CITY OF ALAMEDA
ALAMEDA MUNICIPAL POWER

Specification No: CS 10-14-02

REQUEST FOR PROPOSAL

FOR

LABOR, MATERIAL, AND EQUIPMENT FOR THE LED STREETLIGHT REPLACEMENT PROGRAM (PHASE 1)

December 2, 2014

ALAMEDA MUNICIPAL POWER

LED STREETLIGHT REPLACEMENT PROGRAM (PHASE 1)

TABLE OF CONTENTS

7. REQUIRED SUBMITTALS
   - 7.1 COMPLETED APPENDIX E.2: STREETLIGHT DATABASE, PROPOSED REPLACEMENTS
   - 7.2 COMPLETED APPENDIX F SUBMITTAL FORM
   - 7.3 PRODUCT CUTSHEETS
   - 7.4 INSTRUCTIONS FOR INSTALLATION AND MAINTENANCE
   - 7.5 SUMMARY OF LUMINAIRE RECYCLED CONTENT AND RECYCLABILITY\
   - 7.6 IES LM-79 LUMINAIRE PHOTOMETRIC REPORT(S)
   - 7.7 LUMEN MAINTENANCE CALCULATIONS AND SUPPORT TEST DATA
   - 7.8 COMPUTER-GENERATED POINT-BY-POINT PHOTOMETRIC ANALYSIS OF MAINTAINED LIGHT LEVELS
   - 7.9 SUMMARY OF JOINT ELECTRON DEVICES ENGINEERING COUNCIL (JEDEC) OR JAPAN ELECTRONICS AND INFORMATION TECHNOLOGY INDUSTRIES (JEITA) RELIABILITY TESTING PERFORMED FOR LED PACKAGES
   - 7.10 SUMMARY OF RELIABILITY TESTING PERFORMED FOR LED DRIVER(S)
   - 7.11 WRITTEN PRODUCT WARRANTY AS PER SECTION 9 BELOW
   - 7.12 SAFETY CERTIFICATION AND FILE NUMBER INDICATING COMPLIANCE WITH UL 1598
   - 7.13 DOCUMENTATION SUPPORTING ANY U.S. ORIGIN CLAIMS FOR THE PRODUCT, IN ACCORDANCE WITH FTC GUIDANCE.

CITY OF ALAMEDA, CALIFORNIA
ALAMEDA MUNICIPAL POWER

GENERAL CONDITIONS

RECEIPT OF BIDS. Sealed Bids will be received until the hour of 3:00 p.m. P.S.T.on Thursday, January 15, 2015. Bids will be opened publicly at above stated date and time in the office of the Support Services Supervisor located at 2000 Grand Street, Alameda, California 94501. Bids must be addressed to the Support Services Supervisor, and plainly marked on the outside: "BID ON SPECIFICATION CS 10-14-02". Submit original, 2 printed copies, and one electronic copy(CD with PDF file sealed in bid package). Alameda Municipal Power may reject all Bids received after the specified time and will return such Bids to Bidder unopened.

GC-1. SCOPE:

FOR FURNISHING TO ALAMEDA MUNICIPAL POWER (hereinafter referred to as "AMP"), a department of the CITY OF ALAMEDA, a municipal corporation, acting by and through its PUBLIC UTILITIES BOARD (hereinafter referred to as "Board"):

LABOR, MATERIALS AND EQUIPMENT FOR THE LED STREETLIGHT REPLACEMENT PROGRAM (PHASE 1)

GC-2. PROPOSAL FORM:

All proposals must be made upon the blank proposal form(s), attached to these Specifications. Proposals and attachments thereto or in support thereof, must be signed by the bidder. If the proposal is made by an individual, his or her name and business address must be shown. If made by a partnership, the name and post office address of each member of the partnership must be shown. If made by a corporation, the proposal must show the name of the state under the laws of which the corporation was chartered and the names, titles and business addresses of the president, secretary and treasurer.

GC-3. BIDDER'S GUARANTY:

All bids must be accompanied by a cashier's check or certified check, drawn on a bank or savings and loan association chartered by the federal government or State of California, or by a bid bond furnished by a surety company authorized to transact business in the State of California, made payable to AMP for an amount of not less than 10% of contract price and no bid shall be considered unless such check or bid bond is enclosed therewith.

GC-4. RETURN OF BIDDER'S GUARANTY:

Upon full execution of the Contract, and upon request by Bidder, AMP will return to the respective unsuccessful Bidders their Bid securities and Bid Bonds.

GC-5. REJECTION OF PROPOSALS CONTAINING ALTERATIONS, ERASURES OR IRREGULARITIES:

Proposals may be rejected if they show any alterations of form, additions not called for, conditional or alternative bids, incomplete bids, erasures, or irregularities of any kind. Any statement or qualification in proposal form, or attached to, or included therewith, serving to qualify proposal, or containing conflicting statements, or otherwise rendering proposal ambiguous or uncertain, will disqualify the bid.

The right is reserved to reject any or all proposals.

GC-6. TAXES:

The price quoted in the proposal must include all appropriate state and federal taxes, unless herein otherwise specifically provided. (See Section GC-19, Bid Price.)

GC-7. CASH DISCOUNT:

Each Bidder shall state cash discount, if any.

GC-8. AWARD OF CONTRACT:

The award of the contract, if it be awarded, will be made within 90 days after the opening of the proposals.

Proposal may be withdrawn by the Bidder if award of contract is not made within 90 days after opening of bids.

GC-9. EXECUTION OF CONTRACT:

The contract, in form and contents satisfactory to AMP, shall be executed by the successful Bidder and returned to AMP with the necessary bonds, if any be required, within seven working days after the Bidder has received notice that the contract has been recommended for award and is ready for signature. Note: Bids submitted with devations to AMP's contract terms and conditions may not be accepted.

No proposal shall be considered binding by AMP until the execution of the contract. The successful Bidder is hereafter referred to as the Contractor. The Bidders Guaranty enclosed with the proposal of the Bidder to whom the contract shall be awarded shall be retained as agreed as liquidated damages by AMP in the event that such Bidder shall fail to enter into a contract and furnish bonds as herein required, time being of the essence hereof.

GC-10. BONDS:

Unless herein otherwise specifically provided, the Contractor shall furnish two good and sufficient bonds. One of the bonds shall be executed in a sum equal to the contract price, which shall be furnished as required by the Terms of Sections 3247 to 3252 of the Civil Code of the State of California. The other bond shall guaranty faithful performance of the said contract in the sum equal to the contract price. Bonds shall be furnished by a surety company satisfactory to AMP.

Whenever any surety or sureties on any such bonds, or any bonds required by law for the protection of the claims of laborers and material men, become insufficient or the Engineer has cause to believe that such surety or sureties have become insufficient, a demand in writing may be made of the Contractor for further bond or bonds or additional surety not exceeding that originally required, as is considered necessary, taking into account the extent of the work remaining to be done. Thereafter, no payment shall be made upon such contract to the Contractor until such further bond or bonds or additional surety has been furnished. Faithful performance bonds, whether by individual or corporate surety, shall in addition to other terms and conditions, contain the conditions that (1) death of the named principal shall not operate as a release of the obligation hereunder of the surety and (2) extensions of time, if any, granted by AMP to Contractor for performance of the work covered by said bond shall extend for a like time the period of limitations during which surety shall remain bound by the said undertaking.

GC-11. DELIVERY POINT:

Delivery of all goods and services shall be made, with all transportation charges prepaid, to the appropriate construction site locations.

GC-12. TIME OF DELIVERY:

Bidder shall state the number of days after the date of award of contract within which they agree to make delivery at specified delivery point.

In determining the lowest and best bid, AMP reserves the right to give substantial weight to the time in which Bidder proposes to make delivery.

GC-13. CONDITIONS EXCUSING DELIVERY:

There shall be no obligation on the part of the Contractor to perform work or to deliver supplies and material called for in these Specifications if prevented or hindered by an Act of God, fire, strike, lockout, commandeering of raw materials, products or facilities by civil or military authority, or by any other causes beyond the control of the Contractor.

GC-14. TIME OF COMPLETION OF CONTRACT-EXTENSION:

Except as provided in Section GC-13, the contract shall be completed in the time specified by Bidder in his proposal or within such extension of time as AMP may grant.

GC-15. CONTRACT AWARDED AS A WHOLE:

Unless otherwise stated on the proposal form, when a contract is awarded, it will be awarded as a whole to one Bidder for all items. A contract for one item will not be divided between two or more Bidders.

GC-16. BIDDER'S QUALIFICATIONS AND EXPERIENCE:

The Bidder shall submit with his or her proposal sufficient evidence of his or her qualifications and experience in providing the type of service herein specified. This evidence shall include names, addresses and telephone numbers of companies for whom similar services have been provided within the last five years. The decision of AMP as to the adequacy of the Bidder's qualifications and experience shall be final.

GC-17. PATENTS:

The Contractor shall defend any suit or proceeding brought against AMP claiming that any device or part thereof constitutes an infringement of any patent of the United States. He shall also pay all damages and costs awarded therein against AMP.

In case said equipment or part thereof is in such suit held to constitute infringement, and the use of such equipment or part thereof is enjoined, the Contractor shall at his own expense either procure for AMP the right to continue using the equipment or part thereof or replace same with non-infringing equipment or part, all at no expense to AMP.

GC-18. INSPECTION OF WORK:

AMP shall have the right to inspect the work of the Contractor on a regular basis. Any work which is deficient in the sole opinion of AMP, shall be redone by the Contractor at no additional cost to AMP. The Contractor shall provide a twenty-four (24) hour response time on all such rework on normal business days.

GC-19. BID PRICE:

Proposal shall state the net delivered price with all transportation charges prepaid at the delivery point(s) specified in Section GC-11. Price quoted shall include all State and Federal Taxes, including the amount of any Use or Excise Tax that may be applicable to the transaction, all of which will be paid by the Bidder.

If California Use Tax is applicable, Bidder shall state whether they maintain a place of business in the State of California, or are authorized by the State Board of Equalization of said State, under Section 6202 of the Revenue and Taxation Code, to collect Use Taxes.

If the Bidder to whom the contract is awarded does not maintain a place of business in the State of California, or is not authorized to collect Use Taxes, the amount of such taxes, if applicable, will be deducted from the total bid price and paid directly by AMP to the State of California.

GC-20. LOCAL PREFERENCE RULES:

The local preference rules are set forth in section 3-16 and 3-17 of the City Charter and Article V. Chapter II of the Municipal Code. The local preference rules of the City extend a 5% preference to local businesses in the evaluation of bids or proposals for the award of all contracts for the purchase or lease of supplies, materials, equipment or other personal property.

Local business are defined in the Municipal Code as a business firm with fixed offices or local taxable distribution points within the boundaries of the City of Alameda which hold a current business license with an Alameda business address which is not a Post Office box. Bidder shall clearly indicate if he or she believes they qualify for this preference.

The final determination of qualification for Alameda Bidder's preference rests with AMP.

GC-21. DATE OF CONTRACT:

Date of Contract will be the date on which the contract has been fully executed.

GC-22. SUPPLEMENTAL CLAUSES FOR PUBLIC UTILITY CONTRACTS:

During the performance of a contract and to the extent applicable the contractor agrees to fully comply with the following Federal Acquisitions Regulation (48 CFR CHAPTER 5) Clauses:

48 CFR REF	CLAUSE TITLE	APPLICABLE TO CONTRACTS:
52.223-2	Clean Air and Water (Apr 1984)	(ALL)
52.222-4	Contract Work Hours and Safety Standards Act - Overtime Compensation- General (Mar 1986)	(ALL)
522.22-26	Equal opportunity (Apr 1984)	(ALL)
52.222-35	Affirmative Action for Special Disabled and Vietnam Era Veterans (Apr 1984)	EXCEEDING $9,999.99
52.222-36	Affirmative Action for Handicapped Workers (Apr 1984)	EXCEEDING $2,500.00
52.219-8	Utilization of Small Business Concerns and Small Disadvantaged Business Concerns (Feb 1990)	(ALL)
52.219-9	Small Business and Small Disadvantaged Business Subcontracting Plan (Jan 1991)	(ALL)
52.220-3	Utilization of labor Surplus Area concerns (Apr 1984)	(ALL)
52.219-13	Utilization of women-owned Small Business (Aug 1986)	(ALL)

A copy of all listed regulations is available upon request.

GC-23. INTERNAL REVENUE SERVICE FORM W-9 (IRS FORM W-9):

AMP requires all awardee/s to submit a completed IRS Form W-9 or otherwise provide their Federal ID Employer Number or Social Security Number. There is an area designated for your

Federal ID Employer or Social Security Number on our Proposal. AMP will mail Form 1099-MISC at year-end for all applicable payments.

GC-24. CITY OF ALAMEDA BUSINESS LICENSE:

All businesses reporting an Alameda address will be required to present proof of City of Alameda business license.

GC-25. INSURANCE:

In addition to any form of insurance or bonds required under the terms of the contract and specifications, the Contractor will be required to carry insurance of the following kinds and amounts:

a) Contractor's General Liability and Property Damage Liability Insurance, including completed Operations/Products, Contractual, Broad Form, Property Damage and Automobile, owned and non-owned.

The Contractor shall furnish evidence to AMP that with respect to the operations he performs, he carries regular Contractor's General Liability Insurance, naming AMP, the City of Alameda, its City Council, boards, commissions, their officers, employees and agents against loss from the liability imposed by law, contingent and otherwise, for injury to, or death of any person or persons, or damage to real or personal property, and arising in or by reason of or in connection with the performance of the work herein contemplated, and agreeing to defend against all claims, demands, actions, or legal proceedings made or brought by any person by reason of any such injury, death or damage and to pay all judgments, interest, costs, legal and other expenses arising out of or in connection therewith. This insurance shall provide for a limit of not less than Two Million Dollars ($2,000,000.00) combined single limit for each accident or occurrence which may arise from the operations of the Contractor in the performance of the work herein provided for.

If any part of the work is sublet, similar insurance shall be provided by or in behalf of the subcontractors to cover their operations.

b) Contractor's Protective Liability and Property Damage Liability Insurance.

The Contractor shall furnish evidence to AMP that, with respect to the operations performed for him by subcontractors, he carries in his own behalf regular Contractor's Protective Public Liability Insurance providing for a limit of not less than Two Million Dollars ($2,000,000.00) for all damages arising out of bodily injuries to or death of one person, and subject to that limit for each person, a total limit of Three Million Dollars ($3,000,000.00) for all damages arising out of bodily injuries to or death of two or more persons in any one accident, and regular Contractor's Protective Property Damage Liability Insurance providing for a limit of not less than One MillionDollars ($1,000,000) for all damages arising out of injury to or destruction of property in any one accident and subject to that limit per accident, a total (or aggregate) limit of Three Million Dollars ($3,000,000.00) for all damages arising out of injury to or destruction of property during the policy period.

The insurance hereinbefore specified shall be carried until all work required to be performed under the terms of the contract is satisfactorily completed as evidenced by the formal acceptance by AMP.

GC-26. LEGAL RELATIONS AND RESPONSIBILITIES:

a) Laws to Be Observed. The Contractor shall keep himself fully informed of all existing and future State and National Laws and all municipal ordinances and regulations of the City of Alameda which in any manner affect those engaged or employed in the work, or the materials used in work, or which in any way affect the conduct of the work, and of all such orders and decrees of bodies or tribunals having any jurisdiction or authority over the same.

b) Prevailing Wages. In accordance with the provisions of Section 1770 of the Labor Code, a schedule of prevailing wages applicable to the work to be done is included in EXHIBIT B.

Any classification omitted herein shall receive not less than the lowest wage tabulated herein.

Overtime shall be not less than one and one-half (1-1/2) times the specified rates. The Contractor shall forfeit One Hundred Dollars ($100.00) for each calendar day, or portion thereof, for each workman paid less than the stipulated prevailing rates for such work or craft in which such workman is employed for the work mentioned herein by any subcontractor under him.

c) Apprentice. Attention is directed to the provisions in Section 1777.5 and 777.6 of the Labor Code concerning the employment of apprentices by the Contractor or any subcontractor under him on contracts greater than Thirty Thousand Dollars ($30,000.00) or 20 working days.

Section 1777.5 requires the Contractor or subcontractor employing tradesmen in any apprenticeable occupation to apply to the joint apprenticeship committee nearest the site of the public works project and which administers the apprenticeship program in that trade for a certificate of approval, if they have not previously applied and are covered by the local apprenticeship standards. The certificate will also fix the ratio of apprentices to journeymen that will be used in the performance of the contract. The ratio of apprentices to journeymen in such cases shall not be less than one to five except:

1) When unemployment in the area of coverage by the joint apprenticeship committee has exceeded an average of 15 percent in the 90 days prior to the request for certificate, or

2) When the number of apprentices in training in the area exceeds a ratio of one to five, or

3) When the trade can show that it is replacing at least 1/30 of its membership through apprenticeship training on an annual basis statewide or locally, or

4) When the Contractor provides evidence that he employs registered apprentices on all of his contracts on an annual average of not less than one apprentice to eight journeymen, or

5) When assignment of an apprentice creates a condition jeopardizing his life or the life,

safety, or property of fellow employees or the public, or when the specific task is of such a nature that training cannot be provided by a journeyman.

The Contractor is required to make contributions to funds established for the administration of apprenticeship programs if he employs registered apprentices or journeymen in any apprenticeable trade on such contracts and if other contractors on the public works site are making such contributions or for contractors who are not signatory to an apprenticeship fund and if the funds administrator is unable to accept Contractor's required contribution, the Contractor or subcontractor shall pay a like amount to the California Apprenticeship Council.

The Contractor and any subcontractor under him shall comply with the requirements of Sections 1777.5 and 1777.6 in the employment of apprentices.

Information relative to apprenticeship standards, wage schedules, and other requirements may be obtained from the Director of Industrial Relations, ex-officio the Administrator of Apprenticeship, San Francisco, California, or from the Division of Apprenticeship Standards and its branch offices.

d) Permit and Licenses. Contractor shall procure all permits and licenses and pay for all charges and fees, comply with, implement and acknowledge effectiveness of all permits, initiate and cooperate in securing all required notifications or approvals therefore, and give all notices necessary and incident to due and lawful prosecution of the work. However, the contractor will be reimbursed for the actual cost of the permits. The Contractor and each Subcontractor, if any, shall have a current City of Alameda business license.

e) Patents. The Contractor shall assume all costs arising from the use of patented materials, equipment, devices or processing used on or incorporated in the work, and agrees to indemnify and save harmless AMP, the City of Alameda, its City Council, boards, commissions, their officers, employees and agents from all suits at law or actions of any nature, damages, royalties and costs on account of the use of any patented materials, equipment, devices or processes.

f) Responsibility for Damages. AMP, the City of Alameda, its City Council, boards, commissions, their officers, employees and agents shall not be answerable or accountable in any manner for any loss or damage that may happen to the work or any part thereof, or to any material or equipment used in performing the work, or for injury or damage to any person or persons, either workmen or the public; for damage to adjoining property from any cause whatsoever during the progress of the work or at any time before final acceptance.

g) Contractor's Responsibility for Work. Except as provided above until formal acceptance of the work by AMP, the Contractor shall have the charge and care thereof and shall bear the risk of injury or damage to any part thereof by the action of the elements or from any other cause, whether arising from the execution or from the non-execution of the work. The Contractor shall rebuild, repair, restore and make good all injuries or damages to any portion of the work occasioned by any of the above causes before final acceptance and shall bear the expense thereof, except such injuries or damages occasioned by acts of the Federal Government or the public enemy. The Contractor will not be responsible for the cost of repairing or restoring damage to the work, which damage is determined to have been proximately caused by an act of God, in excess of 5% of the contracted amount.

h) Safety Provisions. The Contractor shall conform to the rules and regulations pertaining to safety established by the California Division of Industrial Safety.

i) No Personal Liability. Neither the City Council, City Manager, Public Utilities Board, General Manager of AMP, nor any other officer or authorized assistant or agent shall be personally responsible for any liability arising under this contract.

j) Responsibility of City. AMP shall not be held responsible for the care or protection of any material or parts of the work prior to final acceptance, except as expressly provided in these specifications.

k) Notices to Contractor. Any notice required to be given to the Contractor by AMP or the Project Manager or any officer of said City may be given to said Contractor at the address shown in his proposal. Such notices may be given by mailing a copy of said notice to the Contractor to such address by United States certified mail. Evidence of such mailing shall be deemed the equivalent of personal service of said notice.

GC-27. PLANS, SPECIFICATIONS AND INSPECTION:

a) Plans. All authorized alterations affecting the requirements and information given on the approved plans shall be in writing. No changes shall be made of any plans or drawings after the same have been approved by the Project Manager, except by direction of the Engineer.

b) Interpretation of Plans and Specifications and Addenda Thereto. Should it appear that the work to be done, or any matter relative thereto, is not sufficiently detailed or explained in these specifications and plans, the Contractor shall apply to AMP for such further explanation as may be necessary. Upon such application by the Contractor or prospective bidder, or in the event that it appears expedient to AMP to further explain, clarify or amend these specifications, special provisions and plans, AMP shall issue addenda thereto and such addenda shall constitute a part hereof, and shall be binding on the Contractor. Addenda shall be forwarded to prospective bidders. In the event of doubt or question relative to the true meaning of the specifications and addenda, reference shall be made to AMP, whose decision thereon shall be final.

In the event of any discrepancy between any drawing and the specifications written thereon, the specifications shall be taken as correct.

c) Inspection. AMP shall at all times have access to the work during construction and shall be furnished with every reasonable facility for ascertaining full knowledge respecting the progress, workmanship, and character of materials used and employed in the work. Whenever the Contractor varies the period during which work is carried on each day, he shall give due notice to AMP, so that proper inspection may be provided. The inspection of the work shall not relieve the Contractor of any of his obligations to fulfill the contract as prescribed.

Defective work shall be made good and unsuitable materials may be rejected, notwithstanding the fact that such defective work and unsuitable materials have been previously overlooked by AMP.

d) Removal of Defective and Unauthorized Work. All work which is defective in its construction or deficient in any of the requirements of these specifications shall be remedied, or removed and replaced by the Contractor in an acceptable manner and no compensation will be allowed for such correction. Upon failure on the part of the Contractor to comply forthwith with any order of AMP made under the provisions of this article, AMP shall have the authority to cause defective work to be remedied, or removed and replaced, and unauthorized work to be removed, and to deduct the cost thereof from any monies due or to become due the Contractor.

e) Final Inspection. Whenever the work provided and contemplated by the contract shall have been satisfactorily completed, AMP will make the final inspection.

GC-28. CONTROL OF MATERIALS:

a) Samples and Tests. When materials are required to be supplied by the Contractor and at the option of the Project Manager, the source of supply of each of the materials shall be approved by AMP before delivery is started and before such material is used in the work. Representative preliminary samples of the character and quality prescribed shall be submitted by the Contractor or producer of all materials to be used in the work for testing or examination as desired by AMP.

All tests of materials furnished by the Contractor shall be made in accordance with commonly recognized standards of national organizations and such special methods and tests as are prescribed in these specifications.

The Contractor shall furnish such samples of materials as are requested by AMP without charge. No material shall be used until it has been approved by AMP. Samples will be secured and tested whenever necessary to determine the quality of material.

b) Defective Materials. All materials not conforming to the requirements of these specifications shall be considered as defective, and all such materials, whether in place or not, shall be rejected. They shall be removed immediately from the site of the work unless otherwise permitted by AMP.

Upon failure on the part of the Contractor to comply with any order of AMP made under the provisions of this article, AMP shall have authority to remove and replace defective material and to deduct the cost of removal and replacement from any monies due or to become due the contractor.

c) Notice of Completion. Whenever the work provided and contemplated by the contract shall have been satisfactorily completed, AMP will make the final inspection.

When such final inspection shows that the work has been completed in compliance with the plans, specifications and special provisions, AMP will recommend acceptance and upon such acceptance, the Notice of Completion will be recorded with the County.

d) Final Payment. AMP shall, after the completion of the contract, make a final estimate of the amount of work done thereunder, and the value of such work, and AMP shall pay the entire sum so found to be due after deducting therefrom all previous payments. Final payment shall not be due until the expiration of thirty (30) days after recordation of Notice of Completion pursuant to

Section 3184 of the Civil Code of the State of California.

It is mutually agreed between the parties to the contract that no certificate given or payments made under the contract, except the final certificate or final payment, shall be conclusive evidence of the performance of the contract, either wholly or in part, against any claim of the Contractor; and no payment shall be construed to be an acceptance of any defective work or improper materials.

Contractor further agrees that the payment of the final amount due under the contract, and the adjustment and payment for any work done in accordance with any alterations of the same, shall release AMP, City of Alameda, its City Council, boards, commissions, their officers, employees and agents from any and all claims or liability on account of work performed under the contract or any alteration thereof.

GC-29. PROSECUTION AND PROGRESS:

a) Progress of the Work and Time for Completion. The Contractor shall begin construction work within twenty (20) working days after receiving the fully executed contract from AMP. Contractor shall advise AMP when all required permits and licenses have been acquired for AMP to issue the Notice to Proceed. After which, the contractor shall diligently prosecute the work to completion.

The Contractor shall submit a written work schedule to AMP designating the order in which the work shall progress, and construction work shall not be started until such work schedule is approved by AMP.

b) Temporary Suspension of Work. AMP shall have the authority to suspend the work wholly or in part for such period as he may deem necessary, due to unsuitable weather, or to such other conditions as are considered unfavorable for the suitable prosecution of the work, or for such time as he may deem necessary, due to the failure on the part of the Contractor to carry out orders given, or to perform any of the provisions of the work. The Contractor shall immediately obey such orders of AMP and shall not resume the work until ordered in writing by AMP.

GC-30. MEASUREMENTS AND PAYMENT:

a) As soon as practicable after all required Work is completed in accordance with Contract Documents, including punchlist, testing, recordation of documents and Contractor maintenance after Final Acceptance, AMP will pay to Contractor, in manner provided by law, unpaid balance of Contract Sum of Work (including without limitation retentions), or whole Contract Sum of Work if no progress payment has been made, determined in accordance with terms of Contract Documents, less sums as may be lawfully retained under any provisions of Contract Documents or by law.

b) As soon as practicable after approval of each Application for payment for progress payments, AMP will pay to the Contractor in manner provided by law, an amount equal to 90 percent of the amounts otherwise due as provided in the Contract Documents, or a lesser amount if so provided in Contract Documents, provided that payments may at any time be withheld if, in judgment of AMP, work is not proceeding in accordance with Contract, or Contractor is not complying with

requirements of Contract, or to comply with stop notices. Applications for payment will be accepted every 30-days.

c) Extra and Force Account Work. Extra work as hereinbefore defined (GC-27, Paragraph A, of these specifications) when ordered and accepted, shall be paid for under a written work order in accordance with the terms therein provided. Payment for extra work will be made at the unit price or lump sum previously agreed upon by the Contractor and AMP.

GC-31. TESTS:

AMP shall have the privilege of employing a recognized testing laboratory or use its own test facilities and personnel to make any or all tests to prove that the equipment itself and the materials used have met the specifications in all respects.

GC-32. HOURS OF PERFORMANCE:

The Contractor shall be allowed to operate only during the hours of 7:00 a.m. to 4:30 p.m. unless prior written approval has been secured from AMP to do otherwise.

All inspections are to be scheduled between 7:30 A.M. and 3:00 P.M. Monday through Friday.

GC-33. SAFETY REQUIREMENT:

All work performed under this contract shall be performed in such a manner as to provide safety to the public and to meet or exceed the safety standards outlined by CAL-OSHA. AMP reserves the right to issue restraint or cease and desist orders to Contractor when unsafe or harmful acts are observed or reported relative to the performance of the work under this Agreement. Contractor shall maintain the work sites free of hazards to persons and/or property resulting from his operations.

Any hazardous condition noted by Contractor, which is not a result of his operations, shall immediately be reported to AMP.

GC-34. STANDARD OF CARE:

Contractor agrees to perform all services hereunder in a manner commensurate with the highest community professional standards and agrees that all services shall be performed by qualified and experienced personnel who are not employed by AMP nor have any contractual relationship with AMP.

GC-35. HOLD HARMLESS:

Contractor shall indemnify and hold harmless AMP, the City of Alameda, its City Council, boards and commissions, officers and employees from and against any and all loss, damages, liability, claims, suits, costs and expenses whatsoever, including reasonable attorneys' fees, regardless of the merits or outcome of any such claim or suit arising from or in any manner connected to Contractor's negligent performance of services or work conducted or performed pursuant to this

Agreement. Contractor shall indemnify and hold harmless AMP, the City of Alameda, City Council, boards and commissions, officers and employees from and against any and all loss, damages, liability, claims, suits, costs and expenses whatsoever, including reasonable attorneys' fees, accruing or resulting to any and all persons, firms or corporations furnishing or supplying work, services, materials, equipment or supplies arising from or in any manner connected to the Contractor's negligent performance of services or work conducted or performed pursuant to this Agreement.

GC-36. PROHIBITION AGAINST TRANSFERS:

Contractor shall not assign, sublease, hypothecate, or transfer this Agreement or any interest therein directly or indirectly, by operation of law or otherwise without prior written consent of the Board. Any attempt to do so without said consent shall be null and void, and any assignee, sub-lessee, hypothecate or transferee shall acquire no right or interest by reason of such attempted assignment, hypothecation or transfer.

The sale, assignment, transfer or other disposition of any of the issued and outstanding capital stock of Contractor, or of the interest of any general partner or joint venturer or syndicate member or cotenant if Contractor is a partnership or joint venture or syndicate or co-tenancy, which shall result in changing the control of Contractor, shall be construed as an assignment of this Agreement. Control means fifty percent (50%) or more of the voting

GC-37. LICENSE REQUIRED TO SUBMIT BID TO PUBLIC AGENCY; EXCEPTIONS:

a) It is a misdemeanor for any person to submit a bid to a public agency in order to engage in the business or act in the capacity of a contractor within this state without having a license therefore, except in any of the following cases:

1) The person is particularly exempted from the provisions of this chapter.

2) The bid is submitted on a state project governed by Section 10164 of the Public Contract Code.

b) If a person has been previously convicted of the offense described in this section, the court shall impose a fine of 20 percent of the price of the contract under which the un-licensed person performed contracting work, or four thousand five hundred dollars ($4,500) whichever is greater, or imprisonment in the county jail for not less than 10 days nor more than six months, or both.

In the event the person performing the contracting work has agreed to furnish materials and labor on an hourly basis, "the price of the contract" for the purposes of this subdivision means the aggregate sum of the cost of materials and labor furnished and the cost of completing the work to be performed.

c) This section shall not apply to a joint venture license, as required by Section 7029.1. However, at the time of making a bid as a joint venture, each person submitting the bid shall be subject to this section with respect to his or her individual licensure.

d) This section shall not affect the right or ability of a licensed architect or registered professional engineer to form joint ventures with licensed contractors to render services within the scope of their respective practices.

e) A licensed contractor shall not submit a bid to a public agency unless his or her contractor's license number appears clearly on the bid, the license expiration date is stated, and the bid contains a statement that the representations made therein are made under penalty of perjury. Any bid not containing this information, or a bid containing information which is subsequently proven false, shall be considered non-responsive and shall be rejected by the public agency.

f) Registration of Contractors. Before submitting bids, contractors shall be licensed in accordance with the provisions of Chapter 9, Division 3, of the Business and Professional Code of the State of California.

GC-38. REPORTS:

Each and every report, draft, work product, map, record and other document reproduced, prepared or caused to be prepared by Contractor pursuant to or in connection with this Agreement shall be the exclusive property of the Board.

No report, information nor other data given to or prepared or assembled by Contractor pursuant to this Agreement shall be made available to any individual or organization by Contractor without prior approval by the Board.

Contractor shall, at such time and in such form as Board may require, furnish reports concerning the status of services required under this Agreement.

GC-39. RECORDS:

Contractor shall maintain complete and accurate records with respect to sales, costs, expenses, receipts and other such information required by the Board that relate to the performance of services under this Agreement.

Contractor shall maintain adequate records of services provided in sufficient detail to permit an evaluation of services. All such records shall be maintained in accordance with generally accepted accounting principles and shall be clearly identified and readily accessible. Contractor shall provide free access to the representatives of the Board or its designers at all proper times to such books and records, and gives the Board the right to examine and audit same, and to make transcripts therefrom as necessary, and to allow inspection of all work, data, documents, proceedings and activities related to this Agreement. Such records, together with supporting documents, shall be kept separate from other documents and records and shall be maintained for a period of three (3) years after receipt of final payment.

GC-40. TERMINATION:

In the event Contractor hereto fails or refuses to perform any of the provisions hereof at the time and in the manner required hereunder, Contractor shall be deemed in default in the performance of

this Agreement.

If such default is not cured within a period of two (2) days after receipt by Contractor from Board of written notice of default, specifying the nature of such default and the steps necessary to cure such default, the Board may terminate the Agreement forthwith by giving to the Contractor written notice thereof.

Board shall have the option, at its sole discretion and without cause, of terminating this Agreement by given seven (7) days' prior written notice to Contractor as provided herein. Upon termination of this Agreement, each party shall pay to the other party that portion of compensation specified in this Agreement that is earned and unpaid prior to the effective date of termination.

GC-41. COST OF LITIGATION:

If any legal action is necessary to enforce any provision hereof or for damages by reason for an alleged breach of any provisions of this Agreement, the prevailing party shall be entitled to receive from the losing party all costs and expenses in such amount as the Court may adjudge to be reasonable attorneys' fees.

GC-42. COMPLIANCES:

Contractor shall comply with all laws, state or federal and all ordinances, rules and regulations enacted or issued by the City of Alameda.

GC-43. WAIVER:

A waiver by the Board of any breach of any term, covenant, or condition contained herein shall not be deemed to be a waiver of any subsequent breach of the same or any other term, covenant, or condition contained herein whether of the same or a different character.

GC-44. INTEGRATED CONTRACT:

This Agreement represents the full and complete understanding of every kind or nature whatsoever between the parties hereto and all preliminary negotiations and agreements of whatsoever kind or nature are merged herein.

No verbal agreement or implied covenant shall be held to vary the provisions hereof. Any modification of this Agreement will be effective only by written execution signed by both the Board and Contractor.

The Contractor shall furnish AMP with one (1) certified copy of each of the executed policies required by Paragraphs 1 and 2 above. In lieu of said policies, a certificate thereof, in form to be approved by the City Attorney, may be furnished. An endorsement naming AMP, City of Alameda, its City Counsel, boards and commissions, officers and employees, as additional insured shall be provided with the certificate. The certification on such copies or certificates of insurance shall guarantee that the policy will not be amended, altered, modified, or canceled insofar as the coverage contemplated hereunder is concerned, without at least thirty (30) day's

notice, mailed by certified mail, to the Support Services Supervisor, Alameda Municipal Power, 2000 Grand Street, Alameda, CA 94501.

ALAMEDA MUNICIPAL POWER
LED STREETLIGHT REPLACEMENT PROGRAM (PHASE 1)

SPECIAL CONDITIONS

SC-01 PRE-BID MEETING:

An optional "pre-bid meeting" will be held from 1:30 p.m. to 2:30 p.m. on Thursday, December 11, 2014, at Alameda Municipal Power's offices located at 2000 Grand Street. All Bidders are encouraged to attend this pre-bid meeting.

SC-02 SITE VISIT:

All Bidders are encouraged to visit the construction site(s). If there are any discrepancies with the scope of work outlined in the drawings and specifications, they should be brought to AMP's attention at least 2 weeks prior to the bid submittal date.

SC-03 BIDDER'S EXPERIENCE

Provide information that demonstrates the Contractor meets the following minimum requirements:

a. Five (5) years operation in the State of California.
b. A minimum of five (5) years experience in the removal and installation of streetlights.
c. Familiarity with local, state and federal agencies requirements for street lighting projects.
d. Installation of a minimum of three (3) similar projects for converting a minimum of two hundred fifty (250) HPS luminaires (per project) to LED for energy efficiency.
e. Ability to provide qualified professionals for the project, such as electrical engineers as necessary.
f. Ability to perform all work within the specified budget.
g. C-10 electrical Contractor license.
h. References. Three references shall be provided for both the prime Contractor and any proposed subcontractors (2 pages maximum). References shall include
    - Contracting Agency
    - Contracting Agency Project Manager
    - Contracting Agency contact information
    - Contract amount
    - Date of contract
    - Date of completion
    - Number of luminaires replaced

SC-04 BID EVALUATION:

The bids will be evaluated based on the Bidder's qualifications, similar work experience, references, equipment and material plan, quality assurance program, adequacy of labor force, cost of the project, number of days for construction, proposed Contract Agreement changes, safety record, work record with AMP, sub-contractor qualifications and experience, cost of the fixtures, power consumption of the fixtures and other factors deemed important to the successful completion including those in the technical specifications of the Project by AMP.

The following criteria will be considered, although not exclusively, in determining which firm is hired.

a) Contractor's demonstrated experience in completing projects of a similar type.
b) Ability of proposed luminaires to meet the required specifications.
c) Limited number of different LED street light models.
d) Ability to achieve reductions in power consumption and maintenance costs.
e) Ability to complete the project within the shortest schedule.
f) Alameda local business preference.

A selection panel will be convened to evaluate proposals. The bidder that meets all of the requirements of the specification and has the lowest bid cost will be selected as the winning bidder. Once a determination is made, the selection panel will make a recommendation to the Public Utilities Board, who will award the project. Upon Board approval, AMP will issue the Notice of Award and deliver the signed contract to the winning bidder.

Bids must be submitted with all documents required by this Request for Proposal. Bids not submitted with all the required information may be considered incomplete and rejected by AMP.

SC-05 CONSTRUCTION TIME:

The construction shall be completed within six months (26 weeks) from the date of delivery of Notice to Proceed. A written notice-to-proceed (NTP) will be issued by AMP to the Contractor within 5 working days after AMP has been advised by the Contractor that all necessary permits and licenses have been acquired by the Contractor. The bidder shall submit the shortest construction schedule possible.

The longest acceptable schedule information that has been assumed is:

Item	Start	Complete
Bid Award	March 17, 2015	March 20, 2015
Mobilization	March 23, 2015	April 3, 2015
Construction	Within 10 days of NTP	As Provided by Winning Bidder, and no later than 6 months after NTP

All disconnected fixtures should be re-energized before the end of each day of work.

SC-06 BIDDER'S SUBMITTALS:

Submit with Bid Proposal (minimum requirements)

2. Introductory Letter (1 page maximum)
   The letter shall include the Contractor's name, contact names, mailing address, telephone number, fax number, email address. The letter will address the understanding of the service being requested and any other pertinent information the proposer believes should be included. The letter shall be signed by the individual authorized to bind the Contractor to the proposal

3. Contract Agreement (Exhibit A): Provide any proposed modifications

4. Bid Item Sheet (Exhibit H): Provide breakdown of proposal price

5. Proposal Sheet (Exhibit I): Provide completed and signed form

6. Sub-Contractor Form, if applicable (Exhibit G): Provide proposed sub-contractor info

7. Bidder's Guaranty: As required by GC-04

8. Organization and Approach (4 pages maximum, not including resumes)
   a. Describe the roles and organization of your proposed team for this project. Indicate the composition and number of project staff, facilities available and experience of your team as it relates to this project.
   b. Describe your project management approach. Provide a detailed description of how the team and scope of work will be managed. Describe your ability and experience with modeling appropriate photometric performance of street lighting systems. Describe your approach and ability to design LED street lighting conversions to maximize energy savings and overall value to the Agency.
   c. Describe the roles of key individuals on the team. Provide resumes and references for all key team members. Resumes shall show relevant experience, for the Project's Scope of Work as well as the length of employment with the proposing Contractor. Key members, especially the project manager, shall have significant demonstrated experience with this type of project, and should be committed to stay with the project for the duration of the project.
   d. Provide a narrative explanation that describes how the proposed luminaires will meet the AMP's project objectives, Technical Specifications, Section 1.0. Explain how the proposed luminaires will meet illumination standards in the most common configurations in the City, as represented by the Luminaire Designations in Technical Specification section 6.0, while minimizing power requirements. Provide details of the methods and work plan for streetlight disassembly and assembly.

9. Schedule of Work

Provide a detailed schedule for all phases of the project, including but not limited to the following.

a. Lead-time for product procurement
b. Anticipated equipment delivery date
c. Construction start and completion by site or major area
d. Project walk through and punch list development
e. Project sign off

10. Technical Submittals

a. Submit technical documentation as described in the Technical Specifications Section 7.0.

11. Cost Proposal and Power Consumption

Bidders shall complete the Bid Sheet (Exhibit H). Line Item Bid:

a. Propose a make/model number for each Luminaire Designation.
b. Bidders may specify the same make/model for multiple Luminaire Designations as appropriate to meet illuminance, energy savings and maintenance objectives.
c. A maximum of eight (8) different luminaire make/models is allowed.
d. The quantity of luminaires proposed must be equal to the total number of existing luminaires for each Luminaire Designation and must correspond to the quantities in the Proposed Luminaires spreadsheet provided with the proposal.
e. The luminaire wattage should be the wattage of the luminaire at the factory delivered setting.
f. Total wattage: Quantity times actual wattage
g. Contractor is to provide unit-based luminaire pricing for each Luminaire Designation. Unit "Material" pricing shall be the cost of the luminaire, accessories, hardware, shipping, taxes and Contractor markup. Unit "Labor" pricing shall be the labor cost associated with replacement of the existing luminaire with the new LED luminaire. "All Other" unit pricing shall consist of all other costs for the completion of the scope, including but not limited to project management, meetings, photometric analysis, submittals, disposal, close out documents, lift trucks, and Contractor markup. There will be no other forms of compensation.
h. Price adjustments for luminaire substitutions identified during construction will be calculated based the unit prices. Price adjustments will be calculated as the difference between the unit price of the proposed luminaire and the unit price of the actual luminaire installed.
i. Total Bid Price: Total price for completion of the entire scope.
j. Optional Adders:
    i. Bidder shall specify lump sum cost to provide electronic post-construction GIS records for all street lights in the City, which should include at a minimum all the information provided in the Street Light Database as well as locations in a GIS format (+/- 1 meters), location street addresses, and other associated attributes.
    ii. House side lighting control unit price.

The successful Bidder is hereafter referred to as the Contractor.

SC-07 NOTICE OF INTENT TO AWARD:

Submit upon Notice of Intent to Award

1. Contractor Signed Contract Agreement: Provide two (2) signed documents
2. Bonds: As required by GC-10 and Contract Agreement
3. Certificates of Insurance: As required by GC-25

Note: AMP will submit Documents 1-3 to the City Attorney's office for final approval.

SC-08 PRECONSTRUCTION MEETING:

Prior to beginning construction, the Contractor shall meet with AMP representatives, City of Alameda Inspector, and representatives of other enforcing agencies to coordinate the project.

SC-09 PERMITS:

The Contractor will be responsible for obtaining and paying for all permits and thereafter comply with all permit conditions.

AMP will reimburse the Contractor for the actual cost of the permits (with proper documentation).

The Contractor will be responsible for purchasing "No Parking" signs from the City. AMP will not reimburse for these signs.

SC-10 ADDITIONS/DELETIONS AND/OR CHANGES:

AMP may elect to revise (increase or decrease) the scope of the project due to new equipment, new materials, new methods of construction, additional streetlights found in the field or problems found in the field preventing the completion as planned. All such changes must be approved by AMP prior to starting work. In such event, a contract addendum for the adjustment must be received by the Contractor.

Any variation in the scope of work initiated by the Contractor shall be brought to the notice of AMP immediately. No additional work shall be performed unless an AMP Change Order, properly signed by both AMP and the Contractor, has been issued. AMP will not pay for any work done without a proper AMP Change Order. Work tags on time-and-material work shall be signed and approved by the AMP inspector.

SC-11 PROGRESS PAYMENTS:

Contractor may submit invoices for progress payments only for street lights for which the installation of the new LED street lights is completed and for which AMP inspection and approval is complete.

SC-12 AS-BUILT DRAWINGS:

Contractor shall, at the completion of the job, submit an "As-Built" drawing. Contractor shall maintain and update the as-built drawings on a daily basis. These drawings shall be available for review by the inspector during working hours.

ALAMEDA MUNICIPAL POWER
LED STREETLIGHT REPLACEMENT PROGRAM (PHASE 1)

TECHNICAL SPECIFICATIONS

1.0 OBJECTIVES

1.1 AMP's objectives for this project include the following:

1.1.1 Convert approximately 3,200 street lights to LED based on a one-for-one replacement of existing street light luminaires.

1.1.2 Maximize energy savings from replacement of existing street lights with LED sources in aggregate for the entire inventory of street lights included in the scope (see Exhibit E.1 Street Light Database, Inventory).

1.1.3 Meet IES RP-8-14 illumination standards.

1.1.4 Minimize the inventory of different LED street light models.

1.1.5 Minimize future costs to maintain and replace the converted street lights.

1.1.6 Base the new LED lighting system on a one-for-one replacement of existing street light luminaires. Preserve the mounting height of the luminaires. Do not move existing poles and do not add new poles and/or luminaires.

1.1.7 Complete the project within six months after issuance of Notice to Proceed.

2.0 SCOPE OF SERVICES

2.1 Contractor will provide the following scope of services for a turnkey replacement of existing HPS cobra head and shoebox luminaires with LED luminaires:

2.1.1 Photometric modeling to confirm appropriate LED replacement luminaires and illuminance requirements

2.1.2 Purchase of LED luminaires and all miscellaneous materials to complete installation

2.1.3 Transport of all equipment, labor, consumables and materials to and from the job site

2.1.4 Installation and testing of proper operation of LED luminaires

2.1.5 Disposal of removed materials except for existing LED fixtures that will be returned to AMP Stores.

2.1.6 Compliance with all applicable codes and regulations

2.1.7 Clean up and project close out

3.0 NORMATIVE REFERENCES

The publications listed below form a part of this specification to the extent referenced. Publications are referenced within the text by their basic designation only. Versions listed shall be superseded by updated versions as they become available.

American National Standards Institute (ANSI)

- C78.377-2011 (or latest), American National Standard for the Chromaticity of Solid State Lighting Products
- C82.77-2002 (or latest), American National Standard for Harmonic Emission Limits - Related Power Quality Requirements for Lighting Equipment
- C136.10-2010 (or latest), American National Standard for Roadway and Area Lighting Equipment – Locking-Type Photocontrol Devices and Mating Receptacles— Physical and Electrical Interchangeability and Testing
- C136.15-2011 (or latest), American National Standard for Roadway and Area Lighting Equipment – Luminaire Field Identification
- C136.22-2004 R2009 (or latest), American National Standard for Roadway and Area Lighting Equipment – Internal Labeling of Luminaires
- C136.31-2010 (or latest), American National Standard for Roadway Lighting Equipment – Luminaire Vibration
- C136.37-2011 (or latest), American National Standard for Roadway and Area Lighting Equipment - Solid State Light Sources Used in Roadway and Area Lighting
- C136.41-2013 (or latest), American National Standard for Roadway and Area Lighting Equipment—Dimming Control Between an External Locking Type Photocontrol and Ballast or Driver

American Society for Testing and Materials International (ASTM)

- B117-11 (or latest), Standard Practice for Operating Salt Spray (Fog) Apparatus
- D523-08 (or latest), Standard Test Method for Specular Gloss
- D1654-08 (or latest), Standard Test Method for Evaluation of Painted or Coated Specimens Subjected to Corrosive Environments
- G154-06 (or latest), Standard Practice for Operating Fluorescent Light Apparatus for UV Exposure of Nonmetallic Materials

ENERGY STAR®

- ENERGY STAR TM-21 Calculator, rev. 020712 (or latest, www.energystar.gov/TM-21Calculator)

Federal Communications Commission (FCC)

- 47 CFR Part 15, Telecommunication – Radio Frequency Devices

Federal Trade Commission (FTC)

- Complying with the Made in USA Standard, December 1998 (http://business.ftc.gov/advertising-and-marketing/made-usa)
- Green Guides, 16 CFR Part 260, Guides for the Use of Environmental Marketing Claims

Illuminating Engineering Society of North America (IESNA or IES)

- LM-50-13 (or latest), IES Approved Method for Photometric Measurement of Roadway and Street Lighting Installations
- LM-61-06 (or latest), IESNA Approved Guide for Identifying Operating Factors Influencing Measured Vs. Predicted Performance for Installed Outdoor High Intensity Discharge (HID) Luminaires
- LM-63-02 (R2008 or latest), ANSI/IESNA Standard File Format for the Electronic Transfer of Photometric Data and Related Information
- LM-79-08 (or latest), IESNA Approved Method for the Electrical and Photometric Measurements of Solid-State Lighting Products
- LM-80-08 (or latest), IESNA Approved Method for Measuring Lumen Maintenance of LED Light Sources
- RP-8-00 (or latest), ANSI / IESNA American National Standard Practice for Roadway Lighting
- RP-16-10 (or latest), ANSI/IES Nomenclature and Definitions for Illuminating Engineering
- TM-15-11 (or latest), Luminaire Classification System for Outdoor Luminaires
- TM-21-11 (or latest), Projecting Long Term Lumen Maintenance of LED Light Sources

International Electrotechnical Commission (IEC)

- 60929 Annex E, Control Interface for Controllable Ballasts (0-10V)
- 62386, Digital Addressable Lighting Interface (DALI)

LED Lighting Facts

- Submission Requirements (http://www.lightingfacts.com/About/Content/Manufacturers/SubmissionRequirements)

Municipal Solid-State Street Lighting Consortium (MSSLC)

- Model Specification for Networked Outdoor Lighting Control Systems, V2.0 (or latest)

National Electrical Manufacturers Association (NEMA)

- LSD 63-2012, Measurement Methods and Performance Variation for Verification Testing of General Purpose Lamps and Systems

Underwriters Laboratories (UL)

- 1598 Third Edition (or latest), Luminaires

4.0 RELATED DOCUMENTS

4.1 Contract Drawings and conditions of Contract (including General Conditions, Special Conditions, and all other Contract Documents) apply to the work of this section.

5.0 DEFINITIONS

5.1 Lighting terminology used herein is defined in IES RP-16. See referenced documents for additional definitions.

5.1.1 Exception: The term "driver" is used herein to broadly cover both drivers and power supplies, where applicable.

5.1.2 Clarification: The term "LED light source(s)" is used herein per IES LM-80 and TM-21 to broadly cover LED package(s), module(s), and array(s).

6.0 PRODUCT REQUIREMENTS

6.1 Luminaire Designations: Tabulated summaries of key parameters and product criteria

Table 6.1. **Summary of Luminaire Designations**

Luminaire Designation				**HPS to Replace**		
Cobra	**Street**	**Class**	**Layout**	**Fixture Model #**	**Wattage**	**Initial Lamp Lumens**
70CL-A	Pacific Ave	Local	One side	GE M2RC-XX-S-O-H-2-G-MC3	70	6400
70CL-B	Otis	Local	Staggered	Same	70	6400
70CL-C	Shoreline Dr.	Local	Staggered	Same	70	6400
70CC	Otis	Collector	One side	Same	70	6400
100CL	Fernside	Local	One side	Same	100	9500
100CC	Ralph Appezzato	Collector	Median	Same	2@100	9500
150CL	Fernside	Local	Staggered	Same	150	16000
150CC	Constitution	Collector	Staggered	Same	150	16000
250CC	Park	Collector	Staggered	Same	250	28000
Shoe Box	**Street**	**Class**	**Layout**	**Fixture Model #**	**Wattage**	**Initial Lamp Lumens**
70SL	Seaview	Local	Staggered	Cooper UCS Concourse III – SNW	70	6400
100SL	South Loop Rd	Local	Staggered	Same	100	9500
150SL	Aughinbaugh	Local	Staggered	Same	150	16000
250SL	Mecartney	Local	Staggered	Same	250	28000
Intersections	**Street**	**Class**	**Layout**	**Fixture Model #**	**Wattage**	**Initial Lamp Lumens**
100CLL-A	Pacific Ave and Chapin St	Local/Local	Intersection	GE M2RC-XX-S-O-H-2-G-MC3	100	9500
100CLL-B	Grand St. and San Antonio Ave.	Local/Local	Intersection	GE M2RC-XX-S-O-H-2-G-MC3	100	9500
100CLL-C	Lincoln Ave and Chapin St.	Local/Local	Intersection	GE M2RC-XX-S-O-H-2-G-MC3	100	9500
100CCL	Otis Drive and Pearl St.	Collector/Local	Intersection	GE M2RC-XX-S-O-H-2-G-MC3	100	9500
100SLL	Seaview Parkway and Gainsborough Ct.	Local/Local	Intersection	Cooper UCS Concourse III – SNW	70	6400
150SCL	Harbor Bay Parkway-South Loop Rd-Road B	Collector/Local	Intersection	Cooper UCS Concourse III – SNW	150	16000

Luminaire Designation Code:
Existing HPS wattage – Type – Roadway Class/Roadway Class
Example: 70CL = 70 watt HPS, cobra head, local
Example: 150SC = 150 watt HPS, shoe box, collector
Example: 100CLL = 100 watt HPS, cobra head, local/local intersection

Luminaire Designation: 70CL-A (one of three required scenarios)

Replacing 70W HPS Cobra Head, Local Roadways

Typical Street: Pacific Ave between St Charles & Chapin

SITE PARAMETERS (*See drawings in Exhibit C- Pole Layout Illustrations*)					
ROADWAY DATA	Total width (curb to curb)				38 ft
	Median width (including curbs, gutters, and shoulders)				0 ft
	Number of vehicular lanes (total on both sides of median)				2
	Width of one vehicular lane				12 ft
	Shoulder width (including gutter and curb)				7 ft
	IES pavement class.	☐ R1	☐ R2	☑ R3 ☐ R4	
SIDEWALK DATA	Berm width (from curb to sidewalk)				3 ft
	Sidewalk width				6 ft
	Sidewalk on	☑ Both sides of street	☐ Pole side	☐ Other side	
LIGHT POLE DATA	Luminaire mounting height				30 ft
	Arm length (horizontal)				6 ft
	Luminaires per pole				1
	Pole set-back from curb				2 ft
	Pole spacing (one pole cycle, parallel to path of travel)				150 ft
	Pole layout	☑ One side	☐ Opposite	☐ Staggered ☐ Median	
PERFORMANCE CRITERIA					
MAINTAINED ROADWAY ILLUMINATION (Based on Local, Low Pedestrian Conflict)					
PHOTOPIC ILLUMINANCE	Average horizontal illuminance at pavement				3.0 lux (0.3 fc)
	Avg:min uniformity ratio				6.0
	Max:min uniformity ratio				n/a
DISABILITY GLARE	Max. veiling luminance ratio				0.4
MAINTAINED SIDEWALK ILLUMINATION (Based on Low Pedestrian Conflict, Low Density)					
PHOTOPIC ILLUMINANCE	Average horizontal at pavement				3.0 lux (0.3 fc)
	Avg:min uniformity ratio (horizontal)				6.0
	Min. vertical illum. at 4.9 ft, in directions of travel				0.8 lux (0.08 fc)
LED LUMINAIRE					
INPUT POWER	Max. nominal luminaire input power				82 W
VOLTAGE	Nominal luminaire input voltage (or range as applicable)				120-277V (multi)
LUMEN MAINT.	Min. % of initial output at 36,000 hours operation				91%
WARRANTY	Min. luminaire warranty				10 years
NOMINAL CCT	Rated correlated color temperature				4100 ± 200 K
BUG RATINGS	Max. nominal backlight-uplight-glare ratings				B1-U0-G1
FINISH	Luminaire housing finish color				Gray
WEIGHT	Luminaire weight				30 lb
EPA	Max. effective projected area				0.9 ft^2
MOUNTING	Method	☐ Post-top	☑ Side-arm	☐ Trun./yoke ☐ Swivel-tenon	
	Tenon nominal pipe size (NPS)				2 inches
VIBRATION	ANSI C136.31	☑ Level 1 (normal)	☐ Level 2 (bridge/overpass)		
THERMAL ENVIRONMENT	Typical min. ambient temperature during operation				0 °C
	Typical max. ambient temperature during operation				35 °C
ELECTRICAL IMMUNITY	ANSI C136.2 Comb. Wave Test Level	☑ Basic (6kV / 3kA)	☐ Enhanced (10kV / 5kA)	☐ Elevated (20kV / 10kA)	
CONTROL INTERFACE	☐ None	☐ ANSI C136.10 (3-pin)	☑ ANSI C136.41, 5-pin	☐ ANSI C136.41, 7-pin	
LED DRIVER	☐ Not dimmable	☑ Dimmable, 0-10V (IEC 60929)	☐ Dimmable, DALI (IEC 62386)		

Luminaire Designation: 70CL-B (two of three required scenarios)
Replacing 70W HPS Cobra Head, Local Roadway
Typical Street: Otis between Tarryton Isle & Larchmont

SITE PARAMETERS (*See drawings in Exhibit C- Pole Layout Illustrations*)					
ROADWAY DATA	Total width (curb to curb)				64 ft
	Median width (including curbs, gutters, and shoulders)				0 ft
	Number of vehicular lanes (total on both sides of median)				4
	Width of one vehicular lane				12 ft
	Shoulder width (including gutter and curb)				8 ft
	IES pavement class.	☐ R1	☐ R2	☑ R3 ☐ R4	
SIDEWALK DATA	Berm width (from curb to sidewalk)				5 ft
	Sidewalk width				5 ft
	Sidewalk on	☑ Both sides of street	☐ Pole side	☐ Other side	
LIGHT POLE DATA	Luminaire mounting height				30 ft
	Arm length (horizontal)				6 ft
	Luminaires per pole				1
	Pole set-back from curb				2 ft
	Pole spacing (one pole cycle, parallel to path of travel)				200 ft
	Pole layout	☐ One side	☐ Opposite	☑ Staggered ☐ Median	
PERFORMANCE CRITERIA					
MAINTAINED ROADWAY ILLUMINATION (Based on Local, Low Pedestrian Conflict)					
PHOTOPIC ILLUMINANCE	Average horizontal illuminance at pavement				3.0 lux (0.3 fc)
	Avg:min uniformity ratio				6.0
	Max:min uniformity ratio				n/a
DISABILITY GLARE	Max. veiling luminance ratio				0.4
MAINTAINED SIDEWALK ILLUMINATION (Based on Low Pedestrian Conflict, Low Density)					
PHOTOPIC ILLUMINANCE	Average horizontal at pavement				3.0 lux (0.3 fc)
	Avg:min uniformity ratio (horizontal)				6.0
	Min. vertical illum. at 4.9 ft, in directions of travel				0.8 lux (0.08 fc)
LED LUMINAIRE					
INPUT POWER	Max. nominal luminaire input power				82 W
VOLTAGE	Nominal luminaire input voltage (or range as applicable)				120-277V (multi)
LUMEN MAINT.	Min. % of initial output at 36,000 hours operation				91%
WARRANTY	Min. luminaire warranty				10 years
NOMINAL CCT	Rated correlated color temperature				4100 ± 200 K
BUG RATINGS	Max. nominal backlight-uplight-glare ratings				B1-U0-G1
FINISH	Luminaire housing finish color				Gray
WEIGHT	Luminaire weight				30 lb
EPA	Max. effective projected area				0.9 ft^2
MOUNTING	Method	☐ Post-top	☑ Side-arm	☐ Trun./yoke ☐ Swivel-tenon	
	Tenon nominal pipe size (NPS)				2 inches
VIBRATION	ANSI C136.31	☑ Level 1 (normal)	☐ Level 2 (bridge/overpass)		
THERMAL ENVIRONMENT	Typical min. ambient temperature during operation				0 °C
	Typical max. ambient temperature during operation				35 °C
ELECTRICAL IMMUNITY	ANSI C136.2 Comb. Wave Test Level	☑ Basic (6kV / 3kA)	☐ Enhanced (10kV / 5kA)	☐ Elevated (20kV / 10kA)	
CONTROL INTERFACE	☐ None	☐ ANSI C136.10 (3-pin)	☑ ANSI C136.41, 5-pin	☐ ANSI C136.41, 7-pin	
LED DRIVER	☐ Not dimmable	☑ Dimmable, 0-10V (IEC 60929)	☐ Dimmable, DALI (IEC 62386)		

Luminaire Designation: 70CL-C (three of three required scenarios)

Replacing 70W HPS Cobra Head, Local Roadway

Typical Street: Shoreline Dr. between Kitty Hawk and Willow

SITE PARAMETERS (*See drawings in Exhibit C- Pole Layout Illustrations)*					
ROADWAY DATA	Total width (curb to curb)				48 ft
	Median width (including curbs, gutters, and shoulders)				0 ft
	Number of vehicular lanes (total on both sides of median)				4
	Width of one vehicular lane				12 ft
	Shoulder width (including gutter and curb)				0 ft
	IES pavement class.	☐ R1	☐ R2	☑ R3 ☐ R4	
SIDEWALK DATA	Berm width (from curb to sidewalk)				4 ft
	Sidewalk width				8 ft
	Sidewalk on	☑ Both sides of street	☐ Pole side	☐ Other side	
LIGHT POLE DATA	Luminaire mounting height				30 ft
	Arm length (horizontal)				6 ft
	Luminaires per pole				1
	Pole set-back from curb				2 ft
	Pole spacing (one pole cycle, parallel to path of travel)				280 ft
	Pole layout	☐ One side	☐ Opposite	☑ Staggered ☐ Median	
PERFORMANCE CRITERIA					
MAINTAINED ROADWAY ILLUMINATION (Based on Local, Low Pedestrian Conflict)					
PHOTOPIC ILLUMINANCE	Average horizontal illuminance at pavement				3.0 lux (0.3 fc)
	Avg:min uniformity ratio				6.0
	Max:min uniformity ratio				n/a
DISABILITY GLARE	Max. veiling luminance ratio				0.4
MAINTAINED SIDEWALK ILLUMINATION (Based on Low Pedestrian Conflict, Low Density)					
PHOTOPIC ILLUMINANCE	Average horizontal at pavement				3.0 lux (0.3 fc)
	Avg:min uniformity ratio (horizontal)				6.0
	Min. vertical illum. at 4.9 ft, in directions of travel				0.8 lux (0.08 fc)
LED LUMINAIRE					
INPUT POWER	Max. nominal luminaire input power				82 W
VOLTAGE	Nominal luminaire input voltage (or range as applicable)				120-277V (multi)
LUMEN MAINT.	Min. % of initial output at 36,000 hours operation				91%
WARRANTY	Min. luminaire warranty				10 years
NOMINAL CCT	Rated correlated color temperature				4100 ± 200 K
BUG RATINGS	Max. nominal backlight-uplight-glare ratings				B1-U0-G1
FINISH	Luminaire housing finish color				Gray
WEIGHT	Luminaire weight				30 lb
EPA	Max. effective projected area				0.9 ft^2
MOUNTING	Method	☐ Post-top	☑ Side-arm	☐ Trun./yoke ☐ Swivel-tenon	
	Tenon nominal pipe size (NPS)				2 inches
VIBRATION	ANSI C136.31	☑ Level 1 (normal)	☐ Level 2 (bridge/overpass)		
THERMAL ENVIRONMENT	Typical min. ambient temperature during operation				0 °C
	Typical max. ambient temperature during operation				35 °C
ELECTRICAL IMMUNITY	ANSI C136.2 Comb. Wave Test Level	☑ Basic (6kV / 3kA)	☐ Enhanced (10kV / 5kA)	☐ Elevated (20kV / 10kA)	
CONTROL INTERFACE	☐ None	☐ ANSI C136.10 (3-pin)	☑ ANSI C136.41, 5-pin	☐ ANSI C136.41, 7-pin	
LED DRIVER	☐ Not dimmable	☑ Dimmable, 0-10V (IEC 60929)	☐ Dimmable, DALI (IEC 62386)		

Luminaire Designation: 70CC

Replacing 70W HPS Cobra Head, Collector Roadway
Typical Street: Otis between Broadway & Versailles

SITE PARAMETERS (*See drawings in Exhibit C- Pole Layout Illustrations*)					
ROADWAY DATA	Total width (curb to curb)				56 ft
	Median width (including curbs, gutters, and shoulders)				0 ft
	Number of vehicular lanes (total on both sides of median)				4
	Width of one vehicular lane				14 ft
	Shoulder width (including gutter and curb)				0 ft
	IES pavement class.	☐ R1	☐ R2	☑ R3 ☐ R4	
SIDEWALK DATA	Berm width (from curb to sidewalk)				5 ft
	Sidewalk width				5 ft
	Sidewalk on	☑ Both sides of street	☐ Pole side	☐ Other side	
LIGHT POLE DATA	Luminaire mounting height				30 ft
	Arm length (horizontal)				6 ft
	Luminaires per pole				1
	Pole set-back from curb				2 ft
	Pole spacing (one pole cycle, parallel to path of travel)				120 ft
	Pole layout	☑ One side	☐ Opposite	☐ Staggered ☐ Median	
PERFORMANCE CRITERIA					
MAINTAINED ROADWAY ILLUMINATION (Based on Collector, Medium Conflict)					
PHOTOPIC ILLUMINANCE	Average horizontal illuminance at pavement				6.0 lux (0.6 fc)
	Avg:min uniformity ratio				3.5
	Max:min uniformity ratio				n/a
DISABILITY GLARE	Max. veiling luminance ratio				0.4
MAINTAINED SIDEWALK ILLUMINATION (Based on Medium Pedestrian Conflict)					
PHOTOPIC ILLUMINANCE	Average horizontal at pavement				5.0 lux (0.5 fc)
	Avg:min uniformity ratio (horizontal)				4.0
	Min. vertical illum. at 4.9 ft, in directions of travel				2.0 lux (0.2 fc)
LED LUMINAIRE					
INPUT POWER	Max. nominal luminaire input power				82 W
VOLTAGE	Nominal luminaire input voltage (or range as applicable)				120-277V (multi)
LUMEN MAINT.	Min. % of initial output at 36,000 hours operation				91%
WARRANTY	Min. luminaire warranty				10 years
NOMINAL CCT	Rated correlated color temperature				4100 ± 200 K
BUG RATINGS	Max. nominal backlight-uplight-glare ratings				B1-U0-G1
FINISH	Luminaire housing finish color				Gray
WEIGHT	Luminaire weight				30 lb
EPA	Max. effective projected area				0.9 ft^2
MOUNTING	Method	☐ Post-top	☑ Side-arm	☐ Trun./yoke ☐ Swivel-tenon	
	Tenon nominal pipe size (NPS)				2 inches
VIBRATION	ANSI C136.31	☑ Level 1 (normal)	☐ Level 2 (bridge/overpass)		
THERMAL ENVIRONMENT	Typical min. ambient temperature during operation				0 °C
	Typical max. ambient temperature during operation				35 °C
ELECTRICAL IMMUNITY	ANSI C136.2 Comb. Wave Test Level	☑ Basic (6kV / 3kA)	☐ Enhanced (10kV / 5kA)	☐ Elevated (20kV / 10kA)	
CONTROL INTERFACE	☐ None	☐ ANSI C136.10 (3-pin)	☑ ANSI C136.41, 5-pin	☐ ANSI C136.41, 7-pin	
LED DRIVER	☐ Not dimmable	☑ Dimmable, 0-10V (IEC 60929)	☐ Dimmable, DALI (IEC 62386)		

Luminaire Designation: 100CL

Replacing 100W HPS Cobra Head, Local Roadway

Typical Street: Fernside Between Thompson & Monte Vista

SITE PARAMETERS (*See drawings in Exhibit C- Pole Layout Illustrations*)					
ROADWAY DATA	Total width (curb to curb)				60 ft
	Median width (including curbs, gutters, and shoulders)				0 ft
	Number of vehicular lanes (total on both sides of median)				2
	Width of one vehicular lane				15 ft
	Shoulder width (including gutter and curb)				15 ft
	IES pavement class.	☐ R1	☐ R2	☑ R3 ☐ R4	
SIDEWALK DATA	Berm width (from curb to sidewalk)				5 ft
	Sidewalk width				5 ft
	Sidewalk on	☑ Both sides of street	☐ Pole side	☐ Other side	
LIGHT POLE DATA	Luminaire mounting height				30 ft
	Arm length (horizontal)				16 ft
	Luminaires per pole				1
	Pole set-back from curb				2 ft
	Pole spacing (one pole cycle, parallel to path of travel)				150 ft
	Pole layout	☑ One side	☐ Opposite	☐ Staggered ☐ Median	
PERFORMANCE CRITERIA					
MAINTAINED ROADWAY ILLUMINATION (Based on Local, Low Pedestrian Conflict)					
PHOTOPIC ILLUMINANCE	Average horizontal illuminance at pavement				3.0 lux (0.3 fc)
	Avg:min uniformity ratio				6.0
	Max:min uniformity ratio				n/a
DISABILITY GLARE	Max. veiling luminance ratio				0.4
MAINTAINED SIDEWALK ILLUMINATION (Based on Low Pedestrian Conflict, Low Density)					
PHOTOPIC ILLUMINANCE	Average horizontal at pavement				3.0 lux (0.3 fc)
	Avg:min uniformity ratio (horizontal)				6.0
	Min. vertical illum. at 4.9 ft, in directions of travel				0.8 lux (0.08 fc)
LED LUMINAIRE					
INPUT POWER	Max. nominal luminaire input power				112 W
VOLTAGE	Nominal luminaire input voltage (or range as applicable)				120-277V (multi)
LUMEN MAINT.	Min. % of initial output at 36,000 hours operation				91%
WARRANTY	Min. luminaire warranty				10 years
NOMINAL CCT	Rated correlated color temperature				4100 ± 200 K
BUG RATINGS	Max. nominal backlight-uplight-glare ratings				B1-U0-G1
FINISH	Luminaire housing finish color				Gray
WEIGHT	Luminaire weight				30 lb
EPA	Max. effective projected area				0.9 ft^2
MOUNTING	Method	☐ Post-top	☑ Side-arm	☐ Trun./yoke ☐ Swivel-tenon	
	Tenon nominal pipe size (NPS)				2 inches
VIBRATION	ANSI C136.31	☑ Level 1 (normal)	☐ Level 2 (bridge/overpass)		
THERMAL ENVIRONMENT	Typical min. ambient temperature during operation				0 °C
	Typical max. ambient temperature during operation				35 °C
ELECTRICAL IMMUNITY	ANSI C136.2 Comb. Wave Test Level	☑ Basic (6kV / 3kA)	☐ Enhanced (10kV / 5kA)	☐ Elevated (20kV / 10kA)	
CONTROL INTERFACE	☐ None	☐ ANSI C136.10 (3-pin)	☑ ANSI C136.41, 5-pin	☐ ANSI C136.41, 7-pin	
LED DRIVER	☐ Not dimmable	☑ Dimmable, 0-10V (IEC 60929)	☐ Dimmable, DALI (IEC 62386)		

Luminaire Designation: 100CC

Replacing 100W HPS Cobra Head, Collector Roadway

Typical Street: Ralph Appezzato between Coral Sea & Mosley

SITE PARAMETERS (*See drawings in Exhibit C- Pole Layout Illustrations*)					
ROADWAY DATA	Total width (curb to curb)				64 ft
	Median width (including curbs, gutters, and shoulders)				2 ft
	Number of vehicular lanes (total on both sides of median)				4
	Width of one vehicular lane				16 ft
	Shoulder width (including gutter and curb)				0 ft
	IES pavement class.	☐ R1	☐ R2	☑ R3 ☐ R4	
SIDEWALK DATA	Berm width (from curb to sidewalk)				5 ft
	Sidewalk width				5 ft
	Sidewalk on	☑ Both sides of street	☐ Pole side	☐ Other side	
LIGHT POLE DATA	Luminaire mounting height				30 ft
	Arm length (horizontal)				6 ft
	Luminaires per pole				2
	Pole set-back from curb				2 ft
	Pole spacing (one pole cycle, parallel to path of travel)				150 ft
	Pole layout	☐ One side	☐ Opposite	☐ Staggered ☑ Median	
PERFORMANCE CRITERIA					
MAINTAINED ROADWAY ILLUMINATION (Based on Collector, Medium Conflict)					
PHOTOPIC ILLUMINANCE	Average horizontal illuminance at pavement				6.0 lux (0.6 fc)
	Avg:min uniformity ratio				3.5
	Max:min uniformity ratio				n/a
DISABILITY GLARE	Max. veiling luminance ratio				0.4
MAINTAINED SIDEWALK ILLUMINATION (Based on Medium Pedestrian Conflict)					
PHOTOPIC ILLUMINANCE	Average horizontal at pavement				5.0 lux (0.5 fc)
	Avg:min uniformity ratio (horizontal)				4.0
	Min. vertical illum. at 4.9 ft, in directions of travel				2.0 lux (0.2 fc)
LED LUMINAIRE					
INPUT POWER	Max. nominal luminaire input power				112 W
VOLTAGE	Nominal luminaire input voltage (or range as applicable)				120-277V (multi)
LUMEN MAINT.	Min. % of initial output at 36,000 hours operation				91%
WARRANTY	Min. luminaire warranty				10 years
NOMINAL CCT	Rated correlated color temperature				4100 ± 200 K
BUG RATINGS	Max. nominal backlight-uplight-glare ratings				B2-U0-G2
FINISH	Luminaire housing finish color				Gray
WEIGHT	Luminaire weight				30 lb
EPA	Max. effective projected area				0.9 ft^2
MOUNTING	Method	☐ Post-top	☑ Side-arm	☐ Trun./yoke ☐ Swivel-tenon	
	Tenon nominal pipe size (NPS)				2 inches
VIBRATION	ANSI C136.31	☑ Level 1 (normal)	☐ Level 2 (bridge/overpass)		
THERMAL ENVIRONMENT	Typical min. ambient temperature during operation				0 °C
	Typical max. ambient temperature during operation				35 °C
ELECTRICAL IMMUNITY	ANSI C136.2 Comb. Wave Test Level	☑ Basic (6kV / 3kA)	☐ Enhanced (10kV / 5kA)	☐ Elevated (20kV / 10kA)	
CONTROL INTERFACE	☐ None	☐ ANSI C136.10 (3-pin)	☑ ANSI C136.41, 5-pin	☐ ANSI C136.41, 7-pin	
LED DRIVER	☐ Not dimmable	☑ Dimmable, 0-10V (IEC 60929)	☐ Dimmable, DALI (IEC 62386)		

Luminaire Designation: 150CL

Replacing 150W HPS Cobra Head, Local Roadway

Typical Street: Fernside between Washington & San Jose

SITE PARAMETERS (*See drawings in Exhibit C- Pole Layout Illustrations)*					
ROADWAY DATA	Total width (curb to curb)				68 ft
	Median width (including curbs, gutters, and shoulders)				0 ft
	Number of vehicular lanes (total on both sides of median)				2
	Width of one vehicular lane				17 ft
	Shoulder width (including gutter and curb)				17 ft
	IES pavement class.	☐ R1	☐ R2	☑ R3 ☐ R4	
SIDEWALK DATA	Berm width (from curb to sidewalk)				5 ft
	Sidewalk width				5 ft
	Sidewalk on	☑ Both sides of street	☐ Pole side	☐ Other side	
LIGHT POLE DATA	Luminaire mounting height				30 ft
	Arm length (horizontal)				6 ft
	Luminaires per pole				1
	Pole set-back from curb				2 ft
	Pole spacing (one pole cycle, parallel to path of travel)				150 ft
	Pole layout	☐ One side	☐ Opposite	☑ Staggered ☐ Median	
PERFORMANCE CRITERIA					
MAINTAINED ROADWAY ILLUMINATION (Based on Local, Low Pedestrian Conflict)					
PHOTOPIC ILLUMINANCE	Average horizontal illuminance at pavement				3.0 lux (0.3 fc)
	Avg:min uniformity ratio				6.0
	Max:min uniformity ratio				n/a
DISABILITY GLARE	Max. veiling luminance ratio				0.4
MAINTAINED SIDEWALK ILLUMINATION (Based on Low Pedestrian Conflict, Low Density)					
PHOTOPIC ILLUMINANCE	Average horizontal at pavement				3.0 lux (0.3 fc)
	Avg:min uniformity ratio (horizontal)				6.0
	Min. vertical illum. at 4.9 ft, in directions of travel				0.8 lux (0.08 fc)
LED LUMINAIRE					
INPUT POWER	Max. nominal luminaire input power				179 W
VOLTAGE	Nominal luminaire input voltage (or range as applicable)				120-277V (multi)
LUMEN MAINT.	Min. % of initial output at 36,000 hours operation				91%
WARRANTY	Min. luminaire warranty				10 years
NOMINAL CCT	Rated correlated color temperature				4100 ± 200 K
BUG RATINGS	Max. nominal backlight-uplight-glare ratings				B1-U0-G1
FINISH	Luminaire housing finish color				Gray
WEIGHT	Luminaire weight				30 lb
EPA	Max. effective projected area				0.9 ft^2
MOUNTING	Method	☐ Post-top	☑ Side-arm	☐ Trun./yoke ☐ Swivel-tenon	
	Tenon nominal pipe size (NPS)				2 inches
VIBRATION	ANSI C136.31	☑ Level 1 (normal)	☐ Level 2 (bridge/overpass)		
THERMAL ENVIRONMENT	Typical min. ambient temperature during operation				0 °C
	Typical max. ambient temperature during operation				35 °C
ELECTRICAL IMMUNITY	ANSI C136.2 Comb. Wave Test Level	☑ Basic (6kV / 3kA)	☐ Enhanced (10kV / 5kA)	☐ Elevated (20kV / 10kA)	
CONTROL INTERFACE	☐ None	☐ ANSI C136.10 (3-pin)	☑ ANSI C136.41, 5-pin	☐ ANSI C136.41, 7-pin	
LED DRIVER	☐ Not dimmable	☑ Dimmable, 0-10V (IEC 60929)	☐ Dimmable, DALI (IEC 62386)		

Luminaire Designation: 150CC

Replacing 150W HPS Cobra Head, Collector Roadway

Typical Street: Constitution between Atlantic & Eagle

SITE PARAMETERS (*See drawings in Exhibit C- Pole Layout Illustrations)*					
ROADWAY DATA	Total width (curb to curb)				64 ft
	Median width (including curbs, gutters, and shoulders)				0 ft
	Number of vehicular lanes (total on both sides of median)				4
	Width of one vehicular lane				12 ft
	Shoulder width (including gutter and curb)				8 ft
	IES pavement class.	☐ R1	☐ R2	☑ R3 ☐ R4	
SIDEWALK DATA	Berm width (from curb to sidewalk)				2 ft
	Sidewalk width				5 ft
	Sidewalk on	☑ Both sides of street	☐ Pole side	☐ Other side	
LIGHT POLE DATA	Luminaire mounting height				30 ft
	Arm length (horizontal)				6 ft
	Luminaires per pole				1
	Pole set-back from curb				2 ft
	Pole spacing (one pole cycle, parallel to path of travel)				200 ft
	Pole layout	☐ One side	☐ Opposite	☑ Staggered ☐ Median	
PERFORMANCE CRITERIA					
MAINTAINED ROADWAY ILLUMINATION (Based on Collector, Medium Conflict)					
PHOTOPIC ILLUMINANCE	Average horizontal illuminance at pavement				6.0 lux (0.6 fc)
	Avg:min uniformity ratio				3.5
	Max:min uniformity ratio				n/a
DISABILITY GLARE	Max. veiling luminance ratio				0.4
MAINTAINED SIDEWALK ILLUMINATION (Based on Medium Pedestrian Conflict)					
PHOTOPIC ILLUMINANCE	Average horizontal at pavement				5.0 lux (0.5 fc)
	Avg:min uniformity ratio (horizontal)				4.0
	Min. vertical illum. at 4.9 ft, in directions of travel				2.0 lux (0.2 fc)
LED LUMINAIRE					
INPUT POWER	Max. nominal luminaire input power				179 W
VOLTAGE	Nominal luminaire input voltage (or range as applicable)				120-277V (multi)
LUMEN MAINT.	Min. % of initial output at 36,000 hours operation				91%
WARRANTY	Min. luminaire warranty				10 years
NOMINAL CCT	Rated correlated color temperature				4100 ± 200 K
BUG RATINGS	Max. nominal backlight-uplight-glare ratings				B2-U0-G2
FINISH	Luminaire housing finish color				Gray
WEIGHT	Luminaire weight				30 lb
EPA	Max. effective projected area				0.9 ft^2
MOUNTING	Method	☐ Post-top	☑ Side-arm	☐ Trun./yoke ☐ Swivel-tenon	
	Tenon nominal pipe size (NPS)				2 inches
VIBRATION	ANSI C136.31	☑ Level 1 (normal)	☐ Level 2 (bridge/overpass)		
THERMAL ENVIRONMENT	Typical min. ambient temperature during operation				0 °C
	Typical max. ambient temperature during operation				35 °C
ELECTRICAL IMMUNITY	ANSI C136.2 Comb. Wave Test Level	☑ Basic (6kV / 3kA)	☐ Enhanced (10kV / 5kA)	☐ Elevated (20kV / 10kA)	
CONTROL INTERFACE	☐ None	☐ ANSI C136.10 (3-pin)	☑ ANSI C136.41, 5-pin	☐ ANSI C136.41, 7-pin	
LED DRIVER	☐ Not dimmable	☑ Dimmable, 0-10V (IEC 60929)	☐ Dimmable, DALI (IEC 62386)		

Luminaire Designation: 250CC

Replacing 250W HPS Cobra Head, Collector Roadway

Typical Street: Park near bridge

SITE PARAMETERS (*See drawings in Exhibit C- Pole Layout Illustrations)*					
ROADWAY DATA	Total width (curb to curb)				56 ft
	Median width (including curbs, gutters, and shoulders)				0 ft
	Number of vehicular lanes (total on both sides of median)				4
	Width of one vehicular lane				14 ft
	Shoulder width (including gutter and curb)				0
	IES pavement class.	☐ R1	☐ R2	☑ R3 ☐ R4	
SIDEWALK DATA	Berm width (from curb to sidewalk)				3 ft
	Sidewalk width				5 ft
	Sidewalk on	☑ Both sides of street	☐ Pole side	☐ Other side	
LIGHT POLE DATA	Luminaire mounting height				30 ft
	Arm length (horizontal)				6 ft
	Luminaires per pole				1
	Pole set-back from curb				2 ft
	Pole spacing (one pole cycle, parallel to path of travel)				100 ft
	Pole layout	☐ One side	☐ Opposite	☑ Staggered ☐ Median	
PERFORMANCE CRITERIA					
MAINTAINED ROADWAY ILLUMINATION (Based on Collector, Medium Conflict)					
PHOTOPIC ILLUMINANCE	Average horizontal illuminance at pavement				6.0 lux (0.6 fc)
	Avg:min uniformity ratio				3.5
	Max:min uniformity ratio				n/a
DISABILITY GLARE	Max. veiling luminance ratio				0.4
MAINTAINED SIDEWALK ILLUMINATION (Based on Medium Pedestrian Conflict)					
PHOTOPIC ILLUMINANCE	Average horizontal at pavement				5.0 lux (0.5 fc)
	Avg:min uniformity ratio (horizontal)				4.0
	Min. vertical illum. at 4.9 ft, in directions of travel				2.0 lux (0.2 fc)
LED LUMINAIRE					
INPUT POWER	Max. nominal luminaire input power				313 W
VOLTAGE	Nominal luminaire input voltage (or range as applicable)				120-277V (multi)
LUMEN MAINT.	Min. % of initial output at 36,000 hours operation				91%
WARRANTY	Min. luminaire warranty				10 years
NOMINAL CCT	Rated correlated color temperature				4100 ± 200 K
BUG RATINGS	Max. nominal backlight-uplight-glare ratings				B2-U0-G2
FINISH	Luminaire housing finish color				Gray
WEIGHT	Luminaire weight				30 lb
EPA	Max. effective projected area				0.9 ft^2
MOUNTING	Method	☐ Post-top	☑ Side-arm	☐ Trun./yoke ☐ Swivel-tenon	
	Tenon nominal pipe size (NPS)				2 inches
VIBRATION	ANSI C136.31	☑ Level 1 (normal)	☐ Level 2 (bridge/overpass)		
THERMAL ENVIRONMENT	Typical min. ambient temperature during operation				0 °C
	Typical max. ambient temperature during operation				35 °C
ELECTRICAL IMMUNITY	ANSI C136.2 Comb. Wave Test Level	☑ Basic (6kV / 3kA)	☐ Enhanced (10kV / 5kA)	☐ Elevated (20kV / 10kA)	
CONTROL INTERFACE	☐ None	☐ ANSI C136.10 (3-pin)	☑ ANSI C136.41, 5-pin	☐ ANSI C136.41, 7-pin	
LED DRIVER	☐ Not dimmable	☑ Dimmable, 0-10V (IEC 60929)	☐ Dimmable, DALI (IEC 62386)		

Luminaire Designation: 70SL

Replacing 70W HPS Shoe Box, Local Roadway

Typical Street: Seaview between Nottingham Dr & Avington Rd.

SITE PARAMETERS (*See drawings in Exhibit C- Pole Layout Illustrations*)					
ROADWAY DATA	Total width (curb to curb)				40 ft
	Median width (including curbs, gutters, and shoulders)				0 ft
	Number of vehicular lanes (total on both sides of median)				2
	Width of one vehicular lane				12 ft
	Shoulder width (including gutter and curb)				8 ft
	IES pavement class.	☐ R1	☐ R2	☑ R3 ☐ R4	
SIDEWALK DATA	Berm width (from curb to sidewalk)				5 ft
	Sidewalk width				5 ft
	Sidewalk on	☑ Both sides of street	☐ Pole side	☐ Other side	
LIGHT POLE DATA	Luminaire mounting height				29 ft
	Arm length (horizontal)				1 ft
	Luminaires per pole				1
	Pole set-back from curb				2 ft
	Pole spacing (one pole cycle, parallel to path of travel)				200 ft
	Pole layout	☐ One side	☐ Opposite	☑ Staggered ☐ Median	
PERFORMANCE CRITERIA					
MAINTAINED ROADWAY ILLUMINATION (Based on Local, Low Pedestrian Conflict)					
PHOTOPIC ILLUMINANCE	Average horizontal illuminance at pavement				3.0 lux (0.3 fc)
	Avg:min uniformity ratio				6.0
	Max:min uniformity ratio				n/a
DISABILITY GLARE	Max. veiling luminance ratio				0.4
MAINTAINED SIDEWALK ILLUMINATION (Based on Low Pedestrian Conflict, Low Density)					
PHOTOPIC ILLUMINANCE	Average horizontal at pavement				3.0 lux (0.3 fc)
	Avg:min uniformity ratio (horizontal)				6.0
	Min. vertical illum. at 4.9 ft, in directions of travel				0.8 lux (0.08 fc)
LED LUMINAIRE					
INPUT POWER	Max. nominal luminaire input power				82 W
VOLTAGE	Nominal luminaire input voltage (or range as applicable)				120-277V (multi)
LUMEN MAINT.	Min. % of initial output at 36,000 hours operation				91%
WARRANTY	Min. luminaire warranty				10 years
NOMINAL CCT	Rated correlated color temperature				4100 ± 200 K
BUG RATINGS	Max. nominal backlight-uplight-glare ratings				B1-U0-G1
FINISH	Luminaire housing finish color				Bronze
WEIGHT	Luminaire weight				30 lb
EPA	Max. effective projected area				1.1 ft^2
MOUNTING	Method	☐ Post-top	☑ Side-arm	☐ Trun./yoke ☐ Swivel-tenon	
	Tenon nominal pipe size (NPS)				2 inches
VIBRATION	ANSI C136.31	☑ Level 1 (normal)	☐ Level 2 (bridge/overpass)		
THERMAL ENVIRONMENT	Typical min. ambient temperature during operation				0 °C
	Typical max. ambient temperature during operation				35 °C
ELECTRICAL IMMUNITY	ANSI C136.2 Comb. Wave Test Level	☑ Basic (6kV / 3kA)	☐ Enhanced (10kV / 5kA)	☐ Elevated (20kV / 10kA)	
CONTROL INTERFACE	☐ None	☐ ANSI C136.10 (3-pin)	☑ ANSI C136.41, 5-pin	☐ ANSI C136.41, 7-pin	
LED DRIVER	☐ Not dimmable	☑ Dimmable, 0-10V (IEC 60929)	☐ Dimmable, DALI (IEC 62386)		

Luminaire Designation: 100SL

Replacing 100W HPS Shoe Box, Local Roadway

Typical Street: South Loop Rd between Harbor Bay Pkwy & South Loop

SITE PARAMETERS (*See drawings in Exhibit C- Pole Layout Illustrations*)					
ROADWAY DATA	Total width (curb to curb)				40 ft
	Median width (including curbs, gutters, and shoulders)				0 ft
	Number of vehicular lanes (total on both sides of median)				2
	Width of one vehicular lane				12 ft
	Shoulder width (including gutter and curb)				8 ft
	IES pavement class.	☐ R1	☐ R2	☑ R3 ☐ R4	
SIDEWALK DATA	Berm width (from curb to sidewalk)				7 ft
	Sidewalk width				5 ft
	Sidewalk on	☑ Both sides of street	☐ Pole side	☐ Other side	
LIGHT POLE DATA	Luminaire mounting height				29 ft
	Arm length (horizontal)				1 ft
	Luminaires per pole				1
	Pole set-back from curb				2 ft
	Pole spacing (one pole cycle, parallel to path of travel)				300 ft
	Pole layout	☐ One side	☐ Opposite	☑ Staggered ☐ Median	
PERFORMANCE CRITERIA					
MAINTAINED ROADWAY ILLUMINATION (Based on Local, Low Pedestrian Conflict)					
PHOTOPIC ILLUMINANCE	Average horizontal illuminance at pavement				3.0 lux (0.3 fc)
	Avg:min uniformity ratio				6.0
	Max:min uniformity ratio				n/a
DISABILITY GLARE	Max. veiling luminance ratio				0.4
MAINTAINED SIDEWALK ILLUMINATION (Based on Low Pedestrian Conflict, Low Density)					
PHOTOPIC ILLUMINANCE	Average horizontal at pavement				3.0 lux (0.3 fc)
	Avg:min uniformity ratio (horizontal)				6.0
	Min. vertical illum. at 4.9 ft, in directions of travel				0.8 lux (0.08 fc)
LED LUMINAIRE					
INPUT POWER	Max. nominal luminaire input power				112 W
VOLTAGE	Nominal luminaire input voltage (or range as applicable)				120-277V (multi)
LUMEN MAINT.	Min. % of initial output at 36,000 hours operation				91%
WARRANTY	Min. luminaire warranty				10 years
NOMINAL CCT	Rated correlated color temperature				4100 ± 200 K
BUG RATINGS	Max. nominal backlight-uplight-glare ratings				B1-U0-G1
FINISH	Luminaire housing finish color				Bronze
WEIGHT	Luminaire weight				30 lb
EPA	Max. effective projected area				1.1 ft^2
MOUNTING	Method	☐ Post-top	☑ Side-arm	☐ Trun./yoke ☐ Swivel-tenon	
	Tenon nominal pipe size (NPS)				2 inches
VIBRATION	ANSI C136.31	☑ Level 1 (normal)	☐ Level 2 (bridge/overpass)		
THERMAL ENVIRONMENT	Typical min. ambient temperature during operation				0 °C
	Typical max. ambient temperature during operation				35 °C
ELECTRICAL IMMUNITY	ANSI C136.2 Comb. Wave Test Level	☑ Basic (6kV / 3kA)	☐ Enhanced (10kV / 5kA)	☐ Elevated (20kV / 10kA)	
CONTROL INTERFACE	☐ None	☐ ANSI C136.10 (3-pin)	☑ ANSI C136.41, 5-pin	☐ ANSI C136.41, 7-pin	
LED DRIVER	☐ Not dimmable	☑ Dimmable, 0-10V (IEC 60929)	☐ Dimmable, DALI (IEC 62386)		

Luminaire Designation: 150SL

Replacing 150W HPS Shoe Box, Local Roadway

Typical Street: Aughinbaugh between Robert Davey & Mecartney

SITE PARAMETERS (*See drawings in Exhibit C- Pole Layout Illustrations*)					
ROADWAY DATA	Total width (curb to curb)				40 ft
	Median width (including curbs, gutters, and shoulders)				0 ft
	Number of vehicular lanes (total on both sides of median)				2
	Width of one vehicular lane				12 ft
	Shoulder width (including gutter and curb)				8 ft
	IES pavement class.	☐ R1	☐ R2	☑ R3 ☐ R4	
SIDEWALK DATA	Berm width (from curb to sidewalk)				8 ft
	Sidewalk width				5 ft
	Sidewalk on	☑ Both sides of street	☐ Pole side	☐ Other side	
LIGHT POLE DATA	Luminaire mounting height				29 ft
	Arm length (horizontal)				1 ft
	Luminaires per pole				1
	Pole set-back from curb				2 ft
	Pole spacing (one pole cycle, parallel to path of travel)				300 ft
	Pole layout	☐ One side	☐ Opposite	☑ Staggered ☐ Median	
PERFORMANCE CRITERIA					
MAINTAINED ROADWAY ILLUMINATION (Based on Local, Low Pedestrian Conflict)					
PHOTOPIC ILLUMINANCE	Average horizontal illuminance at pavement				3.0 lux (0.3 fc)
	Avg:min uniformity ratio				6.0
	Max:min uniformity ratio				n/a
DISABILITY GLARE	Max. veiling luminance ratio				0.4
MAINTAINED SIDEWALK ILLUMINATION (Based on Low Pedestrian Conflict, Low Density)					
PHOTOPIC ILLUMINANCE	Average horizontal at pavement				3.0 lux (0.3 fc)
	Avg:min uniformity ratio (horizontal)				6.0
	Min. vertical illum. at 4.9 ft, in directions of travel				0.8 lux (0.08 fc)
LED LUMINAIRE					
INPUT POWER	Max. nominal luminaire input power				179 W
VOLTAGE	Nominal luminaire input voltage (or range as applicable)				120-277V (multi)
LUMEN MAINT.	Min. % of initial output at 36,000 hours operation				91%
WARRANTY	Min. luminaire warranty				10 years
NOMINAL CCT	Rated correlated color temperature				4100 ± 200 K
BUG RATINGS	Max. nominal backlight-uplight-glare ratings				B1-U0-G1
FINISH	Luminaire housing finish color				Bronze
WEIGHT	Luminaire weight				30 lb
EPA	Max. effective projected area				1.1 ft^2
MOUNTING	Method	☐ Post-top	☑ Side-arm	☐ Trun./yoke ☐ Swivel-tenon	
	Tenon nominal pipe size (NPS)				2 inches
VIBRATION	ANSI C136.31	☑ Level 1 (normal)	☐ Level 2 (bridge/overpass)		
THERMAL ENVIRONMENT	Typical min. ambient temperature during operation				0 °C
	Typical max. ambient temperature during operation				35 °C
ELECTRICAL IMMUNITY	ANSI C136.2 Comb. Wave Test Level	☑ Basic (6kV / 3kA)	☐ Enhanced (10kV / 5kA)	☐ Elevated (20kV / 10kA)	
CONTROL INTERFACE	☐ None	☐ ANSI C136.10 (3-pin)	☑ ANSI C136.41, 5-pin	☐ ANSI C136.41, 7-pin	
LED DRIVER	☐ Not dimmable	☑ Dimmable, 0-10V (IEC 60929)	☐ Dimmable, DALI (IEC 62386)		

Luminaire Designation: 250SL

Replacing 250W HPS Shoe Box, Local Roadway

Typical Street: Mecartney between Aughinbaugh & Baywalk

SITE PARAMETERS (*See drawings in Exhibit C- Pole Layout Illustrations*)					
ROADWAY DATA	Total width (curb to curb)				54 ft
	Median width (including curbs, gutters, and shoulders)				22 ft
	Number of vehicular lanes (total on both sides of median)				2
	Width of one vehicular lane				16 ft
	Shoulder width (including gutter and curb)				0 ft
	IES pavement class.	☐ R1	☐ R2	☑ R3 ☐ R4	
SIDEWALK DATA	Berm width (from curb to sidewalk)				5 ft
	Sidewalk width				5 ft
	Sidewalk on	☑ Both sides of street	☐ Pole side	☐ Other side	
LIGHT POLE DATA	Luminaire mounting height				29 ft
	Arm length (horizontal)				1 ft
	Luminaires per pole				1
	Pole set-back from curb				2 ft
	Pole spacing (one pole cycle, parallel to path of travel)				100 ft
	Pole layout	☐ One side	☐ Opposite	☑ Staggered ☐ Median	
PERFORMANCE CRITERIA					
MAINTAINED ROADWAY ILLUMINATION (Based on Local, Low Pedestrian Conflict)					
PHOTOPIC ILLUMINANCE	Average horizontal illuminance at pavement				3.0 lux (0.3 fc)
	Avg:min uniformity ratio				6.0
	Max:min uniformity ratio				n/a
DISABILITY GLARE	Max. veiling luminance ratio				0.4
MAINTAINED SIDEWALK ILLUMINATION (Based on Low Pedestrian Conflict, Low Density)					
PHOTOPIC ILLUMINANCE	Average horizontal at pavement				3.0 lux (0.3 fc)
	Avg:min uniformity ratio (horizontal)				6.0
	Min. vertical illum. At 4.9 ft, in directions of travel				0.8 lux (0.08 fc)
LED LUMINAIRE					
INPUT POWER	Max. nominal luminaire input power				313 W
VOLTAGE	Nominal luminaire input voltage (or range as applicable)				120-277V (multi)
LUMEN MAINT.	Min. % of initial output at 36,000 hours operation				91%
WARRANTY	Min. luminaire warranty				10 years
NOMINAL CCT	Rated correlated color temperature				4100 ± 200 K
BUG RATINGS	Max. nominal backlight-uplight-glare ratings				B1-U0-G1
FINISH	Luminaire housing finish color				Bronze
WEIGHT	Luminaire weight				30 lb
EPA	Max. effective projected area				1.1 ft^2
MOUNTING	Method	☐ Post-top	☑ Side-arm	☐ Trun./yoke ☐ Swivel-tenon	
	Tenon nominal pipe size (NPS)				2 inches
VIBRATION	ANSI C136.31	☑ Level 1 (normal)	☐ Level 2 (bridge/overpass)		
THERMAL ENVIRONMENT	Typical min. ambient temperature during operation				0 °C
	Typical max. ambient temperature during operation				35 °C
ELECTRICAL IMMUNITY	ANSI C136.2 Comb. Wave Test Level	☑ Basic (6kV / 3kA)	☐ Enhanced (10kV / 5kA)	☐ Elevated (20kV / 10kA)	
CONTROL INTERFACE	☐ None	☐ ANSI C136.10 (3-pin)	☑ ANSI C136.41, 5-pin	☐ ANSI C136.41, 7-pin	
LED DRIVER	☐ Not dimmable	☑ Dimmable, 0-10V (IEC 60929)	☐ Dimmable, DALI (IEC 62386)		

Luminaire Designation: 100CLL-A (one of three required scenarios)

Replacing 100W HPS Cobra Head, Local/Local Intersection

Typical Street: Intersection of Pacific and Chapin

SITE PARAMETERS (*See Intersection Diagram 1 in Exhibit C*)					
ROADWAY DATA Same dimensions for both intersecting streets	Total width (curb to curb)				38 ft
	Median width (including curbs, gutters, and shoulders)				0 ft
	Number of vehicular lanes (total on both sides of median)				2
	Width of one vehicular lane				12 ft
	Shoulder width (including gutter and curb)				7 ft
	IES pavement class.	☐ R1	☐ R2	☑ R3 ☐ R4	
LIGHT POLE DATA	Luminaire mounting height				30 ft
	Arm length (horizontal)				16 ft
	Luminaires per pole				1
	Pole set-back from curb				2 ft
	Pole spacing (one pole cycle, parallel to path of travel)				na
	Pole layout	☑ One side	☐ Opposite	☐ Staggered ☐ Median	
PERFORMANCE CRITERIA					
MAINTAINED ROADWAY ILLUMINATION Based on IES Intersection Classification: Local/Local, Low pedestrian conflict					
PHOTOPIC ILLUMINANCE	Average horizontal illuminance at pavement				8.0 lux (0.8 fc)
	Avg:min uniformity ratio				6.0
	Max:min uniformity ratio				n/a
DISABILITY GLARE	Max. veiling luminance ratio				0.4
LED LUMINAIRE					
INPUT POWER	Max. nominal luminaire input power				112 W
VOLTAGE	Nominal luminaire input voltage (or range as applicable)				120-277V (multi)
LUMEN MAINT.	Min. % of initial output at 36,000 hours operation				91%
WARRANTY	Min. luminaire warranty				10 years
NOMINAL CCT	Rated correlated color temperature				4100 ± 200 K
BUG RATINGS	Max. nominal backlight-uplight-glare ratings				B1-U0-G1
FINISH	Luminaire housing finish color				Gray
WEIGHT	Luminaire weight				30 lb
EPA	Max. effective projected area				0.9 ft^2
MOUNTING	Method	☐ Post-top	☑ Side-arm	☐ Trun./yoke ☐ Swivel-tenon	
	Tenon nominal pipe size (NPS)				2 inches
VIBRATION	ANSI C136.31	☑ Level 1 (normal)	☐ Level 2 (bridge/overpass)		
THERMAL ENVIRONMENT	Typical min. ambient temperature during operation				0 °C
	Typical max. ambient temperature during operation				35 °C
ELECTRICAL IMMUNITY	ANSI C136.2 Comb. Wave Test Level	☑ Basic (6kV / 3kA)	☐ Enhanced (10kV / 5kA)	☐ Elevated (20kV / 10kA)	
CONTROL INTERFACE	☐ None	☐ ANSI C136.10 (3-pin)	☑ ANSI C136.41, 5-pin	☐ ANSI C136.41, 7-pin	
LED DRIVER	☐ Not dimmable	☑ Dimmable, 0-10V (IEC 60929)	☐ Dimmable, DALI (IEC 62386)		

Luminaire Designation: 100CLL-B (two of three required scenarios)
Replacing 100W HPS Cobra Head, Local/Local Intersection
Typical Street: Intersection of Grand St and San Antonio Ave

SITE PARAMETERS (*See Intersection Diagram 2 in Exhibit C*)			
ROADWAY DATA		Grand St	San Antonio Ave
	Total width (curb to curb)	48 ft	36 ft
	Median width (including curbs, gutters, and shoulders)	0 ft	0 ft
	Number of vehicular lanes (total on both sides of median)	4	2
	Width of one vehicular lane	12 ft	12 ft
	Shoulder width (including gutter and curb)	0 ft	6 ft
	IES pavement class. ☐ R1 ☐ R2 ☑ R3 ☐ R4		
LIGHT POLE DATA	Luminaire mounting height		30 ft
	Arm length (horizontal)		6 ft
	Luminaires per pole		1
	Pole set-back from curb		2 ft
PERFORMANCE CRITERIA			
MAINTAINED ROADWAY ILLUMINATION Based on IES Intersection Classification: Local/Local, Low pedestrian conflict			
PHOTOPIC ILLUMINANCE	Average horizontal illuminance at pavement		8.0 lux (0.8 fc)
	Avg:min uniformity ratio		6.0
	Max:min uniformity ratio		n/a
DISABILITY GLARE	Max. veiling luminance ratio		0.4
LED LUMINAIRE			
INPUT POWER	Max. nominal luminaire input power		112 W
VOLTAGE	Nominal luminaire input voltage (or range as applicable)		120-277V (multi)
LUMEN MAINT.	Min. % of initial output at 36,000 hours operation		91%
WARRANTY	Min. luminaire warranty		10 years
NOMINAL CCT	Rated correlated color temperature		4100 ± 200 K
BUG RATINGS	Max. nominal backlight-uplight-glare ratings		B1-U0-G1
FINISH	Luminaire housing finish color		Gray
WEIGHT	Luminaire weight		30 lb
EPA	Max. effective projected area		0.9 ft^2
MOUNTING	Method ☐ Post-top ☑ Side-arm ☐ Trun./yoke ☐ Swivel-tenon		
	Tenon nominal pipe size (NPS)		2 inches
VIBRATION	ANSI C136.31 ☑ Level 1 (normal) ☐ Level 2 (bridge/overpass)		
THERMAL ENVIRONMENT	Typical min. ambient temperature during operation		0 °C
	Typical max. ambient temperature during operation		35 °C
ELECTRICAL IMMUNITY	ANSI C136.2 Comb. Wave Test Level	☑ Basic (6kV / 3kA)	☐ Enhanced (10kV / 5kA) ☐ Elevated (20kV / 10kA)
CONTROL INTERFACE	☐ None	☐ ANSI C136.10 (3-pin)	☑ ANSI C136.41, 5-pin ☐ ANSI C136.41, 7-pin
LED DRIVER	☐ Not dimmable	☑ Dimmable, 0-10V (IEC 60929)	☐ Dimmable, DALI (IEC 62386)

Luminaire Designation: 100CLL-C (three of three required scenarios)

Replacing 100W HPS Cobra Head, Local/Local Intersection

Typical Street: Intersection of Lincoln Ave and Chapin St

SITE PARAMETERS (*See Intersection Diagram 3 in Exhibit C*)			
ROADWAY DATA		Lincoln Ave	Chapin St
	Total width (curb to curb)	68 ft	38 ft
	Median width (including curbs, gutters, and shoulders)	0 ft	0 ft
	Number of vehicular lanes (total on both sides of median)	4	2
	Width of one vehicular lane	12 ft	12 ft
	Shoulder width (including gutter and curb)	10 ft	7 ft
	IES pavement class.	☐ R1 ☐ R2 ☑ R3 ☐ R4	
LIGHT POLE DATA	Luminaire mounting height		30 ft
	Arm length (horizontal)		16 ft
	Luminaires per pole		1
	Pole set-back from curb		2 ft
PERFORMANCE CRITERIA			
MAINTAINED ROADWAY ILLUMINATION Based on IES Intersection Classification: Local/Local, Low pedestrian conflict			
PHOTOPIC ILLUMINANCE	Average horizontal illuminance at pavement		8.0 lux (0.8 fc)
	Avg:min uniformity ratio		6.0
	Max:min uniformity ratio		n/a
DISABILITY GLARE	Max. veiling luminance ratio		0.4
LED LUMINAIRE			
INPUT POWER	Max. nominal luminaire input power		112 W
VOLTAGE	Nominal luminaire input voltage (or range as applicable)		120-277V (multi)
LUMEN MAINT.	Min. % of initial output at 36,000 hours operation		91%
WARRANTY	Min. luminaire warranty		10 years
NOMINAL CCT	Rated correlated color temperature		4100 ± 200 K
BUG RATINGS	Max. nominal backlight-uplight-glare ratings		B1-U0-G1
FINISH	Luminaire housing finish color		Gray
WEIGHT	Luminaire weight		30 lb
EPA	Max. effective projected area		0.9 ft^2
MOUNTING	Method	☐ Post-top ☑ Side-arm ☐ Trun./yoke ☐ Swivel-tenon	
	Tenon nominal pipe size (NPS)		2 inches
VIBRATION	ANSI C136.31	☑ Level 1 (normal) ☐ Level 2 (bridge/overpass)	
THERMAL ENVIRONMENT	Typical min. ambient temperature during operation		0 °C
	Typical max. ambient temperature during operation		35 °C
ELECTRICAL IMMUNITY	ANSI C136.2 Comb. Wave Test Level	☑ Basic (6kV / 3kA)	☐ Enhanced (10kV / 5kA) ☐ Elevated (20kV / 10kA)
CONTROL INTERFACE	☐ None	☐ ANSI C136.10 (3-pin)	☑ ANSI C136.41, 5-pin ☐ ANSI C136.41, 7-pin
LED DRIVER	☐ Not dimmable	☑ Dimmable, 0-10V (IEC 60929)	☐ Dimmable, DALI (IEC 62386)

Luminaire Designation: 100CCL

Replacing 100W HPS Cobra Head, Collector/Local Intersection

Typical Street: Intersection of Otis Drive and Pearl St

SITE PARAMETERS (*See Intersection Diagram 4 in Exhibit C*)					
ROADWAY DATA			Otis Dr	Pearl St	
	Total width (curb to curb)		64 ft	36 ft	
	Median width (including curbs, gutters, and shoulders)		0 ft	0 ft	
	Number of vehicular lanes (total on both sides of median)		4	2	
	Width of one vehicular lane		12 ft	12 ft	
	Shoulder width (including gutter and curb)		8 ft	6 ft	
	IES pavement class.	☐ R1 ☐ R2 ☑ R3 ☐ R4			
LIGHT POLE DATA	Luminaire mounting height			30 ft	
	Arm length (horizontal)			16 ft	
	Luminaires per pole			1	
	Pole set-back from curb			2 ft	
PERFORMANCE CRITERIA					
MAINTAINED ROADWAY ILLUMINATION Based on IES Intersection Classification: Collector/Local, Low pedestrian conflict					
PHOTOPIC ILLUMINANCE	Average horizontal illuminance at pavement			10.0 lux (1.0 fc)	
	Avg:min uniformity ratio			4.0	
	Max:min uniformity ratio			n/a	
DISABILITY GLARE	Max. veiling luminance ratio			0.4	
LED LUMINAIRE					
INPUT POWER	Max. nominal luminaire input power			112 W	
VOLTAGE	Nominal luminaire input voltage (or range as applicable)			120-277V (multi)	
LUMEN MAINT.	Min. % of initial output at 36,000 hours operation			91%	
WARRANTY	Min. luminaire warranty			10 years	
NOMINAL CCT	Rated correlated color temperature			4100 ± 200 K	
BUG RATINGS	Max. nominal backlight-uplight-glare ratings			B1-U0-G1	
FINISH	Luminaire housing finish color			Gray	
WEIGHT	Luminaire weight			30 lb	
EPA	Max. effective projected area			0.9 ft^2	
MOUNTING	Method	☐ Post-top ☑ Side-arm ☐ Trun./yoke ☐ Swivel-tenon			
	Tenon nominal pipe size (NPS)			2 inches	
VIBRATION	ANSI C136.31	☑ Level 1 (normal) ☐ Level 2 (bridge/overpass)			
THERMAL ENVIRONMENT	Typical min. ambient temperature during operation			0 °C	
	Typical max. ambient temperature during operation			35 °C	
ELECTRICAL IMMUNITY	ANSI C136.2 Comb. Wave Test Level	☑ Basic (6kV / 3kA)	☐ Enhanced (10kV / 5kA)	☐ Elevated (20kV / 10kA)	
CONTROL INTERFACE	☐ None	☐ ANSI C136.10 (3-pin)	☑ ANSI C136.41, 5-pin	☐ ANSI C136.41, 7-pin	
LED DRIVER	☐ Not dimmable	☑ Dimmable, 0-10V (IEC 60929)	☐ Dimmable, DALI (IEC 62386)		

Luminaire Designation: 100SLL

Replacing 100W HPS Shoe Box, Local/Local Intersection

Typical Street: Intersection of Seaview Parkway and Gainsborough Ct

SITE PARAMETERS (*See Intersection Diagram 5 in Exhibit C*)				
ROADWAY DATA		Seaview Parkway	Gainsborough Ct	
	Total width (curb to curb)	40 ft	36 ft	
	Median width (including curbs, gutters, and shoulders)	0 ft	0 ft	
	Number of vehicular lanes (total on both sides of median)	0	2	
	Width of one vehicular lane	12 ft	12 ft	
	Shoulder width (including gutter and curb)	8 ft	6 ft	
	IES pavement class.	☐ R1 ☐ R2 ☑ R3 ☐ R4		
LIGHT POLE DATA	Luminaire mounting height		29 ft	
	Arm length (horizontal)		1 ft	
	Luminaires per pole		1	
	Pole set-back from curb		2 ft	
PERFORMANCE CRITERIA				
MAINTAINED ROADWAY ILLUMINATION Based on IES Intersection Classification: Local/Local, Low pedestrian conflict				
PHOTOPIC ILLUMINANCE	Average horizontal illuminance at pavement		8.0 lux (0.8 fc)	
	Avg:min uniformity ratio		6.0	
	Max:min uniformity ratio		n/a	
DISABILITY GLARE	Max. veiling luminance ratio		0.4	
LED LUMINAIRE				
INPUT POWER	Max. nominal luminaire input power		112 W	
VOLTAGE	Nominal luminaire input voltage (or range as applicable)		120-277V (multi)	
LUMEN MAINT.	Min. % of initial output at 36,000 hours operation		91%	
WARRANTY	Min. luminaire warranty		10 years	
NOMINAL CCT	Rated correlated color temperature		4100 ± 200 K	
BUG RATINGS	Max. nominal backlight-uplight-glare ratings		B1-U0-G1	
FINISH	Luminaire housing finish color		Bronze	
WEIGHT	Luminaire weight		30 lb	
EPA	Max. effective projected area		1.1 ft^2	
MOUNTING	Method	☐ Post-top ☑ Side-arm ☐ Trun./yoke ☐ Swivel-tenon		
	Tenon nominal pipe size (NPS)		2 inches	
VIBRATION	ANSI C136.31	☑ Level 1 (normal) ☐ Level 2 (bridge/overpass)		
THERMAL ENVIRONMENT	Typical min. ambient temperature during operation		0 °C	
	Typical max. ambient temperature during operation		35 °C	
ELECTRICAL IMMUNITY	ANSI C136.2 Comb. Wave Test Level	☑ Basic (6kV / 3kA)	☐ Enhanced (10kV / 5kA)	☐ Elevated (20kV / 10kA)
CONTROL INTERFACE	☐ None	☐ ANSI C136.10 (3-pin)	☑ ANSI C136.41, 5-pin	☐ ANSI C136.41, 7-pin
LED DRIVER	☐ Not dimmable	☑ Dimmable, 0-10V (IEC 60929)	☐ Dimmable, DALI (IEC 62386)	

Luminaire Designation: 150SCL

Replacing 150W HPS Shoe Box, Collector/Local Intersection

Typical Street: Harbor Bay intersection with North Loop and South Loop Roads

SITE PARAMETERS (*See Intersection Diagram 6 in Exhibit C*)			
ROADWAY DATA		Harbor Bay	N & S Loop Rds
	Total width (curb to curb)	84 ft	40 ft
	Median width (including curbs, gutters, and shoulders)	22 ft	0 ft
	Number of vehicular lanes (total on both sides of median)	4	2
	Width of one vehicular lane	12 ft	12 ft
	Shoulder width (including gutter and curb)	7 ft	8 ft
	IES pavement class. ☐ R1 ☐ R2 ☑ R3 ☐ R4		
LIGHT POLE DATA	Luminaire mounting height		29 ft
	Arm length (horizontal)		1 ft
	Luminaires per pole		1
	Pole set-back from curb		2 ft
PERFORMANCE CRITERIA			
MAINTAINED ROADWAY ILLUMINATION Based on IES Intersection Classification: Collector/Local, Low pedestrian conflict			
PHOTOPIC ILLUMINANCE	Average horizontal illuminance at pavement		10.0 lux (1.0 fc)
	Avg:min uniformity ratio		4.0
	Max:min uniformity ratio		n/a
DISABILITY GLARE	Max. veiling luminance ratio		0.4
LED LUMINAIRE			
INPUT POWER	Max. nominal luminaire input power		179 W
VOLTAGE	Nominal luminaire input voltage (or range as applicable)		120-277V (multi)
LUMEN MAINT.	Min. % of initial output at 36,000 hours operation		91%
WARRANTY	Min. luminaire warranty		10 years
NOMINAL CCT	Rated correlated color temperature		4100 ± 200 K
BUG RATINGS	Max. nominal backlight-uplight-glare ratings		B1-U0-G1
FINISH	Luminaire housing finish color		Bronze
WEIGHT	Luminaire weight		30 lb
EPA	Max. effective projected area		1.1 ft^2
MOUNTING	Method ☐ Post-top ☑ Side-arm ☐ Trun./yoke ☐ Swivel-tenon		
	Tenon nominal pipe size (NPS)		2 inches
VIBRATION	ANSI C136.31 ☑ Level 1 (normal) ☐ Level 2 (bridge/overpass)		
THERMAL ENVIRONMENT	Typical min. ambient temperature during operation		0 °C
	Typical max. ambient temperature during operation		35 °C
ELECTRICAL IMMUNITY	ANSI C136.2 Comb. Wave Test Level	☑ Basic (6kV / 3kA)	☐ Enhanced (10kV / 5kA) ☐ Elevated (20kV / 10kA)
CONTROL INTERFACE	☐ None	☐ ANSI C136.10 (3-pin)	☑ ANSI C136.41, 5-pin ☐ ANSI C136.41, 7-pin
LED DRIVER	☐ Not dimmable	☑ Dimmable, 0-10V (IEC 60929)	☐ Dimmable, DALI (IEC 62386)

6.2 General requirements

6.2.1 LED replacement luminaires shall have a field adjustable power setting with a minimum of three setpoints. For each Luminaire Designation, the LED replacement luminaire shall meet the requirements at a mid-range factory power setting. At least two field adjustable settings shall be provided to change the power setting from the mid-range factory power setting: one to set the power level a minimum of 40% higher than the mid range power setting and one to set the power level a minimum of 40% lower than the mid-range power setting. LED replacement luminaires shall be delivered at the mid-range factory power setting.

6.2.2 For each Luminaire Designation the LED replacement luminaire shall:

6.2.2.1 not consume more power than listed as the "Max. nominal luminaire input power" in the Luminaire Designation, section 6.1, at the factory delivered power setting.

6.2.2.2 deliver lighting performance (as defined in by the Performance Criteria listed in section 6.1) that meets or exceeds the recommendations in IES RP-8-00 while satisfying requirement 6.2.2.1.

6.2.2.2.1 If RP-8 lighting performance cannot be met while satisfying requirement 6.2.2.1, then the LED replacement luminaire shall deliver lighting performance (as defined in by the Performance Criteria listed in section 6.1) that meets or exceeds the lighting performance of the existing HPS luminaire.

6.2.3 Luminaires shall satisfy the key criteria summarized in section 6.1.

6.2.3.1 Exception: The criteria listed for Sidewalk Illumination are targets, not requirements. AMP will give preference in bid evaluations for luminaires that most closely meet targets.

6.2.4 Luminaires shall be Design Lights Consortium® (DLC) qualified.

6.2.5 Transmissive optical components shall be applied in accordance with OEM design guidelines to ensure suitability for the environment (e.g., electromagnetic, thermal, mechanical, chemical).

6.2.6 Luminaire shall be designed for ease of component replacement and end-of-life disassembly.

6.2.7 LED light source(s) and driver(s) shall be RoHS compliant.

6.2.8 The power draw of the Luminaire (including Photocontrol) shall not exceed 0.50 watts when in the off state.

6.2.9 Nominal luminaire input wattage shall account for nominal applied voltage and any reduction in driver efficiency due to sub-optimal driver loading.

6.2.10 Luminaire shall accept the voltage or voltage range specified at 50/60 Hz, and shall operate normally for input voltage fluctuations of plus or minus 10 percent.

6.2.11 Luminaire shall accommodate field-installed optional backlight control shield.

6.2.12 All internal components shall be assembled and pre-wired using modular electrical connections.

6.2.13 The following shall be in accordance with corresponding sections of ANSI C136.37.

6.2.13.1 Wiring and grounding

6.2.13.2 Terminal blocks for incoming AC lines (electrical mains wires)

6.2.13.3 Photocontrol receptacle

6.2.13.4 Latching and hinging

6.2.13.5 Mounting provisions

6.2.13.6 Ingress protection

6.3 Painted or finished luminaire surfaces exposed to the environment

6.3.1 Shall exceed a rating of six per ASTM D1654 after 1000 hours of testing per ASTM B117.

6.3.2 The coating shall exhibit no greater than 30% reduction of gloss per ASTM D523, after 500 hours of QUV testing at ASTM G154 Cycle 6.

6.4 Thermal management

6.4.1 Luminaire shall start and operate normally in ambient temperature range specified.

6.4.2 Maximum rated case temperature of driver and other internal components shall not be exceeded when luminaire is operated in ambient temperature range specified.

6.4.3 Mechanical design of protruding external surfaces (heat sink fins) shall facilitate hose-down cleaning and discourage debris accumulation.

6.4.4 No liquids or other moving parts shall be used for thermal management.

6.5 LED driver, photocontrol, photocontrol receptacle, and control interface

6.5.1 Photocontrol shall be specifically designed for use with LED Luminaires. The photocontrol shall be rated for 120-277 V, fail off, and provide ANSI category C surge protection. The photocontrol shall have a 10-year manufacturer warranty.

6.5.2 Luminaire designation(s) indicated "ANSI C136.41, 5-pin" shall be fully prewired and shall incorporate an ANSI C136.41 compliant receptacle. The dimmable LED driver control wires shall be connected to the receptacle pads as specified in ANSI C136.41.

6.5.3 To allow for ease of conversion should AMP choose to install a network control module on the photocell receptacle at a later date, AMP will give preference in bid evaluations for luminaires that require no access or internal modifications to the driver or wiring to enable the control functionality.

6.6 Electrical safety testing

6.6.1 Luminaire shall be listed for wet locations by a U.S. Occupational Safety Health Administration (OSHA) Nationally Recognized Testing Laboratory (NRTL).

6.6.2 Luminaire shall meet the performance requirements specified in ANSI C136.2 for dielectric withstand, using the DC test level and configuration.

6.7 Electrical immunity

6.7.1 Luminaire shall meet the "Basic" requirements in Exhibit D: Electrical Immunity

6.7.2 Manufacturer shall indicate on Exhibit F: Product Submittal Form whether failure of the electrical immunity system can possibly result in disconnect of power to luminaire.

6.8 Interference and power quality

6.8.1 Luminaire shall comply with FCC 47 CFR part 15 interference criteria for Class A (non-residential) digital devices.

6.8.2 Luminaire shall comply with section 5.2.5 (luminaires rated for outdoor use) of ANSI C82.77 at full input power and across specified voltage range.

6.9 Color attributes

6.9.1 Color Rendering Index (CRI) shall be no less than 60.

6.9.2 Nominal Correlated Color Temperature (CCT) shall be as specified in section 6.1.

6.9.2.1 If submitted nominal CCT is listed in Table 6.2 below, measured CCT and Duv shall be as listed in Table 6.2.

Table 6.2. Allowable CCT and Duv (adapted from ANSI C78.377)

Manufacturer-Rated Nominal CCT (K)	Allowable IES LM-79 Chromaticity Values	
	Measured CCT (K)	Measured Duv
4000	3710 to 4260	-0.005 to 0.007

6.9.2.2 If submitted nominal CCT is not listed in Table 6.2, measured CCT and Duv shall be as per the criteria for Flexible CCT defined in ANSI C78.377.

6.10 Identification

6.10.1 Luminaire shall have an external label per ANSI C136.15.

6.10.2 Luminaire shall have an internal label per ANSI C136.22.

7.0 REQUIRED SUBMITTALS

7.1 Completed Exhibit E.2: Street Light Database, Proposed Replacements

7.2 Completed Exhibit F: Product Submittal Form. Submit one for each proposed luminaire make/model.

7.2.1 Family grouping in accordance with LED Lighting Facts is permitted, provided this is clearly indicated on the submittal form provided in Exhibit F, and clearly communicated via a letter that includes detailed calculations relating the tested product(s) to the submitted product.

7.3 Product cutsheets

7.3.1 Luminaire cutsheets. Cutsheets shall indicate current DLC qualification and listing. If DLC qualification is not shown on the cutsheet, other documentation showing current DLC qualification shall be provided.

7.3.2 Cutsheets for LED light source(s)

7.3.3 Cutsheets for LED driver(s)

7.3.3.1 If dimmable LED driver is specified, provide diagrams illustrating light output and input power as a function of control signal.

7.3.3.2 Information on field adjustable power settings, indicating factory-delivered setting, adjustment power settings above and below, and associated lumen output change.

7.3.3.3 If possible future conversion to a network controlled dimming photocell module cannot be achieved without access to and reconfiguration or rewiring of the LED driver, information shall be provided on the steps required to complete such a conversion.

7.3.4 Cutsheets for surge protection device, if applicable

7.4 Instructions for installation and maintenance

7.5 Summary of luminaire recycled content and recyclability

7.5.1 Shall be in accordance with the FTC Green Guides, expressed as a percentage of luminaire weight.

7.6 IES LM-79 luminaire photometric report(s)

7.6.1 Shall be produced by the test laboratory

7.6.1.1 The test laboratory shall be listed on the LED Lighting Facts Approved Labs list.

7.6.2 Shall include the following information

7.6.2.1 Name of test laboratory

7.6.2.2 Report number

7.6.2.3 Date

7.6.2.4 Complete luminaire catalog number

7.6.2.5 Description of luminaire, LED light source(s), and LED driver(s)

7.6.2.6 Goniophotometry

a. IES TM-15 Backlight-Uplight-Glare (BUG) ratings shall be for initial (worst-case) values, i.e., Light Loss Factor (LLF) = 1.0.
b. If luminaires are tilted upward for calculations in section 7.7.2, BUG ratings shall correspond to the same angle(s) of tilt.

7.7 Lumen maintenance calculations and supporting test data

7.7.1 Shall be in accordance with LED Lighting Facts guidance.

7.7.1.1 Exception: calculations shall be based on the cumulative hours of operation specified in section 6.1.

7.7.2 Submit the following documentation to support the lumen maintenance claim.

7.7.2.1 LM-80 data for the LED package/module/array from a laboratory listed on the LED Lighting Facts Approved Labs list.

7.7.2.2 ISTMT report on the proposed luminaire from a laboratory listed on the LED Lighting Facts Approved Labs list.

7.7.2.3 ENERGY STAR TM-21 Calculator as an electronic Excel file.

7.8 Computer-generated point-by-point photometric analysis of maintained light levels

7.8.1 Calculation/measurement points shall be per IES RP-8, Annex A9. Separated vehicular lanes, bikeways, and walkways shall be evaluated separately. Where shoulders are indicated in the Luminaire Designation, the shoulder shall be considered as a vehicular lane for modeling purposes.

7.8.2 For each LED Luminaire Designation listed in Section 6.1, calculations shall be provided for both the LED luminaire and for the existing associated HPS luminaire being replaced.

7.8.3 Calculations shall be provided for the entire street section for the representative streets listed in Table 7.1. Intersections included in these street sections shall be evaluated separately. Electronic CAD files to use for this analysis are provided as part of this RFP.

Table 7.1. Representative Streets for Photometric Analysis

Street	From	To
Otis	Willow St.	Versailles St.
Pacific	9th St.	Bay St.
Lincoln	Mozart St.	Stanton St.
Mecartney	Adelphian Way	Fontana Dr.
Constitution	Atlantic Ave.	Lincoln Ave.

7.8.4 Sufficient information regarding inputs used and output results shall be provided to allow AMP to verify that calculations were performed as directed in this specification. A Luminaire Schedule shall be provided. A calculation summary table of performance parameters generated by the photometric modeling software shall be provided for each model. At a minimum, the following parameters will be included: average illuminance, maximum illuminance, minimum illuminance, average/min, max/min.

7.8.5 Calculations shall be for maintained values, i.e. Light Loss Factor (LLF) < 1.0, where LLF = LLD x LDD x LATF, and values shall be as listed in Table 7.2.

Table 7.2. Light Loss Factors

	Lamp Lumen Depreciation (LLD)	Luminaire Dirt Depreciation (LDD)	Luminaire Ambient Temperature Factor (LATF)
LED	0.95 or the value calculated in section 7.7, whichever is lower.	0.92	1.0
HPS	0.80	0.95	1.0

7.8.6 Mesopic multipliers (i.e., effective luminance factors) shall not be used. All values shall assume photopic visual adaptation.

7.8.7 Submit IES LM-63 format electronic file containing luminous intensity data associated with submitted LM-79 report(s) and used for point-by-point calculations.

7.9 Summary of Joint Electron Devices Engineering Council (JEDEC) or Japan Electronics and Information Technology Industries (JEITA) reliability testing performed for LED packages

7.10 Summary of reliability testing performed for LED driver(s)

7.11 Written product warranty as per section 9.0.

7.12 Safety certification and file number indicating compliance with UL 1598

7.12.1 Applicable testing bodies are determined by the US Occupational Safety Health Administration (OSHA) as Nationally Recognized Testing Laboratories (NRTL) and include: CSA (Canadian Standards Association), ETL (Edison Testing Laboratory), and UL (Underwriters Laboratory).

7.13 Documentation supporting any U.S. origin claims for the product, in accordance with FTC guidance.

8.0 QUALITY ASSURANCE

8.1 Submit one sample luminaire of each different size (input wattage) proposed, as listed in Exhibit H Bid Sheet including at least one sample with bronze coating. Luminaire samples will be reviewed for serviceability, ease of installation, construction quality and other field related items, as determined by AMP. Luminaires will be returned to bidders.

8.2 Electrically test fully assembled luminaires before shipment from factory.

9.0 LUMINAIRE WARRANTY

9.1 Warranty shall be of the minimum duration specified in section 6.1, and shall cover maintained integrity and functionality of the following

9.1.1 Luminaire housing, wiring, and connections

9.1.2 LED light source(s)

9.1.2.1 Negligible light output from more than 10 percent of the LED packages constitutes luminaire failure.

9.1.3 LED driver(s)

9.2 Warranty period shall begin on receipt of delivery.

10.0 MANUFACTURER SERVICES

10.1 Manufacturer or local sales representative shall provide installation and troubleshooting support via telephone and/or email.

11.0 ELIGIBLE MANUFACTURERS

11.1 Any manufacturer offering products that comply with the required product performance and operation criteria may be considered.

12.0 EXECUTION

12.1 Terms and Conditions

Contractor will adhere to the following terms and conditions throughout the project:

12.1.1 Contractor will do all that is necessary to maintain a safe working environment for Contractor's employees, AMP and facility employees and the general public who might be present.

12.1.2 Contractor will work with the AMP facility staff to understand and abide by any site-specific security procedures.

12.1.3 Contractor will be diligent in following the technical specifications and leave the construction sites with no damage to streets and roadways, sidewalks, medians, traffic signals, street and roadway signage, luminaire poles and arms, landscaping, and other site features and characteristics.

12.1.4 The Contractor shall arrange for, and pay for, all utilities required during the project including water, electrical, communication, portable restroom facilities, etc.

12.1.5 The Contractor shall arrange for, and pay for, all garbage, refuse collection and off-site disposal required for the project.

12.1.6 The Contractor shall leave the work area each day only after the site is cleaned and proper barricades installed.

12.1.7 The Contractor shall coordinate, in advance, with any resident and/or business, if a driveway is to be blocked during construction.

12.1.8 All work will be performed in accordance with all national, state, and local codes.

12.2 Project Management

The following parties are involved during the project construction:

- Alameda Municipal Power Project Manager (AMP PM): AMP representative assigned as Project Manager
- Inspector: City of Alameda Inspector

- Contractor: The installation Contractor

Contractor will fulfill the following requirements to facilitate project management:

12.2.1 Contractor will transmit any official documentation to AMP PM.

12.2.2 Contractor will provide an overall schedule for each week, and a minimum one-week look-ahead schedule identifying work areas for each day and/or night.

12.2.3 At the end of each day, Contractor will provide a daily progress report log to the AMP PM to facilitate next-day verification/inspection; communication will also include problems (e.g., access issues) and details for the next day's work schedule.

12.2.4 The Contractor and/or the AMP PM can initiate a supplemental task order. All parties are responsible for reviewing supplemental task orders.

12.2.5 Contractor will notify the AMP PM when the project has been completed.

12.2.6 Close-out will include true-up of the quantity of each make and model of LED luminaire installed.

12.2.7 AMP PM will generate punch list items. Contractor will perform punch list items.

12.2.8 Contractor will furnish the final construction As-Built Documents as described below.

12.2.9 Contractor will cooperate with testing process and final inspection.

12.3 Meetings

The Contractor will attend the following meetings complete with preparation and follow-up:

12.3.1 Pre-construction logistics meeting – for introduction to team members, to understand roles and responsibilities, to discuss the construction schedule, and to learn the submittal transmittal process. At the pre-construction meeting, the AMP PM and Contractor will establish a mechanism for ongoing verification/inspection of work.

12.3.2 Construction kick-off meeting – to resolve any remaining pre-construction issues and begin onsite construction.

12.3.3 Submittal review meetings as required - for discussion of major submittal-related issues that cannot be resolved through the submittal transmittal process.

12.3.4 Periodic construction meetings, as needed – to discuss punch list items, safety issues and the construction progress. The AMP PM will schedule these meetings as required.

12.3.5 Final job walk – to convey substantial completion to AMP PM and request final acceptance. The Contractor will schedule this meeting.

12.4 Logistics

Contractor will coordinate logistics with the AMP to ensure safe and timely execution of the work. At a minimum the Contractor will perform the following activities:

12.4.1 AMP will be responsible for notifying residents and businesses about the project.

12.4.2 Contractor will do everything necessary to maintain a safe working environment for its employees, AMP employees, Alameda residents, and the general public.

12.4.3 A plan for storage and staging area(s) will be determined during the pre-construction meeting.

12.4.4 Contractor will be responsible for the security of the Contractor's property, equipment, construction materials and all other items on the staging area or construction site.

12.4.5 All equipment and materials demolished under the terms of this project are to become the property of the Contractor, except for existing LED fixtures along Clement Avenue which are to be delivered to AMP, and are to be removed from the site and will be disposed of in accordance with state and city requirements. Recyclable, non-hazardous material will be recycled. Work areas will be cleaned up prior to vacating for the day.

12.4.6 Contractor will coordinate with the AMP PM prior to moving the Contractor's equipment, tools, and materials onto the construction site at the start of the project.

12.5 Submittals

Contractor will provide submittals as outlined below:

12.5.1 Preconstruction Submittals

Within ten (10) business days of Notice of Award, Contractor will provide the following submittals:

12.5.1.1 As needed, updates to the construction schedule submitted with the proposal.

12.5.1.2 City Approved Traffic Plan

12.5.1.3 City Approved Site Safety Plan

12.5.1.4 Contact information of Field Personnel (including outside of working hours)

12.5.1.5 Material Safety and Data Sheets

12.5.1.6 Required permits

12.5.1.7 Work Plan

12.5.2 Close-Out Submittals

Within five (5) working days of notifying the AMP PM of substantial completion, Contractor will provide the following in the form of a Project Completion Documentation Binder:

12.5.2.1 Final updated "as built" records of all newly installed LED streetlights, including all wattages, pole numbers, locations and other associated attributes; this includes a copy of the Street Light Database spreadsheet, Exhibit E.3: Street Light Database, Closeout Checklist, that has been updated by the Contractor to reflect the full inventory of removed and installed luminaires, as verified in the field.

12.5.2.2 Final updated "as built" street light drawings (hardcopy with redlines)

12.5.2.3 Final signed-off punch list.

12.5.2.4 O&M manuals for installed equipment.

12.5.2.5 Materials list of components installed for reordering purposes.

12.5.2.6 Material recycling documents.

12.5.2.7 Warranty documentation for installed equipment.

Submittals will not be considered complete until they are reviewed and approved by the AMP PM. Contractor will make corrections noted by AMP PM and transmit the revised submittal for approval.

12.6 Installations

12.6.1 The Contractor will remove existing High-Pressure Sodium (HPS) street lighting cobrahead and shoebox luminaires and replace the luminaires with LEDs as specified in the Line Item Bid. In the event that the existing luminaire in the field does not match the luminaire specified in the Exhibit E.1: Street Light Database, Inventory for a particular pole, the Contractor shall install an appropriate luminaire to replace what is in the field, according to the replacement luminaire mappings specified in the Line Item Bid. The Contractor shall then update Exhibit E.3: Street Light Database, Closeout Checklist to list the actual luminaire removed (type and wattage) and the actual luminaire installed (type and wattage).

12.6.2 The Contractor will ensure that installed luminaires are level to the ground.

12.6.3 The Contractor will verify in the field that the photocells function properly after installation.

12.6.4 The Contractor will furnish labor, materials and incidentals including, but not limited to, complete lighting luminaires and wiring necessary for the streetlights to be replaced on existing street lighting poles for 120 and 277 volt circuit street lighting systems.

12.6.5 The Contractor will manage delivery and staging of material to the site, including any secured storage considerations.

12.6.6 The Contractor will properly dispose of all removed luminaires and non-recyclable materials including hazardous waste, such as lead-based material. EXCEPTION: there are ten existing LED fixtures along Clement Ave. that the contractor will deliver to AMP upon replacement.

12.6.7 The Contractor will be responsible for maintaining traffic control during installation.

12.6.8 During installation, the Contractor will ensure that all luminaires have AMP-compliant labeling and badging and will install or replace all labels and/or stickers as required.

12.6.9 During periodic inspections by AMP during installation, if AMP identifies locations where illuminance levels appear to be different than required, AMP may request that the Contractor perform photometric modeling of the specific location. If illumination levels are confirmed to be different than required, the Contractor will propose an alternate LED luminaire that meets illuminance requirements. After approval by AMP, the Contractor will replace the LED luminaire and update the Exhibit E.3: Street Light Database, Closeout Checklist to list the actual luminaire installed. AMP may request this photometric modeling for up to 15 locations.

12.7 Installation Warranty Requirements

12.7.1 The Contractor shall guarantee that the installation is free from defects. The Contractor agrees to replace or repair to the satisfaction of AMP any part of this installation which may fail within a period of one (1) year after final acceptance provided that such failure is due to poor workmanship, defective contractor-furnished material or equipment, or to the failure to follow the specifications and drawings.

12.8 Implementation Verification

12.8.1 Contractor will provide a list of luminaires that have been removed and luminaires that have been installed each week to the AMP PM, in the form of an updated spreadsheet shown in Exhibit E.3: Street Light Database, Closeout Checklist.

12.8.2 At the completion of the project, the Contractor will supply to the AMP PM a completed Exhibit E.3: Street Light Database, Closeout Checklist spreadsheet listing the existing street lighting luminaires removed and new luminaires installed including wattage, luminaire type, and location.

12.8.3 AMP will observe a sample (10%) of street light operation to confirm proper operation of photocells and luminaires. AMP will observe operation of the street lights during daylight hours to confirm lights are off, and during night time hours to confirm lights are on. AMP will notify the Contractor of any non-functioning photocells and/or luminaires for repair or replacement.

12.9 Close-Out

For project close out, Contractor will complete the following tasks:

12.9.1 The Contractor will participate with the AMP PM in review of the punch list and the final job walk. The Contractor will correct any remaining punch list items before final acceptance is granted.

12.9.2 Within ten working days of notifying the PM and Consultant of substantial completion, the Contractor will train City personnel in all aspects of routine operation, maintenance, and safety of the LED lighting luminaires installed.

Exhibit A

CONTRACTOR AGREEMENT
(SAMPLE)
CS 10-14-02

THIS AGREEMENT, entered into this __ day of ___ 2015, by and between ALAMEDA MUNICIPAL POWER, a department of the CITY OF ALAMEDA, a municipal corporation, acting by and through its PUBLIC UTILITIES BOARD, (hereinafter referred to as "AMP"), and _____, (a California Corporation, partnership, sole proprietor, individual, non profit-organization) whose address is _____ hereinafter called the Contractor, is made with reference to the following:

RECITALS:

A. AMP is a department of the City of Alameda, a municipal corporation duly organized and validly existing under the laws of the State of California with the power to carry on its business as it is now being conducted under the statutes of the State of California and the Charter of the City.

B. AMP and Contractor desire to enter into an agreement for _____, in accordance with Specifications, Special Provisions and Plans, adopted therefor, No. _____ filed in the office of the Secretary of said Board, on _____, 2015.

NOW, THEREFORE, it is mutually agreed by and between the undersigned parties as follows:

1. **TERM**:

The Contractor shall begin work within _____ (___) working days after receiving notice from the Project Manager to commence the work, and shall diligently prosecute the work to completion before the expiration of _____ (___) consecutive working days from the date of receipt of notice to begin work.

2. **SERVICES TO BE PERFORMED**:

Contractor agrees, at its own cost and expense, to furnish all labor, tools, equipment, materials, except as otherwise specified, and to do all work strictly in accordance with Specifications, Special Provisions and Plans, which Specifications, Special Provisions and Plans are hereby referred to and expressly made a part hereof with the same force and effect as if the same were fully incorporated herein.

3. **COMPENSATION TO CONTRACTOR**:

Contractor shall be compensated for services performed pursuant to this Agreement in the amount not to exceed _____ ($) and manner set forth in Contractor's bid, which is attached hereto as Exhibit "A" and incorporated herein by this reference. Payment will be made in the same manner that claims of a like character are paid by AMP, with checks drawn on the treasury of said City, to be taken from the AMP fund.

4. **TIME IS OF THE ESSENCE:**

Contractor and AMP agree that time is of the essence regarding the performance of this Agreement.

5. **STANDARD OF CARE**:

Contractor agrees to perform all services hereunder in a manner commensurate with the prevailing standards of like professionals in the San Francisco Bay Area and agrees that all services shall be performed by qualified and experienced personnel who are not employed by AMP nor have any contractual relationship with AMP.

6. **INDEPENDENT PARTIES**:

Contractor herby declares that it is engaged as an independent business and it agrees to perform its services as an independent contractor. The manner and means of conducting the work are under the control of Contractor, except to the extent they are limited by statute, rule or regulation and the express terms of this Agreement. No civil service status or other right of employment will be acquired by virtue of Contractor's services. None of the benefits provided by AMP to its employees, including but not limited to unemployment insurance, workers' compensation plans, vacation and sick leave are available from AMP to Contractor, its employees or agents. Deductions shall not be made for any state or federal taxes, FICA payments, PERS payments, or other purposes normally associated with an employer-employee relationship from any fees due Contractor. Payments of the above items, if required, are the responsibility of Contractor.

7. **IMMIGRATION REFORM AND CONTROL ACT (IRCA):**

Contractor assumes any and all responsibility for verifying the identity and employment authorization of all of its employees performing work hereunder, pursuant to all applicable IRCA or other federal or state rules and regulations. Contractor shall indemnify, defend, and hold AMP harmless from and against any loss, damage, liability, costs or expenses arising from any noncompliance of this provision by Contractor.

8. **NON-DISCRIMINATION:**

Consistent with AMP's policy that harassment and discrimination are unacceptable employer/employee conduct, Contractor agrees that harassment or discrimination directed toward a job applicant, an AMP employee, or a citizen by Contractor or Contractor's employee on the basis of race, religious creed, color, national origin, ancestry, handicap, disability, marital status, pregnancy, sex, age, or sexual orientation will not be tolerated. Contractor agrees that any and all violations of this provision shall constitute a material breach of this Agreement.

9. **INDEMNIFICATION:**

Contractor shall indemnify, defend, and hold harmless AMP, the City of Alameda, its City Council, boards, commissions, officials, and employees (Indemnitees) from and against any and all loss, damages, liability, claims, suits, costs and expenses whatsoever, including reasonable attorneys fees (Claims), arising from or in any manner connected to Contractors negligent act or omission, whether alleged or actual, regarding performance of services or work conducted or performed pursuant to this Agreement. If Claims are filed against Indemnitees which allege negligence on behalf of the Contractor, Contractor shall have no right of reimbursement against Indemnitees for the costs of defense even if negligence is not found on the part of Contractor. However, Contractor shall

not be obligated to indemnify Indemnitees from Claims arising from the sole or active negligence or willful misconduct of Indemnitees.

10. **INSURANCE**:

On or before the commencement of the terms of this Agreement, Contractor shall furnish AMP with certificates showing the type, amount, class of operations covered, effective dates and dates of expiration of insurance coverage in compliance with paragraphs 10A, B, C and D. Such certificates, which do not limit Contractor's indemnification, shall also contain substantially the following statement: "Should any of the above insurance covered by this certificate be canceled or coverage reduced before the expiration date thereof, the insurer affording coverage shall provide thirty (30) days' advance written notice to AMP, City of Alameda by certified mail, "Attention: Risk Manager."

It is agreed that Contractor shall maintain in force at all times during the performance of this Agreement all appropriate coverage of insurance required by this Agreement with an insurance company that is acceptable to AMP and licensed to do insurance business in the State of California. Endorsements naming AMP, City of Alameda, its City Council, boards and commissions, officers and employees as additional insured shall be submitted with the insurance certificates.

A. **COVERAGE**:

Contractor shall maintain the following insurance coverage:

(1) **Workers' Compensation**:

Statutory coverage as required by the State of California.

(2) **Liability**:

Commercial general liability coverage in the following minimum limits:

Bodily Injury:	$2,000,000 each occurrence
	$3,000,000 aggregate - all other
Property Damage:	$1,000,000 each occurrence

If submitted, combined single limit policy with aggregate limits in the amounts of $2,000,000 will be considered equivalent to the required minimum limits shown above.

(3) **Automotive:**

Comprehensive automobile liability coverage in the following minimum limits:

Bodily injury:	$500,000 each occurrence
Property Damage:	$100,000 each occurrence
	or
Combined Single Limit:	$1,000,000 each occurrence

B. **SUBROGATION WAIVER**:

Contractor agrees that in the event of loss due to any of the perils for which it has agreed to provide comprehensive general and automotive liability insurance, Contractor shall look solely to its insurance for recovery. Contractor hereby grants to AMP, on behalf of any insurer providing

comprehensive general and automotive liability insurance to either Contractor or AMP with respect to the services of Contractor herein, a waiver of any right to subrogation which any such insurer of said Contractor may acquire against AMP by virtue of the payment of any loss under such insurance.

C. **FAILURE TO SECURE**:

If Contractor at any time during the term hereof should fail to secure or maintain the foregoing insurance, AMP shall be permitted to obtain such insurance in the Contractor's name or as an agent of the Contractor and shall be compensated by the Contractor for the costs of the insurance premiums at the maximum rate permitted by law and computed from the date written notice is received that the premiums have not been paid.

D. **ADDITIONAL INSURED**:

AMP, City of Alameda, its City Council, boards and commissions, officers, and employees shall be named as an additional insured under all insurance coverage, except workers compensation insurance. The naming of an additional insured shall not affect any recovery to which such additional insured would be entitled under this policy if not named as such additional insured. An additional insured named herein shall not be held liable for any premium, deductible portion of any loss, or expense of any nature on this policy or any extension thereof. Any other insurance held by an additional insured shall not be required to contribute anything toward any loss or expense covered by the insurance provided by this policy.

E. **SUFFICIENCY OF INSURANCE:**

The insurance limits required by AMP are not represented as being sufficient to protect Contractor. Contractor is advised to consult Contractor's insurance broker to determine adequate coverage for Contractor.

11. **BONDS**:

Contractor shall furnish the following bonds from a bonding company acceptable to the City Attorney:

A. **Faithful Performance**:

A bond in the amount of 100% of the total contract price guaranteeing the faithful performance of this contract, and

B. **Labor and Materials**:

A bond for labor and materials in the amount of 100% of the total contract price.

12. **PROHIBITION AGAINST TRANSFERS**:

Contractor shall not assign, sublease, hypothecate, or transfer this Agreement, or any interest therein, directly or indirectly, by operation of law or otherwise, without prior written consent of AMP. Any attempt to do so without said consent shall be null and void, and any assignee, sub-lessee, hypothecate or transferee shall acquire no right or interest by reason of such attempted assignment, hypothecation or transfer. However, claims for money by Contractor from AMP under this Agreement may be assigned to a bank, trust company or other financial institution without prior written consent. Written notice of such assignment shall be promptly furnished to AMP by Contractor.

The sale, assignment, transfer or other disposition of any of the issued and outstanding capital stock of Contractor, or of the interest of any general partner or joint venture or syndicate member or

co-tenant, if Contractor is a partnership or joint venture or syndicate or co-tenancy, which shall result in changing the control of Contractor, shall be construed as an assignment of this Agreement. Control means fifty percent (50%) or more of the voting power of the corporation.

13. **SUBCONTRACTOR APPROVAL**:

Unless prior written consent from AMP is obtained, only those people and subcontractors whose names are listed in Contractor's bid shall be used in the performance of this Agreement.

Requests for additional subcontracting shall be submitted in writing, describing the scope of work to be subcontracted and the name of the proposed subcontractor. Such request shall set forth the total price or hourly rates used in preparing estimated costs for the subcontractor's services. Approval of the subcontractor may, at the option of AMP, be issued in the form of a Work Order.

In the event that Contractor employs subcontractors, such subcontractors shall be required to furnish proof of workers' compensation insurance and shall also be required to carry general and automobile liability insurance in reasonable conformity to the insurance carried by Contractor. In addition, any work or services subcontracted hereunder shall be subject to each provision of this Agreement.

14. **PERMITS AND LICENSES**:

Contractor, at its sole expense, shall obtain and maintain during the term of this Agreement, all appropriate permits, certificates and licenses, including a City Business License that may be required in connection with the performance of services hereunder.

15. **REPORTS**:

Each and every report, draft, work product, map, record and other document reproduced, prepared or caused to be prepared by Contractor pursuant to or in connection with this Agreement shall be the exclusive property of AMP.

No report, information nor other data given to or prepared or assembled by Contractor pursuant to this Agreement shall be made available to any individual or organization by Contractor without prior approval by AMP.

Contractor shall, at such time and in such form as AMP may require, furnish reports concerning the status of services required under this Agreement.

16. **RECORDS**:

Contractor shall maintain complete and accurate records with respect to sales, costs, expenses, receipts and other such information required by AMP that relate to the performance of services under this Agreement.

Contractor shall maintain adequate records of services provided in sufficient detail to permit an evaluation of services. All such records shall be maintained in accordance with generally accepted accounting principles and shall be clearly identified and readily accessible. Contractor shall provide free access to such books and records to the representatives of Alameda Municipal Power or its designees at all proper times, and gives AMP the right to examine and audit same, and to make transcripts therefrom as necessary, and to allow inspection of all work, data, documents, proceedings and activities related to this Agreement. Such records, together with supporting documents, shall be kept separate from other documents and records and shall be maintained for a period of three (3) years after receipt of final payment.

If supplemental examination or audit of the records is necessary due to concerns raised by

AMP's preliminary examination or audit of records, and AMP=s supplemental examination or audit of the records discloses a failure to adhere to appropriate internal financial controls, or other breach of contract or failure to act in good faith, then Contractor shall reimburse Alameda P&T for all reasonable costs and expenses associated with the supplemental examination or audit.

17. **NOTICES**:

All notices, demands, requests or approvals to be given under this Agreement shall be given in writing and conclusively shall be deemed served when delivered personally or on the second business day after the deposit thereof in the United States Mail, postage prepaid, registered or certified, addressed as hereinafter provided.

All notices, demands, requests, or approvals from Contractor to AMP shall be addressed to AMP at:

Alameda Municipal Power
2000 Grand Street
Alameda CA 94501
Attention: _____, Project Manager

All notices, demands, requests, or approvals from AMP to Contractor shall be addressed to Contractor at:

_____
_____
_____

18. **PREVAILING WAGES**:

a. The Contractor is aware of the requirements of California Labor Code sections 1720 et seq. and 1770 et seq., as well as California Code of Regulations, Title 8, section 16000 et seq. ("Prevailing Wage Laws"), which require the payment of prevailing wage rates and the performance of other requirements on certain "public works" projects. Since this Project involves a "public work" project, as defined by the Prevailing Wage Laws, Contractor shall fully comply with such Prevailing Wage Laws. Contractor's failure to comply with the Prevailing Wage Law may constitute a default under the contract for performance of the Work which would entitle the City to rescind the contract or exercise other remedies as provided by law or the contract.

b. The Contractor shall obtain a copy of the prevailing rates of per diem wages at the commencement of this Contract from the website of the Division of Labor Statistics and Research of the Department of Industrial Relations located at www.dir.ca.gov/dlsr/. In the alternative, the Contractor may view a copy of the prevailing rates of per diem wages at the City's Public Works Department, Building 1, 950 W. Mall Square, Room 110, Alameda. The Contractor shall make copies of the prevailing rates of per diem wages for each craft, classification or type of worker needed to perform work on the Project available to interested parties upon request, and shall post copies at the Contractor's principal place of business and at the Project site. The Contractor shall defend, indemnify and hold the City, its elected officials, officers, employees and agents free and harmless from any claims, liabilities, costs, penalties or interest arising out of any failure or allege failure to comply with the Prevailing Wage Laws and/or the City's Labor Compliance Program (hereinafter referred to as "LCP"), if any.

c. If this project is funded in whole or in part with Federal monies and subject to the provisions of the Davis-Bacon Act, the successful bidder shall pay not less than the wage rates

determined by the Secretary of Labor. The Federal wage rates shall apply unless the State wage rates are higher. The Federal Wage Rates applicable to the contract are those current within ten (10) days of the bid due date.

d. The Contractor and all subcontractors shall pay and shall cause to be paid each worker engaged in work on the Project not less than the general prevailing rate of *per diem* wages determined by the Director, regardless of any contractual relationship which may be alleged to exist between the Contractor or any Subcontractor and such workers.

e. The Contractor and all subcontractors shall pay and shall cause to be paid to each worker needed to execute the work on the Project travel and subsistence payments, as such travel and subsistence payments are defined in the applicable collective bargaining Contracts filed with the Department of Industrial Relations in accordance with Labor Code § 1773.8.

f. If during the period any bid for work on this Project remains open, the Director of Industrial Relations determines that there has been a change in any prevailing rate of *per diem* wages in the locality in which this public work is to be performed, such change shall not alter the wage rates in the Notice calling for Bids or the contract subsequently awarded.

g. Pursuant to Labor Code § 1775, the Contractor shall as a penalty to the City, forfeit Fifty Dollars ($50.00) for each calendar day, or portion thereof, for each worker paid less than the prevailing rate of *per diem* wages, determined by the Director, for such craft or classification in which such worker is employed for any public work done under the Contract by the Contractor or by any Subcontractor under it. The amount of the penalty shall be determined by the Labor Commission. In addition, the difference between such prevailing rate of *per diem* wage and the amount paid to each worker for each calendar day or portion thereof for which each worker was paid less than the prevailing rate of *per diem* wage shall be paid to each work by the Contractor.

h. Any worker employed to perform work on the Project, which work is not covered by any craft or classification listed in the general prevailing rate of *per diem* wages determined by the Director, shall be paid not less than the minimum rate of wages specified therein for the craft or classification which most nearly corresponds to the work on the Project to be performed by them, and such minimum wage rate shall be retroactive to time of initial employment of such person in such craft or classification.

i. For those crafts or job classifications requiring special prevailing wage determinations, please contact the Division of Labor Statistics and Research, Prevailing Wage Unit, P.O. Box 420603, San Francisco, CA 94142-0603, (415) 703-4774 or check out the web site at www.dir.ca.gov.

19. **TERMINATION**:

In the event Contractor fails or refuses to perform any of the provisions hereof at the time and in the manner required hereunder, Contractor shall be deemed in default in the performance of this Agreement. If such default is not cured within a period of two (2) days after receipt by Contractor from AMP of written notice of default, specifying the nature of such default and the steps necessary to cure such default, AMP may terminate the Agreement forthwith by giving to the Contractor written notice thereof.

AMP shall have the option, at its sole discretion and without cause, of terminating this Agreement by giving seven (7) days' prior written notice to Contractor as provided herein. Upon termination of this Agreement, each party shall pay to the other party that portion of compensation

specified in this Agreement that is earned and unpaid prior to the effective date of termination.

19. **COMPLIANCES**:

Contractor shall comply with all laws, state or federal and all ordinances, rules and regulations enacted or issued by AMP.

20. **CONFLICT OF LAW:**

This Agreement shall be interpreted under, and enforced by the laws of the State of California excepting any choice of law rules which may direct the application of laws of another jurisdiction. The Agreement and obligations of the parties are subject to all valid laws, orders, rules, and regulations of the authorities having jurisdiction over this Agreement (or the successors of those authorities.) Any suits brought pursuant to this Agreement shall be filed with the courts of the County of Alameda, State of California.

21. **ADVERTISEMENT:**

Contractor shall not post, exhibit, display or allow to be posted, exhibited, displayed any signs, advertising, show bills, lithographs, posters or cards of any kind pertaining to the services performed under this Agreement unless prior written approval has been secured from AMP to do otherwise.

22. **WAIVER:**

A waiver by AMP of any breach of any term, covenant, or condition contained herein, shall not be deemed to be a waiver of any subsequent breach of the same or any other term, covenant, or condition contained herein, whether of the same or a different character.

23. **INTEGRATED CONTRACT**:

This Agreement represents the full and complete understanding of every kind or nature whatsoever between the parties hereto, and all preliminary negotiations and agreements of whatsoever kind or nature are merged herein. No verbal agreement or implied covenant shall be held to vary the provisions hereof. Any modification of this Agreement will be effective only by written execution signed by both AMP and Contractor.

24. **INSERTED PROVISIONS**

Each provision and clause required by law to be inserted into the Agreement shall be deemed to be enacted herein, and the Agreement shall be read and enforced as though each were included herein. If through mistake or otherwise, any such provision is not inserted or is not correctly inserted, the Agreement shall be amended to make such insertion on application by either party.

25. **CAPTIONS:**

The captions in this Agreement are for convenience only, are not a part of the Agreement and in no way affect, limit or amplify the terms or provisions of this Agreement.

IN WITNESS WHEREOF, the parties have caused the Agreement to be executed on the day and year first above written.

(name of contractor)
(type of company)

By _____
(Signature)

_____
(Please print or type)

Title _____
{If Corporation: Chairman, President, or Vice President}

By _____
(Signature)

_____
(Please print or type)

Title _____
{If Corporation: Secretary, Assistant Secretary, Chief Financial Officer or Assistant Treasurer}

ALAMEDA MUNICIPAL POWER, a department of the City of Alameda
A Municipal Corporation

By _____
Glenn O. Steiger
General Manager

RECOMMENDED BY:

By _____

Title _____

APPROVED AS TO FORM:
City Attorney

By _____

Title _____

EXHIBIT B

GENERAL PREVAILING WAGE DETERMINATION MADE BY THE DIRECTOR OF INDUSTRIAL RELATIONS
PURSUANT TO CALIFORNIA LABOR CODE PART 7, CHAPTER 1, ARTICLE 2, SECTIONS 1770, 1773 AND 1773.1

FOR COMMERCIAL BUILDING, HIGHWAY, HEAVY CONSTRUCTION AND DREDGING PROJECTS

CRAFT: #LABORER AND RELATED CLASSIFICATIONS

DETERMINATION: NC-23-102-1-2014-3
ISSUE DATE August 22, 2014
EXPIRATION DATE OF DETERMINATION: JUNE 28, 2015** The rate to be paid for work performed after this date has been determined. If work will extend past this date, the new rate must be paid and should be incorporated in contracts entered into now. Contact the Office of the Director – Research Unit for specific rates at (415) 703-4774.

LOCALITY: ALL LOCALITIES WITHIN ALAMEDA, ALPINE, AMADOR, BUTTE, CALAVERAS, COLUSA, CONTRA COSTA, DEL NORTE, EL DORADO, FRESNO, GLENN, HUMBOLDT, KINGS, LAKE, LASSEN, MADERA, MARIPOSA, MARIN, MENDOCINO, MERCED, MODOC, MONTEREY, NAPA, NEVADA, PLACER, PLUMAS, SACRAMENTO, SAN BENITO, SAN FRANCISCO, SAN JOAQUIN, SAN MATEO, SANTA CLARA, SANTA CRUZ, SHASTA, SIERRA, SISKIYOU, SOLANO, SONOMA, STANISLAUS, SUTTER, TEHAMA, TRINITY, TULARE, TUOLUMNE, YOLO, AND YUBA COUNTIES.

		Employer Payments					Straight-Time		Overtime Hourly Rate		
Classification[a] (Journeyperson)	Basic Hourly Rate[g]	Health and Welfare	Pension	Vacation and Holiday	Training	Other Payments	Hours[f]	Total Hourly Rate	Daily 1 1/2X	Saturday[b] 1 1/2X	Sunday/ Holiday 2X
AREA 1[c]											
Construction Specialist	29.09	6.84	10.10	2.63	0.41	0.15	8	49.22	63.765	63.765	78.31
Group 1; Group 1(B)[e]	28.39	6.84	10.10	2.63	0.41	0.15	8	48.52	62.715	62.715	76.91
Group 1 (A)	28.61	6.84	10.10	2.63	0.41	0.15	8	48.74	63.045	63.045	77.35
Group 1 (C)	28.44	6.84	10.10	2.63	0.41	0.15	8	48.57	62.79	62.79	77.01
Group 1 (E)	28.94	6.84	10.10	2.63	0.41	0.15	8	49.07	63.54	63.54	78.01
Group 1 (F-1)	28.97	6.84	10.10	2.63	0.41	0.15	8	49.10	63.585	63.585	78.07
Group 1 (F-2)	27.99	6.84	10.10	2.63	0.41	0.15	8	48.12	62.115	62.115	76.11
Group 1 (G)	28.59	6.84	10.10	2.63	0.41	0.15	8	48.72	63.015	63.015	77.31
Group 2	28.24	6.84	10.10	2.63	0.41	0.15	8	48.37	62.49	62.49	76.61
Group 3; Group 3(A)	28.14	6.84	10.10	2.63	0.41	0.15	8	48.27	62.34	62.34	76.41
Group 4; Group 6(B)	21.83	6.84	10.10	2.63	0.41	0.15	8	41.96	52.875[d]	52.875[d]	63.79[d]
Group 6	29.35	6.84	10.10	2.63	0.41	0.15	8	49.48	64.155	64.155	78.83
Group 6 (A)	28.85	6.84	10.10	2.63	0.41	0.15	8	48.98	63.405	63.405	77.83
Group 6 (C)	28.26	6.84	10.10	2.63	0.41	0.15	8	48.39	62.52	62.52	76.65
Group 7 – Stage 1 (1st 6 months)	19.70	6.84	10.10	2.63	0.41	0.15	8	39.83	49.68	49.68	59.53
Stage 2 (2nd 6 months)	22.51	6.84	10.10	2.63	0.41	0.15	8	42.64	53.895	53.895	65.15
Stage 3 (3rd 6 months)	25.33	6.84	10.10	2.63	0.41	0.15	8	45.46	58.125	58.125	70.79
AREA 2[c]											
Construction Specialist	28.09	6.84	10.10	2.63	0.41	0.15	8	48.22	62.265	62.265	76.31
Group 1; Group 1(B)[e]	27.39	6.84	10.10	2.63	0.41	0.15	8	47.52	61.215	61.215	74.91
Group 1 (A)	27.61	6.84	10.10	2.63	0.41	0.15	8	47.74	61.545	61.545	75.35
Group 1 (C)	27.44	6.84	10.10	2.63	0.41	0.15	8	47.57	61.29	61.29	75.01
Group 1 (E)	27.94	6.84	10.10	2.63	0.41	0.15	8	48.07	62.04	62.04	76.01
Group 1 (F-1)	27.97	6.84	10.10	2.63	0.41	0.15	8	48.10	62.085	62.085	76.07
Group 1 (F-2)	26.99	6.84	10.10	2.63	0.41	0.15	8	47.12	60.615	60.615	74.11
Group 2	27.24	6.84	10.10	2.63	0.41	0.15	8	47.37	60.99	60.99	74.61
Group 3; Group 3(A)	27.14	6.84	10.10	2.63	0.41	0.15	8	47.27	60.84	60.84	74.41
Group 4; Group 6(B)	20.83	6.84	10.10	2.63	0.41	0.15	8	40.96	51.375[d]	51.375[d]	61.79[d]
Group 6	28.35	6.84	10.10	2.63	0.41	0.15	8	48.48	62.655	62.655	76.83
Group 6 (A)	27.85	6.84	10.10	2.63	0.41	0.15	8	47.98	61.905	61.905	75.83
Group 6 (C)	27.26	6.84	10.10	2.63	0.41	0.15	8	47.39	61.02	61.02	74.65
Group 7 – Stage 1 (1st 6 months)	19.00	6.84	10.10	2.63	0.41	0.15	8	39.13	48.63	48.63	58.13
Stage 2 (2nd 6 months)	21.71	6.84	10.10	2.63	0.41	0.15	8	41.84	52.695	52.695	63.55
Stage 3 (3rd 6 months)	24.43	6.84	10.10	2.63	0.41	0.15	8	44.56	56.775	56.775	68.99

PLEASE GO TO PAGE 50 FOR CLASSIFICATIONS WITHIN EACH GROUP

# INDICATES AN APPRENTICEABLE CRAFT. THE CURRENT APPRENTICE WAGE RATES ARE AVAILABLE ON THE INTERNET AT HTTP://WWW.DIR.CA.GOV/OPRL/PWAPPWAGE/PWAPPWAGESTART.ASP. TO OBTAIN ANY APPRENTICE WAGE RATES AS OF JULY 1, 2008 AND PRIOR TO SEPTEMBER 27, 2012, PLEASE CONTACT THE DIVISION OF APPRENTICESHIP STANDARDS OR REFER TO THE DIVISION OF APPRENTICESHIP STANDARDS' WEBSITE AT HTTP://WWW.DIR.CA.GOV/DAS/DAS.HTML

a GROUP 1(D) - MAINTENANCE OR REPAIR TRACKMEN AND ROAD BEDS AND ALL EMPLOYEES PERFORMING WORK COVERED BY THIS CLASSIFICATION SHALL RECEIVE $0.25 PER PER HOUR ABOVE THEIR REGULAR RATE FOR ALL WORK PERFORMED ON UNDERGROUND STRUCTURES NOT SPECIFICALLY COVERED HEREIN. THIS SHALL NOT APPLY TO WORK BELOW GROUND LEVEL IN OPEN CUT. THIS SHALL APPLY TO CUT AND COVER WORK OF SUBWAY CONSTRUCTION AFTER TEMPORARY COVER HAS BEEN PLACED.
GROUP 1(H) - ALL LABORERS WORKING OFF OR WITH OR FROM BOS'N CHAIRS, SWINGING SCAFFOLDS, BELTS RECEIVE $0.25 PER HOUR ABOVE THEIR APPLICABLE WAGE RATE. THIS SHALL NOT APPLY TO LABORERS ENTITLED TO RECEIVE THE WAGE RATE SET FORTH IN GROUP 1(A).

b SATURDAYS IN THE SAME WORK WEEK MAY BE WORKED AT STRAIGHT-TIME IF JOB IS SHUT DOWN DURING THE NORMAL WORK WEEK DUE TO INCLEMENT WEATHER, MAJOR MECHANICAL BREAKDOWN OR LACK OF MATERIALS BEYOND THE CONTROL OF THE EMPLOYER.

c **AREA 1** - ALAMEDA, CONTRA COSTA, MARIN, SAN FRANCISCO, SAN MATEO, AND SANTA CLARA COUNTIES.
AREA 2 - ALPINE, AMADOR, BUTTE, CALAVERAS, COLUSA, DEL NORTE, EL DORADO, FRESNO, GLENN, HUMBOLDT, KINGS, LAKE, LASSEN, MADERA, MARIPOSA, MENDOCINO, MERCED, MODOC, MONTEREY, NAPA, NEVADA, PLACER, PLUMAS, SACRAMENTO, SAN BENITO, SAN JOAQUIN, SANTA CRUZ, SHASTA, SIERRA, SISKIYOU, SOLANO, SONOMA, STANISLAUS, SUTTER, TEHAMA, TRINITY, TULARE, TUOLUMNE, YOLO AND YUBA COUNTIES.

d SERVICE LANDSCAPE LABORER ON NEW CONSTRUCTION MAY WORK ANY FIVE (5) DAYS WITHIN A WEEK.

e GROUP 1(B) RECEIVES AN ADDITIONAL AMOUNT EACH DAY. SEE PAGE 50 FOR DETAILS.

f WHEN THREE SHIFTS ARE EMPLOYED FOR FIVE (5) OR MORE CONSECUTIVE DAYS, SEVEN AND ONE-HALF (7 ½) CONSECUTIVE HOURS (EXCLUSIVE OF MEAL PERIOD), SHALL CONSTITUTE A DAY OF WORK, FOR WHICH EIGHT (8) TIMES THE STRAIGHT TIME HOURLY RATE SHALL BE PAID AT THE NON-SHIFT WAGE RATE FOR THE SECOND SHIFT. THE THIRD SHIFT SHALL BE SEVEN (7) HOURS OF WORK FOR EIGHT (8) HOURS PAY AT THE NON-SHIFT WAGE RATE.

g ZONE PAY AT THREE DOLLARS ($3.00) PER HOUR, FACTORED AT THE APPLICABLE OVERTIME MULTIPLE, WILL BE ADDED TO THE BASE RATE FOR WORK PERFORMED OUTSIDE THE FREE ZONE DESCRIBED BY THE BOUNDARIES ALONG TOWNSHIP AND RANGE LINES. PLEASE SEE TRAVEL AND SUBSISTENCE PROVISION FOR MAP DESCRIPTION AND EXCEPTIONS.

RECOGNIZED HOLIDAYS: HOLIDAYS UPON WHICH THE GENERAL PREVAILING HOURLY WAGE RATE FOR HOLIDAY WORK SHALL BE PAID, SHALL BE ALL HOLIDAYS IN THE COLLECTIVE BARGAINING AGREEMENT, APPLICABLE TO THE PARTICULAR CRAFT, CLASSIFICATION, OR TYPE OF WORKER EMPLOYED ON THE PROJECT, WHICH IS ON FILE WITH THE DIRECTOR OF INDUSTRIAL RELATIONS. IF THE PREVAILING RATE IS NOT BASED ON A COLLECTIVELY BARGAINED RATE, THE HOLIDAYS UPON WHICH THE PREVAILING RATE SHALL BE PAID SHALL BE AS PROVIDED IN SECTION 6700 OF THE GOVERNMENT CODE. YOU MAY OBTAIN THE HOLIDAY PROVISIONS FOR THE CURRENT DETERMINATIONS ON THE INTERNET AT HTTP://WWW.DIR.CA.GOV/OPRL/PWD. HOLIDAY PROVISIONS FOR CURRENT OR SUPERSEDED DETERMINATIONS MAY BE OBTAINED BY CONTACTING THE OFFICE OF THE DIRECTOR – RESEARCH UNIT AT (415) 703-4774.

TRAVEL AND/OR SUBSISTENCE PAYMENT: IN ACCORDANCE WITH LABOR CODE SECTIONS 1773.1 AND 1773.9, CONTRACTORS SHALL MAKE TRAVEL AND/OR SUBSISTENCE PAYMENTS TO EACH WORKER TO EXECUTE THE WORK. YOU MAY OBTAIN THE TRAVEL AND/OR SUBSISTENCE PROVISIONS FOR THE CURRENT DETERMINATIONS ON THE INTERNET AT HTTP://WWW.DIR.CA.GOV/OPRL/PWD. TRAVEL AND/OR SUBSISTENCE REQUIREMENTS FOR CURRENT OR SUPERSEDED DETERMINATIONS MAY BE OBTAINED BY CONTACTING THE OFFICE OF THE DIRECTOR – RESEARCH UNIT AT (415) 703-4774.

EXHIBIT B

DETERMINATION: NC-23-102-1-2014-3 and NC-23-102-1-2014-3A

CONSTRUCTION SPECIALIST
ASPHALT IRONERS AND RAKERS
CHAINSAW
CONCRETE DIAMOND CHAINSAW
LASER BEAM IN CONNECTION WITH LABORER'S WORK
MASONRY AND PLASTER TENDER
CAST IN PLACE MANHOLE FORM SETTERS
PRESSURE PIPELAYERS
DAVIS TRENCHER – 300 OR SIMILAR TYPE (AND ALL SMALL TRENCHERS)
STATE LICENSED BLASTERS AS DESIGNATED
DIAMOND DRILLERS
DIAMOND CORE DRILLER
MULTIPLE UNIT DRILLS
HIGH SCALERS (INCLUDING DRILLING OF SAME)
HYDRAULIC DRILLS
CERTIFIED WELDER

GROUP 1 (FOR CONTRA COSTA COUNTY ONLY, USE GROUP 1 (G) FOR SOME OF THE FOLLOWING CLASSIFICATIONS)
ASPHALT SPREADER BOXES (ALL TYPES)
BARKO, WACKER AND SIMILAR TYPE TAMPERS
BUGGYMOBILE
CAULKERS, BANDERS, PIPEWRAPPERS, CONDUIT LAYERS, PLASTIC PIPE LAYERS
CERTIFIED ASBESTOS AND MOLD REMOVAL WORKER
CERTIFIED HAZARDOUS WASTE WORKER (INCLUDING LEAD ABATEMENT)
COMPACTORS OF ALL TYPES
CONCRETE AND MAGNESITE MIXER AND ½ YARD
CONCRETE PAN WORK
CONCRETE SANDERS, CONCRETE SAW
CRIBBERS AND/OR SHORING
CUT GRANITE CURB SETTER
DRI PAK-IT MACHINE
FALLER, LOGLOADER AND BUCKER
FORM RAISERS, SLIP FORMS
GREEN CUTTERS
HEADERBOARD MEN, HUBSETTERS, ALIGNERS BY ANY METHOD
HIGH PRESSURE BLOW PIPE (1-1/2" OR OVER, 100 LBS. PRESSURE/OVER)
HYDRO SEEDER AND SIMILAR TYPE
JACKHAMMER OPERATORS
JACKING OF PIPE OVER 12 INCHES
JACKSON AND SIMILAR TYPE COMPACTORS
KETTLEMEN, POTMEN, AND MEN APPLYING ASPHALT, LAY-KOLD, CREOSOTE, LIME, CAUSTIC AND SIMILAR TYPE MATERIALS (APPLYING MEANS APPLYING DIPPING, OR HANDLING OF SUCH MATERIALS)
LAGGING, SHEETING, WHALING, BRACING, TRENCH-JACKING, LAGGING HAMMER
MAGNESITE, EPOXY RESIN, FIBER GLASS AND MASTIC WORKERS (WET/DRY)
NO JOINT PIPE AND STRIPPING OF SAME, INCLUDING REPAIR OF VOIDS
PAVEMENT BREAKERS AND SPADERS, INCLUDING TOOL GRINDER
PERMA CURBS
PRECAST-MANHOLE SETTERS
PIPELAYERS (INCLUDING GRADE CHECKING IN CONNECTION WITH PIPELAYING)
PRESSURE PIPE TESTER
POST HOLE DIGGERS-AIR, GAS, AND ELECTRIC POWER BROOM SWEEPERS
POWER TAMPERS OF ALL TYPES, EXCEPT AS SHOWN IN GROUP 2
RAM SET GUN AND STUD GUN
RIPRAP-STONEPAVER AND ROCK-SLINGER, INCLUDING PLACING OF SACKED CONCRETE AND/OR SAND (WET OR DRY) AND GABIONS AND SIMILAR TYPE
ROTARY SCARIFIER OR MULTIPLE HEAD CONCRETE CHIPPING SCARIFIER
ROTO AND DITCH WITCH
ROTOTILLER
SAND BLASTERS, POTMEN, GUNMEN, AND NOZZLEMEN
SIGNALING AND RIGGING
SKILLED WRECKER (REMOVING AND SALVAGING OF SASH, WINDOWS, DOORS, PLUMBING AND ELECTRIC FIXTURES)
TANK CLEANERS
TREE CLIMBERS
TRENCHLESS TECHNOLOGY LABORER- PIPE INSTALLATION, BURSTING, RELINING, OR SIMILAR
TRENCHLESS LABORER'S WORK, CAMERA CONTROLLER
TURBO BLASTER
VIBRA-SCREED-BULL FLOAT IN CONNECTION WITH LABORER'S WORK
VIBRATORS

GROUP 1 (A)
ALL WORK OF LOADING, PLACING AND BLASTING OF ALL POWDER & EXPLOSIVES OF WHATEVER TYPE, REGARDLESS OF METHOD USED FOR LOADING AND PLACING
JOY DRILL MODEL TWM-2A
GARDENER-DENVER MODEL DH 143 AND SIMILAR TYPE DRILLS
TRACK DRILLERS
JACK LEG DRILLERS
WAGON DRILLERS
MECHANICAL DRILLERS-ALL TYPES REGARDLESS OF TYPE OR METHOD OF POWER
MECHANICAL PIPE LAYER-ALL TYPES REGARDLESS OF TYPE OR METHOD OF POWER
BLASTERS AND POWDERMAN
TREE TOPPER
BIT GRINDER

GROUP 1 (B) -- SEE GROUP 1 RATES
SEWER CLEANERS (ANY WORKMEN WHO HANDLE OR COME IN CONTACT WITH RAW SEWAGE IN SMALL DIAMETER SEWERS) SHALL RECEIVE $4.00 PER DAY ABOVE GROUP 1 WAGE RATES. THOSE WHO WORK INSIDE RECENTLY ACTIVE, LARGE DIAMETER SEWERS, AND ALL RECENTLY ACTIVE SEWER MANHOLES SHALL RECEIVE $5.00 PER DAY ABOVE GROUP 1 WAGE RATES.

GROUP 1 (C)
BURNING AND WELDING IN CONNECTION WITH LABORER'S WORK
SYNTHETIC THERMOPLASTICS AND SIMILAR TYPE WELDING

GROUP 1 (D)
SEE FOOTNOTE A ON PAGE 49

GROUP 1 (E)
WORK ON AND/OR IN BELL HOLE FOOTINGS AND SHAFTS THEREOF, AND WORK ON AND IN DEEP FOOTINGS (DEEP FOOTINGS IS A HOLE 15 FEET OR MORE IN DEPTH)
SHAFT IS AN EXCAVATION OVER FIFTEEN (15) FEET DEEP OF ANY TYPE

GROUP 1 (F-1)
ALIGNER OF WIRE WINDING MACHINE IN CONNECTION WITH GUNITING OR SHOT CRETE

GROUP 1 (F-2)
ALIGNER HELPER OF WIRE WINDING MACHINE IN CONNECTION WITH GUNITING OR SHOT CRETE

GROUP 1 (G) APPLIES ONLY TO WORK IN CONTRA COSTA COUNTY
PIPELAYERS (INCLUDING GRADE CHECKING IN CONNECTION WITH PIPELAYING), CAULKERS, BANDERS, PIPEWRAPPERS, CONDUIT LAYERS, PLASTIC PIPE LAYER, PRESSURE PIPE TESTER, NO JOINT PIPE AND STRIPPING OF SAME, INCLUDING REPAIR OF VOIDS, PRECAST MANHOLE SETTERS, CAST IN PLACE MANHOLE FORM SETTERS IN CONTRA COSTA COUNTY ONLY

GROUP 1(H)
SEE FOOTNOTE A ON PAGE 49

GROUP 2
ASPHALT SHOVELERS
CEMENT DUMPERS AND HANDLING DRY CEMENT OR GYPSUM
CHOKE-SETTER AND RIGGER (CLEARING WORK)
CONCRETE BUCKET DUMPER AND CHUTEMAN
CONCRETE CHIPPING AND GRINDING
CONCRETE LABORERS (WET OR DRY)
DRILLERS HELPER, CHUCK TENDER, NIPPER (ONE CHUCKTENDER ON SINGLE MACHINE OPERATION WITH MINIMUM OF ONE CHUCKTENDER FOR EACH TWO MACHINES ON MULTIPLE MACHINE OPERATION. JACKHAMMERS IN NO WAY INVOLVED IN THIS ITEM.)
GUINEA CHASER (STAKEMAN), GROUT CREW
HIGH PRESSURE NOZZLEMAN, ADDUCTORS
HYDRAULIC MONITOR (OVER 100 LBS. PRESSURE)
LOADING AND UNLOADING, CARRYING AND HANDLING OF ALL RODS AND MATERIALS FOR USE IN REINFORCING CONCRETE CONSTRUCTION
PITTSBURGH CHIPPER, AND SIMILAR TYPE BRUSH SHREDDERS
SEMI-SKILLED WRECKER (SALVAGING OF OTHER BUILDING MATERIALS) – SEE ALSO SKILLED WRECKER (GROUP 1)
SLOPER
SINGLEFOOT, HAND HELD, PNEUMATIC TAMPER
ALL PNEUMATIC, AIR, GAS AND ELECTRIC TOOLS NOT LISTED IN GROUPS 1 THROUGH 1 (F)
JACKING OF PIPE-UNDER 12 INCHES

GROUP 3
CONSTRUCTION LABORERS INCLUDING BRIDGE LABORERS, GENERAL LABORERS AND CLEANUP LABORERS
DEMOLITION WORKER
DUMPMAN, LOAD SPOTTER
FLAGPERSON/PEDESTRIAN MONITOR
FIRE WATCHER
FENCE ERECTORS, INCLUDING TEMPORARY FENCING
GUARDRAIL ERECTORS
GARDENER, HORTICULTURAL AND LANDSCAPE LABORERS (SEE GROUP 4, FOR LANDSCAPE MAINTENANCE ON NEW CONSTRUCTION DURING PLANT ESTABLISHMENT PERIOD)
JETTING
LIMBERS, BRUSH LOADERS, AND PILERS
PAVEMENT MARKERS (BUTTON SETTERS)
PAVERS/INTERLOCKING PAVERS (ALL TYPES) AND INTERLOCKING PAVER MACHINES
MAINTENANCE, REPAIR TRACKMEN AND ROAD BEDS
STREETCAR AND RAILROAD CONSTRUCTION TRACK LABORERS
TEMPORARY AIR AND WATER LINES, VICTAULIC OR SIMILAR
TOOL ROOM ATTENDANT (JOBSITE ONLY)
WHEELBARROW, INCLUDING POWER DRIVEN

GROUP 3 (A) -- SEE GROUP 3 RATES
COMPOSITE CREW PERSON (OPERATION OF VEHICLES, WHEN IN CONJUNCTION WITH LABORER'S DUTIES)

GROUP 4
ALL FINAL CLEANUP OF DEBRIS, GROUNDS AND BUILDINGS NEAR THE COMPLETION OF THE PROJECT INCLUDING BUT NOT LIMITED TO STREET CLEANERS (NOT APPLICABLE TO ENGINEERING OR HEAVY HIGHWAY PROJECTS)
CLEANING AND WASHING WINDOWS (NEW CONSTRUCTION ONLY), SERVICE LANDSCAPE LABORERS (SUCH AS GARDENER, HORTICULTURE, MOWING, TRIMMING, REPLANTING, WATERING DURING PLANT ESTABLISHMENT PERIOD) ON NEW CONSTRUCTION
BRICK CLEANERS (JOB SITE ONLY)
MATERIAL CLEANERS (JOB SITE ONLY)

NOTE: AN ADDITIONAL DETERMINATION FOR LANDSCAPE MAINTENANCE WORK AFTER THE PLANT ESTABLISHMENT PERIOD OR WARRANTY PERIOD IS PUBLISHED ON PAGE 57 OF THESE GENERAL DETERMINATIONS.

GROUP 6
STRUCTURAL NOZZLEMAN

GROUP 6 (A)
NOZZLEMAN (INCLUDING GUNMAN, POTMAN)
RODMAN
GROUNDMAN

GROUP 6 (B) -- SEE GROUP 4 RATES
GUNITE TRAINEE (ONE GUNITE LABORER SHALL BE ALLOWED FOR EACH THREE (3) JOURNEYMAN (GROUP 6, 6A, 6C, OR GENERAL LABORER) ON A CREW. IN THE ABSENCE OF THE JOURNEYMAN, THE GUNITE TRAINEE RECEIVES THE JOURNEYMAN SCALE.).
NOTE: THIS RATIO APPLIES ONLY TO WORK ON THE SAME JOB SITE.

GROUP 6 (C)
REBOUNDMAN

GROUP 7
LANDSCAPE LABORER TRAINEE (RATIO FOR TRAINEES IS ONE IN THREE. AT LEAST ONE SECOND PERIOD TRAINEE AND AT LEAST ONE THIRD PERIOD TRAINEE MUST BE EMPLOYED BEFORE EMPLOYNG ANOTHER FIRST PERIOD TRAINEE).
NOTE: THIS RATIO APPLIES ONLY TO WORK ON THE SAME JOB SITE.

EXHIBIT B

GENERAL PREVAILING WAGE DETERMINATION MADE BY THE DIRECTOR OF INDUSTRIAL RELATIONS
PURSUANT TO CALIFORNIA LABOR CODE PART 7, CHAPTER 1, ARTICLE 2, SECTIONS 1770, 1773 AND 1773.1
FOR COMMERCIAL BUILDING, HIGHWAY, HEAVY CONSTRUCTION AND DREDGING PROJECTS

CRAFT: #LABORER AND RELATED CLASSIFICATIONS (Special Single and Second Shift)

DETERMINATION: NC-23-102-1-2014-3A
ISSUE DATE: August 22, 2014
EXPIRATION DATE OF DETERMINATION: JUNE 28, 2015** The rate to be paid for work performed after this date has been determined. If work will extend past this date, the new rate must be paid and should be incorporated in contracts entered into now. Contact the Office of the Director-Research Unit for specific rates at (415) 703-4774.
LOCALITY: ALL LOCALITIES WITHIN ALAMEDA, ALPINE, AMADOR, BUTTE, CALAVERAS, COLUSA, CONTRA COSTA, DEL NORTE, EL DORADO, FRESNO, GLENN, HUMBOLDT, KINGS, LAKE, LASSEN, MADERA, MARIPOSA, MARIN, MENDOCINO, MERCED, MODOC, MONTEREY, NAPA, NEVADA, PLACER, PLUMAS, SACRAMENTO, SAN BENITO, SAN FRANCISCO, SAN JOAQUIN, SAN MATEO, SANTA CLARA, SANTA CRUZ, SHASTA, SIERRA, SISKIYOU, SOLANO, SONOMA, STANISLAUS, SUTTER, TEHAMA, TRINITY, TULARE, TUOLUMNE, YOLO, AND YUBA COUNTIES.

		Employer Payments					Straight-Time		Overtime Hourly Rate		
Classification[a] (Journeyperson)	Basic Hourly Rate[f]	Health and Welfare	Pension	Vacation and Holiday	Training	Other Payments	Hours	Total Hourly Rate	Daily 1 1/2X	Saturday[b] 1 1/2X	Sunday/ Holiday 2X
AREA 1[c]											
Construction Specialist	32.09	6.84	10.10	2.63	0.41	0.15	8	52.22	68.265	68.265	84.31
Group 1; Group 1(B)[e]	31.39	6.84	10.10	2.63	0.41	0.15	8	51.52	67.215	67.215	82.91
Group 1 (A)	31.61	6.84	10.10	2.63	0.41	0.15	8	51.74	67.545	67.545	83.35
Group 1 (C)	31.44	6.84	10.10	2.63	0.41	0.15	8	51.57	67.29	67.29	83.01
Group 1 (E)	31.94	6.84	10.10	2.63	0.41	0.15	8	52.07	68.04	68.04	84.01
Group 1 (F-1)	31.97	6.84	10.10	2.63	0.41	0.15	8	52.10	68.085	68.085	84.07
Group 1 (F-2)	30.99	6.84	10.10	2.63	0.41	0.15	8	51.12	66.615	66.615	82.11
Group 1 (G)	31.59	6.84	10.10	2.63	0.41	0.15	8	51.72	67.515	67.515	83.31
Group 2	31.24	6.84	10.10	2.63	0.41	0.15	8	51.37	66.99	66.99	82.61
Group 3; Group 3(A)	31.14	6.84	10.10	2.63	0.41	0.15	8	51.27	66.84	66.84	82.41
Group 4; Group 6(B)	24.83	6.84	10.10	2.63	0.41	0.15	8	44.96	57.375[d]	57.375[d]	69.79[d]
Group 6	32.35	6.84	10.10	2.63	0.41	0.15	8	52.48	68.655	68.655	84.83
Group 6 (A)	31.85	6.84	10.10	2.63	0.41	0.15	8	51.98	67.905	67.905	83.83
Group 6 (C)	31.26	6.84	10.10	2.63	0.41	0.15	8	51.39	67.02	67.02	82.65
Group 7 – Stage 1 (1st 6 months)	22.70	6.84	10.10	2.63	0.41	0.15	8	42.83	54.18	54.18	65.53
Stage 2 (2nd 6 months)	25.51	6.84	10.10	2.63	0.41	0.15	8	45.64	58.395	58.395	71.15
Stage 3 (3rd 6 months)	28.33	6.84	10.10	2.63	0.41	0.15	8	48.46	62.625	62.625	76.79
AREA 2[c]											
Construction Specialist	30.94	6.84	10.10	2.63	0.41	0.15	8	51.07	66.54	66.54	82.01
Group 1; Group 1(B)[e]	30.24	6.84	10.10	2.63	0.41	0.15	8	50.37	65.49	65.49	80.61
Group 1 (A)	30.46	6.84	10.10	2.63	0.41	0.15	8	50.59	65.82	65.82	81.05
Group 1 (C)	30.29	6.84	10.10	2.63	0.41	0.15	8	50.42	65.565	65.565	80.71
Group 1 (E)	30.79	6.84	10.10	2.63	0.41	0.15	8	50.92	66.315	66.315	81.71
Group 1 (F-1)	30.82	6.84	10.10	2.63	0.41	0.15	8	50.95	66.36	66.36	81.77
Group 1 (F-2)	29.84	6.84	10.10	2.63	0.41	0.15	8	49.97	64.89	64.89	79.81
Group 2	30.09	6.84	10.10	2.63	0.41	0.15	8	50.22	65.265	65.265	80.31
Group 3; Group 3(A)	29.99	6.84	10.10	2.63	0.41	0.15	8	50.12	65.115	65.115	80.11
Group 4; Group 6(B)	23.68	6.84	10.10	2.63	0.41	0.15	8	43.81	55.65[d]	55.65[d]	67.49[d]
Group 6	31.20	6.84	10.10	2.63	0.41	0.15	8	51.33	66.93	66.93	82.53
Group 6 (A)	30.70	6.84	10.10	2.63	0.41	0.15	8	50.83	66.18	66.18	81.53
Group 6 (C)	30.11	6.84	10.10	2.63	0.41	0.15	8	50.24	65.295	65.295	80.35
Group 7 – Stage 1 (1st 6 months)	21.85	6.84	10.10	2.63	0.41	0.15	8	41.98	52.905	52.905	63.83
Stage 2 (2nd 6 months)	24.56	6.84	10.10	2.63	0.41	0.15	8	44.69	56.97	56.97	69.25
Stage 3 (3rd 6 months)	27.28	6.84	10.10	2.63	0.41	0.15	8	47.41	61.05	61.05	74.69

PLEASE GO TO PAGE 50 FOR CLASSIFICATIONS WITHIN EACH GROUP

# INDICATES AN APPRENTICEABLE CRAFT. THE CURRENT APPRENTICE WAGE RATES ARE AVAILABLE ON THE INTERNET AT HTTP://WWW.DIR.CA.GOV/OPRL/PWAPPWAGE/PWAPPWAGESTART.ASP. TO OBTAIN ANY APPRENTICE WAGE RATES AS OF JULY 1, 2008 AND PRIOR TO SEPTEMBER 27, 2012, PLEASE CONTACT THE DIVISION OF APPRENTICESHIP STANDARDS OR REFER TO THE DIVISION OF APPRENTICESHIP STANDARDS' WEBSITE AT HTTP://WWW.DIR.CA.GOV/DAS/DAS.HTML.

a GROUP 1(D) - MAINTENANCE OR REPAIR TRACKMEN AND ROAD BEDS AND ALL EMPLOYEES PERFORMING WORK COVERED BY THIS CLASSIFICATION SHALL RECEIVE $0.25 PER PER HOUR ABOVE THEIR REGULAR RATE FOR ALL WORK PERFORMED ON UNDERGROUND STRUCTURES NOT SPECIFICALLY COVERED HEREIN. THIS SHALL NOT APPLY TO WORK BELOW GROUND LEVEL IN OPEN CUT. THIS SHALL APPLY TO CUT AND COVER WORK OF SUBWAY CONSTRUCTION AFTER TEMPORARY COVER HAS BEEN PLACED.
GROUP 1(H) - ALL LABORERS WORKING OFF OR WITH OR FROM BOS'N CHAIRS, SWINGING SCAFFOLDS, BELTS RECEIVE $0.25 PER HOUR ABOVE THEIR APPLICABLE WAGE RATE. THIS SHALL NOT APPLY TO LABORERS ENTITLED TO RECEIVE THE WAGE RATE SET FORTH IN GROUP 1(A).

b SATURDAYS IN THE SAME WORK WEEK MAY BE WORKED AT STRAIGHT-TIME IF JOB IS SHUT DOWN DURING THE NORMAL WORK WEEK DUE TO INCLEMENT WEATHER, MAJOR MECHANICAL BREAKDOWN OR LACK OF MATERIALS BEYOND THE CONTROL OF THE EMPLOYER.

c **AREA 1** - ALAMEDA, CONTRA COSTA, MARIN, SAN FRANCISCO, SAN MATEO, AND SANTA CLARA COUNTIES.
AREA 2 - ALPINE, AMADOR, BUTTE, CALAVERAS, COLUSA, DEL NORTE, EL DORADO, FRESNO, GLENN, HUMBOLDT, KINGS, LAKE, LASSEN, MADERA, MARIPOSA, MENDOCINO, MERCED, MODOC, MONTEREY, NAPA, NEVADA, PLACER, PLUMAS, SACRAMENTO, SAN BENITO, SAN JOAQUIN, SANTA CRUZ, SHASTA, SIERRA, SISKIYOU, SOLANO, SONOMA, STANISLAUS, SUTTER, TEHAMA, TRINITY, TULARE, TUOLUMNE, YOLO AND YUBA COUNTIES.

d SERVICE LANDSCAPE LABORER ON NEW CONSTRUCTION MAY WORK ANY FIVE (5) DAYS WITHIN A WEEK.

e GROUP 1(B) RECEIVES AN ADDITIONAL AMOUNT EACH DAY. SEE PAGE 50 FOR DETAILS.

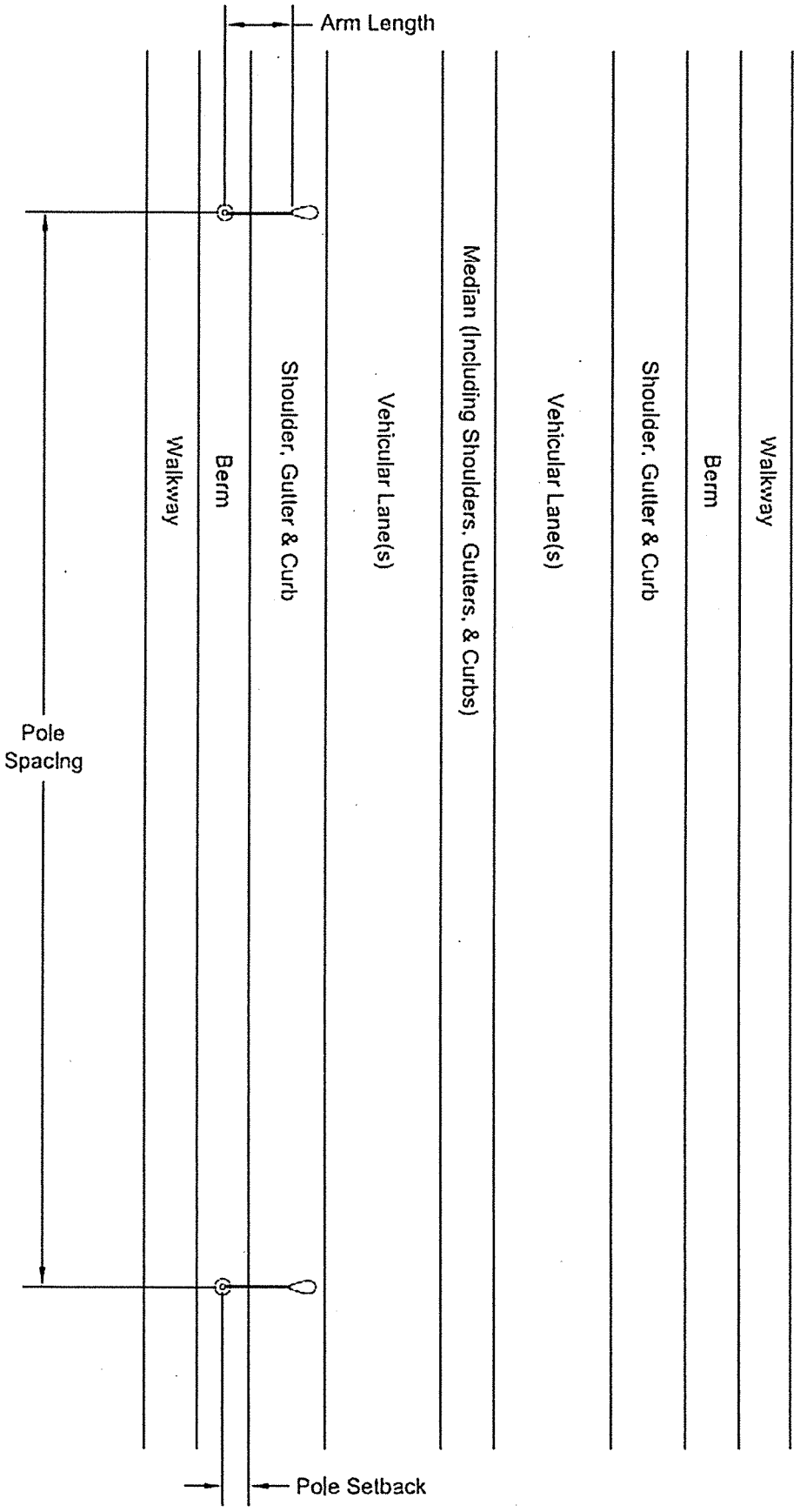
f ZONE PAY AT THREE DOLLARS ($3.00) PER HOUR, FACTORED AT THE APPLICABLE OVERTIME MULTIPLE, WILL BE ADDED TO THE BASE RATE FOR WORK PERFORMED OUTSIDE THE FREE ZONE DESCRIBED BY THE BOUNDARIES ALONG TOWNSHIP AND RANGE LINES. PLEASE SEE TRAVEL AND SUBSISTENCE PROVISIONS FOR MAP DESCRIPTION AND EXCEPTIONS.

RECOGNIZED HOLIDAYS: HOLIDAYS UPON WHICH THE GENERAL PREVAILING HOURLY WAGE RATE FOR HOLIDAY WORK SHALL BE PAID, SHALL BE ALL HOLIDAYS IN THE COLLECTIVE BARGAINING AGREEMENT, APPLICABLE TO THE PARTICULAR CRAFT, CLASSIFICATION, OR TYPE OF WORKER EMPLOYED ON THE PROJECT, WHICH IS ON FILE WITH THE DIRECTOR OF INDUSTRIAL RELATIONS. IF THE PREVAILING RATE IS NOT BASED ON A COLLECTIVELY BARGAINED RATE, THE HOLIDAYS UPON WHICH THE PREVAILING RATE SHALL BE PAID SHALL BE AS PROVIDED IN SECTION 6700 OF THE GOVERNMENT CODE. YOU MAY OBTAIN THE HOLIDAY PROVISIONS FOR THE CURRENT DETERMINATIONS ON THE INTERNET AT HTTP://WWW.DIR.CA.GOV/OPRL/PWD. HOLIDAY PROVISIONS FOR CURRENT OR SUPERSEDED DETERMINATIONS MAY BE OBTAINED BY CONTACTING THE OFFICE OF THE DIRECTOR – RESEARCH UNIT AT (415) 703-4774.

TRAVEL AND/OR SUBSISTENCE PAYMENT: IN ACCORDANCE WITH LABOR CODE SECTIONS 1773.1 AND 1773.9, CONTRACTORS SHALL MAKE TRAVEL AND/OR SUBSISTENCE PAYMENTS TO EACH WORKER TO EXECUTE THE WORK. YOU MAY OBTAIN THE TRAVEL AND/OR SUBSISTENCE PROVISIONS FOR THE CURRENT DETERMINATIONS ON THE INTERNET AT HTTP://WWW.DIR.CA.GOV/OPRL/PWD. TRAVEL AND/OR SUBSISTENCE REQUIREMENTS FOR CURRENT OR SUPERSEDED DETERMINATIONS MAY BE OBTAINED BY CONTACTING THE OFFICE OF THE DIRECTOR – RESEARCH UNIT AT (415) 703-4774.

Exhibit C — Pole Layout Illustrations

The plan-view drawings provided on the following pages illustrate typical pole layouts for use in developing photometric calculations for the representative luminaire designations. These drawings are not to scale.



One-sided Pole Layout
One Luminaire Per Pole
No Dedicated Bikeway

Exhibit C - **Intersection Diagram 1**

Intersection of Pacific and Chapin

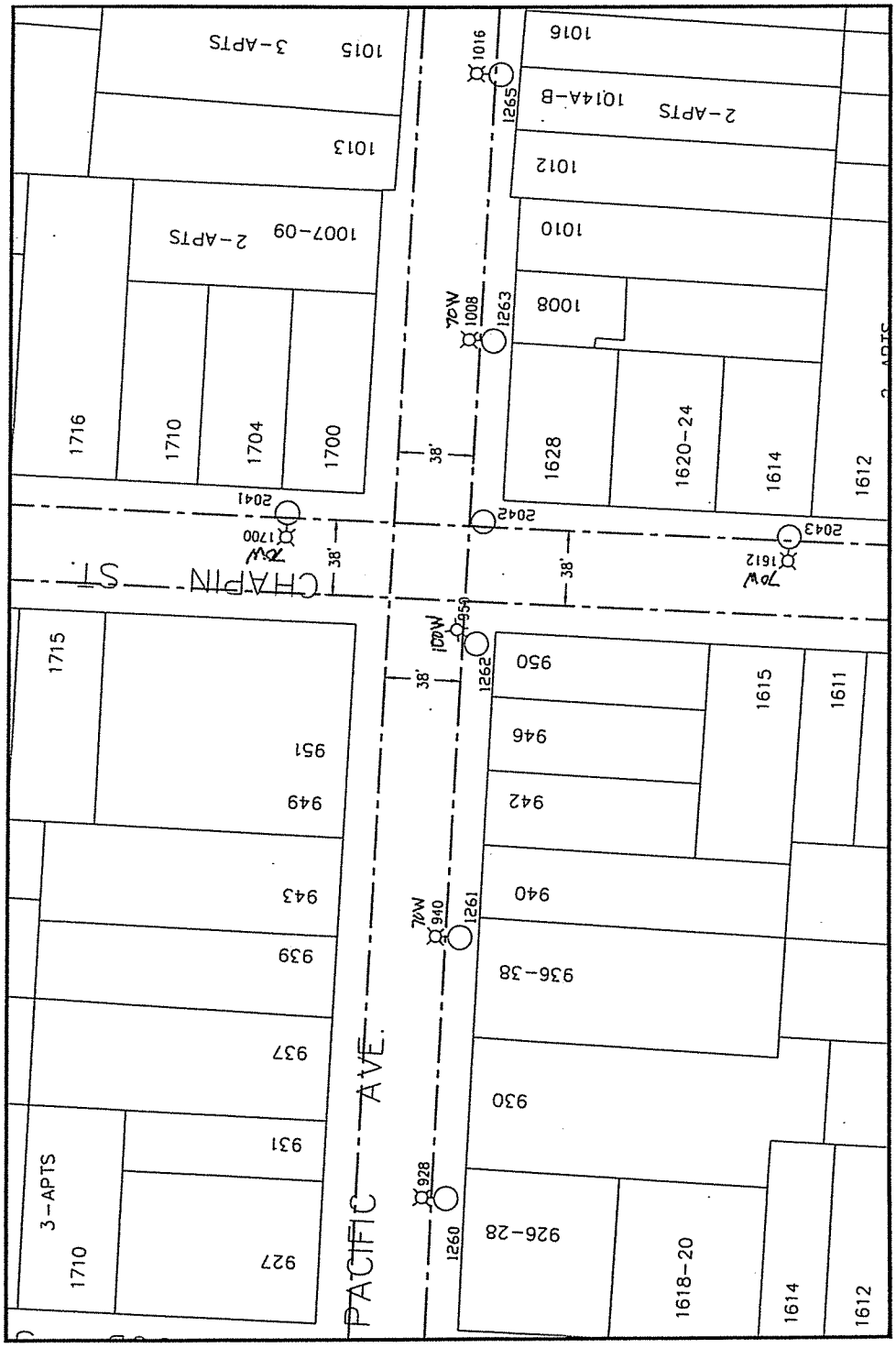


Exhibit C -**Intersection Diagram 2**

Intersection of Grand St. and San Antonio Ave

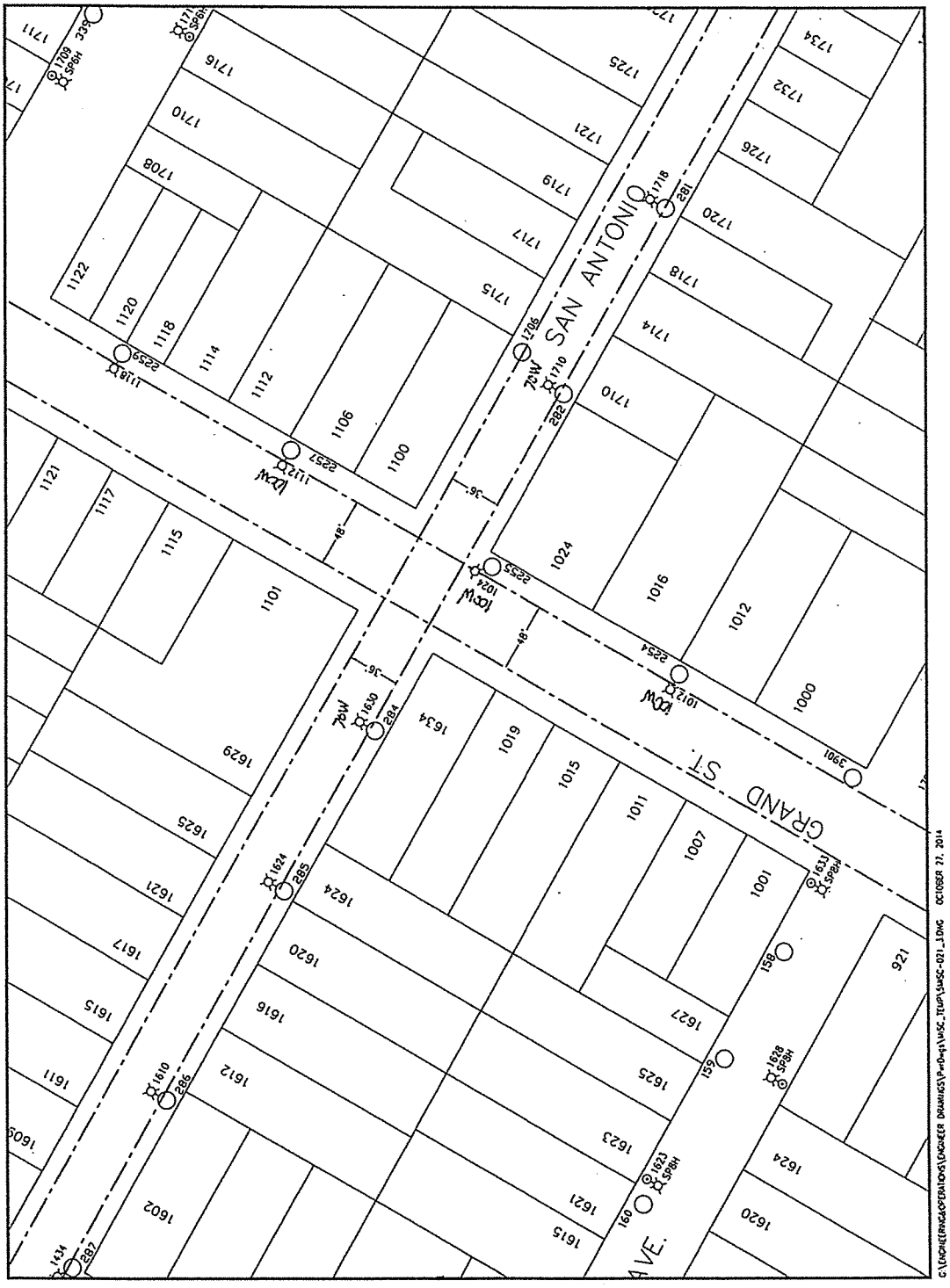


Exhibit C -**Intersection Diagram 3**

Intersection of Lincoln Ave and Chapin St

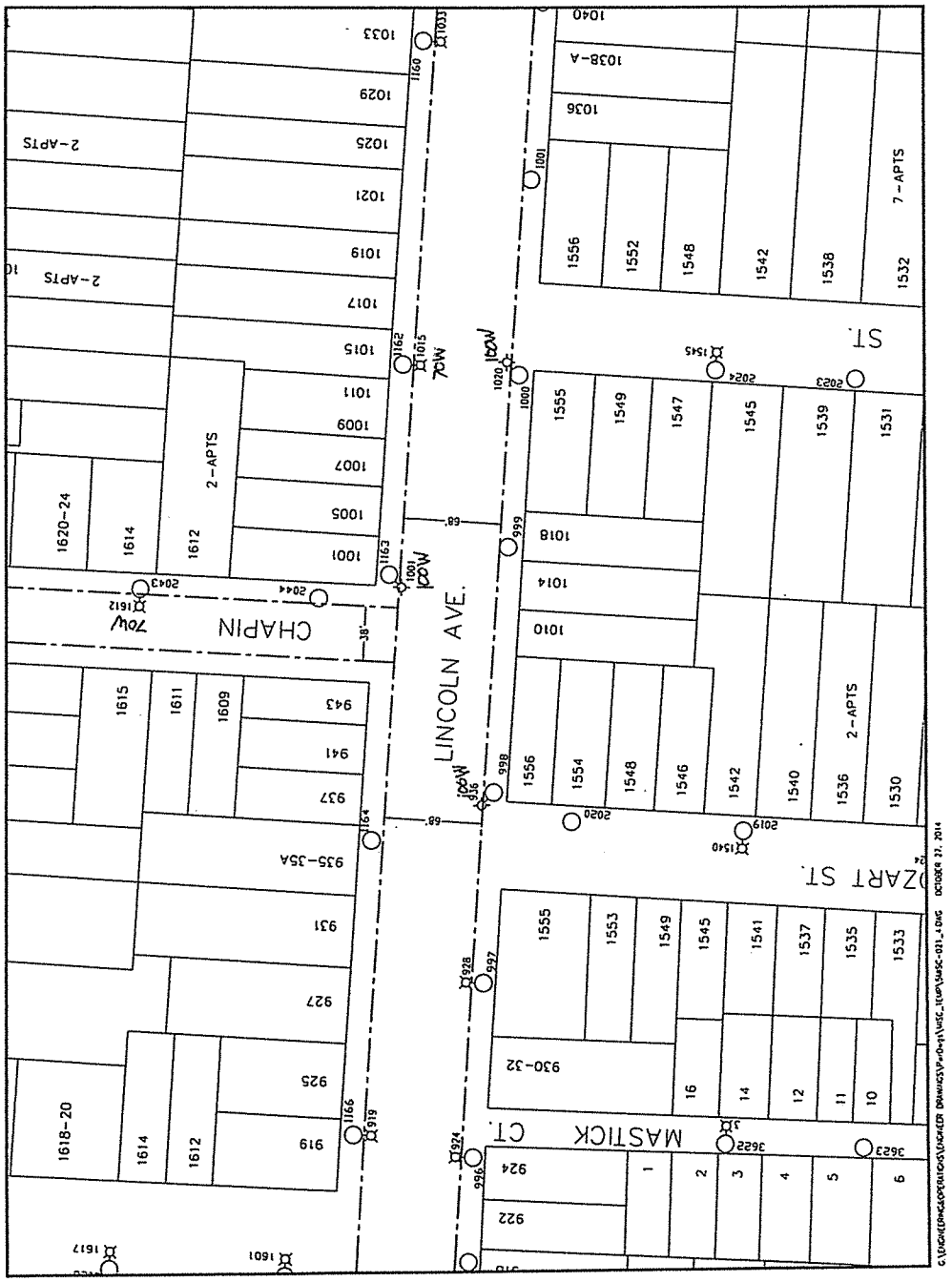
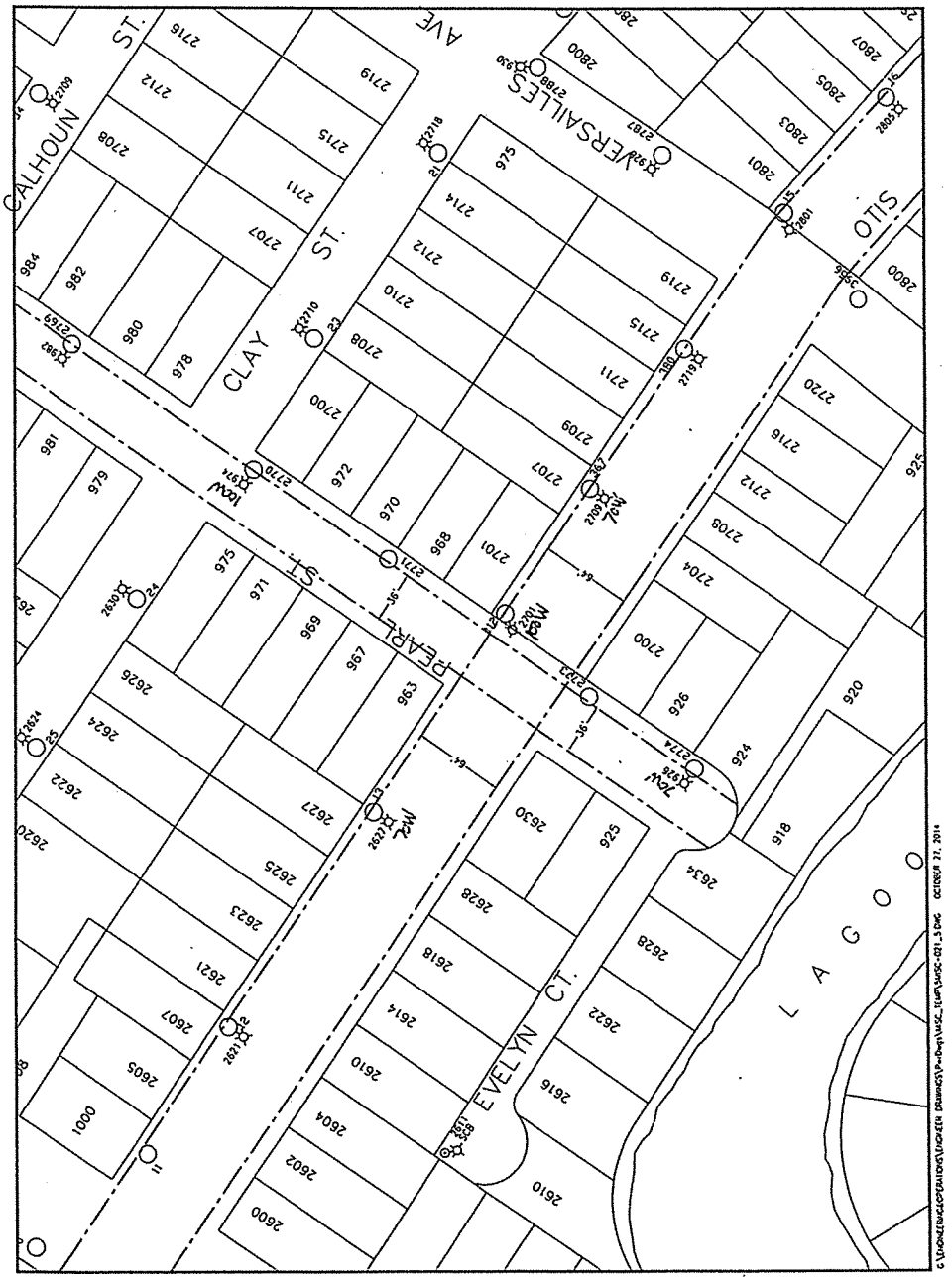
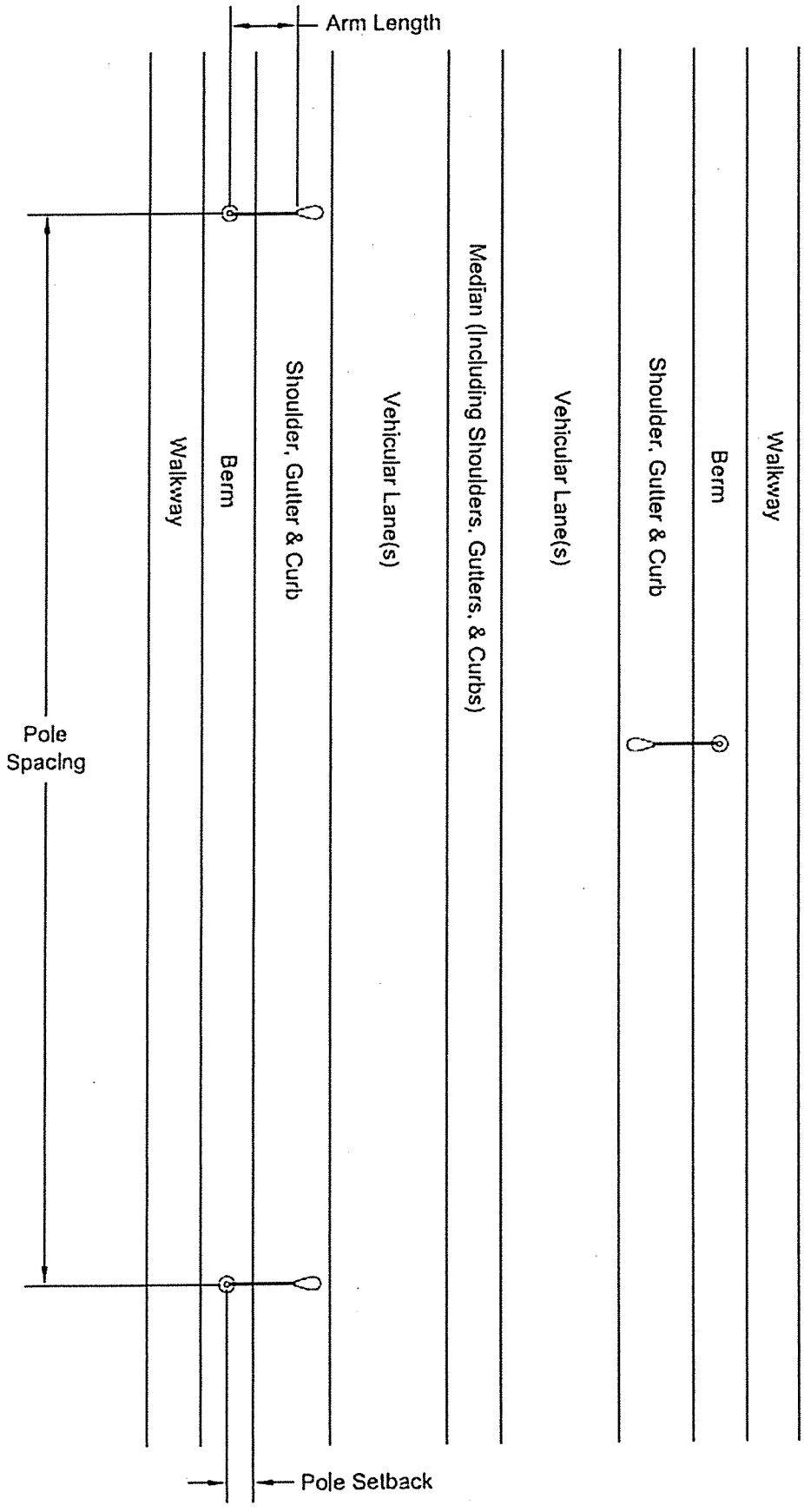


Exhibit C -**Intersection Diagram 4**

Intersection of Otis Drive and Pearl St



Staggered Pole Layout
One Luminaire Per Pole
No Dedicated Bikeway



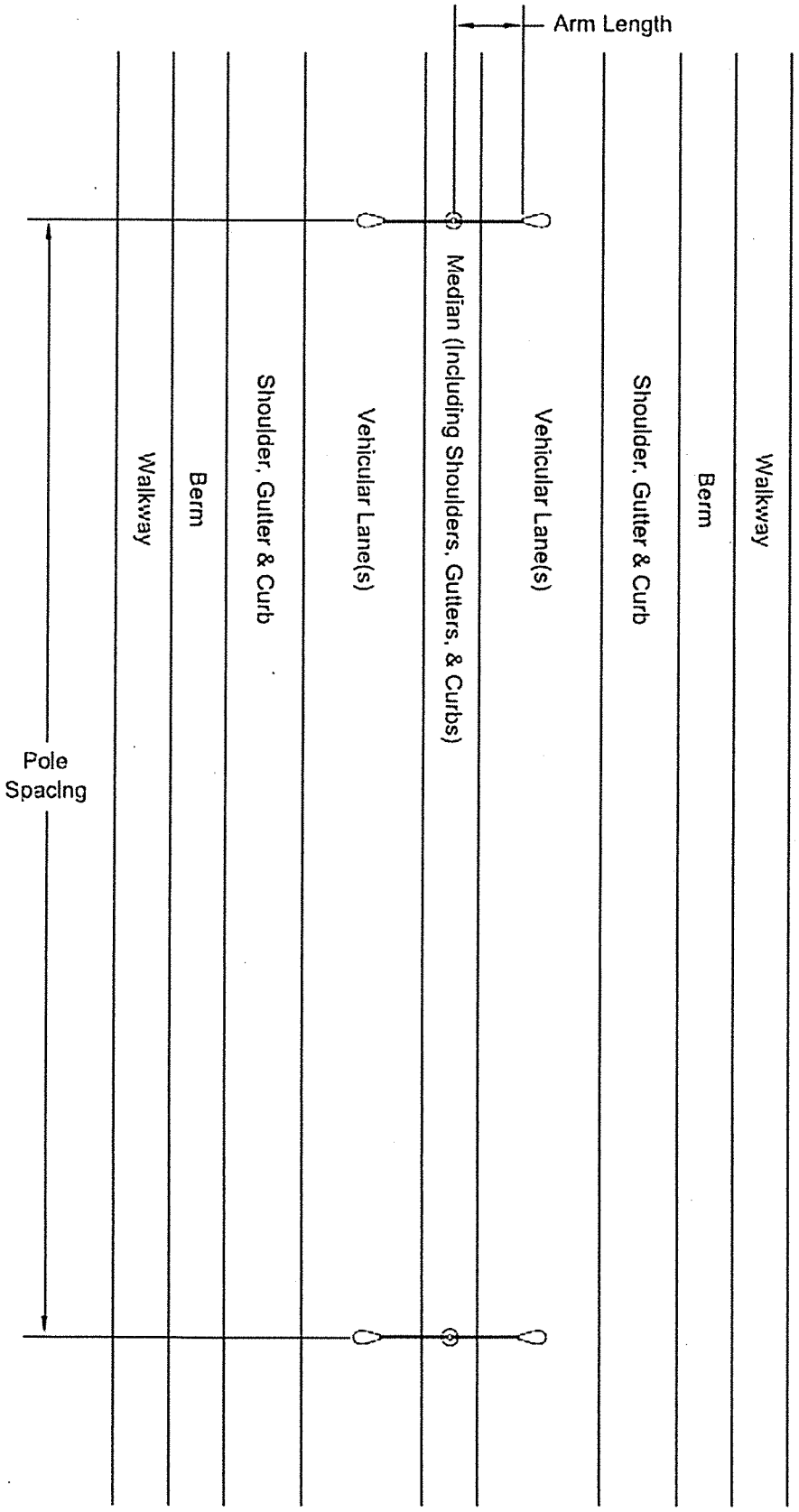

Arm Length
Median Pole Layout
Two Luminaires Per Pole
No Dedicated Bikeway
Pole Spacing
Walkway
Berm
Shoulder, Gutter & Curb
Vehicular Lane(s)
Median (Including Shoulders, Gutters, & Curbs)
Vehicular Lane(s)
Shoulder, Gutter & Curb
Berm
Walkway

Exhibit C -**Intersection Diagram 5**

Intersection of Seaview Parkway and Gainsborough Ct.

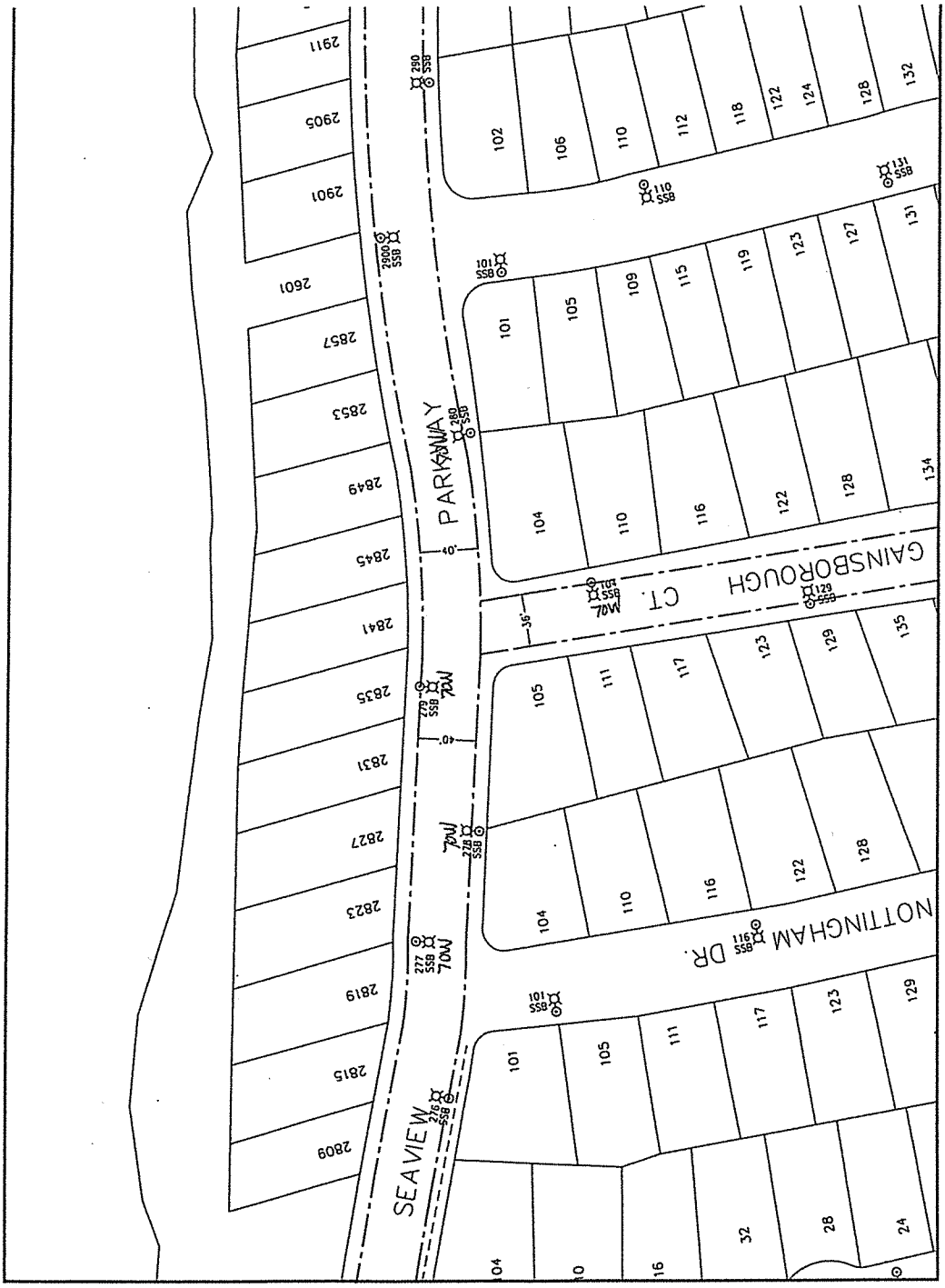


Exhibit C -**Intersection Diagram 6**

Harbor Bay intersection with North Loop and South Loop Roads

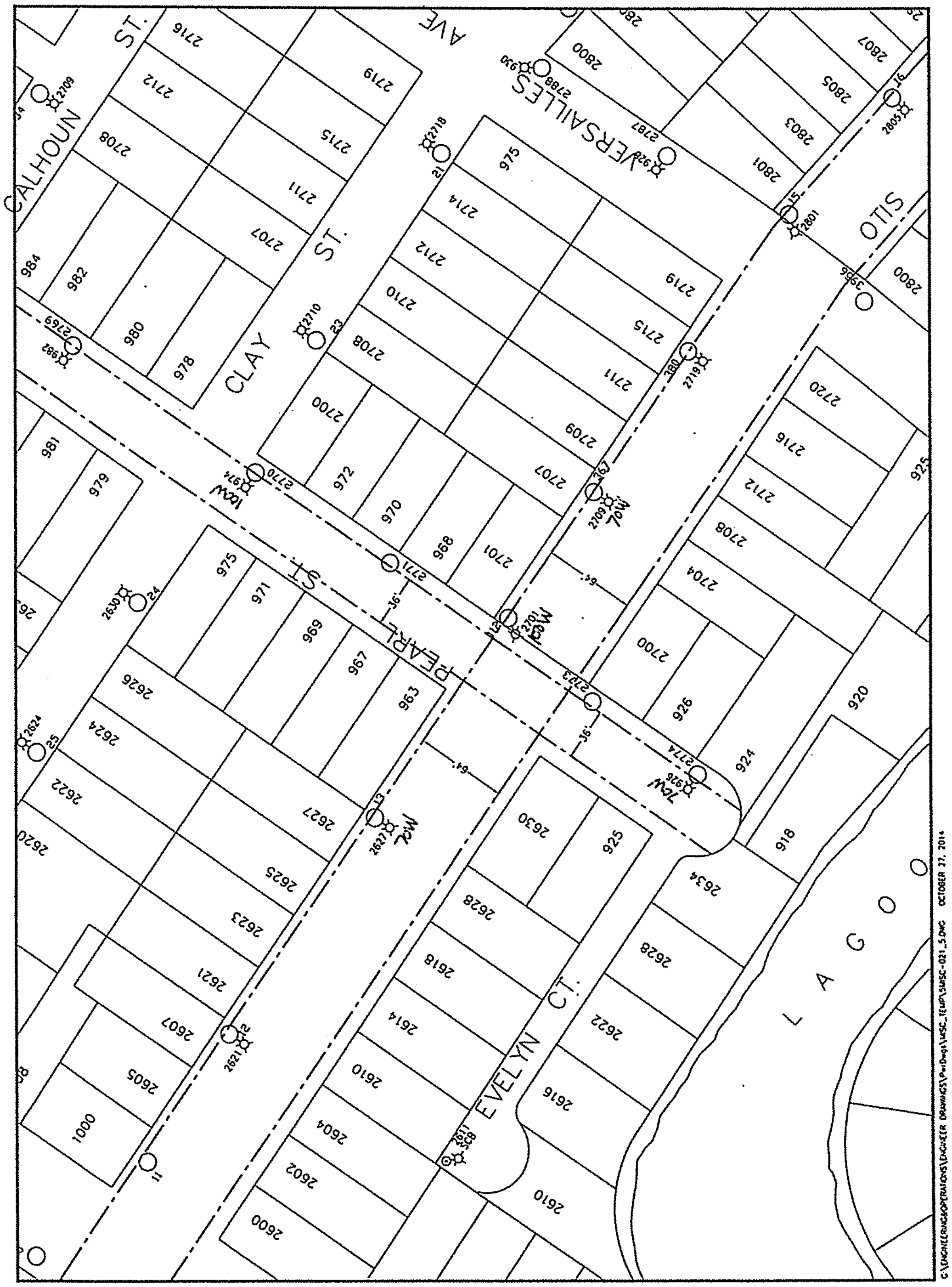


Exhibit D: Electrical Immunity

Test Procedure

1. Electrical Immunity Tests 1, 2 and 3, as defined by their Test Specifications, shall be performed on an entire powered and connected luminaire, including any control modules housed within the luminaire, but excluding any control modules mounted externally, such as a NEMA socket connected photo-control. A shorting cap should be placed across any such exterior connector.
2. The luminaire shall be connected to an AC power source with a configuration appropriate for nominal operation. The AC power source shall have a minimum available short-circuit current of 200A. The luminaire shall be tested at the nominal input voltage specified, or at the highest input voltage in the input voltage range specified.
3. Electrical Immunity test waveforms shall be superimposed on the input AC power line at a point within 6 inches (15cm) of entry into the luminaire using appropriate high-voltage probes and a series coupler/decoupler network (CDN) appropriate for each coupling mode, as defined by ANSI/IEEE C62.45-2002. The test area for all tests shall be set up according to ANSI/IEEE C62.45-2002, as appropriate.
4. Prior to electrical immunity testing a set of diagnostic measurements shall be performed, and the results recorded to note the pre-test function of the luminaire after it has reached thermal equilibrium. These measurements should include at a minimum:
    a. For all luminaires, Real Power, Input RMS Current, Power Factor and THD at full power/light output;
    b. For luminaires specified as dimmable, Real Power, Input RMS Current, Power Factor and THD at a minimum of 4 additional dimmed levels, including the rated minimum dimmed level.
5. Tests shall be applied in sequential order (Test 1, followed by Test 2, followed by Test 3). If a failure occurs during Test 3, then Test 3 shall be re-applied to a secondary luminaire of identical construction.
6. Following the completion of Tests 1, 2, and 3, the same set of diagnostic measurements performed pre-test should be repeated for all tested luminaires, and the results recorded to note the post-test function of the luminaire(s).
7. A luminaire must function normally and show no evidence of failure following the completion of Test 1 + Test 2 + Test 3 (for a single tested luminaire), or the completion of Test 1 + Test 2 on a primary luminaire and Test 3 on a secondary luminaire. Abnormal behavior during testing is acceptable.
8. A luminaire failure will be deemed to have occurred if any of the following conditions exists following the completion of testing:
    c. A hard power reset is required to return to normal operation;
    d. A noticeable reduction in full light output (e.g. one or more LEDs fail to produce light, or become unstable) is observed;
    e. Any of the post-test diagnostic measurements exceeds by ±10% the corresponding pre-test diagnostic measurement;
    f. The luminaire, or any component in the luminaire (including but not limited to an electrical connector, a driver, a protection component or module) has ignited or shows

evidence of melting or other heat-induced damage. Evidence of cracking, splitting, rupturing, or smoke damage on any component is acceptable.

Test Specifications

NOTE: L1 is typically "HOT", L2 is typically "NEUTRAL" and PE = Protective Earth.

Test 1) Ring Wave: The luminaire shall be subjected to repetitive strikes of a "C Low Ring Wave" as defined in ANSI/IEEE C62.41.2-2002, Scenario 1, Location Category C. The test strikes shall be applied as specified by Table D.1. Prior to testing, the ring wave generator shall be calibrated to simultaneously meet BOTH the specified short circuit current peak and open circuit voltage peak MINIMUM requirements. Note that this may require that the generator charging voltage be raised above the specified level to obtain the specified current peak. Calibrated current probes/transformers designed for measuring high-frequency currents shall be used to measure test waveform currents.

Test waveform current shapes and peaks for all strikes shall be compared to ensure uniformity throughout each set (coupling mode + polarity/phase angle) of test strikes, and the average peak current shall be calculated and recorded. If any individual peak current in a set exceeds by ±10% the average, the test setup shall be checked, and the test strikes repeated.

Table D.1: 0.5 μS – 100Hz Ring Wave Specification

Parameter	**Test Level/Configuration**
Short Circuit Current Peak	0.5 kA
Open Circuit Voltage Peak	6 kV
Coupling Modes	L1 to PE, L2 to PE, L1 to L2
Polarity and Phase Angle	Positive at 90° and Negative at 270°
Test Strikes	5 for each Coupling Mode and Polarity/Phase Angle combination
Time between Strikes	1 minute
Total Number of Strikes	= 5 strikes x 3 coupling modes x 2 polarity/phase angles = 30 total strikes

Test 2) Combination Wave: The luminaire shall be subjected to repetitive strikes of a "C High Combination Wave" or "C Low Combination Wave", as defined in ANSI/IEEE C62.41.2-2002, Scenario 1, Location Category C. The test strikes shall be applied as specified by Table D.2. The "Low" test level shall be used for luminaires with **Basic** Electrical Immunity requirements, while the "High" test level shall be used for luminaires with **Elevated** Electrical Immunity requirements.

Prior to testing, the combination wave generator shall be calibrated to simultaneously meet BOTH the specified short circuit current peak and open circuit voltage peak MINIMUM requirements. Note that this may require that the generator charging voltage be raised above the specified level to obtain the specified current peak. Calibrated current probes/transformers designed for measuring high-frequency currents shall be used to measure test waveform currents.

Test waveform current shapes and peaks for all strikes shall be compared to ensure uniformity throughout each set (coupling mode + polarity/phase angle) of test strikes, and the average peak current shall be

Exhibit E – Street Light Database

Electronic file provided.

Exhibit E consists of the following three sub appendices as separate tabs in the Excel workbook:

Exhibit E.1: Street Light Database, Inventory

Exhibit E.2: Street Light Database, Proposed Replacements

Exhibit E.3: Street Light Database, Closeout Checklist

calculated and recorded. If any individual peak current in a set exceeds by ±10% the average, the test setup shall be checked, and the test strikes repeated.

Table D.2: 1.2/50μS – 8/20 μS Combination Wave Specification

Parameter	**Test Level/ Configuration**	
1.2/50 μS Open Circuit Voltage Peak	Low: 6 kV	High: 10kV[1]
8/20 μS Short Circuit Current Peak	Low: 3 kA	High: 10kA
Coupling Modes	L1 to PE, L2 to PE, L1 to L2	
Polarity and Phase Angle	Positive at 90° and Negative at 270°	
Test Strikes	5 for each Coupling Mode and Polarity/Phase Angle combination	
Time Between Strikes	1 minute	
Total Number of Strikes	= 5 strikes x 3 coupling modes x 2 polarity/phase angles = 30 total strikes	

[1] This is a MINIMUM requirement. Note that for most combination wave generators, which have a source impedance of 2Ω, the generator charging voltage will need to be raised above the specified level (to somewhere in the vicinity of 20kV) to obtain the specified current peak.

Test 3) Electrical Fast Transient (EFT): The luminaire shall be subjected to "Electrical Fast Transient Bursts", as defined in ANSI/IEEE C62.41.2 -2002. The test area shall be set up according to IEEE C62.45-2002. The bursts shall be applied as specified by Table D.3. Direct coupling is required; the use of a coupling clamp is not allowed.

Table D.3: Electrical Fast Transient (EFT) Specification

Parameter	**Test Level/ Configuration**
Open Circuit Voltage Peak	3 kV
Burst Repetition Rate	2.5 kHz
Burst Duration	15 milliseconds
Burst Period	300 milliseconds
Coupling Modes	L1 to PE, L2 to PE, L1 to L2
Polarity	Positive and Negative
Test Duration	1 minute for each Coupling Mode and Polarity combination
Total Test Duration	= 1 minute x 3 coupling modes x 2 polarities = 6 minutes

Exhibit F — Product Submittal Form

Bidder to duplicate form and include one for each Luminaire Designation proposed.

Luminaire designation	*Indicate Luminaire Designation here.*			
Luminaire manufacturer				
Luminaire model number				
Nominal IES TM-15 BUG ratings	B =	U =	G =	
Product family testing	☐ Submitted product is identical to tested product	☐ Submitted product differs from tested product(s) as explained in attached letter		
Housing finish color				
Tenon nominal pipe size	inches			
Nominal luminaire weight	lb			
Nominal luminaire EPA	ft^2			
Nominal luminaire input voltage	V			
Control interface	☐ None	☐ ANSI C136.10 (3-pin)	☐ ANSI C136.41, 5-pin	☐ ANSI C136.41, 7-pin
LED driver	☐ Not dimmable	☐ Dimmable, 0-10V (IEC 60929)	☐ Dimmable, DALI (IEC 62386)	
Electrical immunity—ANSI C136.2 combination wave test level	☐ Basic (6kV / 3kA)	☐ Enhanced (10kV / 5kA)	☐ Elevated (20kV / 10kA)	
Upon failure of electrical immunity system	☐ Possible disconnect	☐ No possible disconnect		
ANSI C136.31 vibration test level	☐ Level 1 (Normal)	☐ Level 2 (bridge/overpass)		
Thermal management	☐ Liquids or moving parts	☐ No liquids or moving parts		
Luminaire warranty period	Years			
Rated life of LED driver(s)	Hours			
IES LM-80 test duration	Hours			
LED lumen maintenance *	☐ Reported (restricted)	☐ Calculated (unrestricted)		
Make/model of LED light source(s)				
	Nominal value	Tolerance (%)		
Luminaire input power—initial, factory delivered	W	W		
Luminaire input power—maintained **	W	W		
LED drive current—initial	mA	mA		
LED drive current—maintained **	mA	mA		
In-situ LED T_s	°C	°C		
LED lumen maintenance **	%	%		
CCT	K	K		
Maximum field adjustable input power	W	W		
Minimum field adjustable input power	W	W		
Additional product description				

* Manufacturer shall indicate which is applicable (check only one box) as per section 7.7. According to IES TM-21, "Reported" values are restricted to 5.5x or 6x (depending on sample size) the duration of IES LM-80 testing, whereas "Calculated" (i.e., projected) values are unrestricted.

** As per section 7.7.

Exhibit G

SUB-CONTRACTOR FORM

Complete this form & return with Proposal

List only Sub-Contractors to be used on this project.

Sub-Contractors must be able to provide references complete with contact names and phone numbers

Company Name	License No.	Scope of Work	Address	Contact Name	Phone No.

Exhibit H

Bid Item Sheet – Page 1 of 2

Bidder Name: _____

Luminaire Designation	Qty	Manuf	Model No.	Watts/ Luminaire	Total kW
70CL-A	1434				
70CL-B	140				
70CL-C	257				
70CC	46				
100CL	67				
100CC	88				
150CL	40				
150CC	53				
250CC	11				
70SL	460				
100SL	138				
150SL	37				
250SL	139				
100CLL-A	125				
100CLL-B	38				
100CLL-C	36				
100CCL	12				
100SLL	61				
150SCL	44				
Total	3226				

Exhibit H
Bid Item Sheet – Page 2 of 2

Bidder Name: _____

Luminaire Designation	Qty	Model No.	Material Unit Price	Labor Unit Price	All Other Unit Price	Total Unit Price	Extended Price
70CL-A	1434						
70CL-B	140						
70CL-C	257						
70CC	46						
100CL	67						
100CC	88						
150CL	40						
150CC	53						
250CC	11						
70SL	460						
100SL	138						
150SL	37						
250SL	139						
100CLL-A	125						
100CLL-B	38						
100CLL-C	36						
100CCL	12						
100SLL	61						
150SCL	44						
Total Bid Price	3226						

Optional Adders	Quantity	Price
GIS Records	3,226	
House Side Lighting Control (materials only)	10	
Side Lighting Control (materials only)	10	

EXHIBIT I

Specification No. CS 10-14-02

PROPOSAL

TO THE PUBLIC UTILITIES BOARD OF THE CITY OF ALAMEDA:

The undersigned declares that he/she has carefully examined Specification CS 09-14-02 and all its provisions, which has been issued by Alameda Municipal Power and which filed with the Secretary of the Public Utilities Board for **FURNISHING LABOR, MATERIALS, AND EQUIPMENT FOR THE LED STREETLIGHT REPLACEMENT PROGRAM (PHASE 1)**

Further, the undersigned declares and hereby agrees to perform these services to Alameda Municipal Power strictly in accordance with the terms and conditions of said Specification and provisions at the fixed price shown below. Or, for bid items at a price not to exceed that indicated for the unit pricing of the item.

The Bidder is [ ], is not [ ], qualified for the "Alameda Bidder's Preference" (See Section GC-20)

.

BID OPENING DATE: JANUARY 15, 2015 at 3:00 p.m.

BID SUMMARY

1. Bid Price..... $_____

2. Sales Tax (9.0%). . . . . $_____

3. Total Bid Price . . . . . $_____

4. Contract Agreement accepted without modification: Yes _____ No _____

5. Number of calendar days to complete the project: _____

6. Fixture manufactured by: _____

7. Unit cost adders

   a. House side shield (10 qty. material only) _____
   b. Side shield (10 qty. material only) _____
   c. GIS information (coordinates) _____

Note: Bidder is required to submit this Proposal form, the Bidder's Guaranty, all required Exhibits, and all other submittals required by the Specification.

Other documentation may be submitted as deemed fitting and appropriate.

The undersigned agrees to execute the contract required in the said Specifications and Provisions and further agrees that in case of failure to execute said contract with the necessary insurance documents, within fourteen (14) calendar days, after receiving notice that the contract has been awarded and is ready for signature. The signature below certifies that the information given on this document is true and correct under penalty of perjury (Section 7028.15 California Business and Professionals Code).

Signature of Bidder: _____ Date: _____

Bidder's Name: _____
(please print or type)

Name of Business: _____

Business Address: _____

Contractor's License No. _____ Expiration Date: _____

Federal ID Employer Number or Social Security Number: _____

Phone Number: (___) _____ Fax Number: (___) _____

E-Mail Address: _____

Incorporated under the laws of the State of: _____

Officers or Partners:

Name	Title	Address
_____	_____	_____
_____	_____	_____
_____	_____	_____

IMPORTANT INSTRUCTIONS

1. Any erasure or interlineation may invalidate bid.
2. If bidder is:
   a) An individual doing business under his/her own name, sign his/her name only.
   b) An individual using a firm name, sign: Example, "John Doe, an individual doing business as Blank Co."
   c) A co-partnership, sign: Example, "Blank Co., by John Doe, co-partner."
   d) A corporation, sign: Example,"Blank Co., by John Doe, President" (or other officer or agent duly authorized). If by agent, furnish written evidence of authority.
3. If a firm or co-partnership, give the names and addresses of all individual co-partners composing the firm.
4. If a corporation, state legal name of corporation, also names and addresses of president, secretary and treasurer.
5. If corporation is bidder, affix seal of corporation.
6. Write plainly on the envelope "Proposal for Furnishing . . . (name of product). . . "