

**ELECTRICAL NOTES:**

- ALL WORK TO BE DONE ACCORDING TO 2017 F.B.C., 2013 NFPA-72, 2015 NFPA-101, 2015 NFPA-1, 2014 NFPA AND 2014 N.E.C.
- CONTRACTOR TO VISIT SITE AND VERIFY EXISTING CONDITIONS PRIOR TO SUBMITTING BIDS. NOTIFY ENGINEER OF ANY DISCREPANCIES AT ONCE. FAILURE TO DO SO AND CONTRACTOR PROCEEDS AT HIS OWN RISK.
- MAINTAIN AS-BUILTS ON A DAILY BASIS. SUBMIT 3 COPIES TO ARCHITECT AND OWNER 3 DAYS PRIOR TO ANY REQUIRED INSPECTIONS.
- ALL CONDUIT TO BE METAL EMT INSIDE AND RIGID ON THE EXTERIOR. P.V.C. WILL BE ACCEPTED PROVIDED THAT THE CORRECT GROUND AS PER N.E.C. TABLE 250-66.122 IS INCLUDED WHEN ALLOWED BY CODE. NO P.V.C. WILL BE ALLOWED IN R.A. PLenums OR FIRE RATED ASSEMBLIES. ALL MATERIALS IN R.A. PLenums TO BE PLenum RATED.
- CONDUCTOR TO BE COPPER THIN OR THIN. MORE THAN THREE CURRENT CARRYING CONDUCTORS IN A CONDUIT TO BE INSTALLED PER NEC 310.15(B)(3)(A)
- ALL EXTERIOR EQUIPMENT TO NEMA 3R RATED.
- ALL FUSES TO BE BUSSMAN CURRENT LIMITING AT SERVICE ENTRANCE. ALL OTHERS FUSES ACCORDING TO MANU. SPEC.
- PROVIDE 6 SETS OF SHOP DRAWINGS FOR APPROVAL. NO EQUIPMENT TO BE ORDERED BEFORE SHOP DRAWINGS ARE APPROVED.
- VERIFY ALL NAMEPLATE DATA OF EQUIPMENT FOR PROPER PROTECTION AND LOADS PRIOR TO INSTALL OR WIRING.
- MAINTAIN A MINIMUM OF 36" IN FRONT OF ALL ELECTRICAL EQUIPMENT. PRIOR TO INSTALLING ANY EQUIPMENT COORDINATE WITH OTHER TRADES TO INSURE THAT CLEARANCES ARE MAINTAINED.
- CONTRACTOR TO REMOVE ALL TRASH/UNUSED MATERIALS AT THE END OF DAY.
- ALL CONDUITS, FIXTURES, DEVICES TO HAVE GROUND EXTEND AS PER TABLE 250-122 N.E.C.
- POWER TO BE ON CONTINUOUSLY 5 WEEK PRIOR TO COMPLETING PROJECT.
- ALL LOW VOLTAGE CABLING AND SYSTEM ARE THE RESPONSIBILITY OF THE VENDOR THAT IS PROVIDING THE SYSTEM INCLUDING PERMITTING.
- CONTRACTOR TO LAMP/RE-LAMP ALL FIXTURES.
- CONTRACTOR TO VERIFY QUANTITIES OF EXISTING AND NEW DEVICES AND FIXTURES REQUIRED TO COMPLETE PROJECT PRIOR TO SUBMITTING BIDS.
- CONTRACTOR TO VERIFY EXISTING CIRCUITS AND MUST PROVIDE NEW PANEL SCHEDULES IDENTIFYING ALL CIRCUITS IN PANEL.
- NEUTRALS NOT TO BE SHARED. PROVIDE #8 NEUTRAL TO ALL FURNITURE SYSTEMS, IF APPLICABLE.
- ELECTRICAL CONTRACTOR TO PROVIDE AND INSTALL ALL EQUIPMENT MENTIONED OR NOT TO POWER, DATA AND VOICE TO ALL ELECTRICAL AND SYSTEMS INSTALLED.
- ALL DEVICES TO MATCH BUILDING STANDARD OR BE DECORA SERIES.
- TYPICAL LIGHT SWITCHES TO BE 48" A.F.F. ON CENTER. TYPICAL RECEPTACLE TO BE 18" A.F.F. ON CENTER. ALL SWITCHES TO BE GANGED WITH CONTINUOUS FACEPLATES. ALL DEVICES THAT ARE ADJACENT TO BE SPACED 6" ON CENTER.
- ALL ELECTRICAL ELEMENTS TO BE THOROUGHLY PROTECTED FROM DAMAGE AFTER INSTALLATION AND SHALL HAVE TRIM INSTALLED AFTER ADJOINING FINISH MATERIALS ARE INSTALLED.
- AT THE COMPLETION OF THE PROJECT ALL EQUIPMENT, DEVICES AND FIXTURES TO BE CLEANED.
- ALL EMERGENCY AND EXIT LIGHTS ARE TO HAVE A MINIMUM 90 MINUTE BATTERY BACK-UP.
- CONTRACTOR IS TO PROVIDE STEP DOWN TRANSFORMERS FOR ALL FANS WHEN REQUIRED.
- NO ALUMINUM CONDUIT OR BUSS WILL BE ALLOWED - ALL MUST BE COPPER.
- ALL DATA, TEL., TV BOXES TO BE 44x42 DOUBLE GANG BOXES. STUD ALL CONDUITS WITH LAY IN CEILINGS TO 6" ABOVE CEILING. ALL CONCEALED OR EXPOSED APPLICATIONS TO BE HOME RUN TO MAIN DISTRIBUTION LOCATION.
- CONTRACTOR TO PROVIDE TEMPORARY POWER FOR ALL TRADES.
- NEW ELECTRICAL PANELS TO HAVE BOLT ON BREAKERS.
- NO ELECTRICAL CIRCUITS OR WIRING FROM ADJACENT SPACES TO BE USED IN THIS PROJECT.
- ALL INTERIOR LIGHTING TO HAVE SWITCHES WITH OCCUPANCY SENSORS IN THEM CAPABLE OF STAYING ON NO MORE THAN 30 MINUTES. CIRCUITS WHICH HAVE MOTION SENSORS ON THEM MAY USE STANDARD SWITCHES.
- CONTRACTOR TO REMOVE ALL ABANDONED OR UNUSED WIRING, CONDUIT AND BOXES.
- PROVIDE 2"-2" RIGID CONDUIT FROM BUILDINGS MAIN TELEPHONE ROOM COMMUNICATION CENTER TO SITE DEMARC POINT. COORDINATE CABLE, TV, VOICE AND DATA REQUIREMENTS WITH OWNER TO MEET THEIR REQUIREMENTS.
- VERIFY EXISTING FIRE ALARM HAS SUFFICIENT ROOM FOR EXPANSION AND EQUIPMENT IS STILL READILY AVAILABLE. CONTRACTOR TO PROVIDE COMPLETE SHOP DWGS INCLUDING RISER, CUT SHEETS, BATTERY CALCULATIONS AND ALL OTHER NECESSARY INFORMATION.
- LABEL ALL OUTLETS AND JUNCTION BOXES WITH PANEL AND CIRCUIT NUMBER.
- ANY ELECTRICAL EQUIPMENT POTENTIALLY NEEDING ADJUSTMENT, SERVICING, OR MAINTENANCE WHILE ENERGIZED MUST BE PLACED IN ACCORDANCE WITH N.E.C. 110.16.
- ALL NIGHT LIGHTS AND EMERGENCY LIGHTS TO BE CONNECTED AHEAD OF ANY CONTROL DEVICE.
- ALL TRANSFORMERS ARE TO HAVE A MINIMUM K-RATING OF K-13. KVA SIZING OF TRANSFORMER IS SHOWN ON THE ELECTRICAL RISER DRAWING.
- ALL CIRCUIT BREAKERS SERVING FURNITURE SYSTEMS MUST BE HANDLE TIED AS PER N.E.C. 605.7
- PROVIDE 90 MIN. BATTERY BACK UP FOR NEW AND EXISTING EMERGENCY/NIGHT LIGHTS PLEASE REFER LEGEND.
- PROVIDE MEAN OF DISCONNECTION FOR ALL LIGHTING FIXTURES AS PER NEC 410.130(G)

| PANEL HC 800A MCB 3Ø4W 120/208V |   |     |       |      |             |       |     |       |      |             |         |   |      |
|---------------------------------|---|-----|-------|------|-------------|-------|-----|-------|------|-------------|---------|---|------|
| Wire                            | Ø | No. | Poles | Trip | Description | Load  | No. | Poles | Trip | Description | Load    | Ø | Wire |
| E                               | A | 01  | 2     | 20   | POLE LIGHTS | 2200  | 02  | 2     | 20   | POLE LTG    | 2100    | A | E    |
| E                               | B | 03  | -     | -    | -           | -     | -   | -     | -    | -           | -       | B | E    |
| B                               | C | 05  | 1     | 20   | WALKWAY LTG | 532   | 06  | 1     | 20   | LTG         | 1300    | C | E    |
| B                               | A | 07  | 1     | 20   | WALKWAY LTG | 532   | 08  | 1     | 20   | LTG         | 1200    | A | E    |
| E                               | B | 09  | 1     | 20   | SIGN        | 1200  | 10  | 1     | 20   | STEP LTG    | 500     | B | E    |
| E                               | C | 11  | 1     | 20   | SIGN        | 1200  | 12  | 1     | 20   | LTG         | 800     | C | E    |
| E                               | A | 13  | 1     | 20   | METER ROOM  | 360   | 14  | 1     | 20   | FA          | 180     | A | E    |
| B                               | B | 15  | 1     | 20   | LTG         | 550   | 16  | 1     | 20   | PHONE       | 180     | B | E    |
| E                               | A | 17  | 1     | 20   | LTG         | 300   | 18  | 1     | 20   | TIMELOCKS   | 200     | A | E    |
| E                               | A | 19  | 1     | 20   | LTG         | 1000  | 20  | 3     | 60   | PNL HC-4    | 18000   | A | E    |
| E                               | B | 21  | 3     | 50   | WEST A/C    | 17200 | 22  | -     | -    | -           | -       | B | E    |
| E                               | C | 23  | -     | -    | -           | -     | -   | -     | -    | -           | -       | C | E    |
| E                               | A | 25  | -     | -    | -           | -     | -   | -     | -    | -           | -       | A | E    |
| E                               | B | 27  | 2     | 30   | EQUIP       | 3900  | 28  | -     | -    | -           | -       | B | E    |
| E                               | C | 29  | -     | -    | -           | -     | -   | -     | -    | -           | -       | C | E    |
| B                               | C | 31  | -     | -    | -           | -     | -   | -     | -    | -           | -       | B | E    |
| C                               | C | 35  | -     | -    | -           | -     | -   | -     | -    | -           | -       | C | E    |
| E                               | A | 37  | 3     | 100  | PNL HC-2    | 21500 | 38  | 3     | 225  | PNL HC-1    | 61920   | A | E    |
| E                               | C | 41  | -     | -    | -           | -     | -   | -     | -    | -           | -       | C | E    |
| PANEL LOAD                      |   |     |       |      |             |       |     |       |      |             | 182054W |   |      |
|                                 |   |     |       |      |             |       |     |       |      |             | 290     |   | 506A |

| PANEL HB 100A MCB 3Ø4W 120/208V |   |     |       |      |             |      |     |       |      |             |        |   |      |
|---------------------------------|---|-----|-------|------|-------------|------|-----|-------|------|-------------|--------|---|------|
| Wire                            | Ø | No. | Poles | Trip | Description | Load | No. | Poles | Trip | Description | Load   | Ø | Wire |
| E                               | A | 01  | 2     | 20   | POLE LIGHTS | 2200 | 02  | 2     | 20   | POLE LTG    | 2100   | A | E    |
| E                               | C | 05  | 1     | 20   | WALKWAY REC | 720  | 06  | 1     | 20   | WALKWAY LTG | 350    | C | B    |
| B                               | A | 07  | 1     | 20   | WALKWAY LTG | 450  | 08  | 1     | 20   | METER ROOM  | 360    | A | E    |
| E                               | B | 09  | 3     | 100  | MAIN        | -    | 10  | -     | -    | -           | -      | B | E    |
| E                               | C | 11  | -     | -    | -           | -    | -   | -     | -    | -           | -      | C | E    |
| E                               | A | 13  | -     | -    | -           | -    | -   | -     | -    | -           | -      | A | E    |
| E                               | B | 15  | 2     | 20   | POLE LIGHTS | 2500 | 16  | 1     | 20   | PHONE       | 180    | B | E    |
| E                               | C | 17  | -     | -    | -           | -    | -   | -     | -    | -           | -      | C | E    |
| E                               | A | 19  | 1     | 20   | SIGN / REC  | 1200 | 20  | 1     | 20   | LTG / LTG   | 500    | A | E    |
| E                               | B | 21  | 1     | 20   | SIGN / SIGN | 1200 | 22  | 1     | 20   | SIGN / SIGN | 200    | B | E    |
| E                               | C | 23  | 1     | 20   | LTG / SIGN  | 800  | 24  | 1     | 20   | SIGN / SIGN | 200    | C | E    |
| E                               | A | 25  | 2     | 20   | LTG         | 2200 | 26  | 1     | 20   | LTG / SIGN  | 300    | A | E    |
| E                               | B | 27  | 2     | 20   | -           | -    | 28  | 1     | 20   | LTG / SIGN  | 200    | B | E    |
| B                               | C | 29  | 1     | 20   | LTG         | 600  | 30  | 1     | 20   | SPARE       | -      | C | E    |
| A                               | A | 31  | -     | -    | -           | -    | 32  | -     | -    | -           | -      | A | E    |
| PANEL LOAD                      |   |     |       |      |             |      |     |       |      |             | 29120W |   | 81A  |

| PANEL HD 100A MCB 3Ø4W 120/208V |   |     |       |      |             |      |     |       |      |             |        |   |      |
|---------------------------------|---|-----|-------|------|-------------|------|-----|-------|------|-------------|--------|---|------|
| Wire                            | Ø | No. | Poles | Trip | Description | Load | No. | Poles | Trip | Description | Load   | Ø | Wire |
| E                               | A | 01  | 2     | 20   | POLE LIGHTS | 2200 | 02  | 2     | 20   | POLE LTG    | 2100   | A | E    |
| E                               | B | 03  | -     | -    | -           | -    | -   | -     | -    | -           | -      | B | E    |
| E                               | C | 05  | 1     | 20   | WALKWAY REC | 720  | 06  | 1     | 20   | WALKWAY LTG | 350    | C | B    |
| B                               | A | 07  | 1     | 20   | WALKWAY LTG | 450  | 08  | 1     | 20   | METER ROOM  | 360    | A | E    |
| E                               | B | 09  | 3     | 100  | MAIN        | -    | 10  | -     | -    | -           | -      | B | E    |
| E                               | C | 11  | -     | -    | -           | -    | -   | -     | -    | -           | -      | C | E    |
| E                               | A | 13  | -     | -    | -           | -    | -   | -     | -    | -           | -      | A | E    |
| E                               | B | 15  | 2     | 20   | POLE LIGHTS | 2500 | 16  | 1     | 20   | PHONE       | 180    | B | E    |
| E                               | C | 17  | -     | -    | -           | -    | -   | -     | -    | -           | -      | C | E    |
| E                               | A | 19  | 1     | 20   | SIGN / REC  | 1200 | 20  | 1     | 20   | LTG / LTG   | 500    | A | E    |
| E                               | B | 21  | 1     | 20   | SIGN / SIGN | 1200 | 22  | 1     | 20   | SIGN / SIGN | 200    | B | E    |
| E                               | C | 23  | 1     | 20   | LTG / SIGN  | 800  | 24  | 1     | 20   | SIGN / SIGN | 200    | C | E    |
| E                               | A | 25  | 2     | 20   | LTG         | 2200 | 26  | 1     | 20   | LTG / SIGN  | 300    | A | E    |
| E                               | B | 27  | 2     | 20   | -           | -    | 28  | 1     | 20   | LTG / SIGN  | 200    | B | E    |
| B                               | C | 29  | 1     | 20   | LTG         | 600  | 30  | 1     | 20   | SPARE       | -      | C | E    |
| A                               | A | 31  | -     | -    | -           | -    | 32  | -     | -    | -           | -      | A | E    |
| PANEL LOAD                      |   |     |       |      |             |      |     |       |      |             | 30320W |   | 84A  |

**Enclosure: DIMB**

**Wattstopper Architectural Dimming Panel #LCAP32M**

| Load | Description      | Fixture Type | Fixture Qty | Dimming Type | Wattage per fixture | Wattage per zone | Module Type | Feeds |
|------|------------------|--------------|-------------|--------------|---------------------|------------------|-------------|-------|
| 1    | Walkway Lighting | A            | 16          | ELV          | 18.5                | 296              | UDM08-EM    | HB-7  |
| 2    | Spare            |              |             |              |                     |                  | UDM08-EM    |       |
| 3    | Exterior Sconces | B            | 3           | ELV          | 22                  | 66               | UDM08-EM    | HB-8  |
| 4    | Exterior Sconces | C1           | 20          | ELV          | 22                  | 440              | UDM08-EM    |       |
| 5    | Spare            |              |             |              |                     |                  | UDM08-EM    |       |
| 6    | Spare            |              |             |              |                     |                  | UDM08-EM    |       |
| 7    | Spare            |              |             |              |                     |                  | UDM08-EM    |       |
| 8    | Spare            |              |             |              |                     |                  | UDM08-EM    |       |

Provide secondary enclosure with (1) CIS10-DIN for Photocell Integration and (1) LVOS-0-10.

**Enclosure: DIMC**

**Wattstopper Architectural Dimming Panel #LCAP32M**

| Load | Description      | Fixture Type | Fixture Qty | Dimming Type | Wattage per fixture | Wattage per zone | Module Type | Feeds |
|------|------------------|--------------|-------------|--------------|---------------------|------------------|-------------|-------|
| 1    | Exterior Sconces | C1           | 32          | ELV          | 22                  | 704              | UDM08-EM    | HC-5  |
| 2    | Spare            |              |             |              |                     |                  | UDM08-EM    |       |
| 3    | Walkway Lighting | A            | 17          | ELV          | 18.5                | 314.5            | UDM08-EM    | HC-7  |
| 4    | Walkway Lighting | B            | 2           | ELV          | 22                  | 44               | UDM08-EM    |       |
| 5    | Exterior Sconces | C            | 16          | ELV          | 22                  | 352              | UDM08-EM    | HC-15 |
| 6    | Spare            |              |             |              |                     |                  | UDM08-EM    |       |
| 7    | Spare            |              |             |              |                     |                  | UDM08-EM    |       |
| 8    | Spare            |              |             |              |                     |                  | UDM08-EM    |       |

Provide secondary enclosure with (1) CIS10-DIN for Photocell Integration and (1) LVOS-0-10.

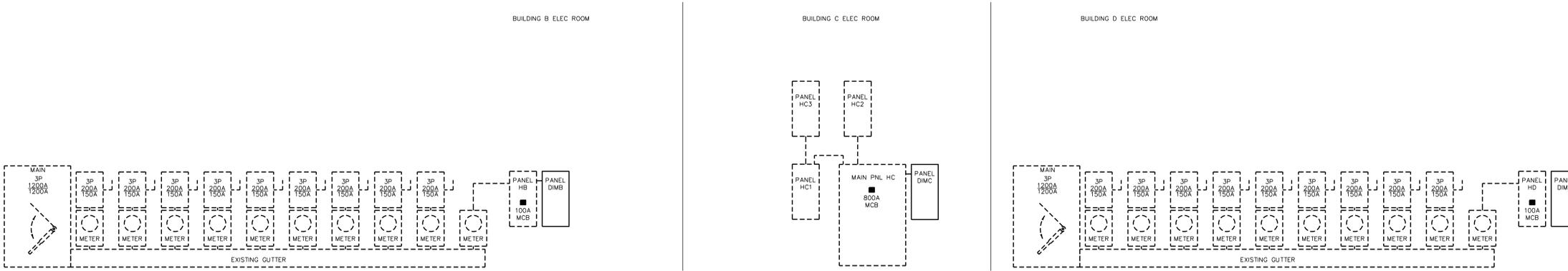
**Enclosure: DIMD**

**Wattstopper Architectural Dimming Panel #LCAP32M**

| Load | Description      | Fixture Type | Fixture Qty | Dimming Type | Wattage per fixture | Wattage per zone | Module Type | Feeds |
|------|------------------|--------------|-------------|--------------|---------------------|------------------|-------------|-------|
| 1    | Walkway Lighting | A            | 16          | ELV          | 18.5                | 296              | UDM08-EM    | HD-7  |
| 2    | Spare            |              |             |              |                     |                  | UDM08-EM    |       |
| 3    | Exterior Sconces | B            | 3           | ELV          | 22                  | 66               | UDM08-EM    | HD-8  |
| 4    | Exterior Sconces | C1           | 20          | ELV          | 22                  | 440              | UDM08-EM    |       |
| 5    | Spare            |              |             |              |                     |                  | UDM08-EM    |       |
| 6    | Spare            |              |             |              |                     |                  | UDM08-EM    |       |
| 7    | Spare            |              |             |              |                     |                  | UDM08-EM    |       |
| 8    | Spare            |              |             |              |                     |                  | UDM08-EM    |       |

Provide secondary enclosure with (1) CIS10-DIN for Photocell Integration and (1) LVOS-0-10.

**DIMMING PANELS SCHEDULES - VERIFY WITH SHOP DRAWINGS FOR UP TO DATE SCHEDULES AND SPECS**



| TYPE | DESCRIPTION                       | MANUFACTURER        | CATALOG NUMBER               | VOLT    | LAMPS | LAMP TYPE | INPUT WATTS | MOUNTING     | REMARKS  |
|------|-----------------------------------|---------------------|------------------------------|---------|-------|-----------|-------------|--------------|--|
| A    | 6" LED RETROFIT DOWNLIGHT         | LIGHTOLIER          | RD5R120301W                  | 120     | ---   | LED 3000K | 18.5W       | RECESS       |  |
| B    | 6" LED SQUARE WALL MOUNT CYLINDER | LITON               | WD1Q360BZ-L20-845-UE-DUN-T30 | 120-277 | ---   | LED 3000K | 22W         | WALL SURFACE | SEE ARCH DETAILS FOR FIXTURE MOUNTING HEIGHTS                              |
| C    | 6" LED SQUARE WALL MOUNT CYLINDER | LITON               | WD1Q360BZ-L20-845-UE-DUN-T30 | 120-277 | ---   | LED 3000K | 22W         | WALL SURFACE | SEE ARCH DETAILS FOR FIXTURE MOUNTING HEIGHTS                              |
| C1   | 6" LED SQUARE WALL MOUNT CYLINDER | LITON               | WD1Q360BZ-L20-845-UE-DUN-T30 | 120-277 | ---   | LED 3000K | 22W         | WALL SURFACE | SEE ARCH DETAILS FOR FIXTURE MOUNTING HEIGHTS                              |
| C2   | 6" LED SQUARE WALL MOUNT CYLINDER | LITON               | WD1Q360BZ-L20-845-UE-DUN-T30 | 120-277 | ---   | LED 3000K | 22W         | WALL SURFACE | SEE ARCH DETAILS FOR FIXTURE MOUNTING HEIGHTS                              |
| C3   | 6" LED SQUARE WALL MOUNT CYLINDER | LITON               | WD1Q360BZ-L20-845-UE-DUN-T30 | 120-277 | ---   | LED 3000K | 22W         | WALL SURFACE | SEE ARCH DETAILS FOR FIXTURE MOUNTING HEIGHTS                              |
| C4   | 6" LED SQUARE WALL MOUNT CYLINDER | LITON               | WD1Q360BZ-L20-845-UE-DUN-T30 | 120-277 | ---   | LED 3000K | 22W         | WALL SURFACE | SEE ARCH DETAILS FOR FIXTURE MOUNTING HEIGHTS                              |
| D    | WET LOCATION LED TAPELIGHT        | DIODE LED           | DI-24V-BL85C2-30-XX          | 24V     | ---   | LED 3000K | 2.93W/FT    | SURFACE      | REMOTE TRANSFORMER REQUIRED MOUNT TO BACKSIDE OF LOUVERS. SEE ARCH DETAILS |
| E    | WALL SCONCE                       | VISIONAIRE LIGHTING | VSC-II-T3-32LC-5-3K-UN-WM-B2 | 24V     | ---   | LED 3000K | ---         | SURFACE      | SEE ARCH DETAILS FOR FIXTURE MOUNTING HEIGHTS                              |

**ELECTRICAL RISER DIAGRAM**  
N.T.S.

CONTRACTOR TO VISIT SITE AND VERIFY EXISTING CONDITIONS PRIOR TO SUBMITTING BIDS. NOTIFY ENGINEER OF ANY DISCREPANCIES AT ONCE. FAILURE TO DO SO AND CONTRACTOR PROCEEDS AT HIS OWN RISK. CONTRACTOR TO CONTACT KEITH ROSEN/SESCO LIGHTING FOR DIMMING SYSTEM AND SHOP DRAWINGS. SYSTEM TO MEET CURRENT CODE. MUST ALLOW (1) FOOT CANDLE MAXIMUM AFTER HOURS AND TO TURN ON AND OFF AT APPROPRIATE TIMES. 3 SYSTEMS REQUIRED. 1 FOR EACH BUILDING. THIS WILL REQUIRE NEW AND ADDITIONAL WIRING INCLUDING LOW VOLTAGE WIRING FOR DIMMING SYSTEM. LIGHTING CONTROL SYSTEMS AND ALL REQUIRED INSTALLATIONS SHALL BE INCLUDED IN ALL BID PRICING FOR ALL BUILDINGS.

LONGEST RUN VOLTAGE DROP CALCULATION  
 $V_D = 2 \times K \times I \times D/CM$   
 $K = 12.9 \text{ ohms, Copper}$   
 $I = 8 \text{ amperes}$   
 $D = 200 \text{ feet}$   
 $CM = \text{No. } 16, 16510 \text{ circular mils, Chapter 9, Table 8}$   
 $V_D = 2 \times 12.9 \text{ ohms} \times 8 \text{ amper$