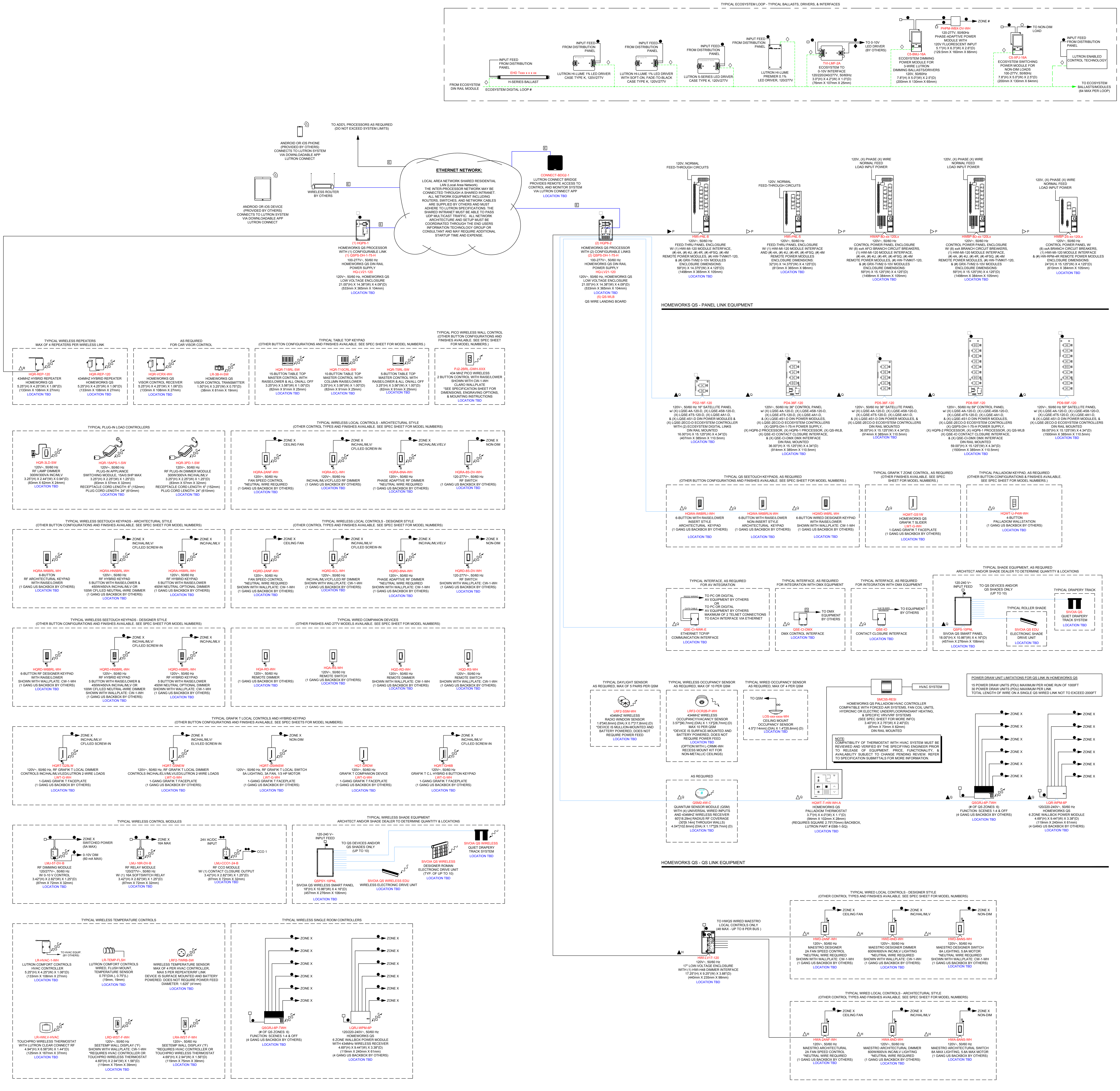

WIRING LEGEND:

Q QS CONTROL LINK (SEE WIRE DESCRIPTION BELOW)
Q QS CONTROL LINK (SEE WIRE DESCRIPTION BELOW) (CONNECT WIRES 1, 3 AND 4. DO NOT CONNECT WIRE # 2)
T THERMOSTAT CONTROL LINK (SEE WIRE DESCRIPTION BELOW) (CONNECT WIRES 1, 3 AND 4. DO NOT CONNECT WIRE # 2)

QS WIRING AS REQUIRED BY CONTROL LINK LENGTH
(REFER TO QS SMART PANEL POWER SUPPLY WIRING GUIDE FOR SHADE WIRING NOTES):

TOTAL CONTROL LINK LENGTH	WIRE GUAGE	AVAILABLE FROM LUTRON IN ONE CABLE:
LESS THAN 500ft (153 m)	POWER (TERMINALS 1&2): 1 PAIR 18 AWG (1.0 mm²)	GRX-CBL-346S OR GRX-PCBL-346S
	DATA (TERMINALS 3&4): 1 PAIR 22 AWG (0.5 mm²), TWISTED AND SHIELDED*	
500ft (153 m) TO 2,000ft (600 m)**	POWER (TERMINALS 1&2): 1 PAIR 12 AWG (4 mm²)	GRX-CBL-46L OR GRX-PCBL-46L
	DATA (TERMINALS 3&4): 1 PAIR 22 AWG (0.5 mm²), TWISTED AND SHIELDED*	

*ALTERNATE DATA-ONLY CABLE: USE APPROVED DATA LINK CABLE (22 AWG [0.5 mm²] TWISTED/SHIELDED) FROM BELDEN (MODEL # 9461).

**TOTAL LENGTH OF THE QS LINK MUST NOT EXCEED 2,000 ft (600 m).

R RF CONTROL LINK (SEE WIRE DESCRIPTION BELOW)
R RF CONTROL LINK (SEE WIRE DESCRIPTION BELOW) (CONNECT WIRES 1, 3 AND 4. DO NOT CONNECT WIRE # 2)

LUTRON CABLE GRX-CBL-46L (5 CONDUCTOR NON-PLENUM) OR GRX-PCBL-46L (5 CONDUCTOR PLENUM RATED). OTHERWISE USE 2 #12 AWG (4 mm²), 1 BELDEN #9461.

P PANEL LINK (SEE WIRE DESCRIPTION BELOW)
P PANEL LINK (SEE WIRE DESCRIPTION BELOW) (CONNECT WIRES 1, 3 AND 4. DO NOT CONNECT WIRE # 2)

LUTRON CABLE GRX-CBL-46L (5 CONDUCTOR NON-PLENUM) OR GRX-PCBL-46L (5 CONDUCTOR PLENUM RATED). OTHERWISE USE 2 #12 AWG (4 mm²), 1 BELDEN #9461.

H H48/Q96 LINK (SEE WIRE DESCRIPTION BELOW)
H H48/Q96 LINK (SEE WIRE DESCRIPTION BELOW) (CONNECT WIRES 1, 3 AND 4. DO NOT CONNECT WIRE # 2)

LUTRON CABLE GRX-CBL-46L (5 CONDUCTOR NON-PLENUM) OR GRX-PCBL-46L (5 CONDUCTOR PLENUM RATED). OTHERWISE USE 2 #12 AWG (4 mm²), 1 BELDEN #9461.

S

QS SMART PANEL POWER SUPPLY (QSPS-PX-10-60) SHADE WIRING GUIDE				
MAXIMUM DEVICES PER ONE OUTPUT		MAXIMUM DISTANCE PER ONE OUTPUT BASED ON WIRE GUAGE		
SHADES + CONTROLS		12 AWG (4 mm²) QSH-CBL-L-500 QSH-CBLP-L-500	16 AWG (1.5 mm²) QSH-CBL-M-500 QSH-CBLP-M-500	18 AWG (1.0 mm²) GRX-CBL-346S-500
1 SIVOIA QS SHADE OR DRAPERY	UP TO 1 POWER DRAW UNIT	500 ft (150 m)	200 ft (60 m)	125 ft (35 m)
2 SIVOIA QS ROLLER 64™, ≤ 30 ft² (2.75 m²) EACH		200 ft (60 m)	75 ft (20 m)	50 ft (15 m)
3 SIVOIA QS ROLLER 64™, ≤ 20 ft² (1.8 m²) EACH				
2 SIVOIA QS ROLLER 100™, ≤ 50 ft² (4.6 m²) EACH				

QS INDIVIDUAL POWER SUPPLY (QSPS-PX-1-50 OR QSPS-J-1-50) SHADE WIRING GUIDE				
MAXIMUM DEVICES PER ONE OUTPUT		MAXIMUM DISTANCE PER ONE OUTPUT BASED ON WIRE GUAGE		
SHADES + CONTROLS		12 AWG (4 mm²) QSH-CBL-L-500 QSH-CBLP-L-500	16 AWG (1.5 mm²) QSH-CBL-M-500 QSH-CBLP-M-500	18 AWG (1.0 mm²) GRX-CBL-346S-500
1 SIVOIA QS SHADE OR DRAPERY	UP TO 1 POWER DRAW UNIT	250 ft (75 m)	100 ft (30 m)	50 ft (15 m)

- INPUT POWER (NORMAL)
- 2 #12AWG (4 mm²)
- 3 #12AWG (4 mm²)
- 0-10V SIGNAL: 2 #18AWG (1.0 mm²)
- ECOSYSTEM BUS/LOOP: LUTRON CABLE C-CBL-216-GR-1 (2 #16 CONDUCTOR NON-PLENUM) OR C-PCBL-216-CL-1 (2 #16 CONDUCTOR PLENUM RATED). OTHERWISE USE 2 #16 AWG (1.5 mm²) BY OTHERS.
- E CAT5E OR BETTER CABLE FOR LUTRON NETWORK TERMINATED WITH RJ45 CONNECTORS (TO BE PROVIDED BY OTHERS). 328 ft (100 m) MAXIMUM RUN.
- 1-WAY RF COMMUNICATION
- 2-WAY RF COMMUNICATION
- 2 #18AWG (1.0 mm²)
- 3 #18AWG (1.0 mm²)
- LUTRON SENSOR CABLE C-CBL-522S OTHERWISE USE 3 #22 AWG (1.0 mm²)
- LUTRON SENSOR CABLE C-CBL-522S OTHERWISE USE 4 #22 AWG (1.0 mm²)
- D DMX CONTROL
- DALI LINK
- F FIBER OPTIC CABLE FOR LUTRON NETWORK TERMINATED WITH APPROPRIATE FIBER OPTIC CONNECTORS (TO BE PROVIDED BY OTHERS). NOTE: REQUIRES DEDICATED FIBER OPTIC LINK (SINGLE-MODE OR MULTI-MODE).

WIRING NOTES:

HWQS QS LINK RULES
THE FOLLOWING LINK RULES MUST BE OBSERVED FOR PROPER OPERATION:

- THIS IS A TOPOLOGY-FREE LINK (T-TAP, HOME-RUN, ETC. IS OK); REFER TO TABLE BELOW FOR WIRE RUN LIMITS.
- IF WIRED DIFFERENTLY THAN WHAT IS SHOWN, POWER DRAW UNIT REQUIREMENTS NEED TO BE CONFIRMED; SEE POWER DRAW UNITS (PDUs) SPECIFICATION SHEET INCLUDED IN THIS SUBMITTAL.
- MAXIMUM OF 512 OUTPUTS (BALLASTS, SHADES, CONTACT CLOSURES, ETC).
- MAXIMUM OF 100 OCCUPANCY SENSORS, 100 RADIO WINDOW SENSORS AND 100 KEYPADS.
- MAXIMUM OF 100 QS DEVICES (SUCH AS A GRAFIK EYE® QS, SEETOUCH® QS KEYPAD, SMART PANEL POWER SUPPLY [QSPS-Px-10-60], ESN, OR SIVOIA® QS SHADE / DRAPERY DRIVE UNIT). HWQS PROCESSOR COUNTS AS 1 DEVICE PER LINK.
- THE 10 OUTPUTS ON A QSPS-Px-10-60 CANNOT EXCEED A COMBINED LENGTH OF 2,000 ft (600 m).

HWQS WIRELESS LINK RULES
THE FOLLOWING LINK RULES MUST BE OBSERVED FOR PROPER OPERATION:

- 4 WIRELESS LINKS MAXIMUM
- 4 REPEATERS PER WIRELESS LINK
- 100 DEVICES PER WIRELESS LINK
- 100 SWITCH LEGS PER WIRELESS LINK
- 2500 FT2 (762 M2) COVERAGE PER REPEATER
- 30 FT (9 M) FROM ANY NON-REPEATER TO REPEATER
- 60 FT (18 M) BETWEEN REPEATERS
- DAISY CHAIN WIRE RUN BETWEEN PROCESSOR AND/OR REPEATERS CANNOT EXCEED 1000 FT (305 M)
- REPEATERS CAN BE WIRED TOGETHER, BUT MUST BE DAISY-CHAINED.

HWQS ECOSYSTEM BUS/LOOP RULES
THE FOLLOWING LOOP RULES MUST BE OBSERVED FOR PROPER OPERATION:

- THIS IS TOPOLOGY-FREE AND POLARITY FREE WIRING (T-TAP, HOME-RUN, ETC. IS OK).
- KEEP ALL THE BALLASTS/MODULES IN ONE ROOM ON THE SAME LOOP WHENEVER POSSIBLE.
- ECOSYSTEM LOOPS ARE SHOWN ON THE LIGHTING PLANS. IF THERE IS A DISCREPANCY, AND ROOMS ARE WIRED TO A DIFFERENT LOOP THAN THE ONE SHOWN, LUTRON NEEDS TO BE NOTIFIED. THIS INFORMATION IS IMPORTANT FOR PROGRAMMING THE SYSTEM.
- UP TO 64 BALLASTS/DRIVERS PER ECOSYSTEM LOOP

HWQS PANEL LINK RULES
THE FOLLOWING LINK RULES MUST BE OBSERVED FOR PROPER OPERATION:

- MI/SPI COMPATIBLE, CIRCUIT SELECTORS NOT SUPPORTED
- PANELS ARE DAISY-CHAINED ON ONE OF THE CONFIGURABLE LINKS PER LUTRON'S DRAWING, HOWEVER THEY DO NOT HAVE TO BE IN THE ORDER SHOWN.
- DO NOT HOME-RUN OR T-TAP THIS WIRING LINK. ALL CIRCUITS NEED TO BE LANDED IN THESE PANELS PER LUTRON'S PANEL SCHEDULES.
- IF A PANEL IS MOVED TO ANOTHER LINK, OR THE LOADS ARE NOT WIRED AS SHOWN IN LUTRON PANEL SCHEDULES, LUTRON MUST BE NOTIFIED. THIS INFORMATION IS IMPORTANT FOR PROGRAMMING THE SYSTEM.
- UP TO 16 MI/SPI PER LINK OR 256 SWITCH LEGS PER LINK, WHICHEVER IS REACHED FIRST
- LT-1 LINK TERMINATORS NEEDED ON EACH END OF THE LINK

H48/Q96 LINK RULES
THE FOLLOWING LINK RULES MUST BE OBSERVED FOR PROPER OPERATION:

- H48/Q96 LINK CANNOT EXCEED 1000 FT.
- A LINK TRANSLATOR MUST BE USED OVER 50FT. ONLY 1 TRANSLATOR REQUIRED PER LINK. IF A TRANSLATOR IS ADDED TO THE LINK, A LINK TERMINATOR (LT-1) WILL BE ERQUIRED AT THE FARTHEST INTERFACE BOARD FROM THE PROCESSOR.
- MAXIMUM OF 4 ADDRESSES, EACH H48 AND Q96 COUNT AS 1 ADDRESS. THESE DEVICES MUST BE DAISY-CHAINED.
- EACH H48 HAS 6 BUSSES WITH UP TO 8 DIMMERS PER BUS. BUS WIRING IS TYPOLOGY FREE (T-TAP, HOME-RUN, ETC. IS OK).
- EACH MAESTRO BUS MAY HAVE A MAXIMUM OF 500FT PER WIRE RUN, BUT MAY NOT EXCEED 1000FT.

PANEL(S) BASED ON ________________ DATED XX.XX.XX FROM ______________

CONCEPT DRAWING NOTES:
CONTROL SYSTEM DRAWING IS PROVIDED FOR CONCEPTUAL PURPOSES ONLY AND IS NOT INTENDED FOR CONSTRUCTION. EXACT EQUIPMENT REQUIREMENTS, INCLUDING LOCATIONS AND QUANTITIES, SHOULD BE VERIFIED IN ACCORDANCE WITH THE MOST UP-TO-DATE LIGHTING/ELECTRICAL REFLECTED CEILING PLANS, LIGHTING FIXTURE SCHEDULES, PANEL SCHEDULES, CONTROL INTENT AND SPECIFICATIONS. SHADE EQUIPMENT SHOULD BE VERIFIED IN ACCORDANCE WITH ARCHITECTURAL PLANS, SPECIFICATIONS AND WINDOW SCHEDULES/DETAILS.

LED DIMMING REQUIRES AN EXACT MATCH BETWEEN THE LED ARRAY, DRIVER AND CONTROL. LUTRON CANNOT GUARANTEE COMPATIBILITY OR PERFORMANCE WITHOUT TESTING THIS COMBINATION.

TO CONFIRM WHAT PRODUCTS LUTRON HAS AVAILABLE OR WHAT INTERFACES MAY BE REQUIRED, CALL 1-877-DIM-LED8 OR CHECK LUTRON'S PRODUCT COMPATIBILITY MATRIX ON-LINE AT WWW.LUTRON.COM/LED.

TO REQUEST THE TESTING OF AN LED PRODUCT BY LUTRON MANUFACTURERS CAN FILL OUT AN LED EVALUATION REQUEST FORM ON-LINE AT WWW.LUTRON.COM/LED OR CONTACT LEDS@LUTRON.COM.

LUTRON CAN GUARANTEE COMPATIBILITY AND PERFORMANCE OF LUTRON HI-LUME A-SERIES LED DRIVERS USED WITH APPROPRIATE LUTRON CONTROLS. THE HI-LUME A-SERIES LED DRIVER CAN BE USED ON PRODUCTS UNDER 40 WATTS WITH SUITABLE MOUNTING LOCATIONS. PLEASE REFER TO THE SPECIFICATION SUBMITTAL SHEET FOR FURTHER INFORMATION.

IF USING UNTESTED, NON-LUTRON LED DRIVERS REQUIRING 0-10V CONTROL, PERFORMANCE AND COMPATIBILITY CANNOT BE GUARANTEED BY LUTRON. PRODUCTS FOLLOWING THE IEC STANDARD 60929 ARE MORE LIKELY TO PROVIDE ACCEPTABLE PERFORMANCE RESULTS. DETERMINATION OF RESULT ACCEPTABILITY IS UP TO THE USER'S DISCRETION.

IF USING UNTESTED, NON-LUTRON LED DRIVERS REQUIRING PHASE CONTROL, PERFORMANCE AND COMPATIBILITY CANNOT BE GUARANTEED BY LUTRON. A-SERIES OR ELV PRODUCTS PROVIDING HIGH END AND LOW END TRIM ADJUSTMENTS ARE MORE LIKELY TO PROVIDE ACCEPTABLE PERFORMANCE RESULTS. DETERMINATION OF RESULT ACCEPTABILITY IS UP TO THE USER'S DISCRETION.

LUTRON NOTES:

ALL DIMMING BALLASTS TO BE LUTRON ECOSYSTEM, ECOSYSTEM H-SERIES, OR HI-LUME 3D TYPE.
ALL DIMMING DRIVERS TO BE LUTRON ECOSYSTEM DRIVER: A-SERIES; H-SERIES; OR 5-SERIES OTHERWISE NOTED.

E.E. TO CONFIRM ALL CIRCUITING REQUIREMENTS.

ARCHITECT TO VERIFY QUANTITY, LOCATION & FINISH OF ALL CONTROLS.

ALL FACEPLATES, DIMMERS, SWITCHES, RECEPTACLES & CABLE/PHONE JACKS TO BE LUTRON NOVA T*

LUTRON FIELD SERVICE COMMISSIONING INCLUDED IN ALL SYSTEMS INITIATES AN 2 YEAR LIMITED WARRANTY. THE ELECTRICAL CONTRACTOR MUST CONTACT LUTRON (1-844-588-7661) TO SET UP VISIT WITH 10 DAYS NOTICE.

HOMEWORKS QS TYPICAL ONE-LINE

LOCATION TBD

CONCEPT DRAWING NOT FOR CONSTRUCTION

Project Number:	#######
Drawn By:	CMT
Drawing Revision:	0
Drawing Date:	FALL 2017
Sheet:	1 OF 1

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