



CITY OF DULUTH
PURCHASING DIVISION
Room 100 City Hall
411 West First Street
Duluth, Minnesota 55802-1199
218/730-5340 218/730-5922 FAX
purchasing@duluthmn.gov

Addendum # 1
File # 16-0499 (REBID)
Energy Efficiency Lighting Project

An update to the specifications and drawings is attached.

Please acknowledge receipt of this Addendum by initialing and dating Addendum #1 below the bid form on the invitation for bids.

Posted: August 30, 2016

ADDENDUM

THE FOLLOWING DRAWINGS ARE
ATTACHED HERETO:

ADDENDUM NO. 1

PROJECT: City of Duluth Energy
Efficiency Lighting Project

G&M Project No. 84493

OWNER:
City of Duluth

DATE:
August 30, 2016

Sent from:

St. Paul Office
700 Rosedale Tower
1700 Highway 36 West
St. Paul, MN 55113
Phone: 651-639-9606
FAX: 651-639-9618

Duluth Office
Suite 310
501 South Lake Avenue
Duluth, MN 55802
Phone: 218-722-2555
FAX: 218-722-9306

Santa Clarita Office
Suite 205
26415 Carl Boyer Drive
Santa Clarita, CA 91350
Phone: 661-291-1978
FAX: 661-291-6213

To: Prime Contract Bidders and all others to whom the Project Manual and the Project Drawings have been issued by the Architect/Engineer or Contractor.

This Addendum is a Contract Document and may apply to any or all Contracts and subcontracts. Unless otherwise specified herein or shown on the attached drawings (if any), all work required by this Addendum shall be in complete accord with the Contract Documents and subsequent Addenda thereto.

The items listed in this Addendum are not in any order in regard to the Project Drawings or the Project Manual. All contractors are cautioned to examine each and every item of this Addendum.

The bidder shall insert the Addendum number in the space indicated on the Project Proposal Form. Failure to comply may result in the bid being rejected.

<u>ITEM</u>	<u>REFERENCE</u>	<u>CHANGE/COMMENTS</u>
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CHANGES TO ELECTRICAL SPECIFICATIONS

- | | | |
|----|---|--|
| 1. | Section 260943 Part
2-E-4 – Unit Costs | Revise unit costs to include the following:

NPN- One Year Support License: \$500.00

100127 -EMB900- S – RF Fixture Control Module: \$170.00

OEMFS305LU- PIR Motion Sensor: \$90.00

100106 – RF Photocell Sensor: \$190.00

Echelon 20001002 – Lumensight Desktop CMS Software: \$1975.00

100198- 120 – RF + PLC Network Integration Gateway with EIA
Enclosure: \$2475.00

100140 – RF Network Gateway with EIA Enclosure: \$1475.00 |
|----|---|--|

2. Section 260943 Part 2- E- 2 Replace '(One required per site)' with '(One or more required per site)'.

CHANGES TO ELECTRICAL DRAWINGS

1. Sheet E100
 - Add numbered notes 4 and 5 as shown clouded on plan.
 - Add occupancy sensors as shown clouded on plan.
 - Revise lighting control matrix as shown clouded on plan.
 - Revise numbered note 1 as shown clouded on plan.
2. Sheets E101
 - Add numbered note 6 as shown clouded on plan.
 - Add occupancy sensors as shown clouded on plan.
 - Revise lighting control matrix as shown clouded on plan.
 - Revise numbered notes 1 and 2 as shown clouded on plan.
3. Sheet E102
 - Add numbered notes 5 and 6 as shown clouded on plan.
 - Add occupancy sensors as shown clouded on plan.
 - Revise lighting control matrix as shown clouded on plan.
 - Revise numbered notes 1 and 2 as shown clouded on plan.
4. Sheet E103
 - Add numbered notes 5 and 6 as shown clouded on plan.
 - Add occupancy sensors as shown clouded on plan.
 - Revise lighting control matrix as shown clouded on plan.
 - Revise numbered notes 1 and 2 as shown clouded on plan.
5. Sheet E104
 - Add numbered notes 2, 3 and 4 as shown clouded on plan.
 - Add occupancy sensors as shown clouded on plan.
 - Revise numbered note 1 as shown clouded on plan.
 - Revise lighting control matrix as shown clouded on plan.

6. Sheet E105
 - Add numbered notes 4 and 5 as shown clouded on plan.
 - Add occupancy sensors as shown clouded on plan.
 - Revise lighting control matrix as shown clouded on plan.
 - Revise numbered note 1 as shown clouded on plan.
7. Sheet E106
 - Add numbered note 7 as shown clouded on plan.
 - Add occupancy sensors as shown clouded on plan.
 - Revise lighting control matrix as shown clouded on plan.
 - Revise numbered notes 1 and 2 as shown clouded on plan.
8. Sheet E107
 - Add numbered notes 5 and 6 as shown clouded on plan.
 - Add occupancy sensors as shown clouded on plan.
 - Revise lighting control matrix as shown clouded on plan.
 - Revise numbered notes 1 and 2 as shown clouded on plan.
9. Sheet E108
 - Add numbered notes 5 and 6 as shown clouded on plan.
 - Add occupancy sensors as shown clouded on plan.
 - Revise lighting control matrix as shown clouded on plan.
 - Revise numbered notes 1 and 2 as shown clouded on plan.
10. Sheet E109
 - Add numbered notes 5 and 6 as shown clouded on plan.
 - Add occupancy sensors as shown clouded on plan.
 - Revise lighting control matrix as shown clouded on plan.
 - Revise numbered notes 1 and 2 as shown clouded on plan.

11. Sheet E110
 - Add numbered notes 2, 3 and 4 as shown clouded on plan.
 - Add occupancy sensors as shown clouded on plan.
 - Revise lighting control matrix as shown clouded on plan.
 - Revise numbered note 1 as shown clouded on plan.
12. Sheet E111
 - Add numbered notes 4 and 5 as shown clouded on plan.
 - Add occupancy sensors as shown clouded on plan.
 - Revise lighting control matrix as shown clouded on plan.
 - Revise numbered note 1 as shown clouded on plan.

13. Sheet E112
- Revise numbered note 3 as follows:

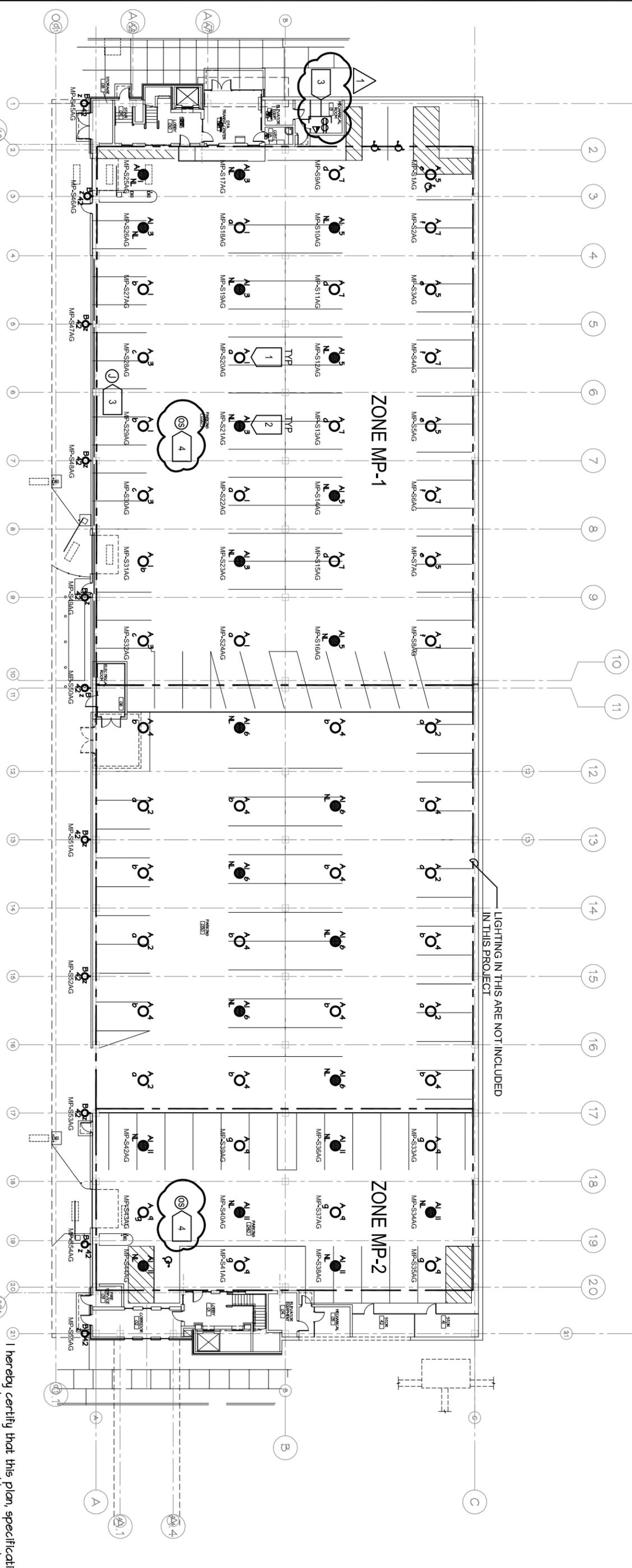
‘Provide lighting control bridge device as required to interconnect multiple services as required. Contractor to field verify location and quantity of services feeding lighting in this area.’

LIGHTING CONTROL MATRIX

SYSTEM INPUTS	SYSTEM OUTPUTS			
	CONTROLLED BY WIRELESS OCCUPANCY SENSOR	CONTROLLED BY LOCAL PHOTOCELL DEVICE	CONTROLLED BY A SET TIME ON/OFF	CONTROLLED BY INTEGRAL/EXTERNAL CONTROL MODULE
ZONE 1-MP (Z1)	•	•	•	•
ZONE 2-MP (Z2)	•	•	•	•

GROUND LEVEL OVERALL LIGHTING AND CONTROL PLAN

E100 SCALE: 0' = 32'



GENERAL NOTES:

- A TYPICAL, DISCONNECT AND REMOVE EXISTING LIGHTING CONTROLS ASSOCIATED WITH TYPE 'A' AND 'A1' LIGHT FIXTURES. LIGHTING CONTROLS TO REMAIN FOR ALL OTHER LIGHTING ASSOCIATED WITH PARKING RAMP BUILDING.
- B TYPICAL, REPLACE LIGHT FIXTURE TYPES 'A', 'A1' AND 'B' WITH OWNER FURNISHED LED TYPE GARAGE STYLE FIXTURE. REFER TO LIGHT FIXTURE SCHEDULE INCLUDED IN SPECIFICATION.
- C EXISTING CIRCUITS AND/OR SWITCHING SHOWN FOR REFERENCE ONLY. FIELD VERIFY EXISTING CONDITIONS PRIOR TO WORK.
- D THIS PROJECT INCLUDES LIGHTING AND ASSOCIATED CONTROLS. MISCELLANEOUS ELECTRICAL ITEMS SHOWN ARE NOT PART OF THIS PROJECT SCOPE AND ARE SHOWN FOR REFERENCE ONLY UNLESS NOTED OTHERWISE.

NUMBERED NOTES:

- 1 PROVIDE WIRELESS CONTROL MODULE MOUNTED EXTERNAL TO EACH TYPE 'A' OR 'A1' LIGHT FIXTURE AS MANUFACTURED BY ECHOLON CONTROLS LUMEWAVE SERIES OR APPROVED EQUIVALENT.
- 2 TYPICAL, RECORD DRAWINGS INDICATE 'NL' FIXTURES TO BE ON A NIGHT LIGHT CIRCUIT. UNLESS NOTED OTHERWISE, CONTROL THESE LIGHTS WITH OTHER LIGHTS IN THE SAME ZONE.
- 3 PROVIDE WIRELESS PHOTOCELL AS MANUFACTURED BY ACUTTY BRANDS CONTROLS OR APPROVED EQUIVALENT. VERIFY EXACT LOCATION PRIOR TO INSTALLATION.
- 4 PROVIDE WIRELESS OCCUPANCY SENSOR(S) ASSOCIATED WITH RESPECTIVE ZONE(S) FOR CONTROL. COORDINATE EXACT LOCATION AND QUANTITIES WITH LIGHTING CONTROL MANUFACTURER.
- 5 PROVIDE DEDICATED 120V, 20A QUAD RECEPTACLE (CONNECTED TO NEAREST 120/208V PANEL WITH 20A SPARE BREAKER) AND VOICE/DATA OUTLET FOR WIRELESS LIGHTING CONTROL SYSTEM GATEWAY (ECHOLON LUMEWAVE SYSTEM). VERIFY EXACT LOCATION OF GATEWAYS WITH OWNER PRIOR TO ROUGH-IN.

LIGHTING IN THIS ARE NOT INCLUDED IN THIS PROJECT



ADDENDUM #1 - 08/30/16 Date: 07/22/2016 Reg No: 246711

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota

Dave T. Blume

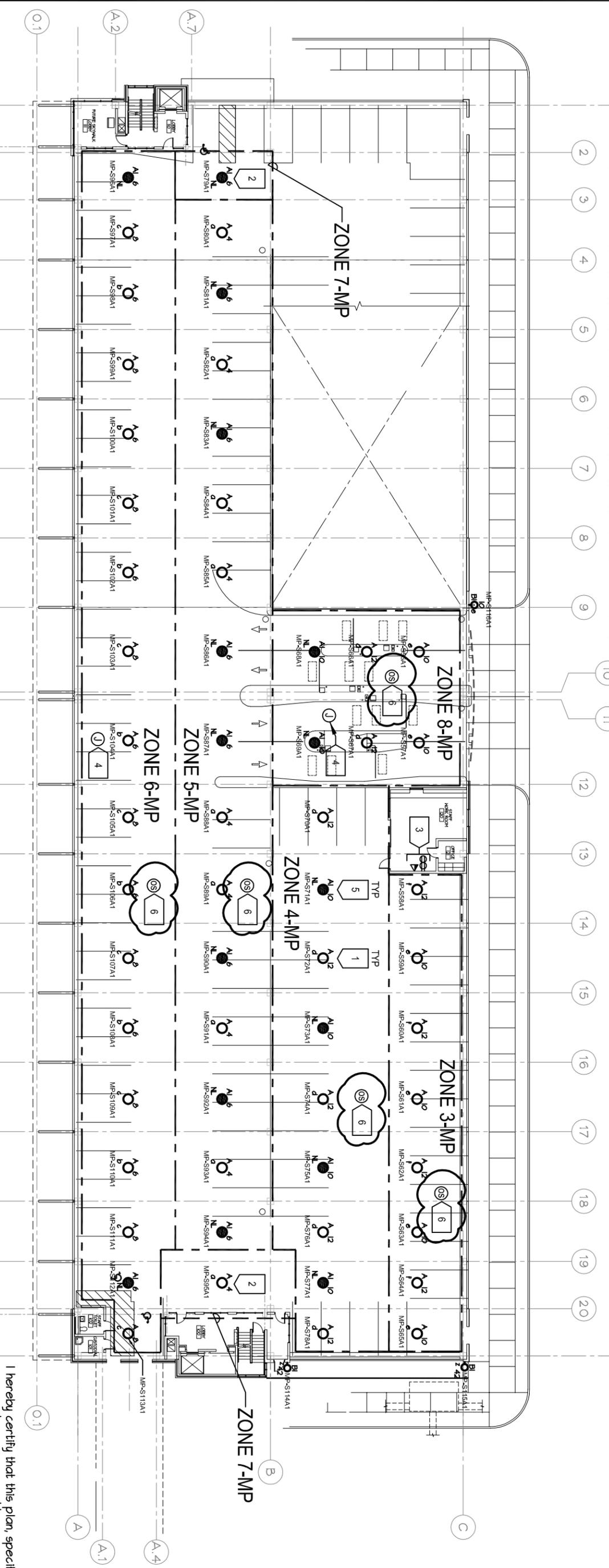
Dave T. Blume

LIGHTING CONTROL MATRIX

SYSTEM INPUTS	SYSTEM OUTPUTS							
	CONTROLLED BY WIRELESS OCCUPANCY SENSOR(S)				CONTROLLED BY LOCAL PHOTOCELL DEVICE			
	NIGHT LIGHT ON 24/7							
	CONTROLLED BY WIRELESS INTEGRAL EXTERNAL CONTROL MODULE							
ZONE 3-MP (Z3)								
ZONE 4-MP (Z4)								
ZONE 5-MP (Z5)								
ZONE 6-MP (Z6)								
ZONE 7-MP (Z7)								
ZONE 8-MP (Z8)								

FIRST LEVEL OVERALL LIGHTING AND CONTROL PLAN

SCALE: 0' = 32'



GENERAL NOTES:

- A TYPICAL, DISCONNECT AND REMOVE EXISTING LIGHTING CONTROLS ASSOCIATED WITH TYPE 'A' AND 'A1' LIGHT FIXTURES. LIGHTING CONTROLS TO REMAIN FOR ALL OTHER LIGHTING ASSOCIATED WITH PARKING RAMP BUILDING.
- B TYPICAL, REPLACE LIGHT FIXTURE TYPES 'A', 'A1' AND 'B1' WITH OWNER FURNISHED LED TYPE GARAGE STYLE FIXTURE. REFER TO LIGHT FIXTURE SCHEDULE INCLUDED IN SPECIFICATION.
- C EXISTING CIRCUITS AND/OR SWITCHING SHOWN FOR REFERENCE ONLY. FIELD VERIFY EXISTING CONDITIONS PRIOR TO WORK.
- D THIS PROJECT INCLUDES LIGHTING AND ASSOCIATED CONTROLS. MISCELLANEOUS ELECTRICAL ITEMS SHOWN ARE NOT PART OF THIS PROJECT SCOPE AND ARE SHOWN FOR REFERENCE ONLY UNLESS NOTED OTHERWISE.

NUMBERED NOTES:

- 1 PROVIDE WIRELESS CONTROL MODULE MOUNTED EXTERNAL TO EACH TYPE 'A' OR 'A1' LIGHT FIXTURE AS MANUFACTURED BY ECHELON CONTROLS LUMEWAVE SERIES OR APPROVED EQUIVALENT.
- 2 PROVIDE WIRELESS CONTROL MODULE MOUNTED EXTERNAL TO EACH TYPE 'A' OR 'A1' LIGHT FIXTURE FOR 24/7 OPERATION AS MANUFACTURED BY ECHELON CONTROLS LUMEWAVE SERIES OR APPROVED EQUIVALENT.
- 3 PROVIDE DEDICATED 120V, 20A QUAD RECEPTACLE (CONNECTED TO NEAREST 120/208V PANEL WITH 20A SPARE BREAKER) AND VOICEDATA OUTLET FOR WIRELESS LIGHTING CONTROL SYSTEM GATEWAY (ECHELON LUMEWAVE SYSTEM). VERIFY EXACT LOCATION OF GATEWAYS WITH OWNER PRIOR TO ROUGH-IN.
- 4 PROVIDE WIRELESS PHOTOCELL AS MANUFACTURED BY ECHELON CONTROLS LUMEWAVE SERIES OR APPROVED EQUIVALENT. VERIFY EXACT LOCATION PRIOR TO INSTALLATION.
- 5 TYPICAL, RECORD DRAWINGS INDICATE 'NL' FIXTURES TO BE ON A NIGHT LIGHT CIRCUIT. UNLESS NOTED OTHERWISE, CONTROL THESE LIGHTS WITH OTHER LIGHTS IN THE SAME ZONE.
- 6 PROVIDE WIRELESS OCCUPANCY SENSOR(S) ASSOCIATED WITH RESPECTIVE ZONE(S) FOR CONTROL. COORDINATE EXACT LOCATION AND QUANTITIES WITH LIGHTING CONTROL MANUFACTURER.

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly licensed Professional Engineer under the laws of the State of Minnesota

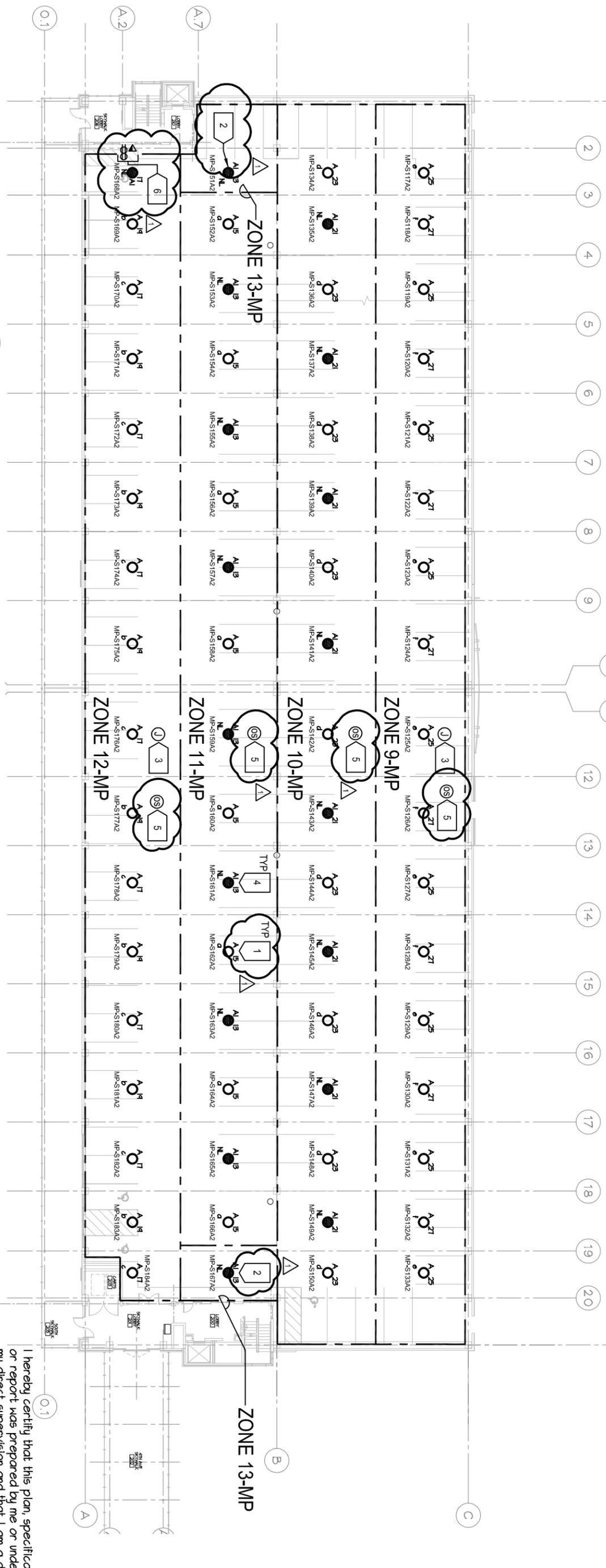
Dave T. Blume

Date: 07/22/2016 Reg No: 246711

LIGHTING CONTROL MATRIX

SYSTEM INPUTS	SYSTEM OUTPUTS		
	CONTROLLED BY WIRELESS OCCUPANCY SENSOR(S)	CONTROLLED BY LOCAL PHOTOCELL DEVICE	CONTROLLED BY WIRELESS INTEGRAL/EXTERNAL CONTROL MODULE
ZONE 9-MP (Z10)	•	•	•
ZONE 11-MP (Z11)	•	•	•
ZONE 12-MP (Z12)	•	•	•
ZONE 13-MP (Z13)	•	•	•

- GENERAL NOTES:**
- DISCONNECT AND REMOVE EXISTING LIGHTING CONTROLS ASSOCIATED WITH TYPE 'A' AND 'A1' LIGHT FIXTURES. LIGHTING CONTROLS TO REMAIN FOR ALL OTHER LIGHTING ASSOCIATED WITH PARKING RAMP BUILDING.
 - REPLACE LIGHT FIXTURE TYPES 'A' AND 'A1' WITH OWNER FURNISHED LED TYPE GARAGE STYLE FIXTURE. REFER TO LIGHT FIXTURE SCHEDULE INCLUDED IN SPECIFICATION.
 - EXISTING CIRCUITS AND/OR SWITCHING SHOWN FOR REFERENCE ONLY. FIELD VERIFY EXISTING CONDITIONS PRIOR TO WORK.
 - THIS PROJECT INCLUDES LIGHTING AND ASSOCIATED CONTROLS. MISCELLANEOUS ELECTRICAL ITEMS SHOWN ARE NOT PART OF THIS PROJECT SCOPE AND ARE SHOWN FOR REFERENCE ONLY UNLESS NOTED OTHERWISE.
- NUMBERED NOTES:**
- PROVIDE WIRELESS CONTROL MODULE MOUNTED EXTERNAL TO EACH TYPE 'A' OR 'A1' LIGHT FIXTURE AS MANUFACTURED BY ECHHELON CONTROLS LUMEWAVE SERIES OR APPROVED EQUIVALENT.
 - PROVIDE WIRELESS CONTROL MODULE MOUNTED EXTERNAL TO EACH TYPE 'A' OR 'A1' LIGHT FIXTURE FOR 24/7 NL OPERATION AS MANUFACTURED BY ECHHELON CONTROLS LUMEWAVE SERIES OR APPROVED EQUIVALENT.
 - PROVIDE WIRELESS PHOTOCELL AS MANUFACTURED BY ECHHELON CONTROLS LUMEWAVE SERIES OR APPROVED EQUIVALENT. VERIFY EXACT LOCATION PRIOR TO INSTALLATION.
 - TYPICAL. ALL FIXTURES INDICATED WITH 'NL' WILL NOT BE NIGHT LIGHTS UNLESS NOTED OTHERWISE.
 - PROVIDE WIRELESS OCCUPANCY SENSOR(S) ASSOCIATED WITH RESPECTIVE ZONE(S) FOR CONTROL. COORDINATE EXACT LOCATION AND QUANTITIES WITH LIGHTING CONTROL MANUFACTURER.
 - PROVIDE DEDICATED 120V, 20A QUAD RECEPTACLE (CONNECTED TO NEAREST 120/208V PANEL WITH 20A SPARE BREAKER) AND VOICE/DATA OUTLET FOR WIRELESS LIGHTING CONTROL SYSTEM GATEWAY (ECHHELON LUMEWAVE SYSTEM). VERIFY EXACT LOCATION OF GATEWAYS WITH OWNER PRIOR TO ROUGH-IN.



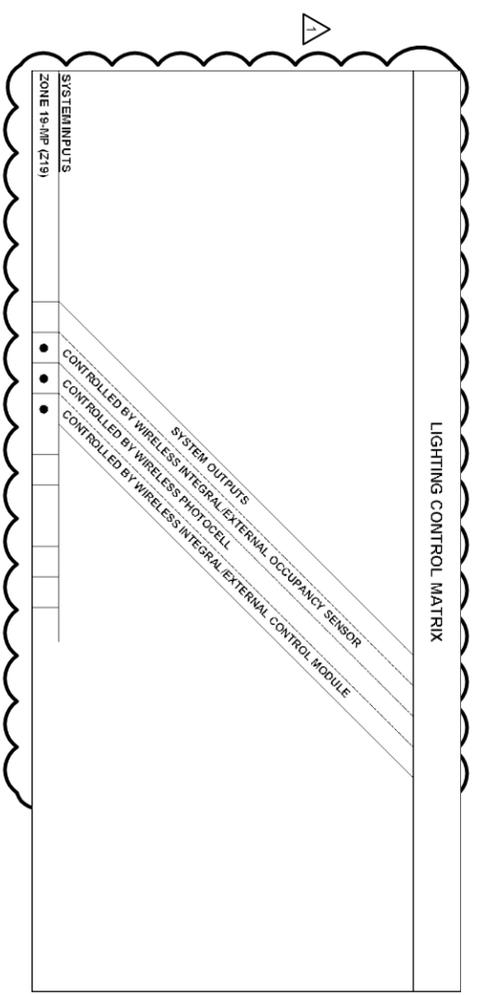
1 SECOND LEVEL OVERALL LIGHTING AND CONTROL PLAN

SCALE: 0' = 32'

APPENDUM # - 08/30/16
 Dave T. Blume
 Date: 07/22/2016 Reg No: 246711

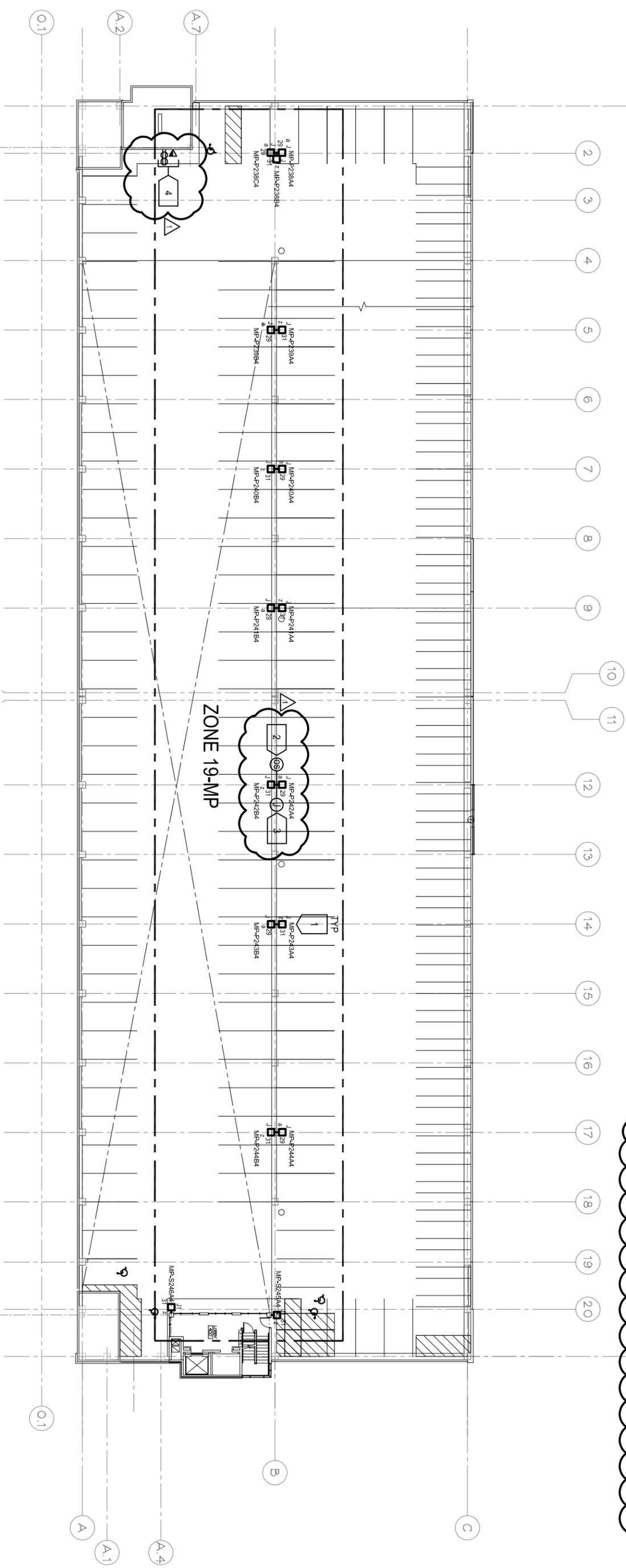
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Dave T. Blume



- GENERAL NOTES:**
- A DISCONNECT AND REMOVE EXISTING LIGHTING CONTROLS ASSOCIATED WITH TYPES 'J' AND 'J1' LIGHT FIXTURES. LIGHTING CONTROLS TO REMAIN FOR ALL OTHER LIGHTING ASSOCIATED WITH PARKING RAMP BUILDING.
 - B LIGHT FIXTURE TYPES 'J' AND 'J1' TO BE REPLACED WITH OWNER FURNISHED LED TYPE POLE MOUNTED FIXTURE, REFER TO LIGHT FIXTURE SCHEDULE INCLUDED IN SPECIFICATION.
 - C EXISTING CIRCUITS AND/OR SWITCHING SHOWN FOR REFERENCE ONLY. FIELD VERIFY EXISTING CONDITIONS PRIOR TO WORK.
 - D THIS PROJECT INCLUDES LIGHTING AND ASSOCIATED CONTROLS. MISCELLANEOUS ELECTRICAL ITEMS SHOWN ARE NOT PART OF THIS PROJECT SCOPE AND ARE SHOWN FOR REFERENCE ONLY UNLESS NOTED OTHERWISE.

- NUMBERED NOTES:**
- 1 PROVIDE WIRELESS CONTROL MODULE MOUNTED EXTERNAL TO EACH TYPE 'J' OR 'J1' LIGHT FIXTURE AS MANUFACTURED BY ECHELON CONTROLS LUMEWAVE SERIES OR APPROVED EQUIVALENT.
 - 2 PROVIDE WIRELESS OR HARD-WIRED OCCUPANCY SENSOR(S) ASSOCIATED WITH RESPECTIVE ZONE(S) FOR CONTROL AS MANUFACTURED BY ECHELON CONTROLS OR APPROVED EQUIVALENT. COORDINATE EXACT LOCATION AND QUANTITIES WITH LIGHTING CONTROL MANUFACTURER.
 - 3 PROVIDE WIRELESS PHOTOCELL AS MANUFACTURED BY ECHELON CONTROLS LUMEWAVE SERIES OR APPROVED EQUIVALENT. VERIFY EXACT LOCATION PRIOR TO INSTALLATION.
 - 4 PROVIDE DEDICATED 120V, 20A QUAD RECEPTACLE (CONNECTED TO NEAREST 120/208V PANEL WITH 20A SPARE BREAKER) AND VOICEDATA OUTLET FOR WIRELESS LIGHTING CONTROL SYSTEM GATEWAY (ECHELON LUMEWAVE SYSTEM). VERIFY EXACT LOCATION OF GATEWAYS WITH OWNER PRIOR TO ROUGH-IN.



1 FOURTH LEVEL OVERALL LIGHTING AND CONTROL PLAN
 E104 SCALE: 0' = 32'

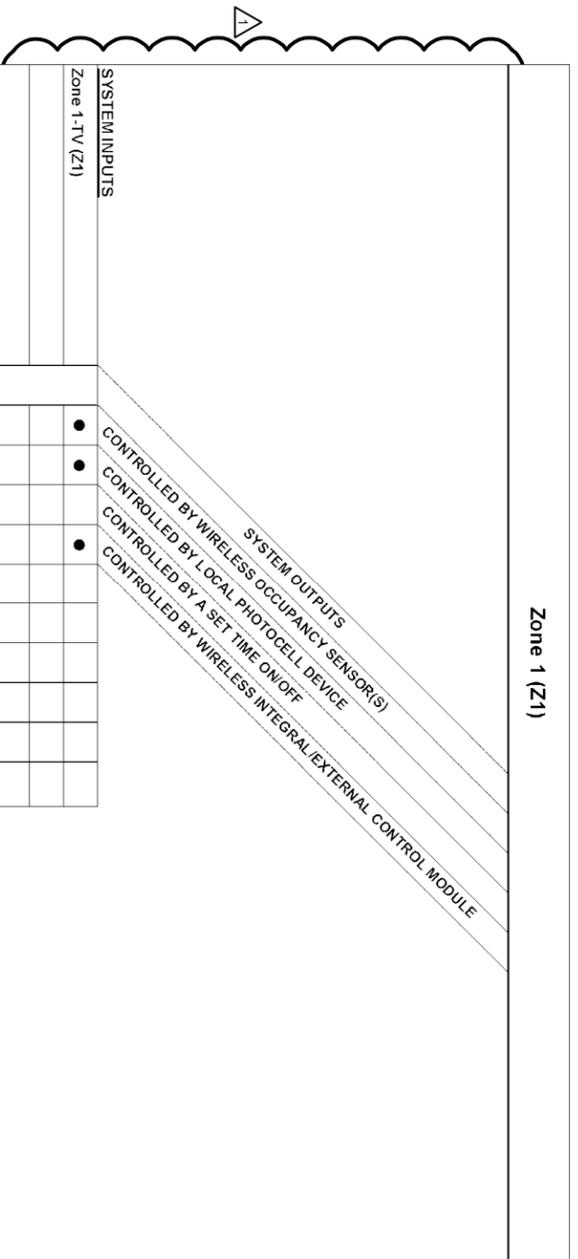
1 ADDENDUM # - 08/30/16

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Dave T. Blume

Date: 07/22/2016 Reg No. 246711

Zone 1 (Z1)

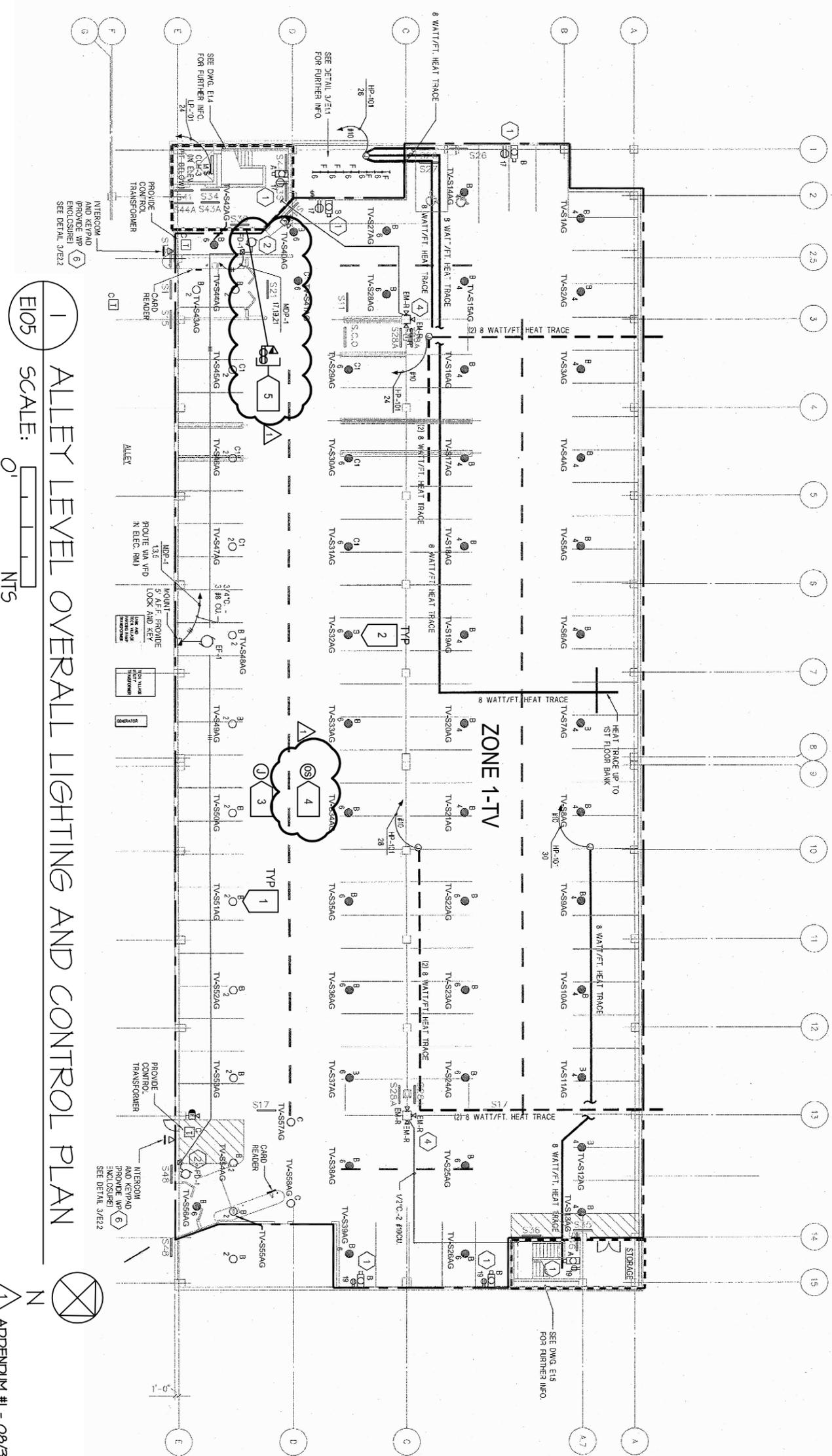


GENERAL NOTES:

- A DISCONNECT AND REMOVE EXISTING LIGHTING CONTROLS ASSOCIATED WITH TYPE 'B', 'C' AND 'C1' LIGHT FIXTURES. LIGHTING CONTROLS TO REMAIN FOR ALL OTHER LIGHTING ASSOCIATED WITH PARKING RAMP BUILDING.
- B REPLACE LIGHT FIXTURE TYPES 'B', 'C' AND 'C1' WITH OWNER FURNISHED LED TYPE GARAGE STYLE FIXTURE. REFER TO LIGHT FIXTURE SCHEDULE INCLUDED IN SPECIFICATION.
- C EXISTING CIRCUITS AND/OR SWITCHING SHOWN FOR REFERENCE ONLY. FIELD VERIFY EXISTING CONDITIONS PRIOR TO WORK.
- D THIS PROJECT INCLUDES LIGHTING AND ASSOCIATED CONTROLS. MISCELLANEOUS ELECTRICAL ITEMS SHOWN ARE NOT PART OF THIS PROJECT SCOPE AND ARE SHOWN FOR REFERENCE ONLY UNLESS NOTED OTHERWISE.

NUMBERED NOTES:

- 1 PROVIDE WIRELESS CONTROL MODULE MOUNTED EXTERNAL TO EACH TYPE 'B', 'C' OR 'C1' LIGHT FIXTURE AS MANUFACTURED BY ECHELON CONTROLS LUMEWAVE SERIES OR APPROVED EQUIVALENT.
- 2 TYPICAL. RECORD DRAWINGS INDICATE SHADED FIXTURES TO BE ON A NIGHT LIGHT CIRCUIT. UNLESS NOTED OTHERWISE, CONTROL THESE LIGHTS WITH OTHER LIGHTS IN THE SAME ZONE.
- 3 PROVIDE WIRELESS PHOTOCELL AS MANUFACTURED BY ECHELON CONTROLS LUMEWAVE SERIES OR APPROVED EQUIVALENT. VERIFY EXACT LOCATION PRIOR TO INSTALLATION.
- 4 PROVIDE WIRELESS OCCUPANCY SENSOR(S) ASSOCIATED WITH RESPECTIVE ZONE(S) FOR CONTROL AS MANUFACTURED BY ECHELON, LUMEWAVE SERIES OR APPROVED EQUIVALENT. COORDINATE EXACT LOCATION AND QUANTITIES WITH LIGHTING CONTROL MANUFACTURER.
- 5 PROVIDE DEDICATED 120V, 20A QUAD RECEPTACLE (CONNECTED TO NEAREST 120/208V PANEL WITH 20A SPARE BREAKER) AND VOICEDATA OUTLET FOR WIRELESS LIGHTING CONTROL SYSTEM GATEWAY (ECHELON LUMEWAVE SYSTEM). VERIFY EXACT LOCATION OF GATEWAYS WITH OWNER PRIOR TO ROUGH-IN.



ALLEY LEVEL OVERALL LIGHTING AND CONTROL PLAN

SCALE: 0' NTS

E105

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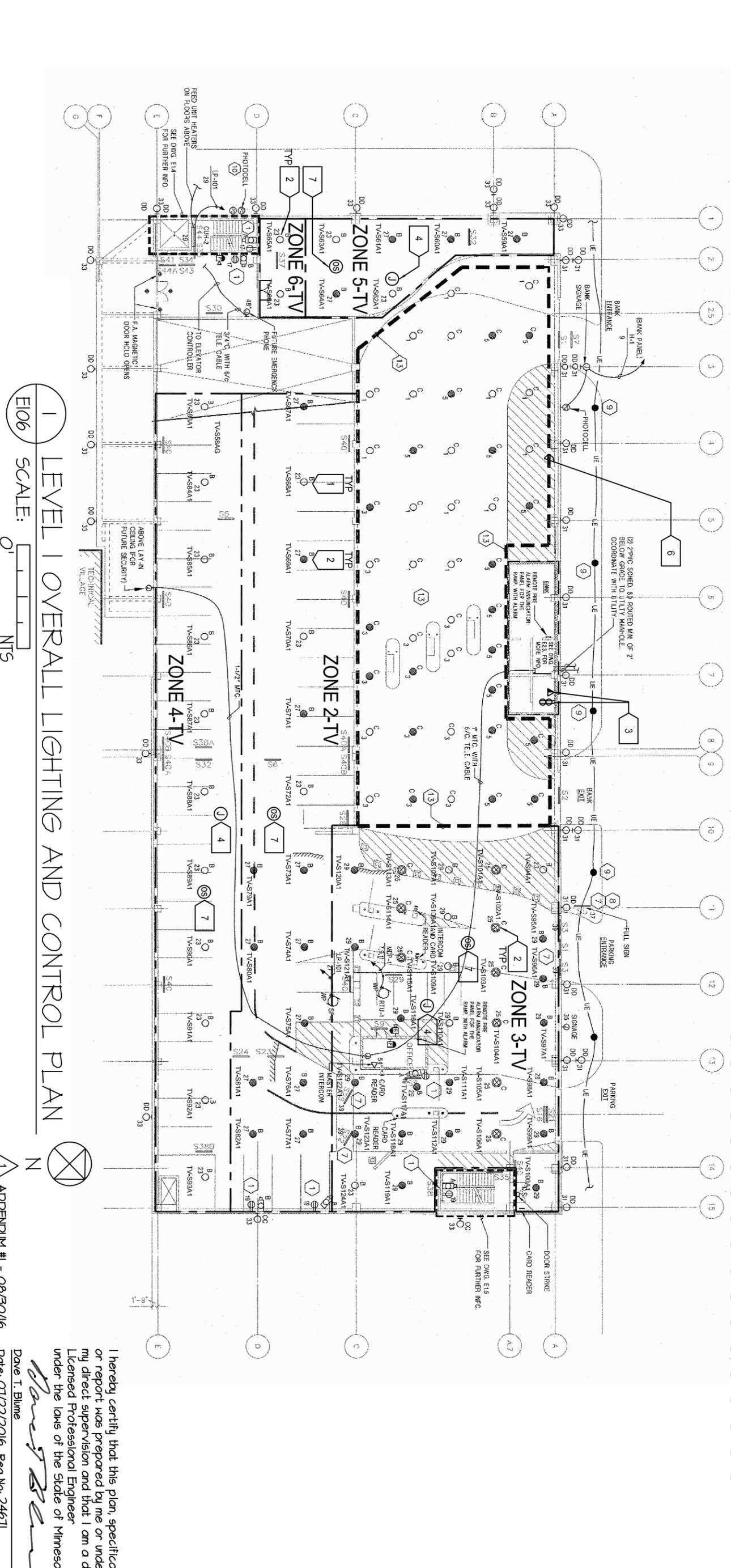
Dave T. Blume

Date: 07/22/2016 Reg No. 246711

LIGHTING CONTROL MATRIX	
SYSTEM INPUTS	SYSTEM OUTPUTS
ZONE 2-TV (Z2)	CONTROLLED BY WIRELESS OCCUPANCY SENSOR(S)
ZONE 3-TV (Z3)	CONTROLLED BY LOCAL PHOTOCELL DEVICE
ZONE 4-TV (Z4)	CONTROLLED BY A SET TIME ON/OFF
ZONE 5-TV (Z5)	NIGHT LIGHT ON 24/7
ZONE 6-TV (Z6)	CONTROLLED BY WIRELESS INTEGRAL EXTERNAL CONTROL MODULE

- GENERAL NOTES:**
- DISCONNECT AND REMOVE EXISTING LIGHTING CONTROLS ASSOCIATED WITH TYPE 'B' AND 'C' LIGHT FIXTURES. LIGHTING CONTROLS TO REMAIN FOR ALL OTHER LIGHTING ASSOCIATED WITH PARKING RAMP BUILDING.
 - REPLACE LIGHT FIXTURE TYPES 'B' AND 'C' WITH OWNER FURNISHED LED TYPE GARAGE STYLE FIXTURE. REFER TO LIGHT FIXTURE SCHEDULE INCLUDED IN SPECIFICATION.
 - EXISTING CIRCUITS AND/OR SWITCHING SHOWN FOR REFERENCE ONLY. FIELD VERIFY EXISTING CONDITIONS PRIOR TO WORK.
 - THIS PROJECT INCLUDES LIGHTING AND ASSOCIATED CONTROLS. MISCELLANEOUS ELECTRICAL ITEMS SHOWN ARE NOT PART OF THIS PROJECT AND ARE SHOWN FOR REFERENCE ONLY UNLESS NOTED OTHERWISE.

- NUMBERED NOTES:**
- PROVIDE WIRELESS CONTROL MODULE MOUNTED EXTERNAL TO EACH TYPE 'B' OR 'C' LIGHT FIXTURE AS MANUFACTURED BY ECHELON CONTROLS LUMEWAVE SERIES OR APPROVED EQUIVALENT.
 - PROVIDE WIRELESS CONTROL MODULE MOUNTED EXTERNAL TO EACH TYPE 'B' LIGHT FIXTURE FOR 24/7 OPERATION AS MANUFACTURED BY ECHELON CONTROLS LUMEWAVE SERIES OR APPROVED EQUIVALENT.
 - PROVIDE DEDICATED 120V, 20A QUAD RECEPTACLE (CONNECTED TO NEAREST 120/208V PANEL WITH 20A SPARE BREAKER) AND VOICE/DATA OUTLET FOR WIRELESS LIGHTING CONTROL SYSTEM GATEWAY (ECHELON LUMEWAVE SYSTEM). VERIFY EXACT LOCATION OF GATEWAYS WITH OWNER PRIOR TO ROUGH-IN.
 - PROVIDE WIRELESS PHOTOCELL AS MANUFACTURED BY ECHELON CONTROLS LUMEWAVE SERIES OR APPROVED EQUIVALENT. VERIFY EXACT LOCATION PRIOR TO INSTALLATION.
 - TYPICAL. RECORD DRAWINGS INDICATE FIXTURES SHADING TO BE ON A NIGHT LIGHT CIRCUIT. UNLESS NOTED OTHERWISE, CONTROL THESE LIGHTS WITH OTHER LIGHTS IN THE SAME ZONE.
 - PROVIDE ADD ALTERNATE FOR FIXTURE REPLACEMENT IN THIS AREA. REFER TO BID TAB FOR ADDITIONAL INFORMATION.
 - PROVIDE WIRELESS OCCUPANCY SENSOR(S) ASSOCIATED WITH RESPECTIVE ZONE(S) FOR CONTROL. COORDINATE EXACT LOCATION AND QUANTITIES WITH LIGHTING CONTROL MANUFACTURER.



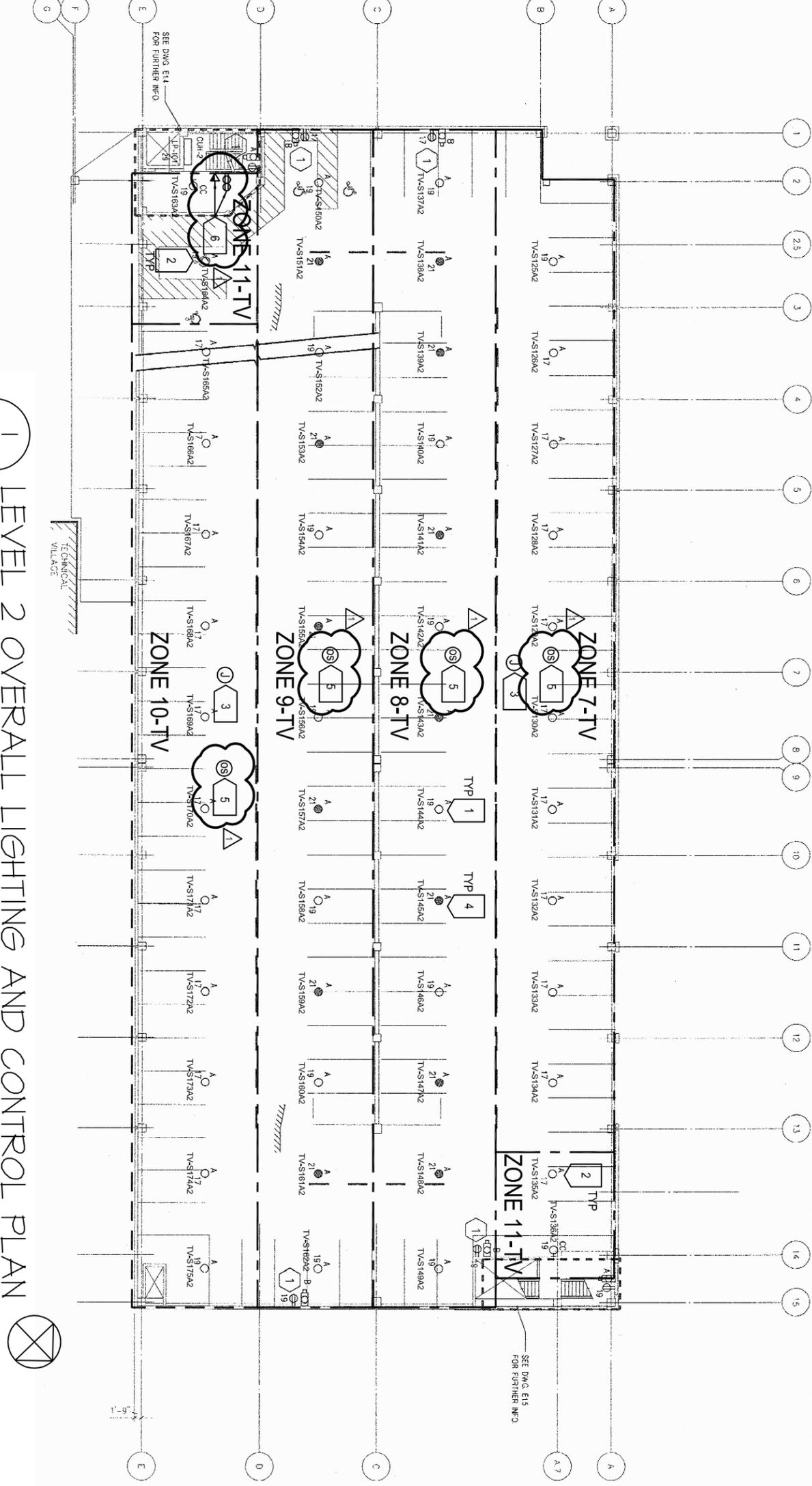
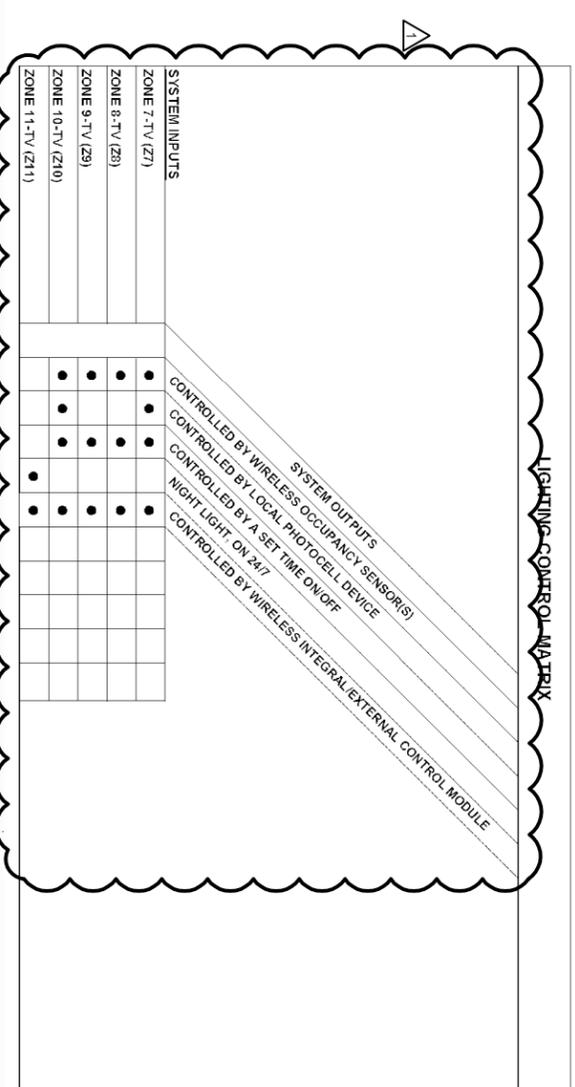
1 LEVEL 1 OVERALL LIGHTING AND CONTROL PLAN
 E106 SCALE: 0' NTS



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Dave T. Blime

Date: 07/22/2016 Reg No. 24671



GENERAL NOTES:

- A DISCONNECT AND REMOVE EXISTING LIGHTING CONTROLS ASSOCIATED WITH TYPE 'A' AND 'CC' LIGHT FIXTURES. LIGHTING CONTROLS TO REMAIN FOR ALL OTHER LIGHTING ASSOCIATED WITH PARKING RAMP BUILDING.
- B REPLACE LIGHT FIXTURE TYPES 'A' WITH OWNER FURNISHED LIGHT FIXTURE. REFER TO LIGHT FIXTURE SCHEDULE INCLUDED IN SPECIFICATION.
- C EXISTING CIRCUITS AND/OR SWITCHING SHOWN FOR REFERENCE ONLY. FIELD VERIFY EXISTING CONDITIONS PRIOR TO WORK.
- D THIS PROJECT INCLUDES LIGHTING AND ASSOCIATED CONTROLS. MISCELLANEOUS ELECTRICAL ITEMS SHOWN ARE NOT PART OF THIS PROJECT SCOPE AND ARE SHOWN FOR REFERENCE ONLY UNLESS NOTED OTHERWISE.

NUMBERED NOTES:

- 1 PROVIDE WIRELESS CONTROL MODULE MOUNTED EXTERNAL TO EACH TYPE 'A' OR 'A1' LIGHT FIXTURE AS MANUFACTURED BY ECHELON CONTROLS LUMEWAVE SERIES OR APPROVED EQUIVALENT.
- 2 PROVIDE WIRELESS CONTROL MODULE MOUNTED EXTERNAL TO EACH TYPE 'A' OR 'A1' LIGHT FIXTURE FOR 24/7 NL OPERATION AS MANUFACTURED BY ECHELON CONTROLS LUMEWAVE SERIES OR APPROVED EQUIVALENT.
- 3 PROVIDE WIRELESS PHOTOCELL AS MANUFACTURED BY ECHELON CONTROLS LUMEWAVE SERIES OR APPROVED EQUIVALENT. VERIFY EXACT LOCATION PRIOR TO INSTALLATION.
- 4 TYPICAL. RECORD DRAWINGS INDICATE SHADED FIXTURES TO BE ON A NIGHT LIGHT CIRCUIT. UNLESS NOTED OTHERWISE. CONTROL THESE LIGHTS WITH OTHER LIGHTS IN THE SAME ZONE.
- 5 PROVIDE WIRELESS OCCUPANCY SENSOR(S) ASSOCIATED WITH RESPECTIVE ZONE(S) FOR CONTROL. COORDINATE EXACT LOCATION AND QUANTITIES WITH LIGHTING CONTROL MANUFACTURER.
- 6 ROVIDE DEDICATED 120V, 20A QUAD RECEPTACLE (CONNECTED TO NEAREST 120/208V PANEL WITH 20A SPARE BREAKER) AND VOICEDATA OUTLET FOR WIRELESS LIGHTING CONTROL SYSTEM GATEWAY (ECHELON LUMEWAVE SYSTEM). VERIFY EXACT LOCATION OF GATEWAYS WITH OWNER PRIOR TO ROUGH-IN.

1 LEVEL 2 OVERALL LIGHTING AND CONTROL PLAN
 E107 SCALE: 0' = 1" NTS

1 APPENDIX # - 08/30/16

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota

Dave T. Blume

Date: 07/22/2016 Reg No. 246711

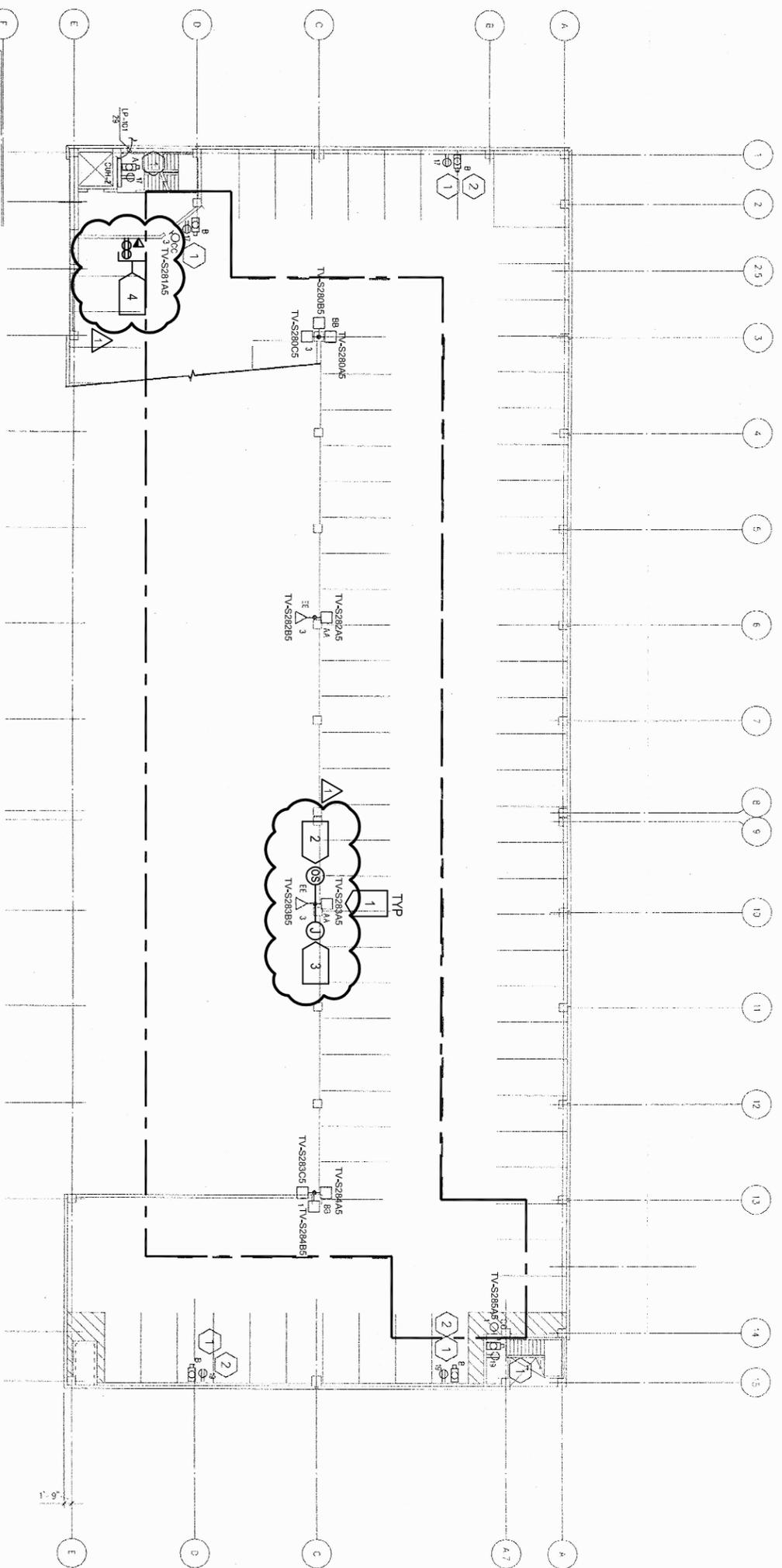
LIGHTING CONTROL MATRIX	
SYSTEM INPUTS	SYSTEM OUTPUTS
ZONE 22-TV (ZZZ)	CONTROLLED BY WIRELESS OCCUPANCY SENSOR(S)
	CONTROLLED BY LOCAL PHOTOCELL DEVICE
	CONTROLLED BY A SET TIME ON/OFF
	CONTROLLED BY WIRELESS INTEGRAL/EXTERNAL CONTROL MODULE

GENERAL NOTES:

- A DISCONNECT AND REMOVE EXISTING LIGHTING CONTROLS ASSOCIATED WITH TYPE 'AA', 'BB', 'CC' AND 'EE' LIGHT FIXTURES. LIGHTING CONTROLS TO REMAIN FOR ALL OTHER LIGHTING ASSOCIATED WITH PARKING RAMP BUILDING.
- B REPLACE LIGHT FIXTURE TYPES 'AA', 'BB', 'CC', AND 'EE' WITH OWNER FURNISHED LED TYPE POLE MOUNTED FIXTURES. REFER TO LIGHT FIXTURE SCHEDULE INCLUDED IN SPECIFICATION.
- C EXISTING CIRCUITS AND/OR SWITCHING SHOWN FOR REFERENCE ONLY. FIELD VERIFY EXISTING CONDITIONS PRIOR TO WORK.
- D THIS PROJECT INCLUDES LIGHTING AND ASSOCIATED CONTROLS. MISCELLANEOUS ELECTRICAL ITEMS SHOWN ARE NOT PART OF THIS PROJECT SCOPE AND ARE SHOWN FOR REFERENCE ONLY UNLESS NOTED OTHERWISE.

NUMBERED NOTES:

- 1 PROVIDE WIRELESS CONTROL MODULE MOUNTED EXTERNAL TO EACH TYPE 'AA', 'BB', 'CC' AND 'EE' LIGHT FIXTURE AS MANUFACTURED BY ECHELON CONTROLS LUMEWAVE SERIES OR APPROVED EQUIVALENT.
- 2 PROVIDE WIRELESS OR HARD-WIRED OCCUPANCY SENSOR(S) ASSOCIATED WITH RESPECTIVE ZONE(S) FOR CONTROL AS MANUFACTURED BY ECHELON CONTROLS OR APPROVED EQUIVALENT. COORDINATE EXACT LOCATION AND QUANTITIES WITH LIGHTING CONTROL MANUFACTURER.
- 3 PROVIDE WIRELESS PHOTOCELL AS MANUFACTURED BY ECHELON CONTROLS LUMEWAVE SERIES OR APPROVED EQUIVALENT. VERIFY EXACT LOCATION PRIOR TO INSTALLATION.
- 4 PROVIDE DEDICATED 120V, 20A QUAD RECEPTACLE (CONNECTED TO NEAREST 120/208V PANEL WITH 20A SPARE BREAKER) AND VOICEDATA OUTLET FOR WIRELESS LIGHTING CONTROL SYSTEM GATEWAY (ECHELON LUMEWAVE SYSTEM). VERIFY EXACT LOCATION OF GATEWAYS WITH OWNER PRIOR TO ROUGH-IN.



LEVEL 5 OVERALL LIGHTING AND CONTROL PLAN

E110 SCALE: 0' NTS

APPENDUM # - 08/30/16

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Dave T. Blume

Dave T. Blume
Date: 07/22/2016 Reg No: 246711

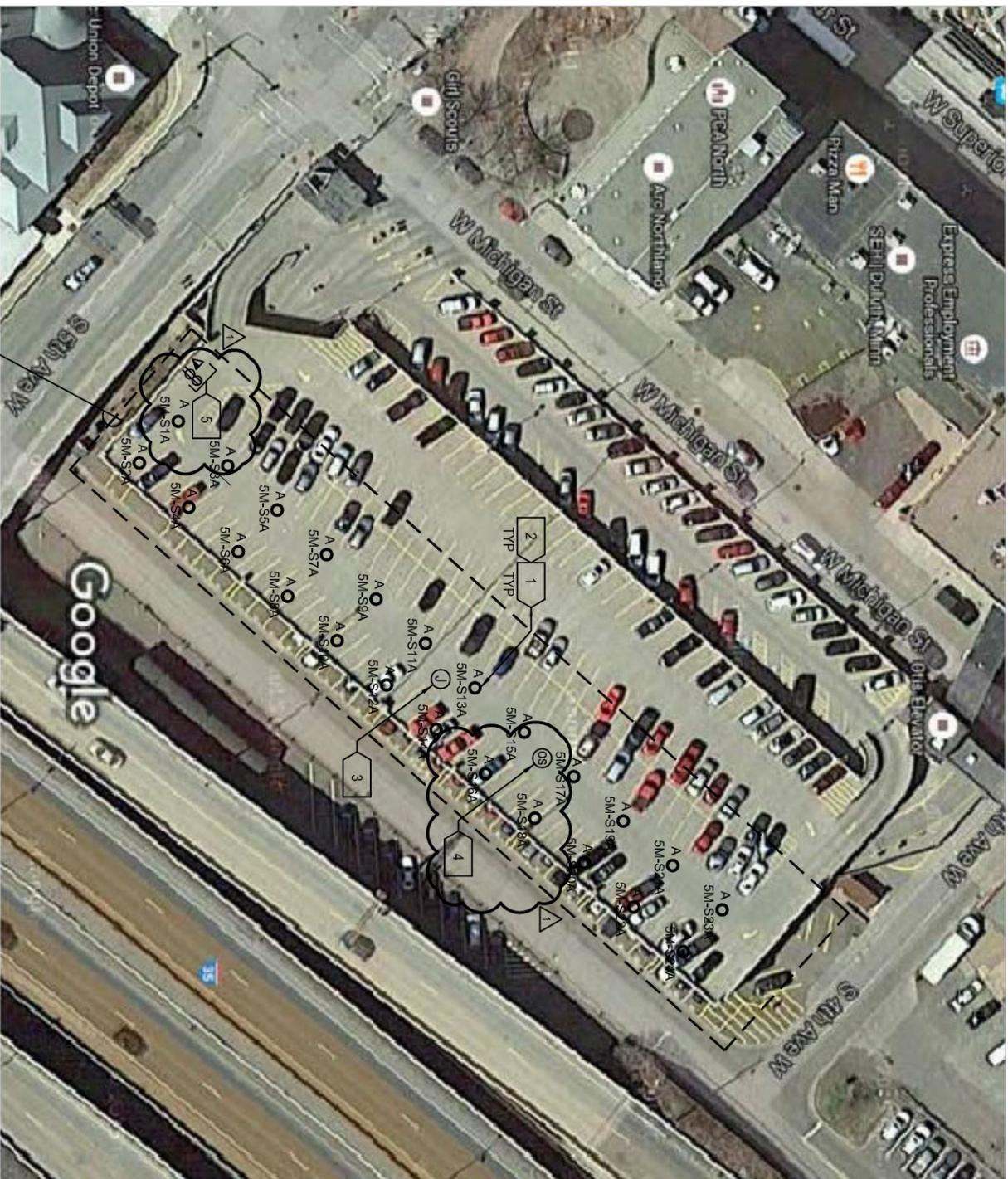
LIGHTING CONTROL MATRIX	
SYSTEM INPUTS	SYSTEM OUTPUTS
Zone 1-5M (Z1)	CONTROLLED BY WIRELESS OCCUPANCY SENSOR(S)
	CONTROLLED BY LOCAL PHOTOCELL DEVICE
	CONTROLLED BY A SET TIME ON/OFF
	CONTROLLED BY WIRELESS INTEGRAL/EXTERNAL CONTROL MODULE

GENERAL NOTES:

- A MAINTAIN EXISTING LIGHTING CONTROLS FOR EXISTING TYPE 'A' LIGHT FIXTURES. NEW CONTROL DEVICES WILL BE ADDED AS PART OF THIS PROJECT AS INDICATED IN NUMBERED NOTES BELOW FOR FUTURE CONNECTION TO AREA WIRELESS LIGHTING CONTROL SYSTEM. LIGHTING CONTROL MATRIX SHOWN FOR REFERENCE ONLY.
- B REPLACE LIGHT FIXTURE TYPES 'A' WITH OWNER FURNISHED LED TYPE GARAGE STYLE FIXTURE. REFER TO LIGHT FIXTURE SCHEDULE INCLUDED IN SPECIFICATION.
- C PROVIDE FIXTURE IDENTIFICATION ID NUMBER AS INDICATED ON PLAN.

NUMBERED NOTES:

- 1 PROVIDE WIRELESS CONTROL MODULE MOUNTED EXTERNAL TO EACH TYPE 'A' LIGHT FIXTURE AS MANUFACTURED BY ECHELON CONTROLS LUMEWAVE SERIES OR APPROVED EQUIVALENT.
- 2 TYPICAL TYPE 'A' LIGHT FIXTURES ARE LOCATED ON UNDER SIDE OF TOP LEVEL OF THE PARKING RAMP INDICATED ON PLAN. THE CITY OF DULUTH PROJECT BOUNDARY IS INDICATED. THIS PROJECT ONLY INCLUDES THE CITY OWNED PARKING AREA.
- 3 PROVIDE WIRELESS PHOTOCELL AS MANUFACTURED BY ECHELON CONTROLS LUMEWAVE SERIES OR APPROVED EQUIVALENT. VERIFY EXACT LOCATION PRIOR TO INSTALLATION.
- 4 PROVIDE WIRELESS OCCUPANCY SENSOR(S) ASSOCIATED WITH RESPECTIVE ZONE(S) FOR CONTROL. COORDINATE EXACT LOCATION AND QUANTITIES WITH LIGHTING CONTROL MANUFACTURER.
- 5 PROVIDE DEDICATED 120V, 20A QUAD RECEPTACLE (CONNECTED TO NEAREST 120/208V PANEL WITH 20A SPARE BREAKER) AND VOICE/DATA OUTLET FOR WIRELESS LIGHTING CONTROL SYSTEM GATEWAY AND/OR BRIDGE DEVICE (ECHELON LUMEWAVE SYSTEM). COORDINATE WITH CITY FOR INTERCONNECT TO STREETS LIGHTING CONTROL SYSTEM. VERIFY EXACT LOCATION OF GATEWAY/BRIDGE DEVICE WITH OWNER PRIOR TO ROUGH-IN.



PROJECT BOUNDARY - ZONE 1-5M (Z1)

OVERALL LIGHTING AND CONTROL PLAN



E111

SCALE:



NTS



1 ADDENDUM # - 08/30/16

Date: 07/22/2016 Reg No: 24671

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota

Dave T. Blume

City of Duluth Energy Efficiency Lighting Project - Bid Package #1

5th Avenue & Michigan Street Parking Ramp Lighting Plan



Gausman & Moore
Mechanical and Electrical Engineers

Date: 07/22/16
Drawn: LAH
Checked: SLH
Proj No: 84493

E111