



Department of Administrative Services

Purchasing and Contracts

500 S Grand Central Pky 4th Fl • Box 551217 • Las Vegas NV 89155-1217
(702) 455-2897 • Fax (702) 386-4914

Sabra Smith Newby, Chief Administrative Officer
Adleen B. Stidhum, Purchasing Manager

CLARK COUNTY, NEVADA BID NO. 603795-15 CIRCUS CIRCUS DRIVE FROM INDUSTRIAL ROAD TO LAS VEGAS BOULEVARD

November 10, 2015

ADDENDUM NO. 3

INVITATION TO BID

1. The bid opening date of November 13, 2015 at 2:15:00 p.m. **remains the same.**

SPECIAL PROVISIONS

Changes are shown in bold type.

2. Incorporate **SECTION 619 OBJECT MARKERS AND GUIDE POSTS** (Attached)
3. Incorporate the following to Section 623:

623.05.01 PAYMENT

The following paragraph replaces the eighth paragraph:

The lump sum price paid for Crosswalk Warning Lighting System shall be full compensation for all labor and materials, including but not limited to in-roadway warning light fixtures, pedestrian microwave presence sensors, system controller, conduit and conductors from service pedestal, conduit and conductors from controller to all pedestrian microwave presence sensors, pull string for future flashing beacons, connection to drain pipes, **drain pipes, connection to drop inlet**, shipping and delivering costs, tools and required hardware for mounting, fittings, connections, equipment, making all required tests, and all other incidentals required to make the "Crosswalk Warning Lighting System" operational as a system, and to function as specified and shown in the contract drawings, the manufacturer's recommendations, and these Supplemental Project Special Provisions.

BID FORM

4. Replace bid form pages 4-1 through 4-7 with revised bid form pages 4-1 through 4-7.

Except as modified herein and in Addendum 1 and 2, all other bid specifications, terms, conditions and special provisions shall remain the same.

ISSUED BY:

THOMAS BOLDT, C.P.M.
Sr. Purchasing Analyst

Attachments: Revised Bid Form pages 4-1 through 4-7
Section 619
Section 623

cc: Kathleen Kingston, Public Works
Mike Mamer, Public Works
Cindy Beauchamp, Public Works

CLARK COUNTY, NEVADA

BID FORM

BID NO. 603795-15

CIRCUS CIRCUS DRIVE FROM INDUSTRIAL ROAD TO LAS VEGAS BOULEVARD

PWP NUMBER: CL-2015-376

REVISED PER ADDENDUM NO. 3

(NAME)

(ADDRESS)

I, THE UNDERSIGNED BIDDER:

1. Agree, if awarded this Contract, I will complete all work for which a Contract may be awarded and to furnish any and all labor, equipment, materials, transportation, and other facilities required for the services as set forth in the Bidding and Contract Documents.
2. Have examined the Contract Documents and the site(s) for the proposed work and satisfied themselves as to the character, quality of work to be performed, materials to be furnished and as to the requirements of the specifications.
3. Have completed all information in the blanks provided and have submitted the following within this Bid:
 - a) Have listed the name of each Subcontractor which will be paid an amount exceeding five percent (5%) of the Total Base Bid amount.
 - b) Attached a bid security (in the form of, at my option, a Cashiers Check, Certified Check, Money Order, or Bid Bond in favor of the Owner in the amount of five percent (5%) of the Total Base Bid amount.
 - c) If claiming the preference eligibility, I have submitted a valid Certificate of Eligibility with this Bid.
4. I acknowledge that if I am one of the three apparent low bidders at the bid opening, and if I have listed Subcontractor(s) pursuant to NRS 338.141, I must submit Bid Attachment 2 within two-hours after completion of the bid opening pursuant to the Instructions to Bidders, forms must be submitted via hand delivery or email to COUNTYPURCHASING@CLARKCOUNTYNV.GOV and I understand that hand delivery is recommended, and Owner shall not be responsible for lists received after the two-hour time limit, regardless of the reason. I understand that submission after the two-hour time limit is not allowed and will be returned to me and the bid will be deemed non-responsive. I acknowledge that for all projects, I will list:
 - a) My firm's name on the list If my firm will perform any work which is more than 1 percent of the prime contractor's total bid and which is not being performed by a subcontractor. The prime contractor shall also include on the list:
 - 1) A description of the labor or portion of the work that the prime contractor will perform: or
 - 2) A statement that the prime contractor will perform all work other than that being performed by a subcontractor listed.
 - b) The name of each first tier subcontractor who will provide labor or a portion of the work on the public work to the prime contractor for which the first tier subcontractor will be paid an amount exceeding \$250,000.
 - c) If I will employ a first tier subcontractor who will provide labor or a portion of the work on the public work to the prime contractor for which the first tier subcontractor will not be paid an amount exceeding \$250,000, the name of each first tier subcontractor who will provide labor or a portion of the work on the public work to the prime contractor for which the first tier subcontractor will be paid 1 percent of the prime contractor's total bid or \$50,000, whichever is greater.
5. I acknowledge that if I am one of the three apparent low bidders at bid opening, and if I have submitted a valid Certificate of Eligibility as described in 3.c above, I must submit Bid Attachment 3, Affidavit Pertaining to Preference Eligibility, within two-hours after completion of the bid opening pursuant to the General Conditions. The forms must be submitted via hand delivery or email to COUNTYPURCHASING@CLARKCOUNTYNV.GOV and I understand hand delivery is recommended. Owner shall not be responsible for lists received after the two-hour time limit, regardless of the reason. I understand that submission of the Certificate after the two-hour time limit is not allowed and it will be returned to me and the bid will be deemed non-responsive.

6. I acknowledge that if notified that I am the low bidder, I must submit the Disclosure of Ownership/Principals form within 24-hours of request.
7. I acknowledge that my bid is based on the current State of Nevada prevailing wages.
8. I acknowledge that I have not breached a public work contract for which the cost exceeds \$25,000,000, within the preceding year, for failing to comply with NRS 338.147 and the requirements of a contract in which I have submitted within 2 hours of the bid opening an Affidavit pertaining to preference eligibility.
9. Upon faxed or mailed receipt of a Notice of Intent to Award the Contract, I will provide the following submittals within seven business days from receipt of the Notice:
 - a) Performance Bond, Labor and Material Payment Bond and a Guaranty Bond, for 100% of the Contract amount as required.
 - b) Certificates of insurance for Commercial General Liability in the amount of \$1,000,000, Automobile Liability in the amount of \$1,000,000, and Workers' Compensation insurance issued by an insurer qualified to underwrite Workers' Compensation insurance in the State of Nevada, as required by law.
10. I acknowledge that if I do not provide the above submittals on or before the seventh business day after receipt of the Notice of Intent to Award; or do not keep the bonds or insurance policies in effect, or allow them to lapse during the performance of the Contract; I will pay over to the Owner the amount of **\$2,000** per day as liquidated damages.
11. I confirm this bid is genuine and is not a sham or collusive, or made in the interest of, or on behalf of any person not herein named, nor that the Bidder in any manner sought to secure for themselves an advantage over any bidders.
12. I further propose and agree that if my bid is accepted, I will commence to perform the work called for by the contract documents on the date specified in the Notice to Proceed and I will complete all work within the calendar days **specified in the General Conditions.**
13. I further propose and agree that I will accept as full compensation for the work to be performed the price written in the Bid Schedule below.
14. I have carefully checked the figures below and the Owner will not be responsible for any error or omissions in the preparation or submission of this Bid.
15. I agree no verbal agreement or conversation with an officer, agent or employee of the Owner, either before or after the execution of the contract, shall affect or modify any of the terms or obligations of this Bid.
16. I am responsible to ascertain the number of addenda issued, and I hereby acknowledge receipt of the following addenda:

Addendum No. _____ dated, _____	Addendum No. _____ dated, _____
Addendum No. _____ dated, _____	Addendum No. _____ dated, _____
Addendum No. _____ dated, _____	Addendum No. _____ dated, _____
Addendum No. _____ dated, _____	Addendum No. _____ dated, _____
Addendum No. _____ dated, _____	Addendum No. _____ dated, _____

17. I agree to perform all work described in the drawings, specifications, and other documents for the amounts quoted below:

BID SCHEDULE				
ITEM NUMBER	ITEM DESCRIPTION	APPROX. QUANTITY	UNIT	TOTAL
107.01	TRAFFIC CONTROL	275	DAY	\$
109.01	CONSTRUCTION CONFLICTS AND ADDITIONAL WORK	1	LS	\$300,000.00
109.02	HISTORICAL OWNER CAUSED DELAY ALLOWANCE	10	DAY	\$5,000.00
109.03	ADDITIONAL AMOUNT OVER \$500/DAY AS DETERMINED BY BIDDER	10	DAY	\$
200.01	MOBILIZATION	1	LS	\$
202.01	REMOVE CURB AND GUTTER	1,541	LF	\$

BID SCHEDULE				
ITEM NUMBER	ITEM DESCRIPTION	APPROX. QUANTITY	UNIT	TOTAL
202.02	REMOVE CONCRETE SIDEWALK	7,632	SF	\$
202.03	REMOVE ASPHALT SIDEWALK	712	SF	\$
202.04	REMOVE CONCRETE DRIVEWAY	2,225	SF	\$
202.05	REMOVE CROSS GUTTER	3,798	SF	\$
202.06	REMOVE CONCRETE MEDIAN ISLAND	421	SF	\$
202.07	REMOVE BITUMINOUS SURFACE	10,542	SY	\$
202.08	REMOVE DROP INLET	1	EA	\$
202.09	REMOVE STREET LIGHT ASSEMBLY AND FOUNDATION	3	EA	\$
202.10	REMOVE SIGN	16	EA	\$
202.11	REMOVE SIGN POST	5	EA	\$
208.01	TRENCH OVER-EXCAVATION AND COMPACTED IMPORTED AGGREGATE BEDDING	1,000	CY	\$
216.01	ROTO-MILL FINE	3,574	SY	\$
302.01	TYPE II AGGREGATE BASE	2,524	CY	\$
402.01	PLANTMIX BITUMINOUS SURFACE	2,503	TONS	\$
403.01	PLANTMIX OPEN GRADE BITUMINOUS SURFACE	51	TONS	\$
413.01	1-INCH UTACS BONDED WITH A PMM, S3 GRADATION	12,878	SY	\$
605.01	12-INCH C-900 POLYVINYL CHLORIDE PIPE	1,056	LF	\$
609.01	NDOT TYPE 3 DROP INLET	8	EA	\$
613.01	TYPE "L" CURB AND GUTTER	1,479	LF	\$
613.02	CONCRETE SIDEWALK	9,606	SF	\$
613.03	COMMERCIAL AND INDUSTRIAL DRIVEWAY	3,162	SF	\$
613.04	CONCRETE CROSS GUTTER	4,235	SF	\$
613.05	CONCRETE TACK-ON ISLAND	255	SF	\$
613.06	SIDEWALK DRAIN	1	EA	\$
619.01	K71 SELF RE-ERECTING MARKER POST (YELLOW)	3	EA	\$
623.01	TRAFFIC SIGNAL SYSTEM MODIFICATIONS (CIRCUS CIRCUS DR AND INDUSTRIAL RD)	1	LS	\$
623.02	TRAFFIC SIGNAL SYSTEM MODIFICATIONS (CIRCUS CIRCUS DR AND LAS VEGAS BLVD)	1	LS	\$
623.03	200 AMP SERVICE PEDESTAL AND FOUNDATION	1	EA	\$
623.04	LED STREET LIGHT ASSEMBLY AND FOUNDATION	3	EA	\$
623.05	LED LUMINAIRE	8	EA	\$
623.06	NO. 3 1/2 PULL BOX	2	EA	\$
623.07	ADJUST PULL BOX TO FINISHED GRADE	3	EA	\$
623.08	CROSSWALK WARNING LIGHTING SYSTEM	1	LS	\$
623.09	MODIFIED PEDESTRIAN POLE AND FOUNDATION	1	EA	\$

BID SCHEDULE				
ITEM NUMBER	ITEM DESCRIPTION	APPROX. QUANTITY	UNIT	TOTAL
627.01	PERMANENT SIGN PANEL (R3-7R) (30"x30") AND POST	2	EA	\$
627.02	PERMANENT SIGN PANEL (R3-7L) (30"x30") AND POST	1	EA	\$
627.03	PERMANENT SIGN PANEL (W11-2) (36"x36") AND POST	8	EA	\$
627.04	PERMANENT SIGN PANEL (W16-9P) (30"x18")	4	EA	\$
627.05	PERMANENT SIGN PANEL (W16-7P) (30"x18")	6	EA	\$
627.06	PERMANENT SIGN PANEL (R1-6) (12"x36") AND POST	8	EA	\$
627.07	PERMANENT SIGN PANEL (R3-8 (MOD)) (36"x30") AND POST	2	EA	\$
627.08	PERMANENT SIGN PANEL (R2-1) (30"x36")	1	EA	\$
627.09	PERMANENT SIGN PANEL (R7-1APR) (24"x30")	1	EA	\$
627.10	PERMANENT SIGN PANEL (W11-2) (36"x36")	2	EA	\$
627.11	PERMANENT SIGN PANEL (R1-5) (30"x30")	1	EA	\$
627.12	PERMANENT SIGN PANEL (R1-5) (30"x30") AND POST	4	EA	\$
627.13	PERMANENT SIGN PANEL (R3-8 (MOD)) (48"x30") AND POST	2	EA	\$
628.01	TYPE 2 FILM (ONLY LEGEND)	6	EA	\$
628.02	TYPE 2 FILM (ARROW LEGEND)	19	EA	\$
628.03	TYPE 2 FILM (CROSSWALKS AND STOP BARS)	2,490	SF	\$
628.04	TYPE 2 FILM (YIELD MARKINGS)	108	SF	\$
628.05	REFLECTIVE YELLOW MEDIAN PAINT	244	SF	\$
628.06	4-INCH WHITE THERMOPLASTIC PAVEMENT MARKING	74	LF	\$
629.01	ADJUST WATER VALVE TO FINISHED GRADE	18	EA	\$
629.02	ADJUST WATER METER TO FINISHED GRADE	1	EA	\$
629.03	12-INCH PVC WATERLINE - LVVWD	476	LF	\$
629.04	10-INCH PVC WATERLINE - LVVWD	54	LF	\$
629.05	8-INCH PVC WATERLINE - LVVWD	2,036	LF	\$
629.06	6-INCH PVC WATERLINE - LVVWD	85	LF	\$
629.07	12-INCH WET TAP AND LINE STOP - LVVWD	4	EA	\$
629.08	16-INCH WET TAP - LVVWD	1	EA	\$
629.09	12-INCH GATE VALVE - LVVWD	4	EA	\$
629.10	8-INCH GATE VALVE - LVVWD	6	EA	\$
629.11	6-INCH GATE VALVE - LVVWD	8	EA	\$
629.12	NEW FIRE HYDRANT ASSEMBLY - LVVWD	6	EA	\$
629.13	SERVICE LATERAL CONNECTION - LVVWD	2	EA	\$
629.14	ABANDON AND REMOVE EXISTING FIRE HYDRANT ASSEMBLY - LVVWD	6	EA	\$
629.15	ABANDON EXISTING WATERLINES - LVVWD	1	LS	\$

BID SCHEDULE				
ITEM NUMBER	ITEM DESCRIPTION	APPROX. QUANTITY	UNIT	TOTAL
630.01	ADJUST SANITARY SEWER MANHOLE TO FINISHED GRADE	16	EA	\$
633.01	NON-REFLECTIVE RAISED PAVEMENT MARKERS	994	EA	\$
633.02	REFLECTIVE RAISED PAVEMENT MARKERS	386	EA	\$
637.01	DUST CONTROL	275	DAY	\$
TOTAL BASE BID				\$

18. BUSINESS ENTERPRISE INFORMATION:

The Prime Contractor submitting this Bid is a MBE WBE PBE SBE VET DVET ESB as defined in the Instructions to Bidders.

19. BUSINESS ETHNICITY INFORMATION:

The Prime Contractor submitting the Bid Ethnicity is Caucasian (CX) African American (AA) Hispanic American (HA) Asian Pacific American (AX) Native American (NA) Other as defined in the Instructions to Bidders.

20. BIDDERS' PREFERENCE Is the Bidder claiming Bidders' Preference?

- Yes If yes, the Bidder acknowledges that he/she is required to follow the requirements set forth in the Affidavit (Bid Attachment 3).
- No I do not have a Certificate of Eligibility to receive preference in bidding.

LEGAL NAME OF FIRM AS IT WOULD APPEAR IN CONTRACT

ADDRESS OF FIRM

CITY, STATE, ZIP CODE

TELEPHONE NUMBER

FAX NUMBER

NEVADA STATE CONTRACTORS' BOARD LICENSE INFORMATION:

I certify that the license(s) listed below will be the license(s) used to perform the majority of the work on this project.

LICENSE NUMBER: _____

LICENSE CLASS: _____

LICENSE LIMIT: _____

ONE TIME LICENSE LIMIT INCREASE \$ _____ IF YES, DATE REQUESTED _____

CLARK COUNTY BUSINESS LICENSE NO. _____

STATE OF NEVADA BUSINESS LICENSE NO. _____

AUTHORIZED REPRESENTATIVE (PRINT OR TYPE)

E-MAIL ADDRESS

SIGNATURE OF AUTHORIZED REPRESENTATIVE

TODAY'S DATE

SECTION 619 – OBJECT MARKERS AND GUIDE POSTS

SECTION 619

OBJECT MARKERS AND GUIDE POSTS

DESCRIPTION

619.01.01 GENERAL

The following is added to this subsection:

This work shall also consist of furnishing and installing marker posts at locations shown on the plans or as directed by the Engineer.

MATERIALS

The following subsection is added:

619.02.02 MARKER POST

Provide self-re-erecting marker posts Model K71 Flexible Post as supplied by US Reflector, 144 Canterbury Street, Worcester, MA 01603, (508) 753-6373, www.usreflector.com, or Engineer-approved equal.

CONSTRUCTION

619.03.01 GENERAL

The following is added to this subsection:

Install marker posts as shown on the plans and in accordance with the manufacturer's recommendations.

METHOD OF MEASUREMENT

619.04.01 MEASUREMENT

The following is added to this subsection:

The quantity of K71 Self Re-erecting Marker Post (Yellow) measured for payment will be per each, complete and in place.

BASIS OF PAYMENT

619.05.01 PAYMENT

The following is added to this subsection:

The contract unit price paid for K71 Self Re-erecting Marker Post (Yellow) shall be full

SECTION 619 – OBJECT MARKERS AND GUIDE POSTS

compensation for furnishing and installing marker post, including post, mounting hardware, epoxy adhesives, incidentals, and all labor, tools and equipment necessary to complete the work as shown on the plans, in accordance with the manufacturers requirements, as specified herein, and as directed by the Engineer.

Payment will be made under:

<u>Pay Item</u>	<u>Pay Unit</u>
K71 Self Re-erecting Marker Post (Yellow)	Each

SECTION 623 – TRAFFIC SIGNALS AND STREET LIGHTING

SECTION 623

TRAFFIC SIGNALS AND STREET LIGHTING

DESCRIPTION

623 G.01.05 GLOBAL POSITIONING SYSTEM (GPS) COORDINATES

This subsection is replaced with the following:

The Contractor is responsible for documenting and providing traffic asset data to Clark County for traffic assets within the project limits. Traffic assets consist of all new and relocated traffic signal systems, ITS, and street lighting facilities that are connected via the underground conduit system(s) and are visible at ground level, including but not limited to poles, pull boxes, splice vaults, cabinets, service pedestals, transformers, school flasher assemblies and changeable message signs, and shall also include all pull boxes that are buried underground as shown on the plans. The Contractor shall complete the appropriate Traffic Asset Data Collection Forms 1 and/or 2, included herein, and submit to Clark County Public Works in an electronic file format (.doc or .xls) and "hard copy"/paper format at the end of the project, prior to final acceptance for maintenance. The asset information shall be complete and free from error, with Northing/Easting coordinates of the post construction location of each item or facility, based on NAD 1983, State Plane Nevada East, U.S. Survey Feet. The horizontal precision of the coordinates shall be recorded with a device that has an accuracy tolerance within 3 feet of the actual location of the object.

Clark County will not be responsible for furnishing any traffic asset information to the Contractor for this work.

MATERIALS

623 G.02.01 CONDUIT

The following is added to this subsection:

Electrical conduits, fittings, and couplings shall be joined together per NEC section 352.48.

623 G.02.02 PULL BOXES

The first sentence of paragraph B is replaced with the following:

Non-conductive lids shall be used for all pull box covers except for Type 200 splice vault. Steel lids shall be used for Type 200 splice vault.

The following is added to this subsection:

Pull boxes shall not be installed within the roadway, shoulder, nor bike lane. Pull boxes shall also not be installed within sidewalk ramp, driveway, nor within 10 feet of a driveway.

623 G.02.04 CONDUCTORS AND CABLE

The second sentence of paragraph A.4 is replaced with the following:

SECTION 623 – TRAFFIC SIGNALS AND STREET LIGHTING

All traffic signal cable shall be 25-conductor, No. 14 AWG solid copper wire traffic signal cable.

Paragraph A.7.a is replaced with the following:

Conductors shall be seven-strand No. 4/0 AWG copper wire with THW-2 or XHHW-2 insulation, unless otherwise shown in the plans or indicated herein.

Paragraph A.9.b is replaced with the following:

The insulation shall be 15 mils of orange PVC complying with UL62 with an overall jacket of clear nylon in accordance with ASTM D4066.

The following is added:

The induction loop wires shall be soldered and sealed to the loop lead-in wires.

623 G.02.07 ELECTRICAL SERVICE PEDESTALS

Paragraph J1 is replaced with the following:

The main body of the pedestal, the hood and the main door shall be polyurethane powder coated inside and out with a gloss, mint green coating (Federal color 14672).

Paragraph M is replaced with the following:

The pedestals shall incorporate a tin plated copper load center. Bus bars for grounding and neutral connections shall be tin plated aluminum rated for both copper and aluminum wire with facilities for landing two No. 1/0 AWG conductors, six No. 2 to No. 12 AWG and 12 No. 4 to No. 14 AWG conductors. The utility landing lugs shall be tin plated aluminum rated for both copper and aluminum service wire.

Paragraph O.1 is replaced with the following:

Each lighting circuit shall have a separate test toggle switch (or toggle switch position) rated for 10 amps with sealed leads for testing the circuit during maintenance activities.

CONSTRUCTION

623 G.03.03 SCHEDULING OF WORK

The following is added to paragraph G:

The Contractor shall supply Traffic Jackets as supplied by Phoenix Highway Products, 2631 North 37th Drive, Phoenix, Arizona 85009, Phone 602-344-7770, www.phoenixhighwayproducts.com, or approved equal by the Maintaining Agency.

The covers shall be bright orange with a vertical message "NOT IN SERVICE" in black on each cover, for new construction. The covers shall be black with a vertical message "NOT IN SERVICE" in white on each cover, for modifications to a traffic signal already in operation.

SECTION 623 – TRAFFIC SIGNALS AND STREET LIGHTING

Coverings that are not installed when a signal head is installed, and not activated, shall have a cover installed by the Contracting Agency and the cost of the covering shall be deducted from any unpaid invoices that have been or will be submitted to the Contracting Agency by the Contractor.

623 G.03.07 FOUNDATIONS

The following is added:

Service pedestal and controller cabinet foundations shall be level.

623 G.03.08 WIRING AND CONDUIT

The following is added to paragraph D of this subsection:

Splices for street light cables shall be split bolt type of the appropriate size. The split bolt connector shall be copper or copper alloy with copper plating, and shall accommodate range of cable sizes specified in the Drawings. The split bolt connector shall be Brundy KS22, Brundy KS23, or approved equivalent by the Maintaining Agency.

Paragraph I of this subsection is replaced by the following:

Wire shall be 14 AWG UF and shall be used between the pole-mounted "J" box and the traffic signal tenons on the traffic signal mast arms. All 14 AWG UF wire shall be uniquely identified in the "J" box. Six conductors shall be installed from the pole mounted "J" box to any unused tenon at the end of the mast arm. Four conductors shall be installed from the pole mounted "J" box to any unused tenons located elsewhere on the mast arm. All empty tenons shall be sealed with 10mil tape. Contractor shall determine and install the appropriate number of conductors from the pole mounted "J" box to all traffic signal indications.

623 G 03.09 ELECTRICAL SERVICES

Paragraph E of this subsection is replaced with the following:

Electrical conductors for service shall have THW-2 or XHHW-2 insulation and shall be 4/0 AWG, stranded, copper wire unless otherwise specified.

The following is added to this subsection:

623 G 03.13 CONDUIT VERIFICATION AND CONDUIT BLOCKAGE

At locations where existing conduit is to be utilized, Contractor shall verify condition of the conduit. In the event of a conduit blockage at existing conduit locations, the Contractor shall attempt to clear the blockages by any reasonable means to his disposal until the conduit is cleared of obstruction to the satisfaction of the Engineer or until the Engineer determines that further attempts to clear the conduit are not feasible. Reasonable means include any industry standard methods for removing conduit blockages, such as, blowing air through the blocked conduit(s) with an air compressor of a minimum size of 185 cfm, soaking the blocked conduit(s) with water for 24 hours then blowing air with an air compressor of a minimum size of 185 cfm, and any other methods as approved by the Engineer.

SECTION 623 – TRAFFIC SIGNALS AND STREET LIGHTING

TRAFFIC SIGNAL SECTION

623 T.01.01 GENERAL

The following is added:

A Clark County-licensed Journeyman Electrician shall perform all electrical terminations.

MATERIAL

623 T.02.02 TRAFFIC SIGNAL CONTROLLER CABINET EQUIPMENT

The following is added to paragraph F:

Two GTT Model 764 emergency vehicle phase selectors shall be provided for each traffic signal system.

Paragraph H.1 is replaced with the following:

A 16-channel conflict monitor with flashing yellow arrow capabilities shall be furnished unprogrammed and the program card shall be wired by the Maintaining Agency.

623 T.02.03 TRAFFIC SIGNAL CONTROLLERS

Paragraph B.5.d of this subsection is deleted.

Paragraph C of this subsection is deleted.

Paragraph D.1 is replaced with the following:

Contractor shall supply a Siemens M53 (with OS9 version 3.3.0 operating software) with installed Naztec Apogee actuated signal controller software (latest version) or Naztec model 980 ATC signal controller with Apogee actuated signal controller software (latest version).

623 T.02.04 MAGNETIC INDUCTION LOOP DETECTORS

The following is added to paragraph A:

A 6-foot diameter circular detection loop may be used in lieu of a 6 feet by 6 feet square detection loop. Spacing between each loop and the number of loops shall be as specified in the plans.

Paragraph G.1 is replaced with the following:

A separate lead-in cable to the controller cabinet shall be provided for each left turn, straight through, and right turn lanes. A separate lead-in cable to the controller cabinet shall be provided for advanced detection loops for each approach. Each lead-in cable shall be individually tagged.

Paragraph H.2 is replaced with the following:

SECTION 623 – TRAFFIC SIGNALS AND STREET LIGHTING

All loop amplifiers shall be shelf mounted.

623 T.02.05 EMERGENCY VEHICLE PRIORITY CONTROL SYSTEM (INTERNAL PREEMPTION)

Paragraph D.4.b.1 is replaced with the following:

This module unit shall be a plug-in, four-channel device, dual-priority, multimode encoded signal device designed to be used with optical Emitters and Detectors.

623T.02.06 TRAFFIC SIGNAL VIDEO IMAGE DETECTION SYSTEMS

This subsection is replaced with the following:

Video detection systems shall be approved by the Engineer for installation. The system shall be PEEK VideoTrak IQ, ITERIS Edge 2, ECONOLITE Auto Scope Rack Vision or an alternate system that is pre-approved by the Traffic Manager. All video detection systems installed shall have eight channels with the capability of expanding to more channels of detection by adding additional modules. A video detection system color LCD monitor, minimum size of 9 inches, shall be provided as part of the detection system.

623 T.02.07 SYNCHRONIZING CLOCK

Paragraph B is replaced with the following:

The timing device provided shall be a stand alone unit to be shelf mounted and capable of accuracy to within 10 milliseconds of the GPS data stream. The timing device shall be an output only device and shall not receive commands from the controller. The clock shall be designed to maintain accuracy through continuous communication with a minimum of three satellites. Time zone and daylight savings shall be selected by means of an eight-position dipswitch on the circuit board. The clock shall have a time of day display utilizing temperature compensated LCD.

TRAFFIC SIGNALS AND FITTINGS

623 T.02.08 VEHICLE SIGNAL FACES

The following is added to paragraph D.5:

Testing by an independent laboratory may be required if the LED offered does not have prior approval of the Traffic Manager. All vehicular LED modules not previously approved shall be tested by Intertek - ETL/Semko, Cortland, NY. Test reports for each ball LED module shall include verification of power consumption, chromaticity, luminous intensity and light distribution and shall indicate compliance to the ITE VTCSH-LED specification. Test reports for arrow LED modules shall indicate compliance with the luminous intensity of the CALTRANS standards and measurement criteria. All supporting data and test results shall be delivered to the maintaining Agency Operations Engineer for approval prior to the installation of the LED modules.

Paragraph I.5 is replaced with the following:

All traffic signal backplates shall be louvered and shall be painted or powder coated flat black

SECTION 623 – TRAFFIC SIGNALS AND STREET LIGHTING

(front side)/dark olive green (backside), using the same technique as on the signal housing.

623 T.02.09 PROGRAMMED VISIBILITY VEHICLE SIGNAL FACES

The first sentence paragraph C is replaced with the following:

All signal sections shall be provided with an adjustable connection that permits incremental tilting from 7 degrees to 15 degrees above or below the horizontal while maintaining a common vertical axis through couplers and mountings.

623 T.02.11 PEDESTRIAN PUSH BUTTONS

The following is added to this subsection:

The pedestrian push button assembly shall be rectangular in shape and have nominal dimensions of 9"x16". A 9"x12" pedestrian push button sign must fit within the pedestrian push button assembly without any gaps or modifications to the sign and/or the assembly. The rear brackets shall be curved and adjustable to permit mounting on traffic signal poles type 1-A, 1-B, XX, XX-A, and XX-B, as well as mounting on a flat surface. At the rear of the assembly at the center shall be a wire entrance of 1-inch diameter. On the vertical centerline, two inches above the wire entrance hole, shall be two 3/8-inch diameter holes for securing the assembly to a pole, spaced 9-1/4-inch apart. The case shall be reinforced at these holes to provide adequate bearing surface. Four drilled and tapped holes shall be provided for mounting the pedestrian push button sign. Four 10-32 x 3/8-inch stainless steel tamper-proof screws per each push button assembly shall be used to mount the pedestrian push button sign.

All pedestrian push button signs shall conform to MUTCD requirements. Signs shall be 9"x12" and shall be porcelain enameled sheet steel of 0.036-inch minimum thickness. Each hole shall be provided with a brass grommet. Signs shall have four holes, one on each corner of the sign, for mounting on the pedestrian push button assembly.

623 T.02.12 FLASHERS

The following subsection is added:

G. Crosswalk Warning Lighting System

Each system shall consist of in-roadway warning light fixtures, a pedestrian microwave presence sensor, and a system controller. The number and configuration of in-roadway warning light fixtures and pedestrian microwave presence sensors shall be as indicated on the contract drawings.

The crosswalk warning lighting system shall meet or exceed the following specifications:

1. In-Roadway Warning Light Fixture

- a) The fixture shall have bi-directional and uni-directional capability, have a modular design comprised of 6 major parts with the top and bottom castings of high tensile strength aluminum alloy. The top and bottom casting shall be sealed by means of a flat gasket. The fixture shall have a smooth shaped face projecting not more than

SECTION 623 – TRAFFIC SIGNALS AND STREET LIGHTING

0.64" when installed in the factory provided mounting base. The fixture shall incorporate a self-cleaning design with an outward sloping light channel to promote drainage and facilitate maintenance. Diameter shall not exceed 8" and all mounting hardware shall be stainless steel. Fixture will operate on 12 VDC and be furnished pre-wired with a waterproof 90P plug.

- b) Fixture shall withstand a static load of 44,000 lb. without sustaining permanent deformation or cracking of materials. Leads, gaskets, etc. shall be rated to withstand 300 degrees F.
- c) The fixture's light beam shall be refractor controlled and pre-focused to simplify maintenance. The refractors shall be molded high performance optical grade glass and formed to provide a sealed fit within the fixture. High density silicone rubber gaskets shall be used to provide a proper seal. There will be two hardened glass refractors per fixture, one aimed at 0 degrees and the other aimed at 180 degrees, to be installed parallel to roadway center line. To prevent moisture intrusion, each fixture shall be installed with a Schrader valve to facilitate verification that the entire assembly is sealed at the time of installation and to allow for re-testing during maintenance. Two refractor beam spread options shall be provided – 60 degrees and 10 degrees, as well as the capability to operate in a uni-directional mode through the use of a blank plate. The glass refractor pointed towards the inside of the crosswalk shall normally have a beam angle of 60 degrees. To facilitate early onset of the driver's awareness of the crosswalk, the outboard facing refractors shall normally have beam angle of 10 degrees, except on curves were a 60 degree beam may be more desirable. In some cases it may be desirable to utilize the fixture in a uni-directional mode and a blank may be inserted in place of one of the refractors.
- d) The fixture shall be clearly visible in any weather condition, daytime and at night, and shall produce a yellow light using a 12 Volt, 3 watt LED array with a brightness level of more than 600,000 candela per meter squared using the 10 degree refractor option.
- e) The top cover shall be natural anodized aluminum, grey in color. The bottom cover shall have a black powder coat.
- f) Fixture shall be installed in mounting base of high strength steel, hot dip galvanized after fabrication per ASTM-153 specifications, with a 7.25" diameter bolt circle, a 0.75" mud ring, and standard base depth of 5". The mud ring shall be detachable from the base. Mounting base without mud ring shall be made available upon request. The base shall be supplied with a plywood cover to protect the mounting flange during installation.

2. Pedestrian Microwave Presence Sensor

The pedestrian microwave presence detector shall have the following features:

- a) Detect pedestrians standing curbside
- b) Microwave reliability of up to 22-feet
- c) Automated and hands-free activation of in-roadway warning light fixtures
- d) Unaffected by temperature, humidity, color or background noise variations
- e) Minimal false activations from nearby moving traffic

The pedestrian microwave presence detector shall have the following specifications:

- a) Operating Frequency: 24.125 GHz (K-band)

SECTION 623 – TRAFFIC SIGNALS AND STREET LIGHTING

- b) Detection Method: Microprocessor analyzed Doppler microwave with MICROMOTION technology
- c) Detection Pattern: Adjustable with cover off
- d) Detection Angle: Adjustable
- e) Detection Mode: Selectable: approach-only, depart-only or bidirectional motion
- f) Detection Verification Time: 0.1 to 5 seconds
- g) Power Requirements: 12 to 24V AC or DC \pm 10%
- h) Power Consumption: 1W maximum
- i) Relay Output: Form C, rated at 1 Amp @ 24V DC (N.O. and N.C.)
- j) Output Power: 5mW typical, 2mW minimum
- k) Relay Contact Ratings: 0.5A:50V AC; 1A:24V DC
- l) Operating Temperature: -22°F to 158°F (-30°C to 70°C)
- m) Physical Dimensions: 4"W x 4"H x 7"L
- n) Enclosure: Powder coated aluminum
- o) Weight: 4 lb.

3. System Controller

- a) System controller shall support multiple MUTCD compliant regular and enhanced flash patterns, and be capable of auto-sequencing through all enhanced flash patterns, one pattern per activation period.
- b) Output pattern operation, power limitations and output flash pattern selection:
 - i. *Output A (Primary DC Power Output)*
The maximum DC power output of the primary (10 amp limit) shall be 120 watts (150 watts for high-power model). The output flash pattern shall be selected by the pattern selector control located on the control card.
 - ii. *Output B (Secondary DC Power Output)*
The maximum DC power output of the secondary (10 amp limit) shall be 120 watts (150 watts for high-power model). The output flash pattern shall be selected by a set of output mode selector switches (1-4) located on the control card: 1-Same as primary; 2-In sync with primary, but non-enhanced; 3-Non-enhanced complement of primary; 4-Continuously on while primary is flashing. Notes: (a) Enhanced flash patterns cannot be used when operating in wig-wag mode. (b) Only one output mode switch can be on (closed) at a time for proper operation of the system.
 - iii. The combined output power of the primary and secondary DC outputs shall be 120 watts (300 watts for the high-power model).
 - iv. A dual AC output option shall be available. The AC outputs shall be in sync with the primary and secondary DC outputs. The output power capability on each output shall be limited to 360 watts (120 volts x 3 amps). Enhanced flash patterns cannot be used when operating in the wig-wag mode.
- c) System controller shall be based on an integrated, high-speed 8-bit microcontroller with non-volatile firmware and memory. All settings must be retained in the event that input power is removed.
- d) System controller shall include the following controls and indicators:
 - i. *Power LED Indicator:* A visual indicator LED shall be provided to indicate the "power on" condition.
 - ii. *Activation Duration Setting:* Activation duration shall be field adjustable in one-second increments, over a range of 1 to 99 seconds. Duration setting shall be displayed on a digital numeric display.

SECTION 623 – TRAFFIC SIGNALS AND STREET LIGHTING

- iii. *Flash Pattern Setting*: Flash pattern setting shall be field adjustable and be displayed on a digital numeric display.
 - iv. *Push-Button Test and LED Indicator*: System shall include an internal push-button used to activate the system during field tests. System shall include a visual indicator LED to indicate internal push-button and external activation device calls.
 - v. *Override Switch*: System shall include an override switch to allow switching from manual system activation to continuous system activation.
 - vi. *Output LED Indicators*: System shall include visual indicator LEDs which indicate: system activation, primary output (A), and secondary output (B) status.
- e) System shall support activation from standard contact-closure type push-buttons, push-buttons with audio message capability, and passive pedestrian sensors.
 - f) All DC outputs shall be protected with a replaceable fuse. In the AC powered model, the input AC voltage shall be protected by a thermal-magnetic circuit breaker integral to the AC power supply. The AC power supply shall include transient surge protection. All DC electronics shall be electrically isolated from the AC input voltage.
 - g) The system shall include a single enclosure for ease of installation. The system shall be housed in a NEMA 4 compliant, aluminum enclosure with a thickness of 0.125" and with approximate dimensions of (20" H x 16" W x 7.32" D, mounting tabs add an additional 3" in height) to provide protection from adverse weather conditions. The enclosure shall have a mill finish and be supplied with NEMA 4 compliant lock for security from unauthorized access, and come with a minimum of one key.

4. Activation and Operation

- a) System shall have a continuous operation, 24 hours a day, 365 days a year

5. Environmental Specifications

- a) The system shall be able to withstand and operate at temperature extremes of -22 deg F to 158 deg F

6. Warranty

- a) The system, including system controller, microwave sensor, in-roadway light fixture and all components, shall be guaranteed by the manufacturer for a minimum of three years
- b) Warranty shall include all parts of the system

623 T.02.13 TRAFFIC SIGNAL POLES

The following is added to paragraph B:

Multi-sided (minimum of 18 sides) steel traffic signal mast arms may be used.

623 T.02.15 RED LIGHT DISPLAY INDICATORS

This subsection is replaced with the following:

SECTION 623 – TRAFFIC SIGNALS AND STREET LIGHTING

Red light display indicators shall be provided for all traffic signals installed. The indicator shall be installed at the locations shown in the plans or as directed by the Maintaining Agency.

The devices shall be the McCain Red Light Violator Detection Unit, current models for red and blue indicators or approved equal. It shall operate from 120-volt VAC signal lines without additional power requirements. The indicators shall be visible for a minimum of 200 feet from the placement of the device.

The red indicator shall be mounted between 16 to 20 feet above the base plate of the signal pole and shall detect the mast arm straight through signal red indication. The blue indicator shall be mounted 1 foot above the red indicator and shall detect the side mount left turn red indication. Contractor shall install the indicators at a mounting height where they will not be obstructed by any side mounted signal hardware.

The Display indicators shall have a warranty of one year on all parts and labor (including installation) from final acceptance of the project.

623 T.02.16 INTERNALLY ILLUMINATED STREET NAME SIGNS

This subsection is replaced with the following:

Internally illuminated street name signs shall be provided at all traffic signal locations, with street names on both sides of the sign. The internally illuminated street name sign is an assembly that consists of an enclosure and two sign panels, and shall be weather-tight and consist of aluminum alloy housing. The sign assembly shall be secured to the mast arm by two 3/4-inch wide, 0.03-inch thick stainless steel bands with ear-lock buckle and one bandable mounting bracket for each "L" bracket of the street name sign.

A. Street Name Sign Enclosure

1. The sign enclosure shall be 97 to 97-1/4 inches in length and 20-1/2 to 20-3/4 inches in height.
2. The sign enclosure shall have minimum yielding tensile strength of 22 ksi, minimum shear strength of 17 ksi, and minimum bending strength of 10 ksi.
3. The sign assembly (enclosure and sign panels) shall have a maximum weight of 93 lbs.
4. The sign enclosure shall be wired and equipped with two 8-foot light emitting diode (LED) dual-tube lamps, with single pin Fa8 contact at each end of the lamp, spaced 6 inches apart.
5. The internal wires shall be carefully installed along the side of the sign enclosure and secured in place with a continuous bead of clear silicon rubber.
6. Thumb screws shall be brass or stainless steel, and shall not go through the sign panel framework.

B. Street Name Sign Panel

1. The sign panels shall be fabricated of clear, impact resistant, acrylic or polycarbonate sheeting with aluminum framing.
2. The clear, impact resistant, acrylic or polycarbonate panels shall be covered with translucent white, wide-angle, prismatic reflective sign face sheeting. Sheeting shall conform to ASTM D4956 Type XI sheeting.

SECTION 623 – TRAFFIC SIGNALS AND STREET LIGHTING

3. The sign sheeting shall be applied in a vertical orientation in accordance with the manufacturer's recommendations.
4. The sign panel shall be capable of withstanding winds of 90 mph or greater without damage or separation from the sign enclosure.
5. The aluminum frame shall have a minimum inside dimension of 94-3/4 inches in length, and an outside dimension of 96-1/4 to 96-3/8 inches in length.
6. The aluminum frame shall have a minimum inside dimension of 16-1/2 inches in height, and an outside dimension of 18-11/16 to 18-13/16 inches in height.
7. The sign panel shall be hinged into the housing and secured by the bottom rail of the street name sign enclosure. No drilling or screws will be allowed in the panel and/or fascia.

C. Street Name

1. Street names shall be applied on top of the prismatic reflective sign face sheeting by either reverse-screened with manufacturer's recommended green ink and clear coating or overlaid with green, electronic cuttable, transparent overlay film.
2. Street names shall be in upper and lower case letters. Street names shall be 12-inch series D, unless other specified in the plans. If necessary to make spacing fit, 12-inch series C letters may be used upon approval by the Traffic Manager. Lower case letters shall be 9 inches in height.
3. Letters for the street cardinal direction, street name suffix, and block number shall be 5-inch series C.
4. The Kerning value of 110 percent shall be used.
5. Street name shall be centered between the cardinal direction and the street name suffix.
6. Cardinal direction shall be located in the upper left corner of each sign panel in upper case letter (N, S, E, or W).
7. Street name suffix abbreviation shall be located in the upper right corner of the sign panel in upper case letters. Postal Service standard suffix abbreviations shall be used.
8. Block number shall be located at the lower right corner in numerals.

D. Lamp

Lamps shall be 8-foot light emitting diode (LED) dual-tube lamps, with single pin Fa8 contact at each end of the lamp. The lamp shall also meet the minimum requirements below:

1. Photometric

- a. A normal Correlated Color Temperature (CCT) of 4000 °K to 5000 °K.
- b. A Coloring Rendering Index (CRI) \geq 80.
- c. 180 degree light distribution.
- d. bi-directional (dual side's illumination).

2. Electrical

- a. Power factor \geq 0.92.
- b. Operating voltage 120 VAC.
- c. Frequency 50-60 Hz.
- d. Total power consumption 40 watts maximum per tube connector/receptacle.
- e. UL 1310 class 2, UL 1598 and/or UL 8750 approved.
- f. Radio frequency (RF) emission $>$ 50 kiloHertz.

SECTION 623 – TRAFFIC SIGNALS AND STREET LIGHTING

3. LED Tube Lamp

- a. Full light output at initial lamp turn on.
- b. Operating temperature range from -10 °F to 120 °F (-23 °C to 49 °C).
- c. Must fit into a single pin T-12 fluorescent lamp receptacle for an 8-foot illuminated street name sign enclosure.
- d. Lamp shall have a Fa8 lamp single-pin contacts.
- e. Rated life ≥ 70,000 hours.
- f. Tube lens shall be polycarbonate.
- g. Luminaire must operate at 77 °F (25 °C) for a minimum of 50,000 hours before the LED light output has decreased to 70% of initial output (L70).
- h. Shall have internally built-in drivers. No external drivers are accepted.
- i. The 8-foot tube lamp shall have light output of minimum 2,500 lumens per tube lamp.

4. Warranty

A manufacturer's warranty must be provided for the replacement or repair of the tube lamp due to any electrical failure (including light source and power supplies/drivers) for a minimum of five years from final acceptance of the project. Warranty documents shall have Clark County Public Works as the warrantee. Contractor shall provide all warranty documents to Clark County Public Works Traffic Management Division. Documents shall contain project name, bid number of the project, manufacturer, brand, model, and quantity of tube lamps installed.

CONSTRUCTION

623 T.03.01 PAINTING

Paragraph A.4 is replaced with the following:

Directional louvers shall be painted or powder coated flat black (interior)/dark olive green (exterior) and backplates shall be painted or powder coated flat black (front side)/dark olive green (backside), using the same technique as the signal housing.

623 T.03.02 ELECTRICAL TESTING

Paragraph A.3 is replaced with the following:

A megohm test shall be conducted on all single conductor, except ground wire, between a new service pedestal and transformer, and between service pedestal to controller cabinet. Additionally, loop continuity shall be tested using a loop amplifier. The insulation resistance shall not be less than 100 megohms when tested at 500 volts for one minute.

SECTION 623 – TRAFFIC SIGNALS AND STREET LIGHTING

STREET LIGHTING SECTION

DESCRIPTION

623 L.01.01 GENERAL

Paragraph G is replaced with the following:

Refer to Subsection 623 G.01.05 GLOBAL POSITIONING SYSTEM (GPS) COORDINATES of these Special Provisions for requirements the collection of field data including State Plane and Geodetic coordinates.

MATERIALS

623 L.02.01 STREET LIGHT POLES AND ARMS

Paragraph O.1 is replaced with the following:

The handhole shall be 4-inch by 6-inch O.D. reinforced frame with slip-resistant indented type cover located 12 inches above the base plate. The edges of the handhole at the base of the streetlight pole shall be continuously, permanently welded shut by bead welding, after project walk-thru and prior to final acceptance of the project. Welded surfaces shall be galvanized by hot-stick galvanizing per Section 623 T.03.01. Welding shall be done by American Welding Society (AWS) certified welders.

623 L.02.03 STREET LIGHTING LUMINAIRES

Paragraph A is replaced with the following:

- A. The standard luminaire shall be of the light emitting diode (LED) type, cobra head style. Luminaires installed for typical street lighting shall achieve average minimum foot-candle as outlined in IESNA RP-8-00 (latest edition) Table 5 for mixed vehicle and pedestrian area.
1. The luminaire shall consist of a rugged die cast aluminum housing with integral heat sink fins, refractor, driver, surge protective device, field adjustable output (optional), LED module(s) and hinged cover.
 2. The hinged door shall be lowered by releasing a latch mechanism and allowing the door to swing free on its hinge.
 3. The latch assembly shall be easily operated while wearing lineman's gloves.
 4. The hinged door latch shall provide easy access to the refractor, driver, surge protective device, field adjustable output (optional), and LED modules.
 5. The luminaire shall be provided with a terminal connection block installed in the housing.

Paragraph B is replaced with the following:

- B. The luminaire housing shall be bonded to earth ground at the ground screw within the housing using a grounding conductor.

Paragraph C.2 is replaced with the following:

SECTION 623 – TRAFFIC SIGNALS AND STREET LIGHTING

2. The optical assembly shall consist of a borosilicate prismatic glass refractor for 150-watt through 750-watt luminaires or, when specified, shall be of polycarbonate resin vandal resistant material.
 - a. The refractors shall have accurately molded light controlling prisms and shall be resistant to impact and thermal shock.
 - b. The refractor shall provide maximum transmission and minimize unwanted spill light.
 - c. Standard street light fixtures shall be supplied with full-cutoff photometrics and IES type II distribution, unless otherwise specified in the Contract Documents or directed by the Engineer.

Paragraphs D, E and F are replaced with the following:

- D. The driver shall be mounted in the housing of the light fixture and shall be prewired to the LED module(s) surge protective device, and field adjustable output (optional).
 1. Drivers mounted on the hinged door are not allowed.
 2. Luminaire housing shall have a minimum IP (International Protection Rating) rating of IP65.
- E. The driver shall be of the multi-voltage (120-277V) type, capable of operating the wattage indicated in the Drawings and specified herein from a nominal 120-volt, 240-volt, 60 Hz power source, as shown in the Drawings within the limits specified by the LED module manufacturer.
 1. The expected life of the driver shall be rated at 100,000 hours at 25°C ambient.
 2. The power factor shall be greater than or equal to 0.90 for primary application up to 50% of full load rating.
 3. Input current total harmonic distortion shall be less than 20% up to 50% of full load rating.
- F. The electronic light module/light engine shall be mounted to a single plate and factory prewired.
 1. Light engine shall be rated at 100,000 hours at 25°C, L70.
 2. Color Rendering Index (CRI) shall be a minimum of 70.
 3. Correlated Color Temperature (CCT) shall be 4000K.
 4. The surge protective device shall be tested in accordance with IEEE/ANSI C62.41 to Category C.

Delete Paragraphs G, H and J.

Paragraph N is replaced with the following:

- N. A permanent data sheet shall be provided on the inside of the housing containing pertinent information, such as a connection diagram, operating voltages, total watts/total lumens, part number for driver and driver requirements.

Remove Paragraphs O and P.

Paragraph Q is replaced with the following:

- Q. A manufacturer's warranty must be provided for the replacement or repair of the tube lamp due to any electrical failure (including light source and power supplies/drivers) for a

SECTION 623 – TRAFFIC SIGNALS AND STREET LIGHTING

minimum of five (5) years from final acceptance of the project. All other components shall have a warranty for a minimum of one (1) year after final acceptance of the project. Warranty documents shall have Clark County Public Works as the warrantee. Contractor shall provide all warranty documents to Clark County Public Works Traffic Management Division. Documents shall contain project name, bid number of the project, manufacturer, brand, model, contact information for warranty claim, and quantity of tube lamps installed. Warranty replacement of fixture shall be delivered no more than sixty (60) calendar days upon notification by Clark County Public Works.

The following is added to this subsection:

For new construction, Contractor shall install light emitting diode (LED) type LED optical assembly with cobra head style fixture. For existing intersection lighting, Contractor shall remove the existing high pressure sodium type fixture at street intersections and replace with light emitting diode (LED) type LED optical assembly with cobra head style fixture. The LED luminaire and fixture for intersection lighting shall meet the following requirements:

A. Photometric

1. A normal Correlated Color Temperature (CCT) of 5000 °K to 6000 °K.
2. A Color Rendering Index (CRI) \geq 65.
3. A minimum luminaire efficacy \geq 60 lumen/watts.
4. Photometric measurement shall be documented by an independent test lab report according to IESNA specification.
5. LED light distribution shall be in accordance with IESNA Type III distribution with a true 90° light cutoff.
6. Luminaire must operate at 77°F (25 °C) for a minimum of 50,000 hours before the LED light output has decreased to 80% of initial output (L80).
7. LED's in the fixture shall be manufactured by Cree, Nichia or Lumileds.
8. Fixtures installed for typical intersection lighting for an intersection shall achieve average maintained illumination as outlined in IESNA RP-8-14, Table 8 (Major/Major, High and E_{avg} / E_{min}) within the limits of the intersection (see Limits of Intersection detail). Lighting luminaire arms are 15 ft in length, with fixtures at the mounting height of 30 or 37 ft. Supplier must provide an illuminance study for both 30-ft and 37-ft luminaire mounting heights, that proves that lighting luminaire standards are met or exceeded per IESNA RP-8-14, with a light loss factor of 0.94.
9. Per IESNA TM-15-2007 (Revised) Backlight, Uplight, and Glare (BUG) rating shall be B3 U1 G3 or better. Fixture shall be Dark Sky compliant.

B. Electrical

1. Off state power draw of 0 watts (excluding photocell).
2. Power factor of \geq 0.90.
3. Maximum LED forward current of \leq 530 mA.
4. UL 1310 class 2, UL 1598 and/or UL 8750 approved.
5. Operating temperature range of -10°F to 120°F (-23°C to 49°C).
6. Transient voltage/surge suppression protection must meet or exceed the requirements of ANSI/IEEE C.62.41-1991 Class A operation, which consists of seven strikes of a 100 Hz ring wave, 6 KV level, for both common mode and differential mode.
7. Class A sound rating for power supply per ANSI C63.4.
8. Power supply shall meet FCC 47 CFR 15/18.
9. Nominal operating voltage within a range of 120 to 277 volts at 60 Hz \pm 3 Hz.

SECTION 623 – TRAFFIC SIGNALS AND STREET LIGHTING

10. Output operating frequency must be ≥ 120 Hz for switched output drivers.
11. Fixture shall have a prewired heavy-duty barrier type terminal block, with captive screws capable of terminating three (3) #14 to #10 AWG.
12. Total power consumption of the fixture shall not exceed 258 Watts.

C. Housing

1. Luminaires shall be painted with 2 finish coats of high gloss gray enamel or polyurethane powder coating, free of lead and mercury.
2. Constructed of die cast aluminum. Stamped and formed aluminum housings shall not be permitted.
3. Lens shall be made of high impact acrylic.
4. Driver(s) mounted internally and replaceable.
5. All parts to be corrosion resistant.
6. Fixture shall have heat sink integrated into fixture body, and be resistant to debris buildup that may cause degraded heat dissipation. No fans, pumps or liquids are allowed. Light engines with integrated head sinks will not be accepted.
7. Fixture weight ≤ 50 Lbs.
8. Fixture must withstand a minimum vibration of 2Gs per ANSI C136.31-2001.
9. Fixture shall have a photoelectric receptacle, 3-prong twist-lock per ANSI C136.10. The receptacle (socket) will need to be able to rotate to face north direction without the use of tools.
10. The fixture shall have a slip-fitter capable of adapting to 1-1/4-inch through 2-inch pipe bracket without rearrangement of parts and be adjustable $+5^\circ$ degrees from horizontal. There shall be no more than four (4) 9/16-inch hex bolts to secure fixture to pipe. Bolts shall be secured from bottom of fixture and mounted internally.
11. The optical assembly of the fixture shall have a minimum IP-65 rating to protect internal components.
12. The maximum effective projected area (calculated from either side) shall not exceed 1.2 square foot. (slim, low profile design to optimize for wind loading).
13. Maximum dimension 41" long x 19" wide x 10" tall.
14. Fixture shall have bird guard or wildlife intrusion protection.
15. Fixture shall have tool-less entry.

D. Fixture Identification

1. Each fixture shall have the manufacturer's name, trademark, model number, serial number, date of manufacture (month/year), and lot number permanently marked on inside of each unit.
2. The wattage of the fixture must be able to be detected visibly from an observer standing at ground elevation at base of pole. (See Wattage Label detail)
3. Operating characteristics shall be permanently marked inside each unit: Voltage rating, power rating (in watts and volt-ampere) and fixture efficiency rating (LER).
4. Each LED fixture shall be permanently marked with correlated color temperature (CCT) rating in Kelvin, color rendering index (CRI) and wattage driver current.

E. Measurements and Performance

1. IESNA LM-79-08 approved method for electrical and photometric measurements of solid-state lighting products. Documentation shall be provided with the shop drawing submittals.

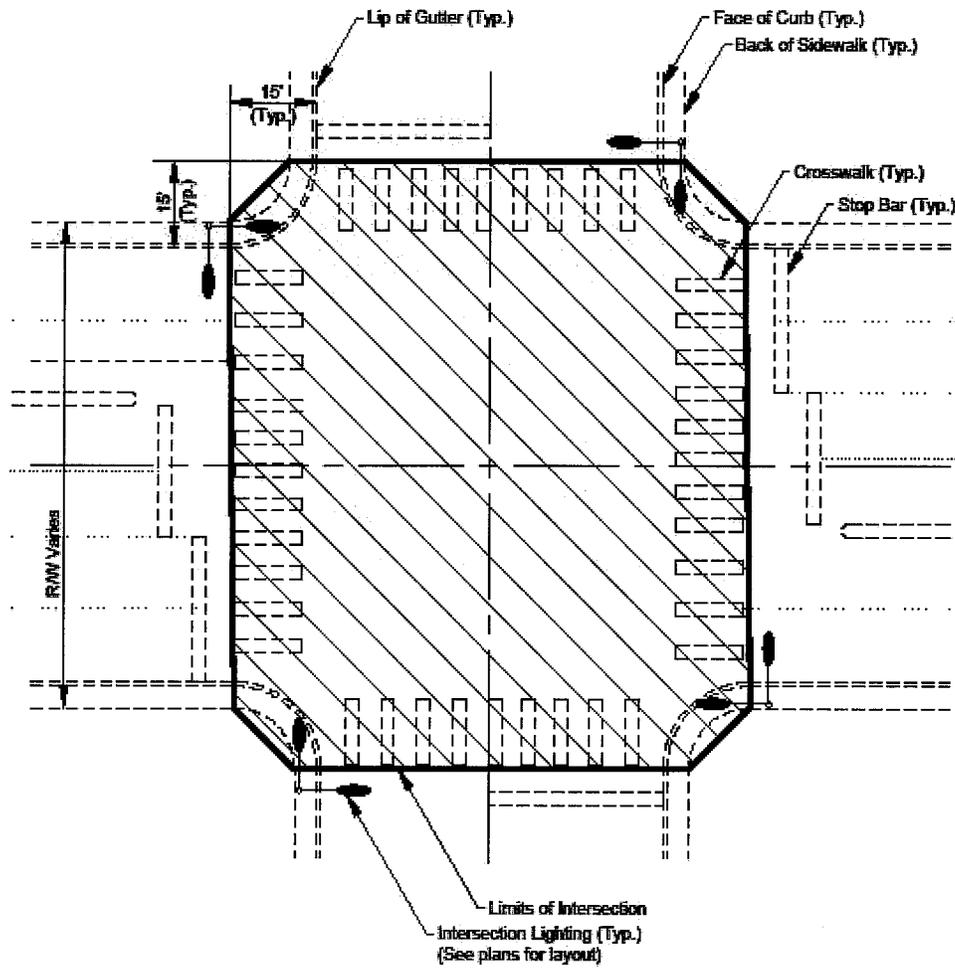
SECTION 623 – TRAFFIC SIGNALS AND STREET LIGHTING

2. IESNA LM-80-08 approved method for measuring lumen maintenance of LED lighting sources. Documentation shall be provided with the shop drawing submittals.
3. IESNA files shall be submitted for each fixture type, and also must include photometric test results for 30 foot and 37 foot mounting heights. Dimensions of the intersection and luminaire arms shall be clearly visible on the illumination exhibit.

F. Warranty

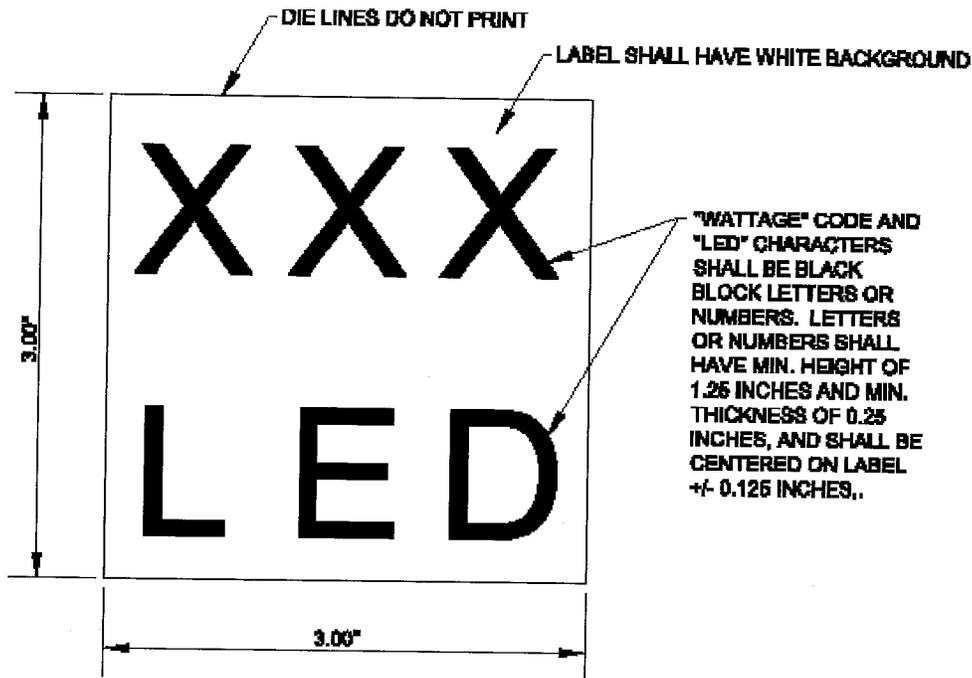
A manufacturer's warranty must be provided for the replacement or repair of the tube lamp due to any electrical failure (including light source and power supplies/drivers) for a minimum of five (5) years from final acceptance of the project. All other components shall have a warranty for a minimum of one (1) year after final acceptance of the project. Warranty documents shall have Clark County Public Works as the warrantee. Contractor shall provide all warranty documents to Clark County Public Works Traffic Management Division. Documents shall contain project name, bid number of the project, manufacturer, brand, model, contact information for warranty claim, and quantity of tube lamps installed. Warranty replacement of fixture shall be delivered no more than sixty (60) calendar days upon notification by Clark County Public Works.

SECTION 623 – TRAFFIC SIGNALS AND STREET LIGHTING



TYPICAL LIMITS OF INTERSECTION DETAIL
(N.T.S)

SECTION 623 – TRAFFIC SIGNALS AND STREET LIGHTING



**WATTAGE LABEL
(N.T.S)**

623 L.02.04 FUSEHOLDERS AND FUSES

Paragraph F is replaced with the following:

Fuse holders shall be rated for 600 volts. Single fuse holders shall be Littlefuse, 600 volt, Series LEB fuse holders, with WPB1 rubber boots and Littlefuse BLF10, fast-acting Midget, 250 volt, L4J12F fuse or approved equal. Double pole fuseholders shall be Littlefuse double fuse holder, Series LEX rated for 600 volts with Littlefuse rubber boot WPB1 and Littlefuse BLF10, Fast-Acting, Midget 250 volt L4J12F fuse or approved equal for 240 volt multiple street lighting systems. Glass, paper or indicating type fuses are not acceptable.

CONSTRUCTION

623 L.03.03 ELECTRICAL TESTING

Paragraph A.3 is replaced with the following:

A megohm test shall be conducted on all single conductor, except ground wire, between a new service pedestal and transformer. The insulation resistance shall not be less than 100 megohms when tested at 500 volts for one minute.

SECTION 623 – TRAFFIC SIGNALS AND STREET LIGHTING

METHOD OF MEASUREMENT

623.04.01 MEASUREMENT

Add the following to this subsection:

The quantity of Traffic Signal System Modifications (Circus Circus Dr and Industrial Rd) will be measured as a lump sum, installed as a system, in place and operational, as shown on the contract drawings, as specified herein, and as directed by the Engineer.

The quantity of Traffic Signal System Modifications (Circus Circus Dr and Las Vegas Blvd) will be measured as a lump sum, installed as a system, in place and operational, as shown on the contract drawings, as specified herein, and as directed by the Engineer.

The quantity of 200 AMP Service Pedestal and Foundation will be measured per each, in place and operational, as shown on the contract drawings and as directed by the Engineer.

The quantity of LED Street Light Assembly and Foundation will be measured per each, in place and operational, as shown on the contract drawings and as directed by the Engineer.

The quantity of LED Luminaire will be measured per each, in place and operational, as shown on the contract drawings and as directed by the Engineer.

The quantity of No. 3 ½ Pull Box will be measured per each, complete and in place, as shown on the contract drawings, as specified herein, and as directed by the Engineer.

The quantity of Adjust Pull Box to Finished Grade will be measured per each, complete and in place, as shown on the contract drawings, as specified herein, and as directed by the Engineer.

The quantity of Crosswalk Warning Lighting System will be measured as a lump sum, installed as a system, in place and operational, as shown on the contract drawings, as specified herein, and as directed by the Engineer.

The quantity of Modified Pedestrian Pole and Foundation will be measured per each, complete and in place, as shown on the contract drawings, as specified herein, and as directed by the Engineer.

BASIS OF PAYMENT

623.05.01 PAYMENT

Add the following to this subsection:

The lump sum price paid for Traffic Signal System Modifications (Circus Circus Dr and Industrial Rd) shall be full compensation for supplying all labor, materials, and equipment necessary to complete the work in place as shown on the Drawings, as specified, and as directed by Engineer. The work shall include but is not limited to: the modification of traffic signal system and related components at the designated intersection including all pull strings, conduits, wires, cables, pull boxes (No. 5, No. 7, and/or P30), splice vaults (Type 200), removal/salvage of existing pull boxes, removal/salvage of existing luminaires, LED luminaires, trenching, bedding, backfill, conductors, poles, foundations, excavation, anchor bolts, pedestrian heads, tactile pedestrian push buttons, metal signs, testing, and all associated incidentals.

The lump sum price paid for Traffic Signal System Modifications (Circus Circus Dr and Las Vegas Blvd) shall be full compensation for supplying all labor, materials, and equipment necessary to complete the work in place as shown on the Drawings, as specified, and as directed by Engineer. The work shall include but is not limited to: the modification of traffic signal

SECTION 623 – TRAFFIC SIGNALS AND STREET LIGHTING

system and related components at the designated intersection including all pull strings, conduits, wires, cables, pull boxes (No. 5, No. 7, and/or P30), splice vaults (Type 200), remove/relocate existing pull boxes, removal/salvage of existing pull boxes, removal/salvage of existing luminaires, LED luminaires, trenching, bedding, backfill, conductors, poles, foundations, excavation, anchor bolts, pedestrian heads, tactile pedestrian push buttons, metal signs, testing, and all associated incidentals.

The accepted quantity of 200 AMP Service Pedestal and Foundation shall be paid per each which price shall be full compensation for furnishing and installing all materials including, but not limited to removal/salvage of existing service pedestal, excavation, trenching, backfill, concrete, foundations, connections, restoring improvements designated to remain in place, coordination and fees with NV Energy for disconnecting existing service pedestal and connection of 200 AMP Service Pedestal, and all labor, equipment, hardware and other incidentals required to be installed by the Contractor to make the service pedestal complete and fully operational as shown on the drawings, as specified herein, and as required by the Engineer.

The accepted quantity of LED Street Light Assembly and Foundation shall be paid per each which price shall be full compensation for furnishing and installing all materials including, but not limited to excavation, trenching, backfill, concrete, foundations, poles, LED luminaires, luminaire arms, connections, conduit and conductors from pull box to the street light, fittings, bends, pull strings, pull box, restoring improvements designated to remain in place, and all labor, equipment, hardware and other incidentals required to be installed by the Contractor to make the assemblies complete and fully operational as shown on the drawings, as specified herein, and as required by the Engineer.

The accepted quantity of LED Luminaire shall be paid per each which price shall be full compensation for furnishing and installing LED luminaires, removal/salvage of existing luminaires, connections, fittings, tools and required hardware for mounting, and all labor, equipment, hardware and other incidentals required to be installed by the Contractor to make the LED luminaire complete and fully operational as shown on the drawings, as specified herein, and as required by the Engineer.

The accepted quantity of No. 3 ½ Pull Box will be paid for at the contract unit price per each and shall be full compensation for all labor, equipment, and materials, including but not limited to pull boxes, pull box covers with appropriate markings, fittings, connections to existing conduit and circuits, conduit, conductors, for making all required tests, trenching, bedding, backfill, needed to complete the work in place as shown on the Drawings, as specified, and as directed by Engineer.

The accepted quantity of Adjust Pull Box to Finished Grade will be paid for at the contract unit price per each and shall be full compensation for supplying all labor, materials, and equipment necessary to complete the work in place as shown on the Drawings, as specified herein, and as directed by the Engineer.

The lump sum price paid for Crosswalk Warning Lighting System shall be full compensation for all labor and materials, including but not limited to in-roadway warning light fixtures, pedestrian microwave presence sensors, system controller, conduit and conductors from service pedestal, conduit and conductors from controller to all pedestrian microwave presence sensors, pull string for future flashing beacons, connection to drain pipes, **drain pipes, connection to drop inlet**, shipping and delivering costs, tools and required hardware for mounting, fittings, connections, equipment, making all required tests, and all other incidentals required to make the "Crosswalk Warning Lighting System" operational as a system, and to function as specified and shown in the contract drawings, the manufacturer's recommendations, and these Supplemental Project Special Provisions.

SECTION 623 – TRAFFIC SIGNALS AND STREET LIGHTING

The accepted quantity of Modified Pedestrian Pole and Foundation will be paid for at the contract unit price per each and shall be full compensation for supplying all labor, materials, and equipment necessary to complete the work in place as shown on the Plans, as specified, and as directed by Engineer. The work shall include but is not limited to: furnishing and installing the modified pedestrian poles and related components at the designated locations including all foundations, anchor bolts, excavation, trenching, bedding, backfill, testing, and all associated incidentals required to make the system operational, as specified and shown in the contract drawings, the Clark County Area Uniform Standard Specifications, and these Supplemental Project Special Provisions.

Payment will be made under:

<u>Pay Item</u>	<u>Pay Unit</u>
Traffic Signal System Modifications (Circus Circus Dr and Industrial Rd)	Lump Sum
Traffic Signal System Modifications (Circus Circus Dr and Las Vegas Blvd)	Lump Sum
200 AMP Service Pedestal and Foundation	Each
LED Street Light Assembly and Foundation	Each
LED Luminaire	Each
No. 3 ½ Pull Box	Each
Adjust Pull Box to Finished Grade	Each
Crosswalk Warning Lighting System	Lump Sum
Modified Pedestrian Pole and Foundation	Each

SECTION 623 – TRAFFIC SIGNALS AND STREET LIGHTING

CLARK COUNTY PUBLIC WORKS TRAFFIC MANAGEMENT DIVISION
TRAFFIC ASSET DATA COLLECTION FORMS
FORM 1 – SIGNAL ASSET

SIGNAL ASSET:

Signal Type: _____ (Traffic / Fire / School Flasher / Pedestrian Flasher)

Street name 1 _____
Street name 2 _____

Controller Cabinet:

Type: _____ (R-type / School / Other - Specify)
X _____ Y _____
Corner/median: _____ (NE / NW / SE / SW / N / S / E / W)

Service Pedestal: X _____ Y _____
Corner/median: _____ (NE / NW / SE / SW / N / S / E / W)
Address: _____
Meter #: _____
Amp Rating: _____ (200A / 125A / Other)

Poles:

Pole Type: _____ (1A / 1B / XX / XX-A / XX-B / TYPE 7 / SPECIAL)
Corner/median: _____ (NE / NW / SE / SW / N / S / E / W)
Pole Height: _____
Mast arm length: _____ (Feet)
Luminaries: _____ (1 / 2)
X _____ Y _____

Pole Type: _____ (1A / 1B / XX / XX-A / XX-B / TYPE 7 / SPECIAL)
Corner/median: _____ (NE / NW / SE / SW / N / S / E / W)
Pole Height: _____
Mast arm length: _____ (Feet)
Luminaries: _____ (1 / 2)
X _____ Y _____

Pole Type: _____ (1A / 1B / XX / XX-A / XX-B / TYPE 7 / SPECIAL)
Corner/median: _____ (NE / NW / SE / SW / N / S / E / W)
Pole Height: _____
Mast arm length: _____ (Feet)
Luminaries: _____ (1 / 2)
X _____ Y _____

Pole Type: _____ (1A / 1B / XX / XX-A / XX-B / TYPE 7 / SPECIAL)
Corner/median: _____ (NE / NW / SE / SW / N / S / E / W)
Pole Height: _____
Mast arm length: _____ (Feet)
Luminaries: _____ (1 / 2)
X _____ Y _____

SECTION 623 – TRAFFIC SIGNALS AND STREET LIGHTING

CLARK COUNTY PUBLIC WORKS TRAFFIC MANAGEMENT DIVISION
TRAFFIC ASSET DATA COLLECTION FORMS
FORM 1 – SIGNAL ASSET

SIGNAL ASSET (CONTINUED)

Pull Boxes:

Pull Box Type: _____ (3½ / 5 / 7 / P30 / T200 / other)
Corner/median: _____ (NE / NW / SE / SW / N / S / E / W)
X _____ Y _____

Pull Box Type: _____ (3½ / 5 / 7 / P30 / T200 / other)
Corner/median: _____ (NE / NW / SE / SW / N / S / E / W)
X _____ Y _____

Pull Box Type: _____ (3½ / 5 / 7 / P30 / T200 / other)
Corner/median: _____ (NE / NW / SE / SW / N / S / E / W)
X _____ Y _____

Pull Box Type: _____ (3½ / 5 / 7 / P30 / T200 / other)
Corner/median: _____ (NE / NW / SE / SW / N / S / E / W)
X _____ Y _____

Pull Box Type: _____ (3½ / 5 / 7 / P30 / T200 / other)
Corner/median: _____ (NE / NW / SE / SW / N / S / E / W)
X _____ Y _____

Pull Box Type: _____ (3½ / 5 / 7 / P30 / T200 / other)
Corner/median: _____ (NE / NW / SE / SW / N / S / E / W)
X _____ Y _____

Pull Box Type: _____ (3½ / 5 / 7 / P30 / T200 / other)
Corner/median: _____ (NE / NW / SE / SW / N / S / E / W)
X _____ Y _____

Pull Box Type: _____ (3½ / 5 / 7 / P30 / T200 / other)
Corner/median: _____ (NE / NW / SE / SW / N / S / E / W)
X _____ Y _____

Pull Box Type: _____ (3½ / 5 / 7 / P30 / T200 / other)
Corner/median: _____ (NE / NW / SE / SW / N / S / E / W)
X _____ Y _____

Pull Box Type: _____ (3½ / 5 / 7 / P30 / T200 / other)
Corner/median: _____ (NE / NW / SE / SW / N / S / E / W)
X _____ Y _____

Pull Box Type: _____ (3½ / 5 / 7 / P30 / T200 / other)
Corner/median: _____ (NE / NW / SE / SW / N / S / E / W)
X _____ Y _____

Pull Box Type: _____ (3½ / 5 / 7 / P30 / T200 / other)
Corner/median: _____ (NE / NW / SE / SW / N / S / E / W)
X _____ Y _____

SECTION 623 – TRAFFIC SIGNALS AND STREET LIGHTING

CLARK COUNTY PUBLIC WORKS TRAFFIC MANAGEMENT DIVISION
TRAFFIC ASSET DATA COLLECTION FORMS
FORM 2 – STREET LIGHTING

STREET LIGHTING

Circuit: _____ (A, B, C, etc.)

Service Pedestal: X _____ Y _____

Address: _____

Meter #: _____

Amp Rating: _____ (200A / 125A / Other)

Poles:

Pole designation: _____ (A-1, A-2, etc.; must be same designation from the plans)

Street name: _____ (NE / NW / SE / SW / N / S / E / W)

Pole Height: _____ (Feet)

Pole Type: _____ (CCPW, NDOT, Summerlin, Southern Highland, Other - Specify)

Pole Base: _____ (Standard, Safety)

Pole Gage: _____ (7, 11, Other - Specify)

Luminaire arms: _____ (single, double)

Luminaire arm type: _____ (3-Bolt / Single Bolt)

Luminaire arm length: _____ (Feet) (8', 12', 15', 18')

Fixture type: _____ (HPS / Induction / LED)

Fixture Wattage: _____

Voltage: _____ (120 / 240 / 277)

X _____ Y _____

Pole designation: _____ (A-1, A-2, A-3, etc.; must be same designation from the plans)

Street name: _____ (NE / NW / SE / SW / N / S / E / W)

Pole Height: _____ (Feet)

Pole Type: _____ (CCPW, NDOT, Summerlin, Southern Highland, Other - Specify)

Pole Base: _____ (Standard, Safety)

Pole Gage: _____ (7, 11, Other - Specify)

Luminaire arms: _____ (single, double)

Luminaire arm type: _____ (3-Bolt / Single Bolt)

Luminaire arm length: _____ (Feet) (8', 12', 15', 18')

Fixture type: _____ (HPS / Induction / LED)

Fixture Wattage: _____

Voltage: _____ (120 / 240 / 277)

X _____ Y _____

Pole designation: _____ (A-1, A-2, A-3, etc.; must be same designation from the plans)

Street name 1: _____ (NE / NW / SE / SW / N / S / E / W)

Pole Height: _____ (Feet)

Pole Type: _____ (CCPW, NDOT, Summerlin, Southern Highland, Other - Specify)

Pole Base: _____ (Standard, Safety)

Pole Gage: _____ (7, 11, Other - Specify)

Luminaire arms: _____ (single, double)

Luminaire arm type: _____ (3-Bolt / Single Bolt)

Luminaire arm length: _____ (Feet) (8', 12', 15', 18')

Fixture type: _____ (HPS / Induction / LED)

Fixture Wattage: _____

Voltage: _____ (120 / 240 / 277)

X _____ Y _____

SECTION 623 – TRAFFIC SIGNALS AND STREET LIGHTING

CLARK COUNTY PUBLIC WORKS TRAFFIC MANAGEMENT DIVISION
TRAFFIC ASSET DATA COLLECTION FORMS
FORM 2 – STREET LIGHTING

STREET LIGHTING (CONTINUED)

Pull Boxes:

Pull Box Type: _____ (3½ / 5 / Other)
X _____ Y _____

Pull Box Type: _____ (3½ / 5 / Other)
X _____ Y _____

Pull Box Type: _____ (3½ / 5 / Other)
X _____ Y _____

Pull Box Type: _____ (3½ / 5 / Other)
X _____ Y _____

Pull Box Type: _____ (3½ / 5 / Other)
X _____ Y _____

Pull Box Type: _____ (3½ / 5 / Other)
X _____ Y _____

Pull Box Type: _____ (3½ / 5 / Other)
X _____ Y _____

Pull Box Type: _____ (3½ / 5 / Other)
X _____ Y _____

Pull Box Type: _____ (3½ / 5 / Other)
X _____ Y _____

Pull Box Type: _____ (3½ / 5 / Other)
X _____ Y _____

Pull Box Type: _____ (3½ / 5 / Other)
X _____ Y _____

Pull Box Type: _____ (3½ / 5 / Other)
X _____ Y _____

Pull Box Type: _____ (3½ / 5 / Other)
X _____ Y _____

Pull Box Type: _____ (3½ / 5 / Other)
X _____ Y _____

Pull Box Type: _____ (3½ / 5 / Other)
X _____ Y _____

Pull Box Type: _____ (3½ / 5 / Other)
X _____ Y _____

SECTION 623 – TRAFFIC SIGNALS AND STREET LIGHTING

THIS PAGE INTENTIONALLY LEFT BLANK