted to fixture's die-cast housing. Thermal management system uses conduction and natural convection to transfer heat away from LED source. Three half-inch NPT threaded conduit entry points allow thru-branch wiring and the back box is an authorized electrical wiring compartment. Vinci-LED luminaires maintain greater than 70% of initial light output after 120,000 hours of operation.

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Operating Temperature:	-40°C to +50°C Max Ambient			
Projected Lifetime:	125,000 Hours (L70); 75,000 Hours (L80)			
IP Rating:	IP67			
Power Factor	> 0.90			
Total Harmonic Distortion (THD):	< 20%			
Sound Rating:	Class A (inaudible in a 24dB ambient environment)			
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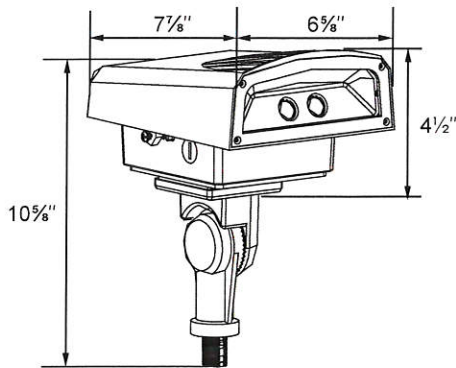
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5000K	X	X	X	X	X

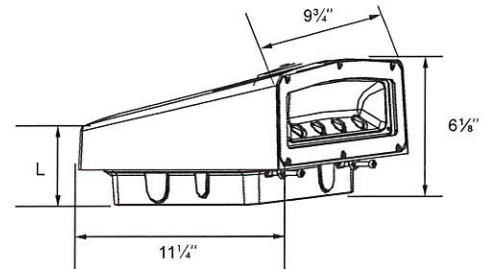
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Heavy Duty Adjustable Knuckle



Heavy Duty Adjustable Knuckle



Yoke Mount



Slip Fitter

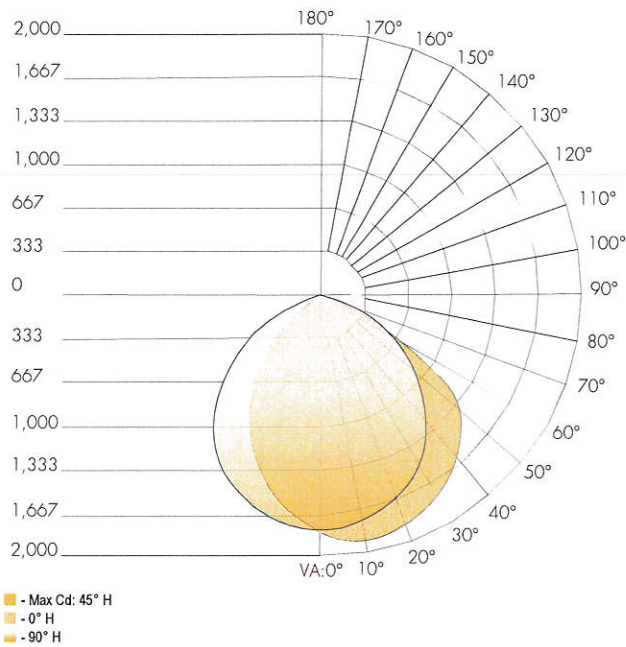


6" Pole Mount Arm

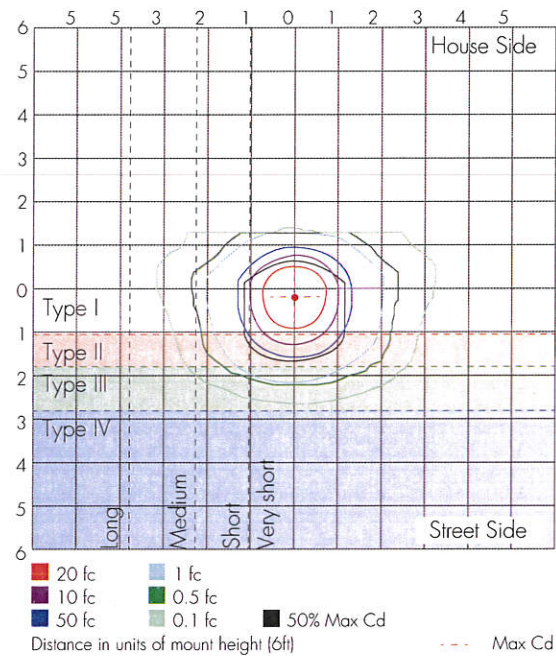
Photometric Data

30W 4000K

Polar Candela Distribution



Isolux Plot



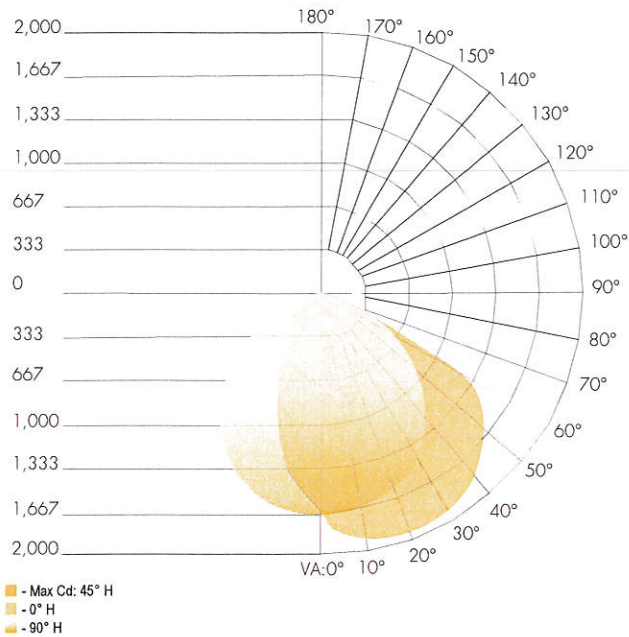
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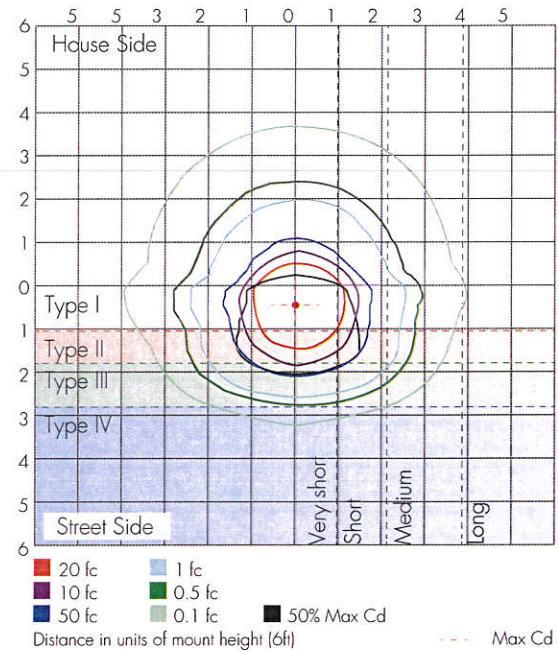
Photometric Data

80W 4000K

Polar Candela Distribution



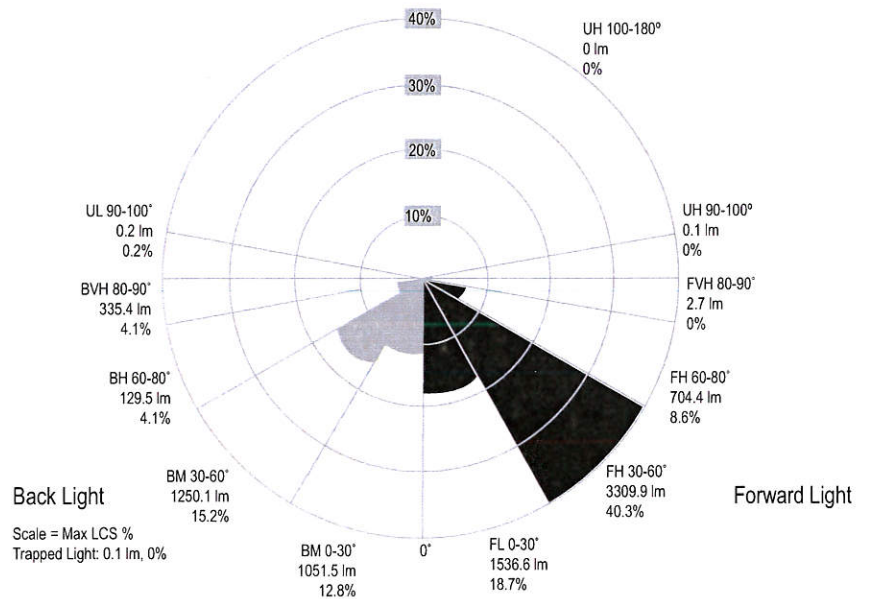
Isolux Plot



Zonal Lumen Summary

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70-100	214.1	2.6%
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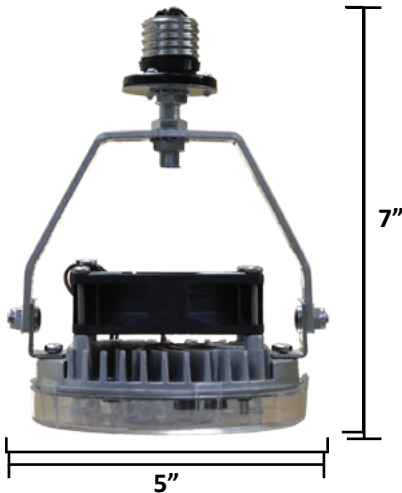
LCS Graph



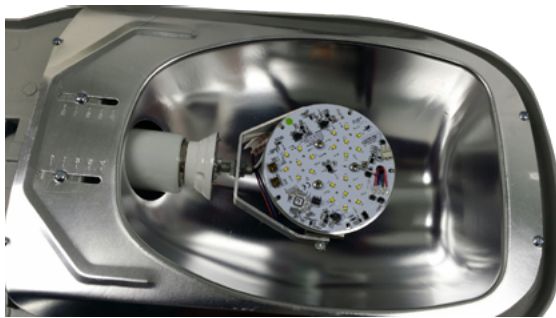
Simply Universal

The World Leader in LED Retrofits

GTR-YK-1xM21 [30W-60W Yoke Mounted LED Module]



Medium E26 Base



Bolt on Yoke Mounted GTSOLM21

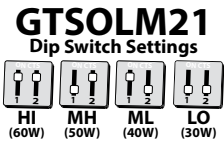


Description and Application:

Global Tech LED's Solstice units are designed to retrofit into almost any HID fixture using custom fabricated brackets and plates for easy plug and play installation. We can articulate our units and offer a wide array of innovative optics to deliver the light precisely where it's needed. Four way switchable power options on board. This unit also comes with an Energy Saver program that is accessed via a switch on the board.

Key Features:

- Multiple temperature control values. Over temperature protection, shut down at critical temperature and resume operation temperature.
- Under voltage lockout for power off or brownout
- Soft start
- Medium E26 and Mogul E40 bases
- 0-10VDC Dimming compatible
- 0-10VDC Input Port
- Current accuracy over the LED operating temperature range +/- 3%.



Driver and Wattage:

50/60Hz
Input voltage 120/277VAC 60W
347-480VAC driver also available.

24VDC operation without driver.
GTSOLM21 – 30W, 40W, 50W, 60W
per Solstice unit.

On Board Programs:

- Standard
- 5-6-1
- 0-10VDC Dimming*
- *If dimming is desired please specify when ordering

Additional Information:

MagLev® Fan Technology:
By using magnetic levitation force, these fans feature zero friction with no contact between shaft and bearing. 100,000 hours rated operating life, providing an exceptionally cool running LED unit -42° Celsius at ambient temperatures.

Distribution Pattern:
Multiple mounting positions for a broad range of narrow to spread symmetrical lighting distribution choices.

Warranty:
10 Year Limited Warranty

Operating Temperature Range:
-40 to +85 degrees Celsius

Photometrics:
Visit our web site at www.GlobalTechLED.com for detailed photometrics.

Lensing:
Multiple lensing options available for maximum light distribution, if needed. Without lensing beam angle is 120°

LED Module Compatibility

Product	Rated Life [L70] [Hrs]	Output Setting	LED Chip Drive Current [mA]	Rated Lumens [lm]	Rated Watts [W]
GTSOLM21 x 1	100,000	LO	400	2679	30
GTSOLM21 x 1	100,000	ML	500	3742	40
GTSOLM21 x 1	100,000	MH	600	4594	50
GTSOLM21 x 1	100,000	HI	700	5910	60

Base Options

Catalog #	Description
E40	Mogul Base
E27	Medium Base
NB	U-Bracket (No Base)

*Available in stock-able packaging



Fully Compliant with ARRA Buy American Requirements. Made in the USA.

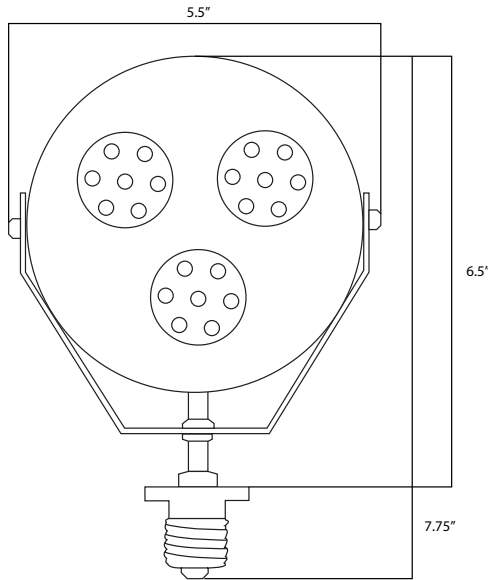


Product Information

GTR-YK-1xM21

[30W-60W Yoke Mounted LED Module]

Details



Features



- Life Sync
- Module Temp Protection
- Lumen Depreciation Maintenance
- Wattage Selections (on board)
- On Board Programming
 - 5-6-1 Energy Saving Program
 - 0-10V Dimming
- Lumiled Luxeon LED chips
- Active Thermal Management
- Optical Distribution Options
- -45°C to 85°C Operating Temperature
- 10 Year Warranty

Ordering Code Example:

GTR-YK - 1XM21 - GR - 100% - SV - NL - E40

Retrofit		Wattage			Color Temp	Optics	Base
Retrofit	Wattage	# of Modules	Setting	Input Voltage	Kelvin	Optics	Base
GTR-YK	30W	1xM21	25%	SV = 120-277V	GR = 5700K	NL = No Lens	E40
				HV = 347-480V	BR = 5000K	10D = Degree	E27
	40W	1xM21	50%	SV = 120-277V	YW = 4100K	25D = Degree	NB
				HV = 347-480V	BL = 4000K	50D = Degree	
	50W	1xM21	75%	SV = 120-277V	RD = 3500K	75D = Degree	
				HV = 347-480V	PR = 3000K	360D = Side Emitters	
	60W	1xM21	100%	SV = 120-277V	OR = 2700K	360s = Square Side Emitters	
				HV = 347-480V	AMB = Amber	T2 = Type II	
					GRO = Grow	T3 = Type III	
					RYB = Royal Blue		
					AQU = Aquarium		

* Please see previous page for Base option information

Fully Compliant with ARRA Buy American Requirements. Made in the USA.

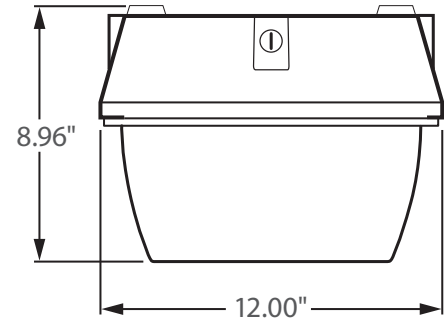


Not all products are qualified on the DLC QPL. To view our DLC qualified products, please consult the DLC Qualified Products List at www.designlights.org/qpl

** AVAILABLE **

Bi-Level Dimming
100% 50%

0 - 10V
FULL DIMMING



Incredible **100,000 hrs**

GENERAL DESCRIPTION

Neptun's 12" square LED canopy fixture features classic design and durability to be used in new construction or retrofit applications. The 12 series canopy fixture features excellent optics for increased visibility and security with horizontal and vertical footcandles to evenly illuminate parking garages. Can replace existing HID & HPS canopy or parking garage fixtures up to 250 Watts.

APPLICATION

- Parking Garage Lighting
- Canopy Lighting
- Gas Station Lighting
- Indoor Lighting
- Storage Lighting
- Security Lighting
- Area Lighting

STRUCTURE, MATERIALS, & FEATURES

- Heavy-gauge, die-cast aluminum housing.
- High efficiency, heat and impact resistant, UV protected, non yellowing polycarbonate lens / refractor.
- Corrosion resistant electrocoat dark bronze finish (custom colors available).
- Easy removal lens with (4) stainless steel screws.
- Continuous silicone gasket surrounds lens for weather - tight seal.
- High Output COB LED's.
- High power factor, low THD driver with 6kV/3kA surge protection. Optional 20kV/10kA surge protector available.
- Instant-On flicker-free Cold Start and Hot Re-Start.
- Bright white light (5000°K) for greater visibility and safety.
- LED engine design with Advanced Thermal Management
- Up to 15 year maintenance free operation.
- 5 Year Warranty on complete fixture. (LED's, Driver, & Housing)
- **Optional:** Bi-Level Dimming, 0-10V Dimming, Remote Monitoring and ON/ OFF Control, DC 24V Operation - Solar Compatible

ORDERING INFORMATION

Sample Number: LED-12040-UNV-0-10VDIM-750-BRZ
Custom options and accessories available. Please consult factory

Series	Wattage	Voltage	Options	Color Temp	Accessories	Color
LED-12 = 12" Square Canopy	040 = 40 W 060 = 60 W 080 = 80 W	UNV = 120-277 VAC 347V = 347 VAC 480V = 480 VAC 24VDC = 24 VDC	0-10VDIM = 0-10V Dimming BL-DIM = Bi-Level Dimming * EM-BB15 = 90min Emergency Battery Backup @ 15w ** * Includes Motion Sensor ** Only available with 40w *** Contact Factory for dimming options	735 = 3500°K 741 = 4100°K 750 = 5000°K * * Standard	LD-120V = Photocell 120V LD-277V = Photocell 277V MD = Motion Detector ON/OFF SP = 20kV/10kA surge protector	BRZ = Dark Bronze * Custom Colors Available



lightinnovations@work™

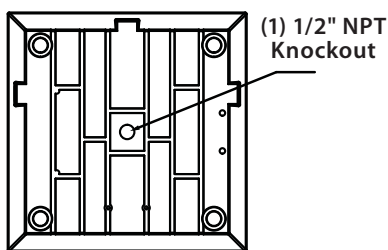
PRODUCT INFORMATION

Model No.	Description	Rated Watts	Input Watts	Delivered Lumens	Universal Line Voltage (VAC)	Max Line Current (Amp) @ 120 - 277	THD	Power Factor	Weight
LED-12040-UNV	LED 12" Square Canopy	40	41	4,400	120-277	0.34 - 0.15	<20%	>0.90	12 lbs
LED-12060-UNV	LED 12" Square Canopy	60	61	6,600	120-277	0.52 - 0.22	<20%	>0.90	12 lbs
LED-12080-UNV	LED 12" Square Canopy	80	81	8,800	120-277	0.69 - 0.30	<20%	>0.90	12 lbs

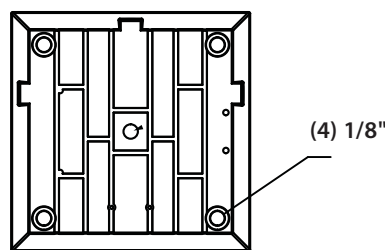
SPECIFICATIONS

- LED Driver Constant Current
- Power Supply 350mA
- Driver UL Rating Class 1
- Driver UL Outdoor Rated Wet Location
- Start Method InstantON
- Hot Re-start InstantON
- Universal Input Line Voltage 120-277 VAC
- Input Line Frequency 50/60 Hz
- Driver Off-State Draw 0 Watts
- Sound Rating Class A
- ANSI Surge Protection IEEE C62.41 C High
- Projected (L70) @ 25°C > 100,000 hrs.
- Color Temperature 5000°K
- Color Rendering Index (CRI) > 80
- Minimum Starting Temperature -40°C
- Maximum Starting Temperature +50°C
- Lumens per Watt > 100
- Shock / Vibration Resistant Yes
- Power Factor > 0.90
- Total Harmonic Distortion < 20%
- Inrush Current Peak < 10 Amp
- ETL Listed / UL Standard 1598 Yes
- FCC Compliance Part 15, Subp. C
- IP Rating IP65
- Warranty 5 Year

MOUNTING OPTIONS

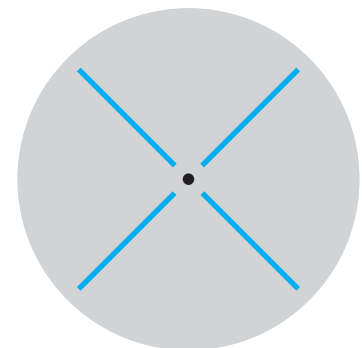


Pendant Mount



Surface Mount

PHOTOMETRICS (See Complete IES File)



Type V Distribution

LED T5 | DIRECT REPLACEMENT



PRODUCT FEATURES

- Easy Plug-and-Play Installation - No Rewiring Required
- Operates with Electronic Ballasts¹
- Identical Look to Standard Fluorescent Lamp
- Full Glass Lens with 240 Degree Light Distribution
- High Efficacy with 50% Energy Savings
- DLC QPL Listed
- UL Listed for Direct Fluorescent Lamp Replacement
- 5-Year Warranty
- ETL Sanitation Listed for Food Service Applications

\$90 Total Life Savings³

APPLICATIONS

- Office Buildings/Schools
- Warehouse
- Manufacturing Facilities
- Parking Garages

Model Number ²	Lamp Type	Base	Watts / Replaced	Lumens	CCT	MOL	Distribution	Certification	Warranty
LBT5F1641	Plug-n-Play	G5	13W / 28W	1650 lm	3500K 4100K 5000K	45.8"	240°	UL	5-Years
LBT5F3341	Plug-n-Play	G5	31W / 54W	3300 lm	3500K 4100K 5000K	45.8"	240°	UL/DLC	5-Years

NOTE 1: Please reference our Ballast Compatibility List

NOTE 2: Replace xx with 35 for 3500K, 41 for 4100K, and 50 for 5000K Color Temperature

NOTE 3: Savings calculated by 50,000 hour Lifetime, Electricity rated \$0.12, and 3 Operating Hours Per Day.



LED T5 | DIRECT REPLACEMENT



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- Easy Plug-and-Play Installation - No Rewiring Required
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NOTE 2: Replace xx with 35 for 3500K, 41 for 4100K, and 50 for 5000K Color Temperature

NOTE 3: Savings calculated by 50,000 hour Lifetime, Electricity rated \$0.12, and 3 Operating Hours Per Day.





TAG PP

Elite High Output A-Lamps

All Purpose and Omni-Directional

TCP's High Output A-Lamps are ideal for use in areas where maximum light output is required. This high output lamp produces an even light similar to incandescent, all with an average life span of 25,000 hours.

Limitless options for the following applications:

- General Lighting
- Floor Lamps
- Ceiling Fixtures
- Table Lamps
- Sconces
- Decorative Fixtures

Great features and benefits:

- Energy efficient: 80% more efficient than halogen alternatives
- Smooth, uniform dimming; also available as non-dimming
- Incandescent replacement
- Long life: 25,000 hours
- Replaces 75W and 100W incandescents
- All purpose and omni-directional options
- Excellent color consistency and high color rendering (CRI)
- Available in 2700K, 3000K, 4100K and 5000K



A21 A-Lamp




we know light.™

TCP®

325 Campus Dr. | Aurora, Ohio 44202 | P: 800-324-1496 | tcp.com

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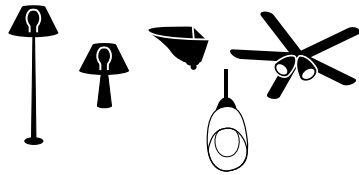


LED 25,000 Hours average rated life, 120 Volts

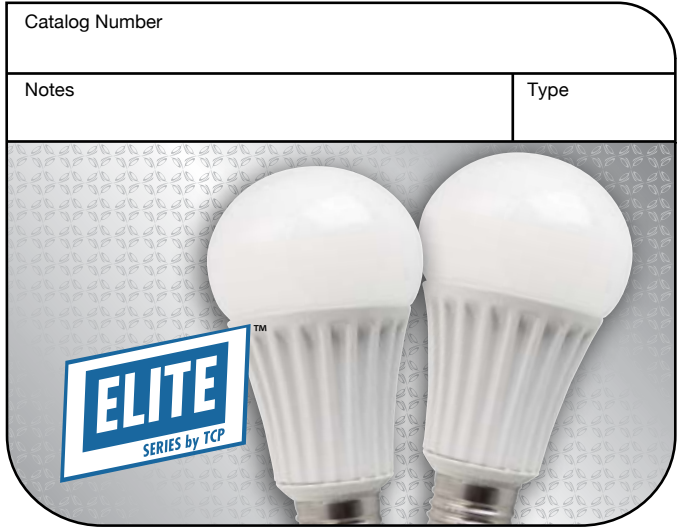
Applications:

Ideal for applications where uniform multi-directional light output is required.

- + Table Lamps
- + Floor Lamps
- + Sconces
- + Ceiling Fixtures
- + Decorative Fixtures



Features	Benefits
Up to 85% less energy than halogen alternatives	Instant energy savings
Long life	Minimizes replacement and maintenance costs
Very low heat generation	Perfect for sensitive display lighting such as art galleries
Excellent Color Consistency and CRI	Enhances colors of focal point while maintaining uniformity throughout lighting installation from lamp to lamp
UL approved for damp location	Can be used outdoors when protected from elements. Withstands humidity indoors/outdoors
Shatter resistant	Lower the risk of injury and breakage
ANSI construction compliant	Fits all A21 installations



Specifications

Input Line Voltage:	120 VAC
Input Power	See Chart
Input Line Frequency	50/60HZ
Lamp Life (Rated)	25,000 hrs
Minimum Starting Temp	-30°C
Maximum Operating Temp	40°C
CRI	82



A21 A-Lamp



5 YEAR WARRANTY*

Omni-Directional



- + Best "technical" A-Lamp replacement
- + Based on ENERGY STAR standard for omni-directional lamps
- + Supported by many utility rebates

All-Purpose



- + Best "value" A-Lamp replacement
- + All-purpose lamp with excellent uniformity within 230 degrees that works well in all A-Lamp fixtures

*Based on 12 hours use per day

For the most up-to-date specs, please visit www.tcp.com





Warranties and Certifications	Item #	Description	Voltage	Watt	Incandescent Wattage Comparison	Lumens	LPW	CCT	CRI	R9	M.O.L. (inches)	Diameter (inches)	Case Quantity	Enclosed/ Recessed Luminaire
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100W Equivalent Options

18W A21 Omni-Directional A-Lamp - Dimmable

LED18A21DOD27K <i>See new item L15A19D2527K</i>	18W Omni Dimmable A-Lamp - 2700K	120	18	100	1600	88.9	2700K	82	>0	4.9	2.6	12	N
LED18A21DOD30K <i>Use LED16A21D30K</i>	18W Omni Dimmable A-Lamp - 3000K	120	18	100	1625	90.3	3000K	82	>0	4.9	2.6	12	N
LED18A21DOD41K <i>See new item L15A19D2541K</i>	18W Omni Dimmable A-Lamp - 4100K	120	18	100	1650	91.7	4100K	82	>0	4.9	2.6	12	N
LED18A21DOD50K <i>See new item L15A19D2550K</i>	18W Omni Dimmable A-Lamp - 5000K	120	18	100	1675	93.1	5000K	82	>0	4.9	2.6	12	N

16W A21 230° A-Lamp - Dimmable

LED16A21D27K <i>See new item L15A19D2527K</i>	16W Dimmable A-Lamp - 2700K	120	16	100	1600	100.0	2700K	82	>0	4.9	2.6	12	N
LED16A21D30K	16W Dimmable A-Lamp - 3000K	120	16	100	1625	101.6	3000K	82	>0	4.9	2.6	12	N
LED16A21D41K <i>See new item L15A19D2541K</i>	16W Dimmable A-Lamp - 4100K	120	16	100	1650	103.1	4100K	82	>0	4.9	2.6	12	N
LED16A21D50K <i>See new item L15A19D2550K</i>	16W Dimmable A-Lamp - 5000K	120	16	100	1675	104.7	5000K	82	>0	4.9	2.6	12	N

15W A21 230° A-Lamp - Non Dimmable

LED15A2127K <i>See new item L16A19N1527K</i>	15W Non-Dimmable A-Lamp - 2700K	120	15	100	1600	106.7	2700K	82	>0	4.9	2.6	12	N
LED15A2130K	15W Non-Dimmable A-Lamp - 3000K	120	15	100	1625	108.3	3000K	82	>0	4.9	2.6	12	N
LED15A2141K <i>See new item L16A19N1541K</i>	15W Non-Dimmable A-Lamp - 4100K	120	15	100	1650	110.0	4100K	82	>0	4.9	2.6	12	N

75W Equivalent Options

13W A21 Omni-Directional A-Lamp - Dimmable

LED13A21DOD27K <i>See new item L11A19D2527K</i>	13W Omni Dimmable A-Lamp - 2700K	120	13	75	1100	84.6	2700K	82	>0	4.9	2.6	12	Y
LED13A21DOD30K	13W Omni Dimmable A-Lamp - 3000K	120	13	75	1125	86.5	3000K	82	>0	4.9	2.6	12	Y
LED13A21DOD41K	13W Omni Dimmable A-Lamp - 4100K	120	13	75	1150	88.5	4100K	82	>0	4.9	2.6	12	Y
LED13A21DOD50K	13W Omni Dimmable A-Lamp - 5000K	120	13	75	1175	90.4	5000K	82	>0	4.9	2.6	12	Y

13W A21 230° A-Lamp - Dimmable

LED13A21D27K	13W Dimmable A-Lamp - 2700K	120	13	75	1100	84.6	2700K	82	>0	4.9	2.6	12	N
LED13A21D30K	13W Dimmable A-Lamp - 3000K	120	13	75	1125	86.5	3000K	82	>0	4.9	2.6	12	N
LED13A21D41K	13W Dimmable A-Lamp - 4100K	120	13	75	1150	88.5	4100K	82	>0	4.9	2.6	12	N
LED13A21D50K <i>Use LED13A21DOD50K</i>	13W Dimmable A-Lamp - 5000	120	13	75	1175	90.4	5000K	82	>0	4.9	2.6	12	N

13W A21 230° A-Lamp - Non Dimmable

LED13A2127K	13W Non-Dimmable A-Lamp - 2700	120	13	75	1100	84.6	2700K	82	>0	4.9	2.6	12	N
LED13A2130K <i>Use LED13A21D30K</i>	13W Non-Dimmable A-Lamp - 3000K	120	13	75	1125	86.5	3000K	82	>0	4.9	2.6	12	N
LED13A2141K	13W Non-Dimmable A-Lamp - 4100K	120	13	75	1150	88.5	4100K	82	>0	4.9	2.6	12	N

*Based on 12 hours use per day

For the most up-to-date specs, please visit www.tcpi.com



CREATING BEAUTY

TCP has a **20-year history in energy-efficient lighting.**

Thanks to our **cutting edge technology** and manufacturing

expertise, we have shipped billions of high quality lamps and our

integrated technology and manufacturing

provides **expedited time-to-market.** With TCP, you can

count on unique lighting products designed to meet very specific needs—

lighting that transforms your surroundings and envelopes you in warmth—

lighting that generates beauty with every flip of the switch.

LED

For more information on the quality and care TCP can deliver, call us at **800.324.1496** or visit tcp.com

325 Campus Dr. | Aurora, Ohio 44202 | P: 800-324-1496 | F: 877-487-0516

Catalog Number	TAG QQEB
Notes	
Type	

FEATURES & SPECIFICATIONS

INTENDED USE — For wall or ceiling mounting, vertical or horizontal. The WL combines digital LED lighting and controls technologies with high-performance optical design to offer the most advanced wall-mount luminaire for general ambient lighting applications. High-efficacy light engine delivers long life and excellent color, ensuring a superior quality lighting installation that is highly efficient and sustainable.

CONSTRUCTION — Housing is roll formed from code-gauge steel.

Reflector is retained in die cast ends providing secure installation and easy maintenance.

Decorative die-cast end caps provide added durability.

Finish: All metal parts are post-painted in white polyester powder coat for smooth, finished edges and uniform light distribution.

OPTICS — Impact modified linear faceted refractor. Optically engineered for superior light distribution and maximum efficacy.

Crescent-shape linear faceted refractor system obscures and integrates individual LED images and uniformly washes fixture surface with light.

ELECTRICAL — Long-life LEDs, coupled with high-efficiency drivers, provide superior quantity and quality of illumination for extended service life. 90% LED lumen maintenance at 60,000 hours (L90/60,000). The LEDs have a CRI of 82.

eldoLED driver options deliver choice of dimming range and choice for control, while assuring flicker-free, low-current inrush, 89% efficiency and low EMI.

Driver disconnect provided where required to comply with US and Canadian codes.

Optional nLight® embedded controls continuously monitor system performance and allow for constant lumen management function.

Lumen Management: Unique lumen management system (option N80) provides onboard intelligence that actively manages the LED light source so that constant lumen output is maintained over the system life, preventing energy waste created by the traditional practice of over-lighting.

SENSOR — **Integrated sensor (individual control):** Sensor Switch MSD7 (Passive Infrared (PIR)) integrated occupancy sensor photocell allows the luminaire to power off when the space is unoccupied. See page 4 for more details on the integrated sensor.

Integrated Sensor (nLight Wired Networking): The sensor is nLight-enabled, meaning it has the ability to communicate over an nLight network. When wired using CAT-5 cabling with other nLight-enabled sensors, power packs, or WallPods, an nLight control zone is created. Once linked to a Gateway, directly or via a Bridge, the zone becomes capable of remote status monitoring and control via SensorView software. See page 4 for the nLight sensor options.

Integrated Smart Sensor (nLight AIR Wireless Platform): The RES7 sensor is nLight AIR enabled, meaning it has the ability to communicate over the wireless nLight control platform. It is available with an automatic dimming photocell, and either a digital PIR or a dual technology occupancy sensor. It pairs to other luminaires and wall switches through our mobile app, CLAIRITY, which allows for simple sensor adjustment. See page 4 for more details on the Integrated Smart Sensor.

XPoint Wireless Networking: XPoint™ Wireless technology creates a mesh network to ensure communication between fixtures, sensors, and wall stations facility wide. This option provides superior lighting management capabilities including granular control, configuration, and custom grouping. This option enables sensors that detect motion to wirelessly communicate to neighboring fixtures — whether on different floors in a stairwell, to a corridor or hallway — illuminating the desired path.

LISTINGS — CSA certified to meet U.S. and Canadian standards. Suitable for damp location (excluding sensor option).

Patents pending. DesignLights Consortium® (DLC) qualified product. Not all versions of this product may be DLC qualified. Please check the DLC Qualified Products List at www.designlights.org/QPL to confirm which versions are qualified.

WARRANTY — 5-year limited warranty. Complete warranty terms located at: www.acuitybrands.com/CustomerResources/Terms_and_conditions.aspx

NOTE: Actual performance may differ as a result of end-user environment and application.

All values are design or typical values, measured under laboratory conditions at 25 °C.

Specifications subject to change without notice.

W SERIES

Wall bracket & Surface Mount LED



WL4

4'
LED



eldoLED



A+ Capable Luminaire

This item is an A+ capable luminaire, which has been designed and tested to provide consistent color appearance and out-of-the-box control compatibility with simple commissioning.

- All configurations of this luminaire meet the Acuity Brands' specification for chromatic consistency
- This luminaire is part of an A+ Certified solution for nLight® or XPoint™ Wireless control networks when ordered with drivers marked by a shaded background*

To learn more about A+, visit www.acuitybrands.com/aplus.

*See ordering tree for details

WL4 Wall Bracket & Surface Mount LED



A+ Capable options indicated by this color background.

ORDERING INFORMATION

Lead times will vary depending on options selected. Consult with your sales representative.

Example: WL4 30L EZ1 LP840

WL4 Series	Lumens ¹	Voltage	Driver	Color temperature	nLight Interface
WL4 4' wall-mount LED	20L 2000 lumens 30L 3000 lumens 40L 4000 lumens	(blank) MVOLT 347 347V	EZ1 eldoLED dims to 1%, 0-10V EZB eldoLED dims to dark, 0-10V	LP830 3000 K LP835 3500 K LP840 4000 K LP850 5000 K	nLight Wired (blank) No nLight® interface N80 nLight® with 80% lumen management N80EMG nLight® with 80% lumen management. For use with generator supply EM power ² N100 nLight® without lumen management N100EMG nLight® without lumen management. For use with generator supply EM power ² nLight Wireless (blank) No nLight® interface NLTAIR2 nLight® Air Generation 2 enabled ³

Control ⁴	Standby mode ⁸	Options	Finish ¹¹
nLight Wired (blank) No nLight control NES7 nLight® nES 7 PIR integral occupancy sensor ⁵ NESPDT7 nLight® nES PDT 7 dual technology integral occupancy control ⁵ NES7ADCX nLight® nES 7 ADCX PIR integral occupancy sensor with automatic dimming photocell ⁵ Xpoint Wireless XADS7 XPoint™ wireless controller and micro 360° PIR occupancy and photocell sensor ⁷ XADNS7 XPoint™ wireless controller and micro 360° PIR occupancy and photocell sensor (egress lighting) ⁷ nLight Wireless RES7 nLight® AIR PIR integral occupancy sensor with automatic dimming photocell RES7PDT nLight® AIR microphonics dual technology integral occupancy sensor with automatic dimming photocell Individual Control MSD7 Sensor Switch® MSD 7 PIR Integral Occupancy Control ⁶	(blank) Fixture turns off when unoccupied DIM10 Fixture dims to approximately 10% light output when unoccupied DIM50 Fixture dims to approximately 50% light output when unoccupied NOC Occupancy sensor disabled ⁹	EL7L 700 nominal lumen battery pack (non-CEC compliant) ¹⁰ EL14L 1400 nominal lumen battery pack (non-CEC compliant) ¹⁰ E10WLCP EM Self-Diagnostic battery pack, 10W Constant Power, CEC compliant ¹⁰ SC Surface conduit end cap provisions	(blank) White

Notes

- 1 Approximate lumen output.
- 2 nLight EMG option requires a connection to existing nLight network. Power is provided from a separate N80 or N100 enabled fixture
- 3 Must order with RES7, RES7PDT, or module. Only available with EZ1 driver.
- 4 See sensor options on page 4.
- 5 Requires N80, N100, N80EMG, or N100EMG. Cannot be ordered with EZB and EL7L or EL14L together.
- 6 Not available with nLight options or EZB.
- 7 Not available with nLight options or Standby Mode. Gateway not included. Requires on-site commissioning. Visit www.lightingcontrols.com/XPointWireless for more information.
- 8 Requires Occupancy Control.
- 9 Only available with RES7 or RES7PDT. Occupancy sensor disabled at factory but can be re-enabled upon commissioning.
- 10 Not available with 347V. Cannot be ordered with 40L, EZB, and sensor combination.
- 11 For additional paint finishes, refer to [Architectural Colors](#).

WL4 Wall Bracket & Surface Mount LED

nLight® Wired Control Accessories:

Order as separate catalog number. Visit www.acuitybrands.com/products/controls/nlight.

WallPod stations	Model number	Occupancy sensors	Model number
On/Off	nPODM [color]	Small motion 360°, ceiling (PIR / dual tech)	nCM 9 RJB / nCM PDT 9 RJB
On/Off & raise/lower	nPODM DX [color]	Large motion 360°, ceiling (PIR / dual tech)	nCM10 RJB / nCM PDT 10 RJB
Graphic touchscreen	nPOD GFX [color]	Wall switch with raise/lower	nWSX PDT LV DX [color]
Photocell controls	Model number	Cat-5 cable (plenum rated)	Model number
Full range dimming	nCM ADCX RJB	10' cable	CAT5 10FT J1
		30' cable	CAT5 30FT J1

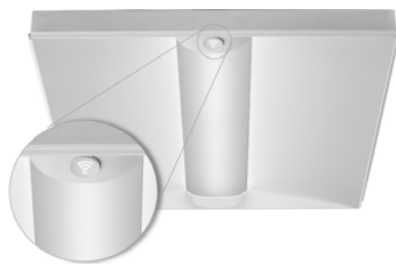
nLight® AIR Control Accessories:

Order as separate catalog number. Visit www.acuitybrands.com/products/controls/nlightair.

Wall switches	Model number
On/Off single pole	rPODB [color] G2
On/Off two pole	rPODB 2P [color] G2
On/Off & raise/lower single pole	rPODB DX [color] G2
On/Off & raise/lower two pole	rPODB 2P DX [color] G2
On/Off & raise/lower single pole	rPODBZ DX WH G2

ORDERING INFORMATION

rCMS		Example: RCMS PDT 10 AR G2				
Series/Detection	Occupancy Detection	Lens (Required)		Operating Mode	Generation	
RCMS nLight AIR occupancy and daylight sensor	(blank) PIR Detection PDT Dual Tech PIR/ Microphonics	10 Large Motion/Extended Range 360°	9 Small Motion/Extended Range 360°	(blank) None AIR Auxiliary Relay	G2 Generation 2 compatibility	
		6 High Bay 360° Lens				



RCMS

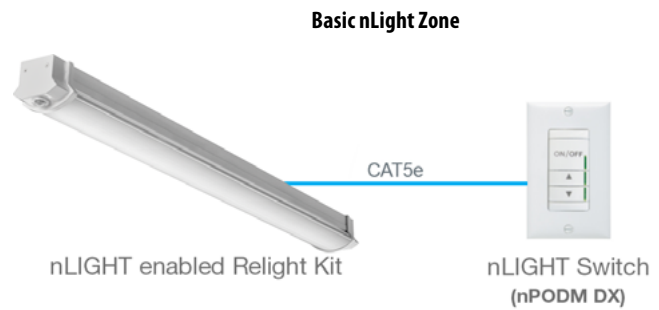


WL4 Wall Bracket & Surface Mount LED

Sensor Options					
Option	Automatic Dimming Photocell	Occupancy Sensing		nLight Wired Networking	nLight AIR Networking
		PIR	PDT		
MSD7		X			
NES7		X		X	
NES7ADCX	X	X		X	
NESPDT7			X	X	
RES7	X	X			X
RES7PDT	X	X	X		X

Integrated Sensor with Individual Control

The MSD7 PIR occupancy sensor is ideal for areas without obstructions and where daylight harvesting may be desired. Suggested applications include, but not limited to, hallways, corridors, storage rooms, and breakrooms or other areas where people are typically moving.



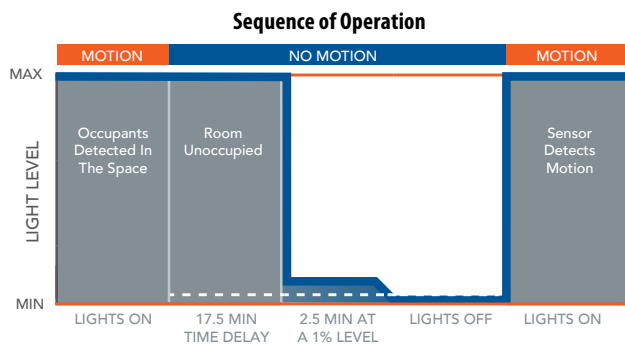
nLight Wired Networking

The nES 7 is ideal for small rooms without obstructions or areas with primarily walking motion. Ideal areas include hallways, corridors, storage rooms, and breakrooms. Additionally, the NES7ADCX includes an integrated photocell, which enables daylight harvesting controls.

For areas like restrooms, private offices, open offices, conference rooms or any space with obstructions, the nES PDT 7 dual technology sensor is recommended. The nES PDT 7 utilizes both PIR (passive infrared) and Microphonics technologies to detect occupancy.

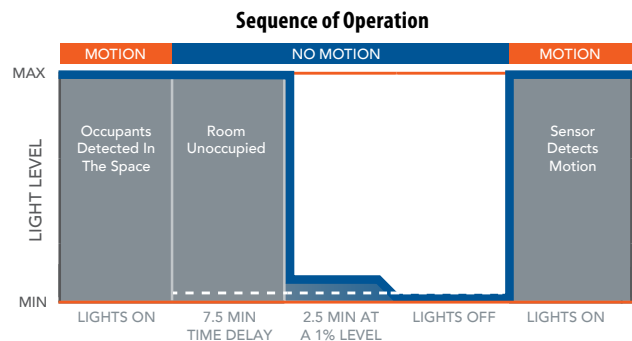
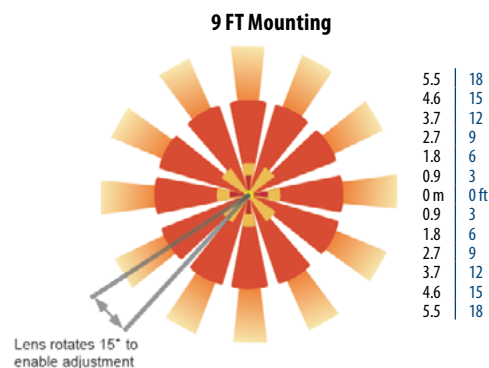
nLight AIR Wireless

nLight AIR is the ideal solution for retrofit or new construction spaces where adding additional wiring can be labor intensive and costly. nLight AIR is available with or without an integral sensor. The integrated RES7 or RES7PDT smart sensors are part of each luminaire in the nLight AIR network, which can be grouped to control multiple luminaires. The granularity of control with the digital PIR occupancy detection and daylight sensing makes a great solution for any application.

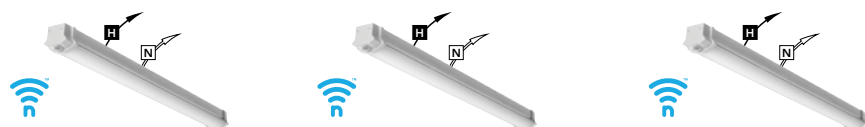


Sensor Coverage Pattern Mini 360° Lens

- Recommended for walking motion detection from mounting heights between 8 ft (2.44 m) and 20 ft (6.10 m)
- Initial detection of walking motion along sensor axes at distances of 2x the mounting height up to 15 ft (4.57 m) and 1.75x up to 20 ft (6.10 m).
- Provides 12 ft (3.66 m) radial detection of small motion when mounted at 9 ft (2.74 m)
- Initial detection will occur earlier when walking across sensor's field of view than when walking directly at sensor



*The presetting on the automatic dimming photocell is 5fc.



Simple as 1,2,3

1. Install the nLight® AIR fixtures with embedded smart sensor
2. Install the wireless battery-powered wall switch
3. With CLAIRITY app, pair the fixtures with the wall switch and if desired, customize the sensor settings for the desired outcome



WL4 Wall Bracket & Surface Mount LED

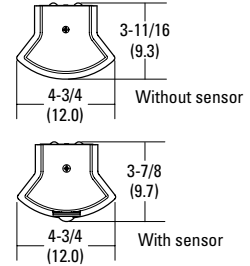
Performance Data			
Lumen package	Input watts	Lumens	LPW
20L LP830	18.7	2050	110
20L LP835	18.7	2152	115
20L LP840	18.7	2255	121
20L LP850	18.7	2410	129
30L LP830	28.2	2952	105
30L LP835	28.2	3095	110
30L LP840	28.2	3251	115
30L LP850	28.2	3239	115
40L LP830	39.5	3927	99
40L LP835	39.5	4124	104
40L LP840	39.5	4325	110
40L LP850	39.5	4571	116

DIMENSIONS

All dimensions are inches (centimeters) unless otherwise noted.

Specifications

Length: with sensor - 50-15/16 (129.40)
 without sensor - 46-13/16 (118.90)
 Height: with sensor - 3-7/8 (9.7)
 without sensor - 3-11/16 (9.3)
 Width: 4-3/4 (12.1)



How to Calculate Estimated Lumens in Emergency Mode

Use the formula below to estimate the delivered lumens in emergency mode

Delivered Lumens = 1.25 x P x LPW

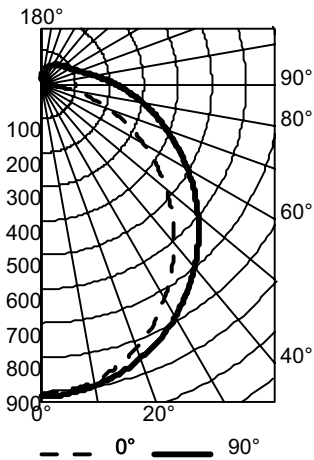
P = Output power of emergency driver. P = 10W for E10WLCP option.

LPW = Lumen per watt rating of the luminaire. This information is available on the ABL luminaire spec sheet.

LPW = Lumen per watt rating of the luminaire. LPW information available in Performance Data section.

PHOTOMETRICS

WL4 30L EZ1 LP840, 3250.8 delivered lumens, test no. LTL25482P5, tested in accordance to IESNA LM-79



CP Summary

	0°	90°
0°	912	912
5°	901	910
15°	856	879
25°	777	823
35°	666	745
45°	542	650
55°	412	549
65°	279	444
75°	151	346
85°	44	257
90°	5	219

Coefficients of Utilization

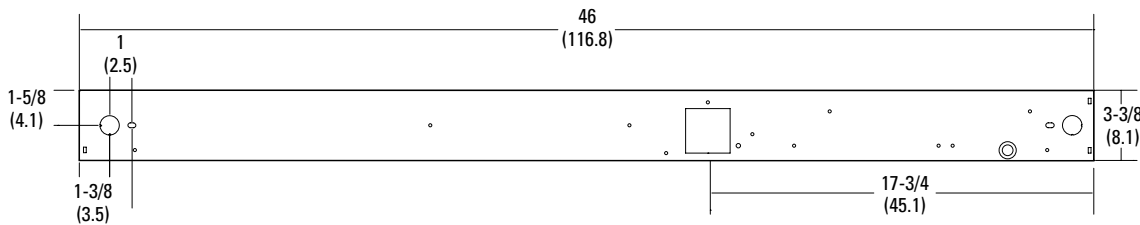
pc	pw	20%								
		80%			70%			50%		
0	1	2	3	4	5	6	7	8	9	10
0	116	116	116	112	112	112	104	104	104	
1	104	99	94	95	91	87	88	85	81	
2	94	85	78	82	75	70	76	71	66	
3	85	74	66	72	64	57	67	60	55	
4	78	66	56	63	55	48	59	52	46	
5	72	58	49	57	48	42	53	46	40	
6	66	52	43	51	42	36	48	40	35	
7	61	47	39	46	38	32	43	36	31	
8	57	43	35	42	34	28	40	32	27	
9	53	40	31	39	31	25	36	29	25	
10	50	37	29	36	28	23	34	27	22	

Zonal Lumen Summary

Zone	Lumens	% Lamp	% Fixture
0° - 30°	701	21.6	21.6
0° - 40°	1143	35.2	35.2
0° - 60°	2032	62.5	62.5
0° - 90°	2829	87.0	87.0
90° - 120°	256	7.9	7.9
90° - 130°	310	9.5	9.5
90° - 150°	386	11.9	11.9
90° - 180°	421	13.0	13.0
0° - 180°	3251	100.0	100.0

MOUNTING DATA

For unit installation; surface ceiling or wall mounting.





S9855

9WPLH/LED/835/DR/2P
 9W LED PL 2-Pin; 3500K; 850 Lumens; G24d base; 50000
 Average rated hours; 120 Deg. beam spread



S9855

Features

- Replaces 26 watt CFLs
- Direct Replacement - for use with Magnetic ballasts with no rewiring required. Ballast required.
- Instant on to full brightness / no flickering
- Horizontal operation
- Up to 70% energy saving
- Long life - 50,000 hours
- 5 year warranty

View:

[Ballast Compatibility Chart](#)

Item Number	UPC	Watts	Fluorescent Equivalent	Lamp Shape	Base	Lamp Code	Finish
S9855	045923098550	9	26 watt CFL	PL	G24d	9WPLH/LED/835/DR/2P	Frost
MOL In Inches	Initial Lumens	Average Rated Hours	Kelvin Temp	Color	CRI	Beam Spread Deg	Package Type
6-5/8"	850	50000	3500	Neutral White	82	120	Box
RoHS Compliant	UL or ETL Listed	UL Classification				Warranty	
Yes	Yes	cULus Classified - Damp Location Rated				5 Year Limited	



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PL H 8.5W DIR TITANIUM LED SERIES



8.5W REPLACES



26W CFL

60% Energy Savings



PRO

- Easy to install - Plug & Play Direct
- Ballast output power control technology
- Exceptional efficacy 120 LPW
- Dimmable on 0-10V circuits
- Compatible with most electronic ballasts
- Available in 2700K, 3000K, 3500K & 4000K CCT


 50,000 H


 ELECTRONIC BALLAST COMPATIBLE


 PLUG & PLAY Direct


 5 YR WARRANTY


 82 CRI (Ra)


 DIMMABLE









PL PRODUCT FEATURES

High Performance - Ballast Smart Control

The PL DIR lamp's ballast smart control technology allows for high performance even on lower powered ballasts, making it a suitable replacement for 13W, 18W, 26W, 32W and 42W CFL PL lamps.

Ballast Type	Lumens	Bare Lamp
13W	600	4.5W
18W	700	5.5W
26W	1020	8.5W

Adjustable Base



This PL H lamp features a base that can be rotated 310° to fit any socket configuration. After installation simply rotate the lamp to achieve maximum light output.

PL H 8.5W DIR TITANIUM LED SERIES

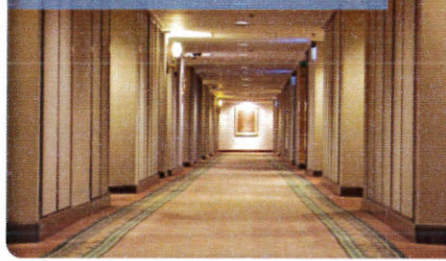


APPLICATIONS

Retail



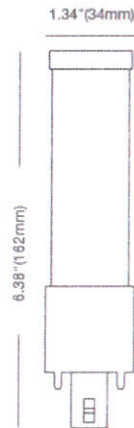
Hospitality



Office



Base: G24q & GX24q (4-pin CFL)
Voltage: Ballast compatible 120-277V
Dimmable: Yes
PF: 0.9
Lifetime (L70): 50,000 hrs
Weight: 0.18lb / 82g



SPECIFICATIONS

Model	Product	Power (W)	CCT	CRI (typ.)	Lumens	LPW	Beam Angle
8.5PLH/827/DIR	28366	8.5	Soft White 2700K	82	870	102	110°
8.5PLH/830/DIR	28367	8.5	Warm White 3000K	82	950	112	110°
8.5PLH/835/DIR	28368	8.5	Neutral White 3500K	82	950	112	110°
8.5PLH/840/DIR	28369	8.5	Cool White 4000K	82	1020	120	110°

BALLAST PERFORMANCE

Ballast Type	Bare Lamp (W)	System (W)	2700K	3000K	3500K	4000K
			Lumens	Lumens	Lumens	Lumens
13W	4.5	6	530	550	550	600
18W	5.5	7.3	630	650	650	700
26W	8.5	10.5	870	950	950	1020
42W	10	12.5	1000	1050	1050	1100

Testing Method: Power and lumen output will vary based on number of lamps, ballast and fixture type. Above data is indicative only.

* Suitable for damp locations. Not for use where directly exposed to weather or water

** Not intended for use in enclosed fixtures

*** Full installation guide and more details available on website

Solstice Titan 112- G2 LED Engine

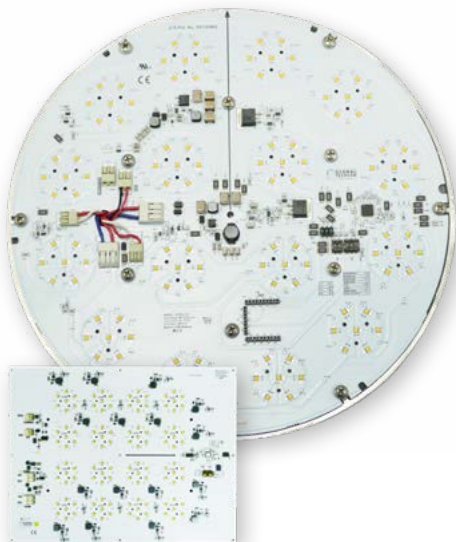
Solstice 112 - G2 - Pancake

125W - 340W

Commonly Replaces
750W-1000W HPS/MH/HID

Description:

The Solstice Engines are designed to replace inefficient and out dated HID lights. Our retrofit kits make it possible to install the solstice into almost any existing fixture. We offer a wide variety of accessory options and built in smart features, giving you unrivaled flexibility. A single Titan engine can replace up to 1000W. The pancake is purchased for replacements, it does not include any mounting or accessories.



IES Files
Available at
globaltechled.com

Additional Information:

- Solstice LED Engine's Life Sync Programs: Lumen Depreciation Maintenance, Temperature Control, Under Voltage Lockout, and Optional 5-6-1 Energy Savings Program
- Soft Start
- Plug and Play wireless control transceiver, IoT compatible (optional)
- LED Chips operating up to 1100mA
- Smart Driver: SV and HV, IP66 Rated, IEC, UL class 2 power, Class A sound rating, minimum efficiency of 86%, and operates between -40°C and 50°C, 120-480V, 50Hz

Limited Warranty:

- 10 Year Engine Warranty
- 5 Year Driver warranty

Applications:

- Replacement


Made in USA
Buy American Act compliant


L70 > 150,000
Third Party Tested


Rated IP67
Optional


Dimming Capable
Optional


RoHS compliant
Materials

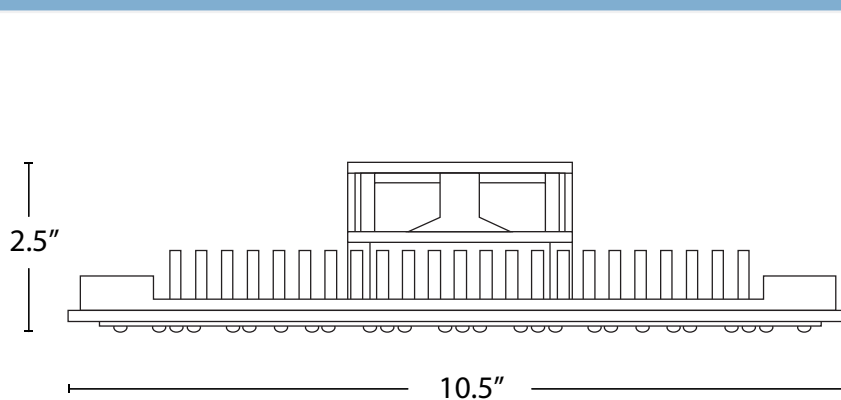

UL Listed
US and Canada

Output	Wattage	Lumens	Efficacy (L/W)
HO	340	39000	120
HI	300	35000	120
MH	240	31000	130
ML	200	26000	130
LO	125	15000	125

Specifications

Voltage Options:	SV (120V-277V) HV (277V-480V)	CCT:	BR 5000K, YW 4100K, BL 4000K, RD 3500K, PR 3000K, OR 2700K
Operating Temp:	-40° to 50° Celsius	Power Factor:	>.90
THD:	<20%	Surge Protection:	Required for ALL 347V-480V applications in order to qualify for warranty. Recommended for outdoor applications.
CRI:	80 (standard)	Optics:	NL (no lens), 10D, 25D, 50D, 75D, 360s, T2, T3

Dimensions




Ordering Information:

GTR - AR - 112 - G2 - HO - SV - GR - NL - PANC / IP67

Retrofit	Category	Engine	Wattage	Voltage	CCT	Lens	Mounting Method	Accs
GTR	AR = Area/ Roadway	112 - G2	HO (340W)	SV (120V-277V)	BR ¹ (5000K) [80CRI]	NL = No Lens	PANC = Pancake	IP67 = 1x112 - G2*
				HV (277V-480V)	YW (4100K) [70CRI]	10D = 10D Lens		GT-LSP-120
		112 - G2	HI (300W)	SV (120V-277V)	BL (4000K) [80CRI]	25D = 25D Lens		GT-LSP-240
				HV (277V-480V)	RD (3500K) [80CRI]	50D = 50D Lens		GT-LSP-277
		112 - G2	MH (240W)	SV (120V-277V)	PR (3000K) [95CRI]	75D = 75D Lens		GT-LSP-347
				HV (277V-480V)	OR (2700K) [80CRI]	360s = 360 Square Lens		GT-LSP-480
		112 - G2	ML (200W)	SV (120V-277V)		T2 = Type II Lens		
				HV (277V-480V)		T3 = Type III Lens		
		112 - G2	LO (125W)	SV (120V-277V)				
				HV (277V-480V)				

Surge Protectors	
GT-LSP-120	Surge Protector. 120 V 10 kA Parallel. 20kA maximum discharge current.
GT-LSP-240	Surge Protector. 240 V 10 kA Parallel. 20kA maximum discharge current.
GT-LSP-277	Surge Protector. 277 V 10 kA Parallel. 20kA maximum discharge current.
GT-LSP-347	Surge Protector. 347 V 10 kA Parallel. 20kA maximum discharge current.
GT-LSP-480	Surge Protector. 480 V 10 kA Parallel. 20kA maximum discharge current.

Accessories
 <p>IP67</p>

Notes:

¹ Lead times for CCT options other than BR and BL may be increased
* IP67 upgrade for Engine + fan (only NL, 10D, 25D, 50D & 75D)



TCP's award winning PARs have just gotten better. With a wide variety of options, TCP's PAR series combines traditional beauty with top-notch technology.

Limitless options for the following applications:

- Track lights
- Recessed downlights
- Display lights
- Outdoor fixtures that protect lamps from the elements

Great features and benefits:

- Energy efficient: up to 85% less energy than halogen replacements
- Smooth, uniform dimming
- Long life: 25,000 hours
- 120W, 90W, 75W, 60W and 50W replacements
- NEW smooth outer housing
- Excellent color consistency and high color rendering (CRI)
- Available in 2400K, 2700K, 3000K, 3500K, 4100K and 5000K



PAR38

PAR30LN

PAR30SN

PAR20





ELITE Series LED Dimmable PAR Lamps

Smooth Uniform Dimming

LED 25,000 hours average rated life, 120 volts

Applications

Ideal for PAR38, PAR30, and PAR20 flood and spot light applications.

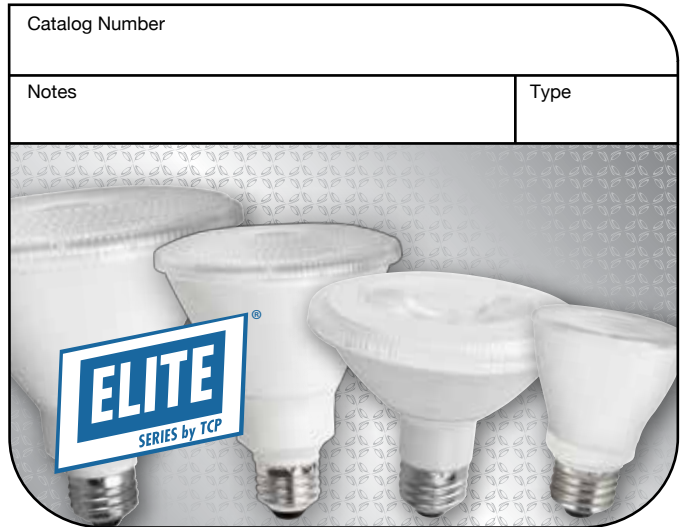
- + Track Lights
- + Recessed Downlights
- + Display Lights
- + Outdoor Fixtures that Protect Lamps from the Elements



Features

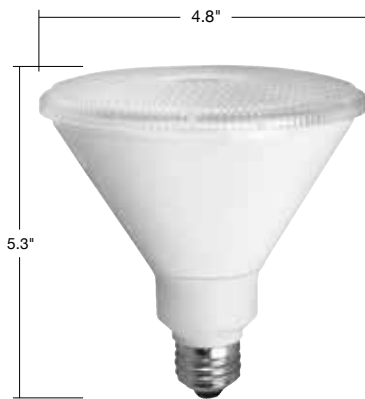
Benefits

Up to 85% less energy than halogen alternatives	Instant energy savings
Long life	Minimizes replacement and maintenance costs
Unique full face optic	Provides designer grade light quality with same look as halogen replacement
Smooth, clean outside housing	Seamlessly blends into lighting applications
Very low heat generation	Perfect for sensitive display lighting such as art galleries
Excellent color consistency and CRI	Enhances colors of focal point while maintaining uniformity throughout lighting installation from lamp to lamp
Light weight	Track or down light installations are not strained by excess weight
UL approved for damp location	Can be used outdoors when protected from elements — withstands humidity indoors/outdoors
Shatter resistant	Lower the risk of injury and breakage



Specifications

	PAR38	PAR30LN	PAR30SN	PAR20
Input Line Voltage:	120 VAC	120 VAC	120 VAC	120 VAC
Input Power	17 & 14 W	14 & 12 W	12 & 10 W	10 & 8 W
Input Line Frequency	50/60HZ	50/60HZ	50/60HZ	50/60HZ
Lamp Life (Rated)	25,000 hrs	25,000 hrs	25,000 hrs	25,000 hrs
Minimum Starting Temp	-30°C	-30°C	-30°C	-30°C
Maximum Operating Temp	40°C	40°C	40°C	40°C



PAR38



PAR30LN



PAR30SN



PAR20



5 YEAR WARRANTY

For the most up-to-date specs, please visit www.tcpi.com





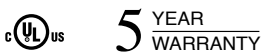
ELITE Series LED Dimmable PAR Lamps

Smooth Uniform Dimming

Item #	Description	Voltage	Wattage	Incandescent Wattage Comparison	Lumens	LPW	CBCP	Beam Angle	CTT	CRI	M.O.L. (inches)	Diameter (inches)	Case Quantity	STK/MTO
PAR38														
LED17P38D24KNFL	Dimmable 17W Smooth PAR38 - 2400K 25°	120	17	120	1200	70.6	4750	25	2400K	80	5.3	4.8	12	MTO
LED17P38D27KFL	Dimmable 17W Smooth PAR38 - 2700K 40°	120	17	120	1200	70.6	2563	40	2700K	80	5.3	4.8	12	STK
LED17P38D27KNFL	Dimmable 17W Smooth PAR38 - 2700K 25°	120	17	120	1200	70.6	5710	25	2700K	80	5.3	4.8	12	STK
LED17P38D27KSP	Dimmable 17W Smooth PAR38 - 2700K 15°	120	17	90	1200	70.6	8338	15	2700K	80	5.3	4.8	12	MTO
LED17P38D30KFL	Dimmable 17W Smooth PAR38 - 3000K 40°	120	17	120	1250	73.5	3107	40	3000K	80	5.3	4.8	12	STK
LED17P38D30KNFL	Dimmable 17W Smooth PAR38 - 3000K 25°	120	17	120	1250	73.5	6130	25	3000K	80	5.3	4.8	12	STK
LED17P38D35KFL	Dimmable 17W Smooth PAR38 - 3500K 40°	120	17	120	1275	75.0	3132	40	3500K	80	5.3	4.8	12	MTO
LED17P38D35KNFL	Dimmable 17W Smooth PAR38 - 3500K 25°	120	17	120	1275	75.0	7550	25	3500K	80	5.3	4.8	12	MTO
LED17P38D35KSP	Dimmable 17W Smooth PAR38 - 3500K 15°	120	17	90	1275	75.0	8771	15	3500K	80	5.3	4.8	12	MTO
LED17P38D41KFL	Dimmable 17W Smooth PAR38 - 4100K 40°	120	17	120	1300	76.5	3366	40	4100K	80	5.3	4.8	12	MTO
LED17P38D41KNFL	Dimmable 17W Smooth PAR38 - 4100K 25°	120	17	120	1300	76.5	7292	25	4100K	80	5.3	4.8	12	MTO
LED17P38D41KSP	Dimmable 17W Smooth PAR38 - 4100K 15°	120	17	90	1300	76.5	9947	15	4100K	80	5.3	4.8	12	MTO
LED17P38D50KFL	Dimmable 17W Smooth PAR38 - 5000K 40°	120	17	120	1300	76.5	3183	40	5000K	80	5.3	4.8	12	MTO
LED17P38D50KNFL	Dimmable 17W Smooth PAR38 - 5000K 25°	120	17	120	1300	76.5	7043	25	5000K	80	5.3	4.8	12	MTO
LED17P38D50KSP	Dimmable 17W Smooth PAR38 - 5000K 15°	120	17	90	1300	76.5	10989	15	5000K	80	5.3	4.8	12	MTO
LED14P38D24KFL	Dimmable 14W Smooth PAR38 - 2400K 40°	120	14	90	1050	75.0	2377	40	2400K	80	5.3	4.8	12	MTO
LED14P38D24KNFL	Dimmable 14W Smooth PAR38 - 2400K 25°	120	14	90	1050	75.0	4645	25	2400K	80	5.3	4.8	12	MTO
LED14P38D27KFL	Dimmable 14W Smooth PAR38 - 2700K 40°	120	14	90	1050	75.0	2858	40	2700K	80	5.3	4.8	12	STK
LED14P38D27KNFL	Dimmable 14W Smooth PAR38 - 2700K 25°	120	14	90	1050	75.0	5583	25	2700K	80	5.3	4.8	12	STK
LED14P38D27KSP	Dimmable 14W Smooth PAR38 - 2700K 15°	120	14	90	1050	75.0	10949	15	2700K	80	5.3	4.8	12	MTO
LED14P38D30KFL	Dimmable 14W Smooth PAR38 - 3000K 40°	120	14	90	1100	78.6	876	60	3000K	80	5.3	4.8	12	STK
LED14P38D30KNFL	Dimmable 14W Smooth PAR38 - 3000K 25°	120	14	90	1100	78.6	2846	40	3000K	80	5.3	4.8	12	STK
LED14P38D30KSP	Dimmable 14W Smooth PAR38 - 3000K 15°	120	14	90	1100	78.6	6721	25	3000K	80	5.3	4.8	12	STK
LED14P38D35KFL	Dimmable 14W Smooth PAR38 - 3500K 25°	120	14	90	1125	80.4	6970	25	3500K	80	5.3	4.8	12	MTO
LED14P38D35KSP	Dimmable 14W Smooth PAR38 - 3500K 15°	120	14	90	1125	80.4	10098	15	3500K	80	5.3	4.8	12	MTO
LED14P38D41KFL	Dimmable 14W Smooth PAR38 - 4100K 40°	120	14	90	1150	82.1	2612	40	4100K	80	5.3	4.8	12	MTO
LED14P38D41KNFL	Dimmable 14W Smooth PAR38 - 4100K 25°	120	14	90	1150	82.1	4546	25	4100K	80	5.3	4.8	12	MTO
LED14P38D41KSP	Dimmable 14W Smooth PAR38 - 4100K 15°	120	14	90	1150	82.1	11718	15	4100K	80	5.3	4.8	12	MTO
LED14P38D50KFL	Dimmable 14W Smooth PAR38 - 5000K 40°	120	14	90	1150	82.1	4621	40	5000K	80	5.3	4.8	12	MTO
LED14P38D50KNFL	Dimmable 14W Smooth PAR38 - 5000K 25°	120	14	90	1150	82.1	7611	25	5000K	80	5.3	4.8	12	MTO

PAR30														
LED14P30D24KFL	Dimmable 14W Smooth PAR30 - 2400K 40°	120	14	75	950	67.9	2513	40	2400K	80	4.8	3.8	12	MTO
LED14P30D24KNFL	Dimmable 14W Smooth PAR30 - 2400K 25°	120	14	75	950	67.9	4417	25	2400K	80	4.8	3.8	12	MTO
LED14P30D27KFL	Dimmable 14W Smooth PAR30 - 2700K 40°	120	14	75	1050	75.0	3021	40	2700K	80	4.8	3.8	12	STK
LED14P30D27KNFL	Dimmable 14W Smooth PAR30 - 2700K 25°	120	14	75	1050	75.0	5310	25	2700K	80	4.8	3.8	12	STK
LED14P30D27KSP	Dimmable 14W Smooth PAR30 - 2700K 15°	120	14	75	1050	75.0	9033	15	2700K	80	4.8	3.8	12	MTO
LED14P30D30KFL	Dimmable 14W Smooth PAR30 - 3000K 40°	120	14	75	1100	78.6	2881	40	3000K	80	4.8	3.8	12	STK
LED14P30D30KNFL	Dimmable 14W Smooth PAR30 - 3000K 25°	120	14	75	1100	78.6	8169	25	3000K	80	4.8	3.8	12	STK
LED14P30D30KSP	Dimmable 14W Smooth PAR30 - 3000K 15°	120	14	75	1100	78.6	9328	15	3000K	80	4.8	3.8	12	MTO
LED14P30D35KFL	Dimmable 14W Smooth PAR30 - 3500K 40°	120	14	75	1125	80.4	3196	40	3500K	80	4.8	3.8	12	MTO
LED14P30D35KNFL	Dimmable 14W Smooth PAR30 - 3500K 25°	120	14	75	1125	80.4	6662	25	3500K	80	4.8	3.8	12	MTO
LED14P30D41KFL	Dimmable 14W Smooth PAR30 - 4100K 40°	120	14	75	1150	82.1	3154	40	4100K	80	4.8	3.8	12	MTO
LED14P30D41KNFL	Dimmable 14W Smooth PAR30 - 4100K 25°	120	14	75	1150	82.1	6813	25	4100K	80	4.8	3.8	12	MTO
LED14P30D41KSP	Dimmable 14W Smooth PAR30 - 4100K 15°	120	14	75	1150	82.1	9681	15	4100K	80	4.8	3.8	12	MTO
LED14P30D50KFL	Dimmable 14W Smooth PAR30 - 5000K 40°	120	14	75	1150	82.1	3212	40	5000K	80	4.8	3.8	12	MTO
LED14P30D50KNFL	Dimmable 14W Smooth PAR30 - 5000K 25°	120	14	75	1150	82.1	5872	25	5000K	80	4.8	3.8	12	MTO
LED12P30D24KFL	Dimmable 12W Smooth PAR30 - 2400K 40°	120	12	75	800	66.7	1600	40	2400K	80	4.8	3.8	12	MTO
LED12P30D24KNFL	Dimmable 12W Smooth PAR30 - 2400K 25°	120	12	75	800	66.7	4553	25	2400K	80	4.8	3.8	12	MTO
LED12P30D24KSP	Dimmable 12W Smooth PAR30 - 2400K 15°	120	12	75	800	66.7	6990	15	2400K	80	4.8	3.8	12	MTO
LED12P30D27KFL	Dimmable 12W Smooth PAR30 - 2700K 40°	120	12	75	850	70.8	1924	40	2700K	80	4.8	3.8	12	STK
LED12P30D27KNFL	Dimmable 12W Smooth PAR30 - 2700K 25°	120	12	75	850	70.8	5473	25	2700K	80	4.8	3.8	12	STK
LED12P30D27KSP	Dimmable 12W Smooth PAR30 - 2700K 15°	120	12	75	850	70.8	8402	15	2700K	80	4.8	3.8	12	MTO
LED12P30D30KFL	Dimmable 12W Smooth PAR30 - 3000K 40°	120	12	75	875	72.9	2596	40	3000K	80	4.8	3.8	12	STK
LED12P30D30KNFL	Dimmable 12W Smooth PAR30 - 3000K 25°	120	12	75	875	72.9	5523	25	3000K	80	4.8	3.8	12	STK
LED12P30D30KSP	Dimmable 12W Smooth PAR30 - 3000K 15°	120	12	75	875	72.9	8437	15	3000K	80	4.8	3.8	12	MTO
LED12P30D35KFL	Dimmable 12W Smooth PAR30 - 3500K 40°	120	12	75	900	75.0	2608	40	3500K	80	4.8	3.8	12	MTO
LED12P30D35KNFL	Dimmable 12W Smooth PAR30 - 3500K 25°	120	12	75	900	75.0	4060	25	3500K	80	4.8	3.8	12	MTO
LED12P30D41KFL	Dimmable 12W Smooth PAR30 - 4100K 40°	120	12	75	925	77.1	2759	40	4100K	80	4.8	3.8	12	MTO
LED12P30D41KNFL	Dimmable 12W Smooth PAR30 - 4100K 25°	120	12	75	925	77.1	6017	25	4100K	80	4.8	3.8	12	MTO

PAR30 continued next page



For the most up-to-date specs, please visit www.tcp.com





ELITE Series LED Dimmable PAR Lamps

Smooth Uniform Dimming

Item #	Description	Voltage	Wattage	Incandescent Wattage Comparison	Lumens	LPW	CBCP	Beam Angle	CCT	CRI	M.O.L. (inches)	Diameter (inches)	Case Quantity	STK/MTO
PAR30 continued														
LED12P30D41KSP	Dimmable 12W Smooth PAR30 - 4100K 15°	120	12	75	925	77.1	7275	15	4100K	80	4.8	3.8	12	MTO
LED12P30D50KFL	Dimmable 12W Smooth PAR30 - 5000K 40°	120	12	75	950	79.2	2235	40	5000K	80	4.8	3.8	12	MTO
LED12P30D50KSP	Dimmable 12W Smooth PAR30 - 5000K 15°	120	12	75	950	79.2	7375	15	5000K	80	4.8	3.8	12	MTO

PAR30SN

LED12P30SD27KFL	Dimmable 12W Smooth PAR30 Short Neck - 2700K 40°	120	12	75	850	70.8	2261	40	2700K	80	3.5	3.8	12	STK
LED12P30SD27KNFL	Dimmable 12W Smooth PAR30 Short Neck - 2700K 25°	120	12	75	850	70.8	4333	25	2700K	80	3.5	3.8	12	STK
LED12P30SD27KSP	Dimmable 12W Smooth PAR30 Short Neck - 2700K 15°	120	12	75	850	70.8	7274	15	2700K	80	3.5	3.8	12	MTO
LED12P30SD30KFL	Dimmable 12W Smooth PAR30 Short Neck - 3000K 40°	120	12	75	875	72.9	2349	40	3000K	80	3.5	3.8	12	STK
LED12P30SD30KNFL	Dimmable 12W Smooth PAR30 Short Neck - 3000K 25°	120	12	75	875	72.9	5630	25	3000K	80	3.5	3.8	12	STK
LED12P30SD30KSP	Dimmable 12W Smooth PAR30 Short Neck - 3000K 15°	120	12	75	875	72.9	7705	15	3000K	80	3.5	3.8	12	MTO
LED12P30SD35KFL	Dimmable 12W Smooth PAR30 Short Neck - 3500K 40°	120	12	75	900	75.0	2032	40	3500K	80	3.5	3.8	12	MTO
LED12P30SD35KNFL	Dimmable 12W Smooth PAR30 Short Neck - 3500K 25°	120	12	75	900	75.0	5832	25	3500K	80	3.5	3.8	12	MTO
LED12P30SD41KFL	Dimmable 12W Smooth PAR30 Short Neck - 4100K 40°	120	12	75	925	77.1	2235	40	4100K	80	3.5	3.8	12	MTO
LED12P30SD41KNFL	Dimmable 12W Smooth PAR30 Short Neck - 4100K 25°	120	12	75	925	77.1	7159	25	4100K	80	3.5	3.8	12	MTO
LED12P30SD41KSP	Dimmable 12W Smooth PAR30 Short Neck - 4100K 15°	120	12	75	925	77.1	7768	15	4100K	80	3.5	3.8	12	MTO
LED12P30SD50KFL	Dimmable 12W Smooth PAR30 Short Neck - 5000K 40°	120	12	75	950	79.2	2500	40	5000K	80	3.5	3.8	12	MTO
LED12P30SD50KNFL	Dimmable 12W Smooth PAR30 Short Neck - 5000K 25°	120	12	75	950	79.2	3798	15	5000K	80	3.5	3.8	12	MTO
LED12P30SD50KSP	Dimmable 12W Smooth PAR30 Short Neck - 5000K 15°	120	12	75	950	79.2	8045	15	5000K	80	3.5	3.8	12	MTO
LED10P30SD24KFL	Dimmable 10W Smooth PAR30 Short Neck - 2400K 40°	120	10	60	600	60.0	1713	40	2400K	80	3.5	3.8	12	MTO
LED10P30SD24KSP	Dimmable 10W Smooth PAR30 Short Neck - 2400K 15°	120	10	60	600	60.0	6163	15	2400K	80	3.5	3.8	12	MTO
LED10P30SD27KFL	Dimmable 10W Smooth PAR30 Short Neck - 2700K 40°	120	10	60	700	70.0	2060	40	2700K	80	3.5	3.8	12	STK
LED10P30SD27KNFL	Dimmable 10W Smooth PAR30 Short Neck - 2700K 25°	120	10	60	700	70.0	4427	25	2700K	80	3.5	3.8	12	STK
LED10P30SD30KFL	Dimmable 10W Smooth PAR30 Short Neck - 3000K 40°	120	10	60	725	72.5	2173	40	3000K	80	3.5	3.8	12	STK
LED10P30SD30KNFL	Dimmable 10W Smooth PAR30 Short Neck - 3000K 25°	120	10	60	725	72.5	4799	25	3000K	80	3.5	3.8	12	STK
LED10P30SD30KSP	Dimmable 10W Smooth PAR30 Short Neck - 3000K 15°	120	10	60	725	72.5	8181	15	3000K	80	3.5	3.8	12	MTO
LED10P30SD35KFL	Dimmable 10W Smooth PAR30 Short Neck - 3500K 40°	120	10	60	750	75.0	2289	40	3500K	80	3.5	3.8	12	MTO
LED10P30SD41KFL	Dimmable 10W Smooth PAR30 Short Neck - 4100K 40°	120	10	60	775	77.5	1894	40	4100K	80	3.5	3.8	12	MTO
LED10P30SD50KFL	Dimmable 10W Smooth PAR30 Short Neck - 5000K 40°	120	10	60	800	80	2432	40	5000K	80	3.5	3.8	12	MTO

PAR20

LED10P20D24KFL	Dimmable 10W Smooth PAR20 - 2400K 40°	120	10	60	500	50.0	1163	40	2400K	80	3.5	2.5	12	STK
LED10P20D24KNFL	Dimmable 10W Smooth PAR20 - 2400K 25°	120	10	60	500	50.0	2312	25	2400K	80	3.5	2.5	12	STK
LED10P20D27KFL	Dimmable 10W Smooth PAR20 - 2700K 40°	120	10	60	600	60.0	1398	40	2700K	80	3.5	2.5	12	STK
LED10P20D27KNFL	Dimmable 10W Smooth PAR20 - 2700K 25°	120	10	60	600	60.0	2779	25	2700K	80	3.5	2.5	12	STK
LED10P20D30KFL	Dimmable 10W Smooth PAR20 - 3000K 40°	120	10	60	650	65.0	1364	40	3000K	80	3.5	2.5	12	STK
LED10P20D30KNFL	Dimmable 10W Smooth PAR20 - 3000K 25°	120	10	60	650	65.0	2865	25	3000K	80	3.5	2.5	12	STK
LED10P20D35KFL	Dimmable 10W Smooth PAR20 - 3500K 40°	120	10	60	675	67.5	1470	40	3500K	80	3.5	2.5	12	STK
LED10P20D35KNFL	Dimmable 10W Smooth PAR20 - 3500K 25°	120	10	60	675	67.5	2923	25	3500K	80	3.5	2.5	12	STK
LED10P20D41KFL	Dimmable 10W Smooth PAR20 - 4100K 40°	120	10	60	700	70.0	1493	40	4100K	80	3.5	2.5	12	STK
LED10P20D41KNFL	Dimmable 10W Smooth PAR20 - 4100K 25°	120	10	60	700	70.0	2967	25	4100K	80	3.5	2.5	12	STK
LED10P20D50KFL	Dimmable 10W Smooth PAR20 - 5000K 40°	120	10	60	725	72.5	1546	40	5000K	80	3.5	2.5	12	STK
LED10P20D50KNFL	Dimmable 10W Smooth PAR20 - 5000K 25°	120	10	60	725	72.5	3073	25	5000K	80	3.5	2.5	12	STK
LED8P20D24KFL	Dimmable 8W Smooth PAR20 - 2400K 40°	120	8	50	450	56.3	1006	40	2400K	80	3.5	2.5	12	STK
LED8P20D24KNFL	Dimmable 8W Smooth PAR20 - 2400K 25°	120	8	50	450	56.3	1943	25	2400K	80	3.5	2.5	12	STK
LED8P20D27KFL	Dimmable 8W Smooth PAR20 - 2700K 40°	120	8	50	575	71.9	1210	40	2700K	80	3.5	2.5	12	STK
LED8P20D27KNFL	Dimmable 8W Smooth PAR20 - 2700K 25°	120	8	50	575	71.9	2336	25	2700K	80	3.5	2.5	12	STK
LED8P20D30KFL	Dimmable 8W Smooth PAR20 - 3000K 40°	120	8	50	600	75.0	1416	40	3000K	80	3.5	2.5	12	STK
LED8P20D30KNFL	Dimmable 8W Smooth PAR20 - 3000K 25°	120	8	50	600	75.0	2463	25	3000K	80	3.5	2.5	12	STK
LED8P20D35KFL	Dimmable 8W Smooth PAR20 - 3500K 40°	120	8	50	625	78.1	1308	40	3500K	80	3.5	2.5	12	STK
LED8P20D35KNFL	Dimmable 8W Smooth PAR20 - 3500K 25°	120	8	50	625	78.1	1974	25	3500K	80	3.5	2.5	12	STK
LED8P20D41KFL	Dimmable 8W Smooth PAR20 - 4100K 40°	120	8	50	650	81.2	1327	40	4100K	80	3.5	2.5	12	STK
LED8P20D41KNFL	Dimmable 8W Smooth PAR20 - 4100K 25°	120	8	50	650	81.2	2291	25	4100K	80	3.5	2.5	12	STK
LED8P20D50KFL	Dimmable 8W Smooth PAR20 - 5000K 40°	120	8	50	675	84.4	1501	40	5000K	80	3.5	2.5	12	STK
LED8P20D50KNFL	Dimmable 8W Smooth PAR20 - 5000K 25°	120	8	50	675	84.4	2059	25	5000K	80	3.5	2.5	12	STK



For the most up-to-date specs, please visit www.tcp.com



CREATING BEAUTY

TCP has a **20-year history in energy-efficient lighting.**

Thanks to our **cutting edge technology** and manufacturing

expertise, we have shipped billions of high quality lamps. Our

integrated technology and manufacturing provides

expedited time-to-market. With TCP, you can count on

unique lighting products designed to meet very specific needs—lighting that

transforms your surroundings and envelopes you in warmth—**lighting**

that generates beauty with every flip of the switch.

LED

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BROADCAST *LED AREA & FLOOD LIGHT*



PROJECT:

PREPARED BY:

DATE:

TYPE:

SPECIFICATIONS:

LED MODULES

0-10V dimming (80W, 100W, 150W, 220W, 300W models only)

High brightness CREE XML LED

5,000 Kelvin Temperature (4000K available for special order)

50,000 hour rated life

WARRANTY

Five year warranty

ENERGY DATA

Electronic LED Driver

Power Factor >0.9

<20% Total Harmonic Distribution

100-277V 50/60Hz (347-480V available for special order)

-40°F to -122°F (-40°C to 50°C)
Operating Temperature

CONSTRUCTION

Die-cast aluminum construction

FINISH

Bronze powder coating for added durability

OPTICS

High-Lumen clear lens
Beam Angle: 120°

CERTIFICATIONS

UL/cUL Certified
DLC Certified
IP65 Rated
LM79/IES tested

PRODUCT DETAILS

Product	Input	Watts	Kelvin Temp	Lumens	Efficacy	CRI	Dimmable
SL923FLF-15W (SPECIAL ORDER)	100/277	15	5,000	1,663	115	>75	Non-Dimming
SL923FLF-30W	100/277	30	5,000	3,718	125	>75	Non-Dimming
SL923FLF-50W	100/277	50	5,000	6,179	126	>75	Non-Dimming
SL923FLF-80W	100/277	80	5,000	10,342	130	>75	Dimming
SL923FLF-100W	*100/277	100	5,000	12,353	125	>75	Dimming
SL923FLF-150W	*100/277	150	5,000	18,752	123	>75	Dimming
SL923FLF-220W	*100/277	220	5,000	26,731	122	>75	Dimming
SL923FLF-300W	*100/277	300	5,000	38,122	124	>75	Dimming

*347/480V High Voltage available for special order—call for availability.

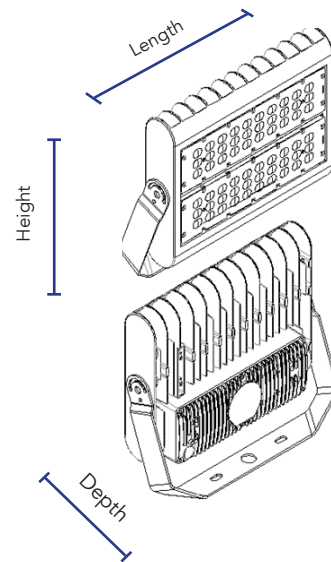
1. CCT range complies to ANSI C78.377-2008

2. Rated average life based on engineering testing and probability analysis.

3. Lifetime test consistent with IESNA LM80 lumen maintenance procedure.

DIMENSIONS

Product	Length (Inches)	Depth (Inches)	Height (Inches)
SL923FLF-15W	4.5	1.4	4.6
SL923FLF-30W	7	1.5	6.5
SL923FLF-50W	8.9	1.7	7.5
SL923FLF-80W	13.4	3.4	11.7
SL923FLF-100W	13.4	3.4	11.7
SL923FLF-150W	13.4	3.4	11.7
SL923FLF-220W	13.4	3.4	11.7
SL923FLF-300W	13.4	3.6	18.7



ORDERING GUIDE

ORDER CODE	WATTS	VOLTS	KELVIN	LENS	BEAM ANGLE	DRIVER	DIMMING	MOUNT
SL923FLF	15W, 30W, 50W, 80W, 100W, 150W, 220W, 300W	100/277 = 100/277V 347/480 = 347/480V	5000 4000	C = CLEAR	120 = 120°	I = INTERNAL	N = Non-Dimming D = Dimming	YM = Yoke Mount TM = Trunnion Mount KM = Knuckle Mount EA = Extruded Arm Mount SF = Slip Fitter Mount

ORDER

EXAMPLE: SL923FLF - 15W - 100/277 - 5000 - C - 120 - I - N - YM

MOUNTING OPTIONS

YOKE MOUNT

Available for 15W, 30W,
50W, 80W, 100W, 150W,
220W, 300W



KNUCKLE MOUNT

(Available for 15W, 30W
and 50W models only)



SLIP FITTER MOUNT

Available for 80W, 100W,
150W, 220W and 300W
models only



TRUNNION MOUNT

Available for 80W, 100W,
150W, 220W and 300W
models only



EXTRUDED ARM

(Available for 80W, 100W,
150W, 220W and 300W
models only)



Antique Filament LED 4 Watt 2200K Amber C11 Candelabra Bulb - 40w equiv.

TYPE WW

SATCO SKU: S9586



\$10⁹⁹



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Qty: 85 in stock

ADD TO CART

Description **Specs**

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- [LED Lighting](#) ▾
- [Projector Lamps](#)
- [Automotive](#)
- [Fixtures](#) ▾
- [Christmas](#) ▾

Voltage	120
Watts	4
Incandescent Equivalent	40W
Lamp Shape	C11
Base	Candelabra
ANSI Base	E12
Lamp Code	4CTA/AMB/LED/E12/22K/120V
Dimmable/Non-Dimmable	Dimmable
Finish	Transparent Amber
MOL In Inches	4-5/16"
MOD In Inches	1.38"
Initial Lumens	300
Average Rated Hours	15000
Color Temp	2200
Beam Spread Deg	360
Operating Temperature	-20C (-4F) to a maximum of +45C (+113F)
RoHS Compliant	Yes
UL or ETL Listed	Yes
UL Classification	cULus - Damp Location Rated



TAG YY Elite Dimmable PAR Series

TCP's award winning PARs have just gotten better. With a wide variety of options, TCP's PAR series combines traditional beauty with top-notch technology.

Limitless options for the following applications:

- Track lights
- Recessed downlights
- Display lights
- Outdoor fixtures that protect lamps from the elements

Great features and benefits:

- Energy efficient: up to 85% less energy than halogen replacements
- Smooth, uniform dimming
- Long life: 25,000 hours
- 120W, 90W, 75W, 60W and 50W replacements
- NEW smooth outer housing
- Excellent color consistency and high color rendering (CRI)
- Available in 2400K, 2700K, 3000K, 3500K, 4100K and 5000K



PAR38

PAR30LN

PAR30SN

PAR20





ELITE Series LED Dimmable PAR Lamps

Smooth Uniform Dimming

LED 25,000 hours average rated life, 120 volts

Applications

Ideal for PAR38, PAR30, and PAR20 flood and spot light applications.

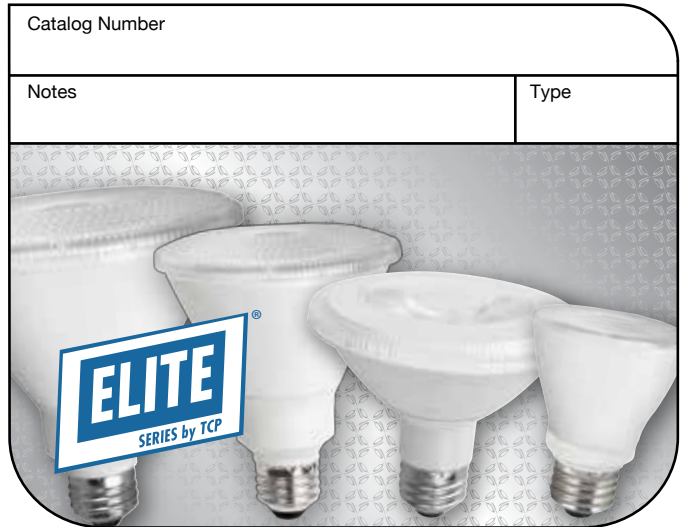
- + Track Lights
- + Recessed Downlights
- + Display Lights
- + Outdoor Fixtures that Protect Lamps from the Elements



Features

Benefits

Up to 85% less energy than halogen alternatives	Instant energy savings
Long life	Minimizes replacement and maintenance costs
Unique full face optic	Provides designer grade light quality with same look as halogen replacement
Smooth, clean outside housing	Seamlessly blends into lighting applications
Very low heat generation	Perfect for sensitive display lighting such as art galleries
Excellent color consistency and CRI	Enhances colors of focal point while maintaining uniformity throughout lighting installation from lamp to lamp
Light weight	Track or down light installations are not strained by excess weight
UL approved for damp location	Can be used outdoors when protected from elements — withstands humidity indoors/outdoors
Shatter resistant	Lower the risk of injury and breakage



Specifications

	PAR38	PAR30LN	PAR30SN	PAR20
Input Line Voltage:	120 VAC	120 VAC	120 VAC	120 VAC
Input Power	17 & 14 W	14 & 12 W	12 & 10 W	10 & 8 W
Input Line Frequency	50/60HZ	50/60HZ	50/60HZ	50/60HZ
Lamp Life (Rated)	25,000 hrs	25,000 hrs	25,000 hrs	25,000 hrs
Minimum Starting Temp	-30°C	-30°C	-30°C	-30°C
Maximum Operating Temp	40°C	40°C	40°C	40°C

Lens Angles



PAR38



PAR30LN



PAR30SN



PAR20



5 YEAR WARRANTY

For the most up-to-date specs, please visit www.tcpi.com





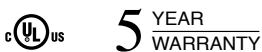
ELITE Series LED Dimmable PAR Lamps

Smooth Uniform Dimming

Item #	Description	Voltage	Wattage	Incandescent Wattage Comparison	Lumens	LPW	CBCP	Beam Angle	CCT	CRI	M.O.L. (inches)	Diameter (inches)	Case Quantity	STK/MTO	
PAR38															
LED17P38D24KNFL	Dimmable 17W Smooth PAR38 - 2400K 25°	120	17	120	1200	70.6	4750	25	2400K	80	5.3	4.8	12	MTO	
LED17P38D27KFL	Dimmable 17W Smooth PAR38 - 2700K 40°	120	17	120	1200	70.6	2563	40	2700K	80	5.3	4.8	12	STK	
LED17P38D27KNFL	Dimmable 17W Smooth PAR38 - 2700K 25°	120	17	120	1200	70.6	5710	25	2700K	80	5.3	4.8	12	STK	
LED17P38D27KSP	Dimmable 17W Smooth PAR38 - 2700K 15°	120	17	90	1200	70.6	8338	15	2700K	80	5.3	4.8	12	MTO	
LED17P38D30KFL	Dimmable 17W Smooth PAR38 - 3000K 40°	120	17	120	1250	73.5	3107	40	3000K	80	5.3	4.8	12	STK	
LED17P38D30KNFL	Dimmable 17W Smooth PAR38 - 3000K 25°	120	17	120	1250	73.5	6130	25	3000K	80	5.3	4.8	12	STK	
LED17P38D35KFL	Dimmable 17W Smooth PAR38 - 3500K 40°	120	17	120	1275	75.0	3132	40	3500K	80	5.3	4.8	12	MTO	
LED17P38D35KNFL	Dimmable 17W Smooth PAR38 - 3500K 25°	120	17	120	1275	75.0	7550	25	3500K	80	5.3	4.8	12	MTO	
LED17P38D35KSP	Dimmable 17W Smooth PAR38 - 3500K 15°	120	17	90	1275	75.0	8771	15	3500K	80	5.3	4.8	12	MTO	
LED17P38D41KFL	Dimmable 17W Smooth PAR38 - 4100K 40°	120	17	120	1300	76.5	3366	40	4100K	80	5.3	4.8	12	MTO	
LED17P38D41KNFL	Dimmable 17W Smooth PAR38 - 4100K 25°	120	17	120	1300	76.5	7292	25	4100K	80	5.3	4.8	12	MTO	
LED17P38D41KSP	Dimmable 17W Smooth PAR38 - 4100K 15°	120	17	90	1300	76.5	9947	15	4100K	80	5.3	4.8	12	MTO	
LED17P38D50KFL	Dimmable 17W Smooth PAR38 - 5000K 40°	120	17	120	1300	76.5	3183	40	5000K	80	5.3	4.8	12	MTO	
LED17P38D50KNFL	Dimmable 17W Smooth PAR38 - 5000K 25°	120	17	120	1300	76.5	7043	25	5000K	80	5.3	4.8	12	MTO	
LED17P38D50KSP	Dimmable 17W Smooth PAR38 - 5000K 15°	120	17	90	1300	76.5	10989	15	5000K	80	5.3	4.8	12	MTO	
LED14P38D24KFL	Dimmable 14W Smooth PAR38 - 2400K 40°	120	14	90	1050	75.0	2377	40	2400K	80	5.3	4.8	12	MTO	
LED14P38D24KNFL	Dimmable 14W Smooth PAR38 - 2400K 25°	120	14	90	1050	75.0	4645	25	2400K	80	5.3	4.8	12	MTO	
LED14P38D27KFL	Dimmable 14W Smooth PAR38 - 2700K 40°	120	14	90	1050	75.0	2858	40	2700K	80	5.3	4.8	12	STK	
LED14P38D27KNFL	Dimmable 14W Smooth PAR38 - 2700K 25°	120	14	90	1050	75.0	5583	25	2700K	80	5.3	4.8	12	STK	
LED14P38D27KSP	Dimmable 14W Smooth PAR38 - 2700K 15°	120	14	90	1050	75.0	10949	15	2700K	80	5.3	4.8	12	MTO	
LED14P38D30KFL	Dimmable 14W Smooth PAR38 - 3000K 40°	120	14	90	1100	78.6	876	60	3000K	80	5.3	4.8	12	STK	
LED14P38D30KNFL	Dimmable 14W Smooth PAR38 - 3000K 25°	120	14	90	1100	78.6	2846	40	3000K	80	5.3	4.8	12	STK	
LED14P38D30KSP	Dimmable 14W Smooth PAR38 - 3000K 15°	120	14	90	1100	78.6	6721	25	3000K	80	5.3	4.8	12	STK	
LED14P38D35KFL	Dimmable 14W Smooth PAR38 - 3500K 25°	120	14	90	1125	80.4	6970	25	3500K	80	5.3	4.8	12	MTO	
LED14P38D35KSP	Dimmable 14W Smooth PAR38 - 3500K 15°	120	14	90	1125	80.4	10098	15	3500K	80	5.3	4.8	12	MTO	
LED14P38D41KFL	Dimmable 14W Smooth PAR38 - 4100K 40°	120	14	90	1150	82.1	2612	40	4100K	80	5.3	4.8	12	MTO	
LED14P38D41KNFL	Dimmable 14W Smooth PAR38 - 4100K 25°	120	14	90	1150	82.1	4546	25	4100K	80	5.3	4.8	12	MTO	
LED14P38D41KSP	Dimmable 14W Smooth PAR38 - 4100K 15°	120	14	90	1150	82.1	11718	15	4100K	80	5.3	4.8	12	MTO	
LED14P38D50KFL	Dimmable 14W Smooth PAR38 - 5000K 40°	120	14	90	1150	82.1	4621	40	5000K	80	5.3	4.8	12	MTO	
LED14P38D50KNFL	Dimmable 14W Smooth PAR38 - 5000K 25°	120	14	90	1150	82.1	7611	25	5000K	80	5.3	4.8	12	MTO	

PAR30															
LED14P30D24KFL	Dimmable 14W Smooth PAR30 - 2400K 40°	120	14	75	950	67.9	2513	40	2400K	80	4.8	3.8	12	MTO	
LED14P30D24KNFL	Dimmable 14W Smooth PAR30 - 2400K 25°	120	14	75	950	67.9	4417	25	2400K	80	4.8	3.8	12	MTO	
LED14P30D27KFL	Dimmable 14W Smooth PAR30 - 2700K 40°	120	14	75	1050	75.0	3021	40	2700K	80	4.8	3.8	12	STK	
LED14P30D27KNFL	Dimmable 14W Smooth PAR30 - 2700K 25°	120	14	75	1050	75.0	5310	25	2700K	80	4.8	3.8	12	STK	
LED14P30D27KSP	Dimmable 14W Smooth PAR30 - 2700K 15°	120	14	75	1050	75.0	9033	15	2700K	80	4.8	3.8	12	MTO	
LED14P30D30KFL	Dimmable 14W Smooth PAR30 - 3000K 40°	120	14	75	1100	78.6	2881	40	3000K	80	4.8	3.8	12	STK	
LED14P30D30KNFL	Dimmable 14W Smooth PAR30 - 3000K 25°	120	14	75	1100	78.6	8169	25	3000K	80	4.8	3.8	12	STK	
LED14P30D30KSP	Dimmable 14W Smooth PAR30 - 3000K 15°	120	14	75	1100	78.6	9328	15	3000K	80	4.8	3.8	12	MTO	
LED14P30D35KFL	Dimmable 14W Smooth PAR30 - 3500K 40°	120	14	75	1125	80.4	3196	40	3500K	80	4.8	3.8	12	MTO	
LED14P30D35KNFL	Dimmable 14W Smooth PAR30 - 3500K 25°	120	14	75	1125	80.4	6662	25	3500K	80	4.8	3.8	12	MTO	
LED14P30D41KFL	Dimmable 14W Smooth PAR30 - 4100K 40°	120	14	75	1150	82.1	3154	40	4100K	80	4.8	3.8	12	MTO	
LED14P30D41KNFL	Dimmable 14W Smooth PAR30 - 4100K 25°	120	14	75	1150	82.1	6813	25	4100K	80	4.8	3.8	12	MTO	
LED14P30D41KSP	Dimmable 14W Smooth PAR30 - 4100K 15°	120	14	75	1150	82.1	9681	15	4100K	80	4.8	3.8	12	MTO	
LED14P30D50KFL	Dimmable 14W Smooth PAR30 - 5000K 40°	120	14	75	1150	82.1	3212	40	5000K	80	4.8	3.8	12	MTO	
LED14P30D50KNFL	Dimmable 14W Smooth PAR30 - 5000K 25°	120	14	75	1150	82.1	5872	25	5000K	80	4.8	3.8	12	MTO	
LED12P30D24KFL	Dimmable 12W Smooth PAR30 - 2400K 40°	120	12	75	800	66.7	1600	40	2400K	80	4.8	3.8	12	MTO	
LED12P30D24KNFL	Dimmable 12W Smooth PAR30 - 2400K 25°	120	12	75	800	66.7	4553	25	2400K	80	4.8	3.8	12	MTO	
LED12P30D24KSP	Dimmable 12W Smooth PAR30 - 2400K 15°	120	12	75	800	66.7	6990	15	2400K	80	4.8	3.8	12	MTO	
LED12P30D27KFL	Dimmable 12W Smooth PAR30 - 2700K 40°	120	12	75	850	70.8	1924	40	2700K	80	4.8	3.8	12	STK	
LED12P30D27KNFL	Dimmable 12W Smooth PAR30 - 2700K 25°	120	12	75	850	70.8	5473	25	2700K	80	4.8	3.8	12	STK	
LED12P30D27KSP	Dimmable 12W Smooth PAR30 - 2700K 15°	120	12	75	850	70.8	8402	15	2700K	80	4.8	3.8	12	MTO	
LED12P30D30KFL	Dimmable 12W Smooth PAR30 - 3000K 40°	120	12	75	875	72.9	2596	40	3000K	80	4.8	3.8	12	STK	
LED12P30D30KNFL	Dimmable 12W Smooth PAR30 - 3000K 25°	120	12	75	875	72.9	5523	25	3000K	80	4.8	3.8	12	STK	
LED12P30D30KSP	Dimmable 12W Smooth PAR30 - 3000K 15°	120	12	75	875	72.9	8437	15	3000K	80	4.8	3.8	12	MTO	
LED12P30D35KFL	Dimmable 12W Smooth PAR30 - 3500K 40°	120	12	75	900	75.0	2608	40	3500K	80	4.8	3.8	12	MTO	
LED12P30D35KNFL	Dimmable 12W Smooth PAR30 - 3500K 25°	120	12	75	900	75.0	4060	25	3500K	80	4.8	3.8	12	MTO	
LED12P30D41KFL	Dimmable 12W Smooth PAR30 - 4100K 40°	120	12	75	925	77.1	2759	40	4100K	80	4.8	3.8	12	MTO	
LED12P30D41KNFL	Dimmable 12W Smooth PAR30 - 4100K 25°	120	12	75	925	77.1	6017	25	4100K	80	4.8	3.8	12	MTO	

PAR30 continued next page



For the most up-to-date specs, please visit www.tcp.com





ELITE Series LED Dimmable PAR Lamps

Smooth Uniform Dimming

Item #	Description	Voltage	Wattage	Incandescent Wattage Comparison	Lumens	LPW	CBCP	Beam Angle	CCT	CRI	M.O.L. (inches)	Diameter (inches)	Case Quantity	STK/MTO
PAR30 continued														
LED12P30D41KSP	Dimmable 12W Smooth PAR30 - 4100K 15°	120	12	75	925	77.1	7275	15	4100K	80	4.8	3.8	12	MTO
LED12P30D50KFL	Dimmable 12W Smooth PAR30 - 5000K 40°	120	12	75	950	79.2	2235	40	5000K	80	4.8	3.8	12	MTO
LED12P30D50KSP	Dimmable 12W Smooth PAR30 - 5000K 15°	120	12	75	950	79.2	7375	15	5000K	80	4.8	3.8	12	MTO

PAR30SN

LED12P30SD27KFL	Dimmable 12W Smooth PAR30 Short Neck - 2700K 40°	120	12	75	850	70.8	2261	40	2700K	80	3.5	3.8	12	STK
LED12P30SD27KNFL	Dimmable 12W Smooth PAR30 Short Neck - 2700K 25°	120	12	75	850	70.8	4333	25	2700K	80	3.5	3.8	12	STK
LED12P30SD27KSP	Dimmable 12W Smooth PAR30 Short Neck - 2700K 15°	120	12	75	850	70.8	7274	15	2700K	80	3.5	3.8	12	MTO
LED12P30SD30KFL	Dimmable 12W Smooth PAR30 Short Neck - 3000K 40°	120	12	75	875	72.9	2349	40	3000K	80	3.5	3.8	12	STK
LED12P30SD30KNFL	Dimmable 12W Smooth PAR30 Short Neck - 3000K 25°	120	12	75	875	72.9	5630	25	3000K	80	3.5	3.8	12	STK
LED12P30SD30KSP	Dimmable 12W Smooth PAR30 Short Neck - 3000K 15°	120	12	75	875	72.9	7705	15	3000K	80	3.5	3.8	12	MTO
LED12P30SD35KFL	Dimmable 12W Smooth PAR30 Short Neck - 3500K 40°	120	12	75	900	75.0	2032	40	3500K	80	3.5	3.8	12	MTO
LED12P30SD35KNFL	Dimmable 12W Smooth PAR30 Short Neck - 3500K 25°	120	12	75	900	75.0	5832	25	3500K	80	3.5	3.8	12	MTO
LED12P30SD41KFL	Dimmable 12W Smooth PAR30 Short Neck - 4100K 40°	120	12	75	925	77.1	2235	40	4100K	80	3.5	3.8	12	MTO
LED12P30SD41KNFL	Dimmable 12W Smooth PAR30 Short Neck - 4100K 25°	120	12	75	925	77.1	7159	25	4100K	80	3.5	3.8	12	MTO
LED12P30SD41KSP	Dimmable 12W Smooth PAR30 Short Neck - 4100K 15°	120	12	75	925	77.1	7768	15	4100K	80	3.5	3.8	12	MTO
LED12P30SD50KFL	Dimmable 12W Smooth PAR30 Short Neck - 5000K 40°	120	12	75	950	79.2	2500	40	5000K	80	3.5	3.8	12	MTO
LED12P30SD50KNFL	Dimmable 12W Smooth PAR30 Short Neck - 5000K 25°	120	12	75	950	79.2	3798	15	5000K	80	3.5	3.8	12	MTO
LED12P30SD50KSP	Dimmable 12W Smooth PAR30 Short Neck - 5000K 15°	120	12	75	950	79.2	8045	15	5000K	80	3.5	3.8	12	MTO
LED10P30SD24KFL	Dimmable 10W Smooth PAR30 Short Neck - 2400K 40°	120	10	60	600	60.0	1713	40	2400K	80	3.5	3.8	12	MTO
LED10P30SD24KSP	Dimmable 10W Smooth PAR30 Short Neck - 2400K 15°	120	10	60	600	60.0	6163	15	2400K	80	3.5	3.8	12	MTO
LED10P30SD27KFL	Dimmable 10W Smooth PAR30 Short Neck - 2700K 40°	120	10	60	700	70.0	2060	40	2700K	80	3.5	3.8	12	STK
LED10P30SD27KNFL	Dimmable 10W Smooth PAR30 Short Neck - 2700K 25°	120	10	60	700	70.0	4427	25	2700K	80	3.5	3.8	12	STK
LED10P30SD30KFL	Dimmable 10W Smooth PAR30 Short Neck - 3000K 40°	120	10	60	725	72.5	2173	40	3000K	80	3.5	3.8	12	STK
LED10P30SD30KNFL	Dimmable 10W Smooth PAR30 Short Neck - 3000K 25°	120	10	60	725	72.5	4799	25	3000K	80	3.5	3.8	12	STK
LED10P30SD30KSP	Dimmable 10W Smooth PAR30 Short Neck - 3000K 15°	120	10	60	725	72.5	8181	15	3000K	80	3.5	3.8	12	MTO
LED10P30SD35KFL	Dimmable 10W Smooth PAR30 Short Neck - 3500K 40°	120	10	60	750	75.0	2289	40	3500K	80	3.5	3.8	12	MTO
LED10P30SD41KFL	Dimmable 10W Smooth PAR30 Short Neck - 4100K 40°	120	10	60	775	77.5	1894	40	4100K	80	3.5	3.8	12	MTO
LED10P30SD50KFL	Dimmable 10W Smooth PAR30 Short Neck - 5000K 40°	120	10	60	800	80	2432	40	5000K	80	3.5	3.8	12	MTO

PAR20

LED10P20D24KFL	Dimmable 10W Smooth PAR20 - 2400K 40°	120	10	60	500	50.0	1163	40	2400K	80	3.5	2.5	12	STK
LED10P20D24KNFL	Dimmable 10W Smooth PAR20 - 2400K 25°	120	10	60	500	50.0	2312	25	2400K	80	3.5	2.5	12	STK
LED10P20D27KFL	Dimmable 10W Smooth PAR20 - 2700K 40°	120	10	60	600	60.0	1398	40	2700K	80	3.5	2.5	12	STK
LED10P20D27KNFL	Dimmable 10W Smooth PAR20 - 2700K 25°	120	10	60	600	60.0	2779	25	2700K	80	3.5	2.5	12	STK
LED10P20D30KFL	Dimmable 10W Smooth PAR20 - 3000K 40°	120	10	60	650	65.0	1364	40	3000K	80	3.5	2.5	12	STK
LED10P20D30KNFL	Dimmable 10W Smooth PAR20 - 3000K 25°	120	10	60	650	65.0	2865	25	3000K	80	3.5	2.5	12	STK
LED10P20D35KFL	Dimmable 10W Smooth PAR20 - 3500K 40°	120	10	60	675	67.5	1470	40	3500K	80	3.5	2.5	12	STK
LED10P20D35KNFL	Dimmable 10W Smooth PAR20 - 3500K 25°	120	10	60	675	67.5	2923	25	3500K	80	3.5	2.5	12	STK
LED10P20D41KFL	Dimmable 10W Smooth PAR20 - 4100K 40°	120	10	60	700	70.0	1493	40	4100K	80	3.5	2.5	12	STK
LED10P20D41KNFL	Dimmable 10W Smooth PAR20 - 4100K 25°	120	10	60	700	70.0	2967	25	4100K	80	3.5	2.5	12	STK
LED10P20D50KFL	Dimmable 10W Smooth PAR20 - 5000K 40°	120	10	60	725	72.5	1546	40	5000K	80	3.5	2.5	12	STK
LED10P20D50KNFL	Dimmable 10W Smooth PAR20 - 5000K 25°	120	10	60	725	72.5	3073	25	5000K	80	3.5	2.5	12	STK
LED8P20D24KFL	Dimmable 8W Smooth PAR20 - 2400K 40°	120	8	50	450	56.3	1006	40	2400K	80	3.5	2.5	12	STK
LED8P20D24KNFL	Dimmable 8W Smooth PAR20 - 2400K 25°	120	8	50	450	56.3	1943	25	2400K	80	3.5	2.5	12	STK
LED8P20D27KFL	Dimmable 8W Smooth PAR20 - 2700K 40°	120	8	50	575	71.9	1210	40	2700K	80	3.5	2.5	12	STK
LED8P20D27KNFL	Dimmable 8W Smooth PAR20 - 2700K 25°	120	8	50	575	71.9	2336	25	2700K	80	3.5	2.5	12	STK
LED8P20D30KFL	Dimmable 8W Smooth PAR20 - 3000K 40°	120	8	50	600	75.0	1416	40	3000K	80	3.5	2.5	12	STK
LED8P20D30KNFL	Dimmable 8W Smooth PAR20 - 3000K 25°	120	8	50	600	75.0	2463	25	3000K	80	3.5	2.5	12	STK
LED8P20D35KFL	Dimmable 8W Smooth PAR20 - 3500K 40°	120	8	50	625	78.1	1308	40	3500K	80	3.5	2.5	12	STK
LED8P20D35KNFL	Dimmable 8W Smooth PAR20 - 3500K 25°	120	8	50	625	78.1	1974	25	3500K	80	3.5	2.5	12	STK
LED8P20D41KFL	Dimmable 8W Smooth PAR20 - 4100K 40°	120	8	50	650	81.2	1327	40	4100K	80	3.5	2.5	12	STK
LED8P20D41KNFL	Dimmable 8W Smooth PAR20 - 4100K 25°	120	8	50	650	81.2	2291	25	4100K	80	3.5	2.5	12	STK
LED8P20D50KFL	Dimmable 8W Smooth PAR20 - 5000K 40°	120	8	50	675	84.4	1501	40	5000K	80	3.5	2.5	12	STK
LED8P20D50KNFL	Dimmable 8W Smooth PAR20 - 5000K 25°	120	8	50	675	84.4	2059	25	5000K	80	3.5	2.5	12	STK



For the most up-to-date specs, please visit www.tcp.com



CREATING BEAUTY

TCP has a **20-year history in energy-efficient lighting.**

Thanks to our **cutting edge technology** and manufacturing

expertise, we have shipped billions of high quality lamps. Our

integrated technology and manufacturing provides

expedited time-to-market. With TCP, you can count on

unique lighting products designed to meet very specific needs—lighting that

transforms your surroundings and envelopes you in warmth—**lighting**

that generates beauty with every flip of the switch.

LED

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TAG ZZ Elite Dimmable PAR Series

TCP's award winning PARs have just gotten better. With a wide variety of options, TCP's PAR series combines traditional beauty with top-notch technology.

Limitless options for the following applications:

- Track lights
- Recessed downlights
- Display lights
- Outdoor fixtures that protect lamps from the elements

Great features and benefits:

- Energy efficient: up to 85% less energy than halogen replacements
- Smooth, uniform dimming
- Long life: 25,000 hours
- 120W, 90W, 75W, 60W and 50W replacements
- NEW smooth outer housing
- Excellent color consistency and high color rendering (CRI)
- Available in 2400K, 2700K, 3000K, 3500K, 4100K and 5000K



PAR38

PAR30LN

PAR30SN

PAR20





ELITE Series LED Dimmable PAR Lamps

Smooth Uniform Dimming

LED 25,000 hours average rated life, 120 volts

Applications

Ideal for PAR38, PAR30, and PAR20 flood and spot light applications.

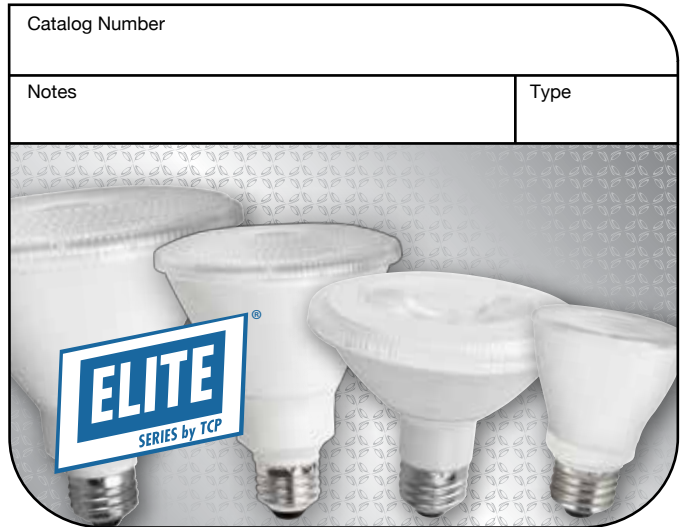
- + Track Lights
- + Recessed Downlights
- + Display Lights
- + Outdoor Fixtures that Protect Lamps from the Elements



Features

Benefits

Up to 85% less energy than halogen alternatives	Instant energy savings
Long life	Minimizes replacement and maintenance costs
Unique full face optic	Provides designer grade light quality with same look as halogen replacement
Smooth, clean outside housing	Seamlessly blends into lighting applications
Very low heat generation	Perfect for sensitive display lighting such as art galleries
Excellent color consistency and CRI	Enhances colors of focal point while maintaining uniformity throughout lighting installation from lamp to lamp
Light weight	Track or down light installations are not strained by excess weight
UL approved for damp location	Can be used outdoors when protected from elements — withstands humidity indoors/outdoors
Shatter resistant	Lower the risk of injury and breakage



Specifications

	PAR38	PAR30LN	PAR30SN	PAR20
Input Line Voltage:	120 VAC	120 VAC	120 VAC	120 VAC
Input Power	17 & 14 W	14 & 12 W	12 & 10 W	10 & 8 W
Input Line Frequency	50/60HZ	50/60HZ	50/60HZ	50/60HZ
Lamp Life (Rated)	25,000 hrs	25,000 hrs	25,000 hrs	25,000 hrs
Minimum Starting Temp	-30°C	-30°C	-30°C	-30°C
Maximum Operating Temp	40°C	40°C	40°C	40°C

Lens Angles



PAR38



PAR30LN



PAR30SN



PAR20



5 YEAR WARRANTY

For the most up-to-date specs, please visit www.tcpi.com





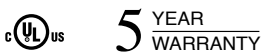
ELITE Series LED Dimmable PAR Lamps

Smooth Uniform Dimming

Item #	Description	Voltage	Wattage	Incandescent Wattage Comparison	Lumens	LPW	CBCP	Beam Angle	CCT	CRI	M.O.L. (inches)	Diameter (inches)	Case Quantity	STK/MTO
PAR38														
LED17P38D24KNFL	Dimmable 17W Smooth PAR38 - 2400K 25°	120	17	120	1200	70.6	4750	25	2400K	80	5.3	4.8	12	MTO
LED17P38D27KFL	Dimmable 17W Smooth PAR38 - 2700K 40°	120	17	120	1200	70.6	2563	40	2700K	80	5.3	4.8	12	STK
LED17P38D27KNFL	Dimmable 17W Smooth PAR38 - 2700K 25°	120	17	120	1200	70.6	5710	25	2700K	80	5.3	4.8	12	STK
LED17P38D27KSP	Dimmable 17W Smooth PAR38 - 2700K 15°	120	17	90	1200	70.6	8338	15	2700K	80	5.3	4.8	12	MTO
LED17P38D30KFL	Dimmable 17W Smooth PAR38 - 3000K 40°	120	17	120	1250	73.5	3107	40	3000K	80	5.3	4.8	12	STK
LED17P38D30KNFL	Dimmable 17W Smooth PAR38 - 3000K 25°	120	17	120	1250	73.5	6130	25	3000K	80	5.3	4.8	12	STK
LED17P38D35KFL	Dimmable 17W Smooth PAR38 - 3500K 40°	120	17	120	1275	75.0	3132	40	3500K	80	5.3	4.8	12	MTO
LED17P38D35KNFL	Dimmable 17W Smooth PAR38 - 3500K 25°	120	17	120	1275	75.0	7550	25	3500K	80	5.3	4.8	12	MTO
LED17P38D35KSP	Dimmable 17W Smooth PAR38 - 3500K 15°	120	17	90	1275	75.0	8771	15	3500K	80	5.3	4.8	12	MTO
LED17P38D41KFL	Dimmable 17W Smooth PAR38 - 4100K 40°	120	17	120	1300	76.5	3366	40	4100K	80	5.3	4.8	12	MTO
LED17P38D41KNFL	Dimmable 17W Smooth PAR38 - 4100K 25°	120	17	120	1300	76.5	7292	25	4100K	80	5.3	4.8	12	MTO
LED17P38D41KSP	Dimmable 17W Smooth PAR38 - 4100K 15°	120	17	90	1300	76.5	9947	15	4100K	80	5.3	4.8	12	MTO
LED17P38D50KFL	Dimmable 17W Smooth PAR38 - 5000K 40°	120	17	120	1300	76.5	3183	40	5000K	80	5.3	4.8	12	MTO
LED17P38D50KNFL	Dimmable 17W Smooth PAR38 - 5000K 25°	120	17	120	1300	76.5	7043	25	5000K	80	5.3	4.8	12	MTO
LED17P38D50KSP	Dimmable 17W Smooth PAR38 - 5000K 15°	120	17	90	1300	76.5	10989	15	5000K	80	5.3	4.8	12	MTO
LED14P38D24KFL	Dimmable 14W Smooth PAR38 - 2400K 40°	120	14	90	1050	75.0	2377	40	2400K	80	5.3	4.8	12	MTO
LED14P38D24KNFL	Dimmable 14W Smooth PAR38 - 2400K 25°	120	14	90	1050	75.0	4645	25	2400K	80	5.3	4.8	12	MTO
LED14P38D27KFL	Dimmable 14W Smooth PAR38 - 2700K 40°	120	14	90	1050	75.0	2858	40	2700K	80	5.3	4.8	12	STK
LED14P38D27KNFL	Dimmable 14W Smooth PAR38 - 2700K 25°	120	14	90	1050	75.0	5583	25	2700K	80	5.3	4.8	12	STK
LED14P38D27KSP	Dimmable 14W Smooth PAR38 - 2700K 15°	120	14	90	1050	75.0	10949	15	2700K	80	5.3	4.8	12	MTO
LED14P38D30KFL	Dimmable 14W Smooth PAR38 - 3000K 40°	120	14	90	1100	78.6	876	60	3000K	80	5.3	4.8	12	STK
LED14P38D30KNFL	Dimmable 14W Smooth PAR38 - 3000K 25°	120	14	90	1100	78.6	2846	40	3000K	80	5.3	4.8	12	STK
LED14P38D30KSP	Dimmable 14W Smooth PAR38 - 3000K 15°	120	14	90	1100	78.6	6721	25	3000K	80	5.3	4.8	12	STK
LED14P38D35KFL	Dimmable 14W Smooth PAR38 - 3500K 25°	120	14	90	1125	80.4	6970	25	3500K	80	5.3	4.8	12	MTO
LED14P38D35KSP	Dimmable 14W Smooth PAR38 - 3500K 15°	120	14	90	1125	80.4	10098	15	3500K	80	5.3	4.8	12	MTO
LED14P38D41KFL	Dimmable 14W Smooth PAR38 - 4100K 40°	120	14	90	1150	82.1	2612	40	4100K	80	5.3	4.8	12	MTO
LED14P38D41KNFL	Dimmable 14W Smooth PAR38 - 4100K 25°	120	14	90	1150	82.1	4546	25	4100K	80	5.3	4.8	12	MTO
LED14P38D41KSP	Dimmable 14W Smooth PAR38 - 4100K 15°	120	14	90	1150	82.1	11718	15	4100K	80	5.3	4.8	12	MTO
LED14P38D50KFL	Dimmable 14W Smooth PAR38 - 5000K 40°	120	14	90	1150	82.1	4621	40	5000K	80	5.3	4.8	12	MTO
LED14P38D50KNFL	Dimmable 14W Smooth PAR38 - 5000K 25°	120	14	90	1150	82.1	7611	25	5000K	80	5.3	4.8	12	MTO

PAR30														
LED14P30D24KFL	Dimmable 14W Smooth PAR30 - 2400K 40°	120	14	75	950	67.9	2513	40	2400K	80	4.8	3.8	12	MTO
LED14P30D24KNFL	Dimmable 14W Smooth PAR30 - 2400K 25°	120	14	75	950	67.9	4417	25	2400K	80	4.8	3.8	12	MTO
LED14P30D27KFL	Dimmable 14W Smooth PAR30 - 2700K 40°	120	14	75	1050	75.0	3021	40	2700K	80	4.8	3.8	12	STK
LED14P30D27KNFL	Dimmable 14W Smooth PAR30 - 2700K 25°	120	14	75	1050	75.0	5310	25	2700K	80	4.8	3.8	12	STK
LED14P30D27KSP	Dimmable 14W Smooth PAR30 - 2700K 15°	120	14	75	1050	75.0	9033	15	2700K	80	4.8	3.8	12	MTO
LED14P30D30KFL	Dimmable 14W Smooth PAR30 - 3000K 40°	120	14	75	1100	78.6	2881	40	3000K	80	4.8	3.8	12	STK
LED14P30D30KNFL	Dimmable 14W Smooth PAR30 - 3000K 25°	120	14	75	1100	78.6	8169	25	3000K	80	4.8	3.8	12	STK
LED14P30D30KSP	Dimmable 14W Smooth PAR30 - 3000K 15°	120	14	75	1100	78.6	9328	15	3000K	80	4.8	3.8	12	MTO
LED14P30D35KFL	Dimmable 14W Smooth PAR30 - 3500K 40°	120	14	75	1125	80.4	3196	40	3500K	80	4.8	3.8	12	MTO
LED14P30D35KNFL	Dimmable 14W Smooth PAR30 - 3500K 25°	120	14	75	1125	80.4	6662	25	3500K	80	4.8	3.8	12	MTO
LED14P30D41KFL	Dimmable 14W Smooth PAR30 - 4100K 40°	120	14	75	1150	82.1	3154	40	4100K	80	4.8	3.8	12	MTO
LED14P30D41KNFL	Dimmable 14W Smooth PAR30 - 4100K 25°	120	14	75	1150	82.1	6813	25	4100K	80	4.8	3.8	12	MTO
LED14P30D41KSP	Dimmable 14W Smooth PAR30 - 4100K 15°	120	14	75	1150	82.1	9681	15	4100K	80	4.8	3.8	12	MTO
LED14P30D50KFL	Dimmable 14W Smooth PAR30 - 5000K 40°	120	14	75	1150	82.1	3212	40	5000K	80	4.8	3.8	12	MTO
LED14P30D50KNFL	Dimmable 14W Smooth PAR30 - 5000K 25°	120	14	75	1150	82.1	5872	25	5000K	80	4.8	3.8	12	MTO
LED12P30D24KFL	Dimmable 12W Smooth PAR30 - 2400K 40°	120	12	75	800	66.7	1600	40	2400K	80	4.8	3.8	12	MTO
LED12P30D24KNFL	Dimmable 12W Smooth PAR30 - 2400K 25°	120	12	75	800	66.7	4553	25	2400K	80	4.8	3.8	12	MTO
LED12P30D24KSP	Dimmable 12W Smooth PAR30 - 2400K 15°	120	12	75	800	66.7	6990	15	2400K	80	4.8	3.8	12	MTO
LED12P30D27KFL	Dimmable 12W Smooth PAR30 - 2700K 40°	120	12	75	850	70.8	1924	40	2700K	80	4.8	3.8	12	STK
LED12P30D27KNFL	Dimmable 12W Smooth PAR30 - 2700K 25°	120	12	75	850	70.8	5473	25	2700K	80	4.8	3.8	12	STK
LED12P30D27KSP	Dimmable 12W Smooth PAR30 - 2700K 15°	120	12	75	850	70.8	8402	15	2700K	80	4.8	3.8	12	MTO
LED12P30D30KFL	Dimmable 12W Smooth PAR30 - 3000K 40°	120	12	75	875	72.9	2596	40	3000K	80	4.8	3.8	12	STK
LED12P30D30KNFL	Dimmable 12W Smooth PAR30 - 3000K 25°	120	12	75	875	72.9	5523	25	3000K	80	4.8	3.8	12	STK
LED12P30D30KSP	Dimmable 12W Smooth PAR30 - 3000K 15°	120	12	75	875	72.9	8437	15	3000K	80	4.8	3.8	12	MTO
LED12P30D35KFL	Dimmable 12W Smooth PAR30 - 3500K 40°	120	12	75	900	75.0	2608	40	3500K	80	4.8	3.8	12	MTO
LED12P30D35KNFL	Dimmable 12W Smooth PAR30 - 3500K 25°	120	12	75	900	75.0	4060	25	3500K	80	4.8	3.8	12	MTO
LED12P30D41KFL	Dimmable 12W Smooth PAR30 - 4100K 40°	120	12	75	925	77.1	2759	40	4100K	80	4.8	3.8	12	MTO
LED12P30D41KNFL	Dimmable 12W Smooth PAR30 - 4100K 25°	120	12	75	925	77.1	6017	25	4100K	80	4.8	3.8	12	MTO

PAR30 continued next page



For the most up-to-date specs, please visit www.tcp.com





ELITE Series LED Dimmable PAR Lamps

Smooth Uniform Dimming

Item #	Description	Voltage	Wattage	Incandescent Wattage Comparison	Lumens	LPW	CBCP	Beam Angle	CCT	CRI	M.O.L. (inches)	Diameter (inches)	Case Quantity	STK/MTO
PAR30 continued														
LED12P30D41KSP	Dimmable 12W Smooth PAR30 - 4100K 15°	120	12	75	925	77.1	7275	15	4100K	80	4.8	3.8	12	MTO
LED12P30D50KFL	Dimmable 12W Smooth PAR30 - 5000K 40°	120	12	75	950	79.2	2235	40	5000K	80	4.8	3.8	12	MTO
LED12P30D50KSP	Dimmable 12W Smooth PAR30 - 5000K 15°	120	12	75	950	79.2	7375	15	5000K	80	4.8	3.8	12	MTO

PAR30SN

LED12P30SD27KFL	Dimmable 12W Smooth PAR30 Short Neck - 2700K 40°	120	12	75	850	70.8	2261	40	2700K	80	3.5	3.8	12	STK
LED12P30SD27KNFL	Dimmable 12W Smooth PAR30 Short Neck - 2700K 25°	120	12	75	850	70.8	4333	25	2700K	80	3.5	3.8	12	STK
LED12P30SD27KSP	Dimmable 12W Smooth PAR30 Short Neck - 2700K 15°	120	12	75	850	70.8	7274	15	2700K	80	3.5	3.8	12	MTO
LED12P30SD30KFL	Dimmable 12W Smooth PAR30 Short Neck - 3000K 40°	120	12	75	875	72.9	2349	40	3000K	80	3.5	3.8	12	STK
LED12P30SD30KNFL	Dimmable 12W Smooth PAR30 Short Neck - 3000K 25°	120	12	75	875	72.9	5630	25	3000K	80	3.5	3.8	12	STK
LED12P30SD30KSP	Dimmable 12W Smooth PAR30 Short Neck - 3000K 15°	120	12	75	875	72.9	7705	15	3000K	80	3.5	3.8	12	MTO
LED12P30SD35KFL	Dimmable 12W Smooth PAR30 Short Neck - 3500K 40°	120	12	75	900	75.0	2032	40	3500K	80	3.5	3.8	12	MTO
LED12P30SD35KNFL	Dimmable 12W Smooth PAR30 Short Neck - 3500K 25°	120	12	75	900	75.0	5832	25	3500K	80	3.5	3.8	12	MTO
LED12P30SD41KFL	Dimmable 12W Smooth PAR30 Short Neck - 4100K 40°	120	12	75	925	77.1	2235	40	4100K	80	3.5	3.8	12	MTO
LED12P30SD41KNFL	Dimmable 12W Smooth PAR30 Short Neck - 4100K 25°	120	12	75	925	77.1	7159	25	4100K	80	3.5	3.8	12	MTO
LED12P30SD41KSP	Dimmable 12W Smooth PAR30 Short Neck - 4100K 15°	120	12	75	925	77.1	7768	15	4100K	80	3.5	3.8	12	MTO
LED12P30SD50KFL	Dimmable 12W Smooth PAR30 Short Neck - 5000K 40°	120	12	75	950	79.2	2500	40	5000K	80	3.5	3.8	12	MTO
LED12P30SD50KNFL	Dimmable 12W Smooth PAR30 Short Neck - 5000K 25°	120	12	75	950	79.2	3798	15	5000K	80	3.5	3.8	12	MTO
LED12P30SD50KSP	Dimmable 12W Smooth PAR30 Short Neck - 5000K 15°	120	12	75	950	79.2	8045	15	5000K	80	3.5	3.8	12	MTO
LED10P30SD24KFL	Dimmable 10W Smooth PAR30 Short Neck - 2400K 40°	120	10	60	600	60.0	1713	40	2400K	80	3.5	3.8	12	MTO
LED10P30SD24KNFL	Dimmable 10W Smooth PAR30 Short Neck - 2400K 15°	120	10	60	600	60.0	6163	15	2400K	80	3.5	3.8	12	MTO
LED10P30SD27KFL	Dimmable 10W Smooth PAR30 Short Neck - 2700K 40°	120	10	60	700	70.0	2060	40	2700K	80	3.5	3.8	12	STK
LED10P30SD27KNFL	Dimmable 10W Smooth PAR30 Short Neck - 2700K 25°	120	10	60	700	70.0	4427	25	2700K	80	3.5	3.8	12	STK
LED10P30SD30KFL	Dimmable 10W Smooth PAR30 Short Neck - 3000K 40°	120	10	60	725	72.5	2173	40	3000K	80	3.5	3.8	12	STK
LED10P30SD30KNFL	Dimmable 10W Smooth PAR30 Short Neck - 3000K 25°	120	10	60	725	72.5	4799	25	3000K	80	3.5	3.8	12	STK
LED10P30SD30KSP	Dimmable 10W Smooth PAR30 Short Neck - 3000K 15°	120	10	60	725	72.5	8181	15	3000K	80	3.5	3.8	12	MTO
LED10P30SD35KFL	Dimmable 10W Smooth PAR30 Short Neck - 3500K 40°	120	10	60	750	75.0	2289	40	3500K	80	3.5	3.8	12	MTO
LED10P30SD41KFL	Dimmable 10W Smooth PAR30 Short Neck - 4100K 40°	120	10	60	775	77.5	1894	40	4100K	80	3.5	3.8	12	MTO
LED10P30SD50KFL	Dimmable 10W Smooth PAR30 Short Neck - 5000K 40°	120	10	60	800	80	2432	40	5000K	80	3.5	3.8	12	MTO

PAR20

LED10P20D24KFL	Dimmable 10W Smooth PAR20 - 2400K 40°	120	10	60	500	50.0	1163	40	2400K	80	3.5	2.5	12	STK
LED10P20D24KNFL	Dimmable 10W Smooth PAR20 - 2400K 25°	120	10	60	500	50.0	2312	25	2400K	80	3.5	2.5	12	STK
LED10P20D27KFL	Dimmable 10W Smooth PAR20 - 2700K 40°	120	10	60	600	60.0	1398	40	2700K	80	3.5	2.5	12	STK
LED10P20D27KNFL	Dimmable 10W Smooth PAR20 - 2700K 25°	120	10	60	600	60.0	2779	25	2700K	80	3.5	2.5	12	STK
LED10P20D30KFL	Dimmable 10W Smooth PAR20 - 3000K 40°	120	10	60	650	65.0	1364	40	3000K	80	3.5	2.5	12	STK
LED10P20D30KNFL	Dimmable 10W Smooth PAR20 - 3000K 25°	120	10	60	650	65.0	2865	25	3000K	80	3.5	2.5	12	STK
LED10P20D35KFL	Dimmable 10W Smooth PAR20 - 3500K 40°	120	10	60	675	67.5	1470	40	3500K	80	3.5	2.5	12	STK
LED10P20D35KNFL	Dimmable 10W Smooth PAR20 - 3500K 25°	120	10	60	675	67.5	2923	25	3500K	80	3.5	2.5	12	STK
LED10P20D41KFL	Dimmable 10W Smooth PAR20 - 4100K 40°	120	10	60	700	70.0	1493	40	4100K	80	3.5	2.5	12	STK
LED10P20D41KNFL	Dimmable 10W Smooth PAR20 - 4100K 25°	120	10	60	700	70.0	2967	25	4100K	80	3.5	2.5	12	STK
LED10P20D50KFL	Dimmable 10W Smooth PAR20 - 5000K 40°	120	10	60	725	72.5	1546	40	5000K	80	3.5	2.5	12	STK
LED10P20D50KNFL	Dimmable 10W Smooth PAR20 - 5000K 25°	120	10	60	725	72.5	3073	25	5000K	80	3.5	2.5	12	STK
LED8P20D24KFL	Dimmable 8W Smooth PAR20 - 2400K 40°	120	8	50	450	56.3	1006	40	2400K	80	3.5	2.5	12	STK
LED8P20D24KNFL	Dimmable 8W Smooth PAR20 - 2400K 25°	120	8	50	450	56.3	1943	25	2400K	80	3.5	2.5	12	STK
LED8P20D27KFL	Dimmable 8W Smooth PAR20 - 2700K 40°	120	8	50	575	71.9	1210	40	2700K	80	3.5	2.5	12	STK
LED8P20D27KNFL	Dimmable 8W Smooth PAR20 - 2700K 25°	120	8	50	575	71.9	2336	25	2700K	80	3.5	2.5	12	STK
LED8P20D30KFL	Dimmable 8W Smooth PAR20 - 3000K 40°	120	8	50	600	75.0	1416	40	3000K	80	3.5	2.5	12	STK
LED8P20D30KNFL	Dimmable 8W Smooth PAR20 - 3000K 25°	120	8	50	600	75.0	2463	25	3000K	80	3.5	2.5	12	STK
LED8P20D35KFL	Dimmable 8W Smooth PAR20 - 3500K 40°	120	8	50	625	78.1	1308	40	3500K	80	3.5	2.5	12	STK
LED8P20D35KNFL	Dimmable 8W Smooth PAR20 - 3500K 25°	120	8	50	625	78.1	1974	25	3500K	80	3.5	2.5	12	STK
LED8P20D41KFL	Dimmable 8W Smooth PAR20 - 4100K 40°	120	8	50	650	81.2	1327	40	4100K	80	3.5	2.5	12	STK
LED8P20D41KNFL	Dimmable 8W Smooth PAR20 - 4100K 25°	120	8	50	650	81.2	2291	25	4100K	80	3.5	2.5	12	STK
LED8P20D50KFL	Dimmable 8W Smooth PAR20 - 5000K 40°	120	8	50	675	84.4	1501	40	5000K	80	3.5	2.5	12	STK
LED8P20D50KNFL	Dimmable 8W Smooth PAR20 - 5000K 25°	120	8	50	675	84.4	2059	25	5000K	80	3.5	2.5	12	STK

5 YEAR WARRANTY

For the most up-to-date specs, please visit www.tcp.com



CREATING BEAUTY

TCP has a **20-year history in energy-efficient lighting.**

Thanks to our **cutting edge technology** and manufacturing

expertise, we have shipped billions of high quality lamps. Our

integrated technology and manufacturing provides

expedited time-to-market. With TCP, you can count on

unique lighting products designed to meet very specific needs—lighting that

transforms your surroundings and envelopes you in warmth—**lighting**

that generates beauty with every flip of the switch.

LED

For more information on the quality and care TCP can deliver, call us at **800.324.1496** or visit tcp.com

325 Campus Dr. | Aurora, Ohio 44202 | P: 800.324.1496 | F: 877.487.0516

LDRE1

TYPE BBB

Applications

Industry's first patented LED troffer retrofit contained within the door frame that installs in as little as a few minutes and with minimal disruption to the workplace. Retrofits existing 2'x2' and 2'x4' T8/T12 fluorescent troffers.



LDRE1D1UNVFDXX83524MST

Features

- Ultra-light, highly efficient troffer retrofit solution
- Installs in a few minutes
- Low environmental impact due to energy efficiency
- Multiple bracket options to fit various application requirements
- Title 24 compliant seismic cable kit option
- Lightweight, white painted aluminum body for better thermal dissipation
- LDR® fits most existing fluorescent troffer fixtures with either prismatic lens or parabolic louvers
- Matte finish, acrylic contour lens diffuses glare in the work environment

Electrical

- Available in 120v-277v
- Full Dimming [0-10v] and Step Dimming available
- Lutron® dimming drivers require an existing Lutron® control system

Ambient Operating Range

See ambient operating table on page 2

Fixture Certification & Listings

- Patented LDR® design
- UL Classified
- Buy American Act Compliant
- DesignLights Consortium™ Standard qualified luminaire
- Visit the [DLC QPL](#) for listed models

Rated Life

100,000 hours L70

Warranty

Orion HARRIS class LED fixtures are covered by a five-year limited warranty. Accessories and individual components are covered by separate OEM supplier warranties



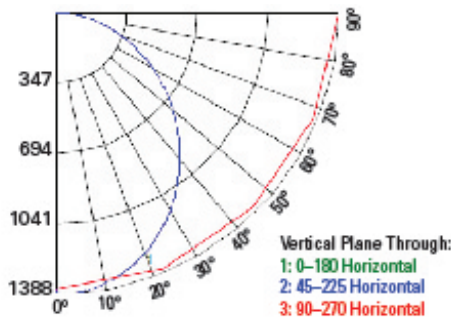
Performance Information, 120v³

Series	Nominal Lumen Code	Actual Lumens	Wattage	LPW	CCT	CRI	Input Current	Power Factor
2' x 2'								
LDRE1	A1	2,331lm	22w	106	4000K	≥80	0.18A	>.90
LDRE1	A2	3,021lm	25w	123	4000K	≥80	0.21A	>.90
LDRE1	B1	4,145lm	38w	109	4000K	≥80	0.32A	>.90
2' x 4'								
LDRE1	D1	3,254lm	27w	121	4000K	≥80	0.23A	>.90
LDRE1	E1	4,297lm	35w	124	4000K	≥80	0.29A	>.90
LDRE1	F1	6,049lm	48w	126	4000K	≥80	0.40A	>.90
LDRE1	G1	7,891lm	64w	123	4000K	≥80	0.53A	>.90

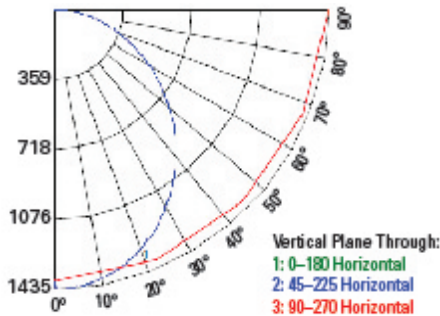
Photometrics

Visit orionlighting.com to obtain all .IES files

B1 840



E1 840



Ambient Operating Temperatures

Nominal Lumen Code	Standard Range
A1/A2/D1/E1	0°C - 45°C [32°F - 113°F]
B1/F1	0°C - 45°C [32°F - 113°F]
G1	0°C - 45°C [32°F - 113°F]

Physical Information⁴

Nominal Lumen Code	Length/Width	Depth	Weight
A1/A2/B1	The Orion LDR is designed to fit industry standard 2' x 2' and 2' x 4' T-Bar grid openings	3.13"	6.00lbs.
D1/E1/F1/G1		3.13"	11.00lbs.

Ordering Information Example (NOTE: No dashes or spaces unless noted below)

Series	Nominal Lumen Code	Voltage	Driver Type	CRI; Color Temp	Fixture Size	Lens Options	Bracket Type	Fixture Options	Control Options	Packaging Options
LDRE1	D1	UNV	FDXX	835	24	M	ST	-BB	[Blank]	[Blank]

Ordering Information

Series	Nominal Lumen Code ¹	Voltage	Driver Type ²	CRI; Color Temp	Fixture Size	Lens Options	Bracket Type	Fixture Options	Control Options	Packaging Options
LDRE1= HARRIS LED Retrofit Edge Gen 1	2' x 2' A1= 2,000lm A2= 3,000lm B1= 4,000lm	UNV= 120v-277v	FDXX= Full Dimming 0-10v ⁸	835= 80CRI; 3500K	22= 2' x 2' 24= 2' x 4'	M= Opaque Matte	ST= Standard PL= Plenum LF= Lift	(Blank)= No Option -BB= Battery Back up -DD= Dial Dimmer ⁷	(Blank)= No Option -EN= Enlighted Sensor ⁷ -BT= Bluetooth Sensor ⁷ -ZB= Zigbee Wireless Control System ⁷ -ME= Magnum EnOcean Control Systems ⁷ -P2= Philips EasySense SNS200 ⁷ -L1= Lutron Vive Integral Control (RF Only) ⁷ -L2= Lutron Vive Integral Sensor [RF Plus Sensor] ⁷	(Blank)= Bulk Packaging -SP= Single Pack
	2' x 4' D1= 3,000lm E1= 4,000lm F1= 6,000lm ⁵ G1= 8,000lm ⁵		FD50= Step Dimming 50% ^{6,7} FDHB= LDE1 Hi-lume 1% EcoSystem LED driver with Soft-on, Fade-to-Black dimming technology ^{7,9} FDH1= L3DA Hi-lume 1% EcoSystem LED driver ^{5,7,9} FDH2= LTEA Hi-lume 1% 2-wire LED driver (120 V forward phase only) ^{5,7,9} FDH3= L3DA Hi-lume 1% 3-wire LED driver ^{5,7,9} FD55= LDE5 5-Series EcoSystem LED driver ^{7,9}	840= 80CRI; 4000K 850= 80CRI; 5000K						

Note:
For more information on options above, select the hyperlinks

Accessories (Field Installed)

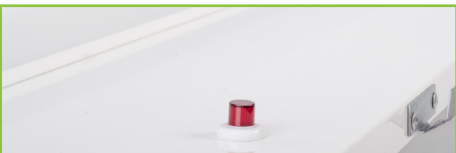
Additional Fixture Accessories	
LDRE-SCBL-2FT-KIT	2' x 2' Fixture Seismic Cable
LDRE-SCBL-4FT-KIT	2' x 4' Fixture Seismic Cable

Accessories (Field Installed)

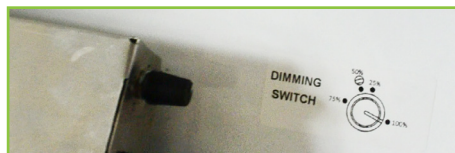


Seismic Cable Kit
(LDRE-SCBL-4FT-KIT)

Fixture Options (Factory Installed)



Battery Back Up
(-BB)



Dial Dimmer
(-DD)



Integrated Enlighted Sensor
(-EN)



Integrated Bluetooth Sensor
(-BT)



Integrated Magnum Sensor
(-ME)



Integrated Zigbee Control
(-ZB)



Integrated EasySense Sensor
(-P2)



Integrated Lutron Vive Control
(-L1)



Integrated Lutron Vive Sensor
(-L2)

Additional Specification Information

¹ For actual lumens, see performance table

² "XX" is a character placeholder for the manufacturing configuration

³ Actual performance may vary by up to ±10% of values listed; facility factors and fixture options can affect performance values

⁴ Weight and depth will vary based on option selection

⁵ **F1** and **G1** lumen packages options are not available with FDH1, FDH2 and FDH3 driver types

⁶ **FD50** [step dimming] option requires two separate hot leads per fixture

⁷ **FD50** [step dimming] or Lutron driver options are not available with **-EN**, **-ZB**, **-P2**, **-L1**, **-L2**, **-DD**, **-ME** listed under "control options" section in order information

⁸ **FDXX** 0-10v driver configurations are compatible with most third party control systems

⁹ Lutron® dimming drivers require a Lutron® control system installed prior to ordering fixtures with Lutron® dimming drivers

LDRE1

TYPE BBBE

Applications

Industry's first patented LED troffer retrofit contained within the door frame that installs in as little as a few minutes and with minimal disruption to the workplace. Retrofits existing 2'x2' and 2'x4' T8/T12 fluorescent troffers.



LDRE1D1UNVFDXX83524MST

Features

- Ultra-light, highly efficient troffer retrofit solution
- Installs in a few minutes
- Low environmental impact due to energy efficiency
- Multiple bracket options to fit various application requirements
- Title 24 compliant seismic cable kit option
- Lightweight, white painted aluminum body for better thermal dissipation
- LDR® fits most existing fluorescent troffer fixtures with either prismatic lens or parabolic louvers
- Matte finish, acrylic contour lens diffuses glare in the work environment

Electrical

- Available in 120v-277v
- Full Dimming [0-10v] and Step Dimming available
- Lutron® dimming drivers require an existing Lutron® control system

Ambient Operating Range

See ambient operating table on page 2

Fixture Certification & Listings

- Patented LDR® design
- UL Classified
- Buy American Act Compliant
- DesignLights Consortium™ Standard qualified luminaire
- Visit the [DLC QPL](#) for listed models

Rated Life

100,000 hours L70

Warranty

Orion HARRIS class LED fixtures are covered by a five-year limited warranty. Accessories and individual components are covered by separate OEM supplier warranties



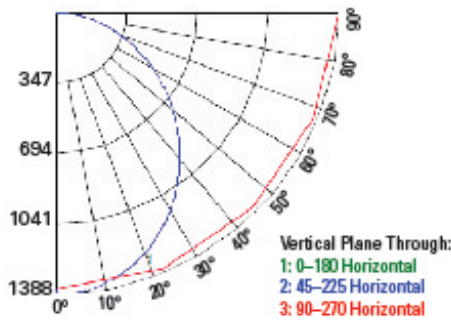
Performance Information, 120v³

Series	Nominal Lumen Code	Actual Lumens	Wattage	LPW	CCT	CRI	Input Current	Power Factor
2' x 2'								
LDRE1	A1	2,331lm	22w	106	4000K	≥80	0.18A	>.90
LDRE1	A2	3,021lm	25w	123	4000K	≥80	0.21A	>.90
LDRE1	B1	4,145lm	38w	109	4000K	≥80	0.32A	>.90
2' x 4'								
LDRE1	D1	3,254lm	27w	121	4000K	≥80	0.23A	>.90
LDRE1	E1	4,297lm	35w	124	4000K	≥80	0.29A	>.90
LDRE1	F1	6,049lm	48w	126	4000K	≥80	0.40A	>.90
LDRE1	G1	7,891lm	64w	123	4000K	≥80	0.53A	>.90

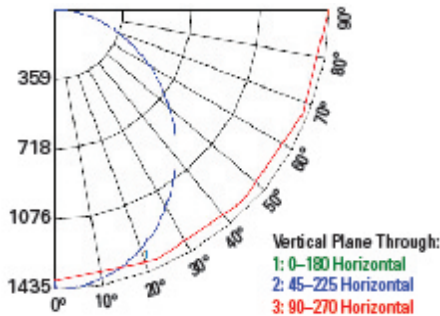
Photometrics

Visit orionlighting.com to obtain all .IES files

B1 840



E1 840



Ambient Operating Temperatures

Nominal Lumen Code	Standard Range
A1/A2/D1/E1	0°C - 45°C [32°F - 113°F]
B1/F1	0°C - 45°C [32°F - 113°F]
G1	0°C - 45°C [32°F - 113°F]

Physical Information⁴

Nominal Lumen Code	Length/Width	Depth	Weight
A1/A2/B1	The Orion LDR is designed to fit industry standard 2' x 2' and 2' x 4' T-Bar grid openings	3.13"	6.00lbs.
D1/E1/F1/G1		3.13"	11.00lbs.

Ordering Information Example (NOTE: No dashes or spaces unless noted below)

Series	Nominal Lumen Code	Voltage	Driver Type	CRI; Color Temp	Fixture Size	Lens Options	Bracket Type	Fixture Options	Control Options	Packaging Options
LDRE1	D1	UNV	FDXX	835	24	M	ST	-BB	[Blank]	[Blank]

Ordering Information

Series	Nominal Lumen Code ¹	Voltage	Driver Type ²	CRI; Color Temp	Fixture Size	Lens Options	Bracket Type	Fixture Options	Control Options	Packaging Options
LDRE1= HARRIS LED Retrofit Edge Gen 1	2' x 2' A1= 2,000lm A2= 3,000lm B1= 4,000lm	UNV= 120v-277v	FDXX= Full Dimming 0-10v ⁸	835= 80CRI; 3500K 840= 80CRI; 4000K 850= 80CRI; 5000K	22= 2' x 2' 24= 2' x 4'	M= Opaque Matte	ST= Standard PL= Plenum LF= Lift	(Blank)= No Option -BB= Battery Back up -DD= Dial Dimmer ⁷	(Blank)= No Option -EN= Enlighted Sensor ⁷ -BT= Bluetooth Sensor ⁷ -ZB= Zigbee Wireless Control System ⁷ -ME= Magnum EnOcean Control Systems ⁷ -P2= Philips EasySense SNS200 ⁷ -L1= Lutron Vive Integral Control (RF Only) ⁷ -L2= Lutron Vive Integral Sensor [RF Plus Sensor] ⁷	(Blank)= Bulk Packaging -SP= Single Pack
	2' x 4' D1= 3,000lm E1= 4,000lm F1= 6,000lm ⁵ G1= 8,000lm ⁵		FD50= Step Dimming 50% ^{6,7} FDHB= LDE1 Hi-lume 1% EcoSystem LED driver with Soft-on, Fade-to-Black dimming technology ^{7,9} FDH1= L3DA Hi-lume 1% EcoSystem LED driver ^{5,7,9} FDH2= LTEA Hi-lume 1% 2-wire LED driver (120 V forward phase only) ^{5,7,9} FDH3= L3DA Hi-lume 1% 3-wire LED driver ^{5,7,9} FD55= LDE5 5-Series EcoSystem LED driver ^{7,9}							

Note:
For more information on options above, select the hyperlinks

Accessories (Field Installed)

Additional Fixture Accessories	
LDRE-SCBL-2FT-KIT	2' x 2' Fixture Seismic Cable
LDRE-SCBL-4FT-KIT	2' x 4' Fixture Seismic Cable

Accessories (Field Installed)

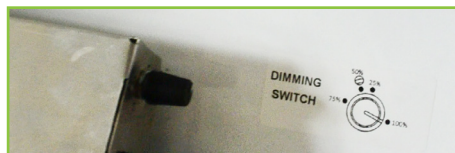


Seismic Cable Kit
(LDRE-SCBL-4FT-KIT)

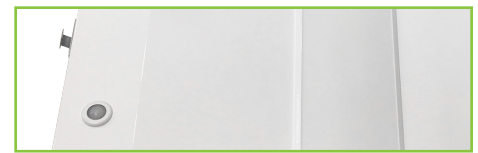
Fixture Options (Factory Installed)



Battery Back Up
(-BB)



Dial Dimmer
(-DD)



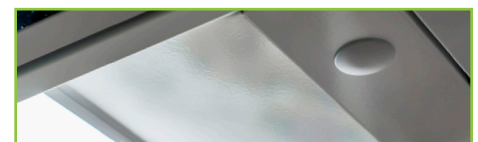
Integrated Enlighted Sensor
(-EN)



Integrated Bluetooth Sensor
(-BT)



Integrated Magnum Sensor
(-ME)



Integrated Zigbee Control
(-ZB)



Integrated EasySense Sensor
(-P2)



Integrated Lutron Vive Control
(-L1)



Integrated Lutron Vive Sensor
(-L2)

Additional Specification Information

¹ For actual lumens, see performance table

² "XX" is a character placeholder for the manufacturing configuration

³ Actual performance may vary by up to ±10% of values listed; facility factors and fixture options can affect performance values

⁴ Weight and depth will vary based on option selection

⁵ **F1** and **G1** lumen packages options are not available with FDH1, FDH2 and FDH3 driver types

⁶ **FD50** [step dimming] option requires two separate hot leads per fixture

⁷ **FD50** [step dimming] or Lutron driver options are not available with **-EN**, **-ZB**, **-P2**, **-L1**, **-L2**, **-DD**, **-ME** listed under "control options" section in order information

⁸ **FDXX** 0-10v driver configurations are compatible with most third party control systems

⁹ Lutron® dimming drivers require a Lutron® control system installed prior to ordering fixtures with Lutron® dimming drivers

LDRE1, Series 2

TYPE CCC

Applications

Industry's first patented LED troffer retrofit contained within the door frame that installs in as little as a few minutes and with minimal disruption to the workplace. Retrofits existing 2'x2' and 2'x4' T8/T12 fluorescent troffers.



Features

- Ultra-light, highly efficient troffer retrofit solution
- Installs in a few minutes
- Low environmental impact due to energy efficiency
- Multiple bracket options to fit various application requirements
- Title 24 compliant seismic cable kit options
- Lightweight, white painted aluminum body for better thermal dissipation
- LDR® fits most existing fluorescent troffer fixtures with either prismatic lens or parabolic louvers
- Matte finish, acrylic contour lens diffuses glare in the work environment

Certification & Listings

- Patented LDR® design
- UL Classified for Damp locations
- DesignLights Consortium® qualified luminaire
- Visit [DLC QPL](#) for listed models

Electrical

- Available in 120-277v
- Hardwired fixture
- Full Dimming (0-10v) and step dimming options are available
- Lutron® dimming drivers require an existing Lutron® control system

Ambient Operating Range

-4°F to 122°F [-20°C to 50°C]

Rated Life

100,000 hours per L70 TM-21 at 25°C

Warranty

Orion LED HARRIS class fixtures are covered by a five-year limited warranty. Accessories and individual components are covered by separate OEM supplier warranties.

LDRE1, Series 2

Ordering Information Example

Series	Nominal Lu- mens	Voltage	Driver Type	CRI; Color Temp.	Fixture Size	Lens Material	Bracket Type	Additional Options
LDRE1	DA	UNV	FDXX	835	24	M	ST	-BB

Ordering Information

Series	Nominal Lumen Code	Voltage	Driver Type	CRI; Color Temp.	Fixture Size	Lens Material	Bracket Type	Additional Options
LDRE1= LED Retrofit Edge Gen1, Series 2	DA= 3000lm EA= 4000lm FB= 6000lm¹	UNV= 120-277v	FD50= Step Dimming 50%^{2,3} FDXX= Full Dimming 0-10v^{4,5} FDHB= LDE1 Hi-lume 1% EcoSystem LED driver with Soft-on, Fade-to-Black dimming technology ⁶ FDH1= L3DA Hi-lume 1% EcoSystem LED driver ^{1,6} FDH2= LTEA Hi-lume 1% 2-wire LED driver [120 V forward phase only] ^{1,6} FDH3= L3DA Hi-lume 1% 3-wire LED driver ^{1,6} FD55= LDE5 5-Series EcoSystem LED driver ⁶	835= 80CRI, 3500K 840= 80CRI, 4000K 850= 80CRI, 5000K	24= 2x4	M= Opaque Matte	ST= Standard PL= Plenum LF= Lift	-BB= Battery Back up -DD= Dial Dimmer ³

Fixture Option - Factory Installed



-BB= Battery Backup



-DD= Dial Dimmer

Fixture Options - Seismic Cable, Field Installed



LDRE-SCBL-4FT-KIT= 2' x 4' fixture seismic cable

LDRE1, Series 2

Physical and Performance Information⁷

Series	Lumen Code	Actual Lumens	Fixture Size	Lumens Per Watt	Light Output	CCT	CRI	Input Voltage	Input Power [watts]	Input Current	Power Factor
LDRE1= LED Retrofit Edge Gen1, Series 2	DA	3000	2x4	110	3375 lm	4000K	≥80	120	31	0.26 A	>0.99
	EA	4000	2x4	106	3968 lm	4000K	≥80	120	37	0.28 A	>0.99
	FB	6000	2x4	117	5882 lm	4000K	≥80	120	50	0.42 A	>0.99

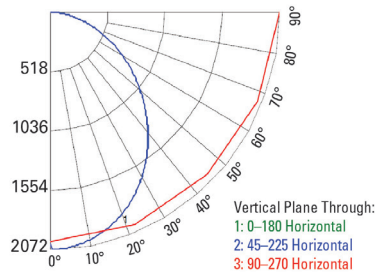
Physical Information

Size	Length	Width	Depth ⁸	Weight ⁸
2x4	46.75"	20.50"	3.125"	11 lbs

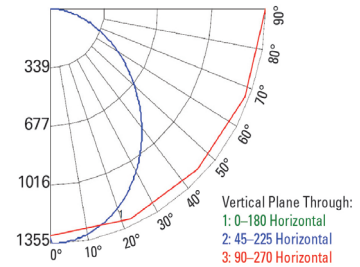
Additional Performance Information for a fixture

Visit orionlighting.com for all .IES files

2x4 FB 4K



2x4 EA 4K



Additional Specification Information

- ¹ FB lumen packages options are not available with FDH1, FDH2 and FDH3 driver types
- ² FD50 (step dimming) option requires two separate hot leads per fixture
- ³ FD50 (step dimming) option is not available with -DD listed under "additional options" section in order information
- ⁴ FDXX 0-10v driver configurations are compatible with most third party control systems
- ⁵ "XX" in part number is a character placeholder for the manufacturing configuration
- ⁶ Lutron® dimming drivers require an existing Lutron® control system
- ⁷ Actual performance may vary by up to ±10% of values listed
- ⁸ Depth and weight varies by model; dependent on driver selection

Exhibit 2
HCC PROJECT NO. IFB 18-38
LED LIGHT RETROFIT – MULTIPLE FACILITIES
(LOANSTAR NO. II)

HCC DIVISION 001 CONSTRUCTION SPECIFICATIONS

Provided as separate document (Exhibit 2) to IFB

HOUSTON COMMUNITY COLLEGE

CONSTRUCTION PROJECT
DIVISION 1 SPECIFICATIONS

Construction Project Division 1 Specifications

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Section 010000 Miscellaneous Requirements

1. Summary

These Miscellaneous Requirements are issued as supplements to the Uniform General Conditions for Construction Contracts (UGCs) and any Special Conditions that form a part of the Contract for Construction between the Owner and the General Contractor (or Construction Manager, or Design-Build Contractor). The term “Contractor”, as used herein, is meant to refer to a General Contractor, or a Design-Build Contractor, or a Construction Manager. Should any provision of these Division 1 Specifications conflict with the Contract, the UGCs or the Special Conditions, the latter shall govern.

2. Removal of Debris (see Section 015240)

The Contractor shall remove and legally dispose of all demolition debris and all unused construction materials off-site. Unless specifically noted otherwise, all excess earth and rock excavation materials shall be removed and disposed of offsite. Such demolition debris, unused construction materials and excess excavated earth and rock shall be handled, transported and legally disposed of at the Contractor’s expense.

3. Drawings and Specifications (also see UGC Article 6)

- 3.1 The Drawings and Specifications are intended to describe and provide for a finished and complete piece of Work that meets the requirements of all the applicable governing laws, ordinances, rules, and regulations of the locality. It is mandatory that all work must meet these requirements.
 - 3.1.1 No extra compensation will be allowed for the Contractor’s rework due to its failure to conform to any such requirements unless the original installation was directed by written order issued by the A/E or the Owner.
 - 3.1.2 Anything mentioned in the Specifications and not shown on the Drawings, or shown on the Drawings and not mentioned in the Specifications, shall be like effect as if shown or mentioned in both. If the Contractor believes that some information is missing then that information should be requested of the Owner or A/E in writing. Should the Drawings disagree among themselves, or with the Specifications, the better quality and/or greater quantity of work and/or materials shall be included with the Contractor’s project proposed pricing. In the case where the Specifications do not fully agree with the material schedules, the material schedules shall govern.
 - 3.1.3 The general character of the detail work is shown on Drawings, but minor modifications may be made by A/E in full size Drawings, shop drawings, or models. Contractor shall not attempt to execute any part of the Work requiring such drawings until he has received approved copies of same.
 - 3.1.4 Where the word “similar or typical” occurs on Drawings, they shall be understood in their general sense and not as meaning identical. All details shall be worked out in relation to their location and their connection to other parts of the Work. If the Contractor finds this to be beyond its capability, interpretations and directions should be requested of the A/E.

- 3.1.5 Small scale and large scale drawings are intended to be mutually compatible and explanatory. In case of variances, the following order of preferences is established to define the intent of the work.
- 3.1.6 Explanatory notes on Drawings;
 - 3.1.6.1 Recorded dimensions;
 - 3.1.6.2 Large scales details;
 - 3.1.6.3 Small scale details;
 - 3.1.6.4 Scaled measurements
- 3.2 The “Scope of Work” description placed in the front portion of each section of the Specifications is intended to designate the scope and locations of all items of Work included in that section, either generally or specifically. It is not, however, intended to limit the scope of the work where plans, schedules, or notes indicate a larger scope.

4. Interpretations of Documents (see UGC 3.2.2)

Whether bidding or building the Project, if there is any doubt as to the meaning of any part of the Construction Documents, the Contractor shall submit a written request to the Owner seeking an interpretation. If the question has to do with technical requirements, the Contractor should provide the A/E with a copy of the request as the Owner will typically ask the A/E for the technical interpretation. If such a request is made during bidding, it should be made at least ten days before bid opening. Interpretations shall then be issued by written response only and during bidding only by issuing an “Addendum” to the bid documents. When in doubt during construction, the Contractor should proceed only with a written interpretation by the Owner, or in its absence, proceed only after notifying the Owner in writing about the interpretation that is being used. Failure of the Contractor to request an interpretation shall not relieve the Contractor from responsibility to complete the Work to the Owner’s satisfaction. If the Contractor does not agree that an interpretation received is satisfactory and without cost or time implications, the Owner should be notified immediately in writing of that fact.

5. Materials and Work (see UGC 8.1)

- 5.1 Unless otherwise specified, all materials shall be new and free of asbestos, noxious or toxic fumes, urea-formaldehyde and lead (lead in potable water system) and both workmanship and materials shall be of the best quality. If requested by the Owner, the Contractor shall furnish satisfactory evidence as to the kind and quality of his materials and workmanship. Any work installed that does not meet the requirements of the Construction Documents shall be removed and replaced with conforming Work. **(UGC 3.3.5)**
- 5.2 The Contractor and subcontractors shall be responsible for the proper care and protection of all materials and equipment furnished both during and after installation. Such materials and equipment may be staged inside the construction fence, or areas designated by the Owner, but only consistent with a Staging Plan acceptable to the Owner. All materials affected by the weather shall be covered and protected to keep them free from damage while being transported to the site. When stored on site, they shall be placed in watertight storage shed/compartments or otherwise protected from the weather. Any material damaged by water or other causes shall be removed from the site and replaced with new material.

- 5.3 When necessary to avoid delay or to protect work or equipment, provide suitable watertight coverings over windows, doors, skylights, hatchways, and such other openings admitting rain, including the Owner's materials within the building area when working on a combined effort.
- 5.4 The Contractor and subcontractors shall protect and be responsible for their Work and any damage to their Work from the date of delivery or installation until Substantial Completion when the Owner will take possession and assume responsibility. They shall make good, without cost to the Owner, any damage or loss that may occur to their Work during this period.
- 5.5 When any room in one of Owner's buildings has been provided for use as a shop, storeroom, etc., the Contractor shall restore the room to equal, or better, condition by providing repairs, patching, cleaning, and painting at its sole expense.
- 5.6 During the execution of the Work the open ends of all piping, conduit and mechanical ducts and openings in equipment shall be sealed in such a way as to prevent the entrance of foreign matter. All heating, ventilating, plumbing and electrical equipment shall be covered and protected. All plumbing fixtures shall be protected and boarded over to prevent their usage by any person. All drains shall be covered until they are placed into service.
- 5.7 The Contractor shall provide all scaffolding and ladders necessary for performing the Work. All scaffolding shall be so constructed, anchored and braced to comply in all respects with OSHA guidelines to afford safety and protection to both workers and their Work, the inspectors and the Work of other contractors.
- 5.8 Except as otherwise specified, the Contractor shall furnish at its own cost and risk all tools, apparatus, hoists or cranes, derricks, etc. needed for the Work.
- 5.9 Temporary equipment shall be installed in such a manner that finished Work will not be damaged by smoke, falling mortar, concrete or other causes. The location and arrangement of temporary equipment shall be subject to the approval of the Owner.
- 5.10 All temporary shoring required for the installation of Work shall be provided by the Contractor who will take all responsibility.
- 5.11 The Contractor and its subcontractors shall provide on the premises, at locations approved by the Owner, suitable watertight storage sheds for the storage of tools and equipment. Such sheds shall be at least 6 inches off the ground on heavy joists. The Contractor shall maintain such sheds in good condition and remove them when directed by the Owner.
- 5.12 **Also see Sections 013100, 013523 and 015000 for related requirements.**

6. Intent of the Documents (see UGC 11.1.2)

- 6.1 It is the intention of the Construction Documents to describe and require the complete installation of the various systems and the Contractor is to furnish all items necessary to make the various systems complete, although each and every item required may not be specifically mentioned in the Construction Documents.
- 6.2 It is not the intent of the Construction Documents to limit materials, equipment or fixtures to the product of any particular manufacturer. Where definite materials, equipment or fixtures have been specified by name, manufacturer or catalog number, it has been done to set a quality standard, applicability, physical conformity and other characteristics. It is not the Owner's intent to discriminate against or prevent any dealer,

jobber or manufacturer from furnishing materials, equipment or fixtures that meet or exceed the characteristics of the specified items. However, substitutions of materials shall not be made without a specific written request by the Contractor having been approved by the Owner in writing. **(See paragraph 18 of this Section).**

- 6.3 Any discrepancies in the Specifications must be reported to the Owner for clarification, correction and interpretation from the A/E before the work is executed.

7. Existing Underground Utilities

If existing underground lines occur in the site where the work is to be accomplished, such lines will be located and staked by the Contractor for the benefit of the Owner and the Contractor prior to start of the work. Contractor shall maintain these markings throughout the duration of the construction project. Prior to any excavation, the Contractor shall review with the Owner the locations of all underground utilities and receive the Owner's written permission to proceed.

8. Pumping, Shoring, Etc.

- 8.1. Pumping: When necessary to avoid delay or to protect the Work or the premises, provide suitable pumping equipment and keep excavations, pits and other areas involved free of water that may leak, seep, or rain in. Do not allow water to flow into excavations. Do not allow water to flow off site in quantities or at rates that exceed the quantities or rates that existed prior to the start of construction
- 8.2. Shoring: The Contractor shall provide and be responsible for all temporary shoring required for execution and protection of the work. After all construction is secure and stable, and when authorized by the Structural Engineer or Civil Engineer, the Contractor shall remove all shoring.

9. Hazardous Materials

- 9.1 If during the course of his work, the Contractor observes the existence of asbestos, or asbestos bearing materials, the Contractor shall immediately terminate further operations and notify Owner of the condition. The Owner will, after consultations, determine a further course of action. **(UGC 7.5)**
- 9.2 Contractor shall furnish Manufacturer's Safety Data Sheets (MSDS) on all materials and products installed by the Contractor and subcontractors on this project to indicate no asbestos-containing materials have been installed.

10. Substantial Completion (see UGC 1.26 and 12.1.1)

"Substantial Completion" constitutes a stage of project completion that will allow Owner beneficial occupancy for the purpose of safely installing furnishings, maintaining normal security over them, and use of the facility for its intended purpose. Substantial Completion shall not be considered as Final Completion as there may be minor correction items outstanding and there are additional completion items required to achieve Final Completion. Upon acceptance that an entire Project, or a portion of a Project, as Substantially Complete the Owner will take possession from the Contractor and assume operations, maintenance and insurance liability responsibilities for that portion of the Project.

11. Coordination (see UGC 3.3.6.2)

The Contractor and subcontractors on the project shall coordinate their work with each other, advising on work schedules, equipment locations, etc. It shall be the responsibility of Contractor to assure this coordination and to schedule and supervise the work of all subcontractors performing work under this contract. Contractor shall be responsible for the proper fit of the various parts of the Work and for the coordination of operations of all trades, the subcontractors and the material suppliers engaged upon or in connection with the Work as well as those of his own employees. Contractor shall accommodate and coordinate with other independent contractors and Owner personnel on site during construction to allow them necessary access to perform their work.

12. Observation of Work (see UGC 8.5.1)

The Owner's representatives, as well as the A/E, shall have access to the work at all times wherever it is in preparation or progress. The Contractor shall provide proper and safe facilities for such access and for observation.

13. Cooperation with Building Officials

Contractor, Subcontractor and all related suppliers, vendors and employees will cooperate with applicable utility and government officials and inspectors at all times. If such official or inspector deems special inspections necessary, provide assistance and facilities that will expedite such inspection or observation.

14. Notification

The Contractor shall notify the Owner at least 48 hours in advance (Monday thru Friday) of concrete pours, roofing installation, start of each new section of classification of work, concealment of plumbing, heating, air conditioning, or electrical work.

15. Ongoing Operations/Construction Personnel

- 15.1 The facilities of the campus will only be available during the scheduled construction time-period as specified by the Owner, and if not specified, then from 8:00 a.m. until 6:00 p.m., Monday through Friday. Work during other times, including weekends, shall only be allowed with prior request and written authorization from the Owner. In addition, the Contractor shall accommodate and coordinate its construction work force and activities to allow the Owner's forces and Owner's separate contractors (i.e. telephone, data, IT, computer, and furniture installation) to enter the jobsite to perform their work.
- 15.2 This project is surrounded by continuously functioning campus facilities, including student housing, academic and research efforts. The Contractor shall make every effort to avoid disruptions to ongoing campus activities and to maintain a safe environment for students, faculty, and staff in the areas adjacent to the Project.
- 15.3 Adjacent facilities will continue to be used for their intended purpose while this Project is underway and the following requirements shall apply:
 - 15.3.1 Contractor, Subcontractors, Owner and A/E shall meet regularly to coordinate and schedule any construction activities affecting ongoing operations including, but not limited to: testing days, student/staff holidays, special events, etc.

- 15.3.2 The Owner may have other contractors, or its own employees, performing work on the campus and in the vicinity of the Contractor's Work. The Contractor shall not commit any act, or allow any act, that will interfere with the performance of work by these other work forces. The Contractor shall cooperate with all performing parties so that the Owner can realize the best possible outcome of all projects involved and requiring coordination.
 - 15.3.3 Student, faculty and general public safety is of utmost importance. Fire and life safety exiting from buildings must be maintained at all times and closely monitored. Review and receive approval for changes in existing conditions with the local fire marshal for each phase of construction. Provide temporary signage as required by the fire marshal and/or the Owner.
 - 15.3.4 Firearms, drugs, intoxicating beverages, X-rated materials, etc. are banned from the Owner's property.
 - 15.3.5 Smoking is not allowed inside any campus building or anywhere on the campus except in designated areas. Smoking will not be allowed in any enclosed area of the building(s) of this project. Enclosed, as used here, refers to erection of exterior walls and overhead structure for any portion of the project; it does not mean to limit the term to only "dried in" situations. Use of or possession of illegal drugs or alcohol on the project site or anywhere on campus is prohibited.
 - 15.3.6 Construction personnel are not to communicate or interact with students and faculty on site. Only the Project Superintendent, Project Manager and/or their appointed representatives may communicate with the faculty and administrative staff on an as needed basis.
- 15.4 Campus utilities must not be interrupted except when scheduled and approved in advance through Owner-designated campus channels. The Contractor or his personnel shall NOT open or close any valves of the central campus utility systems. Valve operation is to be done by University utilities personnel only. The Contractor shall not activate or deactivate any campus utility system or component of any system, without express written direction from the Owner.
- 15.5 Chemical cleaning of new utility additions shall be done by circulating a good non-phosphate cleaner through as much of the new system as possible. Prior to dumping the cleaning agent, the Contractor shall notify the local City/County industrial water treatment department to sample the effluent. If the City/County officials approve of dumping to drain, then the Contractor will dump into the sanitary sewer. The Contractor shall refill the new system with water and again have the City/County water treatment officials sample the effluent prior to dumping. If at any stage the City/County water treatment officials refuse to accept the effluent, then the Contractor must make special arrangements for legal disposal at its expense and provide the Owner with copies of the resulting shipping and disposal manifests.

16. Field Measurements (see 014518 – Field Engineering)

- 16.1 The Contractor will employ an experienced, competent staff to establish or survey the building lines, elevations, and field dimensions. Each subcontractor shall verify all existing grades, lines, levels and dimensions affected by their work.
- 16.2 Before ordering any materials or doing any work, each subcontractor shall verify all measurements and shall be responsible for their correctness. Any difference between the actual dimensions and conditions on the site and those indicated on the drawings shall be submitted to the Owner for instructions and consideration before proceeding with the work.

17. Substitutions (see UGC 8.3.5 and 8.3.6)

The Contractor may submit and Owner and A/E will consider substitutions that have not been submitted and approved prior to receipt of proposals. Contractor shall submit a written substitution request on an Owner approved form and the substitution shall be fully identified for product or method being replaced by substitution, including related specification section and drawing number(s) and fully documented to show compliance with the requirements of the Construction Documents. Include product data/drawings, description of methods, samples where applicable and Contractor's detailed comparison of significant qualities between the specified item and the proposed substitution. The Contractor shall include a statement of effect on construction time, coordination and other affected work, cost information or proposal and a written guarantee indicating the proposed substitution will result in overall work equal to or better than work originally indicated. Contractor shall allow sufficient time for review and approval of such proposed substitutions.

Section 012000 Project Meetings

1. Pre-Construction Conferences (see UGC 3.1.1)

- 1.1 Prior to commencing construction, the Contractor shall schedule a meeting to review all aspects of the Construction Project. The time of the Pre-Construction Conference and the attendees shall be determined through discussions between the Owner, Project Manager and Contractor prior to scheduling.
- 1.2 The following is a tentative agenda for the Pre-Construction Conference:
 - Critical work sequencing;
 - Designation of responsible personnel;
 - Procedures for processing submittals, substitutions, applications for payment, proposal requests, change letters and Contract Close-out procedures;
 - Parking and access to the site;
 - Office, storage areas and temporary facilities;
 - Utility information;
 - Testing procedures;
 - Procedures for maintaining record documents.
- 1.3 Minutes of the Pre-Construction Conference will be kept and distributed to all attendees and to all team members not present at the meeting. All final decisions recorded in the minutes shall become binding on the parties.

2. Pre-Installation Conferences

Conduct a Pre-installation Conference at the site before each construction activity that requires extensive coordination and for those activities where a preinstallation meeting is specifically required by the specification section.

3. Progress Meetings (see UGC 8.5 and 8.6)

- 3.1 The Contractor shall schedule progress meetings at regular intervals to discuss and monitor the construction project. The Contractor shall determine the meeting times and required attendees.
- 3.2 Minutes of the Progress Meeting shall be kept and distributed to all attendees and to all team members not present at the meeting.

4. Close-out Meetings

- 4.1 When the Contractor determines that a Project, including all punch list items, has been substantially completed and an acceptance date established, a formal project close-out meeting will be scheduled and attended by the parties designated by the Owner and A/E.
- 4.2 At the close-out meeting, upon documentation of exceptions and assignment of completion responsibilities, the close-out documents required by the Construction Documents will be released to the Owner.
- 4.3 Minutes of the Project Close-out meeting will be kept by the A/E and any exceptions identified will be recorded. Specific completion dates for the exceptions will be established and tracked by the Owner to ensure expeditious completion. Copies of the minutes will be distributed to all attendees.

Section 013100 Project Administration

1. Subcontracts (see UGC 3.3.6)

- 1.1 Contractor agrees to bind every subcontractor, and every subcontractor agrees to be bound by the terms and conditions of the Owner's contract.
- 1.2 The Contractor is required to submit a list of all first tier subcontractors to the Owner as subcontracts are executed.

2. Flow of Communications (see UGC 3.2, 3.3.1 and 3.3.6)

- 2.1 The Owner's Designated Representative (ODR) is the Owner's primary representative for the Project who will be designated to the Contractor in writing. The ODR is the only party authorized to issue written/or oral instructions directly to the Contractor that involve changes to the contract scope, cost or time of the Work. If any other party directs the Contractor to make changes to the Work that will involve scope, cost or time the Contractor should notify the ODR immediately in writing. (see UGC 1.17)
- 2.2 The Owner will also designate Project Manager. The ODSR will have the authority, delegated by the ODR, to make decisions on behalf of the Owner concerning coordination with the Owner of Work on the site including: traffic controls, site safety, scheduling of utility outages, and all matters within the contract that do not involve changes to the scope, cost and/or time for completion. The Project Manager, will coordinate and conduct quality inspections of the construction work as it is installed or performed, authorize payments (except first and final) and conduct final acceptance

inspections. The Project Manager will be the Contractor's primary point of contact on the site.

- 2.3 The Architect/Engineer (A/E) is responsible to the Owner for the technical aspects of the Design, including the review of Contractor Submittals and for interpretation of the technical requirements of the Construction Documents. The Owner's written instructions to the Contractor on these matters will generally be issued through the A/E.
 - 2.3.1 The A/E may issue clarifications and other information not affecting the contract scope, cost or time by means of an A/E's Supplemental Instructions (ASI), or similar clarification form, that will be sequentially numbered. Both the A/E and Contractor will maintain separate ASI registers. **(See UGC 3.2.2).**
 - 2.3.2 If Contractor believes such a clarification will create a change in the contract scope, cost or time for performance, a written notification of such must be provided to the ODR before performing the Work involved. The Contractor should proceed with such Work only after being directed to do so in writing by the ODR.
- 2.4 Any oral direction to the Contractor by the ODR, ODSR or the A/E should be confirmed in writing prior to the Contractor proceeding with the direction.
- 2.5 All Project correspondence shall include the Project Number and Name in the title or reference.
- 2.6 All correspondence originated by the Contractor should include simultaneous copies to the ODSR and the A/E. Such correspondence that involves changes, or proposed changes, to the scope, cost or time for the Work, or any dispute or potential dispute, should also include copies to the ODR.
- 2.7 All subcontractor correspondence to either the Owner or the A/E shall be routed through the Contractor.
- 2.8 All subcontractor Requests for Information (RFIs) shall be submitted by and under cover of the Contractor, who is to carefully review and ensure the completeness and appropriateness of the question prior to submission. The Contractor should sequentially number each RFI and submit them directly to the A/E, with copies to the ODSR. The Contractor and A/E will maintain separate RFI logs.
- 2.9 The preparation and handling of Pay Applications, Request for Information, Change Proposals, Submittals, etc. are to be processed as discussed in the Pre-Construction Conference meeting.

3. Project Changes (see UGC 9.1, 9.3.3.3, 9.6.2.2 and Article 11)

- 3.1 All changes to the Contract involving scope, cost, or time will be issued on either a written Contingency Expenditure Authorization (CEA) or the standard Houston Community College (HCC) Change Order form. The determination of whether changes in the Work are funded from the Owner's Construction Contingency or by Change Order is at the Owner's sole discretion. Such CEAs or Change Orders are valid only if signed by either the Chancellor of HCC or by the Executive Director for Construction Administration. A single CEA or Change Order may include several different change issues and they will not be required to be related to each other.
- 3.2 Prior to issuing a CEA or Change Order, the Owner must have received from the Contractor a Change Order Proposal that is complete in its description of the changes in scope and its detailed presentation of cost and time implications of the proposed change.

If the Owner and Contractor do not agree on the implications of a proposed change, they will meet and discuss and resolve their differences prior to proceeding with the changes to the Work.

- 3.2.1 The Contractor shall summarize all costs for each change at each level of subcontractor and supplier by preparing a "Cost Analysis", and shall provide each subcontractor's cost summary as backup. Additional support documentation from both the Contractor and its subcontractors is encouraged.
 - 3.2.2 Where the Contractor believes it is entitled to a time extension, it shall so state as part of its response to the Change Proposal, including a justification for such request. Time extensions will be granted only if a Change Order Proposal affects the activities on the Critical Path of the Owner approved Project Schedule (i.e., when the work impacts the "Contract Substantial Completion Date").
 - 3.2.3 If the Owner and Contractor cannot mutually agreed upon a fair and reasonable cost and time settlement, the Owner may: 1) Reject the quotation and void the Change Order Proposal, 2) Issue instruction to the Contractor to proceed on a time and material basis for a price to be determined later not to exceed a fixed maximum dollar and time, or 3) Issue a Construction Change Directive.
 - 3.2.4 The Owner may issue Field Orders directly to the Contractor for minor changes to the contract, which can be negotiated in the field. Pricing backup shall be the same as a Change Order Proposal and is to be outlined as noted above. Once the Owner and the Contractor have signed the Field Order, the work is authorized and the Field Order will be included in the next CEA or Change Order.
- 3.3 Any funds remaining in the Owner's Construction Contingency at the completion of the Project belong to the Owner and shall be credited to the Owner by deductive Change Order.

4. Liquidated Damages (see UGC 9.11, 12.1.4 and 25.2)

If assessed, liquidated damages will be withheld from progress payments beginning with the first payment after the Contract substantial completion deadline and until all work of the contract is complete. The amount assessed shall be deducted from the contract price through a written Change Order.

5. Site Use Issues

- 5.1 The Contractor is responsible for the actions of its entire work force, including Subcontractor and Supplier employees, whenever they are on the campus. Harassment of any kind toward any person will not be tolerated. Offending workers will be removed from the project immediately and permanently. Harassment includes any action such as jeering, whistling, calling-out, staring, snickering, making rude or questionable comments, or similar behavior. Any offending worker or employee will be removed.
- 5.2 The Contractor shall provide and submit a program plan for worker orientation, identification and control of access to the site and for managing personnel records, including payroll records. All workers on the project shall participate in this program before beginning work of the project. This plan shall include, as a minimum:
 - 5.2.1 Employee identification badges with a photo of the employee, the employer and employees' name. Badges shall be provided for all employees and produced by a system on site. This identification shall be worn at all times while on the project

site. Lack of an ID badge shall be grounds for removal from the project until the badge is produced.

- 5.2.2 Identification badges for workers, busing of workers from remote parking lots, frequent written and verbal reminders to the work force of appropriate behavior and avoidance of campus facilities and publication of acceptable access and egress routes from the work site are all minimum requirements of the plan.

6. Shop Drawings and Submittals (see UGC 8.3)

- 6.1 Refer to the UGC for requirements not identified in this section.
- 6.2 The Contractor shall assign an identifying number to each submittal following a format to be established at the Pre-Construction Conference. The same number with a numerical or alphabetical suffix will be used to identify re-submittals.
- 6.3 The burden of timeliness to complete the submittal process is on the Contractor. The Contractor shall allow sufficient time within the construction schedule for the A/E and Owner to review and approve all submittals, including time for all re-submittals on any unaccepted/rejected submittal.
- 6.4 Any deviation from the Construction Documents shall be conspicuously noted on the submittal and the transmittal cover sheet. Failure to so note deviations will void any action taken on the submittal.
- 6.5 All manufacturers' data contained within the submittal shall have all inapplicable features crossed out or deleted in a manner that will clearly indicate exactly what is to be furnished.
- 6.6 Equipment of larger sizes than shown, even though of a specified manufacturer, will not be acceptable unless it can be demonstrated that ample space exists for proper installation, operations and maintenance.
- 6.7 The Owner will not be responsible for payment of any item that has not been submitted and approved through the established submittal process. **(UGC 10.5.1.4)**
- 6.8 The exact number of submittal copies required for distribution will be determined at the Pre-Construction Conference. The Contractor shall anticipate providing a minimum of four (4) copies of each submittal in addition to those needed by the Contractor and its subcontractors. Two (2) of the approved copies will be returned to the Contractor and one (1) shall be set aside for subsequent turn over to Owner at Project Closeout.

7. Substitution of Materials, Labor and Equipment (see UGC 8.3.5 and 010000 paragraph 17)

- 7.1 Refer to the UGC for requirements not identified in this section.
- 7.2 The specified products referenced in the Construction Documents establish minimum qualities for which substitutions shall at least equal to be considered acceptable. The burden of proof of equality rests with the Contractor. The Owner retains sole authority for acceptance of substitutions.
- 7.3 All substitutions shall be submitted with ninety (90) days of the Notice to Proceed for Construction and be clearly marked as such on the transmittal cover sheet for the submittal.
- 7.4 The Contractor shall allow a minimum of four (4) weeks for review of each substitution by the A/E and/or Owner in addition to the requirements identified in Section 7.3 above.

- 7.5 When requested by the A/E, the Contractor shall provide a sample of the proposed substitution item. In some cases, samples of both the specified item and the proposed item shall be required for comparison purposes.
- 7.6 Acceptance of materials and equipment will be based on the supplier/manufacturer's published data and will be tentative subject to submission of complete shop drawings and/or specifications indicating compliance with the Construction Documents. Acceptance of materials and/or equipment under this provision shall not be construed as authorizing any deviation from the Construction Documents, unless specifically directed in writing from the A/E.
- 7.7 Any and all additional costs or time resulting from the acceptance or rejection of any substitution shall be the sole responsibility of the Contractor. These include costs that are not presented at the time of the substitution request and those costs that become known after the approval of the substitution. This includes direct as well as indirect costs.
- 7.8 If a substitution is accepted, and the substitute proves defective, or otherwise unsatisfactory as determined by the Owner for the service intended within the warranty period, the substitute shall be replaced with the material or equipment specified in the Construction Documents, or as approved by the Owner, at no additional cost to the Owner.

8. Allowances

- 8.1 Allowances shall include:
 - Cost of materials to Contractor.
 - Delivery to project site; handling, storage and installation at project site.
 - Protection, security, including insurance.
- 8.2 At contract closeout, monies remaining in any allowance line item will be credited to the Owner by Change Order.

9. Alternates

- 9.1 Alternates will be exercised and added to the proposed contract sum at the option of the Owner.
- 9.2 For any or all additive alternates selected or otherwise approved for addition to the contract sum by the Owner, the Contractor shall coordinate all related work and modify the surrounding work as required to complete the work, including changes under each alternate, only if acceptance is designated in the contract.

10. Unit Prices (see UGC 11.2)

The Contractor shall provide unit prices for specific portions of the work identified by the Owner during the pre-bid process. Unit pricing shall include all costs of materials, including, but not limited to shipping, and their related labor cost, including, but not limited to all appropriate burdens and markups.

11. Applications for Payment (see UGC Article 10 and 12.3)

- 11.1 Such requests shall be presented on (AIA) style G702 & G703 Pay Application forms. The G702 & G703 forms which may be supplemented with columnar continuation sheets shall separately identify each update to the original contract or GMP amounts.

- 11.2 The Contractor's project accounting records shall be kept on the basis of generally accepted accounting principles in accordance with cost accounting standards issued by the Federal Office of Management and Budget Cost Accounting Standards Board and organized by each pay request period.
- 11.3 Prior to the submission of the initial Application for Payment the Contractor shall submit the following documents to the A/E, Project Manager and Owner for review:
 - 11.3.1 Contract Price of GMP Schedule of Values: A single document itemizing the breakdown of the Contract Price/GMP, including general conditions, contingencies and allowances shall be submitted using HCC standard Schedule of Values format. The Contractor shall submit a draft breakdown and such submittal shall be a condition precedent to the processing of the first pay application. The Contractor shall submit subsequent draft copies of the Schedule of Values no later than five (5) working days prior to formal submission of each monthly pay request.
 - 11.3.1.1 The breakdown shall follow the trade divisions of the specifications.
 - 11.3.1.2 No adjustment to the original detailed breakdown of the contract line item shall be made once accepted by the Owner and A/E, unless such adjustment is directed by the Owner in writing.
 - 11.3.1.3 Construction Manager at Risk or Design-Builders will be allowed to reallocate among General Conditions line items after consultation with, and written agreement from the Owner. In the event the contractual limits on General Condition's costs are exceeded, the overruns shall be subtracted from the Fee.
 - 11.3.2 The Contractor shall not use subcontractor invoices/pay applications in lieu of a single Schedule of Values from the Contractor.
 - 11.3.3 The breakdown shall anticipate future CEAs and Change Orders and make provisions for incorporating all changes into the breakdown listing. If issued, CEAs and Change Orders shall be identified separately and shall itemize the GMP, CEAs, Change Orders, Change Proposals and/or Field Orders, which are incorporated into each CEA or Change Order for payment on a line-item basis. Contracts with Guaranteed Maximum Price proposals shall repeat the process outlined in this section every time a subcontract is added to the monthly Schedule of Values for payment.
 - 11.3.4 Submission and approval of Construction Staging Plans, Parking Plans, Quality Control Plans and Trenching Plans are a prerequisite for starting Work at the site and for receiving the first monthly partial payment.
- 11.4 At a minimum, the Contractor shall provide attachments to each month's payment request as follows:
 - 11.4.1 One copy of the monthly Small Business Progress Assessment reports.
 - 11.4.2 One copy of the updated Submittal Schedule.
 - 11.4.3 One copy of all invoices required by the contract.
 - 11.4.4 One copy of the certified wage rate notification form for each member of the workforce not previously submitted.
 - 11.4.5 One copy of the updated RFI and ASI logs.

- 11.4.6 One copy of the updated Work Progress Schedule as specified herein.
- 11.5 All regular monthly applications for payment shall be submitted to the Owner, Project Manager and A/E for review and approval in draft form no less than five working days prior to the formal submission. The Contractor shall be prepared to review the draft copy at the project site, or at such other location as may be agreed to by the parties. Failure to comply with the requirements outlined in this section shall relieve the Owner from its obligation to make payments on any/all line items until the Contractor meets all requirements.
- 11.5.1 Payments cannot exceed the contract, work in-place, or subcontract amounts as noted on the Schedule of Values line items.
- 11.5.2 All as-built drawings shall be up to date and available for review by the A/E and Owner.
- 11.5.3 When requesting payment for materials stored off site, all such materials shall be specifically identified, including supporting documentation, photos and insurance. The Contractor should be available to escort the Owner to visit and personally verify the stored materials in a physically separated and secure area.
- 11.6 Request for payments in association with release of, or reduction in retainage, or completion of work have additional requirements outlined in the UGC.

12. Procurement of Subcontracts (Applies to Construction Manager at Risk and Design-Build Contracts Only)

- 12.1 The Construction Manager at Risk (CM) or Design/Build Contract (DB) shall provide a written Bid/Proposal Package Strategy (B/PPS) for procuring subcontracts including self-performance work (other than General Conditions), prior to the approval of the Guaranteed Maximum Price, but no later than twenty calendar days prior to the first advertisement for subcontractor proposals. The B/PPS shall be a written plan submitted to, and reviewed and approved by the Owner.
- 12.1.1 The plan shall identify bid packages that are most advantageous to the Project and align with the CM/DB's HCC SB Good Faith Effort by providing at least three qualified respondents for each package (including CM/DB). Each bid package shall include the UGC, Owner's Division 1 Specifications, Drawings and Specifications and any other HCC requirements included in the CM/DB Contract pertaining to the scope of work covered in the packages.
- 12.1.2 The B/PPS shall include the following for each bid package contemplated:
- Anticipated scope of work to be procured;
 - A current Work Progress Schedule;
 - Anticipated selection criteria and questions;
 - Self-perform work proposals to be submitted by the CM/DB;
 - Proposed advertising dates;
 - Proposed pre-proposal meeting(s) dates;
 - Proposed receipt, review and award dates;
 - Anticipated notice to proceed dates.
- 12.2 The CM/DB shall update the B/PPS monthly at a minimum, as conditions change, or as proposed dates are revised.

- 12.3 Per the Texas Government Code Sections 2267.255: “A Construction Manager at-Risk shall publicly advertise for bids or proposals and receive bids or proposals from trade contractors or subcontractors for the performance of all major elements of the work other than the minor work that may be included in the general conditions.” The CM may seek to perform portions of the work itself by submitting bids or proposals in the same manner as **and prior to** all other trade or subcontractors, and if the Owner determines that the CM’s bid or proposal provides the best value to the Owner.
- 12.4 The goal of the Project Team shall be to have all work procured through advertised competitive proposals, however, if a “minor procurement” condition arises during the process, the following procurement guidelines may be used by the CM/DB, with Owner approval, for procurement of work: Less than \$5,000.00 No requirements; Between \$5,000.01 to \$50,000.00 Obtain two solicitations Greater than \$50,000.00 Advertised competitive proposals as required by Texas Government Code Section 2267.255 If the CM does not receive at least two competitive proposals on procurements over \$50,000.00, or the Owner does not receive at least three competitive proposals on packages for which the CM seeks to self-perform, the Owner may require that the CM re-package the scope and reissue the proposal without additional cost to the Owner, or delay to the project “Substantial Completion” date. This solicitation requirement does not pertain to Change Orders to existing subcontracts.
- 12.5 Work shall be divided into reasonable lots; however, material and labor acquired through purchase order/vendor type contracts are subject to the entire project (i.e. Concrete material shall be procured as a unit price time an estimated total project quantity provided by the CM/DB to equal a total construction cost). Work shall not be incrementally divided for the purpose of circumventing the procurement guidelines of 12.4 above.
- 12.6 The CM/DB may establish selection criteria for each phase of work for review and approval by the Project Team. Criteria shall be qualifications based and consistent with the information needed by the CM/DB to make a proper evaluation and selection. The CM/DB shall establish a selection matrix including cost, criteria, weighting and ranking procedures for evaluation and work with the Project Team to tailor the selection criteria to be project and scope specific to ensure the questions are proper and relevant to the goals of the project.
- 12.6.1 The CM/DB shall establish clear criteria and questions so that those reading the Request for Proposals will understand how they will be evaluated.
- 12.6.2 If criteria are not included in the advertisement for proposals, the proposal shall be considered a lump sum bid, and the CM/DB shall award the work to the lowest qualified, responsive bidder.
- 12.6.3 After selection criteria have been established, the CM/DB shall publicly advertise the work in general circulations and trade associations as required by law. This advertisement shall included, at a minimum, the following:
- HCC Project Number and Project Name;
 - Institution/Campus name;
 - CM/DB name and address;
 - CM/DB contract name and phone number;
 - Location for viewing of plans and specifications;
 - Date, time and location of Pre-proposal meeting(s);
 - Date, time deadlines(s), and location for receiving proposals;

- Instruction to respondents for submitting proposals;
 - Selection criteria, questions and submittal requirements.
- 12.7 At the time and location identified in the advertisement, the CM/DB shall hold a Pre-proposal meeting(s) for all potential subcontractors with the Project Team and Owner present. The CM/DB shall review the following at a minimum:
- The general scope of the project and specific scope of work included in this package;
 - Instructions to respondents for submitting proposals;
 - Selection criteria and questions;
 - Small Business Program Requirements;
 - Project safety requirements;
 - Project schedule requirements;
 - Payment procedures and requirements, including retainage;
 - Commissioning and Close-out requirements.
- 12.8 If the CM/DB identifies any self-performance in the B/PPS (work to be performed by its own employees), the CM/DB shall submit a proposal to the Owner at least 24 hours before the advertised time and location in a manner so as not to compromise the competitive process.
- 12.9 The CM/DB shall accept all proposals at the advertised location until the advertised deadline. Upon receipt, the Owner shall be allowed to review the proposal and confirm the time and date received. Any proposals received after the deadline shall not be considered by the CM/DB, and shall be returned to the respondent unopened. Fax proposals shall not be accepted unless the ODR, prior to the initial advertisement for proposals, approves a detailed plan by the CM/DB for proper care and custody.
- 12.10 After compiling, reviewing and verifying the costs and scope associated with all proposals, the CM/DB shall provide a “bid tabulation” matrix and a proposed Schedule of Values for review by the project team.
- 12.10.1 The bid tabulation matrix shall compare all equivalent scope proposals to the CM/DB’s estimate.
- 12.10.2 Each matrix shall indicate the CM/DB estimate(s) for each scope of work and identify the respective cost savings/over-runs.
- 12.10.3 The CM/DB may use values/quantities from its own estimate to provide full scope comparisons between each respondent, however, these “plug” numbers shall be clearly identified in the matrix to the Project Team and be used only to compare various proposals.
- 12.10.4 The proposed updated Schedule of Values shall summarize all executed and recommended “best value” subcontracts to provide a current status of the Guaranteed Maximum Price Proposal.
- 12.10.5 Once the proposals are compiled into a bid tabulation matrix and the proposed Schedule of Values has been updated, the CM/DB shall request a meeting with the Project Team to review the proposals.
- 12.11 The CM/DB shall lead the proposal review meeting and identify any exclusions or conditions, identify any non-qualifying respondents and any other problems that may have occurred during the process.
- 12.11.1 The CM/DB shall confirm that the respondents are qualified, meet the established selection criteria, and identify the amount of the proposals.

- 12.11.2 The CM/DB shall identify the “best values” and the current status of the buyout savings to the project team. If the “best value” causes the CM/DB to exceed the Cost of Work line item, including contingencies in the GMP the CM/DB shall acknowledge that the overage will be deducted from the CM/DB’s Construction Phase Fee.
- 12.12 Once the “best value” respondent has been identified by the CM/DB, without exception by the Owner, the CM/DB shall finalize negotiations with the selected “best value” respondent. If the CM/DB is unsuccessful in its negotiations with the selected respondent, the CM/DB shall notify the ODR that it intends to begin negotiations with the second “best value” and report the cost implications to the Schedule of Values. Once negotiations are successfully completed the CM/DB shall notify the Owner in writing that it intends to write a subcontract to the selected “best value” respondent and identify the bid package number, value of the contract, along with any changes from the bid day value, changes in scope, report the current status of the GMP identifying the current savings/overages and provided a copy of the executed subcontract or purchase order prior to any request for payment by the CM/DB for applicable work.
- 12.13 The Owner reserves the right to object to the “best value” identified by the CM/DB and may conduct an evaluation of the selection process. If after evaluation the Owner disagrees with the CM/DB “best value” recommendation, the Owner may instruct the CM/DB to re-bid the scope of work or use the Owner’s “best value” selection. If the value of the Owner’s selection causes an increase in the Guaranteed Maximum Price, the increase will be the responsibility of the Owner.
- 12.14 The process identified in this section shall be repeated for each bid package until the project is entirely awarded to trade contractors or subcontractors, self-performed by the CM or self-performed by Owner and removed from the CM’s scope by deductive Change Order.

13. Contractor Daily Reports

The Contractor shall provide the Owner and Project Manager with a report detailing its daily activities on the Project in a format acceptable to the Owner. All tests performed by the Contractor are to be attached to these daily reports. All work reports required of subcontractors shall be attached to the Contractor’s daily report. As a minimum, the report shall include the following information as it relates to the day’s activities on site: subcontractors on site, equipment on site, areas of work, type of work performed, materials received, tests performed, any injuries or accidents, any oral instructions received from the Owner, Project Manager or A/E, any material damage, any change in supervisory personnel and anything that might impact the projects quality or schedule. These reports shall be submitted to the Owner and Project Manager on a daily basis. Not receiving these reports in a timely manner may be grounds for the Owner withholding payments until they are submitted.

14. As-Built Drawings and Record Drawings (see UGC 10.3 and 11.4)

- 14.1 One copy of all record documents shall be kept up to date and available at the Project Site. “As-Built” drawings, specifications, detail manuals, and submittals shall be continuously annotated by the Contractor to reflect actual record field conditions, addenda, issuance of all Change Orders and clarifications, and actual dimensional records

for underground and all other services. One copy of all approved submittals and material selections shall also be kept available.

- 14.2 Maintenance of current documentation by the Contractor is required in order to process pay applications. The Owner, Project Manager and A/E will review the status of such documentation monthly, at a minimum. Also refer to the Commissioning Procedures and Project Close-out Procedures for detailed instructions on As-Built drawings and specifications.

15. Utility Outages

- 15.1 The Contractor shall notify the Owner, in writing, of any planned utility outages ten business days in advance of the anticipated outage date. The notice shall identify the utility(s) to be shutdown, the anticipated duration of the outage and the subcontractor responsible for initiating and terminating the outage. The Owner has final authority to approve or disapprove of the requested outage date and time.
- 15.2 A standard form for processing a request for utility shutdown or any other disruption shall be provided by the Owner at the Pre-Construction Conference. The Contractor shall utilize this form, with attachments as necessary, in requesting an outage.

16. Coordination of Space (see UGC section 3.3 and 3.3.6.2 in particular)

- 16.1 The Contractor and subcontractors should coordinate the use of Project space and sequence of installation of mechanical, electrical, plumbing, HVAC and Communications work which is indicated diagrammatically on the drawings. The Contractor and subcontractors should follow routing shown for pipes, ducts, and conduits as closely as practicable, with due allowance for available physical space. The Contractor and subcontractors should utilize space efficiently to maximize accessibility for other and future installations, maintenance and repairs. Making adjustments due to field conditions is considered a part of the work.
- 16.2 Within finished areas all pipes, ducts and wiring should be concealed, unless otherwise directed in the plans and specifications. The Contractor and subcontractors should coordinate locations of fixtures and outlets with finish elements.
- 16.3 The Contractor and subcontractors should verify that mechanical and electrical controls, valves, cut-offs, cleanouts, switches and other items are located in such a manner as to make them readily accessible to the user.
- 16.4 In no case shall locations of equipment be established by scaling the drawings. In the event exact dimensions are not provided with the drawings either supplemental instructions should be obtained from the A/E, or approval of placement from the Owner, should be obtained prior to final placement.
- 16.5 All work should be arranged in a neat and orderly manner while maximizing clearances.
- 16.6 All operating system components which will be approved through the submittal process should be reviewed prior to submittal to confirm there is physically adequate space to accommodate the device.

17. Repair of Damage (see UGC 3.3.11.3)

The Contractor shall be responsible for any loss or damage caused by Contractor, his workers or his subcontractors, to the Work, materials stored on site, to tools and equipment, to adjacent property and to persons. The Contractor shall make good any loss,

damage or injury at Contractor's own expense and take particular care to protect adjacent buildings, utilities, landscape and lawn sprinkler systems.

18. Deliveries

- 18.1 The Owner will not accept delivery of products and materials bound for the Contractor. The Owner will not be responsible for material losses, or make arrangements to have someone present for acceptance of deliveries.
- 18.2 The name and address of Owner shall not be used for delivery of materials and equipment.
- 18.3 The Contractor should make arrangements for deliveries in accordance with construction schedules and in ample time to facilitate inspection prior to installation without causing delay to the project.

19. Protection of Utilities, Etc. (see UGC 3.3.11.3)

The Contractor and all subcontractors and vendors should take precaution to protect and leave intact the streets, site and work previously accomplished, including buildings, streets, utility poles, fire hydrants, utility lines, catch basins and storm drainage systems.

Section 013200 Project Planning and Scheduling (see UGC Article 9)

1. Definitions:

- 1.1 Project Schedule (a.k.a. Work Progress Schedule) – the schedule developed, monitored Construction phases of the project.
- 1.2 Project Team – refers to the Owner, Architect/Engineer (A/E), Design Consultants, Users, Contractor and Subcontractors that are contracted and/or specifically assigned to the Project.
- 1.3 Work Day – refers to a day in which work is planned, excluding weekends and legally recognized state holidays.
- 1.4 Critical Path – is the sequence of activities that determines the longest duration for the project when the Total Float is equal to, or less than zero.
- 1.5 Total Float – the number of days an activity on the longest path can be delayed without delaying the Substantial Completion Date. Total float should not be shown as a single activity, but rather the relationship between the early and late finish dates or early and late start dates of each activity.

2. Purpose

- 2.1 Time is an essential part of this contract. Therefore, the timely and successful completion of the Work requires careful planning and scheduling of all activities inherent in the completion of the project.
- 2.2 The Contractor shall participate with the Owner and A/E in a project planning workshop promptly upon execution of the contract unless specified differently in the Construction Documents. The Schedule shall be coordinated with the Contract Price Breakdown, or Schedule of Values, and shall include all significant procurement actions (including long lead time delivery items and related approval activities), all work placement activities (including start and completion dates), identification of the timing of overhead inspections, system startup and commissioning activities, pre-final and final inspections, and punch list corrections as a minimum.

- 2.3 Acceptance of the Project Schedule; or any subsequent update thereof, by the Owner is for format and extent of detail of the Project Schedule only. Such “acceptance” does not indicate approval of the Contractor’s means or methods, or of any change to the contract terms including without limitation any required contract milestones.
- 2.4 The Project Schedule shall be developed with a certain amount of float time. This float, which shall be no less than ten percent of the total duration of the project, shall be presented in a format which facilitates reporting of progress and trends and can be used to identify risk and opportunities, project upcoming activities and forecast project milestones.
- 2.5 The Owner must be able to reasonably rely on the Contractor’s Project Schedule in order to make accurate commitments to the Project Team, campus administration and other parties as necessary.

3. Contractor Responsibilities

- 3.1 The Contractor is responsible for planning, managing, coordinating and scheduling all activities from a Notice to Proceed to Final Completion of the project within the time allotted by the contract.
- 3.2 The Contractor is responsible for keeping the Owner and Project Team fully informed of schedule status and upcoming activities throughout the project.
- 3.3 The Contractor’s Pre-Construction and Construction project management personnel shall actively participate in the planning and development of the Project Schedule and shall be prepared to review such development and progress with the Owner, A/E and any other members of the Project Team so the planned sequences and procedures are clearly understood by all parties.
- 3.4 The Contractor is to plan for appropriate activity durations to allow for thorough review, procurement, submittal, installation, inspection, testing and commissioning of all work in order to confirm compliance with the project plans and specifications.

4. Schedule Development Requirements

- 4.1 Appropriate logic relationships must be in place and complete, while the Project Schedule shall be free of any mandatory and/or late finish constraints, except for the Substantial Completion Date.
- 4.2 The estimated activity duration of an activity shall be expressed in workdays only.
- 4.3 During Pre-Construction Services, the Project Team will establish the maximum duration for every activity included in the schedule.
- 4.4 The Project Schedule should be coordinated with the Contractor’s Submittal Schedule and Schedule of Values.

5. Planning and Scheduling Workshop

- 5.1 Within fifteen calendar days after the Notice of Proceed is issued the Contractor will conduct a Planning and Scheduling Workshop with the Contractor’s Project Manager, Superintendent, the Owner, A/E, Project Manager, User Representative and any available subcontractors prior to submitting the initial Project Schedule to the Owner.
- 5.2 Two separate Planning and Scheduling Workshops should be held with the aforementioned parties prior to the Contractor submitting the baseline Preconstruction Project Schedule.
- 5.3 The baseline schedule shall be submitted within 10 workdays after the Planning and Scheduling Workshops are complete.

6. Construction Phase Baseline Schedule Submittal

- 6.1 The Baseline Project Schedule shall be submitted to the Owner with the required Total Float and a current data date (within five days of the date of submission). The Baseline Schedule will be updated within ten days of the date when each subcontractor is procured and brought on to the project.
- 6.2 Once the full scope of the Project has been approved (i.e. the last stage GMP Change Order has been executed), the Project Manager shall coordinate with the Owner to reset the Baseline Project Schedule.
- 6.3 The Owner reserves the right to withhold any and all payments related to the Project Schedule and/or General Conditions if a Baseline Project Schedule is not submitted, or is not acceptable to the Owner.
- 6.4 The Project Schedule shall be presented in a graphic time-scaled view including all activities, early start and finish dates, estimated durations and total float, sorted by early start.

7. Updating the Project Schedule

- 7.1 Once the Baseline Project Schedule has been accepted, the Project Manager shall update the Project Schedule on at least a monthly basis and submit the updated Project Schedule with the draft application for payment.
- 7.2 Project Schedule updates shall be based on actual work progress, current logic and remaining durations.
- 7.3 Total Float is intended to be used proportionally with the duration of the project; therefore, there should be no remaining Total Float at the actual Substantial Completion Date.

8. Excusable Delays and Time Extensions

- 8.1 Excusable delays shall be administered per the UGC.
- 8.2 If an excusable delay extends the Contract Substantial Completion Date, the ODR may extend the contract time by the number of excusable calendar days lost on the Project Schedule, or take other actions as appropriate under the terms of the contract.
 - 8.2.1 Any Change Order Proposal that the Contractor claims, or will claim, justifies an extension of contract time must contain the information necessary to justify the time extension.
 - 8.2.2 Change Order Proposals that do not affect the Critical Path for the Project and delay the Substantial Completion Date, or does not include a request for additional time prior to approval by the ODR, shall not be due a time extension.
- 8.3 Once the ODR accepts a time extension, and authorizes the Contractor to proceed with the contract change, the proposed revision shall be incorporated in the Project Schedule.

Section 013220 Photographic Documentation

1. Photographic Media

- 1.1 Digital Images: Provide images in uncompressed TIFF format produced with a minimum 4.0 mega pixels and image resolution of not less than 1024 by 768 pixels.
- 1.2 Videotape Format: Provide high-quality ½" VHS color videotape in full size cassettes, 90 minutes long.

2. Construction Photographs

- 2.1 Take photographs using the maximum range of depth of field, and that are in focus, to clearly show the work. Photos with blurry or out-of-focus areas will not be accepted.
 - 2.2 Maintain key plan with each set of construction photos that identifies each photo location.
 - 2.3 Digital Images: Submit digital images exactly as originally recorded in the digital camera, without alteration, manipulation, editing, or modifications using image-editing software.
 - 2.4 Date and Time: Include date and time filename for each image.
 - 2.5 Preconstruction Photos: Before commencement of work on the project take digital photos of the project site and surrounding properties, including existing items to remain during construction, for different vantage points.
 - 2.6 Take photos to show existing conditions adjacent to the project site.
- 3. Construction Videos - Preconstruction Videotapes:** Before starting construction on the project site prepare a video recording of the site and surrounding properties from different vantage points. Show existing conditions of the site and adjacent buildings. Show protection efforts by Contractor including, but not limited to, tree protection and storm water controls.

Section 013520 LEED Requirements (If LEED PROJECT)

1. Definitions - LEED – Leadership in Energy and Environmental Design.

2. Submittals

The Contractor shall provide preliminary submittals of its LEED Action Plan, indicating how the Owner’s requirements will be met, within thirty days after the Start date established by the Notice to Proceed. Submit additional LEED submittals required by other specification sections.

3. Quality Assurance

LEED Coordinator: Engage an experienced LEED-Accredited Professional to coordinate LEED requirements. LEED coordinator may also serve as waste management coordinator.

Section 013523 Project Safety Requirements (see UGC Article 7)

1. Purpose

- 1.1 The Contractor shall bear overall responsibility for all aspects of safety at the project.
- 1.2 The Contractor shall, at all times, provide adequate resources, equipment, training and documentation to:
 - 1.2.1 Assure compliance with all applicable regulatory and contract requirements.
 - 1.2.2 Assure a safe work environment at the Project.
 - 1.2.3 Instill a culture for safe behavior in all supervisors and workers.
 - 1.2.4 Ensure a universal understanding that safety and health issues take precedence over all other considerations at the Project.
- 1.3 The Contractor and every subcontractor shall comply with the requirements of this section and all Federal, State, and local statutes, standards, and regulations. In any circumstance where this Section differs from, or is in conflict with any statutory requirement, the more stringent shall apply.

- 1.4 The Owner reserves the right to have any manager, supervisor or worker removed from the project for disregarding the Project's safety requirements.
- 1.5 The Owner reserves the right to deduct from the contract any safety related expenses that the Owner incurs as a result of the Contractor's, or any subcontractor's, failure to comply with the requirements of this section.
- 1.6 The Owner will deny requests for time extensions and/or monetary considerations whenever the Owner intercedes on behalf of safety compliance as a result of Contractor failure to act as required by the contract.

2. Contractor's Project Safety Coordinator (PSC)

- 2.1 The Contractor shall provide a Project Safety Coordinator, who shall be responsible for safety training, inspections, investigations, record keeping, reporting, incident response, and claims management, and shall serve as the technical advisor to the Contractor's Project staff for all safety issues.
- 2.2 If the contract value is less than \$3,000,000 the Contractor's project superintendent may perform these duties. If the contract value exceeds \$3,000,000 the Contractor shall furnish a construction safety specialist.

3. Subcontractors' Project Safety Representative (PSR)

Every subcontractor shall identify one employee to be its Project Safety Representative who will be on-site during all the subcontractor's activities and will participate in all training activities, audits, etc. related to the safety program.

- 3.1 The PSR shall attend all safety meetings while the company is actively performing work at the project and shall be responsible for reporting all incidents to the PSC.
- 3.2 The PSR shall transport or accompany any injured co-worker that requires medical attention at facilities outside the project.
- 3.3 The PSR shall be responsible for either conducting or making arrangements for all training, equipment and materials that workers need to perform their duties in the safest possible manner.

4. Project Safety Program

- 4.1 The Contractor shall develop a written, site specific, safety program. It shall be printed in English and an initial draft shall be submitted to the Owner for review and comment as a prerequisite to issuance of the Notice to Proceed with construction services'
- 4.2 The Contractor shall incorporate Owner comments into a final draft which shall be resubmitted to the Owner for concurrence.

5. Personal Protective Equipment (PPE)

- 5.1 PPE shall be required for all workers in construction areas. The followings items shall be furnished, inspected, and maintained by the employer. The Contractor shall maintain an adequate inventory to furnish these items for five Owner representatives who may visit the project from time to time:
 - 5.1.2 Hard Hats (safety helmets): shall be ANSI stamped (Z89.1-1997, Type I, Class E, G and C and be worn at all times while in the construction areas.
 - 5.1.3 Eye protection (safety glasses): shall be ANSI stamped Z87. If a worker wears prescription glasses (plastic lenses only) that are marked Z87, the employer shall furnish goggles or safety glasses that are designed to fit over another pair of glasses and be worn at all times while in the construction areas.
 - 5.1.4 Vests shall be at a minimum a Class II reflective traffic vests and be worn at all times while in the construction areas.

5.1.5 Hand protection, Hearing Protection, Respiratory Protection, Fall Arrest Equipment, Other PPE: shall all be furnished as required to comply with OSHA Standards.

6. Medical Equipment - The Contractor shall maintain at least one first aid kit on the project site at all times per ANSI Z308.1.

7. Certifications

Supervisors, Competent Persons, Equipment and Crane Operators, and Emergency Responders shall all be identified in lists submitted by employers to the PSC prior to commencement of work. In addition to lists, the employers shall include copies of all available training certificates or formal documentation to support the declared positions. For all operations that require a “competent person” (per OSHA definition), the PSC shall maintain a project file containing the transmittals from each employer naming each person declared to be competent for each operation. For operations requiring independent certification, a copy of the certificates shall be attached.

8. Project Safety Signs and Posters

- 8.1 The Contractor shall post safety regulation signs at every point of entry to the project in English and Spanish. The content of the sign should at a minimum indicate that visitors are required to check in at the project office, persons entering the construction area must be appropriately attired, no weapons, tobacco, alcohol, controlled substances and related paraphernalia may be brought onto the premises, a posted speed limit will be identified and copies of the MSDS sheets are available at the project office.
- 8.2 The Contractor shall post emergency contacts and notification, including phone numbers, notification of insurance carrier for Worker’s Compensation Coverage and any and all other required State and Federal postings.

9. Project Safety Training and Meetings

- 9.1 Within fifteen days of the issuance of the Notice to Proceed the Contractor shall hold the initial safety meeting and all Project Team members are strongly encouraged to participate.
- 9.2 The PSC shall present orientation training to every person who is to be allowed into the construction area without an escort. A translator shall be present when there are workers in attendance who do not speak English.
- 9.3 The PSC shall maintain a site safety orientation log signed by all persons receiving safety training.
- 9.4 Project safety meetings will be held on a weekly basis and will be chaired by the PSC and attended by all companies’ PSRs who are currently on site. The topics of discussion should focus on safety and loss control issues.
- 9.5 “Tool Box Talks” shall be conducted on a weekly basis by each PSR and will cover safety issues related to upcoming work, current site conditions and review of any recent incidents.
- 9.6 Special task training should occur when new equipment or non-routine activities are scheduled.

10. Safety Inspections

- 10.1 Daily – The PSC shall observe work operations in all areas of the project and note any violations in the daily progress reports.

- 10.2 Weekly – A comprehensive safety inspection shall be conducted by the PSC and each PSR for their respective work areas. A written record of the observations and recommended corrections should be made and placed in the project files.
 - 10.3 Quarterly – The PSC shall facilitate an inspection which shall include, but not be limited to the following: fall arrest equipment, fire extinguishers, rigging, ladders, hand tools, power tools, cords, welding leads, hoses, alarms, respirators, ground fault circuit interrupters, first aid stations, eye wash stations, and emergency rescue equipment.
 - 10.4 Semi-annually – The PSC shall facilitate an inspection of all hoists, cranes, mobile equipment, motorized lift platforms, stages, generators and compressors to assure proper operational condition.
 - 10.5 The PSC shall notify the Owner within one hour of the arrival at the project site by any representative of a regulatory agency and provide the Owner with a copy of any published findings or citations issued to any employer and shall ensure that statutory posting requirements are met.
- 11. Records and Reports** - The PSC shall prepare a written report for each incident that involves any injury that may not be resolved by first aid response and/or each incident that involves damage to property or equipment. The report should contain a list of factual details that created the incident, the responsive actions that occurred during and immediately following the incident and recommendations for modifications to prevent repetition of the incident. A copy of the report should be submitted to the Owner within 24 hours of the incident.
- 12. Construction Operations**
- 12.1 Cranes
 - 12.1.1 Tower cranes and related power supply equipment shall be surrounded by at least an eight foot high, 5/8” plywood enclosure with lock controlled entrance.
 - 12.1.2 Operators of cranes, derricks and/or hoisting equipment shall possess certification from a nationally accredited training organization.
 - 12.2 Demolition - Safe egress paths and barrier isolation of impacted areas shall be monitored and maintained to prevent entry by other trades and members of the public. This includes removal of materials and trash from elevated locations.
 - 12.3 Electrical Power
 - 12.3.1 Ground fault circuit interruption (GFCI) shall be the primary protection from exposure to electrical current for all workers on the project. Only exit lighting and medium-high (greater than 240) voltage service will not be GFCI protected.
 - 12.3.2 All strings of temporary lights shall be fully lamped and guarded regardless of height, and shall be continuously maintained. Adequate levels of illumination for the work operations must be maintained at all times.
 - 12.3.3 All receptacles and switches shall have trim plates installed before they are energized.
 - 12.3.4 All power distribution panels shall have full covers installed before primary power is brought into the panel.
 - 12.4 Excavations
 - 12.4.1 Prior to starting, each excavation shall be reviewed with the Owner to obtain any historical knowledge about existing utilities in the area. Where applicable, “utility locates” will be called for seventy two hours in advance of commencement of the

excavation. Potholing and/or hand excavation shall be required within two horizontal feet of located centerlines and in areas where knowledge is lacking.

12.4.2 When a trench excavations cannot be backfilled in the same day as it is created, a highly visible barricade shall be erected no less than six feet from all approachable edges. All portable means of access shall be removed at the end of each workday.

12.4.3 Earth ramps that are to be used for walking access shall not exceed twenty percent in grade slope. Steeper slopes shall be gated and used for equipment only.

12.5 Fall Protection and Prevention

12.5.1 Any walking/working surface shall be defined to have a fall exposure that has one or more sides, ends or edges without a guardrail system attached or a solid continuous wall of at least forty-two inches in height above the walking/working surface, and within twelve horizontal inches from the edge. The Contractor shall require engineered or conventional fall protection measures for each and every fall exposure that involves vertical distances equal to or greater than six feet. The recognized exemptions/exceptions are as follows:

- Portable step ladders
- Extension and straight ladders
- Erection and dismantling of scaffolding
- Limited exposure for engaging and disengaging a hook
- Vertical fall exposure protected by a warning line and six foot setback

12.5.2 Provide covers over holes which are secured and clearly marked as covers.

12.5.3 Job built ramps and bridges must be covered with non-skid materials.

12.5.4 Materials, scraps, waste and tools shall never be allowed to freefall from a height greater than twenty feet, unless it is contained within a chute or controlled by a hoist.

12.6 Fire Protection

12.6.1 The Contractor shall review fire prevention needs and procedures with the Owner and shall post appropriate information and warnings.

12.6.2 The Contractor shall maintain unobstructed access to fire extinguishers, temporary fire protection facilities, stairways and other access routes.

12.6.3 The Contractor shall provide supervision of welding operations, combustion type temporary heating units and similar sources of ignition.

12.6.4 All floors that have combustible materials present shall be accessible from ground level by a usable stair system. For structures greater than three stories in height shall have a fire sprinkler stand pipe installed and it shall be charged to within two stories (or thirty vertical feet) of all floors containing combustible materials. A Siamese connection shall be installed at every second level to provide access for fire hoses.

12.6.5 All fire extinguishers that are not task-specific shall be adequate in number and description to comply with OSHA declared limits for egress points, floor area and travel distances. They shall be situated in highly visible locations.

12.6.6 All fire extinguisher that are task specific shall be inspected and furnished in advance by the employer that will be conducting the work that requires such fire fighting provisions. Such extinguishers shall be located with twenty-five feet from the perimeter of the task operation.

- 12.7 Housekeeping - The Contractor shall ensure that all subcontractors effectively clean the project site continuously throughout each workday. Effective cleanup shall address all of the following housekeeping issues:
 - 12.7.1 All construction waste, trash, and debris shall be placed in designated receptacles. No glass bottles will be permitted on the project site.
 - 12.7.2 Stack all whole and scrap materials in locations that do not obstruct a clear pathway nor create a risk of toppling causing injury or damage to the work.
 - 12.7.3 Place all hoses, cords, cables and wires in locations that prevent them from being damaged by tires, sharp edges, or pinch points and from creating trip or hook hazards.
 - 12.7.4 Secure and effectively cover all materials on roofs and elevated levels to prevent displacement by wind.
 - 12.7.5 All materials and equipment shall be protected from the elements while staged on the project site.
 - 12.7.6 All signs, barricades, fire extinguishers, guardrails, gates, etc. are to be restored to their proper locations in sound condition after they have been moved for work purposes.
 - 12.7.7 Properly store and secure all flammable and combustible liquids and gases.
 - 12.7.8 Collect and place all cut-off or waste pieces of rolling stock into waste and scrape containers as they are created.
 - 12.7.9 Live rounds ejected from powder-actuated tools shall be immediately placed in designated containers and periodically returned to the tool dealer or law enforcement agency for proper disposal.
 - 12.7.10 All puncture and impalement exposures shall be covered or eliminated as soon as they are created.
- 12.8 Ladders
 - 12.8.1 Portable aluminum ladders are prohibited.
 - 12.8.2 Extension, straight and job built ladders shall be secured from movement at the top and bottom.
 - 12.8.3 Manufactured portable ladders shall display ANSI heavy duty rating (Class 1-A) and be inspected daily.
- 12.9 Medical Assistance and Screening
 - 12.9.1 The PSC shall maintain a First Aid Log for all treatment administered on the project.
 - 12.9.2 Drug and alcohol screening shall be mandatory for every supervisor and/or worker who sustains or contributes to the cause of any injury (beyond first aid) or property damage incident.
 - 12.9.3 Minimum requirements for chemical screening shall at least match the threshold limits for a NIDA 5-panel protocol and for alcohol screening shall at least match the Texas DOT vehicle operator's limit for blood alcohol content.
 - 12.9.4 Any supervisor or worker who tests positive shall be ejected and excluded from return to work at the project. Successful completion of an acceptable rehabilitation program may be considered by the Owner for restoring a person's ability to return to the project. The final decision rest solely with the Owner.
- 12.10 Petroleum Fuel Operated Equipment

- 12.10.1 Where possible, equipment operator cabs shall be locked during non-working hours. Only equipment operators and direct supervisors shall have access to keys.
- 12.10.2 Any combustion engine equipment with less than ninety-eight percent clean air exhaust shall not be operated in enclosed spaces unless the exhaust is piped to outside air, and fresh air is brought into the space to replace the amount being consumed. This includes generators/welders and compressors as well as mobile equipment.
- 12.10.3 For hose and termination fittings on air compressors, whip checks shall be used at all connection points. Emergency shut off valves shall be installed on every discharge fitting of all air compressors.
- 12.11 Public Protection - The public boundary perimeter shall be secured from public intrusion. Attractive nuisance items such as tower cranes, tall ladders, fire escapes, large excavations, etc. shall require additional and separate security measures.
- 12.12 Project Service Water
 - 12.12.1 Potable water: comply with city health requirements.
 - 12.12.2 Non-potable water: Water storage containers, hose bibs and faucet shall be posted in English and Spanish "Danger – Do Not Drink"
- 12.13 Welding and Burning
 - 12.13.1 Oxygen and fuel gas cylinders shall not be stored together, including on bottle carts. At the end of any workday bottles must be moved to OSHA prescribed storage arrangements.
 - 12.13.2 Anti-flashback arrestors shall be installed at the pressure regulator gauges of all Oxy-Acetylene cutting rigs.
 - 12.13.3 Welding operations shall not be allowed to present an opportunity for flash burn exposures to the eyes of any workers in the vicinity. All welding operations shall provide appropriate screening measures, erected in advance to contain the high energy light.

Section 0136001 Project Management Software

GENERAL

1.1 RELATED DOCUMENTS

- A. Attention is directed to the Contract and General Conditions and all Sections within Division 1 – General Requirements, which are hereby made a part of this Section.
- B. Refer to specification Section 01 33 00 – Submittals for additional information.

1.2 SUMMARY

- A. Project Management Communications: The Contractor shall use the Internet web based project management communications tool, e-Builder[®] ASP software and protocols included in that software during this project. The use of project management communications as herein described does not replace or change any contractual responsibilities of the participants.
 - 1. Project management communications is available through e-Builder[®] as provided by "e-Builder[®]" in the form and manner required by HCC.

2. The project communications database is on-line and fully functional. User registration, electronic and computer equipment, and Internet connections are the responsibility of each project participant. The sharing of user accounts is prohibited
- B. Training: e-Builder® will provide a group training sessions scheduled by HCC, the cost of which is included in the initial users' fee. Users are required to attend the scheduled training sessions they are assigned to. Requests for specific scheduled classes will be on a first come first served basis for available spaces. Companies may also obtain group training from E-Builder at their own expense, please contact e-Builder® for availability and cost.
 - C. Support: e-Builder® will provide on-going support through on-line help files.
 - D. Project Archive: The archive shall be available to each team member at a nominal cost. The archive set will contain only documents that the firm has security access to during construction. All legal rights in any discovery process are retained. Archive material shall be ordered from e-Builder®.
 - E. Copyrights and Ownership: Nothing in this specification or the subsequent communications supersedes the parties' obligations and rights for copyright or document ownership as established by the Contract Documents. The use of CAD files, processes or design information distributed in this system is intended only for the project specified herein.
 - F. Purpose: The intent of using e-Builder® is to improve project work efforts by promoting timely initial communications and responses. Secondly, to reduce the number of paper documents while providing improved record keeping by creation of electronic document files
 - G. Authorized Users: Access to the web site will be by individuals who are licensed users.
 1. Individuals may use the User Application included in these specifications or may request the User Application.
 2. Submit completed user application forms with check made payable to "e-Builder, Inc."
 3. Authorized users will be contacted directly by the web site provider, e-Builder®, who will assign the temporary user password.
 4. Individuals shall be responsible for the proper use of their passwords and access to data as agents of the company in which they are employed.
 - H. Administrative Users: Administrative users have access and control of user licenses and all posted items. **DO NOT POST PRIVATE OR YOUR COMPANY CONFIDENTIAL ITEMS IN THE DATABASE!** Improper or abusive language toward any party or repeated posting of items intended to deceive or disrupt the work of the project will not be tolerated and will result in deletion of the offensive items and revocation of user license at the sole discretion of the Administrative User(s).
 - I. Communications: The use of fax, email and courier communication for this project is discouraged in favor of using e-Builder® to send messages. Communication functions are as follows:
 1. Document Integrity and Revisions:
 - a. Documents, comments, drawings and other records posted to the system shall remain for the project record. The authorship time and date shall be recorded for each document submitted to the system. Submitting a new

- document or record with a unique ID, authorship, and time stamp shall be the method used to make modifications or corrections.
- b. The system shall make it easy to identify revised or superseded documents and their predecessors.
 - c. Server or Client side software enhancements during the life of the project shall not alter or restrict the content of data published by the system. System upgrades shall not affect access to older documents or software.
2. Document Security:
 - a. The system shall provide a method for communication of documents. Documents shall allow security group assignment to respect the contractual parties' communication except for Administrative Users. **DO NOT POST PRIVATE OR YOUR COMPANY CONFIDENTIAL ITEMS IN THE DATABASE!**
 3. Document Integration:
 - a. Documents of various types shall be logically related to one another and discoverable. For example, requests for information, daily field reports, supplemental sketches and photographs shall be capable of reference as related records.
 4. Reporting:
 - a. The system shall be capable of generating reports for work in progress, and logs for each document type. Summary reports generated by the system shall be available for team members.
 5. Notifications and Distribution:
 - a. Document distribution to project members shall be accomplished both within the extranet system and via email as appropriate. Project document distribution to parties outside of the project communication system shall be accomplished by secure email of outgoing documents and attachments, readable by a standard email client.
 6. Required Document Types:
 - a. RFI, Request for Information.
 - b. Submittals, including record numbering by drawing and specification section.
 - c. Transmittals, including record of documents and materials delivered in hard copy.
 - d. Meeting Minutes.
 - e. Application for Payments (Draft or Pencil).
 - f. Review Comments.
 - g. Daily Field Reports.
 - h. Construction Photographs.
 - i. Drawings.
 - j. Supplemental Sketches.
 - k. Schedules.
 - l. Specifications.
- J. Record Keeping: Except for paper documents, which require original signatures and large format documents (greater than 8½ x 11 inches), all other 8½ x 11 inches

documents shall be submitted by transmission in electronic form to the e-Builder® web site by licensed users.

- a. The Owner and his representatives, the Construction Manager and his representatives, the Architect and his consultants, and the Contractor and his sub-contractors and suppliers at every tier shall respond to documents received in electronic form on the web site, and consider them as if received in paper document form.
- b. The Owner and his representatives, the Construction Manager and his representatives, the Architect and his consultants, and the Contractor and his sub-contractors and suppliers at every tier reserves the right to and shall reply or respond by transmissions in electronic form on the web site to documents actually received in paper document form.
- c. The Owner and his representatives, the Construction Manager and his representatives, the Architect and his consultants, and the Contractor and his sub-contractors and suppliers at every tier reserves the right to and shall copy any paper document into electronic form and make same available on the web site.
- d. The following are some but not all of the paper documents which require original signature:
 - 1) Contract
 - 2) Change Orders
 - 3) Application & Certificates for Payment
 - 4) Construction Change Directives (CCD)
 - 5) Forms and reports in Division 0

K. Minimum Equipment and Internet Connection: In addition to other requirements specified in this Section, the Owner and his representatives, the Construction Manager and his representatives, the Architect and his consultants, and the Contractor and his sub-contractors and suppliers at every tier required to have a user license(s) shall be responsible for the following:

1. Providing suitable computer systems for each licensed user at the users normal work location¹ with high-speed Internet access, i.e. DSL, local cable company's Internet connection, or T1 connection.
2. Each of the above referenced computer systems shall have the following minimum system² and software requirements:
 - a. Desktop configuration (Laptop configurations are similar and should be equal to or exceed desktop system.)
 - 1) PC system 500 MHz Intel Pentium III or equivalent AMD processor
 - 2) 128 MB Ram
 - 3) Display capable of SVGA (1024 x 768 pixels) 256 colors display
 - 4) 101 key Keyboard
 - 5) Mouse or other pointing device
 - b. Operating system and software shall be properly licensed.

¹ The normal work location is the place where the user is assigned for more than one-half of his time working on this project.

² The minimum system herein will not be sufficient for many tasks and may not be able to process all documents and files stored in the E-Builder® Documents area.

- 1) Internet Explorer or other browser (current version is a free distribution for download). This specification is not intended to restrict the host server or client computers provided that industry standard HTTP clients may access the published content.
- 2) Adobe Acrobat Reader (current version is a free distribution for download).
- 3) Or, users intending to scan and upload to the documents area of e-Builder® should have Adobe Acrobat (current version must be purchased).
- 4) Users should have the standard Microsoft Office Suite (current version must be purchased) or the equivalent.

PART 2 - PRODUCTS

2.1 LICENSE

- A. Houston Community College will issue license as needed.

PART 3 -

PART 4 - EXECUTION (Not Applicable.)

Section 014200 Reference Standards

1. **Governing Regulations/Authorities** - The Architect/Engineer (A/E) has contacted the appropriate authorities having jurisdiction for the listed regulations and codes to obtain information for preparation of the Construction Documents. The Contractor may contact the authorities having jurisdiction directly for information and decisions having bearing on the work. **Refer to the coversheet of the plans issued for construction to identify the appropriate authorities having jurisdiction.**
2. **Standards**
 - 2.1 Reference to standards, codes, Specifications, recommendations and regulations refer to the latest edition or printing prior to the date of issue of the Construction Documents.
 - 2.2 Applicable portions of standards listed that are not in conflict with the Construction Documents are hereby made a part of the Specifications
 - 2.3 Modifications or exceptions to Standards shall be considered as amendments and unmodified portions shall remain in full effect. In cases of discrepancies between standards, the more stringent requirements shall govern.
 - 2.4 Copies of Standards: Each entity engaged in construction of the Project is required to be familiar with industry standards applicable to its respective construction activity. Copies of applicable standards are not bound with the Construction Documents. Where copies of standards are needed to perform a required construction activity, the Contractor shall obtain copies directly from the publication source.

3. Schedule of Standards

AA Aluminum Association
1525 Wilson Blvd. Suite 600
Arlington, VA 22209
703.358.2960
Fax 703.358.2961
www.aluminum.org

AABC Associated Air Balance Council
1518 K St. NW
Washington, DC 20005
202.737.0202
www.aabchq.com

AAMA American Architectural Manufacturers Assoc.
1827 Walden Office Square, Suite 550
Schaumburg, IL 60173-4268
847.303.5664
Fax 847.303.5774
www.aamanet.org

AAN American Association of Nurserymen
1250 Eye St., NW, Suite 500
Washington, DC 20005
202.789.2900

ANLA American Nursery and Landscape Association
1000 Vermont Ave., NW, Suite 300
Washington, DC 20005-4914
202.789.2900
www.anla.org

AASHTO American Association of State Highway and Transportation
Officials
444 North Capitol St., Suite 225
Washington, DC 20001
202.624.5800
www.transporation.org

ACI American Concrete Institute
38800 Country Club Dr.
Farmington Hills, MI 48331
248.848.3700
Fax 248.848.3701
www.aci-int.org

ACIL American Council on Independent Laboratories
1629 K St. NW
Washington, DC 20006
202.887.5872
www.acil.org

ACPA American Concrete Pipe Association
1303 West Walnut Hill Lane, Suite 305
Irving, TX 75038-3008

972.506.7216
Fax 972.506.7682
www.concrete-pipe.org

ADC Air Diffusion Council
1901 N. Roselle Rd., Suite 800
Schaumburg, IL 60195
847.706.6750
Fax 847.706.6751
www.flexibleduct.org

AF&PA American Forest & Paper Products
(Formerly National Forest Products Assoc. (NFPA))
1111 Nineteenth St., NW, Suite 800
Washington, DC 20036
800.878.8878
Fax 202.463.2700
www.afandpa.org

AI Asphalt Institute
2696 Research Park Dr.
Lexington, KY 40512-4052
606.288.4960
<http://www.washpaltinstitute.org>

AIA American Institute of Architects
1735 New York Ave. NW
Washington, DC 20006
202.626.7300
www.aia.org

AIHA American Industrial Hygiene Assoc.
P 2700 Prosperity Ave., Suite 250
Fairfax, VA 22031
703.849-888
www.aiha.org

AISC American Institute of Steel Construction
One East Wacker Dr., Suite 3100
Chicago, IL 60601-2001
312.670.2400
www.aisc.org

AISI American Iron and Steel Institute
1140 Connecticut Ave., NW, Suite 705

Washington, DC 20036
202.452.7100
www.steel.org

AITC American Institute of Timber Construction
7012 S. Revere Parkway, Suite 140
Centennial, CO 80112
303.792.9559
303.792.0669
www.aitc-glulam.org

ALI Associated Laboratories, Inc.
500 S. Vermont St.
Palatine, IL 60067
800.685.0026
www.associatedlabs.org

ALSC American Lumber Standards Committee
P.O. Box 210
Germantown, MD 20875
301.972.1700
www.alsc.org

AMCA Air Movement and Control Assoc.
30 W. University Dr.
Arlington Heights, IL 60004-1893
847.394.0150
www.amca.org

ANSI American National Standards Institute
1819 L St., NW, 6th Fl.
Washington, DC 20036
202.293.8020
Fax 202.293.9287
www.ansi.org

APA American Plywood Assoc.
7011 S. 19th
Tacoma, WA 98466
253.565.6600
Fax 253.565.7265
www.apawood.org

ARI Air Conditioning and Refrigeration Institute
4100 North Fairfax Dr., Suite 200

Arlington, VA 22203
703.524.8800
Fax 703.528.3816
www.ari.org

ARMA Asphalt Roofing Manufacturers Assoc.
Public Information Dept.
1156 15th St., NW, Suite 900
Washington, DC 20005
202.207.0917
Fax 202.223.9741

www.asphaltroofing.org

ASA Acoustical Society of America
2 Huntington Quadrangle, Suite 1N01
Melville, NY 11747-44502
516.576.2360

Fax 516.576.2377

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www.asaa.aip.org

ASC Adhesive and Sealant Council
7979 Old Georgetown Rd. Suite 500
Bethesda, MA 20814
301.986.9700

Fax 301.986.9795

www.ascouncil.org

ASHRAE American Society of Heating, Refrigerating and Air-Conditioning
Engineers

1791 Tullie Circle, NE

Atlanta, GA 30329

404.636.8400

Fax 404.321.5478

www.ashrae.org

ASME American Society of Mechanical Engineers

Three Park Ave.

New York, NY 10016-5990

800.843.2763

www.asme.org

ASPE American Society of Plumbing Engineers

8614 Catalpa Ave., Suite 1007

Chicago, IL 60656-1116

773.693.2773

Fax 773.695.9007

www.aspe.org

ASSE American Society of Sanitary Engineers

901 Canterbury, Suite A

Westlake, OH 44145

440.835.3040

Fax 440.835.3488

www.asse-plumbing.org

ASTM American Society for Testing and Materials

100 Barr Harbor Dr.

West Conshohocken, PA 19428-2959

610.832.9500

Fax 610.832.9555

AWCMA American Window Covering Manufacturers Assoc.

355 Lexington, AVE, 17th Fl.

New York, NY 10017

212.297.2122

Fax 212.370.9047

www.wcmanet.org

AWI Architectural Woodwork Institute

46179 Westlake Dr., Suite 120

Potomac Falls, VA 20165

571.323.3636

Fax 571.323.3630

www.awinet.org

AWPA American Wood-Preservers' Assoc.

P.O. Box 361784

Birmingham, AL 35236-1784

205.733.4077

www.awpa.com

AWPB American Wood Preservers Bureau

4 D. Washington, St

Newnan, GA 30263

404.254.9877

AWS American Welding Society

50 N.W. LeJeune Rd.

Miami, FL 33126

800.443.9353

Fax 305.443.9353

www.aws.org

BHMA Builder's Hardware Manufacturers Assoc.

355 Lexington Ave., 15th Fl.

New York, NY 10017

212.297.2122

Fax 212.370.9047

www.buildershardware.com

BIA The Brick Industry Association

1850 Centennial Park Dr., Suite 301

Reston, VA 20191

703.620.0010

Fax 703.620.3928

www.bia.org

BIFMA Business and Institutional Furniture Manufacturers Assoc.

2680 Horizon, Dr., SE, Suite A-1

Grand Rapids, MI 49546-7500

616.285.3963

Fax 616.285.3765

www.bifma.org

CFFA Chemical Fabrics & Film Assoc., Inc.

c/o Thomas Assoc., Inc

1300 Sumner Ave.

Cleveland, OH 44115-2851

216.241.7333

www.chemicalfabricsandfilm.com

CISCA Ceiling and Interior Systems Construction Assoc.

5700 Old Orchard Rd., 1st Fl.

Skokie, IL 60077

708.965.2776

www.cisca.org

CISPI Cast Iron Soil Pipe Institute

5959 Shallowford Rd., Suite 419

Chattanooga, TN 37421

615.892.0137

Fax 615.892.0817

www.cispi.org

CRI Carpet and Rug Institute

P.O. Box 2048
Dalton, GA 30722
706.278.8835
Fax 706.278.8835 www.carpet-rug.org

CRSI Concrete Reinforcing Steel Institute
933 North Plum Grove Rd.
Schaumburg, IL 60173-4758
847.517.1200
Fax 847.517.1206
www.crsi.org

CTIOA Ceramic Tile Institute of America
12064 Jefferson, Blvd.
Culver City, CA 90230-6219
310.574.7800
Fax 310.821.4655
www.ctioa.org

DHI Door and Hardware Institute
14150 Newbrook Dr., Suite 200
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Date 3/02/09
Chantilly, VA 20151
703.222.2010
Fax 703.222.2410
www.dhi.org

ETL ETL Testing Laboratories, Inc.
P.O. Box 2040
Route 11, Industrial Park
Cortland, NY 13045
607.753.6711
www.etl.com

ECDS Energy Conservation Design Standards for New State Buildings
State Energy Conservation Office
Texas Facilities Commission
P.O. Box 13047
Austin, TX 78711-3047

\\FGMA Flat Glass Marketing Assoc.
(The Flat Glass Marketing Assoc. included Glass Tempering Association, and members of the Laminators Safety Glass Association consolidated to form the Glass Assoc. of North America)

2495 SW Wanamaker Dr., Suite A
Topeka, KS 66614
785.271.0208
Fax 785.271.0166
www.glasswebsite.com

FM Factory Mutual Research Organization
500 River Ridge
P.O. Box 9102
Norwood, MA 02062
617.762.4300

GA Gypsum Association
810 First St., NE #510
Washington, DC 20002
202.289.5440
Fax 202.289.3707
www.gypsum.org

HMA Hardwood Manufacturers Assoc.
400 Penn Center Blvd., Suite 350
Pittsburg, PA 15235
412.829.0770
Fax 412.829.0844
www.hmamembers.org

HPMA Hardwood Plywood Manufacturers Assoc.
1825 Michael Farraday Dr.
Reston, VA 20190
703.435.2900
Fax 703.435.2537
www.hpva.org

IBC International Building Code
International Code Council
500 New Jersey Ave., NW 6th Fl.
Washington, DC 20001-2070

IBD Institute of Business Designers
341 Merchandise Mart
Chicago, IL 60654
312.647.1950

ICC International Code Council
500 New Jersey Ave., NW, 6th Floor
Washington, DC 20001

888.422.7233
Fax 202.783.2348
www.iccsafe.org

IECC International Energy Conservation Coder
www.iccsafe.com

IEEE Institute of Electrical and Electronic Engineers
3 Park Ave., 17th Fl.
New York, NY 10016-5997
212.419.7900
Fax 212.752.4929
www.ieee.org

IESNA Illuminating Engineering Society of North American
120 Wall Street, Fl. 17
New York, NY 10005
212.248.5000
Fax 212.248.5017
www.iesna.org

IFC International File Code
www.iccsafe.org

IGCC Insulating Glass Certification Council
c/o ETL Testing Laboratories, Inc.
P.O. Box 9
Henderson Harbor, NY 13651
315.646.2234
Fax 315.646.2297
www.igcc.org

ILI Indiana Limestone Institute of American
400 Stone City Bank Bldg.
Bedford, IN 47421
812.275.4426
Fax 812.279.8682
www.iliai.com

IPC International Plumbing Code
www.iccsafe.org

ISA Instrument Society of America
67 Alexander Dr.
Research Triangle Park, NC 27709
919.549.8411

Fax 919.549.8288
www.isa.org

LIA Lead Industries Assoc., Inc.
Sparta, New Jersey
www.leadinfo.com

LPI Lightning Protection Institute
25475 Magnolia Dr.
P.O. Box 99
Maryville MO 64468
800.488.6864
www.lightning.org

MBMA Metal Building Manufacturers Assoc.
1300 Sumner Ave.
Cleveland OH 44115-2851
216.241.7333
Fax 216.241.0105
www.mbma.com

MCAA Mechanical Contractors Assoc. of America
1385 Piccard Dr.
Rockville, MD 20850
301.869.5800
Fax 301.990.9690
www.mcaa.org

MFMA Maple Flooring Manufacturers Assoc.
60 Revere Dr., Suite 500
Northbrook, IL 60062
888.480.9138
Fax 847.480.9282
www.maplefloor.org

MIA Marble Institute of America
28901 Clemens Rd., Suite 100
Cleveland, OH 44145
440.250.9222
Fax 440.250.9223
www.marble-institute.com

ML/SFA Metal Lath/Steel Framing Assoc.
(A Division of the National Association of Architectural Metal
Manufacturers)
800 Roosevelt Rd., Bldg. C, Suite 312

Glen Ellyn, IL 60137
630.942.6591
Fax 630.7903095
www.naamm.org

NAAMM National Association of Architectural Metal Manufacturers
800 Roosevelt Rd., Bldg. C, Suite 312
Glen Ellyn, IL 60137
630.942.6591
Fax 630.7903095
www.naamm.org

NAIMA North American Insulation Manufacturers Assoc,
44 Canal Center Plaza, Suite 310
Alexandria, VA 22314
703.684.0084
Fax 703.684.0427
www.naima.org

NAPA National Asphalt Pavement Association
NAPA Building
5100 Forbes Blvd.
Lanham, MD 20706
888.468.6499
www.hotmix.org

NCMA National Concrete Masonry Assoc.
13750 Sunrise Valley Dr.
Herndon, VA 20171-4662
703.713.1900
Fax 703.713.1910
www.ncma.org

NEC National Electrical Code (NFPA)

NECA National Electrical Contractors Assoc.
3 Bethesda Metro Center, Suite 1100
Bethesda, MD 20814
301.657.3110
Fax 301.215.4500
www.necanet.org

NEII National Elevator Industry, Inc.
1677 County Route 64
P.O. Box 838
Salem, NY 127865-0838

518.854.3100
Fax 518.854.3257
www.neii.org

NEMA National Electrical Manufacturers Assoc.
1300 North 17th St., Suite 1752
Rosslyn, VA 22209
703.841.3200
Fax 703.841.5900
www.nema.org

NFPA National Fire Protection Assoc.
1 Batterymarch Park
Quincy, MA 02169-7471
617.770.3000
Fax 617.770.0700
www.nfpa.org

NHLA National Hardwood Lumber Assoc.
6830 Raleigh-LaGrange Rd.
Memphis, TN 38184-0518
901.377.1818
www.natlhardwood.org

NLGA National Lumber Grades Authority
#302 960 Quayside Dr.
New Westminister, BC V3M 6G2 Canada
604.524.2393
Fax 604.524.2893
www.nlga.org

NPA National Particleboard Assoc.
18928 Premiere Court
Gaithersburg, MD 20879-1569
301.670.0604
Fax 301.840.1252
www.pbmdf.org

NPCA National Paint and Coatings Assoc.
1500 Rhode Island Ave., NW
Washington, DC 20005
202.462.6272
Fax 202.462.8549
www.paint.org

NRCA National Roofing Contractors Assoc.
10255 W. Higgins Rd., Suite 600
Rosemont, IL 60018-5607
708.299.9070
Fax 847.299.1183

NTMA National Terrazzo and Mosaic Assoc.
201 North Maple, Suite 208
Purcellville, VA 20132
540.751.0930
Fax 540.751.0935

www.ntma.com

NWWDA National Wood Window and Door Assoc.
1400 E. Touhy Ave.
Des Plaines, IL 60018
800.223.2301
Fax 708.299.1286

PCA Portland Cement Assoc.
5420 Old Orchard Rd.
Skokie, IL 60077
847.966.6200
Fax 847.966.8389
www.cement.org

PCI Precast/Prestressed Concrete Institute
209 W. Jackson Blvd. #500
Chicago, IL 60606
312.786.0300
Fax 312.786.0353
www.pci.org

RFCI Resilient Floor Covering Institute
401 E. Jefferson St., Suite 102
Rockville, MD 20850
301.340.8580
Fax 301.340.7283
www.rfci.com

RMA Rubber Manufacturers Assoc.
1400 K St., NW, Suite 900
Washington DC 20005
202.682.4800
www.rma.org

SDI Steel Deck Institute

P.O. Box 25
Fox River Grove, IL 60021
847.458.4647
Fax 847.458.4648

SECO State Energy Conservation Office
LBJ State Office Bldg.
111 E. 17th St., Rm 1114
Austin, TX 78701
512.463.1931
Fax 512.475.2569

www.seco.cpa.stat.tx.us

SGCC Safety Glazing Certification Council

P.O. Box 730
Sackets Harbor, NY 13685
315.646.2234
Fax 315.646.2297

www.sgcc.org

SIGMA Sealed Insulating Glass Manufacturers Assoc.

401 N. Michigan
Chicago, IL 60611
312.644.8610

www.sigmaonline.org

SJI Steel Joist Institute

3127 Mr. Joe White Ave.
Myrtle Beach, SC 29577-6760
843.626.1995

Fax 843.626.5565

www.steeljoist.org

SMACNA Sheet Metal and Air Conditioning Contractors National Assoc.

4201 Lafayette Center Dr.
Chantilly, VA 20151-1209
703.803.2980

703.803.3732

www.smacna.org

SPIB Southern Pine Inspection Bureau

P.O. Box 10915
Pensacola, FL 32524-0915
850.434.2611

Fax 850.433.5594

www.spib.org

SPRI Single Ply Roofing Institute
77 Rumford Ave., Suite 3B
Waltham, MA 02453
781.647.7026
Fax 781.647.7222
www.spri.org

TCA Tile Council of America
100 Clemson Research Blvd.
Anderson, SC 29625
864.646.8453
Fax 864.646.2821
www.tileusa.com

TIMA Thermal Insulation Manufacturers Assoc.
29 Bank St.
Stanford, CT 06901
203.324.7533

(Standards now issued by NAIMA, www.naima.org)
UFAC Upholstered Furniture Action Council
Box 2436
High Point, NC 27261
919.885.5065
www.ufac.org

UL Underwriters Laboratories, Inc.
333 Pfingsten Rd.
Northbrook, IL 60062-2096
847.272.8800
Fax 847.272.8129
www.ul.com

WSFI Wood and Synthetic Flooring Institute
4415 W. Harrison St., Suite 242-C
Hillside, IL 60162
708.449.2933

WWPA Western Wood Products Assoc.
522 SW Fifth Ave., Suite 500
Portland, OR 97204-2122
503.224.3930
Fax 503.224.3934
www.wwpa.org

W.W.P.A. Woven Wire Products Assoc.

2515 N. Nordica Ave.
Chicago, IL 60635
312.637.1359
www.wovenwire.org

Government Agencies

CPSC Consumer Products Safety Commission

4330 E. West Highway
Bethesda, MD 20814
301.504.7923
Fax 301.504.0124

www.cpsc.gov

CS Commercial Standard

(U.S. Department of Commerce)

1401 Constitution Ave., NW
Washington, DC 20230

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Date 3/02/09

202.482.2000

www.commerce.gov

DOC U.S. Department of Commerce

1401 Constitution Ave., NW
Washington, DC 20230
202.482.2000

www.commerce.gov

EPA Environmental Protection Agency

1445 Ross Ave., Suite 1200
Dallas, TX 75202
214.665.6444

www.epa.gov

FS Federal Specifications (from GSA Specifications Unit WFSIS)

7th and D St., SW
Washington DC 20407
202.708.9205

www.apps.fss.gsa.gov/pub/fedspecs

GSA General Services Administration

1800 F. St., SW
Washington DC, 20405
202.708.9205

www.gsa.gov

GSC Texas Building and Procurement Commission

1711 San Jacinto
Austin, TX 78701
512.463.6363
www.tbpc.state.tx.us

NIST National Institute of Standards and Technology
100 Bureau Dr., Stop 1070
Gaithersbury, MD 20899-1077
301.975.6478
Fax 301.975.8295
www.nist.gov

OSHA Occupational Safety and Health Administration
Federal Office Building
1205 Texas Ave., Rm 806
Lubbock, TX 79401
806.472.7681
Fax 806.472.7686
www.osha.gov

PS Product Standard of NBS
(U.S. Department of Commerce)
Washington, DC 20230
202.482.2000
www.thenbs.com

USDA U.S. Department of Agriculture
1400 Independence Ave., SW
Washington, DC 20250
202.447.2791
www.usda.gov

Section 014300 Quality Assurance

1. General Requirements

- 1.1 The Contractor is responsible for controlling the quality of the Work of its forces and its subcontractors and all of the Work of the Project in general and as set forth in the Construction Documents. The Contractor shall provide qualified personnel, approved by the Owner, to perform daily supervision, reviews and inspections of subcontractor work to insure quality, accuracy, completeness and compliance.
- 1.2 The Owner will employ a testing laboratory and/or geotechnical engineering service to perform quality assurance test and to transmit copies of test reports to the Contractor. Sampling and testing that the Owner may require is specified in this section and in the various technical sections requiring quality assurance testing. The Contractor shall cooperate with the Owner's testing personnel, provide access to the work, to

- manufacturer's and fabricator's operations, furnish incidental labor and facilities and samples for test and inspection as specified.
- 1.2.1 Employment of the testing laboratory to perform quality assurance tests is for the benefit of Owner in confirming that performance and quality of the work is in conformance with the Construction Documents.
 - 1.2.2 Employment of the testing laboratory by Owner in no way relieves Contractor's obligation to perform the work in accordance with the Construction Documents and Owner's testing laboratory shall not be the same as Contractor's testing laboratory.
 - 1.2.3 The testing firm shall make all inspections and perform all tests in accordance with the rules and regulations of the building code, local authorities, the specifications of the ASTM and these Construction Documents.
 - 1.2.4 Any costs incurred by the Owner due to re-testing of materials or re-inspection of work due to non-compliance with the Construction Documents by the contractor shall be at the expense of the Contractor and shall be deducted from the next pay request accordingly.
- 1.3 Limits of testing laboratory authority: Laboratory is not authorized to:
- 1.3.1 Approve or reject any portion of the work.
 - 1.3.2 Perform any duties of the Contractor and subcontractors.
 - 1.3.3 Revoke, alter, relax, expand, or release any requirement of the Construction Documents or to approve or accept any portion of the Work, except where such approval is specifically called for in the specifications.
 - 1.3.4 Work will be checked as it progresses, but failure to detect any defective work or materials shall not, in any way, prevent later rejection when such defect(s) are discovered.
- 1.4 When requested by the Owner, the Contractor will demonstrate a material's compliance with the specifications in one of the following ways:
- Manufacturer's Certificate of Compliance
 - Mill Certificate
 - Testing Laboratory Certifications
 - Report of actual test results from Owner's designated laboratory, or a laboratory satisfactory to the Owner. Materials so tested shall be provided by the Contractor and selected by the Owner, or in the presence of the Owner, and the method of testing shall comply with the professional societies' standard specifications.
- 1.5 The Owner may require Special Inspections, Testing or Approval of certain materials or Work in addition to those clearly specified in the Construction Documents. Upon notification by the Owner of such requirements, the Contractor shall promptly arrange for such Special Inspections, Testing and Approval procedures. The costs associated with these efforts shall be borne by the Owner, except that if such materials or Work fail the initial Owner-paid inspections, tests and approvals, then subsequent tests required to prove the materials or Work suitable for inclusion in the Project Work shall be borne by the Contractor.
- 1.6 If the Contractor covers any of the Work that is required to be inspected, tested or approved by the Construction Documents, then that Work shall be uncovered, inspected, tested or approved and then recovered at the Contractor's sole expense.

- 1.7 The Contractor shall have the right to have tests performed on any material at any time for its own information and job control so long as the Owner is not charged for these tests or forced to rely on these tests when appraising quality of the materials. The tests specified in the Construction Documents for a specific material shall take precedence over any testing initiated by and paid for by the Contractor.
2. **Below Grade Inspections** - Before covering or backfilling of any improvement below grade, cover up inspections will be conducted to see that all items meet the plans and specifications. Only after all the deficiencies have been corrected will the Contractor be allowed to install any backfill.
3. **Concrete Inspections** - Before the placing of any cast-in-place concrete structure, an inspection will be conducted to see that all items meet the intent of the Construction Documents. Only after all deficiencies have been corrected will the Contractor be allowed to proceed.
4. **Wall Closure/Above-Ceiling Inspections** - Before the installation of any ceiling or the closing of walls chases, an inspection will be conducted to see that all items fully meet the contract document requirements before being covered. Only after all the deficiencies have been corrected will the Contractor be allowed to install the ceiling or close-up the wall. As a minimum, the following should be in place before an above-ceiling inspection is scheduled:
- All light fixtures installed and working;
 - All plumbing installed and insulation complete;
 - All rigid and flexible ducts installed;
 - All required valve identification tags installed;
 - All air devices installed and connected;
 - All control wiring and devices installed and connected;
 - The ceiling support structure installed.
5. **Substantial Completion Inspection (see UGC 12.1.1)**
When the Contractor feels that the work is complete and ready for the Owner's intended use, it will notify the A/E and Owner at least seven days prior to the date the Contractor is ready for a Substantial Completion Inspection. The A/E and appropriate members of the design team along with the Owner will perform a detailed inspection of the all work and furnish the Contractor with a list of incomplete or unsatisfactory items. When the Contractor has completed all the work related to these items the Pre-Final Inspection will be complete.
6. **Final Inspection & Acceptance (see UGC 12.1.2 & 12.3)**
Upon verification by the A/E and Owner that the deficiencies found during the Pre-Final Inspection have been corrected, and the work is ready for Final Inspection and Acceptance, the A/E and Owner will schedule a Final Inspection. When the work is found to be acceptable under the Construction Documents without exception and the contract is fully performed, then a Final Acceptance Notice will be issued by the A/E.
7. **One-year Warranty Inspection**
Within thirty-days prior to the expiration of the one year anniversary of the Substantial Completion date the Owner shall prepare a list of deficiencies related solely to the workmanship and material warranties provided by the Contractor through the Construction Documents. The Contractor shall make the necessary repairs and

replacements and notify the Owner that all work is complete and Owner shall review and approve the work and provide written acceptance.

8. Execution

8.1 Pier Drilling Operations

8.1.1 A representative of the soils testing laboratory shall make continuous inspections to determine that proper bearing stratum is obtained and utilized for bearing and that shafts are properly clean and dry before pouring concrete.

8.1.2 Soils testing laboratory shall furnish complete pier log showing the diameter, top and bottom elevations of each pier, casing required or not required, bell size, actual penetration into bearing stratum, elevation of top of bearing stratum, and volume of concrete used.

8.2 Reinforcing Steel Mechanical Splices

8.2.1 Visually inspect and report on the completed condition of each mechanical splice of reinforcing steel.

8.2.2 Each mechanical splice shall be visually inspected to ensure compliance with building code and the manufacturer's published criteria for acceptable completed splices.

8.2.3 Special emphasis shall be placed on inspection of the end preparation of each bar to be spliced.

8.2.4 Submit copies of manufacturer's published criteria for acceptable completed splices prior to observing mechanical splices.

8.2.5 Reports on each splice shall indicate location, size of bars and acceptability or rejection of splice. Reasoning for rejection shall be provided in the report.

8.3 Reinforcing Steel and Embedded Metal Assemblies - Inspect all concrete reinforcing steel for compliance with Construction Documents and approved shop drawings prior to placing concrete. All instances of noncompliance shall be immediately brought to the attention of the Contractor for correction and then, if not corrected, reported to the A/E.

Observe and report on the following:

- Number and size of bars;
- Bending and lengths of bars;
- Splicing;
- Clearance to forms including chair heights;
- Clearance between bars or spacing;
- Rust, form oil and other contaminants;
- Grade of steel;
- Securing, tying and chairing of bars;
- Excessive congestion of reinforcing steel;
- Installation of anchor bolts and placement of concrete around such bolts;
- Fabrication of embedded metal assemblies, including visual inspection of all welds;
- Visually inspect studs and deformed bar anchors on embedded assemblies for compliance with the Construction Documents.

8.4 Concrete Inspection & Testing

8.4.1 Receive, evaluate and certify all proposed concrete mix designs submitted by the Contractor which comply with the Construction Documents. Mix designs not complying shall be returned by the laboratory as unacceptable.

- 8.4.2 Secure composite samples of concrete at the jobsite and perform the appropriate tests as specified in the Construction Documents. Test results will be provided to the appropriate design team members, the Contractor and the Owner.
- 8.4.3 Inspect the application of curing compounds and monitor all curing conditions to assure compliance with the Construction Documents.
- 8.5 Post-tensioning of Concrete
 - 8.5.1 Verify certification of calibration of jacking equipment used in the post-tensioning operations.
 - 8.5.2 Observe and report on placement and anchorage of tendons immediately prior to placement of concrete.
 - 8.5.3 Provide a registered professional engineer experienced in posttension operations to observe and report on the placement, posttensioning and elongation measurement of each tendon.
 - 8.5.4 Observe and report on grouting of tendons noted to be bonded.
- 8.6 Masonry
 - 8.6.1 Provide a qualified inspector to inspect all structural masonry work on a periodic basis.
 - 8.6.2 Inspect the following:
 - Preparation of masonry prisms for testing;
 - Placement of reinforcing;
 - Grout spaces;
 - Mortar mix operations;
 - Bedding of mortar for each type of unit and placing of units;
 - Grouting operations;
 - Condition of units before laying for excessive absorption.
 - 8.6.3 Provide a report of each inspection.
- 8.7 Structural Steel
 - 8.7.1 Inspect all structural steel during and after erection for conformance with the Construction Documents and shop drawings. Any cases of insufficient bracing or guying, or other unsafe conditions shall be immediately called to the attention of the Contractor and reported to the A/E and Owner.
 - 8.7.2 Inspect the following:
 - Proper erection of all pieces;
 - Proper installation of all bolts;
 - Plumbness of structure and proper bracing;
 - Proper field painting;
 - Visual examination of all field welding;
 - Inspect all shop fabricated members, upon arrival at the jobsite;
 - Inspection of shop and field welding shall be in accordance with the AWS Structural Welding Code – Steel, latest edition;
 - Inspection of bolted construction shall be in accordance with AISC specifications for structural steel buildings;
 - Review all shop and field welder certifications;
 - Perform magnetic particle testing in accordance with ASTM E709 and at the discretion of the testing agency for all questionable welds;

- Ultrasonic test 100% of all complete penetration welds in accordance with AWS Structural Welding Code – Steel, latest edition, by ASNT Level II technicians;
 - Inspection of stud field welding shall be in accordance with AWS structural welding code latest edition.
- 8.8 Expansion Bolt Installations
 - 8.8.1 Inspect the drilling of holes and installation of expansion bolts for compliance with the Construction Documents and shop drawings.
 - 8.8.2 Verify the installation torque of the expansion bolts for compliance with the manufacturer’s installation instructions.
- 8.9 Metal Floor Deck - Field inspection shall consist of the following:
 - Check types, gauges and finishes for conformance with Construction Documents and shop drawings;
 - Exam for proper erection of all metal deck, fastenings, reinforcing of holes, deck reinforcing, miscellaneous deck supports, hanger tabs, shear studs, deck closures, painting and other coatings.
- 8.10 Metal Roof Deck - Field inspection shall consist of the following:
 - Check types, gauges and finishes for conformance with Construction Documents and shop drawings;
 - Exam for proper erection of all metal deck, fastenings, reinforcing of holes, deck reinforcing, miscellaneous deck supports, hanger tabs, shear studs, deck closures, painting and other coatings.

Section 014339 Site Mock-ups (see UGC 8.4)

1. General

- 1.1 The Contractor shall direct all the appropriate subcontractors in the construction of all site mock-ups for review by the Owner, Project Manager and Architect/Engineer (A/E) as required by the Construction Documents.
- 1.2 The mock-up(s) when approved by the A/E, Project Manager and Owner shall become the site reference for quality of the incorporated features of materials and workmanship.
- 1.3 The mock-up shall not be part of the work and shall remain in place until Substantial Completion, or otherwise directed by the Owner.

Section 014500 Quality Control (see 014000)

1. General Requirements

- 1.1 Quality control shall be the sole responsibility of the Contractor, unless specifically noted otherwise. The Contractor shall be responsible for all testing, coordination, start-up, operational checkout and commissioning of all items of work included in the project. All costs for these services shall be included in the Contractor’s cost of work and general conditions.
- 1.2 Specific quality control requirements for individual construction activities are specified in sections that govern those activities.
- 1.3 The Contractor employed testing agency shall comply with the requirements of ASTM C - 1021, 1077, 1093, E - 329, 543 and 548.

- 1.4 The Contractor shall develop design mixes for products to be used and have the appropriate test performed by the Contractor's employed testing agency at its own expense.

Section 014518 Field Engineering

- 1. Quality Assurance** - Surveyor Qualifications: Engage a land surveyor, registered in the State of Texas, to perform required land surveying services.
- 2. Examination** - Verify layout information shown on the construction documents, in relation to the property survey and existing benchmarks and building locations and finish floor elevations before proceeding to lay out the work. Protect existing benchmarks and control points. Preserve permanent reference points during construction.
 - 2.1 Do not change or relocate benchmarks or control points without prior written approval from the Owner.
 - 2.2 Establish and maintain a minimum of two permanent benchmarks on the site.
- 3. Performance**
 - 3.1 Work from lines and levels established by the Construction Documents. Calculate and measure required dimensions with indicated and recognized tolerances. Do not scale drawings to determine dimensions.
 - 3.2 Record deviations from required lines and levels and advise A/E immediately when deviations exceed indicated or recognized tolerances.
 - 3.3 Furnish information necessary to adjust, move, or relocate existing structures, utility poles, lines services, or other appurtenances located in or affect by construction.
 - 3.4 The as-built documents shall include a final Title I property survey.

Section 015000 Construction Facilities and Temporary Controls (see UGC 3.3.4, 8.1 & 13.1)

1. General Requirements

- 1.1 Contractor shall provide all construction facilities and temporary controls specified in this section and as necessary for the proper and expeditious prosecution of the work. The Contractor will be provided with a description of the Project Site and the Limits of Construction either by the Construction Documents, or by the Owner. At any time such a description has not been provided, the Contractor should request it of the Owner in writing.
- 1.2 The Contractor shall erect a wire mesh fence around the Project Site. The Contractor and all its personnel, assigns, material suppliers and subcontractors shall confine and limit their work to the Project Site and shall confine their construction activities to within the Limits of Construction. All areas beyond these defined areas are patrolled either by the Campus Police or by the Police Department of the City. All public and University laws, ordinances, rules and regulations shall be obeyed. No tools, construction vehicles or construction materials shall be permitted to be outside the Project Site. Loitering of construction-related personnel in areas outside the Project Site is strongly discouraged and it will be discontinued if it becomes persistent, or otherwise a nuisance to the ordinary and normal functioning of the campus. **(UGC 3.3.11)**

- 1.3 All campus roads, drives, fire lanes and sidewalks/pedestrian routes (other than those specifically given over to the Contractor for its use) must be kept open and clean at all times. The Contractor shall make advanced preparations for, and obtain security clearance for, all significant materials and equipment movements that will disrupt traffic and pedestrian flows. The Contractor shall provide all traffic controls, warning signs, barricades and flag persons needed to minimize disruptions during such approved movements. When such movements cause damage or leave debris, the Contractor shall immediately repair and clean up afterwards. **(UGC 3.3.11.3)**
- 1.4 Contractor shall pay all charges for all connections to and distribution from existing services and sources of supply.
- 1.5 Requirements of service and utility companies relating to the work shall be ascertained by Contractor, and the Contractor shall comply with all requirements, including those relating to continued protection and maintenance until completion of the work.
- 1.6 Materials and construction for construction facilities and temporary controls may be new or used, must be in adequate capacity, must not create unsafe conditions and shall not be unsightly.
- 1.7 Contractor shall relocate temporary services and facilities at its own expense, as required by progress of construction. **(See UGC 7.2.1)**
- 1.8 Contractor shall remove all temporary services and facilities when their use is no longer required or at completion of the project. **(See UGC 3.3.11)**
- 1.9 Contractor shall clean and repair damage caused by temporary services and facilities to new condition for new work and to a condition as good as or better than existing prior to start of work for existing construction projects. **(See UGC 3.3.11.3)**

2. Yard Repairs

Where compaction of the soil has occurred in turf or other plant material areas within the limits of construction, the areas shall be rejuvenated by deep cultivation of the compacted soil. After completion of construction, the Contractor shall scarify the construction site within the limits of construction to a minimum depth of eight inches, except within thirty feet of trees where it shall be a six inch depth. The Contractor will either place sod or hydro mulch on the rejuvenated areas, as may be mutually agreed to between the Owner and the Contractor, depending on the season and availability of irrigation.

3. Temporary Utilities and Services

- 3.1 The Contractor shall provide for all necessary and appropriate temporary utilities and services for execution and protection of the work.
- 3.2 Schedule of Costs and Fees for Utility Services are different on different campuses. The Contractor must review the Construction Documents carefully and communicate with the Owner to determine the status on each Project.
 - 3.2.1 **Temporary Water** – The Contractor shall provide and install temporary lines for all water required for the Work and will arrange with the Owner’s Utility Department for connection to the campus system and for services.
 - 3.2.2 **Temporary Electrical** – The Contractor shall arrange with the local Utility Company for temporary power and for metering. When using this temporary power, the Contractor shall be responsible for all related costs, including energy costs and fuel costs. If such power is available from the campus power systems, then the Contractor will make the same arrangements, but the Owner will pay for the power used unless the Contractor wastes energy and is not consuming it in a

reasonable and prudent manner. The Contractor shall not energize the permanent power on the Project it is constructing until the Owner specifically approves.

- 3.2.3 **Temporary Heating, Cooling and Ventilation** – If temporary heating/cooling/ventilation is required for the protection of the Work or the work forces, the Contractor shall provide, at its cost, Owner-approved apparatus.
- 3.2.4 **Temporary Lighting** – The Contractor shall provide adequate temporary lighting to facilitate quality workmanship and appropriate inspection of the Work. Temporary lighting provided by the Contractor also must be adequate for site security, inspections of excavations, night work if pursued and for personal and general safety of operations. Provide the following minimum standards:
 - 3.2.4.1 Provide and maintain lighting for construction operations to achieve a minimum lighting level of two watts per square foot.
 - 3.2.4.2 Provide and maintain one watt per square foot lighting for exterior staging and storage areas after dark for security purposes.
 - 3.2.4.3 Provide and maintain one-quarter watt per square foot lighting to interior work areas after dark for security purposes.
 - 3.2.4.4 Permanent building lighting may be utilized during construction.
- 3.2.5 **Temporary Services Provided by Owner** – When approved by the Owner, the Contractor may request that Project mechanical and electrical systems be put into service prior to Substantial Completion, even if only to facilitate Contractor operations. However, the Contractor shall NOT open or close any valve connecting to the campus systems without specific Owner approval. During operation of the equipment prior to Substantial Completion the Contractor shall keep the equipment in good operating condition, properly and legally flushed with chemical treatment systems, properly started and stopped, properly maintained, including regular replacement and/or cleaning of filters. Without exception the filters will be newly replaced just prior to turning the equipment over to the Owner for operation. The actual warranty periods will not start until the equipment is officially turned over to the Owner at Substantial Completion.
- 3.2.6 **Temporary Facilities/Equipment Removal** – Prior to turning the Project over to the Owner for operation and maintenance, the Contractor shall completely remove all temporary facilities and equipment from the Project Site and shall repair or replace any material, equipment, finished surfaces or landscaping that has been damaged by its activities on the site.

4. Construction Aids

- 4.1 **Material and Personnel Hoists:** The Contractor shall provide material and personnel hoist as required for normal use by all trades without charge. All necessary guards, signals and safety devices required for safe operation of these hoists shall be provided and properly maintained at all times.
- 4.2 **Stairs:** Provide temporary protective treads, handrails and wall coverings at stairways.

5. Barriers and Enclosures

- 5.1 Contractor shall construct temporary barricades, warning signs, hazard and warning lights, walks, passage-ways and similar temporary barriers and enclosures that are necessary to protect persons and property from hazards or damage due to construction operations, and required by the Owner, city, state or federal laws, ordinances or codes.

- 5.2 Contractor shall furnish and install construction fences and gates within the limits of construction, prior to beginning any other work on the project.
- 5.3 Contractor shall furnish and install movable fences as may be necessary and appropriate to facilitate execution of the work.
- 5.4 The Contractor shall be responsible for the protection of existing building surfaces (both interior and exterior), utilities, exterior structures, pavements, sidewalks, landscape, vegetation and irrigation systems. Any damage to existing areas will be repaired by the Contractor at its expense and to the satisfaction of the Owner. Such needed repairs that are not timely undertaken or completed by the Contractor may, at the Owner's sole discretion, be repaired by the Owner and the related expenses deducted from the Contract Amount by change order.
- 5.5 All existing trees, shrubs or endangered plants within the Project Site or near access ways to the Project Site, shall be protected by the Contractor as indicated on the Drawings and maintained in sound condition unless ordered by the Owner to remove them. Contractor shall furnish and install barricades, fences and guards as necessary to prevent damage to existing trees, shrubs or endangered plants indicated to remain after construction is completed. Contractor shall not remove, cut or trim any tree, shrub or endangered plant before first notifying the Owner and receiving prior approval for the action. The Contractor will be responsible for repair or replacement in kind of damaged vegetation including watering and maintenance until fully restored.
- 5.6 All fencing, gates, barricades and guards shall be maintained to be straight, level and having a neat and uniform appearance while in place. Upon removal all holes and damage caused by the placement and use of the fences shall be repaired to its original condition.
- 5.7 Contractor shall provide temporary roofing and weather tight insulated closures for openings in exterior surfaces as required to maintain specified working conditions and moisture content of all project materials.

6. Security

- 6.1 The Contractor shall provide security and facilities to protect the Work, materials and equipment from unauthorized entry, vandalism, or theft until Substantial Completion has been achieved. If deemed necessary the Contractor may, at its own expense, employ unarmed security personnel. The Contractor must first notify the Owner and provide particulars about the security firm and its personnel prior to its employment.
- 6.2 The Campus Police will not provide security for the Project Site or the areas that are given over to the Contractor's control.

7. Temporary Controls

- 7.1 Cleaning during construction: Contractor at all time shall keep the premises free from accumulation of waste materials and rubbish caused by operations for the work. Provide a collection can at each area used for eating. Pick up garbage daily. Keep project site free of garbage, trash, vermin and rodent infestation. Require each subcontractor to collect and deposit waste and rubbish caused by subcontractor operations at designated locations. Clean interior areas prior to start of finish work and maintain areas free of dust and other contaminants during finishing operations. Protect installed equipment and seal installed ductwork and piping to prevent intrusion of dust. When the Work is within or adjacent to existing spaces that continue to be occupied, protect finishes, seal off occupied spaces and open ductwork and piping. The Contractor shall provide personnel for janitorial work

to clean up (both on the Project Site and in adjacent spaces) any dust or debris that results from its operations. (see UGC 3.3.8)

- 7.2 Noise control: In and around occupied areas, minimize use of noise producing equipment and sequence the Work to minimize its affect of occupants. Work with noise producing equipment adjacent to occupied spaces will be coordinated with the Owner. Curtail such use to accommodate specific meetings or activities when requested by the Owner.
- 7.3 Water control: Provide methods to control surface water to prevent damage to the project and adjoining properties. Control fill, grade and ditch to direct surface drainage away from excavations, pits, tunnels and other construction areas. Direct runoff to proper runoff paths.
- 7.4 Storm Water Pollution Prevention Plan (SWPPP): Contractor shall be responsible for securing the appropriate SWPPP permit and paying all related fees, penalties, fines, etc., related thereto, from Texas Commission on Environmental Quality (TCEQ). The Contractor shall implement the SWPPP plan and insure that all devices and structures are properly maintained through the course of the project. Upon completion of the project the Contractor shall provide TCEQ with a Notice of Termination within thirty days of final stabilization achievement. Refer to SWPPP for additional requirements and to ensure compliance with its requirements.
- 7.5 Pollution controls: Provide methods, means and facilities required to prevent contamination of soil, water, or atmosphere by discharge of noxious or hazardous substances from construction operations. The Contractor shall notify the Owner immediately of all pollutant spills. The Contractor shall be solely responsible for cleaning up and properly disposing of, in accordance with applicable laws and regulations, all spilled pollutants brought to the Site as a part of the Work including oil, paint, fuels, antifreeze, solvents, etc. The Contractor must keep accurate records of these clean up and disposal actions.
- 7.6 Protection of installed work: (see UGC 10.3.4.1)
 - 7.6.1 Protect installed work and provide special protection where specified in individual specification sections.
 - 7.6.2 Provide temporary and removable protection of installed products and control activity in the immediate area to prevent damage.
 - 7.6.3 Provide protective coverings at walls, projections, jambs, sills, and soffits of openings.
 - 7.6.4 Protect finished floors, stairs and other surfaces from dirt traffic, wear, damage, or movement of heavy objects.
 - 7.6.5 Prohibit traffic or storage upon waterproofed or roofed surfaces, or in the alternative obtain the manufacturer's recommendations for protection.
 - 7.6.6 Prohibit traffic from landscaped areas.

8. Parking: (see UGC 3.3.11.1)

- 8.1. Parking for workmen employed on the site shall be provided within the Limits of Construction or on such remote site as may be designated by the Owner from time to time. Any costs involved in Contractor parking shall be borne by the Contractor. The Contractor's forces shall not park on campus in areas outside the Project Site.
- 8.2. In some, but not all circumstances, Owner may provide remote parking spaces near the campus. In these cases the parking may be available for Contractor use at no cost, but permits issued by the campus police will be necessary to use this parking. In providing

remote parking the Owner will not take on any responsibility for the vehicles, or contents of the vehicles, when they are parked in the remote locations provided.

- 8.3. The contractor shall provide adequate reserved parking for the Owner's and the A/E's Project Team members who regularly visit the Project Site.
- 8.4. The Contractor shall be responsible for restoration of all pavement, curbs, signage, sidewalks, etc., damaged by the construction operations and/or the workmen.

9. Field Offices and Sheds

- 9.1. The office shall be weather tight, with lighting, electrical outlets, highspeed internet connection, telephone, heating, cooling and ventilation and equipped with sturdy furniture, a drawing table and plan racks.
- 9.2. Provide adequate space for projects meetings.

10. Temporary Toilets (see UGC 3.3.4)

- 10.1 Provide, maintain and pay for required temporary sanitary facilities and enclosures. Provide at time of project mobilization and do not remove until Substantial Completion. Locate these facilities away from public view as much as practical.
- 10.2 Clean and empty these facilities at least weekly unless it is needed more often to keep them sanitary. Post notices, remove deposited debris and take all steps necessary to keep the facilities clean and sanitary.
- 10.3 Do not use the Owner's toilet facilities, unless specifically approved by the Owner.

Section 015010 Project Signage

1. Installation of Temporary Project Signage

- 1.1 When permitted by the Owner, an exterior construction project sign shall be installed immediately after contract award. The sign will make specific reference to the Houston Community College Campus Location.
- 1.2 Prior to any construction or installation of the sign, submit to the Owner for approval a quarter scale drawing, complete with all graphics and lettering.
- 1.3 The Contractor shall ensure the exterior construction project signage is properly set-back from all street intersections and pedestrian walkways such that it does not conflict with or impede fields of view necessary to vehicular and pedestrian traffic circulation.
- 1.4 The Contractor may install one sign bearing the company name, logo, project address and point of contact.
- 1.5 The sign shall remain the property of the Contractor and shall be removed from the Project Site and legally disposed of at the completion of the Work.

- 2. Signage Dimensions and Materials** - The exterior construction project sign shall be constructed of a single four foot by eight foot sheet of three-quarter inch thick marine plywood placed on two four inch by four inch treated posts. The Architect/Engineer (A/E) shall provide the Contractor with the lettering, font background and rendering of the project, which will be installed by a professional sign company. All related costs shall be included in the General Conditions costs of Construction Manager at Risk and Design-Build contracts.

Section 015240 Construction Waste Management

1. Definitions

- 1.1 Demolition Waste: Building and site improvement materials resulting from demolition or selective demolition operations.
 - 1.2 Disposal: Removal off-site of demolition and construction waste and deposited in landfill or incinerator acceptable to authorities having jurisdiction.
 - 1.3 Recycle: Recovery of demolition or construction waste for subsequent processing in preparation for reuse.
 - 1.4 Salvage: Recovery of demolition or construction waste and subsequent sale or reuse in another facility.
 - 1.5 Salvage and Reuse: Recovery of demolition or construction waste and subsequent incorporation into the work.
- 2. Performance Goals** - The Contractor shall develop a waste management plan that will result in end of project rates for salvage/recycling as directed by the Owner during the Pre-construction conference.
- 3. Quality Assurance** - The Contractor shall continuously monitor the disposal, recycling, salvage and reuse of materials generated by the Project to confirm compliance with the waste management plan and provide a report to the project team at each progress meeting.
- 4. Waste Management Plan** - The Contractor shall develop a plan consisting of waste identification, waste reduction work plan and cost/revenue analysis. The plan should include separate sections for demolition and construction waste.
- 5. Salvaging Demolition Waste**
- 5.1 Salvage of items for sale or donation by the Contractor or subcontractors is not permitted.
 - 5.2 Salvaged items for Owner's use:
 - 5.2.1 Clean salvaged items;
 - 5.2.2 Pack or crate items and properly identify contents on the container;
 - 5.2.3 Store items in a secure area until delivery to Owner;
 - 5.2.4 Transport items to Owner's designated storage area.
- 6. Recycling Demolition and Construction Waste, General** - Separate recyclable waste by type at project site to maximum extent practical.
- 6.1. Provide appropriately marked containers or bins for controlling recyclable waste until they are removed from the project site.
 - 6.2. Remove recyclable waste off Owner's property and transport to recycling receiver or processor within a reasonable time after an appropriate amount has been accumulated.

Section 017000 Contract Close-out

1. General (see UGC Article 12)

- 1.1 Project closeout is hereby defined to include requirements near the end of the contract time, in preparation for Substantial Completion acceptance, occupancy by Owner, release of retainage, final acceptance, final payment and similar actions evidencing completion of the work.
- 1.2 Time of closeout is directly related to completion and acceptance and may either be a single time period for the entire project, or a series of times for individual portions or phases of the project that have been certified as substantially complete at different times.
- 1.3 If the project is to be accepted in phases, whether by originally specified project scope or by subsequent agreement between the parties, then the project closeout requirements shall

pertain to each separately accepted portion or phase of the project. All required documentation for the portion of the project to be occupied early shall be furnished by the Contractor to the Owner on, or before, the date of early occupancy by the Owner. Such early occupancy of any portion of the Work will not waive the Contractor's obligations to complete the remaining Work within the Contract Time specified in the contract.

2. Record Documents (see UGC 6.2)

2.1 Record documents for project closeout shall include, but not necessarily limited to the following, which are required for substantial completion:

- As-built record drawings;
- As-built record specifications;
- Operating & maintenance manuals;
- Record approved submittals and samples;
- Certificate of no asbestos products incorporated in project;
- Completed punch lists.

3. Required Documents

3.1 Required documents for final payment to be released included final versions of all of the above and the following:

- Final release of claims and liens;
- Affidavit of payment of debts and claims;
- Consent(s) of surety;
- Certificate of Substantial Completion;
- City of Houston Certificate of Compliance (Occupancy) for Project;
- Final Change Order (if applicable);
- Final Application for Payment;
- Contractor's Letter for Confirmation of General Guarantee;
- Subcontractor and Material Suppliers' Release and Guarantee, notarized;
- Transmittal Listing Keys turn over to HCC Director of Operation and Maintenance;
- Completed SWPPP documents and Notice of Termination;
- Completed commissioning and closeout manuals.

4. Requirements for Substantial Completion (see UGC 12.1.1)

4.1 Prior to requesting Architect/Engineer (A/E) and Owner to schedule a Substantial Completion, or Pre-Final inspection, the Contractor shall complete the following and list known exceptions in the request:

- 4.1.1 Contractor's payment request should reflect a minimum of 95% completion for all applicable work.
- 4.1.2 Provide A/E, Project Manager and Owner with a complete copy of the Contractor's most current punch list.
- 4.1.3 Submit to the A/E for review a full set of as-built record drawings and specifications.
- 4.1.4 Submit to the A/E, Project Manager and Owner for review preliminary copies of the operating and maintenance manuals.
- 4.1.5 Submit release enabling Owner's full and unrestricted use of the work and access to service and utilities, including operating certificates and similar releases.

4.1.6 Contractor shall make provisions for final changeover of locks with the Owner's personnel.

4.1.7 Complete initial clean up requirements as described in the specifications.

4.2 The Contractor shall ensure that the work is ready for inspection and/or reinspection. If the work is found not to be as stated in the Contractor's punch list or the items have not been substantially corrected/completed; the inspection will be terminated.

5. Requirements for Final Acceptance (see UGC 12.1.2)

Prior to requesting Project Manager to schedule final inspection for the project, the Contractor shall complete the following:

5.1 Prepare draft payment request showing 100% completion for each line item on the schedule of values, including all appropriate releases and supporting documentation.

5.2 Submit a copy of the pre-final punch list which includes evidence that each item has been completed or otherwise resolved.

5.3 Submit final meter readings for utilities as of the time when the Owner took possession.

5.4 Transmit completed commissioning and close-out manuals to the Owner.

5.5 Complete final cleaning and touch-up.

5.6 Submit final payment request.

5.7 Submit evidence of final and continuing insurance coverage complying with applicable insurance requirements.

6. Operating and Maintenance Manuals (see UGC 6.2.3 & 6.2.4)

6.1 Contractor shall organize operating and maintenance manual information into suitable sets of manageable size, and bind into individual binders properly tabbed and indexed. Two complete copies of each bound operating and maintenance manual shall be provided to the Owner and one complete copy for the A/E.

6.2 The requirements of this section are separate, distinct and in addition to product submittal requirements that may be established by this and other sections of the specifications.

6.3. Material and equipment data required by this section is intended to include all data necessary for the proper installation, removal, normal operation, emergency operation, startup, shutdown, maintenance, cleaning, adjustment, calibration, lubrication, assembly, disassembly, repair, inspection, trouble shooting and service of the equipment or materials.

7. Record Product Submittals

During progress of the work, maintain approved copies of each product data submittal and shop drawings, and mark-up significant variations in the actual work in comparison with submitted information. A separate binder with one copy of all MSDS sheets for any and all products incorporated into the project shall be maintained during the course of the project, this binder shall be included in the record submittal documents.

8. Record Sample Submittals

Immediately prior to the date(s) of Substantial Completion, arrange for A/E, Project Manager and Owner to meet with Contractor at the project site to determine which (if any) of the submitted samples or mock-ups maintained by Contractor during progress of the work are to be transmitted to Owner for record purposes.

9. Commissioning and Close-out Manual

The Contractor shall incorporate all commissioning and closeout documentation and/or verification not included in the operating and maintenance manuals, into a manual for transmittal to the Owner

Section 019100 General Commissioning Requirements

1. Scope of Work Included

- 1.1 It is of primary concern that all operable systems installed in the project perform in accordance with the Construction Documents and the specified Owner's operational needs. This is particularly critical for systems affecting life safety, building controls, plumbing, HVAC, lighting and power delivery systems. The process of assuring such performance is achieved is commonly referred to as "Commissioning".
- 1.2 This section establishes minimum general and administrative requirements pertaining to start-up and commissioning of equipment, devices, and building systems. Additional technical and operational requirements for particular systems and components are established in the various technical sections of the specifications. The Contractor is solely responsible for the Commissioning process.

2. Commissioning Plan

- 2.1 The Contractor shall prepare a detailed commissioning plan to identify the following:
 - 2.1.1 Project commissioning team members;
 - 2.1.2 Commissioning activities;
 - Pre-functional tests;
 - Start-up tests;
 - Functional tests;
 - System integration testing.
 - 2.1.3 The Contractor shall properly document the results of each phase of the commissioning plan and coordinate with the Architect/Engineer (A/E) and Owner to remedy any failures to achieve the specified performance levels.
- 2.2 The Contractor shall incorporate the commissioning plan into the project baseline schedule to reflect dates and durations of all commissioning activities.

3. Equipment Documentation Requirements

The Contractor shall develop a complete equipment matrix/list of all equipment, devices and systems which will be presented to the project commissioning team at the Pre-commissioning conference. The following information should be included on the matrix/list:

- Brief equipment identification text;
- Equipment or device i.d. number;
- Start-up inspection required;
- Associated building system;
- Governing specification section;
- Appropriate submittal reference number(s);
- Installation location (room number or column coordinates).

4. Test Equipment

- 4.1 The Contractor and subcontractors shall provide all specialized tools, test equipment and instruments required to execute start-up, checkout and functional performance testing of equipment under their contracts.
- 4.2 Test equipment shall be of sufficient quality and accuracy to test and/or measure system performance within tolerances specified. A testing laboratory shall have calibrated the

test equipment within the previous twelve months. Calibration shall be NIST traceable and in accordance with the manufacturer's recommendations.

5. Pre-commissioning Meeting

- 5.1 The Contractor shall conduct the Pre-commissioning meeting and review all aspects of the commissioning plan. All documentation will be discussed and test procedures will be reviewed for approval by the Owner.
- 5.2 The Contractor shall establish target dates for each of the commissioning activities and these will be discussed at all future project progress meetings.

6. Pre-installation Meeting - The Contractor shall schedule a pre-installation meeting for the work of each major building system. This meeting shall be scheduled following approval of system submittals and prior to commencement of system installation work.

7. Contractor's Verification of Installation

The Contractor shall perform a review of all tests to confirm completion and compliance with the specified performance specifications. The Contractor shall verify:

- Each component device has been properly installed;
- All shop drawings and product data submittals have been approved;
- All valve charts, wiring diagrams, control schematics, electrical panel directories, etc. have been submitted, approved and properly installed;
- All tabulated data has been submitted for each system and/or device as required by the specifications;
- All test reports and/or certifications required have been submitted and accepted;
- Any and all deficiencies have been corrected and re-tested to conformance with the specifications.

8. Contractor's Operational Testing

- 8.1 The Contractor shall operate, or cause to be operated each system, device or equipment item, both intermittently and continuously, for the appropriate duration as set forth in the specifications and/or in accordance with the manufacturer's recommendations. These operations will be documented as a functional test.
- 8.2 Each component device and each building system shall be exercised to the full extent of its capability, from minimum to maximum, and under automatic control, where it is applicable, as well as checking manual operation.

9. Integrated System Demonstration

- 9.1 After successful completion and subsequent documentation of all system operations, the Contractor shall schedule a meeting with the project commissioning team to review the demonstration of all integrated systems within the facility.
- 9.2 The demonstration(s) shall included not only normal operating conditions over the entire operating range, but also failure modes such as major component failure and loss of power.

10. Owner Training

- 10.1 Training shall consist of classroom type sessions followed by on-site demonstrations of system operations.
- 10.2 The Contractor shall provide a minimum of eight hours of video recording of the training, with audio. The Owner will designate which portions of the training will be recorded. The video shall be produced in a professional manner.

Exhibit 3
HCC PROECT NO. IFB 18-38
LED LIGHT RETROFIT – MULTIPLE FACILITIES
(LOANSTAR NO. II)

DETAIL ITEMIZED EQUIPMENT UNIT COST TABLE

Provided as separate document (Exhibit 3) to IFB

Exhibit 4
HCC PROJECT NO. IFB 18-38
LED LIGHT RETROFIT – MULTIPLE FACILITIES
(LOANSTAR NO. II)

FACILITIES LIST COST TABLE

Provided as separate document (Exhibit 4) to IFB

Exhibit 5
HCC PROJECT NO. IFB 18-38
LED LIGHT RETROFIT – MULTIPLE FACILITIES
(LOANSTAR NO. II)

SAMPLE CONSRTRUCTION CONTRACT, UGC & CONSTRUCTION BONDS

Provided as separate document (Exhibit 5) to IFB

**UNIFORM GENERAL CONDITIONS
FOR HOUSTON COMMUNITY COLLEGE
BUILDING CONSTRUCTION CONTRACTS
(CSP-VERSION)**

Uniform General Conditions for Houston Community College Building Construction Contracts (CSP Version)

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Uniform General Conditions for Houston Community College Building Construction Contracts

Article 1. Definitions

Unless the context clearly requires another meaning, the following terms have the meaning assigned herein.

1.1 **Architect/Engineer (A/E)** means a person registered as an architect pursuant to Tex. Occ. Code Ann., Chapter 1051, as a landscape architect pursuant to Tex. Occ. Code Ann., Chapter 1052, a person licensed as a professional engineer pursuant Tex. Occ. Code Ann., Chapter 1001 and/or a firm employed by Owner or Design-Build Contractor to provide professional architectural or engineering services and to exercise overall responsibility for the design of a Project or a significant portion thereof, and to perform the contract administration responsibilities set forth in the Contract.

1.2 **Change Order** means a written modification of the Contract between the Owner and Contractor, signed by the Owner, the Contractor and the Architect/Engineer.

1.3 **Change Order Proposal** means a Contractor -generated document in response to a Change Order Request (COR).

1.4 **Change Order Request (COR)** means a document which informs the Contractor of a proposed change in the Work, and appropriately describes or otherwise documents such change.

1.5 **Close-out Documents** means the product brochures, product/equipment maintenance and operations instructions, manuals, and other documents/warranties, as-built record documents, affidavit of payment, release of lien and claim, and as may be further defined, identified, and required by the Contract Documents.

1.6 **Contingency Expenditure Authorization (CEA)** means a written document executed by Owner authorizing the expenditure of Owner's Construction Contingency to fund minor changes in the work and unforeseen conditions. Requests for expenditures from the Owner's Construction Contingency shall be submitted as a **Contingency Expenditure Proposal (CEP)**.

1.7 **Contract** means the entire agreement between the Owner and the Contractor, including all of the Contract Documents.

1.8 **Contract Date** is the date when the Contractor between the Owner and the Contractor becomes effective.

1.9 **Contract Documents** means those documents identified as a component of the agreement (contract) between the Owner and the Contractor. These may include, but are not limited to, Drawings, Specifications, General, Supplementary and Special Conditions, all pre-bid and/or pre-proposal addenda.

1.10 **Contractor** means the individual, corporation, company, partnership, firm or other entity contracted to perform the Work, regardless of the type of construction contract used, so that the term as used herein includes a Construction Manager-at-Risk or a Design-Build firm as well as a General or Prime Contractor. The Contract Documents refer to Contractor as if singular in number.

1.11 **Contract Sum** means the total compensation payable to the Contractor for completion of the Work in accordance with the terms of the Contract.

- 1.12 **Contract Time** means the period between the Start Date identified in the Notice to Proceed and the Substantial Completion date identified in the Notice to Proceed or as subsequently amended by Change Order.
- 1.13 **Date of Commencement** means the date designated in the Notice to Proceed for the Contractor to commence the Work.
- 1.14 **Day** means a calendar day, unless otherwise specifically stipulated.
- 1.15 **Drawings** mean that product of the Architect/Engineer which graphically depicts the Work.
- 1.16 **Final Completion** means the date determined and certified by the Architect/Engineer and Owner on which the Work is fully and satisfactorily complete in accordance with the Contract.
- 1.17 **Owner** means Houston Community College, the State of Texas and any Agency of the State of Texas, acting through the responsible entity of Houston Community College identified in the Contract as the Owner.
- 1.18 **Owner's Construction Contingency** means a contingency fund created by Owner as part of the Contract Sum to cover the cost of unforeseen conditions that that develop during the Construction Phase which the Contractor could not have anticipated or discovered through the exercise of reasonable care during Pre-Construction Phase.
- 1.19 **Owner's Designated Representative (ODR)** means the individual assigned by the Owner to act on its behalf, and to undertake certain activities as specifically outlined in the Contract. The ODR is the only party authorized to direct changes to the scope, cost, or time of the Contract.
- 1.20 **Owner's Project Allowance** means amounts designated by the Owner to use for items which require further development of the Drawings and Specifications by the Architect following establishment of the Contract Sum. Requests for expenditures from the Owner's Project Allowances must be submitted as an Allowance Expenditure Proposal (**AEP**).
- 1.21 **Project** means all activities necessary for realization of the Work. This includes design, contract award(s), execution of the Work itself, and fulfillment of all contractual and warranty obligations.
- 1.22 **Sample** means representative physical examples of materials, equipment or workmanship, used to confirm compliance with requirements and/or to establish standards for use in execution of the Work.
- 1.23 **Schedule of Values** means the detailed breakdown of the cost of the materials, labor and equipment necessary to accomplish the Work as described in the Contract Documents, submitted by Contractor for approval by Owner and Architect/Engineer.
- 1.24 **Shop Drawings** means the drawings, diagrams, illustrations, schedules, performance charts, brochures and other data prepared by the Contractor or its agents, which detail a portion of the Work.
- 1.25 **Site** means the geographical area of the location of the Work.
- 1.26 **Special Conditions** means the documents containing terms and conditions, which may be unique to the Project. Special Conditions are a part of the Contract Documents and have precedence over the Uniform General Conditions.
- 1.27 **Specifications** mean the written product of the Architect/Engineer that establishes the quality and/or performance of products utilized in the Work and processes to be used, including testing and verification for producing the Work.

1.28 **Subcontractor** means a business entity that enters into an agreement with the Contractor to perform part of the Work or to provide services, materials or equipment for use in the Work.

1.29 **Substantial Completion** means the date determined and certified by the Contractor, Architect/Engineer and Owner when the Work or a designated portion thereof is sufficiently complete, in accordance with the Contract, so as to be operational and fit for the use intended.

1.30 **Supplementary General Conditions** mean procedures and requirements that modify the Uniform General Conditions. Supplementary General Conditions, when used, have precedence over the Uniform General Conditions.

1.31 **Unit Price Work** means Work or a portion of the Work paid for based on incremental units of measurement.

1.32 **Unilateral Change Order (ULCO)** means a Change Order issued by the Owner without the agreement of the Contractor.

1.33 **Work** means the administration, procurement, materials, equipment, construction and all services necessary for the Contractor, and/or its agents, to fulfill the Contractor's obligations under the Contract.

Article 2. Laws Governing Construction

2.1 **Environmental Regulations.** The Contractor shall conduct activities in compliance with applicable laws and regulations and other requirements of the Contract relating to the environment, and its protection at all times. Unless otherwise specifically determined, the Owner is responsible for obtaining and maintaining permits related to stormwater run-off. The Contractor shall conduct operations consistent with stormwater run-off permit conditions. Contractor is responsible for all items it brings to site, including hazardous materials, and all such items brought to the site by its Subcontractors and suppliers, or by other entities subject to direction of the Contractor. The Contractor shall not incorporate hazardous materials into the Work without prior approval of Owner, and shall provide an affidavit attesting to such in association with request for Substantial Completion inspection.

2.2 **Wage Rates.** The Contractor shall not pay less than the wage scale of the various classes of labor as shown on the "Prevailing Wage Schedule" provided by the Owner. The specified wage rates are minimum rates only. The Owner is not bound to pay any claims for additional compensation made by any Contractor because the Contractor pays wages in excess of the applicable minimum rate contained in the Contract. The "Prevailing Wage Schedule" is not a representation that qualified labor adequate to perform the Work is available locally at the prevailing wage rates.

2.2.1 **Notification to Workers.** The Contractor shall notify each worker, in writing, of the following as they commence work on the contract: the worker's job classification, the established minimum wage rate requirement for that classification, as well as the worker's actual wage. The notice must be delivered to and signed in acknowledgement of receipt by the employee and must list both the wages and fringe benefits to be paid or furnished for each classification in which the worker is assigned duties. When requested by the Owner, the Contractor shall furnish evidence of compliance with the Texas Prevailing Wage Law.

2.2.1.1 Submit a copy of each worker wage-rate notification to the ODR with the application for progress payment for the period during which the worker was engaged in activities on behalf of the Project.

2.2.1.2 The "Prevailing Wage Schedule" is determined by the Owner in compliance with Tex. Gov't Code, Chapter 2258. Should the Contractor at any time become aware that a particular skill or trade not reflected on the Owner's Prevailing Wage Schedule will be or is being employed in the Work, whether by the Contractor or by a Subcontractor, the Contractor shall promptly inform the ODR of the proposed wage to be paid for the

skill along with a justification for same. The Contractor is responsible for determining the most appropriate wage for a particular skill in relation to similar skills or trades identified on the Prevailing Wage Schedule. In no case shall any worker be paid less than the wage indicated for Laborers.

2.2.1.3 Penalty for Violation. The Contractor and any Subcontractor will pay to the Owner a penalty of sixty dollars (\$60) for each worker employed for each calendar day, or portion thereof, that the worker is paid less than the wage rates stipulated in the Prevailing Wage Schedule. Nothing herein shall prevent the Contractor or Subcontractor from seeking reimbursement for such amounts under the terms of its subcontracts or sub-subcontracts.

2.2.1.4 Complaints of Violations.

2.2.1.4.1 Owner's Determination of Good Cause. Upon receipt of information concerning a violation of Tex. Gov't Code, Chapter 2258, the Owner will, within 31 days, make an initial determination as to whether good cause exists that a violation occurred. The Owner will send documentation of the initial determination to the Contractor against whom the violation was alleged, and to the worker involved. Upon making a good-cause finding, the Owner will retain the full amounts claimed by the claimant or claimants as the difference between wages paid and wages due under the Prevailing Wage Schedule and any supplements thereto, together with the applicable penalties, such amounts being subtracted from successive progress payments pending a final decision on the violation.

2.2.1.4.2 If the Contractor and claimant worker reach an agreement concerning the claim, the Contractor shall promptly notify the Owner in a written document countersigned by the worker.

2.2.1.4.3 Arbitration Required. If the violation is not resolved within 14 days following initial determination by the Owner, the Contractor and the claimant worker must participate in binding arbitration in accordance with the Texas General Arbitration Act, Tex. Civil Prac. & Rem. Code Chapter 171. For a period not to exceed 10 days, after which, if no agreement reached, a district court may be petitioned by any of the parties to the arbitration to appoint an arbitrator whose decision will be binding on all parties.

2.2.1.4.4 Arbitration Award. If an arbitrator assesses an award against the Contractor, the Contractor shall promptly furnish a copy of said award to the Owner. The Owner may use any amounts retained under Article 2.2.1.4.1 to pay the worker the amount as designated in the arbitration award. If the retained funds are insufficient to pay the worker in accordance with the arbitration award, the worker has a right of action against the Contractor, and/or the surety to receive the amount owed, plus attorneys' fees and court costs. The Owner has no duty to release any funds to either the claimant or the Contractor until it has received the notices of agreement or the arbitration award.

2.2.1.4.5 No Extension of Time. If the Owner's determination proves valid that good cause existed to believe a violation had occurred, the Contractor is not entitled to an extension of time for any delay arising directly or indirectly from of the arbitration procedures set forth herein.

2.3 Venue for Suits. The venue for any suit arising from this contract will be in a court of competent jurisdiction in Houston, Harris County, Texas, or as may otherwise designated in the Supplementary General Conditions.

2.4 **Licensing of Trades.** The Contractor shall comply with all applicable provisions of state law related to license requirements for skilled tradesmen, Contractors, suppliers and or laborers, as necessary to accomplish the Work. In the event the Contractor, or one of its Subcontractors, loses its license during the term of performance of the Contract, the Contractor shall promptly hire or contract with a licensed provider of the service at no additional cost to the Owner.

2.5 **Royalties, Patents & Copyrights.** The Contractor shall pay all royalties and license fees, defend all suits or claims for infringement of any patent rights and shall save the Owner harmless from loss on account thereof.

2.6 **State Sales and Use Taxes.** The Owner qualifies for exemption from certain State and Local Sales and Use Taxes pursuant to the provisions of Tex. Tax Code, Chapter 151. The Contractor must, to the fullest extent possible, claim exemption from payment of applicable State taxes by complying with such procedures as prescribed by the State Comptroller of Public Accounts. ***Owner is not required to reimburse Contractor for taxes paid on items that qualify for tax exemption.***

Article 3. General Responsibilities of Owner & Contractor

3.1 **Owner's General Responsibilities.** The Owner is the entity identified as such in the Contract and referred to throughout the Contract Documents as if singular in number.

3.1.1 **Preconstruction Conference.** Prior to, or concurrent with, the issuance of Notice to Proceed with Construction, a conference will be convened for attendance by the Owner, Contractor, Architect/Engineer (AE) and appropriate Subcontractors. The purpose of the conference is to establish a working understanding among the parties as to the Work, the operational conditions at the Project Site, and general administration of the Project. Topics include communications, schedules, procedures for handling Shop Drawings and other submittals, processing Applications for Payment, maintaining required records and all other matters of importance to the administration of the Project and effective communications between the Project team members.

3.1.2 **Owner's Designated Representative.** Prior to the start of construction, Owner will identify the Owner's Designated Representative (ODR), who has the express authority to act and bind the Owner to the extent and for the purposes described in the Contract, including responsibilities for general administration of the Contract.

3.1.2.1 Unless otherwise specifically defined elsewhere in the Contract Documents, the ODR is the single point of contact between the Owner and Contractor. Notice to the ODR, unless otherwise noted, constitutes notice to the Owner under the Contract.

3.1.2.2 All directives on behalf of the Owner will be conveyed to the Contractor by the ODR in writing.

3.1.3 **Owner Supplied Materials and Information.**

3.1.3.1 The Owner will furnish to the Contractor those surveys describing the physical characteristics, legal description, limitations of the site, site utility locations, and other information used in the preparation of the Contract Documents.

3.1.3.2 The Owner will provide information, equipment, or services under the Owner's control to the Contractor with reasonable promptness.

3.1.4 **Availability of Lands.** The Owner will furnish, as indicated in the Contract, all required rights to use the lands upon which the Work occurs. This includes rights-of-way and easements for access and such other lands that are designated for use by the Contractor. The Contractor

shall comply with all Owner identified encumbrances or restrictions specifically related to use of lands so furnished. The Owner will obtain and pay for easements for permanent structures or permanent changes in existing facilities, unless otherwise required in the Contract Documents.

3.1.5 Limitation on Owner's Duties.

3.1.5.1 The Owner will not supervise, direct, control or have authority over or be responsible for Contractor's means, methods, technologies, sequences or procedures of construction or the safety precautions and programs incident thereto. The Owner is not responsible for any failure of Contractor to comply with laws and regulations applicable to the Work. The Owner is not responsible for the failure of Contractor to perform or furnish the Work in accordance with the Contract Documents. Owner is not responsible for the acts or omissions of Contractor, or any of its Subcontractor, suppliers or of any other person or organization performing or furnishing any of the Work on behalf of the Contractor.

3.1.5.2 The Owner will not take any action in contravention of a design decision made by the AE in preparation of the Contract Documents, when such actions are in conflict with statutes under which the AE is licensed for the protection of the public health and safety.

3.2 Role of Architect/Engineer. Unless specified otherwise in the Contract between the Owner and the Contractor, the AE shall provide general administration services for the Owner during the construction phase of the Project. Written correspondence, requests for information, and shop drawings/submittals shall be directed to the AE for action. The AE has the authority to act on behalf of the Owner to the extent provided in the Contract Documents, unless otherwise modified by written instrument, which will be furnished to the Contractor by the ODR, upon request.

3.2.1 Site Visits.

3.2.1.1 The AE will make visits to the site at intervals as provided in the AE's contract agreement with the Owner, to observe the progress and the quality of the various aspects of Contractor's executed Work and report findings to the Owner.

3.2.1.2 The AE has the authority to interpret Contract Documents and inspect the Work for compliance and conformance with the Contract. Except as referenced in Article 3.1.5.2, the Owner retains the sole authority to accept or reject Work and issue direction for correction, removal, or replacement of Work.

3.2.2 Clarifications and Interpretations. It may be determined that clarifications or interpretations of the Contract Documents are necessary. Upon direction by the ODR such clarifications or interpretations will be provided by the AE consistent with the intent of the Contract Documents. The AE will issue these clarifications with reasonable promptness to the Contractor as Architect's Supplemental Instruction (ASI) or similar instrument. If the Contractor believes that such clarification or interpretation justifies an adjustment in the Contract Sum or the Contract Time, the Contractor shall so notify the Owner in accordance with the provisions of Article 11.

3.2.3 Limitations on Architect/Engineer Authority. The AE is not responsible for:

3.2.3.1 The Contractor's means, methods, techniques, sequences, procedures, safety, or programs incident to the Project nor will the AE supervise, direct, control or have authority over the same.

3.2.3.2 The failure of Contractor to comply with laws and regulations applicable to the furnishing or performing the Work.

3.2.3.3 The Contractor's failure to perform or furnish the Work in accordance with the Contract Documents.

3.2.3.4 Acts or omissions of the Contractor, or of any other person or organization performing or furnishing any of the Work.

3.3 **Contractor's General Responsibilities.** The Contractor is solely responsible for implementing the Work in full compliance with all applicable laws and the Contract Documents and shall supervise and direct the Work using the best skill and attention to assure that each element of the Work conforms to the Contract requirements. The Contractor is solely responsible for all construction means, methods, techniques, safety, sequences, coordination and procedures. *The Contractor is responsible for visiting the site and being familiar with local conditions such as the location, accessibility, and general character of the site and/or building.*

3.3.1 **Project Administration.** The Contractor shall provide Project administration for all Subcontractors, vendors, suppliers, and others involved in implementing the Work and shall coordinate administration efforts with those of the AE and ODR in accordance with these General Conditions and provisions of Division 1 Specifications, and as outlined in the Pre-construction Conference.

3.3.1.1 The Contractor shall furnish to the ODR one copy of the current edition of Means Facility Cost Data at no additional cost. This document shall be in either hard copy format or electronic CD, at option of the ODR.

3.3.1.2 The Contractor shall furnish to the ODR one copy of the current edition of the "Rental Rate Blue Book for Construction Mobilization Costs" at no additional cost. This document shall be in either hard copy format or electronic CD, at option of the ODR.

3.3.2 **Contractor's Superintendent.** Contractor shall employ a competent resident superintendent who will be present at the Project Site during the progress of the Work. The superintendent is subject to the approval of the ODR. Contractor may not change approved superintendents during the course of the Project without the written approval of the ODR unless the superintendent leaves the employ of the Contractor.

3.3.3 **Labor.** Contractor shall provide competent, suitably qualified personnel to survey, layout, and construct the Work as required by the Contract Documents. Maintain good discipline and order at the Site at all times.

3.3.4 **Services, Materials, and Equipment.** Unless otherwise specified, Contractor shall provide and assume full responsibility for all services, materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities, and all other facilities, incidentals, and services necessary for the construction, performance, testing, start-up, inspection and completion of the Work.

3.3.5 **Non-Compliant Work.** Should the AE and/or the ODR identify Work as non-compliant with the Contract Documents, the ODR will communicate the finding to the Contractor and the Contractor will correct such Work at its expense. The approval of Work by either the AE or ODR does not relieve the Contractor from the obligation to comply with all requirements of the Contract Documents.

3.3.6 **Subcontractors.** Contractor shall not employ any Subcontractor, supplier or other person or organization, whether initially or as a substitute, against whom the Owner may have reasonable objection. The Owner will communicate such objections in writing. The Contractor is not required to employ any Subcontractor, supplier or other person or organization to furnish any

of the work to whom the Contractor has reasonable objection. The Contractor will not substitute Subcontractors without the acceptance of the Owner.

3.3.6.1 All Subcontracts and supply contracts shall be consistent with and bound to the terms and conditions of the Contract Documents including provisions of the Contract between the Contractor and the Owner.

3.3.6.2 The Contractor shall be solely responsible for scheduling and coordinating the Work of Subcontractors, suppliers and other persons and organizations performing or furnishing any of the Work under a direct or indirect contract with the Contractor. The Contractor shall require all Subcontractors, suppliers and such other persons and organizations performing or furnishing any of the Work to communicate with Owner only through the Contractor. The Contractor shall furnish to the Owner a copy of each first-tier subcontract promptly after its execution. The Contractor agrees that the Owner has no obligation to review or approve the content of such contracts and that providing the Owner such copies in no way relieves the Contractor of any of the terms and conditions of the Contract, including, without limitation, any provisions of the Contract which require the Subcontractor to be bound to the Contractor in the same manner in which the Contractor is bound to the Owner.

3.3.7 **Continuing the Work.** The Contractor shall carry on the Work and adhere to the progress schedule during all disputes, disagreements or alternative resolution processes with the Owner. The Contractor shall not delay or postpone any Work because of the pending resolution of any disputes, disagreements or processes, except as the Owner and the Contractor may agree in writing.

3.3.8 **Cleaning.** At all times, the Contractor shall keep the Site and the Work clean and free from accumulation of waste materials or rubbish caused by the construction activities under the Contract. The Contractor shall ensure that the entire Project is thoroughly cleaned prior to requesting Substantial Completion Inspection and, again, upon completion of the Project prior to the final inspection.

3.3.9 **Acts and Omissions of Contractor, its Subcontractors and Employees.** The Contractor is responsible for acts and omissions of his employees and all its Subcontractors, their agents and employees. The Owner may, in writing, require the Contractor to remove from the Project any of Contractor's or its Subcontractors employees that the ODR finds to be careless, incompetent, or otherwise objectionable.

3.3.10 **Indemnification of Owner.** The Contractor covenants and agrees to FULLY INDEMNIFY and HOLD HARMLESS, the Owner and the elected officials, employees, officers, directors, volunteers, and representatives of the Owner, individually or collectively, from and against any and all costs, claims, liens, damages, losses, expenses, fees, fines, penalties, proceedings, actions, demands, causes of action, liability and suits of any kind and nature, including but not limited to, personal or bodily injury, death and property damage, made upon the Owner directly or indirectly arising out of, resulting from or related to Contractor's activities under this Contract, including any acts or omissions of Contractor, any agent, officer, director, representative, employee, consultant or the Subcontractor of Contractor, and their respective officers, agents, employees, directors and representatives while in the exercise of performance of the rights or duties under this Contract. The indemnity provided for in this paragraph does not apply to any liability resulting from the negligence of the Owner, officers or employees, or assigned Contractors in instances where such negligence causes personal injury, death or property damage. IN THE EVENT CONTRACTOR AND OWNER ARE FOUND JOINTLY LIABLE BY A COURT OF COMPETENT JURISDICTION, LIABILITY WILL BE APPORTIONED COMPARATIVELY IN ACCORDANCE WITH THE LAWS OF THE STATE OF TEXAS, WITHOUT WAIVING ANY GOVERNMENTAL IMMUNITY AVAILABLE TO THE STATE UNDER

TEXAS LAW AND WITHOUT WAIVING ANY DEFENSES OF THE PARTIES UNDER TEXAS LAW.

3.3.10.1 The provisions of this Indemnification are solely for the benefit of the parties hereto and not intended to create or grant any rights, contractual or otherwise, to any other person or entity.

3.3.10.2 The Contractor shall promptly advise the Owner in writing of any claim or demand against the Owner or the Contractor known to the Contractor related to or arising out of the Contractor's activities under this Contract.

3.3.11 **Ancillary Areas**. The Contractor shall operate and maintain operations and associated storage areas at the site of the Work in accordance with the following:

3.3.11.1 Confine all Contractor operations, including storage of materials and employee parking upon the Site of Work, to areas designated by the Owner.

3.3.11.2 The Contractor may erect, at its own expense, temporary buildings that will remain its property. Remove such buildings and associated utility service lines upon completion of the Work, unless the Contractor requests and the Owner provides written consent that it may abandon such buildings and utilities in place.

3.3.11.3 Use only established roadways or construct and use such temporary roadways as may be authorized by the Owner. Do not allow load limits of vehicles to exceed the limits prescribed by appropriate regulations or law. Provide protection to road surfaces, curbs, sidewalks, trees, shrubbery, sprinklers, drainage structures and other like existing improvements to prevent damage and repair any damage thereto at the expense of the Contractor.

3.3.11.4 The Owner may restrict the Contractor's entry to the site to specifically assigned entrances and routes.

3.3.12 **Separate Contracts**. Additional Contractor responsibilities when the Owner awards separate Contracts:

3.3.12.1 The Owner reserves the right to award other contracts in connection with other portions of the Project under these or similar contract conditions.

3.3.12.2 The Owner reserves the right to perform operations related to the Project with the Owner's own forces.

3.3.12.3 If Owner awards a separate contract, the conditions described herein continue to apply except as may be amended by Change Order.

3.3.12.4 ***The Contractor shall cooperate with other Owner's separate Contractors employed on the Project, including providing access to Site and Project information as requested.***

Article 4. Small Business (SB) Development Plan

4.1 **General Description**. The purpose of the Small Business (SB) Development Program is to promote equal business opportunities for economically disadvantaged businesses to contract with the HCC in accordance with the goals specified in HCC Small Business Requirements.

4.2 **Compliance with Approved SB Subcontracting Plan.** Contractor, having been awarded this Contract in part by complying with the SB Development Program policies, hereby covenants to continue to comply with the SB Program as follows:

4.2.1 Prior to substituting a SB Subcontracting Plan the Contractor will promptly notify the Owner in the event a change is required for any reason; the Owner must approve and accept the substituted SB Subcontracting Plan.

4.2.2 Conduct the good faith effort activities required and provide the Owner with necessary documentation to justify approval of a change to the approved SB Subcontracting Plan.

4.2.3 Cooperate in the execution of a Change Order or such other approval of the change in the SB Subcontracting Plans as the Contractor and Owner may agree to.

4.2.4 Maintain and make available to Owner upon request business records documenting compliance with the accepted SB Subcontracting Plan.

4.2.5 Submit to Owner a compliance report, in the frequency and format required by the Owner that demonstrates Contractor's performance of the SB Subcontracting Plan.

Article 5. Bonds & Insurance

5.1 **Construction Bonds.** The Contractor is required to tender to Owner, prior to commencing the Work, public works performance and payment bonds, as required by Texas Government Code Chapter 2253.

5.1.1 A **Performance Bond** is required if the Contract Sum is in excess of \$100,000. The Performance Bond is solely for the protection of the Owner. The Performance Bond is to be for the Contract Sum to guarantee the faithful performance of the Work in accordance with the Contract Documents. The form of the bond shall be the form of bond approved by the Attorney General of Texas. The Performance Bond shall be effective through the Contractor's warranty period.

5.1.2 A **Payment Bond** is required if the Contract Sum is in excess of \$25,000. The payment bond is to be for the Contract Sum and is payable to the Owner solely for the protection and use of payment bond beneficiaries who have a direct contractual relationship with the Contractor or a Subcontractor. The form of the bond shall be the bond approved by the Attorney General of Texas.

5.1.3 **Bond Requirements.** Each bond shall be executed by a corporate surety or sureties authorized to do business in the State of Texas and acceptable to the Owner, on the Owner's form, and in compliance with the relevant provisions of the Texas Insurance Code. If any bond is for more than 10 percent of the surety's capital and surplus, the Owner may require certification that the company has reinsured the excess portion with one or more reinsurers authorized to do business in the State. A reinsurer may not reinsure for more than 10 percent of its capital and surplus. If a surety upon a bond loses its authority to do business in the State, the Contractor shall, within thirty (30) days after such loss, furnish a replacement bond at no added cost to the Owner.

5.1.4 **Power of Attorney.** Each bond shall be accompanied by a valid Power-of-Attorney (issued by the surety company and attached, signed and sealed with the corporate embossed seal, to the bond) authorizing the attorney in fact who signs the bond to commit the company to the terms of the bond, and stating any limit in the amount for which the attorney can issue a single bond.

5.1.5 **Bond Indemnification.** The process of requiring and accepting bonds and making claims thereunder shall be conducted in compliance with Texas Government Code Chapter 2253. IF FOR ANY REASON A STATUTORY PAYMENT OR PERFORMANCE BOND IS NOT HONORED BY THE SURETY, THE CONTRACTOR SHALL FULLY INDEMNIFY AND HOLD THE OWNER HARMLESS OF AND FROM ANY COSTS, LOSSES, OBLIGATIONS OR LIABILITIES IT INCURS AS A RESULT.

5.1.6 **Furnishing Bond Information.** Owner shall furnish certified copies of the payment bond and the related Contract to any qualified person seeking copies who complies with Texas Government Code §2253.026.

5.1.7 **Claims on Payment Bonds.** Claims on payment bonds must be sent directly to the Contractor and his surety in accordance with Texas Government Code § 2253.041. All Payment Bond claimants are cautioned that no lien exists on the funds unpaid to the Contractor on such Contract, and that reliance on notices sent to the Owner may result in loss of their rights against the Contractor and/or his surety. The Owner is not responsible in any manner to a claimant for collection of unpaid bills, and accepts no such responsibility because of any representation by any agent or employee.

5.1.8 **Payment Claims when Payment Bond not Required.** The rights of Subcontractors regarding payment are governed by Texas Property Code §§ 53.231 – 53.239 when the value of the Contract between the Owner and the Contractor is less than \$25,000.00. These provisions set out the requirements for filing a valid lien on funds unpaid to the Contractor as of the time of filing the claim, actions necessary to release the lien and satisfaction of such claim.

5.1.9 **Sureties** shall be listed on the US Department of the Treasury's Listing Approved Sureties stating companies holding Certificates of Authority as A- acceptable sureties on Federal Bonds and acceptable reinsuring companies (Department Circular 570).

5.2 **Insurance Requirements.** The Contractor shall carry insurance in the types and amounts indicated in this Article for the duration of the Contract. The required insurance shall include coverage for Owner's property in the care, custody and control of Contractor prior to construction, during construction and during the warranty period. The insurance shall be evidenced by delivery to the Owner of certificates of insurance executed by the insurer or its authorized agent stating coverages, limits, expiration dates and compliance with all applicable required provisions. Upon request, the Owner, and/or its agents, shall be entitled to receive without expense, copies of the policies and all endorsements. The Contractor shall update all expired policies prior to submission for monthly payment. Failure to update policies shall be reason for withholding of payment until renewal is provided to the Owner.

5.2.1 The Contractor shall provide and maintain the insurance coverage with the minimum amounts described below until the end of the warranty period unless otherwise stated in Supplementary General Conditions. Failure to maintain insurance coverage, as required, is grounds for Suspension of Work for Cause pursuant to Article 14. The Contractor will be notified of the date on which the Builder's Risk insurance policy may be terminated through Substantial Completion Notices, Acceptance Notices and/or other means as deemed appropriate by the Owner.

5.2.2 Coverage shall be written on an occurrence basis by companies authorized and admitted to do business in the State of Texas and rated A-X or better by A.M. Best Company or otherwise acceptable to Owner.

5.2.2.1 **Insurance coverage required includes:**

5.2.2.1.1 **Workers' Compensation.** Insurance with limits as required by the Texas Workers' Compensation Act, with the policy endorsed to provide a waiver of subrogation as to the Owner, Employer's Liability insurance of not less than:

\$100,000 each accident
\$100,000 disease each employee
\$500,000 disease policy limit

5.2.2.1.2 Commercial General Liability Insurance. Including Independent Contractor's liability, Products and Completed Operations and Contractual Liability, covering, but not limited to, the liability assumed under the indemnification provisions of this contract, fully insuring Contractor's (or Subcontractors) liability for bodily injury and property damage with a combined bodily injury (including death) and property damage minimum limit of:

\$1,000,000 Occurrence
\$2,000,000 Aggregate
\$2,000,000 Completed Operations
\$1,000,000 Personal Injury
\$ 500,000 Fire Damage
\$ 5,000 Medical Payments

Coverage shall be on an "occurrence" basis.

The policy shall include coverage extended to apply to completed operations and explosion, collapse, underground hazards. The policy shall include endorsement CG2503 Amendment-Aggregate Limits of Insurance (Per Project) or its equivalent.

5.2.2.1.3 Asbestos Abatement Liability Insurance, including coverage for liability arising from the encapsulation, removal, handling, storage, transportation, and disposal of asbestos containing materials. *This requirement applies if the Work or the Project includes asbestos containing materials.

The Combined single limit for bodily injury and property damage will be a minimum of \$1,000,000 per occurrence.

*Specific Requirement for Claims-Made Form: Required period of coverage will be determined by the following formula: Continuous coverage for life of the contract, plus one (1) year (to provide coverage for the warranty period), and an extended discovery period for a minimum of five (5) years which shall begin at the end of the warranty period.

If this contract is for asbestos abatement only, the All-Risk Builder's Risk or All-Risk Installation Floater (e) is not required.

5.2.2.1.4 Comprehensive Automobile Liability Insurance, covering owned, hired, and non-owned vehicles, with a combined bodily injury (including death) and property damage minimum limit of \$1,000,000 per occurrence. No aggregate shall be permitted for this type of coverage.

Such insurance is to include coverage for loading and unloading hazards.

5.2.2.1.5 All Risk Builder's Risk Insurance (or All Risk Installation Floater for instances in which the Project involves solely the installation of equipment). Coverage shall be All-Risk, including, but not limited to, Fire, Extended Coverage, Vandalism and Malicious Mischief, Flood, Earthquake, Theft and damage resulting from faulty workmanship, design or materials. If Builder's Risk, limit shall be equal to 100 percent of the contract. If Installation Floater, limit

shall be equal to 100 percent of the contract cost. The policy shall be written jointly in the names of the Owner, the Program Manager, Project Manager, Project Architect, the Contractor, Subcontractors and, Sub-Subcontractors, which shall be named as additional insureds. The policy shall have endorsements as follows:

5.2.2.1.5.1 This insurance shall be specific as to coverage and not contributing insurance with any permanent insurance maintained on the property.

5.2.2.1.5.2 This insurance shall not contain an occupancy clause suspending or reducing coverage should the Owner occupy, or begin beneficial occupancy before the Owner has accepted final completion.

5.2.2.1.5.3 Loss, if any, shall be adjusted with and made payable to the Owner as Trustee for the insureds as their interests may appear; the right of subrogation under the Builder's Risk policy shall be waived as to the Owner. The Owner shall be named as Loss Payee. For renovation projects or projects that involve portions of work contained within an existing structure, refer to Special Conditions for possible additional Builder's Risk insurance requirements.

5.2.2.1.6 "Umbrella" Liability Insurance. The Contractor shall obtain, pay for and maintain umbrella liability insurance during the Contract term, insuring the Contractor (or Subcontractor) as follows:

\$2,000,000 for all projects estimated to cost up to \$25,000,000.

\$5,000,000 for all projects estimated to cost over \$25,000,000.

The policy shall provide "drop down" coverage where underlying primary insurance coverage limits are insufficient or exhausted.

If this contract is for asbestos abatement only, the "Umbrella" Excess Liability is not required

5.2.3 Policies must include the following clauses, as applicable:

5.2.3.1 This insurance shall not be canceled, materially changed, or non-renewed until after sixty (60) days prior written notice has been given to the Owner.

5.2.3.2 It is agreed that the Contractor's insurance shall be deemed primary with respect to any insurance or self insurance carried by the Owner for liability arising out of operations under the Contract with the Owner.

5.2.3.3 The Owner, its officials, directors, employees, representatives, and volunteers are added as additional insureds as respects operations and activities of, or on behalf of the named insured performed under contract with the Owner. The additional insured status must cover completed operations as well. This is not applicable to the workers' compensation policy.

5.2.3.4 The workers' compensation and employers' liability policy will provide a waiver of subrogation in favor of the Owner.

5.2.4 Without limiting any of the other obligations or liabilities of the Contractor, the Contractor shall require each Subcontractor performing work under the Contract, at the Subcontractor's own

expense, to maintain during the term of the Contract, the same stipulated minimum insurance including the required provisions and additional policy conditions as shown above. As an alternative, the Contractor may include its Subcontractors as additional insured on its own coverage as prescribed under these requirements. The Contractor's certificate of insurance shall note in such event that the Subcontractors are included as additional insured's and that Contractor agrees to provide Workers' Compensation for the Subcontractors and their employees. The Contractor shall obtain and monitor the certificates of insurance from each Subcontractor in order to assure compliance with the insurance requirements. The Contractor must retain the certificates of insurance for the duration of the Contract plus 5 years and shall have the responsibility of enforcing these insurance requirements among its Subcontractors. The Owner shall be entitled, upon request and without expense, to receive copies of these certificates.

5.2.5 Workers' Compensation Insurance Coverage must meet the statutory requirements of the Texas Labor Code §401.011(44) and specific to construction Projects for public entities as required by Texas Labor Code §406.096.

A. Definitions:

Certificate of coverage ("certificate"). A copy of a certificate of insurance, a certificate of authority to self-insure issued by the commission, or a coverage agreement (TWCC-81, TWCC-82, TWCC-83, or TWCC-84), showing statutory workers' compensation insurance coverage for the person's or entity's employees providing services on a Project, for the duration of the Project.

Duration of the Project - includes the time from the beginning of the work on the Project until the Contractor's/person's work on the Project has been completed and accepted by the governmental entity.

Persons providing services on the Project ("Subcontractor" in §406.096) - includes all persons or entities performing all or part of the services the Contractor has undertaken to perform on the Project, regardless of whether that person contracted directly with the Contractor and regardless of whether that person has employees. This includes, without limitation, independent Contractors, Subcontractors, leasing companies, motor carriers, owner-operators, employees of any such entity, or employees of any entity which furnishes persons to provide services on the Project. "Services" include, without limitation, providing, hauling, or delivering equipment or materials, or providing labor, transportation, or other service related to a project. "Services" does not include activities unrelated to the Project, such as food/beverage vendors, office supply deliveries, and delivery of portable toilets.

B. The ***Contractor*** shall provide coverage, based on proper reporting of classification codes and payroll amounts and filing of any coverage agreements, which meets the statutory requirements of Texas Labor Code, Section 401.011(44) for all employees of the Contractor providing services on the Project, for the duration of the Project.

C. The ***Contractor*** must provide a certificate of coverage to the governmental entity prior to being awarded the contract.

D. If the coverage period shown on the Contractor's current certificate of coverage ends during the duration of the Project, the Contractor must, prior to the end of the coverage period, file a new certificate of coverage with the governmental entity showing that coverage has been extended.

E. The ***Contractor*** shall obtain from each person providing services on a Project, and provide to the governmental entity:

(1) a certificate of coverage, prior to that person beginning work on the Project, so the governmental entity will have on file certificates of coverage showing coverage for all persons providing services on the Project; and

(2) no later than seven days after receipt by the Contractor, a new certificate of coverage showing extension of coverage, if the coverage period shown on the current certificate of coverage ends during the duration of the Project.

F. The **Contractor** shall retain all required certificates of coverage for the duration of the Project and for one year thereafter.

G. The **Contractor** shall notify the governmental entity in writing by certified mail or personal delivery, within 10 days after the Contractor knew or should have known, of any change that materially affects the provision of coverage of any person providing services on the Project.

H. The **Contractor** shall post on each Project site a notice, in the text, form and manner prescribed by the Texas Workers' Compensation Commission, informing all persons providing services on the Project that they are required to be covered, and stating how a person may verify coverage and report lack of coverage.

I. The **Contractor** shall contractually require each person with whom it contracts to provide services on a Project, to:

(1) provide coverage, based on proper reporting of classification codes and payroll amounts and filing of any coverage agreements, which meets the statutory requirements of Texas Labor Code, Section 401.011(44) for all of its employees providing services on the Project, for the duration of the Project;

(2) provide to the Contractor, prior to that person beginning work on the Project, a certificate of coverage showing that coverage is being provided for all employees of the person providing services on the Project, for the duration of the Project;

(3) provide the Contractor, prior to the end of the coverage period, a new certificate of coverage showing extension of coverage, if the coverage period shown on the current certificate of coverage ends during the duration of the Project;

(4) obtain from each other person with whom it contracts, and provide to the Contractor:

(a) a certificate of coverage, prior to the other person beginning work on the Project; and

(b) a new certificate of coverage showing extension of coverage, prior to the end of the coverage period, if the coverage period shown on the current certificate of coverage ends during the duration of the Project;

(5) retain all required certificates of coverage on file for the duration of the Project and for one year thereafter;

(6) notify the governmental entity in writing by certified mail or personal delivery, within 10 days after the person knew or should have known, of any change that materially affects the provision of coverage of any person providing services on the Project; and

(7) contractually require each person with whom it contracts, to perform as required by paragraphs (1) - (7), with the certificates of coverage to be provided to the person for whom they are providing services.

J. By signing this contract or providing or causing to be provided a certificate of coverage, the Contractor is representing to the governmental entity that all employees of the Contractor who will provide services on the Project will be covered by workers' compensation coverage for the duration of the Project, that the coverage will be based on proper reporting of classification codes and payroll amounts, and that all coverage agreements will be filed with the appropriate insurance carrier or, in the case of a self-insured, with the commission's Division of Self-Insurance Regulation. Providing false or misleading information may subject the Contractor to administrative penalties, criminal penalties, civil penalties, or other civil actions.

K. The Contractor's failure to comply with any of these provisions is a breach of contract by the Contractor which entitles the governmental entity to declare the contract void if the Contractor does not remedy the breach within ten days after receipt of notice of breach from the governmental entity.

Article 6. Contract Documents

6.1 Drawings and Specifications.

6.1.1 Copies Furnished. The Contractor will be furnished, free of charge, the number of complete sets of the Drawings and Specifications as provided in the Supplementary General Conditions or Special Conditions. Additional complete sets of Drawings and Specifications, if requested, will be furnished at reproduction cost to the one requesting such additional sets.

6.1.2 Ownership of Drawings and Specifications. All Drawings, Specifications and copies thereof furnished by the AE are to remain AE's property. These documents are not to be used by Contractor on any other Project, and with the exception of one Contract set for each party to the Contract, are to be returned to the Architect/Engineer, upon request, following completion of the Work.

6.1.3 Interrelation of Documents. The Contract Documents as referenced in the Agreement between the Owner and the Contractor are complimentary, and what is required by one shall be as binding as if required by all.

6.1.4 Resolution of Conflicts in Documents. Where conflicts may exist between and/or within the Contract Documents, the higher quality, greater quantity, more restrictive, and/or more expensive requirement shall be **required**. The Contractor shall notify the AE and the ODR **of any conflict before** executing the work in question.

6.1.5 Contractor's Duty to Review Contract Documents. In order to facilitate its responsibilities for completion of the Work in accordance with and as reasonably inferable from the Contract Documents, prior to pricing or commencing the Work, the Contractor shall examine and compare the Contract Documents, information furnished by the Owner, relevant field measurements made by the Contractor and any visible or reasonably anticipated conditions at the site affecting the Work. This duty extends throughout the construction phase prior to commencing each particular work activity and/or installation.

6.1.6 Discrepancies and Omissions in Drawings and Specifications

6.1.6.1 ***The Owner does not warrant or make any representations as to the accuracy or completeness of the information furnished to the Contractor by the Owner.*** The Contractor shall promptly report to the ODR and to the AE the discovery of any apparent error, omission or inconsistency in the Contract Documents prior to execution of the Work.

6.1.6.2 It is recognized that the Contractor is not acting in the capacity of a licensed design professional, unless it is performing as a Design Build firm.

6.1.6.3 It is further recognized that the Contractor's examination of contract documents is to facilitate construction and does not create an affirmative responsibility to detect errors, omissions or inconsistencies or to ascertain compliance with applicable laws, building codes or regulations, unless it is performing as a Design-Build firm or a Construction Manager-at-Risk.

6.1.6.4 When performing as a Design-Build firm, the Contractor has sole responsibility for discrepancies, errors, and omissions in the drawings and specifications.

6.1.6.5 When performing as a Construction Manager-at-Risk, the Contractor has a shared responsibility for discovery and resolution of discrepancies, errors, and omissions in the Contract Documents. In such case, the Contractor's responsibility pertains to review, coordination, and recommendation of resolution strategies within budget constraints, but does not establish a liability for design.

6.1.6.6 The Contractor has no liability for errors, omissions, or inconsistencies unless the Contractor knowingly failed to report a recognized problem to the Owner or the Work is executed under a Design-Build or Contractor contract as outlined above. Should the Contractor fail to perform the examination and reporting obligations of these provisions, the Contractor is responsible for avoidable costs, direct, and/or consequential damages.

6.2 **Requirements for Record Documents.** The Contractor shall maintain at the Site one copy of all Drawings, Specifications, addenda, approved Submittals, Contract modifications, and all Project correspondence. The Contractor shall keep current and maintain Drawings and Specifications in good order with postings and markings to record actual conditions of Work and show and reference all changes made during construction. The Contractor shall provide Owner and AE access to these documents.

6.2.1 The Contractor shall maintain this record set of Drawings and Specifications which reflect the "As Constructed" conditions and representations of the Work performed, whether it be directed by addendum, Change Order or otherwise. The Contractor shall make available all records prescribed herein for reference and examination by the Owner and its representatives and agents.

6.2.2 The Contractor shall update the "As-Constructed" Drawings and Specifications monthly prior to submission of periodic partial pay estimates. Contractor's failure to maintain such records constitutes cause for denial of a progress payment otherwise due.

6.2.3 Prior to requesting Substantial Completion Inspection by the ODR and AE, the Contractor shall furnish a complete set of the marked up "As-Constructed" set maintained at the site and one photocopy of same. Concurrently with furnishing these record drawings, the Contractor shall furnish a preliminary copy of each operating and maintenance manual (O&M) required by the Contract Documents, for review by the AE and the ODR.

6.2.4 Once determined acceptable, the Contractor shall provide one set of prints of professionally drafted "As-Constructed" drawings, along with an electronic copy on CD, "As-Constructed" specifications in bound volume(s) along with an electronic copy on CD, two sets of operating and maintenance manuals, two sets of approved submittals, and other record documents as required elsewhere in the Contract Documents. ***All electronic copies shall be provided in a format acceptable to the ODR.***

Article 7. Construction Safety

7.1 **General.** It is the duty and responsibility of the Contractor and all of its Subcontractors to be familiar with, enforce and comply with all requirements of Public Law 91-596, 29 U.S.C. §§651 et. seq., the Occupational Safety and Health Act of 1970, (OSHA) and all amendments thereto. The Contractor shall prepare a Safety Plan specific to the Project and submit it to the ODR and AE prior to commencing Work. In addition, the Contractor and all of its Subcontractors shall comply with all applicable laws and regulations of any public body having jurisdiction for safety of persons or property to protect them from damage, injury or loss and erect and maintain all necessary safeguards for such safety and protection.

7.2 **Notices.** The Contractor shall provide notices as follows:

7.2.1 Notify owners of adjacent property including those that own or operate utility services and/or underground facilities, and utility owners, when prosecution of the Work may affect them or their facilities, and cooperate with them in the protection, removal, relocation and replacement, and access to their facilities and/or utilities.

7.2.2 Coordinate the exchange of material safety data sheets or other hazard communication information required to be made available to or exchanged between or among employers at the site in connection with laws and regulations. Maintain a complete file of MSDS for all materials in use on site throughout the construction phase and make such file available to the Owner and its agents as requested.

7.3 **Emergencies.** In any emergency affecting the safety of persons or property, the Contractor shall act to minimize, mitigate, and prevent threatened damage, injury or loss.

7.3.1 Have authorized agents of Contractor respond immediately upon call at any time of day or night when circumstances warrant the presence of Contractor to protect the Work or adjacent property from damage or to take such action pertaining to the Work as may be necessary to provide for the safety of the public.

7.3.2 Give the ODR and AE prompt notice of all such events.

7.3.3 If Contractor believes that any changes in the Work or variations from Contract Documents have been caused by its emergency response, promptly notify the Owner within 72 hours of the emergency response event.

7.3.4 Should Contractor fail to respond, Owner is authorized to direct other forces to take action as necessary and Owner may deduct any cost of remedial action from funds otherwise due the Contractor.

7.4 **Injuries.** In the event of an incident or accident involving outside medical care for an individual on or near the Work, Contractor shall notify the ODR and other parties as may be directed within twenty-four (24) hours of the event.

7.4.1 Record the location of the event and the circumstances surrounding it, by using photography or other means, and gather witness statements and other documentation which describes the event.

7.4.2 Supply the ODR and AE with an incident report no later than 36 hours after the occurrence of the event. In the event of a catastrophic incident (one fatality or three workers hospitalized), barricade and leave intact the scene of the incident until all investigations are complete.

7.5 **Environmental Safety.** Upon encountering any previously unknown potentially hazardous material, or other materials potentially contaminated by hazardous material, Contractor shall immediately stop work activities impacted by the discovery, secure the affected area, and notify the ODR immediately.

7.5.1 Bind all Subcontractors to the same duty.

7.5.2 Upon receiving such notice, the ODR will promptly engage qualified experts to make such investigations and conduct such tests as may be reasonably necessary to determine the existence or extent of any environmental hazard. Upon completion of this investigation, the ODR will issue a written report to the Contractor identifying the material(s) found and indicate any necessary steps to be taken to treat, handle, transport or dispose of the material.

7.5.3 The Owner may hire third-party Contractors to perform any or all such steps.

7.5.4 Should compliance with the ODR's instructions result in an increase in the Contractor's cost of performance, or delay the Work, the Owner will make an equitable adjustment to the Contract price and/or the time of completion, and modify the Contract in writing accordingly.

7.6 **Trenching Plan.** When the Project requires excavation which either exceeds a depth of four feet, or results in any worker's upper body being positioned below grade level, the Contractor is required to submit a trenching plan to the ODR prior to commencing trenching operations. The plan is required to be prepared and sealed by a professional engineer registered in the State of Texas, and employed by the Contractor. Said engineer cannot be anyone who is otherwise either directly or indirectly engaged on this Project.

Article 8 Quality Control

8.1 **Materials & Workmanship.** The Contractor shall execute Work in a good and workmanlike manner in accordance with the Contract Documents. The Contractor shall develop and provide a Quality Control Plan specific to this Project and acceptable to the Owner. Where Contract Documents do not specify quality standards, complete and construct all Work in compliance with generally accepted construction industry standards. Unless otherwise specified, incorporate all new materials and equipment into the Work under the Contract.

8.2 Testing.

8.2.1 **Contractor Testing.** The Contractor is responsible for coordinating and paying for all routine and special tests required to confirm compliance with quality and performance requirements of the Contract Documents. This "quality control" testing shall include any particular testing required by the Specifications and the following general tests.

8.2.1.1 Any test of basic material or fabricated equipment included as part of a submittal for a required item in order to establish compliance with the Contract Documents.

8.2.1.2 Any test of basic material or fabricated equipment offered as a substitute for a specified item on which a test may be required in order to establish compliance with the Contract Documents.

8.2.1.3 Routine, preliminary, start-up, pre-functional and operational testing of building equipment and as necessary to confirm operational compliance with requirements of the Contract Documents.

8.2.1.4 All subsequent tests on original or replaced materials conducted as a result of prior testing failure.

8.2.2 Owner Testing. The Owner reserves the right to subject materials incorporated into the Project to routine tests as may be specified or as deemed necessary by the ODR or the AE to ensure compliance with the quality and/or performance requirements of the Contract Documents and/or with laws, ordinances, rules, regulations and/or orders of any public authority having jurisdiction. The results of such "quality assurance" testing will be provided to the Contractor and, to the extent provided, the Contractor may rely on findings.

8.2.3 All testing shall be performed in accordance with standard test procedures by an accredited laboratory, or special consultant as appropriate, acceptable to the Owner. Results of all tests shall be provided promptly to the ODR, Architect/Engineer and the Contractor.

8.2.4 Non-Compliance (Test Results). Should any of the tests indicate that a material and/or does not comply with the contract requirements, the burden of proof remains with the Contractor, subject to:

8.2.4.1 Contractor selection and submission of the laboratory for Owner acceptance.

8.2.4.2 Acceptance by the Owner of the quality and nature of tests.

8.2.4.3 All tests taken in the presence of the Architect/Engineer and/or ODR, or their representatives.

8.2.4.4 If tests confirm that the materials comply with Contract Documents, the Owner will pay the cost of the test.

8.2.4.5 If tests reveal noncompliance, the Contractor will pay those laboratory fees and costs of that particular test and all future tests, of that failing Work, necessary to eventually confirm compliance with Contract Documents.

8.2.4.6 Proof of noncompliance with the Contract Documents will make the Contractor liable for any corrective action which the ODR determines appropriate, including complete removal and replacement of noncompliant work or material.

8.2.5 Notice of Testing. The Contractor shall give the ODR and the AE timely notice of its readiness and the date arranged so the ODR and AE may observe such inspection, testing or approval.

8.2.6 Test Samples. The Contractor is responsible for providing samples of sufficient size for test purposes and for coordinating such tests with their Work Progress Schedule to avoid delay.

8.2.7 **Covering Up Work** - If the Contractor covers up any Work without providing the Owner an opportunity to inspect, the Contractor shall, if requested by ODR, uncover and recover the work at Contractor's expense.

8.3 **Submittals**

8.3.1 **Contractor's Submittals**. Submit with reasonable promptness consistent with the Project Schedule and in orderly sequence all Shop Drawings, Samples, or other information required by the Contract Documents, or subsequently required by Change Order. Prior to submitting, the Contractor shall review each submittal for compliance with Contract Documents and certify by approval stamp affixed to each copy. Submittal data presented without the Contractor's certification will be returned without review or comment, and any delay resulting from such certification is the Contractor's responsibility.

8.3.1.1 Within twenty-one (21) calendar days of the effective date of the Notice To Proceed with construction, submit to the ODR, and the AE, a submittal schedule/register, organized by specification section, listing all items to be furnished for review and approval by the Architect/Engineer and Owner. The list shall include shop drawings, manufacturer's literature, certificates of compliance, materials samples, materials colors, guarantees, and all other items identified throughout the specifications.

8.3.1.2 Indicate the type of item, contract requirements reference, and Contractor's scheduled dates for submitting the item along with the requested dates for approval answers from the Architect/Engineer and Owner. The submittal register shall indicate the Projected dates for procurement of all included items and shall be updated at least monthly with actual approval and procurement dates. Show and allow a maximum of fourteen (14) business days' duration after receipt by the Architect/Engineer and ODR for review and approval of each submittal. If re-submittal is required, allow a maximum of an additional fourteen (14) business days for review. Submit the updated submittal register with each request for progress payment. The Owner may establish routine review procedures and schedules for submittals at the preconstruction conference and/or elsewhere in the Contract Documents. ***Failure to update and provide the submittal schedule/register as required shall constitute cause for Owner to withhold payment otherwise due.***

8.3.1.3 Coordinate the submittal register with the Work Progress Schedule. Do not schedule Work requiring a submittal to begin prior to scheduling review and approval of the related submittal. Revise and/or update both schedules monthly to ensure consistency and current Project data. Provide to the ODR the updated submittal register and schedule with each application for progress payment. Refer to requirements for the Work Progress Schedule for inclusion of procurement activities therein. Regardless, the submittal register shall identify dates submitted and returned and shall be used to confirm status and disposition of particular items submitted, including approval or other action taken and other information not conveniently tracked through the Work Progress Schedule.

8.3.1.4 By submitting Shop Drawings, Samples or other required information, the Contractor represents and certifies that they have determined and verified all applicable field measurements, field construction criteria, materials, catalog numbers and similar data; and has checked and coordinated each Shop Drawing and Sample with the requirements of the Work and the Contract Documents.

8.3.2 **Review of Submittals**. AE and ODR review is only for conformance with the design concept and the information provided in the Contract Documents. Responses to submittals will

be in writing. The approval of a separate item does not indicate approval of an assembly in which the item functions. The approval of a submittal does not relieve the Contractor of responsibility for any deviation from the requirements of the Contract unless the Contractor informs the AE and ODR of such deviation in a clear, conspicuous, and written manner on the submittal transmittal and at the time of submission, and obtains the Owner's written specific approval of the particular deviation.

8.3.3 Correction and Resubmission. Make any corrections required to a submittal and resubmit the required number of corrected copies promptly so as to avoid delay, until submittal approval. Direct attention in writing to the AE and the ODR, when applicable, to any new revisions other than the corrections requested on previous submissions.

8.3.4 Limits on Shop Drawing Approvals. The Contractor shall not commence any Work requiring a submittal until approval of the submittal. Construct all such work in accordance with approved submittals. Approval of Shop Drawings and Samples is not authorization to Contractor to perform extra work or changed work unless authorized through a Change Order. The AE's and ODR's approval, if any, does not relieve Contractor from responsibility for defects in the Work resulting from errors or omissions of any kind on the submittal, regardless of any approval action.

8.3.5 No Substitutions Without Approval. The ODR and the AE may receive and consider the Contractor's request for substitution when the Contractor agrees to reimburse the Owner for review costs and if the request satisfies in 8.3.5.1, 8.3.5.2, and 8.3.5.3 in combination with one or more of the items in 8.3.5.4 through 8.3.5.11 of the following conditions, as determined by the Owner. If the Contractor does not satisfy these conditions, the ODR and AE will return the request without action except to record noncompliance with these requirements. The Owner will not consider the request if the Contractor cannot provide the product or method because of failure to pursue the Work promptly or coordinate activities properly.

8.3.5.1 The Contract Documents do not require extensive revisions.

8.3.5.2 Proposed changes are in keeping with the general intent of the Contract Documents and the design intent of the AE and do not result in an increase in cost to the Owner.

8.3.5.3 The request is timely, fully documented, and properly submitted.

8.3.5.4 The Contractor cannot provide the specified product, assembly or method of construction within the Contract Time.

8.3.5.5 The request directly relates to an "or-equal" clause or similar language in the Contract Documents.

8.3.5.6 The request directly relates to a "product design standard" or "performance standard" clause in the Contract Documents.

8.3.5.7 The requested substitution offers the Owner a substantial advantage in cost, time, energy conservation or other considerations, after deducting additional responsibilities the Owner must assume.

8.3.5.8 The specified product or method of construction cannot receive necessary approval by an authority having jurisdiction, and the ODR can approve the requested substitution.

8.3.5.9 The Contractor cannot provide the specified product, assembly or method of construction in a manner that is compatible with other materials and where the Contractor certifies that the substitution will overcome the incompatibility.

8.3.6 **Unauthorized Substitutions at Contractor's Risk.** The Contractor is financially responsible for any additional costs or delays resulting from using materials, equipment or fixtures other than those specified. The Contractor shall reimburse the Owner for any increased design or contract administration costs resulting from such unauthorized substitutions.

8.4 **Field Mock-up**

8.4.1 Mockups shall be constructed prior to commencement of a specified scope of work to confirm acceptable workmanship.

8.4.1.1 As a minimum, field mock-ups shall be constructed for roofing, exterior veneer/ finishes, glazing, and any other Work requiring a mock-up as identified throughout the Contract Documents. Mockups for not part of the Project scope shall not be required.

8.4.1.2 Mock-ups may be incorporated into the Work if allowed by the Contract Documents and if acceptable to the ODR. If mock-ups are freestanding, they shall remain in place until otherwise directed by the Owner.

8.4.1.3 The Contractor shall include field mock-ups in their Work Progress Schedule and shall notify the ODR and Architect/Engineer of readiness for review sufficiently in advance to coordinate review without delay.

8.5 **Inspection During Construction**

8.5.1 The Contractor shall provide sufficient, safe, and proper facilities, including equipment as necessary for safe access, at all reasonable times for observation and/or inspection of the Work by the Owner and its agents.

8.5.2 The Contractor shall not cover up any work with finishing materials or other building components prior to providing the Owner and its agents an opportunity to perform an inspection of the Work.

8.5.2.1 Should corrections of the Work be required for approval, do not cover up corrected Work until the Owner indicates approval.

8.5.2.2 Provide notification of at least five (5) working days or otherwise as mutually agreed, to the ODR of the anticipated need for a cover up inspection. Should the ODR fail to make the necessary inspection within the agreed period, the Contractor may proceed with cover up Work, but is not relieved of responsibility for Work to comply with requirements of the Contract Documents.

Article 9. Project Scheduling Requirements

9.1 **Contract Time.** TIME IS AN ESSENTIAL ELEMENT OF THE CONTRACT. The Contract Time is the time between the dates indicated in the Notice to Proceed for Commencement of the Work and for achieving Substantial Completion and Final Completion. The Contract Time can be modified only by Change Order. Failure to achieve Substantial Completion within the Contract Time, Final Completion within thirty (30) days following Substantial Completion or as otherwise agreed to in writing will cause

damage to the Owner and may subject the Contractor to Liquidated Damages as provided in the Contract Documents.

9.2 **Notice to Proceed.** The Owner will issue a Notice to Proceed which shall state the dates for beginning Work and for achieving Substantial Completion and Final Completion of the Work.

9.3 **Work Progress Schedule.** Refer to Special Conditions and Division 1 General Administration Specifications for additional schedule requirements. *This Article pertains to construction phase schedules. Additional requirements for design phase scheduling for Contractor and Design Build contracts are outlined in Division 1 Project Planning and Scheduling Specification.* Unless indicated otherwise in those documents, Contractor shall submit their initial Work Progress Schedule for the Work in relation to the entire Project not later than twenty-one (21) days after the effective date of the Notice to Proceed to the ODR and the AE. Unless otherwise indicated in the Contract Documents, the Work Progress Schedule shall be computerized Critical Path Method (CPM) with full reporting capability. This initial schedule shall indicate the dates for starting and completing the various aspects required to complete the Work, including mobilization, procurement, installation, testing, inspection, and acceptance of all the Work of the Contract. When acceptable to the Owner, the initially accepted schedule shall be the Baseline Schedule for comparison to actual conditions throughout the contract duration.

9.3.1 **Schedule Requirements.** The Contractor shall submit electronic and paper copy of the initial Work Progress Schedule reflecting accurate and reliable representations of the planned progress of the Work, the Work to date if any, and of the Contractor's actual plans for its completion. The Contractor shall organize and provide adequate detail so the Schedule is capable of measuring and forecasting the effect of delaying events on completed and uncompleted activities.

9.3.1.1 The Contractor shall re-submit initial Schedule as required to address review comments from AE and ODR until such Schedule is accepted as the Baseline Schedule.

9.3.1.2 Submittal of a schedule, schedule revision or schedule update constitutes the Contractor's representation to the Owner of the accurate depiction of all progress to date and that the Contractor will follow the schedule as submitted in performing the Work.

9.3.2 **Schedule Updates.** The Contractor shall update the Work Progress Schedule and the Submittal Schedule monthly, as a minimum, to reflect progress to date and current plans for completing the Work, and submit paper and electronic copy of the update to the AE and ODR as directed. The Owner has no duty to make progress payments unless accompanied by the updated Work Progress Schedule. The Contractor shall show the anticipated date of completion reflecting all extensions of time granted through Change Order as of the date of the update. The Contractor may revise the Progress Schedule logic only with the Owner's concurrence when in the Contractor's judgment it becomes necessary for the management of the Work. The Contractor shall identify all proposed changes to schedule logic to Owner and to the AE via an Executive Summary accompanying the updated schedule for review prior to implementation of revisions.

9.3.3 **The Work Progress Schedule** is for the Contractor's use in managing the Work and submittal of the Schedule, and successive updates or revisions, is for the information of the Owner and to demonstrate that the Contractor has complied with requirements for planning the Work. The Owner's acceptance of a schedule, schedule update or revision constitutes the Owner's agreement to coordinate its own activities with the Contractor's activities as shown on the schedule.

9.3.3.1 Acceptance of the Work Progress Schedule, or update and/or revision thereto does not indicate any approval of the Contractor's proposed sequences and duration.

9.3.3.2 Acceptance of a Work Progress Schedule update or revision indicating early or late completion does not constitute the Owner's consent, alter the terms of the Contract, or waive either the Contractor's responsibility for timely completion or the Owner's right to damages for the Contractor's failure to do so.

9.3.3.3 The Contractor's scheduled dates for completion of any activity or the entire Work do not constitute a change in terms of the contract. Change Orders are the only method of modifying the completion Date(s) and Contract time.

9.4 **Ownership of Float.** Unless indicated otherwise in the Contract Documents, the Contractor shall develop the schedule and their execution plan to provide a minimum of 10 percent total float at the Project level at acceptance of the Baseline Schedule. Float time contained in the Work Progress Schedule is not for the exclusive benefit of the Contractor or the Owner, but belongs to the Project and may be consumed by either party as needed on a first-used basis.

9.5 **Completion of Work.** The Contractor is accountable for completing the Work in the time stated in the Contract, or as otherwise amended by Change Order.

9.5.1 If, in the judgment of the Owner, the work is behind schedule and the rate of placement of work is inadequate to regain scheduled progress to insure timely completion of the entire work or a separable portion thereof, the Contractor, when so informed by the Owner, shall immediately take action to increase the rate of work placement by:

9.5.1.1 An increase in working forces.

9.5.1.2 An increase in equipment or tools.

9.5.1.3 An increase in hours of work or number of shifts.

9.5.1.4 Expedite delivery of materials.

9.5.1.5 Other action proposed if acceptable to Owner.

9.5.2 Within ten (10) calendar days after such notice from the ODR, the Contractor shall notify the ODR in writing of the specific measures taken and/or planned to increase the rate of progress. Include an estimate as to the date of scheduled progress recovery and an updated Work Progress Schedule illustrating the Contractor's plan for achieving timely completion of the Project. Should the ODR deem the plan of action inadequate, take additional steps or make adjustments as necessary to its plan of action until it meets with the ODR's approval.

9.6 **Modification of the Contract Time**

9.6.1 Delays and extension of time as hereinafter described are valid only if executed in accordance with provisions set forth in Article 11.

9.6.2 When a delay defined herein as excusable prevents the Contractor from completing the Work within the Contract Time, the Contractor is entitled to an extension of time. The Owner will make an equitable adjustment and extend the number of calendar days lost because of excusable delay, as measured by the Contractor's progress schedule. All extensions of time will be granted in calendar days. In no event, however, will an extension of time be granted for delays that merely extend the duration of non-critical activities, or which only consume float without delaying the Project completion date.

9.6.2.1 A "**Weather Day**" is a day on which the Contractor's current schedule indicates Work is to be done, and on which inclement weather and related site conditions prevent the Contractor from performing seven continuous hours of Work between the hours of 7:00 a.m. and 6:00 p.m. Weather days are excusable delays. When weather conditions at the site prevent work from proceeding, immediately notify the ODR for confirmation of the conditions. At the end of each calendar month, submit to the ODR and AE a list of Weather Days occurring in that month along with documentation of the impact on critical activities. Based on confirmation by the ODR, any time extension granted will be issued by Change Order. If the Contractor and Owner cannot agree on the time extension, the Owner may issue a ULCO for fair and reasonable time extension.

9.6.2.2 **Excusable Delay.** The Contractor is entitled to an equitable adjustment of time, issued via change order, for delays caused by the following:

9.6.2.2.1 Errors, omissions and imperfections in design which the AE corrects by means of changes in the drawings and specifications.

9.6.2.2.2 Unanticipated physical conditions at the Site which the AE corrects by means of changes to the drawings and specifications or for which the ODR directs changes in the Work identified in the Contract Documents.

9.6.2.2.3 Changes in the Work that effect activities identified in the Contractor's schedule as "critical" to completion of the entire Work, if such changes are ordered by the ODR or the AE.

9.6.2.2.4 Suspension of Work for unexpected natural events (sometimes called "acts of God"), civil unrest, strikes or other events which are not within the reasonable control of the Contractor.

9.6.2.2.5 Suspension of Work for convenience of the ODR, which prevents Contractor from completing the Work within the Contract Time.

9.6.3 The Contractor's relief in the event of such delays is the time impact to the critical path as determined by analysis of the Contractor's schedule. In the event that the Contractor incurs additional direct costs because of the delay, they are to be determined pursuant to the provisions of Article 11.

9.7 **No Damages for Delay.** The Contractor has no claim for monetary damages for delay or hindrances to the work from any cause, including without limitation any act or omission of the Owner.

9.8 **Concurrent Delay.** When the completion of the Work is simultaneously delayed by an excusable delay and a delay arising from a cause not designated as excusable, the Contractor may not be entitled to a time extension for the period of concurrent delay.

9.9 **Other Time Extension Requests.** Time extensions requested in association with changes to the Work directed or requested by the Owner shall be included with the Contractor's proposed costs for such change. Time extensions requested for inclement weather are covered by paragraph 9.6.2.1 above. If the Contractor believes that the completion of the Work is delayed by a circumstance other than for changes directed to the Work or weather, they shall give the ODR written notice, stating the nature of the delay and the activities potentially affected, within five (5) calendar days after the onset of the event or circumstance giving rise to the excusable delay. Provide sufficient written evidence to document the delay. In the case of a continuing cause of delay, only one **notice of delay** is necessary. State claims for extensions of time in numbers of whole or half calendar days.

9.9.1 Within ten (10) calendar days after the cessation of the delay, the Contractor shall formalize its request for extension of time in writing to include a full analysis of the schedule impact of the delay and substantiation of the excusable nature of the delay. All Changes to the Contract Time or made as a result of such claims is by Change Order, as set forth in Article 11.

9.9.2 No extension of time releases the Contractor or the Surety furnishing a performance or payment bond from any obligations under the contract or such a bond. Those obligations remain in full force until the discharge of the Contract.

9.9.3 **Contents of Time Extension Requests.** Provide with each Time Extension Request a quantitative demonstration of the impact of the delay on Project completion time, based on the Work Progress Schedule. Include with Time Extension Requests a reasonably detailed narrative setting forth:

9.9.3.1 The nature of the delay and its cause; the basis of the Contractor's claim of entitlement to a time extension.

9.9.3.2 Documentation of the actual impacts of the claimed delay on the critical path indicated in the Contractor's Work Progress Schedule, and any concurrent delays.

9.9.3.3 Description and documentation of steps taken by the Contractor to mitigate the effect of the claimed delay, including, when appropriate, the modification of the Work Progress Schedule.

9.9.4 **Owner's Response.** The Owner will respond to the Time Extension Request by providing to the Contractor written notice of the number of days granted, if any, and giving its reason if this number differs from the number of days requested by the Contractor.

9.9.4.1 The Owner will not grant time extensions for delays that do not affect the Contract Completion Date.

9.9.4.2 The Owner will respond to each properly submitted Time Extension Request within fifteen (15) calendar days following receipt. If the Owner cannot reasonably make a determination about the Contractor's entitlement to a time extension within that time, the Owner will notify the Contractor in writing. Unless otherwise agreed by the Contractor, the Owner has no more than fifteen (15) additional calendar days to prepare a final response. If the Owner fails to respond within forty-five (45) calendar days from the date the Time Extension Request is received, the Contractor is entitled to a time extension in the amount requested.

9.10 **Failure to Complete Work Within the Contract Time.** TIME IS OF THE ESSENCE OF THIS CONTRACT. The Contractor's failure to Substantially Complete the Work within the Contract Time or to achieve final completion as required will cause damage to the Owner. These damages may be liquidated by agreement of the Contractor and the Owner, as set forth in the Contract Documents.

9.11 **Liquidated Damages.** The Owner may collect Liquidated Damages due from the Contractor directly or indirectly by reducing the contract sum in the amount of Liquidated Damages stated in the Contract Documents.

Article 10. Payments

10.1 **Schedule of Values.** The Contractor shall submit to the ODR and the AE for acceptance a Schedule of Values, or Work Breakdown, accurately itemizing material and labor for the various classifications of the Work based on the organization of the specification sections and using the same activity names and terms as the Work Progress Schedule. The accepted Schedule of Values will be the basis for the progress payments under the Contract.

10.1.1 No progress payments will be made prior to receipt and acceptance of the Schedule of Values, provided in such detail as required by the ODR, and submitted not less than twenty-one calendar (21) days prior to the first request for payment. The Schedule of Values shall follow the order of trade divisions of the specifications and include costs for general conditions, fees, expenditures from Owner's Construction Contingency, and expenditures from Owner's Project Allowances, if applicable, so that the sum of the items will equal the contract price. As appropriate, assign each item labor and/or material values, the subtotal thereof equaling the value of the work in place when complete.

10.1.2 The Contractor shall retain a copy of all worksheets used in preparation of its bid or proposal, supported by a notarized statement that the worksheets are true and complete copies of the documents used to prepare the bid or proposal. Make the worksheets available to the ODR at the time of Contract execution. Thereafter grant the Owner during normal business hours access to said notarized copy of worksheets at any time during the period commencing upon execution of the Contract and ending one year after final payment.

10.2 **Progress Payments.** The Contractor will receive periodic progress payments for Work performed, materials in place, suitably stored on site, or as otherwise agreed to by the Owner and the Contractor. Payment is not due until receipt by the ODR or his designee of a correct and complete Pay Application in electronic and/or hard copy format as set forth in Supplementary General Conditions, Special Conditions or Division 1 Specifications, and certified by the AE. Progress payments are made provisionally and do not constitute acceptance of work not in accordance with the Contract Documents. The Owner will not process progress payment applications for Change Order work until all parties execute the Change Order.

10.2.1 **Preliminary Pay Worksheet** once each month that a progress payment is to be requested, the Contractor shall submit to the Architect/Engineer and the ODR a complete, clean copy of a preliminary pay worksheet or Preliminary Pay Application, to include the following:

10.2.1.1 The Contractor's estimate of the amount of Work performed, labor furnished and materials incorporated into the Work, using the established Schedule of Values.

10.2.1.2 An updated Work Progress Schedule including the Executive Summary and all required schedule reports.

10.2.1.3 Small Business Subcontracting Plan reports

10.2.1.4 Such additional documentation as Owner may require as set forth in the Supplementary General Conditions or elsewhere in the Contract Documents.

10.2.2 **Contractor's Application for Progress Payment.** As soon as practicable, but in no event later than seven days after receipt of the Preliminary Pay Worksheet, the AE and ODR will meet with the Contractor to review the Preliminary Pay Worksheet and to observe the condition of the Work. Based on this review, the ODR and the AE may require modifications to the Preliminary Pay Worksheet prior to the submittal of an application for progress payment, and will promptly notify the Contractor of revisions necessary for approval. As soon as practicable, the Contractor shall submit its Invoice on the appropriate and completed form, reflecting the required modifications to the Schedule of Values required by the AE and/or ODR. Attach all additional

documentation required by the ODR and/or AE, as well as an affidavit affirming that all payrolls, bills for labor, materials, equipment, subcontracted work and other indebtedness connected with the Contractor's invoice are paid or will be paid within the time specified in Texas Government Code Chapter 2251. No invoice is complete unless it fully reflects all required modifications, and attaches all required documentation including the Contractor's affidavit.

10.2.3 Certification by Architect/Engineer. Within five days or earlier following the AE's receipt of the Contractor's formal invoice, the AE will review the application for progress payment for completeness, and forward to the ODR. The AE will certify that the application is complete and payable, or that it is incomplete, stating in particular what is missing. If the Invoice is incomplete, the Contractor shall make the required corrections and resubmit the Invoice for processing.

10.3 Owner's Duty to Pay. The Owner has no duty to pay the Contractor except on receipt by the ODR of; 1) a complete Invoice certified by the AE and 2) the Contractor's updated Work Progress Schedule, and 3) confirmation that the Contractor's as-built documentation at the site is kept current.

10.3.1 Payment for stored materials and/or equipment confirmed by the Owner and AE to be on-site or otherwise properly stored may be limited to 85 percent of the invoice price or 85 percent of the scheduled value for the materials or equipment, whichever is less.

10.3.2 Retainage. The Owner will withhold from each progress payment, as retainage, five percent (5%) of the total earned amount, the amount authorized by law, or as otherwise set forth in the Supplementary General Conditions. Retainage is managed in conformance with Texas Government Code Chapter 2252, Government Code, subchapter B.

10.3.2.1 The Contractor shall provide written consent of its Surety for any request for reduction or release of retainage.

10.3.2.2 The Project must be Substantially Complete before the Owner will consider a retainage reduction or release.

10.3.3 Price Reduction to Cover Loss. The Owner may reduce any Periodic Invoice, or application for Progress Payment, prior to payment to the extent necessary to protect the Owner from loss on account of actions of the Contractor including, but not limited to:

10.3.3.1 Defective or incomplete Work not remedied.

10.3.3.2 Damage to Work of a separate Contractor.

10.3.3.3 Failure to maintain scheduled progress or reasonable evidence that the Work will not be completed within the Contract Time.

10.3.3.4 Persistent failure to carry out the Work in accordance with the Contract Documents.

10.3.3.5 Reasonable evidence that the Work cannot be completed for the unpaid portion of the contract sum.

10.3.3.6 Assessment of fines for violations of Prevailing Wage Rate law; or

10.3.3.7 Failure to include the appropriate amount of retainage for that periodic progress payment.

10.3.4 Title to all material and Work covered by progress payments transfers to the Owner upon payment.

10.3.4.1 Transfer of title to Owner does not relieve the Contractor of the sole responsibility for the care and protection of materials and Work upon which payments have been made until final acceptance of the entire Work, or the restoration of any damaged Work, or waive the right of the Owner to require the fulfillment of all the terms of the Contract.

10.4 **Progress payments to the Contractor** do not release the Contractor or its surety from any obligations under this Contract.

10.4.1 Upon the Owner's request, the Contractor shall furnish proof of the status of Subcontractor's accounts in a form acceptable to the Owner.

10.4.2 Pay estimate certificates must be signed by a corporate officer or a representative duly authorized by the Contractor.

10.4.3 Provide copies of bills of lading, invoices, delivery receipts or other evidence of the location and value of such materials in requesting payment for materials.

10.4.4 For purposes of Tex. Gov't Code § 2251.021 (a) (2), the date the performance of service is complete is the date when the Owner's representative approves the application for payment.

10.5 **Off-Site Storage.** With prior approval by the Owner and in the event Contractor elects to store materials at an off-site location, abide by the following conditions, unless otherwise agreed to in writing by the Owner.

10.5.1 Store materials in a Bonded Commercial Warehouse.

10.5.2 Provide separate Insurance Coverage adequate not only to cover materials while in storage, but also in transit from the off-site storage areas to the Project site. Copies of duly authenticated Certificates of Insurance, made out to insure the State Agency which is signatory to the contract, must be filed with the Owner's representative.

10.5.3 Inspection by Owner's representative is allowed at any time. The Owner's Inspectors must be satisfied with the security, control, maintenance, and preservation measures.

10.5.4 Materials for this Project are physically separated and marked for the Project in a sectioned-off area. Only materials which have been approved through the submittal process are to be considered for payment.

10.5.5 Owner reserves the right to reject materials at any time prior to final acceptance of the complete Contract if they do not meet Contract requirements regardless of any previous progress payment made.

10.5.6 With each monthly payment estimate, submit a report to the ODR, AE, and Inspector listing the quantities of materials already paid for and still stored in the off-site location.

10.5.7 Make warehouse records, receipts and invoices available to Owner's representatives, upon request, to verify the quantities and their disposition.

10.5.8 In the event of Contract termination or default by Contractor, the items in storage off-site, upon which payment has been made, will be promptly turned over to Owner or Owner's agents at a location near the jobsite as directed by the ODR. The full provisions of Performance and Payment Bonds on this Project cover the materials off-site in every respect as though they were stored on the Project Site.

Article 11. Changes

11.1 **Change Orders.** A Change Order issued after execution of the Contract is a written order to the Contractor, signed by the ODR, the Contractor, and the Architect/Engineer, authorizing a change in the Work or an adjustment in the Contract Sum or the Contract Time. The Contract Sum and the Contract Time can only be changed by Change Order. A Change Order signed by the Contractor indicates his agreement with it, including the adjustment in the Contract Sum and/or the Contract Time. The ODR may issue written authorization for the Contractor to proceed with work of a change order in advance of final execution by all parties. ***In the absence of an agreement with the Contractor on a Change Order, the Owner may issue a Construction Change Directive that will have the full force and effect of a contract modification. The issuance of a Construction Change Directive does not prejudice the Contractor's rights to make claims or to appeal disputed matters under terms of the Contract.***

11.1.1 The Owner, without invalidating the Contract, ***and without approval of the Contractor's Surety,*** may order changes in the Work within the general scope of the Contract consisting of additions, deletions or other revisions, and the Contract Sum and the Contract Time will be adjusted accordingly. All such changes in the Work shall be authorized by Change Order, and shall be performed under the applicable conditions of the Contract Documents. If such changes cause an increase or decrease in the Contractor's cost of, or time required for, performance of the Contract, an equitable adjustment shall be made and confirmed in writing in a Change Order.

11.1.2 The parties acknowledge that the specifications and drawings may not be complete or free from errors, omissions or imperfections and that they may require changes or additions in order for the work to be completed to the satisfaction of Owner. Therefore, and notwithstanding any other provisions in this Contract, the parties agree that any errors, omissions or imperfections in the specifications and drawings, or any changes in or additions to them or to the work ordered by Owner and any resulting delays in the work or increases in Contractor's costs and expenses, shall not constitute or give rise to any claim, demand or cause of action of any nature whatsoever in favor of Contractor, whether for breach of contract, *quantum meruit*, or otherwise; provided, however, that Owner shall be liable to Contractor for the sum stated to be due Contractor in any Change Order approved and signed by both parties. The parties agree that the Change Order sum, together with any extension of time contained in the Change Order, shall constitute full compensation to Contractor for all costs, expenses and damages to Contractor, whether direct, consequential or otherwise that are incident to, arise out of, or result directly or indirectly from or indirectly from the work performed by Contractor under such Change Order.

11.1.3 Procedures for administration of Change Orders shall be established by the Owner and stated in Supplementary General Conditions, Special Conditions, or elsewhere in the Contract Documents.

11.1.4 Except as provided above, no order, oral statement, or direction of the Owner or his duly appointed representative shall be treated as a change under this article or entitle the Contractor to an adjustment.

11.1.5 The Contractor agrees that the Owner or any of its duly authorized representatives shall have access and the right to examine any directly pertinent books, documents, papers, and records of the Contractor. Further, the Contractor agrees to include in all its subcontracts a

provision giving the Owner or any of its duly authorized representatives access to and the right to examine any directly pertinent books, documents, papers and records of any Subcontractor relating to any claim arising from this Contract, whether or not the Subcontractor is a party to the claim. The right of access and examination described herein shall continue for the duration of any claims brought under the Disputes article of the Contract, litigation, or the settlement of claims arising out of the performance of this Contract until final disposition of such claims, appeals or litigation.

11.2 Unit Prices. The Contract Documents may require the Contractor to provide certain work or materials on the basis of unit prices. If the quantity originally contemplated in determining any unit price is *materially* changed such that application of the agreed unit price to the actual quantity of work required will cause substantial inequity to the Owner or the Contractor, the applicable unit price shall be equitably adjusted as provided in the Special Conditions or as agreed to by the parties and incorporated into Change Order.

11.3 Claims for Additional Costs

11.3.1 The Contractor shall provide written notice to the Owner and the Architect/Engineer within ninety (90) days of the occurrence of any event or the discovery of any condition that the Contractor claims will cause an increase in the Contract Sum or Contract Time that is not related to a requested change. The Contractor shall not proceed with any work for which it will assert a claim for additional cost or time before providing the written notices, except for emergency situations governed by Article 7.3. Failure to provide the required notices is sufficient grounds for rejecting any claim for an increase in the Contract Sum or the Contract Time arising from the event or the condition. Any adjustment in the Contract Sum or Contract Time for any additional Work shall be authorized by Change Order.

11.3.2 The notice provisions of Article 11.3.1 apply to, but are not limited to, any claims for additional cost or time brought by the Contractor as a result of: 1) any written interpretation of the Contract Documents, 2) any order by the Owner to stop the Work pursuant to Article 14 where the Contractor was not at fault, or 3) any written order for a minor change in the Work issued pursuant to Article 11.4.

11.3.3 Should the Contractor or his Subcontractor fail to call attention of the AE to obvious discrepancies or omissions in the Bid/Proposal Documents during the pre-bid/pre-proposal period, but claim additional costs for corrective work after contract award, the Owner may assume intent to circumvent competitive bidding for necessary corrective work. In such case, the Owner may choose to let a separate contract for the corrective work, or issue a Unilateral Change Order to require performance by the Contractor. Claims for time extensions or for extra cost resulting from delayed notice of contract document discrepancies or omissions will not be considered by the Owner.

11.4 Minor Changes. The AE, with concurrence of the ODR, will have authority to order minor changes in the Work not involving an adjustment in the Contract Sum or an extension of the Contract Time. Such changes shall be effected by written order which the Contractor shall carry out promptly and record on as-built record documents.

11.5 Concealed Site Conditions. If, in the performance of the Contract, subsurface, latent or concealed conditions at the site are found to be materially different from the information included in the bid/proposal documents, or if unknown conditions of an unusual nature are disclosed differing materially from the conditions usually inherent in work of the character shown and specified, the ODR and the Architect/Engineer shall be notified in writing of such conditions before they are disturbed. Upon such notice, or upon its own observation of such conditions, the Architect/Engineer, with the approval of the ODR, will promptly make such changes in the Drawings and Specifications as they deem necessary to conform to the different conditions, and any increase or decrease in the cost of the Work, or in the time

within which the Work is to be completed, resulting from such changes will be adjusted by Change Order, subject to the prior approval of the ODR.

11.6 Extension of Time. All Changes to the Contract Time shall be made as a consequence of requests as required under Article 9.6, and as documented by Change Order as provided under Article 11.1.

11.7 Administration of Change Order Requests. All changes in the Contract shall be administered in accordance with procedures approved by the Owner, and when required make use of such electronic information management as the owner may employ.

11.7.1 Routine changes in the Construction Contract shall be formally initiated by the Architect/Engineer by means of a Change Order Request form detailing requirements of the proposed change for pricing by the Contractor. This action may be preceded by communications between the Contractor, AE and ODR concerning the need and nature of the change, but such communications shall not constitute a basis for beginning the proposed Work by the Contractor. Except for emergency conditions described below, approval of the Contractor's cost proposal by the Architect/Engineer and ODR will be required for authorization to proceed with the Work being changed. The Owner will not be responsible for the cost of work changed without prior approval and the Contractor may be required to remove work so installed.

11.7.2 Any unexpected circumstance which necessitates an immediate change in order to avoid a delay in progress of the Work may be expedited by verbal communication and authorization between the Contractor and Owner, with written confirmation following within twenty-four (24) hours. A limited scope not-to-exceed estimate of cost and time will be requested prior to authorizing Work to proceed. Should the estimate be impractical for any reason, the ODR may authorize the use of detailed cost records of such work to establish and confirm the actual costs and time for documentation in a formal Change Order.

11.7.3 Emergency changes to save life or property may be initiated by the Contractor alone (see Article 7.3) with the claimed cost and/or time of such work to be fully documented as to necessity and detail of the reported costs and/or time.

11.7.4 *The method of incorporating approved changes into the parameters of the accepted Schedule of Values must be coordinated and administered in a manner acceptable to the ODR.*

11.8 Pricing Change Order Work

11.8.1 All proposed costs for changes in the work must be supported by itemized accounting of material, equipment and associated itemized installation costs in sufficient detail, following the outline and organization of the established Schedule of Values, to permit analysis by the AE and ODR using current estimating guides and/or practices. All changes in the work are subject to audit by Owner or its representatives at any time in accordance with the Contract Documents, and sums due to the Contractor for changes in the work may be adjusted lower as a result of such audit.

11.8.1.1 Photocopies of Subcontractor and vendor proposals shall be furnished unless specifically waived by the ODR.

11.8.1.2 Contractor shall provide written response to change request within twenty-one (21) calendar days of receipt.

11.8.1.3 If the parties cannot agree on an equitable adjustment for labor hours attributable to a change, they shall use the Means Facility Cost Data as a guide for labor hours as a basis of negotiation.

11.8.1.4 If the parties cannot agree on an equitable adjustment for equipment rental charges attributable to a change, they shall use the Rental Rate Blue Book for Construction Mobilization as a basis of negotiation.

11.8.2 The amounts that the Contractor and/or its Subcontractors add to a Change Order for profit and overhead will also be considered by the Owner before approval is given. The amounts established hereinafter are the maximums that are acceptable to the Owner.

11.8.2.1 For work performed by its forces, the Contractor will be allowed their actual costs for materials, the total amount of actual wages paid for labor, the total actual cost paid for state and federal payroll taxes and for Worker's Compensation. Any additional insurance or bond premium costs shall only be allowed if the change results in a verifiable increase in the premiums that must be paid by the Contractor. To the total of the above costs, the Contractor will be allowed to add a percentage as noted below to cover overhead and profit combined. Overhead shall be considered to include insurance other than mentioned above, field and office supervisors and assistants, including safety and scheduling personnel, use of small tools, incidental job burdens and general Home Office expenses, all other general conditions/general requirements costs, and no separate allowance will be made therefor. Allowable percentages for overhead and profit on changes will not exceed 15 percent if the total cost of self-performed work is less than or equal to \$10,000, will not exceed 10 percent if the total cost of self-performed work is between \$10,000 and \$20,000, and will not exceed 7.5 percent if the total cost of self-performed work is over \$20,000, for any specific change priced.

11.8.2.1.1 On contracts based on a Guaranteed Maximum Price (GMP), the CM-at-Risk or Design Build Firm shall NOT be entitled to a percentage mark-up on any change order work unless the Change Order increases the Guaranteed Maximum Price. CM-at-Risk or Design Build firms will therefore not be permitted any markups for overhead and profit (including General Conditions or CM Construction Phase Fee), on self-performed work funded from Owner's Construction Contingency or Owner's Project Allowances.

11.8.2.2 For subcontracted Work each affected Subcontractor shall figure its costs, overhead and profit, subject to the same calculation and markup limitations described for Contractor self performed work in 11.8.2.1, above. The total amount of combined markup for overhead and profit, for the subcontractor and the Contractor shall not, in any case, exceed 15%.

11.8.2.3 On changes involving both additions and deletions, markups will be allowed only on the net addition, and in accordance with the markup and calculation provisions above. The Owner does not accept and will not pay for additional contract cost identified as indirect, consequential, or as damages caused by delay.

11.9 **Owner's Construction Contingency**

11.9.1 Owner's Construction Contingency is a contingency fund created by Owner as part of the Contract Sum to cover the cost of unforeseen conditions that that develop during the Construction Phase. Expenditures from the Owner's Construction Contingency must be approved in writing by the Owner by CEA.

11.9.2 The Owner's Construction Contingency may not be used for Contractor rework, cost increases caused by lack of coordination or communication with the Project Architect or trade Subcontractors.

11.9.3 Proposals for expenditures from the Owner's Construction Contingency must be requested by a Contingency Expenditure Proposal (CEP) and the CEP must conform to the same documentation requirements as are required for Change Order Proposals in Section 11.8.1.

11.9.4 For changes funded from Owner's Construction Contingency, the Contractor shall not be entitled to any markup for overhead or profit, regardless of whether the work is self-performed or performed by subcontractors. For work performed by subcontractors and funded from the Owner's Construction Contingency, the subcontractors will be allowed their actual costs for materials, the total amount of actual wages paid for labor, the total actual cost paid for state and federal payroll taxes and for Worker's Compensation. To the total of the above costs, the subcontractor will be allowed to add a percentage as noted below to cover overhead and profit combined. Overhead shall be considered to include insurance, field and office supervisors and assistants, including safety and scheduling personnel, use of small tools, incidental job burdens and general Home Office expenses, all other general conditions/general requirements costs, and no separate allowance will be made therefor. Allowable percentages for overhead and profit on changes will not exceed 15 percent if the total cost of the work is less than or equal to \$10,000, will not exceed 10 percent if the total cost of the work is between \$10,000 and \$20,000, and will not exceed 7.5 percent if the total cost of the work is over \$20,000, for any specific change priced.

11.9.5 The determination of whether changes in the work are funded from the Owner's Construction Contingency by a CEA or by Change Order will be at the Owner's sole discretion.

11.9.6 The balance of any remaining Owner's Construction Contingency funds belong to the Owner and shall be credited to the Owner at the end of the Project by deductive Change Order, including a credit for overhead and profit on the unused funds.

11.10 Owner's Project Allowances

11.10.1 As the Drawings and Specifications may not be finished at the time the Contract is awarded, the Contractor shall provide amounts for the Owner's Project Allowances in the Contract Sum. Allowances shall be limited to use for items which require further development of the Drawings and Specifications by the Architect that is consistent with the Contract Documents and reasonably inferable therefrom. Such further development does not include such things as changes in scope, systems, kinds and quality of materials, finishes or equipment, all of which, if required, shall be incorporated by Contingency Expenditure Authorization (CEA) or Change Order.

11.10.2 Proposals for expenditures from the Owner's Project Allowances must be requested by an Allowance Expenditure Proposal (AEP) and the AEP must conform to the same documentation requirements as are required for Change Order Proposals in Section 11.8.1.

11.10.3 For changes funded from Owner's Project Allowances, the Contractor shall not be entitled to any markup for overhead or profit, regardless of whether the work is self-performed or performed by subcontractors. For work performed by subcontractors and funded from the Owner's Project Allowances, the subcontractors will be allowed their actual costs for materials, the total amount of actual wages paid for labor, the total actual cost paid for state and federal payroll taxes and for Worker's Compensation. To the total of the above costs, the subcontractor will be allowed to add a percentage as noted below to cover overhead and profit combined. Overhead shall be considered to include insurance, field and office supervisors and assistants, including safety and scheduling personnel, use of small tools, incidental job burdens and general Home Office expenses, all other general conditions/general requirements costs, and no separate allowance will be made therefor. Allowable percentages for overhead and profit on changes will not exceed 15 percent if the

total cost of the work is less than or equal to \$10,000, will not exceed 10 percent if the total cost of the work is between \$10,000 and \$20,000, and will not exceed 7.5 percent if the total cost of the work is over \$20,000, for any specific change priced.

11.10.4 The balance of any remaining Owner's Project Allowances funds belong to the Owner and shall be credited to the Owner at the end of the Project by deductive Change Order, including a credit for any corresponding overhead and profit calculated on such unused funds.

Article 12. Project Completion and Acceptance

12.1 Closing Inspections

12.1.1 **Substantial Completion Inspection.** When the Contractor considers the entire Work or part thereof Substantially Complete, it shall notify the ODR in writing that the Work will be ready for Substantial Completion Inspection on a specific date. The Contractor shall include with this notice the Contractor's Punchlist to indicate that it has previously inspected all the Work associated with the request for inspection, has corrected items where possible, and includes all items scheduled for completion or correction prior to final inspection. The failure to include any items on this list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents. If any of the items on this list prevents the building from the use to which it is intended, the Contractor shall not request a Substantial Completion Inspection. The Owner and its representatives will review the list of items and schedule the requested inspection, or inform the Contractor in writing that such an inspection is premature because the Work is not sufficiently advanced or conditions are not as represented on the Contractor's list.

12.1.1.1 Prior to the Substantial Completion Inspection, the Contractor shall furnish a copy of its marked-up As-Built Drawings and a preliminary copy of each instructional manual, maintenance and operating manual, parts catalog, wiring diagrams, spare parts, specified written warranties and like publications or parts for all installed equipment and like items. Delivery of these items is a prerequisite for requesting the Substantial Completion Inspection.

12.1.1.2 On the date requested by Contractor, or as mutually agreed upon, the AE, ODR, the Contractor and other Owner representatives as determined by the Owner, will jointly attend the Substantial Completion Inspection, which shall be conducted by the ODR or their delegate. If the ODR **concurs with the AE and Contractor in a determination** that the Work is Substantially Complete, the ODR will issue a Certificate of Substantial Completion to be signed by the AE, Owner and Contractor, establishing the date of Substantial Completion **and identifying responsibilities for security, maintenance, and insurance.** AE will provide with this certificate a list of punchlist items (the Pre-Final Punchlist) for completion prior to final inspection. This list may include items in addition to those on the Contractor's punchlist, which the inspection team deems necessary to correct or complete prior to Final Inspection. If the Owner occupies the facility upon determination of Substantial Completion, the Contractor shall complete all corrective Work at the convenience of the Owner, without disruption to Owner's use of the facility for its intended purposes.

12.1.2 **Final Inspection.** The Contractor shall complete the list of items identified on the Pre-Final Punchlist prior to requesting a Final Inspection. Unless otherwise specified, or otherwise agreed in writing by the parties as documented on the Certificate of Substantial Completion, the Contractor shall complete and/or correct all Work within thirty (30) days of the Substantial Completion date. Upon completion of the Pre-Final Punchlist work, the Contractor shall give written notice to the ODR and AE that the Work will be ready for Final Inspection on a specific

date. The Contractor shall accompany this notice with a copy of the updated Pre-Final Punchlist indicating resolution of all items. On the date specified or as soon thereafter as is practicable, the ODR, AE and the Contractor will inspect the Work. The AE will submit to the Contractor a Final Punchlist of open items that the inspection team requires corrected or completed before final acceptance of the Work.

12.1.2.1 Correct or complete all items on the Final Punchlist before requesting Final Payment. Unless otherwise agreed to in writing by the parties, complete this work within seven (7) days of receiving the Final Punchlist. Upon completion of the Final Punchlist, notify the AE and ODR in writing stating the disposition of each Final Punchlist item. The AE, Owner and Contractor shall promptly inspect the completed items. When the Final Punchlist is complete, and the Contract is fully satisfied according to the Contract Documents the ODR will issue a certificate establishing the date of Final Completion. Completion of all Work is a condition precedent to the Contractor's right to receive Final Payment.

12.1.3 **Annotation.** Any Certificate issued under this Article may be annotated to indicate that it is not applicable to specified portions of the Work, or that it is subject to any limitation as determined by the Owner.

12.1.4 **Purpose of Inspection.** Inspection is for determining the completion of the Work, and does not relieve the Contractor of its overall responsibility for completing the Work in a good and workmanlike manner, in compliance with the Contract. Work accepted with incomplete punchlist items or failure of the Owner or other parties to identify Work that does not comply with the Contract Documents or is defective in operation or workmanship does not constitute a waiver of the Owner's rights under the Contract or relieve the Contractor of its responsibility for performance or warranties.

12.1.5 **Additional Inspections**

12.1.5.1 If the Owner's inspection team determines that the Work is not Substantially Complete at the Substantial Completion Inspection, the ODR or AE will give the Contractor written notice listing cause(s) of the rejection. The **Contractor** will set a time for completion of incomplete or defective work **as acceptable to the ODR**. Complete or correct all work so designated prior to requesting a second Substantial Completion Inspection.

12.1.5.2 If the Owner's inspection team determines that the Work is not complete at the Final Inspection, the ODR or the AE will give the Contractor written notice listing the cause(s) of the rejection. The **Contractor** will set a time for completion of incomplete or defective work **as acceptable to the ODR**. The Contractor shall complete or correct all Work so designated prior to again requesting a Final Inspection.

12.1.5.3 The Contract contemplates three (3) comprehensive inspections: the Substantial Completion Inspection, the Final Completion Inspection, and the Inspection of Completed Final Punchlist Items. The cost to the Owner of additional inspections resulting from the Work not being ready for one or more of these inspections is the responsibility of the Contractor. The Owner may issue a Unilateral Change Order deducting these costs from Final Payment. Upon the Contractor's written request, the Owner will furnish documentation of any costs so deducted. Work added to the Contract by Change Order after Substantial Completion Inspection is not corrective work for purposes of determining timely completion, or assessing the cost of additional inspections.

12.1.6 **Phased Completion.** The Contract may provide, or Project conditions may warrant, as determined by the ODR, that designated elements or parts of the Work be completed in phases. Where phased completion is required or specifically agreed to by the parties, the provisions of the Contract related to Closing Inspections, Occupancy and Acceptance apply independently to each designated element or part of the Work. For all other purposes, unless otherwise agreed by the parties in writing, Substantial Completion of the Work as a whole is the date on which the last element or part of the Work completed receives a Substantially Completion certificate. Final Completion of the Work as a whole is the date on which the last element or part of the Work completed receives a Final Completion certificate *or notice*.

12.2 **Owner's Right of Occupancy.** The Owner may occupy or use all or any portion of the Work following Substantial Completion, or at any earlier stage of completion. Should the Owner wish to use or occupy the Work, or part thereof, prior to Substantial Completion, the ODR will notify the Contractor in writing *and identify responsibilities for security, maintenance, and insurance*. Work performed on the premises by third parties on the Owner's behalf does not constitute occupation or use of the Work by the Owner for purposes of this Article. All Work performed by the Contractor after occupancy, whether in part or in whole, shall be at the convenience of the Owner so as to not disrupt Owner's use of, or access to occupied areas of the Project.

12.3 **Acceptance & Payment**

12.3.1 **Request for Final Payment.** Following the certified completion of all Work, including all punch list items, cleanup, and the delivery of record documents, the Contractor shall submit a certified Application for Final Payment that includes all sums held as retainage and forward to the AE and the ODR for review and approval.

12.3.2 **Final Payment Documentation.** Prior to or with the Application for Final Payment, Contractor shall submit final copies of all close-out documents, maintenance and operating instructions, guarantees and warranties, certificates, record documents and all other items required by the Contract. The Contractor shall submit Consent of Surety to Final Payment and an affidavit that all payrolls, bills for materials and equipment, subcontracted work and other indebtedness connected with the Work, except as specifically noted, are paid, will be paid, or otherwise satisfied within the period of time required by Texas Government Code Chapter 2251. The Contractor shall furnish documentation establishing payment or satisfaction of all such obligations, such as receipts, releases and waivers of claims and liens arising out of the Contract.

12.3.3 **Architect/Engineer Approval.** The AE will review a submitted Application for Final Payment promptly but in no event later than ten (10) days after its receipt. Prior to the expiration of this deadline, the AE will either 1) return the Application for Final Payment to Contractor with corrections for action and resubmission or 2) accept it, note their approval and send to Owner.

12.3.4 **Offsets and Deductions.** The Owner may deduct from the Final Payment all sums due from the Contractor. If the Certificate of Final Completion notes any Work remaining, incomplete, or defects not remedied, the Owner may deduct the cost of remedying such deficiencies from the Final Payment. On such deductions, the Owner will identify each deduction, the amount, and the explanation of the deduction on or by the 21st day after Owner's receipt of an approved Application for Final Payment. Such offsets and deductions shall be incorporated via a final Change Order, including Unilateral Change Order as may be applicable.

12.3.5 **Final Payment Due.** Final Payment is due and payable by the Owner, subject to all allowable offsets and deductions, on the 31st day following the Owner's approval of the Application for Payment. If the Contractor disputes any amount deducted by the Owner, the Contractor shall give notice of the dispute on or before the thirtieth (30th) day following receipt of Final Payment. Failure to do so will bar any subsequent claim for payment of amounts deducted.

12.3.6 **Effect of Final Payment.** Final Payment constitutes a waiver of all claims by the Owner, relating to the condition of the Work except those arising from:

12.3.6.1 Faulty or defective Work appearing after Substantial Completion (latent defects); and/or

12.3.6.2 Failure of the Work to comply with the requirements of the Contract Documents; and/or

12.3.6.3 Terms of any warranties required by the Contract, or implied by law; and/or

12.3.6.4 Claims arising from personal injury or property damage to third parties.

12.3.7 **Waiver of Claims.** *Submission of an Application for Final Payment by the Contractor* constitutes a waiver of all claims and liens by the Contractor except those specifically identified in writing and submitted to the ODR prior to the application for Final Payment.

12.3.8 **Effect on Warranty.** Regardless of approval and issuance of Final Payment, the Contract is not deemed fully performed by the Contractor and closed until the expiration of all warranty periods.

Article 13. Warranty & Guarantee

13.1 **Contractor's General Warranty and Guarantee.** Contractor warrants to the Owner that all Work is executed in accordance with the Contract, complete in all parts and in accordance with approved practices and customs, and of the best finish and workmanship. The Contractor further warrants that unless otherwise specified, all materials and equipment incorporated in the Work under the Contract are new. The Owner may, at its option, agree in writing to waive any failure of the Work to conform to the Contract, and to accept a reduction in the Contract Price for the cost of repair or diminution in value of the Work by reason of such defect. Absent such a written agreement, the Contractor's obligation to perform and complete the Work in accordance with the Contract Documents is absolute and is not waived by any inspection or observation by the Owner, Architect/Engineer or others, by making any progress payment or final payment, by the use or occupancy of the Work or any portion thereof by the Owner, at any time, or by any repair or correction of such defect made by the Owner.

13.2 **Warranty Correction Period.** Except as may be otherwise specified or agreed, the Contractor shall repair all defects in materials, equipment, or workmanship appearing within one year from the date of Substantial Completion of the Work. *If less than all of the Work is accepted as substantially complete (Partial Substantial Completion), the warranty period for the Work accepted begins on the date of Partial Substantial Completion, or as otherwise stipulated on the Certificate of Partial Substantial Completion for the Work.*

13.3 **Limits on Warranty.** Contractor's warranty and guarantee hereunder excludes defects or damage caused by:

13.3.1 Modification or improper maintenance or operation by persons other than Contractor, Subcontractors, or any other individual or entity for whom Contractor is not responsible, unless Owner is compelled to undertake maintenance or operation due to the neglect of the Contractor.

13.3.2 Normal wear and tear under normal usage after acceptance of the Work by the Owner.

13.4 **Events Not Affecting Warranty.** Contractor's obligation to perform and complete the Work in a good and workmanlike manner in accordance with the Contract Documents is absolute. None of the

following will constitute an acceptance of Work that is not in accordance with the Contract Documents or a release of Contractor's obligation to perform the Work in accordance with the Contract Documents:

13.4.1 Observations by Owner and/or AE.

13.4.2 Recommendation to pay any progress or final payment by AE.

13.4.3 The issuance of a certificate of Substantial Completion or any payment by Owner to Contractor under the Contract Documents.

13.4.4 Use or occupancy of the Work or any part thereof by Owner.

13.4.5 Any acceptance by Owner or any failure to do so.

13.4.6 Any review of a Shop Drawing or sample submittal; or

13.4.7 Any inspection, test or approval by others.

13.5 **Separate Warranties.** If a particular piece of equipment or component of the Work for which the contract requires a separate warranty is placed in continuous service before Substantial Completion, the Warranty Period for that equipment or component will not begin until Substantial Completion, regardless of any warranty agreements in place between suppliers and/or Subcontractors and the Contractor. The ODR will certify the date of service commencement in the Substantial Completion Certificate.

13.5.1 In addition to the Contractor's warranty and duty to repair, the Contractor expressly assumes all warranty obligations required under the Contract for specific building components and equipment.

13.5.2 The Contractor may satisfy any such obligation by obtaining and assigning to the Owner a complying warranty from a manufacturer, supplier, or Subcontractor. Where an assigned warranty is tendered and accepted by the Owner which does not fully comply with the requirements of the Contract, the Contractor remains liable to the Owner on all elements of the required warranty not provided by the assigned warranty.

13.6 **Correction of Defects.** Upon receipt of written notice from the Owner, or any agent of the Owner designated as responsible for management of the Warranty Period, of the discovery of a defect, the Contractor shall promptly remedy the defect(s), and provide written notice to the Owner and designated agent indicating action taken. In case of emergency where delay would cause serious risk of loss or damage to the Owner, or if the Contractor fails to remedy within 30 days, or within another period agreed to in writing, the Owner may correct the defect and be reimbursed the cost of remedying the defect from the Contractor or its Surety.

13.7 **Certification of No Asbestos Containing Materials or Work.** The Contractor shall ensure compliance with the Asbestos Hazard Emergency Response Act (AHERA– 40 CFR 763-99 (7)) from all Subcontractors and materials suppliers, and shall provide a notarized certification to the Owner that all equipment and materials used in fulfillment of their contract responsibilities are non Asbestos Containing building Materials (ACBM). This certification must be provided no later than the Contractor's application for Final Payment.

Article 14. Suspension and Termination

14.1 **Suspension of Work for Cause.** The Owner may, at any time without prior notice, suspend all or any part of the Work if the Owner determines it is necessary to do so to prevent or correct any condition

of the Work which constitutes an immediate safety hazard or which may reasonably be expected to impair the integrity, usefulness or longevity of the Work when completed.

14.1.1 The Owner will give the Contractor a written notice of suspension for cause, setting forth the reason for the suspension and identifying the Work suspended. Upon receipt of the notice, the Contractor shall immediately cease all activities related to the identified Work. As soon as practicable following the issuance of a suspension notice, the Owner will conduct an investigation into the circumstances giving rise to the suspension, and issue a written determination of the findings.

14.1.2 If the cause of the suspension is due to actions or omissions within the control of the Contractor, the Contractor will not be entitled to an extension of time for delay resulting from the suspension. If the cause of the suspension is something not within the control of the Contractor and the suspension will prevent the Contractor from completing the Work within the Contract Time, the suspension is an Excusable Delay and a reasonable Time Extension will be granted through a Change Order.

14.1.3 Suspension of work under this provision will be no longer than is reasonably necessary to remedy the conditions giving rise to the suspension.

14.2 **Suspension of Work for Owner's Convenience.** Upon seven (7) calendar days' written notice to the Contractor, the Owner may at any time without breach of the Contract suspend all or any portion of the Work for its own convenience. Upon resumption of the Work, if the suspension prevents the Contractor from completing the Work within the Contract Time, it is an Excusable Delay. A notice of suspension for convenience may be modified by the Owner at any time on seven (7) calendar Days written notice to the Contractor. If the Owner suspends the Work for its convenience for more than 60 consecutive calendar Days, the Contractor may elect to terminate the Contract pursuant to the provisions of the contract.

14.3 **Termination by Owner for Cause**

14.3.1 ***Upon thirty (30) days' written notice to the Contractor and its Surety,*** the Owner may, without prejudice to any right or remedy, terminate the employment of the Contractor and take possession of the site and of all materials, equipment, tools, construction equipment and machinery thereon owned by the Contractor, under any of the following circumstances:

14.3.1.1 Persistent or repeated failure or refusal, except during complete or partial suspensions of work authorized under the Contract, to supply enough properly skilled workmen or proper materials; and/or

14.3.1.2 Persistent disregard of laws, ordinances, rules, regulations or orders of any public authority having jurisdiction, including the ODR; and/or

14.3.1.3 Persistent failure to prosecute the work in accordance with the Contract, and to insure its completion within the time, or any approved extension thereof, specified in this Contract; and/or

14.3.1.4 Failure to remedy defective work condemned or rejected by the ODR; and/or

14.3.1.5 Failure to pay Subcontractors, laborers, and material suppliers; and/or

14.3.1.6 Persistent endangerment to the safety of labor or of the Work; and/or

14.3.1.7 Failure to supply or maintain statutory bonds or to maintain required insurance, pursuant to the contract; and/or

14.3.1.8 Any material breach of the Contract; and/or

14.3.1.9 The Contractor's insolvency, bankruptcy, or demonstrated financial inability to perform the work.

14.3.2 Failure by the Owner to exercise the right to terminate in any instance is not a waiver of the right to do so in any other instance.

14.3.3 Upon receipt of a termination notice, the Contractor or its Surety has thirty (30) days to cure the reasons for the termination or demonstrate to the satisfaction of the Owner that it is prepared to remedy to the condition(s) upon which the notice of termination was based. If the Owner is satisfied that the Contractor or its Surety can remedy the reasons for the termination and complete the Work as required, the notice of termination shall be rescinded in writing by the Owner and the Work shall continue without an extension of time.

14.3.4 If at the conclusion of the thirty (30) day cure period the Contractor or its Surety is unable to demonstrate to the satisfaction of the Owner its ability to remedy the reasons for termination, the Owner may ***immediately terminate the employment of the Contractor***, make alternative arrangements for completion of the Work and deduct the cost of completion from the unpaid Contract Sum.

14.3.4.1 Recoverable costs include additional Owner expenses for items such as AE services, other consultants, and contract administration.

14.3.5 The Owner will make no further payment to the Contractor or its Surety until all costs of completing the Work are paid. If the unpaid balance of the Contract Sum exceeds the costs of administering and finishing the Work, the Contractor will receive the excess funds. If costs of completing the Work exceed the unpaid balance of the Contract Sum, the Contractor or its Surety will pay the difference to the Owner.

14.3.5.1 This obligation for payment survives the termination of the Contract.

14.3.6 The Owner reserves the right, in a termination for cause, to take assignment of all contracts between the Contractor and its Subcontractors, vendors and suppliers. The ODR will promptly notify the Contractor of the contracts the Owner elects to assume. Upon receipt of such notice, the Contractor shall promptly take all steps necessary to effect such assignment.

14.4 **Termination for Convenience of Owner**. Upon written notice to the Contractor and the AE, the Owner may, without breach, terminate the Contract for any reason.

14.4.1 The notice will specify the effective date of contract termination. The notice may also contain instructions necessary for the protection, storage or decommissioning of incomplete work or for safety.

14.4.2 Upon receipt of the notice of termination, the Contractor shall immediately proceed with the following obligations:

14.4.2.1 Stop all Work.

14.4.2.2 Place no further subcontracts or orders for materials or services.

14.4.2.3 Terminate all subcontracts.

14.4.2.4 Cancel all materials and equipment orders as applicable.

14.4.2.5 Take appropriate action to protect and preserve all property related to this Contract which is in the possession of the Contractor.

14.4.3 When the Contract is terminated for the Owner's convenience, the Contractor may recover from the Owner payment for all Work executed *before the notice of termination along with the actual and reasonable cost of any additional work required to secure the Project, the Site and property related to the Contract following the notice of termination. The Contractor will not be entitled to recover any other costs or damages arising from the termination for convenience of the Owner including, but not limited to, claims for lost profits, overhead and profit on Work not performed, or lost business opportunities.*

14.5 **Termination By Contractor.** If the Work is stopped for a period of ninety (90) Days under an order of any court or other public authority having jurisdiction, or as a result of an act of government, such as a declaration of a national emergency making materials unavailable, through no act or fault of the Contractor or a Subcontractor or their agents or employees or any other persons performing any of the Work under a contract with the Contractor, then the Contractor may, upon thirty (30) additional days' written notice to the ODR, terminate the Contract and recover from the Owner payment for all Work executed *before the work stoppage and the actual and reasonable cost of securing the Project and property related to the Contract during the work stoppage. The Contractor will not be entitled to recover any other costs or damages arising from the work stoppage including, but not limited to, claims for lost profits, overhead and profit on Work not performed or lost business opportunities.* If the cause of the work stoppage is removed prior to the end of the thirty (30) day notice period, the Contractor may not terminate the Contract.

14.6 **Settlement on Termination.** Within one hundred eighty (180) days of the effective date of Contract termination for any reason, the Contractor shall submit a final termination settlement proposal to the Owner based upon recoverable costs as provided under the Contract. If the Contractor fails to submit a settlement proposal within the time allowed, the Owner may *unilaterally* determine the amount due to the Contractor because of the termination.

Article 15. Dispute Resolution

15.1 **Unresolved Contractor Disputes.** The dispute resolution process provided for in Texas Government Code Chapter 2260, shall be used by the Owner and the Contractor to attempt to resolve any claim for breach of contract made by the Contractor, that is not resolved under procedures described throughout the Uniform General Conditions, Supplemental Conditions, or Special Conditions of the Contract.

15.2 **Alternative Dispute Resolution Process.** The Owner may establish a dispute resolution process to be utilized in advance of that outlined in Texas Government Code Chapter 2260.

15.3 Before submitting any matter not resolved in the ordinary course of business to the dispute resolution process provided for in Texas Government Code Chapter 2260, the Contractor shall make a written request to the Owner's designated official in charge of construction contract administration for a determination of the matter in dispute. The written request shall clearly state the disputed issue and include or incorporate by specific reference all information or documents that the Contractor wants the official to consider in reaching his/her determination. The official shall issue a written notice of decision on the request. Within 30 days of the notice of decision, the Contractor may submit a request for reconsideration to the official that particularly states the factual and legal basis for the Contractor's

objections to the official's decision. The official will review his/her decision and consider the basis for reconsideration asserted in the request. The official will issue a written notice of decision following reconsideration which shall be final and conclusive on all matters except for claims of breach of contract which are then subject to the dispute resolution process provide by Chapter 2260.

15.4 ***Nothing herein shall hinder, prevent or be construed as a waiver of Owner's right to seek redress on any disputed matter in a court of competent jurisdiction.***

15.5 ***Nothing herein shall waive or be construed as a waiver of the Owner's sovereign immunity.***

Article 16. Miscellaneous

16.1 **Supplemental and Special Conditions.** When the Work contemplated by the Owner is of such a character that the foregoing Uniform General Conditions of the Contract cannot adequately cover necessary and additional contractual relationships, the Contract may include Supplemental and Special Conditions as described below:

16.1.1 Supplemental Conditions may describe the standard procedures and requirements of contract administration followed by a contracting agency of the State. Supplemental Conditions may expand upon matters covered by the Uniform General Conditions, where necessary, provided the expansion does not weaken the character or intent of the Uniform General Conditions. Supplemental Conditions are of such a character that it is to be anticipated that a contracting agency of the State will normally use the same, or similar, conditions to supplement each of its several Projects.

16.1.2 Special Conditions shall relate to a particular Project and be peculiar to that Project but shall not weaken the character or intent of the Uniform General Conditions.

16.2 **Federally Funded Projects.** On federally funded Projects, the Owner may waive, suspend or modify any Article in these Uniform General Conditions which conflicts with any federal statute, rule, regulation or procedure, where such waiver, suspension or modification is essential to receipt by the Owner of such federal funds for the Project. In the case of any Project wholly financed by federal funds, any standards required by the enabling federal statute, or any federal rules, regulations or procedures adopted pursuant thereto, shall be controlling.

16.3 **Internet-based Project Management.** The Owner will administer its design and construction management through the e-Builder Internet-based management. In such cases, the Contractor shall conduct communication through this media and perform all Project related functions utilizing this database. This includes correspondence, submittals, requests for information, vouchers or payment requests and processing, amendments, Change Orders and other administrative activities.

16.3.1 Accessibility And Administration.

16.3.1.1 Refer to Specification Section 01 36 00 in the Owner's Construction Project Division 1 Specifications for the Project Manager Software Requirements for the Project.

16.3.1.2 The Owner shall administer the software.

16.3.2 Training. When used, the Owner shall provide training to the Project team members.

HCC SAMPLE CONSTRUCTION CONTRACT

**CONTRACT BETWEEN HOUSTON COMMUNITY COLLEGE
And
(Awarded Contractor)
HCC Project No. IFB 18-XX**

This Contract ("Contract") is made by and between Houston Community College ("HCC," "Owner"), a public community college district organized under Chapter 130 of the Texas Education Code, and _____, hereinafter known as (the "Contractor"), whose address is _____ (individually, "Party" and collectively, "Parties"), effective as of _____ ("Effective Date").

WITNESSETH, that the Contractor and the Owner for the consideration hereinafter named agree as follows:

ARTICLE 1. SCOPE OF WORK: The Contractor shall furnish all of the materials and perform all of the work shown on the drawings and described in the specifications for the project entitled Spring Branch Campus HVAC Replacement for Houston Community College, IFB No. 18-XX ("Project"). These drawings and specifications prepared for Houston Community College by ESA, Energy Systems & Associates, Inc. [A/E] acting as and in these Contract Documents entitled the Project Architect. The Contractor shall do everything required by this Contract and the Contract Documents.

The Contract Documents for the Project are enumerated as follows:

UNIFORM GENERAL CONDITIONS	Exhibit 1
SPECIFICATIONS AND DRAWING LIST	Exhibit 2
DIVISION 01 SPECIFICATIONS	Exhibit 3
CONSRTRUCTION DRAWINGS	Exhibit 4
ARCHITECTURAL AMENDMENT NO. 1	Exhibit 5
BID PRICE FORM	Exhibit 6
PAYMENT BOND	Exhibit 7
PERFORMANCE BOND	Exhibit 8
CONTRACTOR'S BID or PROPOSAL	Exhibit 9
PREVAILING WASGE RATE SCHEDULE	Exhibit 10
CONTRACTOR/SUBCONTRACTOR PARTICIPATION FORM	Attachment A
SUBCONTRACTOR PAYMENT CERTIFICATION FORM	Attachment B
SUBCONTRACTOR PROGRESS ASSESSMENT FORM	Attachment C
SMALL BUSINESS DEVELOPMENT PROGRAM	Attachment D
ASSURANCE OF SBDP GOAL	Attachment E
POLICY ON UTILIZATION OF SMALL BUSINESS PROGRAM	Attachment F

ARTICLE 2. DEADLINE FOR SUBSTANTIAL COMPLETION: The Owner shall provide a Notice to Proceed in which a Date of Commencement of the Work shall be stated; such Date of Commencement shall be ten (10) or more Days after the date of the Notice to Proceed. The Contractor shall achieve Substantial Completion of the Work within one hundred twenty (120) Calendar Days following the Date of Commencement. This deadline may be extended by approved Change Orders. The deadline set forth for completion of the Work is an essential element of the Contract.

ARTICLE 3. THE CONTRACT SUM: The Owner shall pay the Contractor for performance of the Contract, subject to additions and deductions provided therein, the sum of _____ **dollars (\$X,XXX,XX.00)**, and make payment on account as hereinafter provided in the Contract Documents.

ARTICLE 4. SMALL BUSINESS DEVELOPMENT PROGRAM: The Owner has adopted Attachment D, Small Business Development Program, and Attachment F, Policy on Utilization of Small Business Program, ("Policy"), which is incorporated herein by reference. Contractor, as a provision of the Contract, must comply with the requirements of the Policy and adhere to the Small Business ("SB") Subcontracting Plan submitted with Contractor's Proposal and attached as Attachment A, Attachment B, Attachment C, and Attachment E. No changes to the SB Subcontracting Plan can be made by the Contractor without the prior written approval of the Owner in accordance with the Policy.

ARTICLE 5. LIQUIDATED DAMAGES: For each consecutive Calendar Day after the Deadline for Substantial Completion set forth in Article 2 above that any Work, including the correction of deficiencies found during the final testing and inspection, is not completed, the amount of zero dollars **(\$1,000.00)** per Calendar Day will be deducted from the money due or becomes due the Contractor, not as a penalty but as liquidated damages representing the parties' estimate at the time of Contract execution of the damages which the Owner will sustain for late completion.

ARTICLE 6. CERTIFICATION OF NO ASBESTOS CONTAINING MATERIALS OR WORK: The Contractor shall provide a certification statement, included with each materials submittal, stating that no asbestos containing materials or work is included within the scope of the proposed submittal.

The Contractor shall insure that Texas Department of Health licensed individuals, consultants or companies are used for any required asbestos work including asbestos inspection, asbestos abatement plans/specifications, asbestos abatement, asbestos project management and third-party asbestos monitoring.

The Contractor shall provide at Substantial Completion, a notarized affidavit to the Owner and the Architect stating that no asbestos containing materials or work was provided, installed, furnished or added to the Project.

The Contractor shall take whatever measures he deems necessary to insure that all employees, suppliers, fabricators, materialmen, subcontractors, or their assigns, comply with this requirement.

All materials used on this Project shall be certified as non Asbestos Containing Building Materials (ACBM). The Contractor shall insure compliance with the following acts from all of his subcontractors and assigns:

Asbestos Hazard Emergency Response Act (AHERA—40 CFR 763-99 (7));

National Emission Standards for Hazardous Air Pollutants (NESHAP—EPA 40 CFR 61, National Emission Standard for Asbestos;

Texas Asbestos Health Protection Rules (TAHRP—Tex. Admin. Code Title 25, Part 1, Ch. 295C, Asbestos Health Protection

Every subcontractor shall provide a notarized statement that no ACBM has been used, provided, or left on this Project.

The Contractor shall provide, in hard copy and electronic form, all necessary material safety data sheets (MSDS) of all products used in the construction of the Project to the Texas Department of Health licensed inspector or Project Architect or Engineer who will compile the information from the MSDS and, finding no asbestos in any of the product, make a certification statement.

At Final Completion the Contractor shall provide a notarized certification statement per TAC Title 25 Part 1, Ch. 295.34, par. c.1 that no ACBM was used during construction of the Project.

ARTICLE 7. ACCEPTANCE OF PROPOSAL OR AWARD OF CONTRACT: By signing this Contract, the undersigned certifies as follows:

Assignment. This Contract is a personal service contract for the services of Construction, and Contractor's interest in this Contract, duties hereunder and/or fees due hereunder may not be assigned or delegated to a third party without the Owner's written consent.

Records of expenses pertaining to Additional Services and services performed on the basis of a Worker Wage Rate or Monthly Salary Rate shall be kept on the basis of generally accepted accounting principles and in accordance with cost accounting standards promulgated by the Federal Office of Management and Budget Cost Accounting Standards Board and shall be available for audit by the Owner or the Owner's authorized representative on reasonable notice.

Family Code Child Support Certification. Pursuant to Section 231.006, Texas Family Code, Service Provider certifies that it is not ineligible to receive the award of or payments under this Contract and acknowledges that this Contract may be terminated and payment may be withheld if this certification is inaccurate.

Eligibility Certification. Pursuant to Section 2155.004, Texas Government Code, Service Provider certifies that the individual or business entity named in this Contract is not ineligible to receive the award of or payments under this Contract and acknowledges that this Contract may be terminated and payment withheld if this certification is inaccurate.

Franchise Tax Certification. A corporate or limited liability company Contractor certifies that it is not currently delinquent in the payment of any Franchise Taxes due under Chapter 171 of the Texas Tax Code, or that the corporation or limited liability company is exempt from the payment of such taxes, or that the corporation or limited liability company is an out-of-state corporation or limited liability company that is not subject to the Texas Franchise Tax, whichever is applicable.

Payment of Debt or Delinquency to the State. Pursuant to Sections 2107.008 and 2252.903, Texas Government Code, Contractor agrees that any payments owing to Contractor under this Contract may be applied directly toward any debt or delinquency that Contractor owes the State of Texas or any agency of the State of Texas regardless of when it arises, until such debt or delinquency is paid in full.

Entire Contract; Modifications. This Contract supersedes all prior Contracts, written or oral, between Contractor and Owner and shall constitute the entire Contract and understanding between the parties with respect to the Project. This Contract and each of its provisions shall be binding upon the parties and may not be waived, modified, amended or altered except by a writing signed by Contractor and Owner.

Captions. The captions of paragraphs in this Contract are for convenience only and shall not be considered or referred to in resolving questions of interpretation or construction.

Governing Law and Venue. This Contract and all of the rights and obligations of the parties and all of the terms and conditions shall be construed, interpreted and applied in accordance with and governed by and enforced under the laws of the State of Texas without reference to its conflicts of law provisions. The county where the Project is located, Houston, Texas, Harris County, shall be the sole place of venue for any legal action arising from or related to this Contract or the Project in which the Owner is a party.

Waivers. No delay or omission by either party in exercising any right or power arising from non compliance or failure of performance by the other party with any of the provisions of this Contract shall impair or constitute a waiver of any such right or power. A waiver by either party of any covenant or condition of this Contract shall not be construed as a waiver of any subsequent breach of that or of any other covenant or condition of the Contract.

Binding Effect. This Contract shall be binding upon and inure to the benefit of the parties and their respective permitted assigns and successors.

Appointment. Owner hereby expressly reserves the right from time to time to designate by notice to Contractor a representative(s) to act partially or wholly for Owner in connection with the performance of Owner's obligations. Contractor shall act only upon instructions from the designated representative(s) unless otherwise specifically notified to the contrary.

Records. Records of Contractor's costs, reimbursable expenses pertaining to the Project and payments shall be available to Owner or its authorized representative during business hours and shall be retained for four (4) years after final Payment or abandonment of the Project, unless Owner otherwise instructs Contractor in writing.

Notices. All notices, consents, approvals, demands, requests or other communications relied on by the parties shall be in writing. Written notice shall be deemed to have been given when delivered in person to the designated representative of the Contractor or Owner for whom it is intended; or sent by U. S. Mail to the last known business address of the designated representative; or transmitted by fax machine to the last known business fax number of the designated representative. Mail notices are deemed effective upon receipt or on the third business day after the date of mailing, whichever is sooner. Fax notices are deemed effective the next business day after faxing.

Severability. Should any term or provision of this Contract be held invalid or unenforceable in any respect, the remaining terms and provisions shall not be affected and this Contract shall be construed as if the invalid or unenforceable term or provision had never been included.

Illegal Dumping. The Contractor shall ensure that it and all of its Subcontractors and assigns prevent illegal dumping of litter in accordance with Title 5, Texas Health and Safety Code, Chapter 365.

Ethics Matters/No Financial Interest. Contractor and its employees, agents, representatives and subcontractors have read and understand HCC's Ethics Policy, [http://www.hccs.edu/hcc/System%20Home/Departments/Procurement Operations/About Procurement/Ethics%20Policy.pdf](http://www.hccs.edu/hcc/System%20Home/Departments/Procurement%20Operations/About%20Procurement/Ethics%20Policy.pdf), available at and the HCC Vendor Conflict Interest Questionnaire, [http://www.hccs.edu/hcc/System%20Home/Departments/Procurement Operations/About Procurement/Conflict%20of%20Interest%20Questionnaire.pdf](http://www.hccs.edu/hcc/System%20Home/Departments/Procurement%20Operations/About%20Procurement/Conflict%20of%20Interest%20Questionnaire.pdf) and is in compliance with said policies and applicable state ethics laws and rules. Neither Contractor nor its employees, agents, representatives or subcontractors will assist or cause HCC employees to violate HCC's Ethic's Policy, provisions described by HCC Standards of Conduct Guide, , or applicable state ethics laws or rules. Contractor represents and warrants that no member of the Board has a direct or indirect financial interest in the transaction that is the subject of this Contract.

By signature hereon, Contractor certifies that no member of the Board of Trustees of Houston Community College, or Executive Officers, has a financial interest, directly or indirectly, in the transaction that is the subject of this contract.

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BY SIGNING BELOW, the Parties have executed and bound themselves to this Contract as of the day and year first above written.

(Contractor)

By: _____
(Original Signature)

Name: _____

Title: _____

Date: _____

HOUSTON COMMUNITY COLLEGE
(Owner)

By: _____
(Original Signature)

Name: Cesar Maldonado, Ph.D., P.E.

Title: Chancellor

Date: _____

CONTENT APPROVED:
Office of Facilities Planning and Construction
Houston Community College

By: _____
(Original Signature)

Name: Marshall B. Heins,
Title: Chief Facilities Officer
Finance and Administration

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HCC CONSTRUCTION BONDS

EXHIBIT 7

PAYMENT BOND

Project No: _____

STATE OF TEXAS

COUNTY OF HARRIS

KNOW ALL PERSONS BY THESE PRESENTS: That _____ (Contractor), of the City of _____, County of _____, and State of _____, as Principal, and _____, authorized under the Laws of the State of Texas to act as surety on bonds for principals, are held and firmly bound unto **Houston Community College System** (Owner), in the penal sum of _____ Dollars (\$ _____) for the payment whereof, the said Principal and Surety bind themselves, and their respective officers, directors, shareholders, partners, heirs, administrators, executors, successors and assigns, jointly and severally, by these presents:

WHEREAS, the Principal has entered into a certain written contract with the Owner, dated the ___ day of ___, 20___, for construction of:

which contract is hereby referred to and made a part hereof as fully and to the same extent as if copied at length herein.

NOW, THEREFORE, THE CONDITIONS OF THIS OBLIGATION IS SUCH, that if the said Principal shall pay all claimants supplying Public Work Labor and Public Work Material (as defined by Section 2253.001 of the Texas Government Code) to him or a subcontractor in the prosecution of the work provided for in said contract, then, this obligation shall be void; otherwise to remain in full force and effect;

PROVIDED, HOWEVER, That this bond is executed pursuant to the provisions of Chapter 2253 of the Texas Government Code as amended and all liabilities on this bond shall be determined in accordance with the provisions of said Statute to the same extent as if it were copied at length herein.

Surety, for value received, stipulates and agrees that no change, extension of time, alteration or addition to the terms of the contract, or to work performed thereunder, or the plans, specifications, or drawings, accompanying the same, shall in anyway affect its obligation on this bond, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the contract, or the work to be performed thereunder.

IN WITNESS WHEREOF, the said Principal and Surety have signed and sealed this instrument _____ day of _____, 20___.

Principal

BY: _____

TITLE: _____

ADDRESS:

Surety

BY: _____

TITLE: _____

PHYSICAL ADDRESS:

MAILING ADDRESS:

TELEPHONE: _____

LOCAL RECORDING AGENT

PERSONAL IDENTIFICATION NUMBER:

The name and address of the Resident Agent of Surety is:

EXHIBIT 8

PERFORMANCE BOND

Project No. _____

THE STATE OF TEXAS §
 § KNOW ALL MEN BY THESE PRESENTS:
COUNTY OF HARRIS §

THAT WE, _____, as Principal, hereinafter called "Contractor" and the other subscriber hereto _____, as Surety, do hereby acknowledge ourselves to be held and firmly bound to The Houston Community College, "Owner," in the sum of _____ (\$ _____) for the payment of which sum, well and truly to be made to Owner and its successors, the said Contractor and Surety do bind themselves, their heirs, executors, administrators, successors, and assigns, jointly and severally.

THE CONDITIONS OF THIS OBLIGATION ARE SUCH THAT:

WHEREAS, the Contractor has on or about this day executed a Contract in writing with _____ Owner for

_____ all of such work to be done as set out in full in said Contract Documents therein referred to and adopted by the Owner, all of which are made a part of this instrument as fully and completely as if set out in full herein.

NOW THEREFORE, if the said Contractor shall faithfully and strictly perform Contract in all its terms, provisions, and stipulations in accordance with its true meaning and effect, and in accordance with the Contract Documents referred to therein and shall comply strictly with each and every provision of Contract and with his bond, then this obligation shall become null and void and shall have no further force and effect; otherwise the same is to remain in full force and effect.

Should the Contractor fail to faithfully and strictly perform the Contract in all its terms, the Surety shall be liable for all damages, losses, expenses and liabilities that the Owner may suffer in consequence thereof, as more fully set forth herein. It is further understood and agreed that the Surety does hereby relieve Owner or its representatives from the exercise of any diligence whatever in securing compliance on the part of the Contractor with the terms of the Contract, including the making of payments thereunder, excepting only Owner's failure to make such payments in accordance with the terms and conditions of the Contract, and, having fully considered its Principal's competence to perform the Contract in the underwriting of this Performance Bond, the Surety hereby waives any notice of delay by the Contractor in the performance of the Contract. The Surety understands and agrees that the provision in the Contract that Owner shall retain

certain amounts due the Contractor until the expiration of thirty days from the acceptance of the Work is intended for the Owner's benefit, and Owner shall have the right to pay or withhold such retained amounts or any other amount owing under the Contract without changing or affecting the liability of the Surety hereon in any degree.

It is further expressly agreed by Surety that Owner or its representatives are at liberty at any time, without notice to the Surety, to make any change in the Contract Documents and in the Work to be done thereunder, as provided in the Contract, and in the terms and conditions thereof, or to make any change in, addition to, or deduction from the work to be done thereunder; and that such changes, if made, shall not in any way vitiate the obligation in this bond and undertaking or release the Surety therefrom.

This bond and all obligations created hereunder shall be performable in Harris County, Texas. This bond is given in compliance with the provisions of Chapter 2253 of the Texas Government Code, as amended, which is incorporated herein by this reference. However, all of the express provisions hereof shall be applicable whether or not within the scope of said statute.

IN WITNESS THEREOF, the said Contractor and Surety have signed and sealed this instrument on the respective dates written below their signatures and have attached current Power of Attorney.

ATTEST, SEAL: (if a corporation)

WITNESS: (if not a corporation)

(Name of Contractor)

By: _____
Name:
Title:

By: _____
Name:
Title:
Date:

ATTEST, SEAL: (if a corporation)

WITNESS: (if not a corporation)

(Name of Surety)

By: _____
Name:
Title:

By: _____
Name:
Title:
Date: