

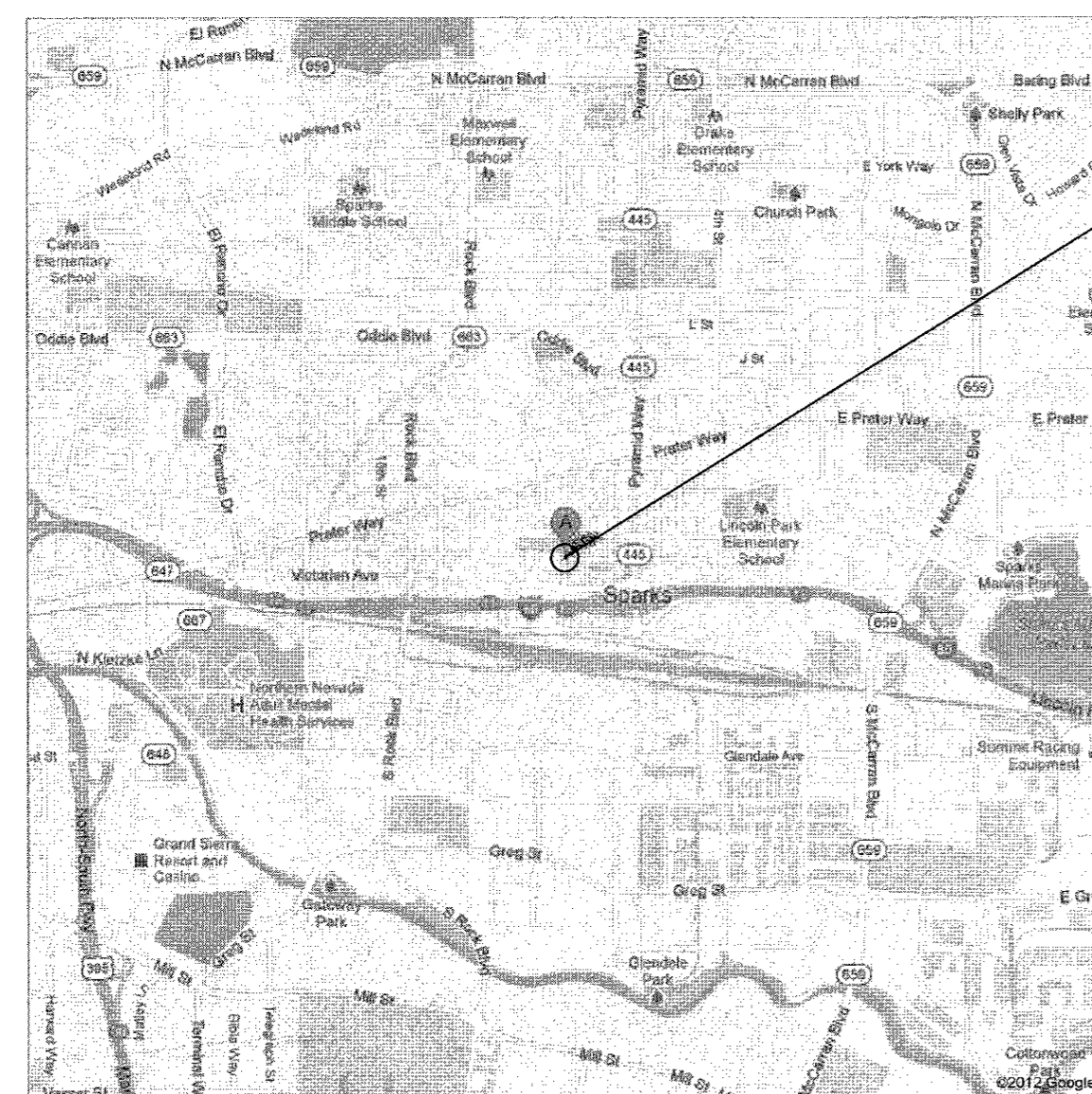
C STREET GARAGE LED RETROFIT PROJECT

SPARKS, NEVADA 89431

PWP #WA-2013-293
 BID #13/14-004

JULY 3, 2013

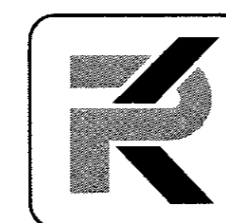
VICINITY MAP



PROJECT SITE
 SPARKS, NV 89431

CONSULTANTS

ELECTRICAL ENGINEER

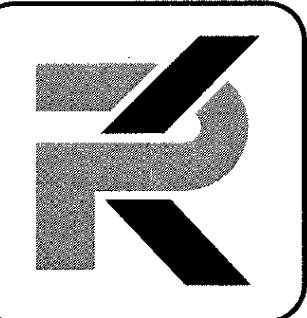


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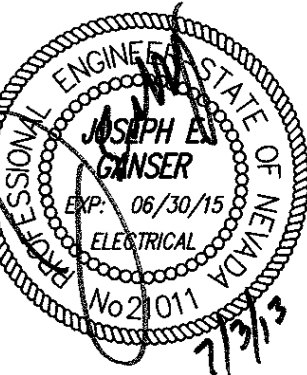
DRAWING INDEX

DRAWING SCHEDULE

SHEET	DESCRIPTION	ISSUED FOR PERMIT 03 JULY 2013
T0.1	COVER SHEET	•
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E0.3	ENERGY CALCULATIONS	•
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TOTAL SHEETS IN ISSUE:		11



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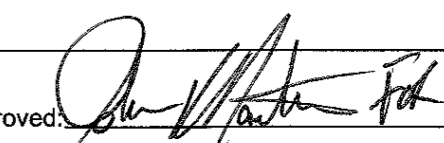


C Street Garage
 LED Retrofit Project
 Sparks, Nevada 89431

REVISIONS

SHEET TITLE
 COVER SHEET

DRAWN: SG
 CHECKED: JEG
 DATE: 7/3/2013
 JOB NUMBER: 13028
 PROJECT MGR: MSP

Approved:  Date: 7-12-13 Neil C. Krutz, P.E.
 Deputy City Manager for Community Services

T0.1

LIGHTING FIXTURE SCHEDULE

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LIGHTING FIXTURE CATALOG NUMBERS ARE SERIES TYPE ONLY. PROVIDE TRIMS, BALLASTS, MOUNTING EQUIPMENT, FITTINGS AND LAMPS AS REQUIRED BY THE SPECIFICATIONS AND PROJECT CONDITIONS FOR A COMPLETE INSTALLATION. THIS IS NOT A STANDALONE SCHEDULE AND FIXTURES MUST INCORPORATE ALL WORK INDICATED OR IMPLIED THROUGHOUT THE DRAWINGS AND SPECIFICATIONS.

LIGHTING AGENCIES, DISTRIBUTORS, ETC. ARE REQUIRED TO HAVE A COMPLETE FIXTURE SCHEDULE AND ALL LIGHTING PLANS AND SPECIFICATIONS IN ORDER TO BID THE PROJECT. PRICING SHALL NOT BE BASED ON CATALOG NUMBERS ALONE. COORDINATE AND PROVIDE ALL MOUNTING HARDWARE, ETC. AS REQUIRED BY ARCHITECTURAL, CEILING TYPES, GRIDS AND CEILING TILE CONFIGURATIONS.

LIGHTING SYSTEM FOOTCANDLE LEVELS ARE BASED ON THE UTILIZATION OF STANDARD REFLECTANCES OF 80-90-20 (CEILING-WALL-FLOOR) PER I.E.S. (ILLUMINATED ENGINEERING SOCIETY). THE ROOM SURFACES ARE USED AS AN INTEGRAL COMPONENT OF THE LIGHTING SYSTEMS. THE REFLECTANCE OF THE SURFACE PAINT COLOR, MATERIAL, AND OTHER ROOM SURFACES, DIRECTLY AFFECTS THE DELIVERY OF LIGHT TO THE WORK PLANE. A SIGNIFICANT DROP IN OVERALL LIGHTING LEVELS WILL OCCUR IF REFLECTANCES ARE LOWERED. THE ARCHITECT/OWNER SHALL NOTIFY THE ENGINEER IMMEDIATELY IF FINISHES DO NOT FALL IN LINE WITH THE REFLECTANCES MENTIONED ABOVE.

TYPE	SYMBOL	DESCRIPTION AND MANUFACTURER
L1		LED, DIRECT MOUNT PARKING STRUCTURE FIXTURE, TYPE V MEDIUM DISTRIBUTION, 40 LED'S PRODUCING 5,750 INITIAL LUMENS AT 525mA, MULTI-LEVEL OPERATION (75mA/525mA), INTEGRATED OCCUPANCY AND DAYLIGHTING SENSORS. SEE LIGHTING SPECIFICATIONS SHEET E0.2 AND SENSOR SETTINGS BELOW. LAMP: (40) LED'S ON LIGHT BAR FURNISHED W/ FIXTURE - 5700K VOLTAGE: 277 MANUFACTURER: BetaLED PK6-DM-304-5M-04-D-UL-SV-ML FACTORY SET AT H=1-425mA; L=2-125mA; D=4-6MINS; A=2-OSLA SUBSTITUTIONS: <input type="radio"/> OR EQUAL <input checked="" type="radio"/> SUBJECT TO REVIEW <input type="radio"/> NO EQUAL
L2		LED THIN HEAD POLE MOUNTED-DIRECT ARM-TYPE IV MEDIUM DISTRIBUTION, LOW PROFILE DESIGN, CAST ALUMINUM, INTEGRAL WEATHER-TIGHT LED DRIVER COMPARTMENT, HIGH PERF HEAT SINK, INTEGRATED OCCUPANCY & PHOTOCELL SENSORS, BRONZE FINISH, 1000 LED'S PRODUCING 13,186 INITIAL LUMENS AT 525mA, MULTI-LEVEL OPERATION (75mA/525mA). SEE LIGHTING SPECIFICATIONS SHEET E0.2 AND SENSOR SETTINGS BELOW, WITH BIRD SPIKES. LAMP: (100) LED'S FURNISHED W/ FIXTURE - 5700K VOLTAGE: 277 MANUFACTURER: BetaLED ARE-ED6-4M-DA-100-D-UL-SV-525-P-ML & XA-BRDSFK FACTORY SET AT H=3-525mA; L=1-75mA; D=4-6 MINS; A=2-OSLA SUBSTITUTIONS: <input type="radio"/> OR EQUAL <input checked="" type="radio"/> SUBJECT TO REVIEW <input type="radio"/> NO EQUAL
L3		LED SINGLE HEAD POLE MOUNTED-DIRECT ARM-TYPE IV MEDIUM DISTRIBUTION, LOW PROFILE DESIGN, CAST ALUMINUM, INTEGRAL WEATHER-TIGHT LED DRIVER COMPARTMENT, HIGH PERF HEAT SINK, INTEGRATED OCCUPANCY & PHOTOCELL SENSORS, SILVER FINISH, 1000 LED'S PRODUCING 13,186 INITIAL LUMENS AT 525mA, MULTI-LEVEL OPERATION (75mA/525mA). SEE LIGHTING SPECIFICATIONS SHEET E0.2 AND SENSOR SETTINGS BELOW, WITH BIRD SPIKES. LAMP: (100) LED'S FURNISHED W/ FIXTURE - 5700K VOLTAGE: 277 (CONFIRM IN FIELD) MANUFACTURER: BetaLED ARE-ED6-4M-DA-100-D-UL-SV-525-P-ML & XA-BRDSFK FACTORY SET AT H=3-525mA; L=1-75mA; D=4-6 MINS; A=2-OSLA SUBSTITUTIONS: <input type="radio"/> OR EQUAL <input checked="" type="radio"/> SUBJECT TO REVIEW <input type="radio"/> NO EQUAL
L4		SAME AS L2 BUT SILVER FINISH, WITH BIRD SPIKES. LAMP: (100) LED'S FURNISHED W/ FIXTURE - 5700K VOLTAGE: 277 (CONFIRM IN FIELD) MANUFACTURER: BetaLED ARE-ED6-4M-DA-100-D-UL-SV-525-P-ML & XA-BRDSFK FACTORY SET AT H=3-525mA; L=1-75mA; D=4-6 MINS; A=2-OSLA SUBSTITUTIONS: <input type="radio"/> OR EQUAL <input checked="" type="radio"/> SUBJECT TO REVIEW <input type="radio"/> NO EQUAL

SUBSTITUTION DEFINITIONS
 OR EQUAL = EQUAL OR SUPERIOR TO SPECIFIED IN ALL RESPECTS WILL BE ALLOWED. ENGINEER'S PRE-BID APPROVAL IS NOT REQUIRED. PROPOSED EQUAL FIXTURES ARE SUBJECT TO REVIEW DURING THE STANDARD SUBMITTAL PROCESS.
 NO EQUAL = PROVIDE SPECIFIED FIXTURE. SUBSTITUTIONS ARE NOT ALLOWED.
 SUBJECT TO REVIEW = EQUAL OR SUPERIOR TO SPECIFIED IN ALL RESPECTS MAY BE ALLOWED ONLY WITH ENGINEER'S APPROVAL. ALL SUBSTITUTIONS MUST BE SUBMITTED AS REQUIRED BY SPECIFICATIONS AND ACCOMPANIED WITH POINT BY POINT LIGHTING CALCULATIONS. DETERMINATION OF EQUAL IS ENGINEER'S SOLE DISCRETION.

SENSOR SETTINGS FIXTURES L1, L2, L3 & L4

1.	TYPE L1: FIXTURES SHALL BE FACTORY SET AS FOLLOWS. HIGH DIMMING = SETTING 1 - 425mA. PROVIDES APPROXIMATELY 3.55FC AVERAGE AT 53 WATTS. LOW DIMMING = SETTING 2 - 125mA. PROVIDES APPROXIMATELY 15FC AVERAGE AT 15 WATTS. AMBIENT LIGHT FEATURE - OCCUPANCY SENSING, LOW AMBIENT AND TIME OFF (OSLA): OCCUPANCY DETECTION (PIR), AMBIENT LIGHT SENSING (AMBIENT PHOTOCELL) ENABLED. DURING TRANSITIONAL PERIODS FROM NIGHT TO DAY ONCE ENVIRONMENT LIGHT LEVELS EXCEED 150 LUX (12 FC), LUMINAIRE WILL BE TURNED OFF REGARDLESS OF OCCUPANCY. DURING TRANSITIONAL PERIODS FROM DAY TO NIGHT WHEN ENVIRONMENT LIGHT LEVELS FALL BELOW 80 LUX (7 FC), LUMINAIRE WILL SWITCH FROM OFF TO LOW MODE DURING NO OCCUPANCY AND SWITCH TO HIGH MODE AFTER OCCUPANCY IS DETECTED.
2.	TYPE L2, L3, AND L4: FIXTURES SHALL BE FACTORY SET AS FOLLOWS. HIGH DIMMING = SETTING 3 - 525mA. LOW DIMMING = SETTING 1 - 75mA. AMBIENT LIGHT FEATURE - OCCUPANCY SENSING, LOW AMBIENT AND TIME OFF (OSLA): OCCUPANCY DETECTION (PIR), AMBIENT LIGHT SENSING (AMBIENT PHOTOCELL) ENABLED. DURING TRANSITIONAL PERIODS FROM NIGHT TO DAY ONCE ENVIRONMENT LIGHT LEVELS EXCEED 150 LUX (12 FC), LUMINAIRE WILL BE TURNED OFF REGARDLESS OF OCCUPANCY. DURING TRANSITIONAL PERIODS FROM DAY TO NIGHT WHEN ENVIRONMENT LIGHT LEVELS FALL BELOW 80 LUX (7 FC), LUMINAIRE WILL SWITCH FROM OFF TO LOW MODE DURING NO OCCUPANCY AND SWITCH TO HIGH MODE AFTER OCCUPANCY IS DETECTED.
3.	THE TIME DELAY FEATURE FOR MULTILEVEL SWITCHING SHALL BE FACTORY SET AT POSITION 4 - 6 MINUTES. IF THE AREA SEES NO OCCUPANCY THE LIGHT LEVEL SHALL GO FROM HIGH TO LOW AFTER 6 MINUTES.

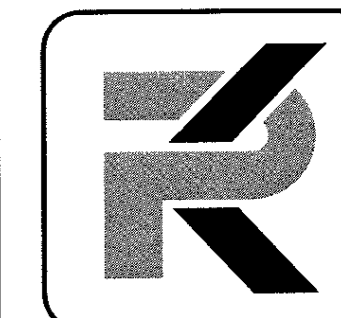
ELECTRICAL SPECIFICATIONS

ITEM	DESCRIPTION
1.	STANDARDS AND CODES: ALL ELECTRICAL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE 2011 EDITION OF THE NATIONAL ELECTRICAL CODE (NEC), AS WELL AS ALL APPLICABLE STATE AND LOCAL CODES AND ORDINANCES. THIS DOES NOT RELIEVE THE CONTRACTOR FROM FURNISHING AND INSTALLING WORK SHOWN OR SPECIFIED WHICH MAY EXCEED THE REQUIREMENTS OF SUCH ORDINANCES, LAWS, REGULATIONS AND CODES.
2.	COMPLETE INSTALLATION: PROVIDE ALL LABOR, MATERIALS, EQUIPMENT, TOOLS, ACCESSORIES, ETC., NECESSARY TO ACCOMPLISH A COMPLETE ELECTRICAL SYSTEM IN ACCORDANCE WITH THE PLANS TOGETHER WITH THE SPECIFICATIONS.
3.	PERMITS: CITY OF SPARKS WILL SUBMIT FOR BUILDING PERMIT AND PAY PERMIT FEES DIRECTLY.
4.	DRAWINGS: DATA PRESENTED ON THESE DRAWINGS SHALL BE FIELD VERIFIED SINCE ALL DIMENSIONS, LOCATIONS, AND LEVELS ARE GOVERNED BY ACTUAL FIELD CONDITIONS. REVIEW ALL FIELD CONDITIONS DRAWINGS AND ADJUST ALL WORK TO MEET THE REQUIREMENTS ON CONDITIONS SHOWN THEREON.
5.	COPYRIGHT: THESE PLANS, SPECIFICATIONS AND ALL RELATED ADDENDA AND DOCUMENTS CONSTITUTE COPYRIGHT MATERIALS OF PK ELECTRICAL, INC. ALL RIGHTS CONFERRED BY THE COPYRIGHT AND SIMILAR LAWS ARE RESERVED TO PK ELECTRICAL, INC. THESE MATERIALS SHALL REMAIN THE SOLE PROPERTY OF PK ELECTRICAL, INC. AND MAY NOT BE REPRODUCED, DISTRIBUTED TO OTHERS OR USED FOR ANY PURPOSE WHATSOEVER WITHOUT THE PRIOR WRITTEN CONSENT OF PK ELECTRICAL, INC.
6.	LOCATIONS: INDICATED LOCATIONS OF ALL OUTLETS AND EQUIPMENT ARE SUBJECT TO CHANGE. SHIFT/RELOCATE/RECONFIGURE ANY OUTLET, EQUIPMENT OR CONNECTION POINT UP TO 10' AS DIRECTED BY ENGINEER PRIOR TO ROUGH-IN, AT NO ADDED COST.
7.	RECORD DRAWINGS: CONTRACTOR SHALL PROVIDE, PRIOR TO FINAL ACCEPTANCE AND OBSERVATION, ONE SET OF REVISED RECORD ELECTRICAL CONSTRUCTION DOCUMENTS ON REPRODUCIBLE MEDIUM INDICATING THE FOLLOWING ADDITIONAL INFORMATION: CONTRACTOR NAME, ADDRESS AND TELEPHONE NUMBER RECORD NOTATIONS SHALL BE CLEARLY DRAWN AT A DRAFTING APPEARANCE EQUAL TO THE ORIGINAL DRAWINGS. CONTRACTOR SHALL ALSO PROVIDE ALL OPERATING AND MAINTENANCE MANUALS PRIOR TO FINAL PAYMENT.
8.	EXAMINATION OF SITE AND EXISTING CONDITIONS: BEFORE SUBMITTING A PROPOSAL, CONTRACTOR SHALL EXAMINE THE SITE AND FAMILIARIZE HIMSELF WITH THE EXISTING CONDITIONS AND LIMITATIONS. NO EXTRAS WILL BE ALLOWED BECAUSE OF THE CONTRACTOR'S MISUNDERSTANDING OF THE AMOUNT OF WORK INVOLVED OR HIS LACK OF KNOWLEDGE OF ANY SITE CONDITIONS WHICH MAY AFFECT HIS WORK. ANY APPARENT VARIANCE OF THE DRAWINGS OR SPECIFICATIONS FROM THE EXISTING CONDITIONS AT THE SITE SHALL BE CALLED TO THE ATTENTION OF THE ENGINEER BEFORE SUBMITTING A PROPOSAL.
9.	EXISTING OUTLETS: EXISTING OUTLETS AND CIRCUITING NOT IN CONFLICT WITH NEW CONDITIONS SHALL REMAIN. EXTEND OUTLETS TO NEW SURFACES, GULF, AND PROVIDE JIMBO PLATES AS REQUIRED TO PRESENT A SERVICEABLE AND FINISHED APPEARANCE.
10.	EXISTING SWITCHGEAR: REUSE EXISTING SWITCHGEAR AND PANELS IN PLACE WHERE SO INDICATED. MODIFY AS REQUIRED TO ACCOMMODATE NEW WORK. TRACE AND IDENTIFY ALL EXISTING CIRCUITS ON NEW RECORD PANEL SCHEDULES.
11.	DEMOLITION: PROVIDE COMPLETE ELECTRICAL DEMOLITION; REMOVE EXISTING OUTLETS AND EQUIPMENT IN CONFLICT WITH NEW CONDITIONS. EXISTING CONDUITS REMOVED FROM SERVICE MAY BE ABANDONED IN PLACE IF IN A CONCEALED LOCATION. REMOVE ALL WIRE FROM ABANDONED RACEWAYS. CONTRACTOR SHALL INSURE CONTINUITY OF EXISTING CIRCUITING PASSING THROUGH DEMOLITION AREAS. EXTEND AND/OR RELOCATED AS NECESSARY. SHIFT/RELOCATE EXISTING EQUIPMENT AND CIRCUITING AS REQUIRED TO ACCOMMODATE NEW WORK.
12.	TESTING: PRIOR TO PLACING IN SERVICE, ALL ELECTRICAL SYSTEMS SHALL BE TESTED FOR OPENS & GROUNDS.
13.	SALVAGE: ALL EXISTING EQUIPMENT REMOVED DURING THE COURSE OF THIS PROJECT SHALL BE OFFERED TO OWNER FOR SALVAGE. ANY EQUIPMENT SELECTED BY OWNER SHALL BE DELIVERED TO OWNER ON SITE. ALL REMAINING EQUIPMENT BECOMES THE PROPERTY OF THIS CONTRACTOR AND SHALL BE REMOVED FROM THE SITE.
14.	GROUNDING: TEST EXISTING SERVICE NEUTRAL FOR ADEQUACY AND FOR GROUND CONTINUITY. GROUND ALL EQUIPMENT AND SYSTEM NEUTRAL IN ACCORDANCE WITH ARTICLE 250 OF THE NEC. EQUIPMENT GROUNDS HAVE NOT BEEN SHOWN ON DRAWINGS - WHERE GROUND WIRES HAVE BEEN SHOWN THEY INDICATE AN INSULATED GROUND.
15.	EQUIPMENT STANDARDS: ALL MATERIALS AND EQUIPMENT SHALL BE NEW AND OF THE HIGHEST QUALITY AVAILABLE ("SPECIFICATION GRADE").
16.	MATCH EXISTING: EXISTING EQUIPMENT AND SYSTEMS SHALL BE CONSIDERED A MINIMUM STANDARD TO BE MET, IF NOT OTHERWISE EXCEEDED BY THESE PLANS AND SPECIFICATIONS. NEW MATERIALS AND EQUIPMENT SHALL MATCH EXISTING IN APPEARANCE AND FUNCTION.
17.	CIRCUITING: ALL WIRING SHALL BE IN CONDUIT, CONCEALED EXCEPT WHERE NOTED. EMT WITH STEEL SET SCREEN INSULATED-THROAT FITTINGS MAY BE USED IN DRY, PROTECTED INTERIOR LOCATIONS. PVC SCHEDULE 40 SHALL BE USED BELOW GRADE AT MINIMUM -24" WRAPPED RIGID ELBOWS AND RISERS SHALL BE USED FOR ALL THROUGH-GRADE TRANSITIONS AND STUB-UPS. RGS OR IMC CONDUIT WITH THREADED FITTINGS SHALL BE USED IN ALL LOCATIONS WHERE EXPOSED TO THE ELEMENTS OR SUBJECT TO PHYSICAL DAMAGE. MC & EMT IS NOT ALLOWED.
18.	WIRING: WIRE SHALL BE COPPER. MINIMUM WIRE SIZE SHALL BE #12 AWG. INSULATION SHALL BE THN, THHN OR THHN.
19.	TEMPORARY CONSTRUCTION POWER: PROVIDE TEMPORARY ELECTRICAL POWER AND LIGHTING FOR ALL TRADES THAT REQUIRE SERVICE DURING THE COURSE OF THIS PROJECT. PROVIDE TEMPORARY SERVICE AND DISTRIBUTION AS REQUIRED. COMPLY WITH THE NEC AND OSHA REQUIREMENTS. (ENERGY COSTS BY OTHERS).
20.	SUBMITTALS: BEFORE ORDERING ANY EQUIPMENT, CONTRACTOR SHALL SUBMIT FOUR COPIES OF FACTORY SHOP DRAWINGS FOR ALL LIGHTING FIXTURES. PROPOSED FOR THIS PROJECT.
21.	SUBSTITUTIONS: PROPOSED SUBSTITUTIONS SHALL BE EQUAL OR SUPERIOR TO SPECIFIED ITEMS IN ALL RESPECTS. DETERMINATION OF EQUALITY RESTS SOLELY WITH ENGINEER. SUBSTITUTIONS MUST BE SUBMITTED A MINIMUM OF 10 WORKING DAYS PRIOR TO BID FOR CONSIDERATION. PROPOSED SUBSTITUTIONS PROVIDED LATER WILL NOT BE REVIEWED OR ALLOWED. BID SUBSTITUTED MATERIAL WILL ONLY BE ALLOWED IF ACCEPTED IN WRITING BY ENGINEER. SEE FIXTURE SPEC E0.2.
22.	GUARANTEE: THE COMPLETE ELECTRICAL SYSTEM, AND ALL PORTIONS THEREOF, SHALL BE GUARANTEED TO BE FREE FROM DEFECTS IN WORKMANSHIP AND MATERIALS FOR A PERIOD OF ONE YEAR FROM DATE OF FINAL ACCEPTANCE. PROMPTLY REMEDY SUCH DEFECTS AND ANY SUBSEQUENT DAMAGE CAUSED BY THE DEFECTS OR REPAIR THEREOF AT NO EXPENSE TO THE OWNER. SEE FIXTURE SPECIFICATIONS FOR FIXTURE AND LED LAMP WARRANTY.

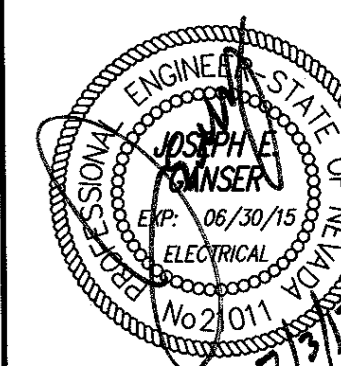
ELECTRICAL LEGEND:

6/17/2008

	PANELBOARD: SURFACE MOUNTED		TICS = NO. OF #12 WIRES (LNO) IF MORE THAN TWO WITHIN RACEWAY. GROUNDING CONDUCTOR (NOT SHOWN) ALWAYS REQUIRED.
	PANELBOARD: FLUSH MOUNTED		ISOLATED GROUNDING CONDUCTOR NEUTRAL CONDUCTOR PHASE CONDUCTOR(S)
	LED LIGHTING FIXTURE		BRANCH CIRCUIT (WHEN TIC MARKS ARE NOT SHOWN) = (1) PHASE, (1) NEUTRAL AND (1) GROUNDING CONDUCTOR
	RECESSED DOWNLIGHT - EXISTING FIXTURE		HOME RUN TO PANELBOARD OR DEVICE
	JUNCTION BOX (USED FOR CLARITY ONLY)		HOME RUN CIRCUIT DESIGNATION
	ELECTRIC SHEET NOTE DESIGNATION		GROUNDING CONDUCTOR NEUTRAL CONDUCTOR (N=1), 2N=2 NEUTRALS, 3N=3 NEUTRALS) PHASE CONDUCTOR(S) PANELBOARD DESIGNATION
	FIXTURE DESIGNATION: L1 = TYPE (SEE FIXTURE SCHEDULE)		HOME RUN CIRCUIT DESIGNATION (3 PHASE CIRCUIT SHOWN)
	REVISION DELTA: NUMBER REPRESENTS REVISION		GROUNDING CONDUCTOR PHASE CONDUCTOR(S) PANELBOARD DESIGNATION
	NEW CONDUIT - SURFACE MOUNTED		
	EXISTING CONDUIT IN CONCRETE DECK		
	ABOVE FINISHED FLOOR		



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**C Street Garage
 LED Retrofit Project**

Sparks, Nevada 89431

REVISIONS

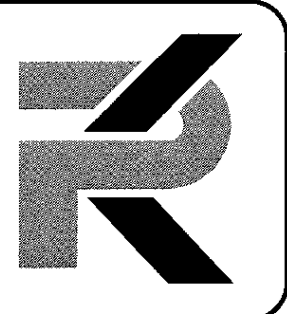
SHEET TITLE

ELECTRICAL LEGEND,
 ELECTRICAL
 SPECIFICATIONS &
 FIXTURE SCHEDULE

DRAWN: **SG**
 CHECKED: **JEG**
 DATE: **7/3/2013**
 JOB NUMBER: **13058**
 PROJECT MGR: **MSP**

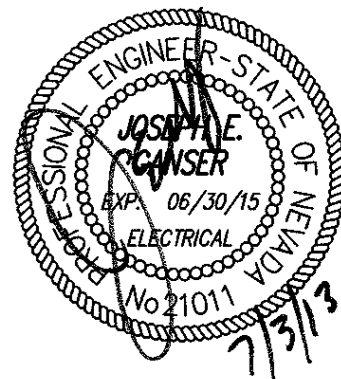
Approved: Date: **7-12-13** Neil C. Krutz, P.E.
 Deputy City Manager for Community Services

E0.1



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REVISIONS

SHEET TITLE

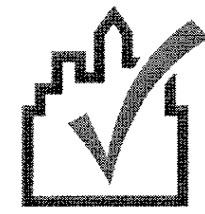
LIGHTING SPECIFICATIONS

DRAWN: SG
CHECKED: JEG
DATE: 7/3/2013
JOB NUMBER: 13058
PROJECT MGR: MSP

E0.2

Approved: *Neil C. Krutz* Date: 7-12-13 Neil C. Krutz, P.E.
Deputy City Manager for Community Services

<p>PARKING GARAGE LED LIGHT FIXTURE PERFORMANCE SPECIFICATION</p> <p>PART 1 – GENERAL</p> <p>1.1 SUMMARY</p> <p>The parking garage lighting performance specification is intended to provide adequate illumination in the parking garage and save energy by reducing the installed power density of equipment below code as well as using integral controls to further reduce energy consumption.</p> <p>1.2 SUBSTITUTIONS</p> <p>A. Substitutions Limitations: A manufacturer who offers products that comply with the required product performance and operation criteria may be submitted for review. Specified catalog numbers are used for description of equipment and standard of quality only. Equivalent material will be given consideration only if adequate comparison data including samples are provided. Acceptance is required prior to bid date. Submit three (3) copies of fixture substitution data ten (10) days prior to bid date to City of Sparks. Bid substituted products only if accepted in writing by Consultant. An addendum will be issued stating if other manufacturers have been approved for Bid.</p> <p>B. The product description, performance and operation requirements must be followed.</p> <p>C. The lighting design is based around fixtures as manufactured by BetaLED. Any other manufacturers desiring to bid this project shall provide complete documentation for a Substitution Request as stated in this performance specification in order to be considered for prior approval. Incomplete information will not be acceptable. See Paragraph 1.6 Submittals.</p> <p>D. Request AutoCAD backgrounds directly from PK Electrical for use in preparing footcandle calculations. Contact Scott Pruter at PK Electrical, 826-9010 or spruter@pk-electrical.com.</p> <p>1.3 REFERENCES</p> <p>A. The publications listed below form a part of this specification to the extent referenced. Publications are referenced within the text by the basic designation only.</p> <ol style="list-style-type: none"> ANSI C62.41.1-2002-IEEE Guide on the Surge Environment in Low-Voltage (1000V and less) AC Power Circuits. ANSI C62.41.2-2002-IEEE Recommended Practice on Characterization of Surges in Low-Voltage (1000V and less) AC Power Circuits. ANSI C82.SSL1-SSL Drivers (in ANSI development) Std. 90.1-2007 – ANSI/ASHRAE/IESNA Standard 90.1 Energy Standard for Buildings Except Low-Rise Residential Buildings. 	<ol style="list-style-type: none"> LM-79-08, IESNA Approved Method for the Electrical and Photometric Measurements of Solid-State Lighting Products. LM-80-08, IESNA Approved Method for Measuring Lumen Maintenance of LED Light Sources. RP-20-98, Recommended Practice for Lighting Parking Facilities. ANSI/IEEE C2 – National Electrical Safety Code. ANSI/NEMA/ANSI/UL C78.377-2008 – American National Standard for the Chromaticity of Solid State Lighting Products. NEMA WD 7-2000 – Occupancy Motion Sensors. NFPA 70 – National Electrical Code. UL 1598 – Luminaires. <p>1.4 QUALITY ASSURANCE</p> <p>A. Site owner may request standard production model luminaire samples identical (including LED package) to product proposed to be installed for inspection. Owner may request independent testing of sample luminaires to verify luminaire performance and compliance with the specifications. Testing shall be conducted per the applicable IESNA and ANSI approved methods for products using Solid-State Lighting (SSL) sources. Refer to the DOE SSL web site for a list of approved test laboratories at www1.eere.energy.gov/buildings/ssl/test_labs.html. Owner shall be sole judge regarding acceptability of optical system performance.</p> <p>1.5 GARAGE LIGHTING SYSTEM PERFORMANCE.</p> <p>See calculations on Sheets E3.1-E3.3 for approximate FC performance of installed fixtures.</p> <p>A. Energy Conservation</p> <ol style="list-style-type: none"> Lighting within the parking structure (excluding dedicated emergency lighting and other fluorescent lighting at stairs, etc.) shall not exceed a maximum of .06 wsf lighting power density (LPD). A maximum target LDP of 0.07 wsf is desired. <p>B. Light Loss Factors (LLF)</p> <ol style="list-style-type: none"> Lamp Maintenance Factor after 50,000 hours of operation. <ol style="list-style-type: none"> Specified fixture is 94. Submit manufacturer's 50K hours Lumen Maintenance Factor at 59 degrees F. <p>C. Lighting Requirements</p> <ol style="list-style-type: none"> Maintained minimum horizontal illumination of 1.00FC. An average-to-minimum illumination ratio between 3.5:1 and 4.5:1. 	<p>1.6 SUBMITTALS</p> <p>SUBMIT (3) COPIES OF THE FOLLOWING COMPLETE INFORMATION FOR PRIOR APPROVAL.</p> <p>A. Performance Reports: Submit the following for prior approval. Computer generated photometric analysis shall include the actual building structure including beams. Assume structure reflectance of 40-20-10. Beam reflectance shall be 40.</p> <ol style="list-style-type: none"> Computer generated photometric analysis showing compliance of Garage Lighting Fixture Performance as stated in Paragraph 1.5. Computer generated photometric analysis of proposed DAY 1 (defined as the initial illuminance values), of the lighting installation, submittal should include the following requirements: <ol style="list-style-type: none"> Provide horizontal illuminance measurements (in footcandles) at grade. Spacing between measurement points shall be 5' on center. Computer generated photometric analysis of proposed FUTURE DATE (defined as assuming 50,000 hours or operation) of the lighting installation, submittal should include the following requirements: <ol style="list-style-type: none"> Provide horizontal illuminance measurements (in footcandles) at grade. Spacing between measurement points shall be 5' on center. <p>B. LED Product Data: For each type of lighting fixture, arranged in order of fixture designation, include data on features, accessories, finishes, and the following:</p> <ol style="list-style-type: none"> Physical description of lighting fixture including dimensions. Driver including: Driver Efficiency; catalog code; and input watts. Luminaire photometric reports per IESNA LM-79-08 including: laboratory name, report number, date, luminaire catalog number, luminaire, and light source specifications. Luminaire (also known as fixture) efficacy. Table of zonal lumen output in 10° vertical increments showing both the lumen value and the percentage of total output per 10° increment. Initial lumen output of light source and temperature at which the lumens are rated. Mean (also known as design) lumen output of light source and percentage of rated life in which mean/design value derived. Correlated Color Temperature (CCT) of light source. Color-Rendering Index (CRI) of light source. 	<ol style="list-style-type: none"> A minimum of 6,000 hours of continuous operation of the LEDs at three different temperatures per LM-80-08. Provide IES files of proposed fixtures in electronic format. <p>C. Provide documentation of the expected useful life as defined in Section 2.4B including the testing and calculation of useful life and verification of the site lighting performance at that life. If the Site defined performance method is used, document the use of LM-80 test data, the specific extrapolation procedure used, the interpolation between the three sets of LM-80 data, and all calculations applied in deriving the proposed LLD and useful life.</p> <p>SUBMIT (4) COPIES OF THE FOLLOWING INFORMATION FOR SHOP DRAWINGS AFTER BID:</p> <p>A. All product information as stated above and in Paragraph 1.7 with the exception of the computer generated photometric analysis.</p> <p>1.7 WARRANTY</p> <p>A. LED Luminaire Warranty</p> <ol style="list-style-type: none"> Provide a written five year replacement material warranty for defective or non-starting LED source assemblies. Provide a written five year replacement material warranty on all power supply/driver units. Provide a written five year replacement warranty for non-maintained illuminance levels (see section 1.5 C) on all light sources (LED package, LED array, or LED module) including, but not limited to the LED die, encapsulate, and phosphor. If the expected useful life of the luminaire system as defined in Section 2.3 B is not maintained, the manufacturer shall replace the light source(s) or luminaire as needed. Provide a ten year repair or replacement warranty to replace defective finish if it exhibits cracking, peeling, excessive fading or corrosion. <p>PART 2 – PRODUCTS</p> <p>2.1 GENERAL</p> <p>A. Luminaire shall be the type indicated on Drawings and as specified. Fixtures of same type shall be of one manufacturer.</p> <p>B. Fixtures shall be of the types and manufacturers described in the LUMINAIRE REQUIREMENTS section below, with light source, wattage and voltage as indicated on Drawings. Specific manufacturer and model number references are indicated as a standard of performance and quality; other manufacturers' models may be supplied provided the product meets or exceeds the specifications. The alternate fixtures must achieve the same photometric levels and uniformity ratios.</p>
<p>C. All fixtures shall be baked on enamel of powder-coated, unless otherwise specified in subsections below.</p> <p>2.2 LIGHT SOURCE REQUIREMENTS</p> <p>A. LED sources shall meet the following requirements:</p> <ol style="list-style-type: none"> Operating temperature rating shall be between -40°C and +50°C. Correlated Color Temperature (CCT): 8000K +/-500K per full fixture. Color Rendering Index (CRI): ≥70 Luminaire manufacturer shall submit reliability reports indicating that the manufacturer of the LED (chip, diode, or package) has performed JEDEC (Joint Electron Devices Engineering Council) reliability tests on the LEDs as follows: <ol style="list-style-type: none"> High Temperature Operating Life (HTOL) Room Temperature operating Life (RTOL) Low Temperature Operating Life (LTOL) Powered Temperature Cycle (PTMCL) <p>2.3 DRIVER REQUIREMENTS</p> <p>A. LED Multi-Level drivers shall meet the following requirements:</p> <ol style="list-style-type: none"> Drivers shall have adjustable drive current, selectable in field. Drivers shall be factory set at high and low settings as indicated on the plans. Drivers shall have a minimum efficiency of 85%. Starting Temperature: -40°C Input Voltage: capable of 120 to 277 (±10%) volt, single phase or as required by the site. Drivers shall be UL Class 1. Surge Protection: Drivers shall have integral 10k surge suppression as standard. Drivers shall be tested in accordance with IEEE/ASNI C62.41.2-2002. Drivers shall have a Power Factor (PF) of ≥0.90 Drivers shall have a Total Harmonic Distortion (THD) of ≤ 20%. Total fixture wattage shall not exceed the following: <ol style="list-style-type: none"> L1 = 60W at high setting. L2, L3 and L4 = single head 175W at high setting. 	<p>2.4 LUMINAIRE REQUIREMENTS</p> <p>A. General Requirements</p> <ol style="list-style-type: none"> The luminaire shall produce a minimum of 20% of the zonal lumens in the 60° to 70° vertical zones. Luminaires shall have an IES BUG rating (Backlight-Up light-Glare) of 3-1-1 or less. The luminaire shall have a luminaire efficacy greater than 75 LPW. Electrical system cavity shall be wet-location rated and be field accessible for service or repair needs. Luminaires shall be fully assembled and electrically tested before shipment from factory. Luminaires shall have country appropriate governing make and certification. Color of the luminaire shall be as specified by the site owner. If a lens not integral to the LED is used, the luminaire optical enclosure (lens/window) shall be constructed of a one piece, UV resistant, clear, polycarbonate, acrylic or glass. The LED bars shall be replaceable. The fixture housing shall be rugged die-cast and extruded aluminum. <p>B. LED-dedicated Luminaire Expected Useful Life (Light Output) and Depreciation</p> <ol style="list-style-type: none"> Simplified L₇₀ threshold: A minimum of 50,000 operating hours before reaching the L₇₀ lumen output degradation point with no catastrophic failures. The L₇₀ lumen output must be capable of providing the illuminance levels and uniformity specified in Section 1.6. <p>2.5 CONTROLS</p> <p>Multi-level options shall allow multiple operating drive currents for high and low modes. The sensor shall be internally field adjustable from 75mA to 700mA in 25-50mA increments.</p> <p>A. Daylighting Controls</p> <ol style="list-style-type: none"> All luminaires shall have an integral factory installed photosensor for daylight harvesting. <p>B. Occupancy Sensor Controls</p> <ol style="list-style-type: none"> All luminaires shall have an integral factory installed passive infrared occupancy sensor. Occupancy sensor shall have adjustable light level (high and low) and time delay function, adjustable in field. 	<ol style="list-style-type: none"> Occupancy sensors shall be factory set at 6 minutes to reduce the lighting level to the low setting after absence of motion (either vehicle or pedestrian). <p>PART 3 – EXECUTION</p> <p>3.1 INSTALLATION</p> <p>A. Disconnect all power sources prior to installation.</p> <p>B. Follow manufacturers' recommended installation procedures.</p> <p>3.2 TESTING & COMMISSIONING</p> <p>A. Test each system component after installation to verify proper operation. Testing will be required at daytime and at nighttime to demonstrate operation of system. Adjust OC sensors and daylight sensors as required by Owner and Engineer.</p> <p>B. Confirm correct loads are recorded on directory card in each panel.</p> <p>C. Provide calibration logs for all devices. Sample log shall be part of shop drawing submittal.</p> <p>3.3 MANUFACTURER SERVICES</p> <p>A. Manufacturer shall provide minimum of 1-day site visit for start-up and commissioning of fixtures, occupancy sensors and daylight sensors.</p> <p>B. Manufacturer must provide installation and troubleshooting support via telephone.</p> <p style="text-align: center;">END OF SECTION</p>	



COMcheck Software Version 3.9.2 Interior Lighting Compliance Certificate

2009 IECC

Section 1: Project Information

Project Type: Alteration
Project Title: C STREET PARKING GARAGE

Construction Site: SPARKS, NV 89431
Owner/Agent: RICHARD BROOKS, CITY OF SPARKS COMMUNITY SERVICES-ENGINEERING, 431 PRATER WAY, RENO, NV 89431, 775-353-2341, rbrooks@cityofsparks.us
Designer/Contractor: SCOTT PRUTER, PK ELECTRICAL, 681 SIERRA ROSE DRIVE, SUITE B, RENO, NV 89511, 775-826-9010

Section 2: Interior Lighting and Power Calculation

A Area Category	B Floor Area (ft ²)	C Allowed Watts / ft ²	D Allowed Watts (B x C)
3 floors- garage (Parking Garage)	100874	0.3	30262
Total Allowed Watts =		30262	

Section 3: Interior Lighting Fixture Schedule

A Fixture ID - Description / Lamp / Wattage Per Lamp / Ballast	B Lamps / Fixture	C # of Fixtures	D Watt	E (C x D)
3 floors- garage (Parking Garage 100874 sq ft)				
LED 1: L1- LED-PARK GARAGE FIXT - Other	1	101	68	6868
Total Proposed Watts =		6868		

Section 4: Requirements Checklist

InteriorLighting: PASSES

- Lighting Wattage:**
1. Total proposed watts must be less than or equal to total allowed watts.
- | Allowed Watts | Proposed Watts | Complies |
|---------------|----------------|----------|
| 30262 | 6868 | Passes |
- Controls, Switching, and Wiring:**
2. Daylight zones under skylights more than 15 feet from the perimeter have lighting controls separate from daylight zones adjacent to vertical fenestration.
3. Daylight zones have individual lighting controls independent from that of the general area lighting.
- Exceptions:
- Contiguous daylight zones spanning no more than two orientations are allowed to be controlled by a single controlling device.
- Daylight spaces enclosed by walls or ceiling height partitions and containing two or fewer light fixtures are not required to have a separate switch for general area lighting.
4. Independent controls for each space (switch/occupancy sensor).

Project Title: C STREET PARKING GARAGE
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- Exceptions:
- Areas designated as security or emergency areas that must be continuously illuminated.
- Lighting in stairways or corridors that are elements of the means of egress.
5. Master switch at entry to hotel/motel guest room.
6. Individual dwelling units separately metered.
7. Medical task lighting or ambulatory display lighting claimed to be exempt from compliance has a control device independent of the control of the nonexempt lighting.
8. Each space required to have a manual control also allows for reducing the connected lighting load by at least 50 percent by either controlling all luminaires, dual switching of alternate rows of luminaires, alternate luminaires, or alternate lamps, switching the middle lamp luminaires independently of other lamps, or switching each luminaire or each lamp.

- Exceptions:
- Only one luminaire in space.
- An occupant-sensing device controls the area.
- The area is a corridor, storeroom, restroom, public lobby or sleeping unit.
- Areas that use less than 0.6 Watts/sq.ft.
9. Automatic lighting shutoff control in buildings larger than 5,000 sq.ft.
- Exceptions:
- Sleeping units, patient care areas, and spaces where automatic shutoff would endanger safety or security.
10. Photocell/astronomical time switch on exterior lights.
- Exceptions:
- Lighting intended for 24 hour use.
11. Tandem wired one-lamp and three-lamp ballasted luminaires (No single-lamp ballasts).
- Exceptions:
- Electronic high-frequency ballasts; Luminaires on emergency circuits or with no available pair.

Section 5: Compliance Statement

Compliance Statement: The proposed lighting alteration project represented in this document is consistent with the building plans, specifications and other calculations submitted with this permit application. The proposed lighting alteration project has been designed to meet the 2009 IECC, Chapter 8, requirements in COMcheck Version 3.9.2 and to comply with the mandatory requirements in the Requirements Checklist.

Joey Ganser, PE
Name - Title
Signature: [Signature] Date: 7/3/13

Project Title: C STREET PARKING GARAGE
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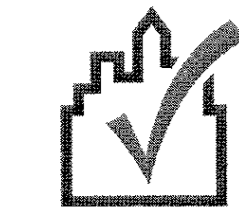
5. All time switches are capable of retaining programming and the time setting during loss of power for a period of at least 10 hours.
- Exterior Lighting Efficacy:**
6. All exterior building grounds luminaires that operate at greater than 100W have minimum efficacy of 60 lumen/watt.
- Exceptions:
- Lighting that has been claimed as exempt and is identified as such in Section 3 table above.
- Lighting that is specifically designated as required by a health or life safety statute, ordinance, or regulation.
- Emergency lighting that is automatically off during normal building operation.
- Lighting that is controlled by motion sensor.

Section 5: Compliance Statement

Compliance Statement: The proposed exterior lighting design represented in this document is consistent with the building plans, specifications and other calculations submitted with this permit application. The proposed lighting system has been designed to meet the 2009 IECC requirements in COMcheck Version 3.9.2 and to comply with the mandatory requirements in the Requirements Checklist.

Joey Ganser, PE
Name - Title
Signature: [Signature] Date: 7/3/13

LIGHTING LOAD CALC - C STREET GARAGE									
EXISTING LOAD	1ST FLR	2ND FLR	3RD FLR	ROOF	TOTAL	WATTS EA.	LOAD-WATTS		
A - 100W HPS	56	56	56		168	128	21504		
B - 70W HPS	5	5	5		15	105	1890		
G - (2) 175W MH				4	4	426	1704		
TOTAL (E) LOAD							25088		
NEW LOAD	1ST FLR	2ND FLR	3RD FLR	ROOF	TOTAL	WATTS EA.	LOAD-WATTS		
L1 - LED	33	34	34		101	58	5858		
L2 - LED				4	4	344	1376		
TOTAL NEW LOAD							7234		
EXISTING LOAD - HID							25088		
NEW LOAD - LED							7234		
BUILDING LOAD REDUCED BY							17854		



COMcheck Software Version 3.9.2 Exterior Lighting Compliance Certificate

2009 IECC

Section 1: Project Information

Project Type: Alteration
Project Title: C STREET PARKING GARAGE
Exterior Lighting Zone: 4 (High activity metropolitan commercial district)

Construction Site: SPARKS, NV 89431
Owner/Agent: RICHARD BROOKS, CITY OF SPARKS COMMUNITY SERVICES-ENGINEERING, 431 PRATER WAY, RENO, NV 89431, 775-353-2341, rbrooks@cityofsparks.us
Designer/Contractor: SCOTT PRUTER, PK ELECTRICAL, 681 SIERRA ROSE DRIVE, SUITE B, RENO, NV 89511, 775-826-9010

Section 2: Exterior Lighting Area/Surface Power Calculation

A Exterior Area/Surface	B Quantity	C Allowed Watts / Unit	D Tradable Wattage	E Allowed Watts (B x C)	F Proposed Watts
GARAGE ROOF (Parking area)	33624 ft ²	0.13	Yes	4371	1376
Total Tradable Watts** =		4371			
Total Allowed Watts** =		4371			
Total Allowed Supplemental Watts** =		1300			

* Wattage tradeoffs are only allowed between tradable areas/surfaces.
** A supplemental allowance equal to 1300 watts may be applied toward compliance of both non-tradable and tradable areas/surfaces.

Section 3: Exterior Lighting Fixture Schedule

A Fixture ID - Description / Lamp / Wattage Per Lamp / Ballast	B Lamps / Fixture	C # of Fixtures	D Watt	E (C x D)
GARAGE ROOF (Parking area 33624 ft ²) Tradable Wattage				
LED 1: L2- LED POLE FIXT - Other	1	4	344	1376
Total Tradable Proposed Watts =		1376		

Section 4: Requirements Checklist

- Lighting Wattage:**
1. Within each non-tradable area/surface, total proposed watts must be less than or equal to total allowed watts. Across all tradable areas/surfaces, total proposed watts must be less than or equal to total allowed watts.
- Compliance: Passes.
- Controls, Switching, and Wiring:**
2. All exemption claims are associated with fixtures that have a control device independent of the control of the nonexempt lighting.
3. Lighting not designated for dusk-to-dawn operation is controlled by either a photosensor (with time switch), or an astronomical time switch.
4. Lighting designated for dusk-to-dawn operation is controlled by an astronomical time switch or photosensor.

Project Title: C STREET PARKING GARAGE
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COMcheck Software Version 3.9.2 Interior Lighting Compliance Certificate

2009 IECC

Section 1: Project Information

Project Type: Alteration
Project Title: VICTORIAN SQUARE PARKING GARAGE ROOF

Construction Site: SPARKS, NV 89431
Owner/Agent: RICHARD BROOKS, CITY OF SPARKS COMMUNITY SERVICES-ENGINEERING, 431 PRATER WAY, RENO, NV 89431, 775-353-2341, rbrooks@cityofsparks.us
Designer/Contractor: SCOTT PRUTER, PK ELECTRICAL, 681 SIERRA ROSE DRIVE, SUITE B, RENO, NV 89511, 775-826-9010

Section 2: Interior Lighting and Power Calculation

A Area Category	B Floor Area (ft ²)	C Allowed Watts / ft ²	D Allowed Watts (B x C)
Total Allowed Watts =		30262	

Section 3: Interior Lighting Fixture Schedule

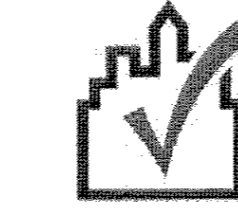
A Fixture ID - Description / Lamp / Wattage Per Lamp / Ballast	B Lamps / Fixture	C # of Fixtures	D Watt	E (C x D)
Total Proposed Watts =		N/A		

Section 4: Requirements Checklist

InteriorLighting: TBD

- Lighting Wattage:**
1. Total proposed watts must be less than or equal to total allowed watts.
- | Allowed Watts | Proposed Watts | Complies |
|---------------|----------------|---------------------------|
| 30262 | N/A | Invalid building use type |
- Controls, Switching, and Wiring:**
2. Daylight zones under skylights more than 15 feet from the perimeter have lighting controls separate from daylight zones adjacent to vertical fenestration.
3. Daylight zones have individual lighting controls independent from that of the general area lighting.
- Exceptions:
- Contiguous daylight zones spanning no more than two orientations are allowed to be controlled by a single controlling device.
- Daylight spaces enclosed by walls or ceiling height partitions and containing two or fewer light fixtures are not required to have a separate switch for general area lighting.
4. Independent controls for each space (switch/occupancy sensor).
- Exceptions:
- Areas designated as security or emergency areas that must be continuously illuminated.

Project Title: VICTORIAN SQUARE PARKING GARAGE ROOF
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COMcheck Software Version 3.9.2 Exterior Lighting Compliance Certificate

2009 IECC

Section 1: Project Information

Project Type: Alteration
Project Title: VICTORIAN SQUARE PARKING GARAGE ROOF
Exterior Lighting Zone: 4 (High activity metropolitan commercial district)

Construction Site: SPARKS, NV 89431
Owner/Agent: RICHARD BROOKS, CITY OF SPARKS COMMUNITY SERVICES-ENGINEERING, 431 PRATER WAY, RENO, NV 89431, 775-353-2341, rbrooks@cityofsparks.us
Designer/Contractor: SCOTT PRUTER, PK ELECTRICAL, 681 SIERRA ROSE DRIVE, SUITE B, RENO, NV 89511, 775-826-9010

Section 2: Exterior Lighting Area/Surface Power Calculation

A Exterior Area/Surface	B Quantity	C Allowed Watts / Unit	D Tradable Wattage	E Allowed Watts (B x C)	F Proposed Watts
GARAGE ROOF (Parking area)	55300 ft ²	0.13	Yes	7189	3096
Total Tradable Watts** =		7189			
Total Allowed Watts** =		7189			
Total Allowed Supplemental Watts** =		1300			

* Wattage tradeoffs are only allowed between tradable areas/surfaces.
** A supplemental allowance equal to 1300 watts may be applied toward compliance of both non-tradable and tradable areas/surfaces.

Section 3: Exterior Lighting Fixture Schedule

A Fixture ID - Description / Lamp / Wattage Per Lamp / Ballast	B Lamps / Fixture	C # of Fixtures	D Watt	E (C x D)
GARAGE ROOF (Parking area 55300 ft ²) Tradable Wattage				
LED 1: L4- LED POLE FIXT-TRIPLE- Other	1	6	344	2064
LED 2: L3- LED POLE FIXT- SINGLE- Other	1	2	172	344
Total Tradable Proposed Watts =		2408		

Section 4: Requirements Checklist

- Lighting Wattage:**
1. Within each non-tradable area/surface, total proposed watts must be less than or equal to total allowed watts. Across all tradable areas/surfaces, total proposed watts must be less than or equal to total allowed watts.
- Compliance: Passes.
- Controls, Switching, and Wiring:**
2. All exemption claims are associated with fixtures that have a control device independent of the control of the nonexempt lighting.
3. Lighting not designated for dusk-to-dawn operation is controlled by either a photosensor (with time switch), or an astronomical time switch.

Project Title: VICTORIAN SQUARE PARKING GARAGE ROOF
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- Lighting in stairways or corridors that are elements of the means of egress.
5. Master switch at entry to hotel/motel guest room.
6. Individual dwelling units separately metered.
7. Medical task lighting or ambulatory display lighting claimed to be exempt from compliance has a control device independent of the control of the nonexempt lighting.
8. Each space required to have a manual control also allows for reducing the connected lighting load by at least 50 percent by either controlling all luminaires, dual switching of alternate rows of luminaires, alternate luminaires, or alternate lamps, switching the middle lamp luminaires independently of other lamps, or switching each luminaire or each lamp.
- Exceptions:
- Only one luminaire in space.
- An occupant-sensing device controls the area.
- The area is a corridor, storeroom, restroom, public lobby or sleeping unit.
- Areas that use less than 0.6 Watts/sq.ft.
9. Automatic lighting shutoff control in buildings larger than 5,000 sq.ft.
- Exceptions:
- Sleeping units, patient care areas, and spaces where automatic shutoff would endanger safety or security.
10. Photocell/astronomical time switch on exterior lights.
- Exceptions:
- Lighting intended for 24 hour use.
11. Tandem wired one-lamp and three-lamp ballasted luminaires (No single-lamp ballasts).
- Exceptions:
- Electronic high-frequency ballasts; Luminaires on emergency circuits or with no available pair.

Project Title: VICTORIAN SQUARE PARKING GARAGE ROOF
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4. Lighting designated for dusk-to-dawn operation is controlled by an astronomical time switch or photosensor.
5. All time switches are capable of retaining programming and the time setting during loss of power for a period of at least 10 hours.
- Exterior Lighting Efficacy:**
6. All exterior building grounds luminaires that operate at greater than 100W have minimum efficacy of 60 lumen/watt.
- Exceptions:
- Lighting that has been claimed as exempt and is identified as such in Section 3 table above.
- Lighting that is specifically designated as required by a health or life safety statute, ordinance, or regulation.
- Emergency lighting that is automatically off during normal building operation.
- Lighting that is controlled by motion sensor.

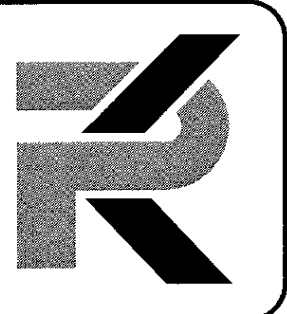
Section 5: Compliance Statement

Compliance Statement: The proposed exterior lighting design represented in this document is consistent with the building plans, specifications and other calculations submitted with this permit application. The proposed lighting system has been designed to meet the 2009 IECC requirements in COMcheck Version 3.9.2 and to comply with the mandatory requirements in the Requirements Checklist.

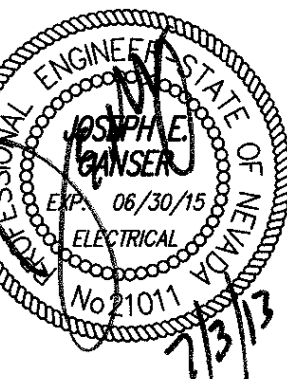
Joey Ganser, PE
Name - Title
Signature: [Signature] Date: 7/3/13

LIGHTING LOAD CALC - VICTORIAN SQUARE GARAGE									
EXISTING LOAD	1ST FLR	2ND FLR	3RD FLR	ROOF	TOTAL	WATTS EA.	LOAD-WATTS		
B1 (2) 250W HPS				8	8	550	4400		
B2 (1) 250W HPS				2	2	295	590		
TOTAL (E) LOAD							4990		
NEW LOAD	1ST FLR	2ND FLR	3RD FLR	ROOF	TOTAL	WATTS EA.	LOAD-WATTS		
L4 - LED				8	8	344	2752		
L3 - LED				2	2	172	344		
TOTAL NEW LOAD							3096		
EXISTING LOAD - HID							4990		
NEW LOAD - LED							3096		
BUILDING LOAD REDUCED BY							1894		

Project Title: VICTORIAN SQUARE PARKING GARAGE ROOF
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PK Electrical, Inc.
681 Sierra Rose Dr., Ste. 8
Reno, Nevada 89511
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f. 775.826.9030
pk electrical.com



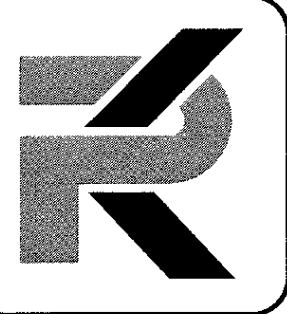
C Street Garage
LED Retrofit Project
Sparks, Nevada 89431

REVISIONS
SHEET TITLE
ENERGY CALCULATIONS

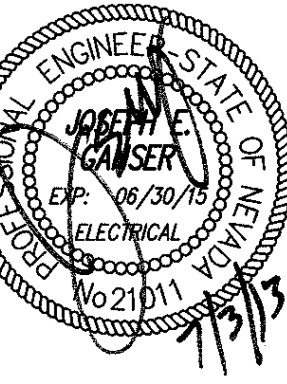
DRAWN: SG
CHECKED: JEG
DATE: 7/3/2013
JOB NUMBER: 13056
PROJECT MGR: MSP

Approved: [Signature] Date: 7-12-13 Neil C. Krutz, P.E.
Deputy City Manager for Community Services

E0.3



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 pkelectrical.com

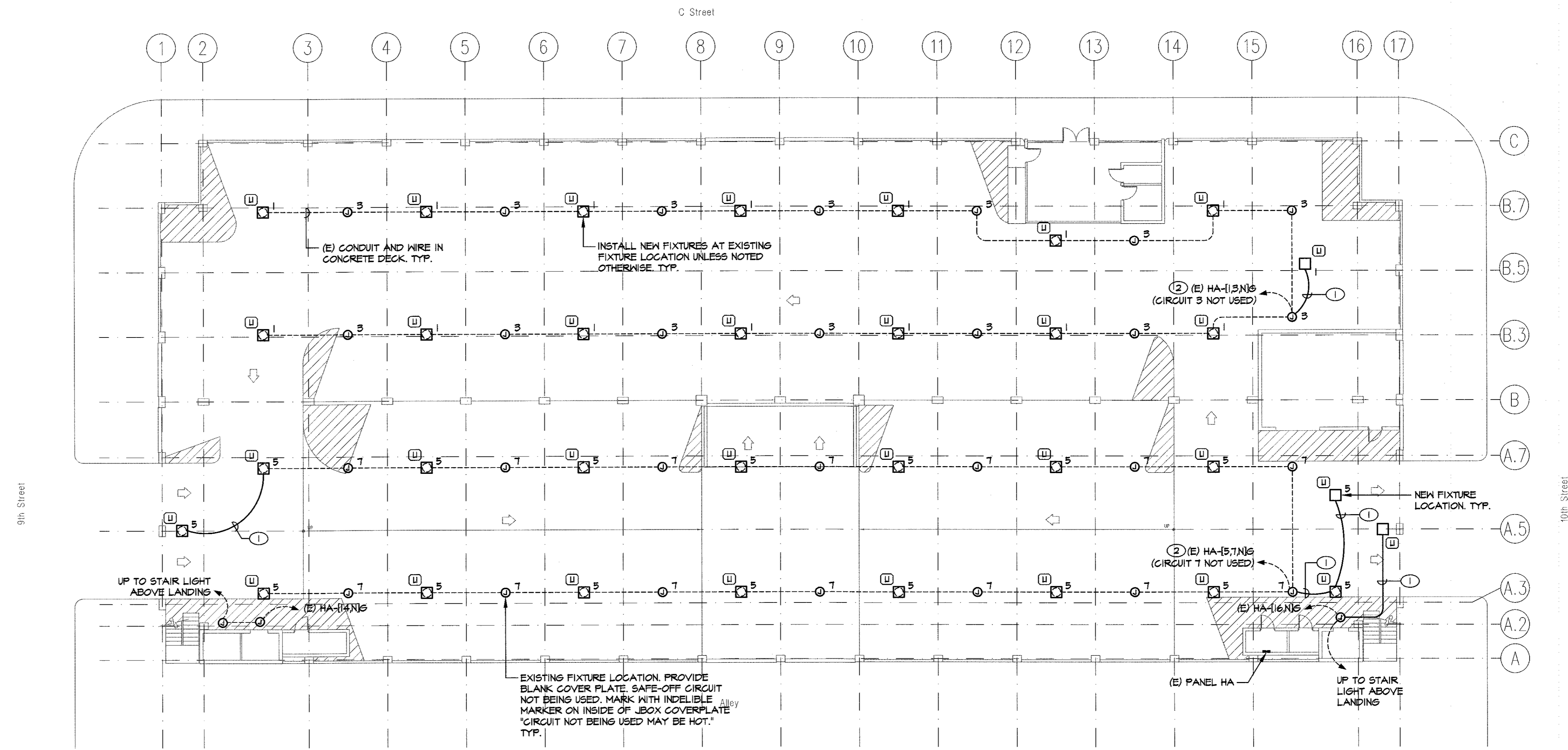


SHEET NOTES

- ① EXTEND SURFACE MOUNTED CONDUIT AND WIRE TO NEW FIXTURE LOCATION.
- ② EXISTING CIRCUITS TO BE REUSED, DISCONNECT FROM (E) RELAY AND TIMELOCK CONTROLS.

GENERAL NOTES

1. THIS DRAWING REPRESENTS THE EXISTING LIGHTING SYSTEM WITHIN THE EXISTING BUILDING. THE CONTRACTOR IS RESPONSIBLE FOR REMOVING, RELOCATING AND REWIRING ALL EQUIPMENT AS INDICATED ON THE DRAWINGS.
2. EXISTING CIRCUITS AS INDICATED ARE BASED ON CASUAL FIELD OBSERVATION AND INFORMATION PER RECORD DRAWINGS AND SHALL BE FIELD VERIFIED BY ELECTRICAL CONTRACTOR PRIOR TO START OF DEMOLITION WORK.
3. THE CONTRACTOR SHALL SALVAGE AND REUSE EXISTING BOXES AND CONDUIT WHERE POSSIBLE. DAMAGED CONDUIT, FITTINGS BOXES, ETC. MAY NOT BE RE-USED. NEW CIRCUITING AS INDICATED ON THE DRAWINGS IS SHOWN FOR INTENT ONLY AND MAY VARY BASED ON ACTUAL FIELD CONDITIONS (NEW CIRCUITING SHALL MATCH EXISTING WHERE POSSIBLE TO UTILIZE EXISTING HOME-RUN CONDUITS, ETC.). KEEP AS-BUILT DRAWINGS CURRENT WITH ANY DEVIATION IN CIRCUITING FROM WHAT IS INDICATED WITHIN THESE PLANS.
4. THE CONTRACTOR SHALL REMOVE FROM THE JOB SITE ALL DISCARDED AND ABANDONED MATERIALS LEFT OVER FROM DEMOLITION AND INSTALLATION. THIS INCLUDES, BUT IS NOT LIMITED TO LIGHT FIXTURES, CONDUIT, FASTENERS AND BOXES. MATERIALS EMBEDDED IN GRADE AND / OR CONCRETE MAY BE ABANDONED IN PLACE. ALL ABANDONED CONDUIT SHALL BE CAPPED.
5. SAFE-OFF CONDUCTORS NOT BEING REUSED, DISCONNECT AT PANEL AND MARK BREAKER AS SPARE.
6. EXISTING EGRESS LIGHTS AND EXIT SIGNS TO REMAIN AS-IS.



**ELECTRICAL PLAN
 GROUND LEVEL - C STREET**
 A
 E1.1 SCALE: 1/16" = 1'-0"

REVISIONS

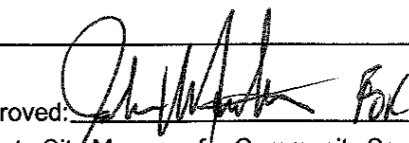
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SHEET TITLE

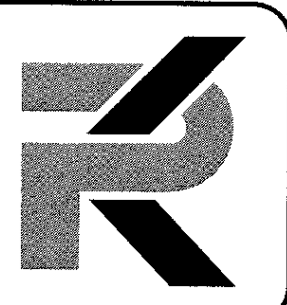
ELECTRICAL PLAN
 GROUND LEVEL - C
 STREET GARAGE

DRAWN:	SG
CHECKED:	JEG
DATE:	7/3/2013
JOB NUMBER:	13052
PROJECT MGR:	MSP

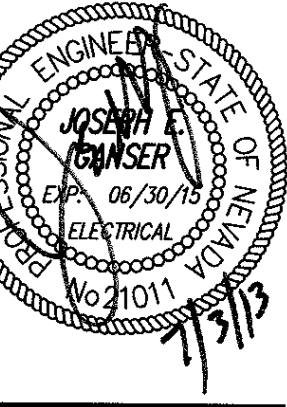
E1.1

Approved:  Date: 7.12.13
 Deputy City Manager for Community Services

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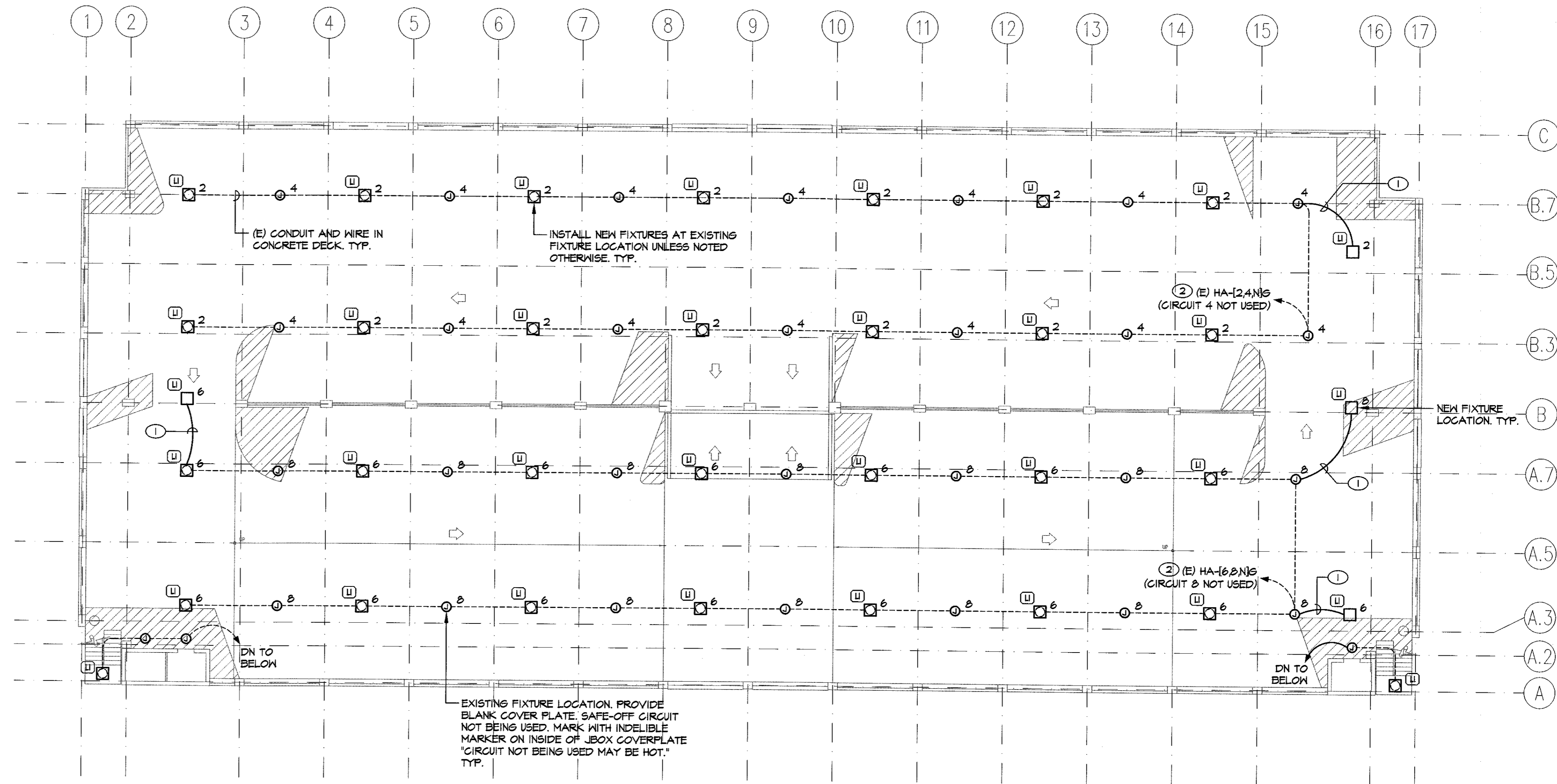


SHEET NOTES

- ① EXTEND SURFACE MOUNTED CONDUIT AND WIRE TO NEW FIXTURE LOCATION.
- ② EXISTING CIRCUITS TO BE REUSED. DISCONNECT FROM (E) RELAY AND TIMECLOCK CONTROLS.

GENERAL NOTES

1. THIS DRAWING REPRESENTS THE EXISTING LIGHTING SYSTEM WITHIN THE EXISTING BUILDING. THE CONTRACTOR IS RESPONSIBLE FOR REMOVING, RELOCATING AND REPAIRING ALL EQUIPMENT AS INDICATED ON THE DRAWINGS.
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4. THE CONTRACTOR SHALL REMOVE FROM THE JOB SITE ALL DISCARDED AND ABANDONED MATERIALS LEFT OVER FROM DEMOLITION AND INSTALLATION. THIS INCLUDES, BUT IS NOT LIMITED TO, LIGHT FIXTURES, CONDUIT, FASTENERS AND BOXES. MATERIALS EMBEDDED IN GRADE AND / OR CONCRETE MAY BE ABANDONED IN PLACE. ALL ABANDONED CONDUIT SHALL BE CAPPED.
5. SAFE-OFF CONDUCTORS NOT BEING REUSED. DISCONNECT AT PANEL AND MARK BREAKER AS SPARE.
6. EXISTING EGRESS LIGHTS AND EXIT SIGNS TO REMAIN AS-IS.



**ELECTRICAL PLAN
 SECOND LEVEL - C STREET**

A
 E1.2 SCALE: 1/16" = 1'-0"

**C Street Garage
 LED Retrofit Project**
 Sparks, Nevada 89431

REVISIONS

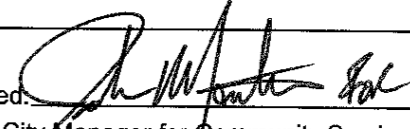
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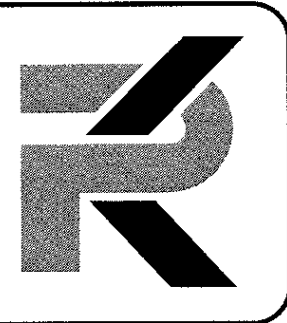
SHEET TITLE

ELECTRICAL PLAN
 SECOND LEVEL - C
 STREET GARAGE

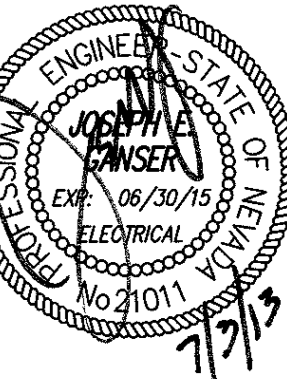
DRAWN: SG
 CHECKED: JEG
 DATE: 7/3/2013
 JOB NUMBER: 13088
 PROJECT MGR: MBP

E1.2

Approved:  Date: 7-12-13 Neil C. Krutz, P.E.
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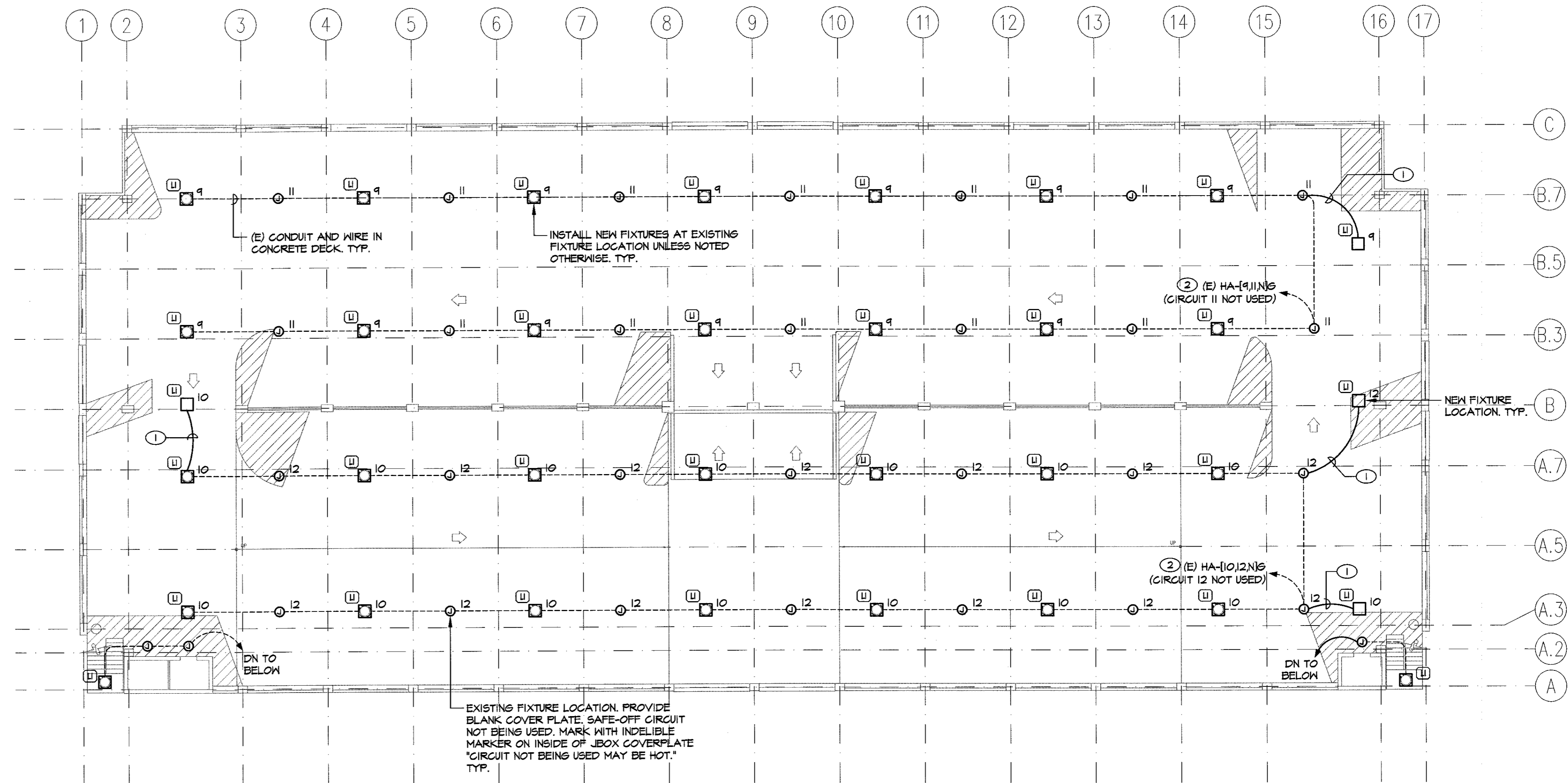


SHEET NOTES

- ① EXTEND SURFACE MOUNTED CONDUIT AND WIRE TO NEW FIXTURE LOCATION.
- ② EXISTING CIRCUITS TO BE REUSED. DISCONNECT FROM (E) RELAY AND TIMECLOCK CONTROLS.

GENERAL NOTES

- 1. THIS DRAWING REPRESENTS THE EXISTING LIGHTING SYSTEM WITHIN THE EXISTING BUILDING. THE CONTRACTOR IS RESPONSIBLE FOR REMOVING, RELOCATING AND REPAIRING ALL EQUIPMENT AS INDICATED ON THE DRAWINGS.
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- 4. THE CONTRACTOR SHALL REMOVE FROM THE JOB SITE ALL DISCARDED AND ABANDONED MATERIALS LEFT OVER FROM DEMOLITION AND INSTALLATION. THIS INCLUDES, BUT IS NOT LIMITED TO, LIGHT FIXTURES, CONDUIT, FASTENERS AND BOXES. MATERIALS EMBEDDED IN GRADE AND / OR CONCRETE MAY BE ABANDONED IN PLACE. ALL ABANDONED CONDUIT SHALL BE CAPPED.
- 5. SAFE-OFF CONDUCTORS NOT BEING REUSED. DISCONNECT AT PANEL AND MARK BREAKER AS SPARE.
- 6. EXISTING EGRESS LIGHTS AND EXIT SIGNS TO REMAIN AS-IS.



A
E1.3 SCALE: 1/16" = 1'-0"
ELECTRICAL PLAN
THIRD LEVEL - C STREET

REVISIONS

NO.	DESCRIPTION

SHEET TITLE

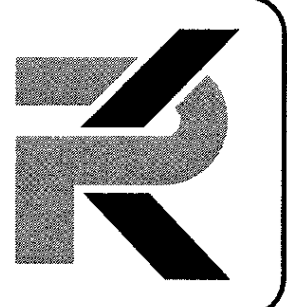
ELECTRICAL PLAN THIRD LEVEL - C STREET GARAGE

DRAWN	SG
CHECKED	JEG
DATE	7/8/2013
JOB NUMBER	13098
PROJECT MGR.	MSP

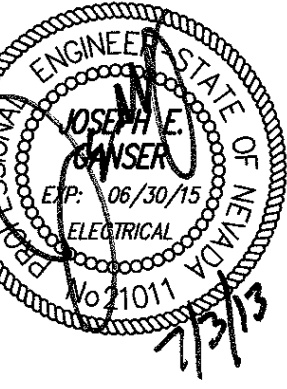
E1.3

Approved: *Neil C. Krutz* Date: 7-12-13 Neil C. Krutz, P.E.
 Deputy City Manager for Community Services

C Street Garage
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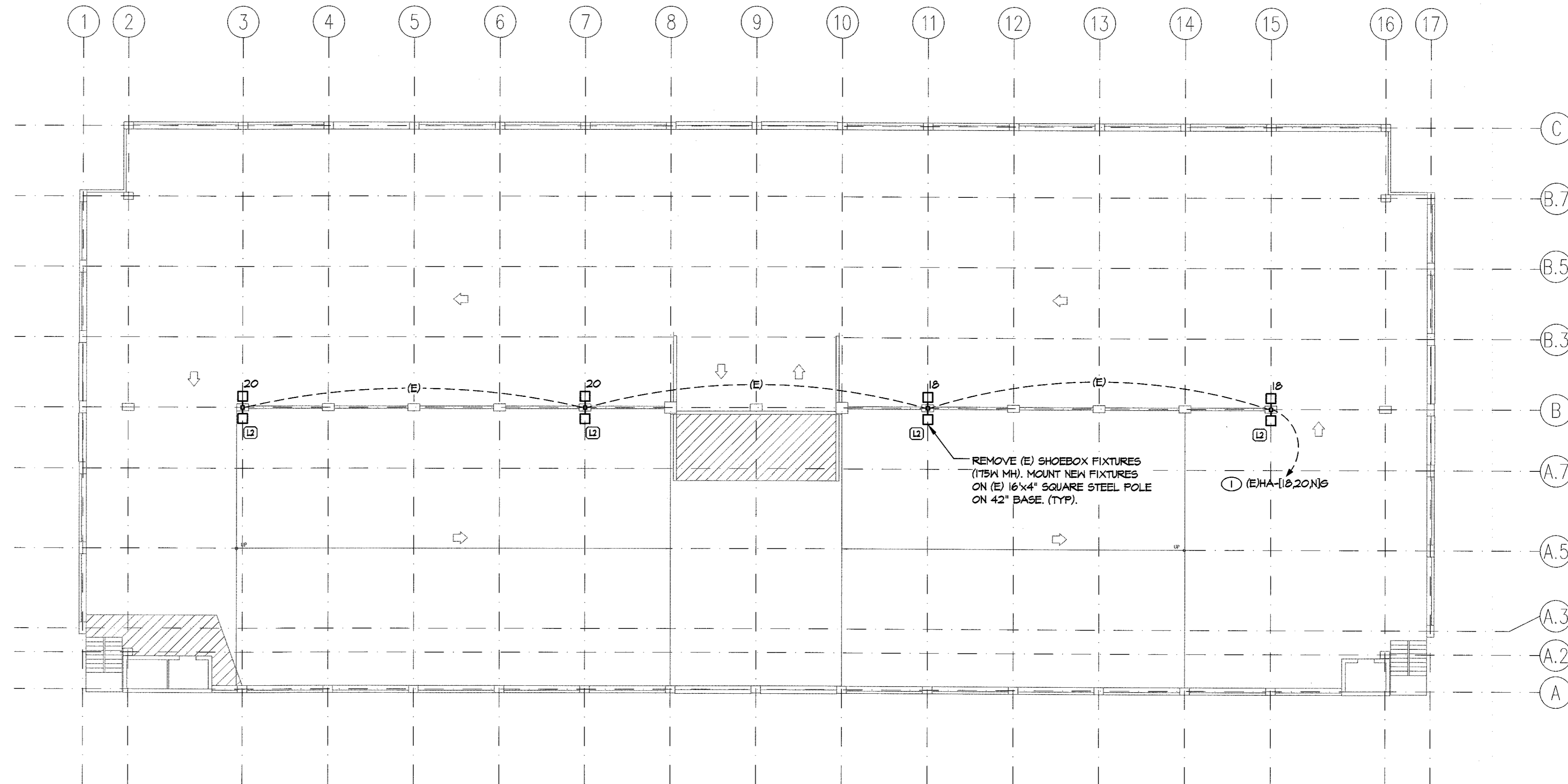


SHEET NOTES

- ① EXISTING CIRCUITS TO BE REUSED. DISCONNECT FROM (E) RELAY AND TIMECLOCK CONTROLS. PROVIDE HANDLE TIES OR A MASTER HANDLE ON (E) BREAKERS WHERE 2 OR 3 CIRCUITS ARE IN A HOMERUN AND SHARE A NEUTRAL PER NEC 225.33 (B).

GENERAL NOTES

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- 5. SAFE-OFF CONDUCTORS NOT BEING REUSED. DISCONNECT AT PANEL AND MARK BREAKER AS SPARE.
- 6. EXISTING EGRESS LIGHTS AND EXIT SIGNS TO REMAIN AS-IS.



**ELECTRICAL PLAN
 ROOF LEVEL - C STREET**
 SCALE: 1/16" = 1'-0"

**C Street Garage
 LED Retrofit Project**
 Sparks, Nevada 89431

REVISIONS

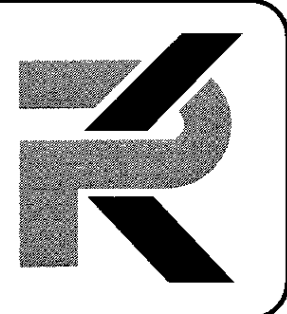
SHEET TITLE

ELECTRICAL PLAN ROOF
 LEVEL - C STREET
 GARAGE

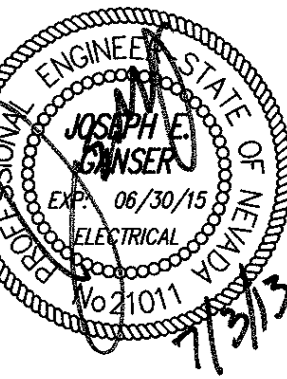
DRAWN:	SG
CHECKED:	JEG
DATE:	7/3/2013
JOB NUMBER:	13052
PROJECT MGR:	MSP

Approved: *Neil C. Krutz* Date: 7-12-13 Neil C. Krutz, P.E.
 Deputy City Manager for Community Services

E1.4



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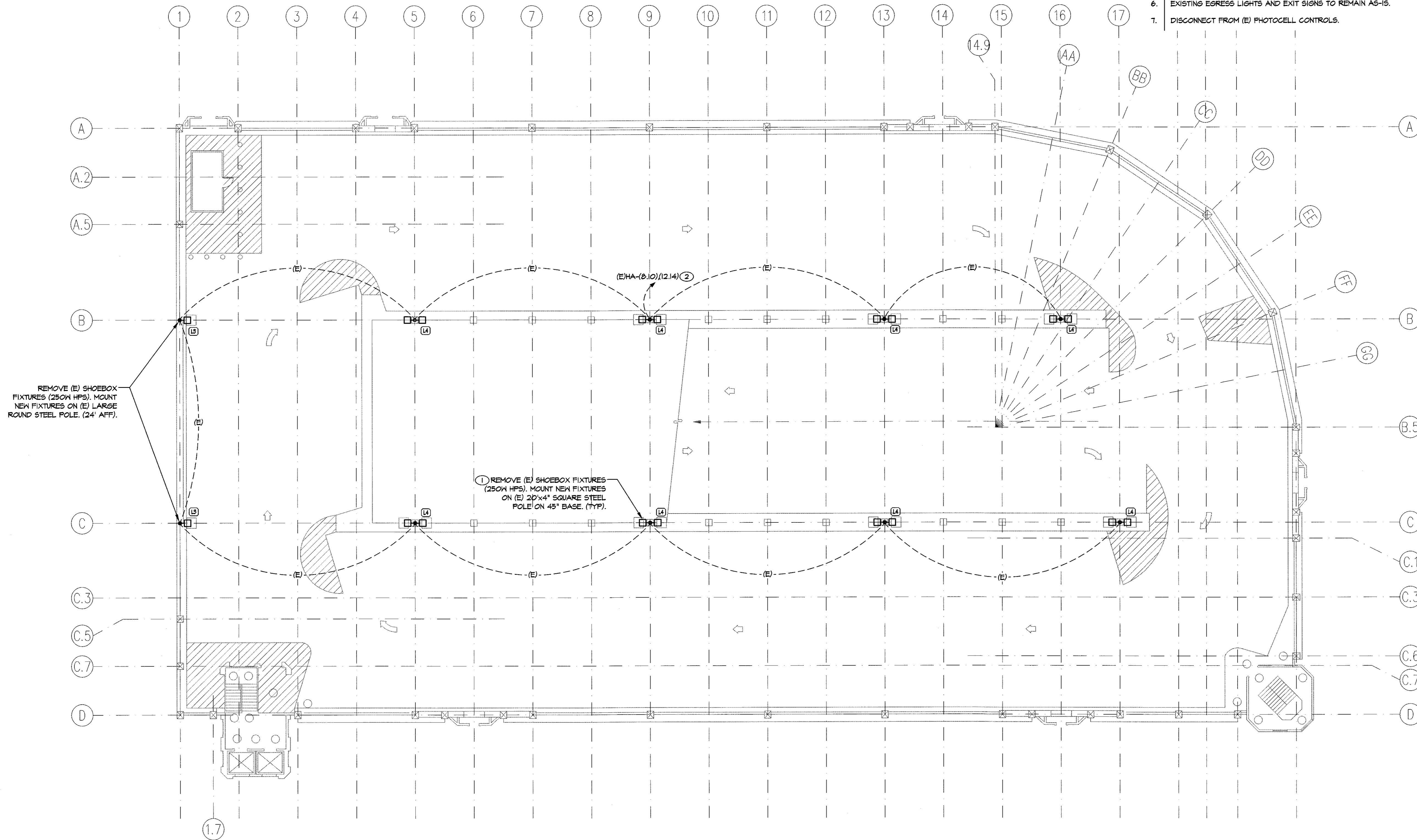


SHEET NOTES

- ① CONTRACTOR SHALL CONFIRM (E) CIRCUITING IN FIELD. AS-BUILT DOCUMENTS INDICATE (E) POLE LIGHTS ARE 277V, BUT CIRCUITING IS SHOWN AS 480V. VERIFY VOLTAGE FOR LIGHT FIXTURES PRIOR TO SUBMITTAL OF SHOP DRAWINGS.
- ② EXISTING CIRCUITS TO BE REUSED. DISCONNECT FROM (E) RELAY AND TIMECLOCK CONTROLS. PROVIDE HANDLE TIES OR A MASTER HANDLE ON (E) BREAKERS WHERE 2 OR 3 CIRCUITS ARE IN A HOMERUN AND SHARE A NEUTRAL PER NEC 225.33 (B).

GENERAL NOTES

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5. SAFE-OFF CONDUCTORS NOT BEING REUSED. DISCONNECT AT PANEL AND MARK BREAKER AS SPARE.
6. EXISTING EGRESS LIGHTS AND EXIT SIGNS TO REMAIN AS-IS.
7. DISCONNECT FROM (E) PHOTOCELL CONTROLS.



A
E2.1 SCALE: 1/16" = 1'-0"

**C Street Garage
 LED Retrofit Project**
 Sparks, Nevada 89431

REVISIONS

NO.	DESCRIPTION

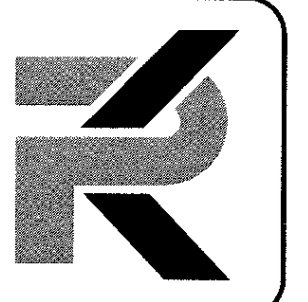
SHEET TITLE

ELECTRICAL PLAN ROOF
 LEVEL - VICTORIAN
 SQUARE GARAGE

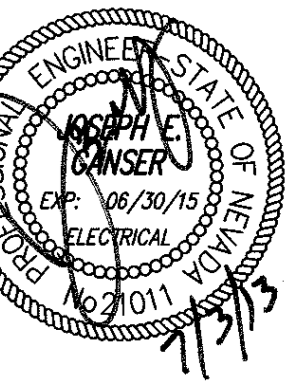
DRAWN:	SG
CHECKED:	JEG
DATE:	7/3/2018
JOB NUMBER:	13058
PROJECT MGR:	MSP

Approved: *Neil C. Krutz* Date: 7-12-18 Neil C. Krutz, P.E.
 Deputy City Manager for Community Services

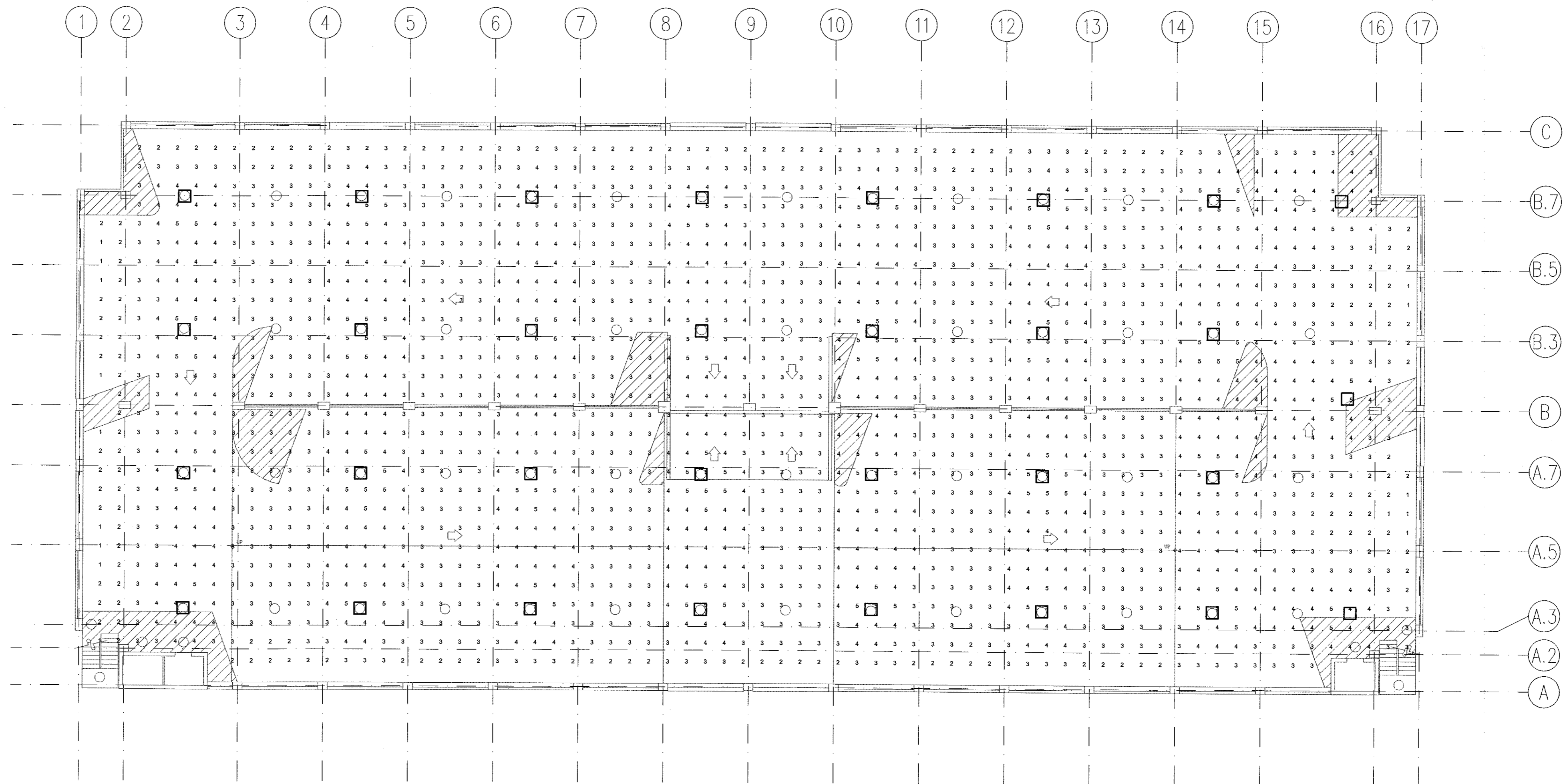
E2.1



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**C Street Garage
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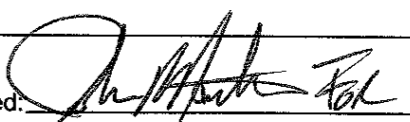
A LIGHTING CALCULATIONS C STREET GARAGE 2ND FLOOR (TYPICAL FLOOR) 
E3.1 SCALE: 1/16" = 1'-0"

REVISIONS

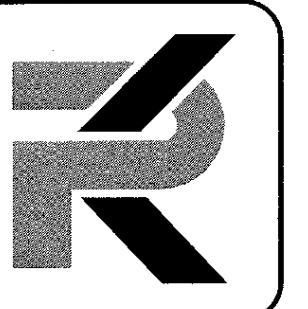
SHEET TITLE

LIGHTING CALCULATIONS
 C STREET GARAGE 2ND
 FLOOR (TYPICAL FLOOR)

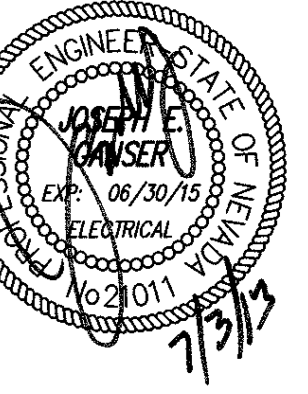
DRAWN:	SG
CHECKED:	JEG
DATE:	7/8/2013
JOB NUMBER:	13058
PROJECT MGR:	MSP

Approved:  Date: 7-12-13 Neil C. Krutz, P.E.
 Deputy City Manager for Community Services

E3.1

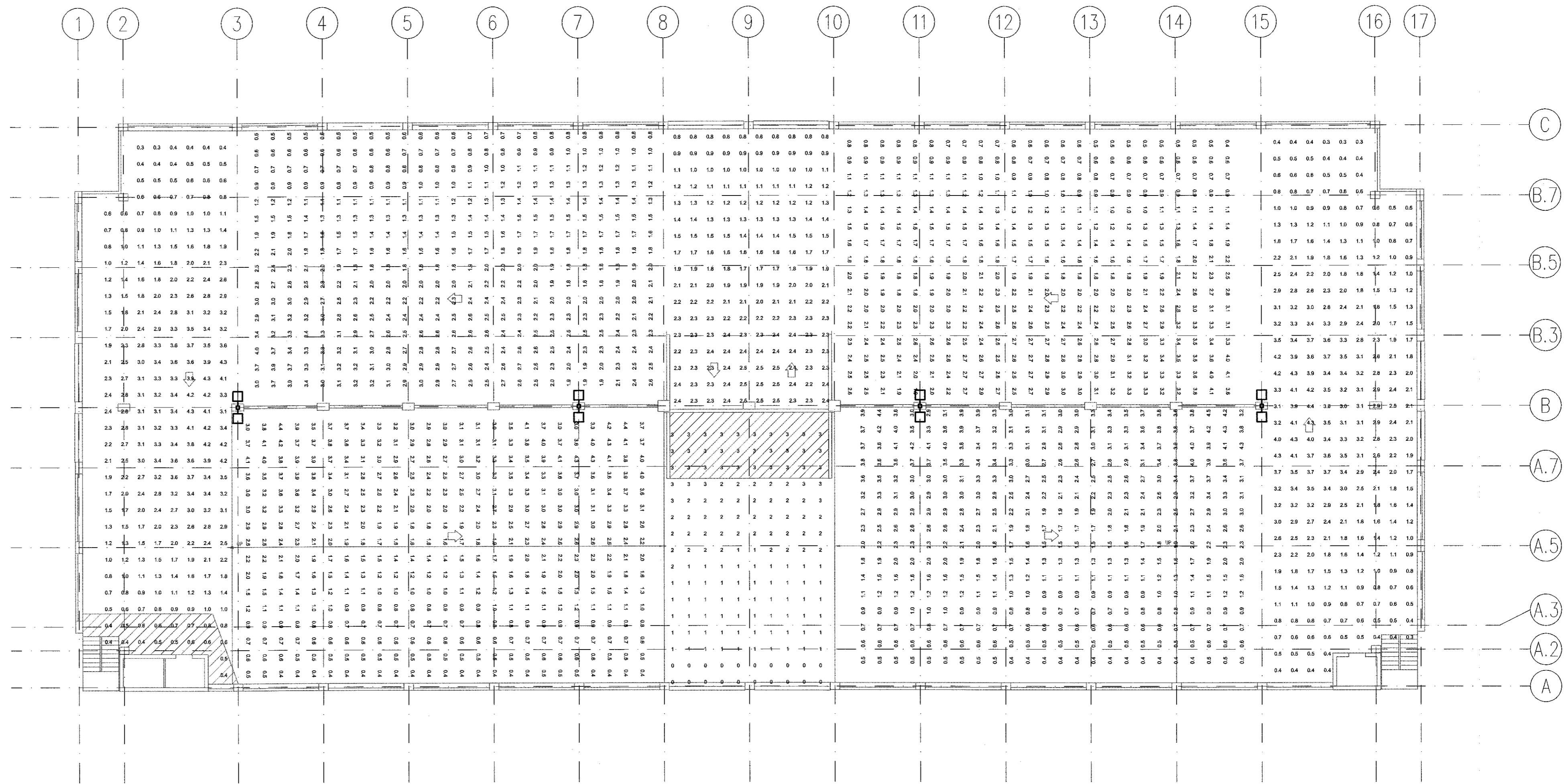


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**C Street Garage
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Sparks, Nevada 89431



A
E1.4 LIGHTING CALCULATIONS - C STREET GARAGE ROOF LEVEL

SCALE: 1/16" = 1'-0"

REVISIONS

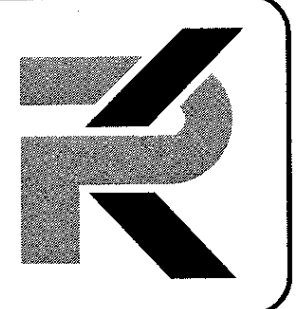
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LIGHTING CALCULATIONS
 C STREET GARAGE
 ROOF LEVEL

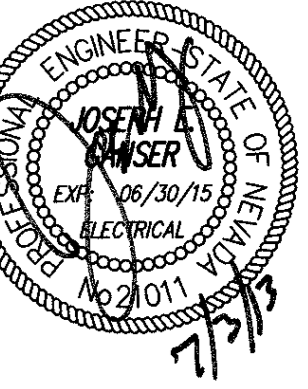
DRAWN: SG
 CHECKED: JES
 DATE: 7/3/2013
 JOB NUMBER: 13050
 PROJECT MGR: MSP

Approved: Date: 7.12.13 Neil C. Krutz, P.E.
 Deputy City Manager for Community Services

E3.2

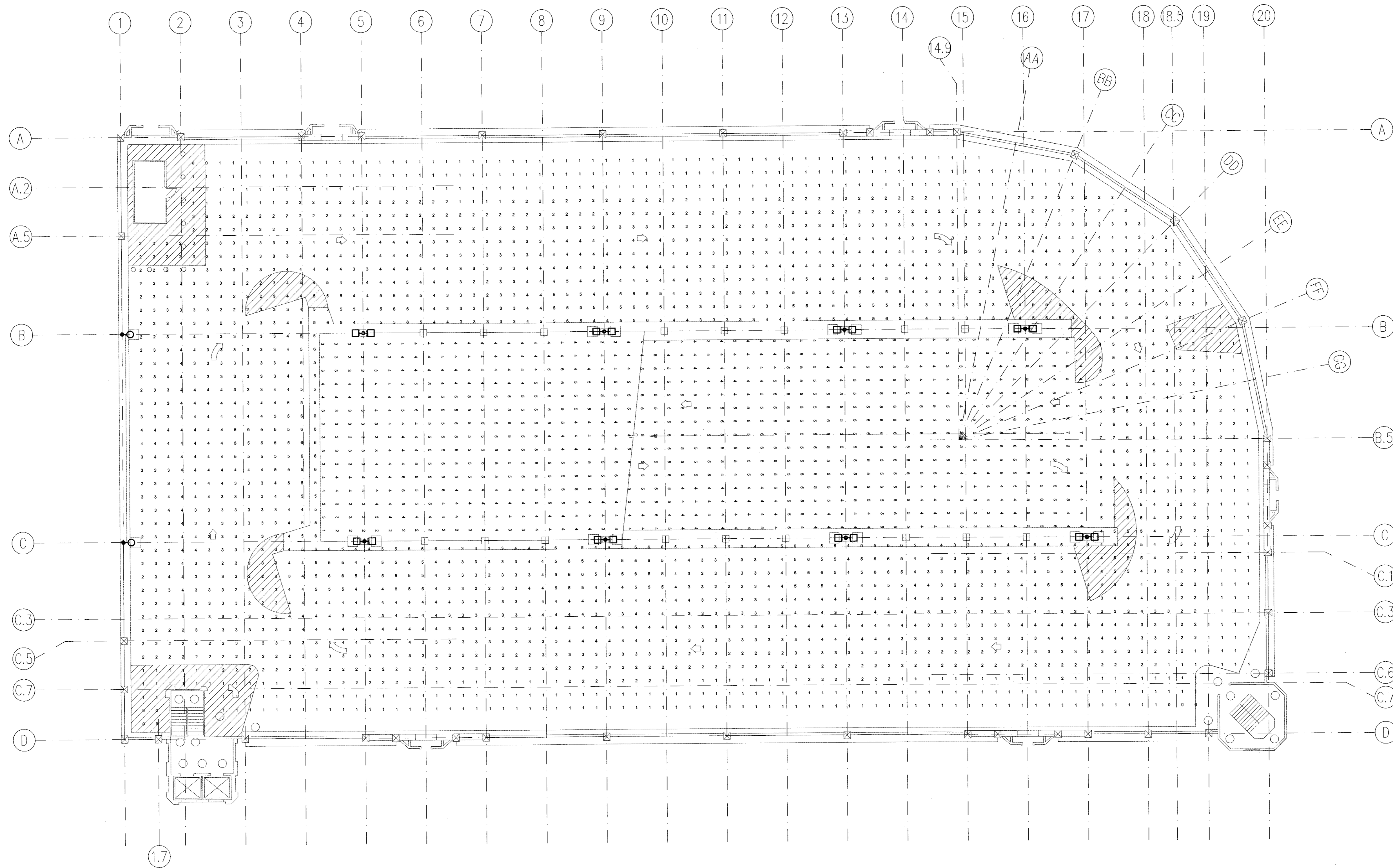


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**C Street Garage
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Sparks, Nevada 89431



A
E3.3 LIGHTING CALCULATIONS
 VICTORIAN SQUARE GARAGE ROOF LEVEL
 SCALE: 1/16" = 1'-0"

REVISIONS

NO.	DESCRIPTION

SHEET TITLE

LIGHTING CALCULATIONS
 VICTORIAN SQUARE
 GARAGE ROOF LEVEL

DRAWN:	SG
CHECKED:	JEG
DATE:	1/3/2013
JOB NUMBER:	13052
PROJECT MGR:	MSP

Approved: *Neil C. Krutz* Date: 7-12-13
 Deputy City Manager for Community Services

E3.3