

Members of the Committee,

Included in your packet are a number of items detailing the revised SMART Fund application from the Alliant Energy Center. When last our proposal came before the committee, you asked us to contact Dane County Facilities Management to get their input on potential areas of cost savings. While doing that work, our staff were able to take the time to identify several other areas where our application could be improved to more accurately reflect the expected return on investment and environmental impacts. Those changes are as follows:

- An email from Nathan Tuggle, a master electrician with Facilities Management, is included which outlines several questions he raised about the project. Interspersed throughout the email are annotations from Alliant Energy Center staff providing answers. Most boil down to the need for our various lighting control systems to work with one another.
- The overall price of the project has been reduced from its previous \$183,214 total estimated cost down to \$159,990 after factoring in an identified area of savings by Mr. Tuggle.
- The estimated hours of operation for the lights was doubled from 2,100 to 4,200 after additional consideration by Alliant Energy Center staff. The previous estimate had been based only on the number of hours the rooms included in this project were used for events in 2019. That estimate failed to take into consideration the number of hours that the rooms' lights are in use for activities such setup, takedown and janitorial services.
- The carbon dioxide equivalent savings increased dramatically, not only because of the above adjustment, but also because staff thought it more appropriate to demonstrate the amount of environmental impact over the entire span of the project's 13-year return on investment. The previous carbon dioxide equivalent calculation had demonstrated the impact created by only a single year of switching from the current light fixtures to LEDs.

In addition to the above points, Alliant Energy Center staff would like to note that there are other impacts for our department beyond the cost and carbon dioxide savings. The Alliant Energy Center is the only part of Dane County that covers the entirety of its costs through the revenue it generates and avoids using general fund monies for support. In fact, all of our additional revenue is used on aged facility repairs and equipment maintenance. This dynamic can make budgeting during tumultuous periods like a global pandemic especially difficult. The estimated \$12,241 that this project will save each year in utility costs will help us address those budgetary concerns.

Another intangible benefit will be our ability to, once this project is completed, advertise our Expo Hall's event spaces as being 100% lit by LEDs. That building is our primary source of revenue, and any additional talking-points or perceived benefits of holding an event inside its walls is a benefit to us, and by extension, Dane County.

Thank you for taking the time to review our SMART Fund proposal.

Sincerely,

Brent Kyzer-McHenry
Executive Director
Alliant Energy Center

2019 Dane County Departmental SMART Fund

Funding Opportunity Description

The Sustainability Subcommittee of the Public Works and Transportation Committee is responsible for distributing grant money to county departments from a dedicated fund in the county's capital budget. This fund supports the county's goal of becoming more sustainable by, for example, investing in initiatives that reduce greenhouse gas emissions by implementing systems that result in more efficient energy use and investments in renewable energy production at county facilities. The fund is a foundational part of the county's continued efforts to ensure that important natural resources and ecosystem services are maintained for current and future generations while working to increase equity and inclusion in all that we do. The fund can be used by your department to help you implement strategies identified in the [Dane County Government Sustainable Operations Plan](#), to supplement current budget items that do not have enough funds to incorporate additional sustainable measures, or to fully fund projects that are not in the current budget, but that will improve the sustainability of county operations and reduce long-term costs.

The subcommittee will select projects to fund based on their consistency with the sustainability principles adopted by the Dane County Board (on October 18, 2012) to guide county government management, operations, and policy making, as well as based on their ability to further implement the [Dane County Government Sustainable Operations Plan](#). The subcommittee will consider applications that might not provide a large financial return on investment but that can be demonstrated by the applicant department to incorporate strong sustainability education benefits for county staff and the public. The subcommittee will also look favorably at innovative pilot projects that test new sustainability technologies in county operations and that can be demonstrated by the applicant department to hold promise for additional future benefits for county facilities.

Benefits of this fund:

- Alignment of departments and staff toward a common understanding of sustainability
- Clarity and consistency in assessing and organizing actions and programs for sustainable government operations
- Enhanced policies and programs incorporating a sustainability perspective
- Enhanced reputation as a proactive contributor to a more sustainable community
- Education of county staff and public on sustainability issues
- Reduced operating costs

Dane County's Sustainability Principles:

Dane County strives to operate in a sustainable way that will:

- Reduce and eventually eliminate county government's contribution to fossil fuel dependence and to wasteful use of scarce metals and minerals;
- Reduce and eventually eliminate county government's contribution to dependence upon persistent chemicals and wasteful use of synthetic substances;
- Reduce and eventually eliminate county government's contribution to encroachment upon nature and harm to life-sustaining ecosystems (e.g., land, water, wildlife, forest, soil, ecosystems); and
- Reduce and eventually eliminate county government's contribution to conditions that undermine people's ability to meet their basic human needs.

Eligible Applicants:

Dane County Departments

Award Information:

Application Deadlines: There are 3 application deadlines for 3 rounds of funding. Solicitations for applications will go out via email about 1 month before each deadline.

1. **February 6, 2019** — At this time up to 50% of the funds will be awarded.
2. **June 3, 2019** — At this time up to an additional 25% of the funds will be awarded.
3. **October 4, 2019** — At this time the remainder of the funds will be awarded.

The subcommittee generally makes award decisions within a couple of weeks of the application deadline depending on complexity of the proposals and the subcommittee meeting schedule.

Examples of types of projects that would be eligible:

- Renewable energy or energy efficiency improvement investments for county facilities, such as solar lighting, LED lighting upgrades, energy efficient boilers, etc.
- Purchase of new or upgraded equipment that will improve the overall efficiency of facilities and reduce greenhouse gas emissions, reduce the use and disposal of toxic products, reduce maintenance costs and/or staff time using the equipment, and/or facilitate better tracking, measurement, and verification of sustainable outcomes in county operations
- Water conservation improvements

Application and Submission Information:

Apply electronically to Lisa MacKinnon at Mackinnon@countyofdane.com and Greg Brockmeyer at Brockmeyer@countyofdane.com.

Please include the following in your application:

- 1) A detailed description of your proposed project
 - 2) How the project, if carried out, will meet the county's sustainability principles
 - 3) How the project, if carried out, will implement specific goals, objectives, and strategies identified in the [Dane County Sustainable Operations Plan](#). Indicate which goals, etc.
 - 4) How the county might build upon the sustainability outcomes of the proposed project
 - 5) How your department intends to track and measure the outcomes of the project, if funded, such as cost savings, energy reductions, maintenance reductions, etc., who will be responsible for measurement and verification, and an estimated timeline for delivery of measurement and verification of outcomes.
 - 6) Budget Sheet: Include all costs of achieving the objectives of the project.
 - 7) Estimated cost savings to the county due to implementation of the project and the payback period.
- NOTE: Include here information on estimated Focus on Energy incentive savings if your project is eligible for FOE incentives (see <https://focusonenergy.com/business> or contact Lisa MacKinnon for assistance in getting this information) or other financial incentives that will offset the cost to the county

Questions are to be directed to Lisa MacKinnon at 267-1529 or Greg Brockmeyer at 266-4519.

Project Information:

Please provide the following information (take as much space as you need to provide details):

| | |
|---|---------------------------------------|
| Department: Alliant Energy Center Address: 1919 Alliant Energy Center Way Madison WI 53713 | Total project costs: \$159,990 |
| | Funding amount in current budget: \$0 |
| | Funding amount requested: \$159,990 |
| Project Title: LED Fixture Lighting | |
| Project Location: Exposition Hall Monona Rooms 1-8, Lake Rooms 1-4 & Board Room | |
| Project Description: This project will replace 189 3 lamp 4 X 8 T8 fixtures and 162 down lights with 267 2x4 LED fixtures.& 10 LED Exit lights. | |

Describe how the proposed project moves the county toward meeting the following Sustainability Principles. (See the guiding questions in the box below.) Responses to this section will be used to determine the relative level of sustainability for each project.

- Reduce and eventually eliminate county government's contribution to fossil fuel dependence and to wasteful use of scarce metals and minerals;

This project will significantly reduce the county's reliance on fossil fuels. By replacing the extensive lighting system required to illuminate the eight Mendota rooms, four Lake rooms and board room inside the Alliant Energy Center's Expo Hall, the government could expect to reduce its power draw in those facilities by almost 60 percent. The 189 florescent fixtures draw power at a rate of 90W each, equaling 17.01 kWh. An additional 162 down lights currently draw 75W, or 12.15 kWh in total. Together, the lights in the spaces pull 122,472 kWh over the course of a year. By contrast, the 267 proposed LED fixtures would draw just 45W each. In one year, the county could expect to use 72,009 fewer kWh of electricity. This diminished power draw would allow the project to pay for itself over the course of 13.7 years. However, this timetable is likely to shorten given two factors: cost and use. Energy costs have risen by over 60 percent since 2001, according to data from the U.S. Energy Information Administration. Should this trend continue into future decades, energy-efficient LED fixtures are likely to realize even greater returns. Also, these estimates assume that the Expo Hall rooms covered in this proposal will continue to be used for about 4,200 hours every year. Given that Dane County and the city of Madison have planned for substantial redevelopment around the Alliant Energy Center, including more amenities, hotels and transportation services, it seems safe to assume that the rooms in question are likely to receive more use as Madison's south side becomes a gateway to the city. More use means that energy efficient investments made now will show greater returns as demand to use the rooms increases.

All told, the power saved by installing the lights is equal to approximately 667 metric tons of carbon dioxide emitted into the atmosphere over the course of the estimated 13 year payback period. Replacing the lights in the Lake and Mendota rooms of the Alliant Energy Center's Expo Hall would be the same as taking 145 cars off the road, planting 817 acres of forest or leaving more than 1,500 barrels of oil in the ground, according to the EPA.

- Reduce and eventually eliminate county government's contribution to dependence upon persistent chemicals and wasteful use of synthetic substances; **N/A**
- Reduce and eventually eliminate county government's contribution to encroachment upon nature and harm to life-sustaining ecosystems (e.g., land, water, wildlife, forest, soil, ecosystems); **N/A** and
- Reduce and eventually eliminate county government's contribution to conditions that undermine people's ability to meet their basic human needs. **N/A**

Include in your description any estimated reductions of GHGs / CO2 equivalent emissions related to your proposal.

Please use the following calculator to do this: <http://www.epa.gov/cleanenergy/energy-resources/calculator.html>

Describe how the proposal furthers implementation of the Dane County Government Sustainable Operations Plan goals, objectives, and strategies in your department and/or countywide. Please identify specific plan goals, objectives, and strategies accomplished.

This project will cut greenhouse gas emissions by greatly reducing the amount of energy needed to illuminate the eight Mendota rooms, four Lake rooms and conference room in the Alliant Energy Center's Expo Hall. Lower emissions generated by county facilities is an express goal of the Sustainable Operations Plan. The move will help Dane County build resilience in the face of global climate change on government operations and our community.

| | |
|--|---|
| <p>Describe how the county might build upon the outcomes of the proposed project to work toward greater sustainability.</p> <p>The Alliant Energy Center sees frequent use by other county staff and departments. The large-scale adoption of LED fixtures in the Expo Hall's meeting rooms seem likely to spark discussion about the cost savings and benefits of applying for SMART funds. Specifically, other departments with extensive lighting systems to embrace a switch to LED fixtures.</p> | |
| <p>Does the proposed project include a strong sustainability education component? If yes, describe the educational component, who it will reach, and how it will be communicated.</p> <p>The work of replacing hundreds of lighting fixtures to brand new energy-efficient alternatives would be a large job with fun visuals that has the potential to attract coverage from local media. The Alliant Energy Center's public information and marketing officer would alert local media to the work being done ahead of time by providing outlets with a press release, fact sheet and images. Outside of local media coverage, the marketing officer would publish pictures, video and graphics about the switch to LED lights on the Alliant Energy Center's social media pages so that its audience, numbering in the tens of thousands could see the investments the county is making in reducing its dependence on fossil fuels.</p> | |
| <p>Does the proposed project pilot an innovative new sustainability-advancing technology in county operations and can it be demonstrated by the applicant department to hold promise for additional future applications in county facilities? If yes, describe the elements of the innovative technology being proposed.</p> <p>This project is not a pilot project of an innovative new sustainability-advancing technology.</p> | |
| <p>Describe how your department will track and measure outcomes of the proposed project (i.e., annual cost savings, annual energy savings, resource use reductions, maintenance reductions, etc.). Include a timeline for measurement and reporting outcomes, and the staff member contact who is responsible for conducting the tracking and measurement and reporting back.</p> <p>The outcomes of this project will be measured by savings in the Alliant Energy Center's electric costs. Savings from this project can be calculated based on hours that the rooms are used for event-related occupancy, calculating the kWh savings.</p> | |
| Contact person: Don Kraft | Phone: 608-267-3983 E-mail: kraft.donald@alliantenergycenter.com |

Guiding questions for the project description. Applicants should include a detailed discussion of the work planned and/or the technical approach used that illustrates what the project will achieve and how it will comply with and implement the county's four sustainability principles and the Dane County Government Sustainable Operations Plan. The following questions provide a guideline to help your department frame and describe the project. Please feel free to address additional issues.

- Will this project reduce wasteful dependence upon fossil fuels, underground metals, and minerals?
- Will this project ensure that the smallest possible amount of resources is used?
- Has the proposal included green procurement standards for required goods, materials, and services?
- Will this project lead to a decrease in greenhouse gas emissions?
- Will this project reduce the need for fossil fuel-dependent transport, increase public transit use, or increase walking and bicycling?
- Will this project support businesses that emit less polluting or hazardous substances to air, water, soil and ecosystem services?
- Will this project raise awareness about waste prevention and recycling and will it help reduce the amount of waste going into the landfill?
- Will this project still be relevant when looking at the demographic changes ahead?
- Will this project consider the most up-to-date technology for recycling and waste reduction?
- Will this project use products that are non-polluting or come from an environmentally friendly source that will reduce negative impacts of the project on the environment, e.g., FSC wood, non-toxic, and non bio-accumulative chemicals?
- Will this project avoid the risks of water, air, and soil contamination?
- Will this project support the provision of environmental and social services in a certain area (e.g., flood prevention, water purification, air cleaning)?
- Will this project be beneficial in helping the county to adapt to the effects of climate change (e.g., changes in precipitation, flood and drought risks, heat emergencies, etc.)?
- Is this project avoiding negative impacts on water bodies, wetlands, etc., and is this project supporting the establishment and management of protected areas in water bodies, wetlands, etc.?
- Is this project proposing activities to raise awareness about water scarcity, water conservation, or water recycling and will this lead to an improvement of the water quality of a certain water body?
- Will this project still be beneficial once the funding is used and what, if any, public funding will need to be used for ongoing maintenance?
- Will this project support jobs in the eco-technology field and/or does this project include training for relevant stakeholders in renewable energy and other clean and sustainable technology?
- Has this project developed a strategy for measuring anticipated outcomes of the project?
- Has this project developed a strategy for how to disseminate results or best practices?
- Will this project improve equity outcomes for everyone?
- Will this project improve access to community services and facilities for all people of the community?



Quality | Integrity | Experience

- ⚡ Electrical Contractors
- 🔧 Technology Solutions
- 🔧 Design/Build Specialists

Alliant Energy Center

BID/PCO # AEC-MENDOTA

July 12, 2021

ATTN: Don Kraft

RE: Alliant Energy Center Mendota Meeting Room Lighting Upgrade

We are pleased to submit our proposal for the electrical work at the Project Listed Above, detailed as follows:

Scope Of Work: **Total = \$ 119,000.00**

Provide Material, Labor, and Subcontractor for Demo of existing light fixtures in (8) Mendota meeting rooms and installation of a complete LED, color tunable 2x4 light system.

Includes:

- 176 Type A 2x4 fixtures
 - LED FLUO 2BLT4 TUWH PROR 60L ADP NLT \$264.61 EA.
 - TOTAL \$46,571.00
- 16 Type A EM/Battery backup fixtures
 - LED FLUO 2BLT4 TUWH PROR 60L ADP EL14L NLTEMG \$446 EA.
 - TOTAL \$7,136.00
- 18 LED exit lights
 - LED EMER EXRG EL M6 \$17.00 EA.
 - TOTAL \$306.00
- Full controls package including (8) touch screen Fresco units, startup and training
 - CTRL FCS 7TSN DBL
 - CTRL NPODMA 4S DX WH
 - CTRL NPS 80
 - CTRL CONTROL SERVICES
 - TOTAL \$22,424.00
- Install straight time labor
 - \$27,174.00
- Demo straight time labor
 - \$14,291.00
- All associated pipe, wiring, and LV connections
 - \$3,000.00
- Full submittal drawings, electronic and hard copies
- Full lighting layout drawings, electronic and hard copies
- Full Control drawings, electronic and hard copies
- Demo of existing fixtures
- Lamp recycling

Excludes:

- Lift rental
- Recycling of fixtures
- Premium time
- Removal or replacement of ceiling grid or tiles
- Repair of any unforeseen existing electrical conditions above the drop ceilings
- Patching of existing can light openings

Fixture quotes are good until 7/8/21

We are expecting longer fixture lead times than normal. Once approved we can get updated lead times.

Please feel free to contact me if you have any questions or require additional information.

Sincerely,
STAFF ELECTRIC CO., INC.



Jim Hynes
Project Manager
JH:su

Bid Accepted By: _____

Date: _____

PO#: _____



Quality | Integrity | Experience

- ⚡ Electrical Contractors
- 🔧 Technology Solutions
- 🔩 Design/Build Specialists

Alliant Energy Center

BID/PCO # AEC-LAKERM

July 12, 2021

ATTN: Don Kraft

RE: Alliant Energy Center Lake Room Lighting

We are pleased to submit our proposal for the electrical work at the Project Listed Above, detailed as follows:

Scope Of Work:

Provide Material, Labor, and Subcontractor for Demo of existing light fixtures in (4) Lake rooms and (1) Board room on the second level of the Exhall and installation of (2) complete LED color tunable 2x4 light systems.

BOARD AND LAKE ROOMS

Includes:

-52 Type A 2x4 fixtures in Lake rooms

- LED FLUO 2BLT4 TUWH PROR 60L ADP NLT \$264.61 EA.
- TOTAL \$13,760.00

-13 Type A 2x4 fixtures in the Board room

- LED FLUO 2BLT4 TUWH PROR 60L ADP NLT \$264.61 EA.
- TOTAL \$3,440.00

-8 Type A EM 2x4 fixtures in the Lake rooms

- LED FLUO 2BLT4 TUWH PROR 60L ADP EL14L NLTEMG \$446.00 EA.
- TOTAL \$3,568.00

-2 Type A EM 2x4 fixtures in the Board room

- LED FLUO 2BLT4 TUWH PROR 60L ADP EL14L NLTEMG \$446.00 EA.
- TOTAL \$892.00

-8 LED exit lights in the Lake rooms

- LED EMER EXRG EL M6 \$17.00 EA.
- TOTAL \$136.00

-2 LED exit lights in the Board Room

- LED EMER EXRG EL M6 \$17.00 EA.
- TOTAL \$34.00

-Full controls package including (4) touch screen Fresco units, start up and training in the Lake rooms

- CTRL FCS 7TSN DBL
- CTRL NPODMA 4S DX WH
- CTRL NPS 80
- CTRL NPARTITION KIT
- CTRL CONTROLS SERVICES
- TOTAL PACKAGE \$11,212.00

-Full controls package including (1) touch screen Fresco unit, start up and training in the Board room

- CTRL FCS 7TSN DBL
- CTRL NPODMA 4S DX WH
- CTRL NPS 80
- CTRL CONTROLS SERVICES
- TOTAL PACKAGE \$2803.00

-Install straight time labor Lake Rooms

- \$15,087.00

-Install straight time labor Board Room

- \$3,772.00

-Demo straight time labor Lake Room

- \$7,146.00

-Demo straight time labor Board Room

- \$1,787.00

-All associated pipe, wiring and LV connections

-Full submittal drawings, electronic and hard copies

-Full Control drawings, electronic and hard copies

-Demo of existing fixtures

-Lamp recycling

Excludes:

-Lift rental

-Recycling of fixtures

-Premium time

-Removal or replacement of ceiling grid or tiles

-Repair of any unforeseen existing electrical conditions above the drop ceilings

Clarifications:

Fixture quotes are good until 7/8/21

We are expecting longer fixture lead times than normal. Once approved we can get updated lead times.

LAKE ROOM COST BREAK OUT:

LIGHT FIXTURES \$17,464

CONTROLS \$11,212

INSTALL \$15,087

DEMO \$7,146

TOTAL \$50,909

BOARD ROOM COST BREAK OUT:

LIGHT FIXTURES \$4,366

CONTROLS \$2,803

INSTALL \$3,772

DEMO \$1,787

TOTAL \$11,728

Please feel free to contact me if you have any questions or require additional information.

Sincerely,
STAFF ELECTRIC CO., INC.

Jim Hynes
Project Manager
JH:su

Bid Accepted By: _____
Date: _____
PO#: _____

The following review of the Alliant Energy Center's lighting project was completed by Dane County facilities management. AEC's responses to the identified areas of concern are in red.

Afternoon everyone,

I was asked to go take a walk through the AEC conference rooms to evaluate the lighting upgrade proposal that was put together by Staff Electric. I was able to review the proposal before I was onsite there today and it gave me a little reference as to what the facility was looking for. After JT showed me the rooms that the facility would like upgraded I have small amount of feedback for Staff Electric and the County. In looking at their proposal it appears no one from Staff ever did a photometric layout for the rooms that will be upgraded and that is reflected in the cost estimate. If the County chooses to go this route and accept the Staff bid I would do it with contingencies built in that will help the County recoup some of the inflated price from their bid. A few of the questions that I would ask before moving forward with this project with Staff as the Contractor are

- A photometric layout of the all the spaces listed for upgrades. You don't replace a 6" can light with a 2'x4' LED fixture
A photometric layout of the spaces was performed and has been included with these meeting materials as a separate document.
- Why is the demo labor being subcontracted out? It's a government job which means it pays white sheet wages and now the County is supposed to pay a markup to Staff for their subcontractor to do the demo.
The Alliant Energy Center will use County labor for the demolition work.
- Who chose the Fresco Lighting Control System? There are other controllers that work just as good if not better and can be installed for about 40% of the cost of the Fresco system.
The Fresco allows us to have room partition control of four rooms in a row. We could use a less expensive control station, but it would not be able to do the combining and separating of the spaces as needed.
- Why are we not utilizing the Nlight Air controls that can come built into the fixtures instead of spending \$22,424 plus all the additional labor costs to install the Fresco controls
The Fresco Lighting Control System, which we have opted to use for the reasons stated above, is not compatible with Nlight Air.
- Was there no plan to do anything with the T8 fluorescent wall wash and up lighting? There isn't anything spelled out in the bid to convert that to LED
The wall wash fixtures will be removed from the rooms as a separate project, and as such will not need to be updated to LED.
- What is the plan for all the drywall cans in the Mendota room? There are no retro fit options listed in the proposal and there are quite a few cans in the drywall portion of the ceiling.
The cans were in place primarily for dimming the lights. With lighting level checks we found we had adequate lighting. This combined with the dimming capability of the new fixtures allows the Alliant Energy Center to eliminate the cans and patch the drywall.

All of these are questions that need to be asked if the County wants to go forward with the proposal from Staff and will save the County a considerable amount of money!

I am also very willing to meet with the staff at AEC and help design a system that is both very cost effective and achieves the same results of converting inefficient fluorescents to LEDs and can utilize some of the controls that are already in place and use some of the other technologies that are available to us that have a proven track record. I have already done the design work for the Boardroom and 4 Lake Rooms and it is a large savings compared to the Staff bid. I am happy to answer any other questions that might come up during discussions about this. Feel free to call anytime!

Best,
Nathan Tuggle, NABCEP
DCFM Master Electrician



ENTERPRISE

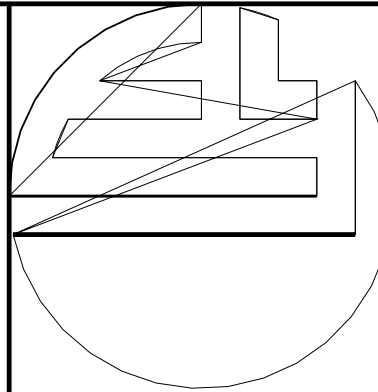
Lighting & Control

Enterprise Lighting & Control Drawing Package

ALLIANT ENERGY

Drawing Type:
Prepared For:

Date: 5/1/2021
Scale: NOT TO SCALE
Drawn By: GS
Project #:
DWG Ref: NONE
Sheet: LC0.0



| General System Notes |
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| ON DIGITAL SYSTEMS, ALL DEVICES TO BE CONNECTED IN A DAISY CHAIN PATTERN SO THAT THE FIRST AND LAST DEVICE IN THE CHAIN HAS AN OPEN PORT. |
| ON DIGITAL SYSTEMS, CONTRACTOR SHALL NOTE AND LABEL ADDRESS AND LOCATION OF EACH DEVICE ON THE SYSTEM ONE-LINE DIAGRAMS OR SYSTEM LAYOUT DRAWINGS AT TIME OF INSTALLATION. |
| ONE-LINE DIAGRAMS INDICATE THE REQUIRED GROUPING OF WIRES, NOT THE NUMBER OR SIZE OF CONDUITS. |
| WIRING SHALL CONFORM TO THE NATIONAL ELECTRICAL CODE (NEC) AND APPLICABLE LOCAL CODES, INCLUDING PROVISION OF EQUIPMENT GROUNDING AS REQUIRED BY THE NEC. |
| POWER CONDUCTORS SHALL BE SIZED PER THE NEC AMPACITY TABLES (ARTICLE 310), INCLUDING ADJUSTMENT FACTOR AND NEUTRAL CONDUCTOR REQUIREMENTS (FEED AND BRANCH NEUTRAL CONDUCTORS MUST BE COUNTED AS CURRENT CARRYING CONDUCTORS). RUN SEPARATE NEUTRAL CONDUCTORS FOR EACH DIMMED LOAD CIRCUIT. |
| FOR 0-10VDC DIMMING SYSTEMS, VIOLET AND GRAY CONDUCTORS ARE FOR 0-10VDC LOW VOLTAGE TERMINATIONS ONLY. NEVER TERMINATE LINE VOLTAGE (120/230/277VAC) TO VIOLET AND GRAY. |
| CONTRACTOR IS RESPONSIBLE FOR ALL CONTROL TERMINATIONS. NO SPLICES ARE PERMITTED IN CONTROL WIRING. |
| POWER AND CONTROL CONDUCTORS MUST NOT SHARE THE SAME RACEWAY OR CONDUIT. |
| LIGHTING CONTROL EQUIPMENT MUST BE INSTALLED, MAINTAINED, AND OPERATED IN AN "OFFICE CLEAN" DRY ENVIRONMENT, INDOOR DRY LOCATIONS ONLY, 10% - 90% RELATIVE HUMIDITY; AMBIENT TEMPERATURE 0°- 40°C (32°- 104°F) - 0°- 35°C (32°- 95°F) RECOMMENDED. |
| SENSORS IN ELECTRICAL/MECHANICAL LOCATIONS NEED TO BE VERIFIED WITH AUTHORITY HAVING JURISDICTION. REFER TO NEC 110.26.D. |
| RELAY AND DIMMER PANEL SCHEDULES SHOULD CONTAIN BREAKER PANEL INPUTS AS WELL AS ZONES/AREAS CONTROLLED. |
| VERIFY MAXIMUM CABLE LENGTHS BASED ON CONTROL SYSTEM. MANUFACTURER IS NOT RESPONSIBLE FOR SYSTEMS EXCEEDING CABLING PARAMETERS. |
| LOW VOLTAGE CABLE MUST BE INSTALLED AT LEAST 12 INCHES FROM ALL LINE VOLTAGE CONDUCTORS EXCEPT TO CROSS OR MAKE TERMINATIONS. CAT. 5 CABLE MUST BE KEPT AWAY FROM ALL EMF DEVICES SUCH AS BALLASTS OR TRANSFORMERS. |
| 0-10V DIMMING BALLASTS AND DRIVERS ARE REQUIRED TO COMPLY WITH IEC 60929 ANNEX E SPECIFICATIONS. |
| Load Types |
| LINE VOLTAGE INCANDESCENT - NON-PHASE DEPENDENT FOR DIMMING. |
| MAGNETIC LOW VOLTAGE INCANDESCENT - ALLOWABLE IN FORWARD PHASE CONTROL MODE ONLY. TRANSFORMER MUST BE RATED FOR DIMMING BY ITS MANUFACTURER. ADD 25% TO LAMP WATTAGE TO ALLOW FOR TRANSFORMER LOSS AND TO CALCULATE TOTAL LOAD. |
| FLUORESCENT - ALLOWABLE WITH 2-WIRE BALLAST, 0-10VDC BALLASTS, SOME 3-WIRE AND SWITCHED DEPENDING ON SYSTEM COMPATIBILITY. VERIFY CONTROL TYPES WITH YOUR REGIONAL SUPPORT TEAM. |
| LED - DIMMING ALLOWED PER LED DRIVER MANUFACTURER SPECIFICATIONS. VERIFY CONTROL TYPES WITH YOUR REGIONAL SUPPORT TEAM. |
| NEON and COLD CATHODE - ALLOWABLE IN FORWARD PHASE CONTROL MODE ONLY. BALLAST MUST BE RATED FOR DIMMING BY ITS MANUFACTURER AND BE NORMAL (LOW) POWER FACTOR. CONNECTED LOAD MUST NOT EXCEED 50% OF THE DIMMER'S NOMINAL RATING. |
| MOTORS - NO DIMMING ALLOWED. SWITCHED CONTROL SOURCE ONLY. |
| ELECTRONIC LOW VOLTAGE INCANDESCENT - ALLOWABLE, NORMALLY IN REVERSE PHASE CONTROL MODE ONLY. ELV TRANSFORMER MUST BE RATED FOR DIMMING BY ITS MANUFACTURER. |
| HID - DIMMING NOT ALLOWED UNLESS WITH DIMMABLE HID DRIVER. OTHERWISE, MUST BE ON SWITCHED CONTROL SOURCE. |
| EMERGENCY - PLEASE CONTACT YOUR REGIONAL SUPPORT TEAM TO VERIFY EMERGENCY CONTROLS NECESSARY BASED ON SYSTEM REQUIREMENTS. |

| Fresco Notes |
|--|
| FRESCO REQUIRES +24 VDC, 6W MAX. USE POWER SUPPLY PROVIDED WITH FRESCO. |
| FRESCO IS POWERED VIA RED AND BLACK WIRES ON THE 4-POSITION HARNESS. CAP OFF UNUSED WIRES. |
| FRESCO MAY BE LOCATED IN ANY POSITION ON THE NLIGHT LINK FOR PROPER OPERATION. |
| CONNECT DMX SHIELD TO EARTH GROUND AT ONE POINT IN THE DMX NETWORK; PREFERABLY ON THE GROUNDED METAL BOX OF THE FRESCO TOUCHSCREEN. |
| FRESCO ACCESSORY POWER IS CLASS 2 AND MUST BE INSTALLED IN ACCORDANCE WITH LOCAL CODES. THIS INCLUDES INSTALLING THE POWER SUPPLY IN A 4"x4" JUNCTION BOX. |

| nLight System Notes |
|--|
| EVERY NLIGHT ENABLED DEVICE (INCLUDING NLIGHT EANABLED FIXTURES) IS FURNISHED WITH (1) PERMANENTLY ADHERED ID TAG AND (1) MATCHING, PARTIALLY ADHERED ID TAG TO BE PLACED ON THE RISER DIAGRAM SHEET, OR THE LIGHTING CONTROL LAYOUT SHEET, PROVIDED AS PART OF AN NLIGHT SUBMITTAL. THIS SHALL BE DONE DURING INSTALLATION AND PRIOR TO FACTORY STARTUP. FAILURE TO COMPLY MAY RESULT IN STARTUP DELAYS AND ADDITIONAL COSTS AT THE CONTRACTOR'S EXPENSE. DO NOT PLACE DEVICE ID STICKERS ON FLOOR PLAN UNLESS REQUIRED TO EXECUTE NFLOORPLAN SERVICES, REFERENCE NFLOORPLAN SERVICE NOTES ON THIS SHEET FOR SPECIFIC REQUIREMENTS. |
| ONE RELAY PACK OR NLIGHT ENABLED FIXTURE IS NEEDED PER CIRCUIT/ZONE TO BE CONTROLLED AND CAN RESIDE WITHIN SENSORS, WALLPODS, OR RELAY PACKS. POWER PACK PLACEMENT ON DRAWINGS IS FOR COUNTING ONLY; FINAL PLACEMENT IS UP TO DISCRETION OF CONTRACTOR/ENGINEER. PLEASE RECHECK COUNTS TO VERIFY THE NUMBER OF RELAYS NEEDED TO SWITCH ALL DESIRED LOADS. |
| BRIDGES, RELAYS, POWER PACKS, WALLPODS, AND SENSORS ON DRAWINGS WERE PLACED WITH INFORMATION PROVIDED AT TIME OF DESIGN. ADDITIONAL BRIDGES AND/OR SENSORS MAY BE REQUIRED DEPENDING ON BUILDING CHANGES, FINAL PARTITION HEIGHT/PLACEMENT, FURNITURE PLACEMENT, EQUIPMENT HEIGHT/PLACEMENT AND SHELVING HEIGHT/PLACEMENT. |
| THE LAYOUT OF THE NETWORK BACKBONE (BRIDGES AND GATEWAYS) HAS BEEN PLACED IN A SEPARATE TREE DIAGRAM AND NOT ON THE ACTUAL LAYOUT. FINAL PLACEMENT OF THE BRIDGE(S) AND GATEWAY(S) DEVICES SHALL BE AT THE CONTRACTOR/ENGINEER DISCRETION. |
| ALL DEVICES HAVE RJ-45 FEMALE PORTS. MAKING NETWORK CONTROL CABLES IS REQUIRED, T568B TERMINATIONS ARE RECOMMENDED. IT IS IMPERATIVE THAT ALL NETWORK CONTROL CABLES BE TESTED WITH A LAN CABLE TESTER TO VERIFY PROPER TERMINATIONS. |
| DAISY-CHAINED DEVICES SHOULD BE POWERED UP AND WORKING ON DEFAULT PROGRAMMING PRIOR TO CONNECTION TO BRIDGE OR GATEWAYS. |
| LOW VOLTAGE NETWORK CONTROL CABLE (CAT5/5E/6) RUNS FOR LOCAL ZONES, HOMERUNS AND BACKBONE SHOULD BE WHITE WITH CABLES LABELED. |
| CONTRACTOR TO VERIFY BLINK/DIAGNOSTIC CODES (VISIT HTTP://NLIGHTCONTROLS.COM/WP-CONTENT/UPLOADS/NLIGHT_POCKET_GUIDE.PDF) WHEN CONNECTING GATEWAYS/BRIDGES TO ZONES. |
| MAXIMUM CABLE LENGTH FROM START DEVICE TO END DEVICE IS 1500' INCLUDING HOMERUN TO BRIDGE DEVICE, IF PRESENT. MANUFACTURER IS NOT RESPONSIBLE FOR SYSTEMS EXCEEDING CABLING PARAMETERS. |

FOR ADDITIONAL TECH SUPPORT AND INSTALLATION INFORMATION PLEASE CALL 1.800.535.2465

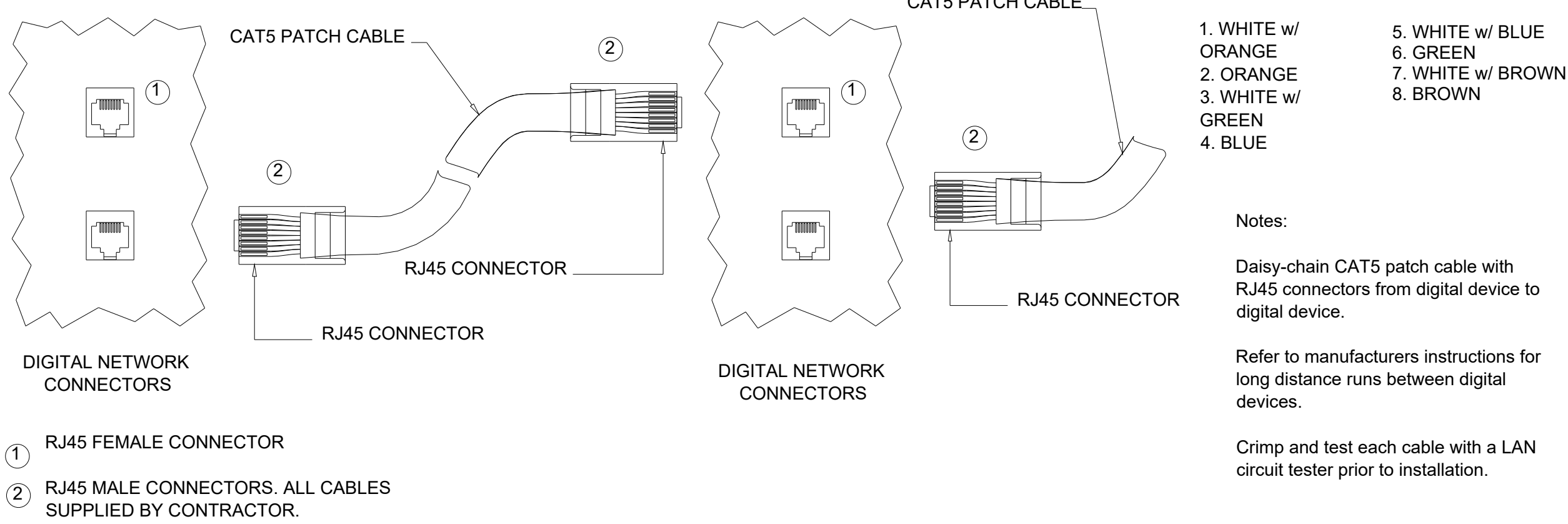
| TIA / EIA-568-B CABLING STANDARD TERMINATION | | | |
|--|--------|-----------------|-----------------|
| Function | PAIR # | PIN OUT (T568B) | Wire Color |
| Tx + (T2) Tx - (R2) | 2 | 1 | WHITE w/ BLUE |
| | | 4 | BLUE |
| Rx + (T3) Rx - (R3) | 3 | 1 | WHITE w/ ORANGE |
| | | 2 | ORANGE |
| (T4) (R4) | 4 | 3 | WHITE w/ GREEN |
| | | 6 | GREEN |
| | | 7 | WHITE w/ BROWN |
| | | 8 | BROWN |

TERMINATION & TESTING OF CAT5 CABLES MUST BE DONE BY A QUALIFIED NETWORK INSTALLER

Cable termination requirements :

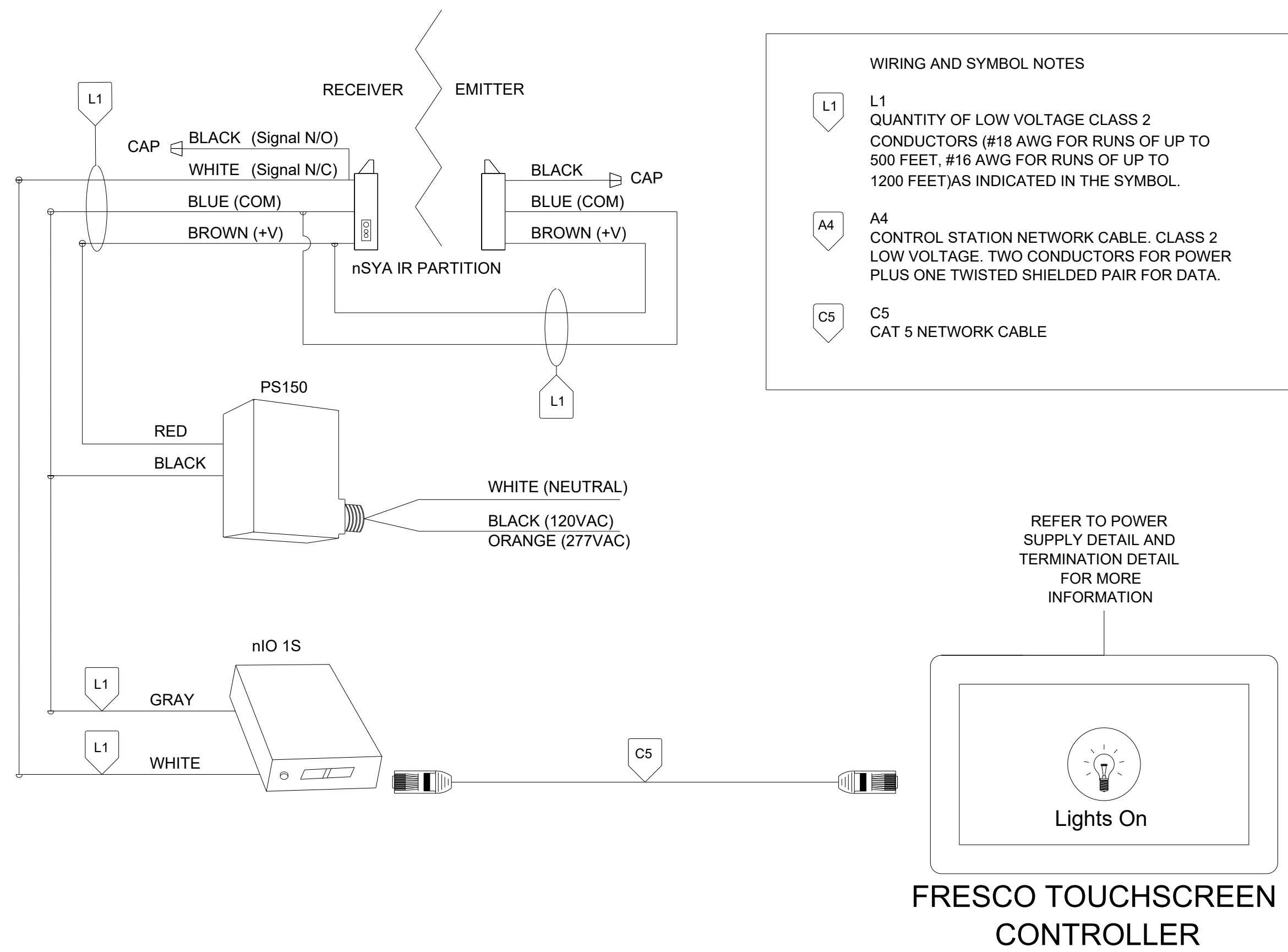
- Strip off outer jacket - approximately 1-1/2" (37.6 mm)
- Terminate approximately 1/2" (12.2 mm) from end of conductors on type 110 punch down block or connector per schedule (568B) - maximum untwist of conductors to terminations is 1/2" (12.2 mm) - trim excess leads.

SEE SYSTEM SPECIFIC NOTES ON SHEET LC0.1 FOR MAXIMUM CABLE LENGTHS.



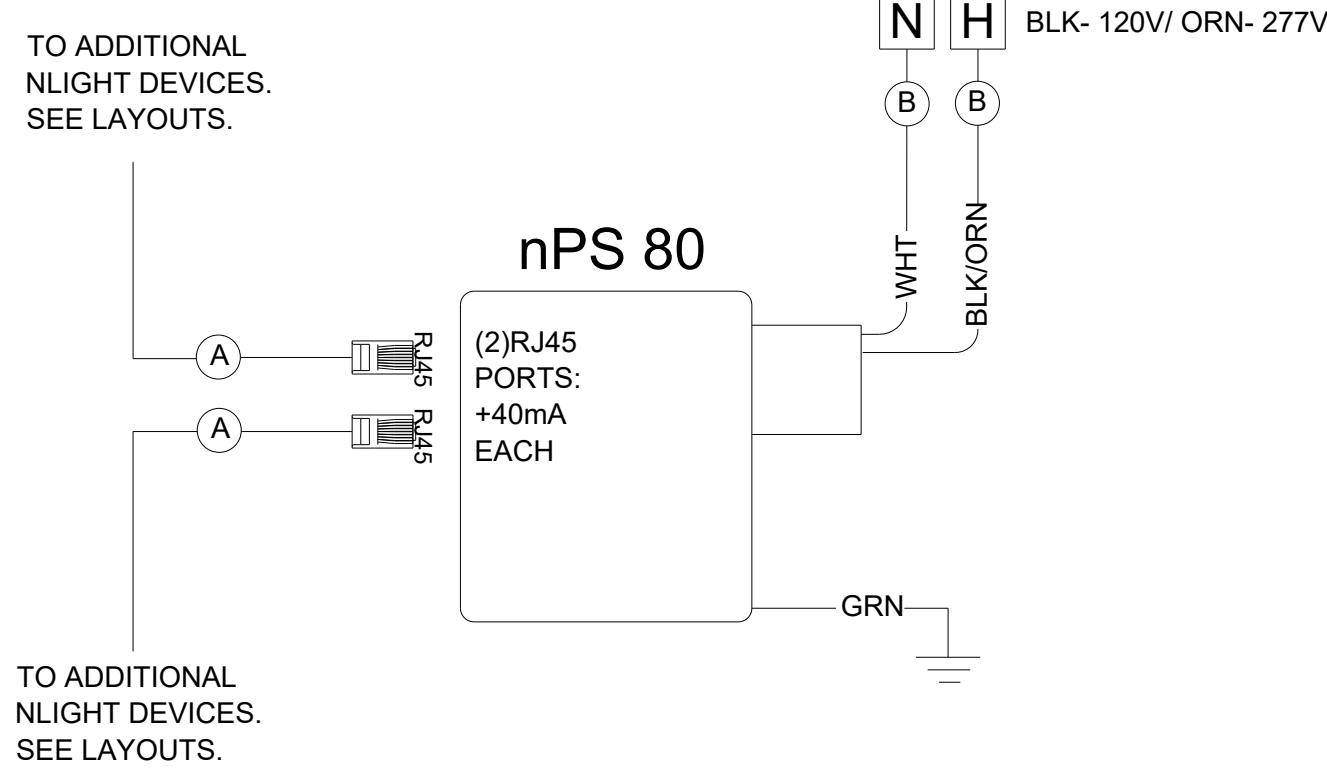
CAT5E/6 CABLE TERMINATION

N.T.S.



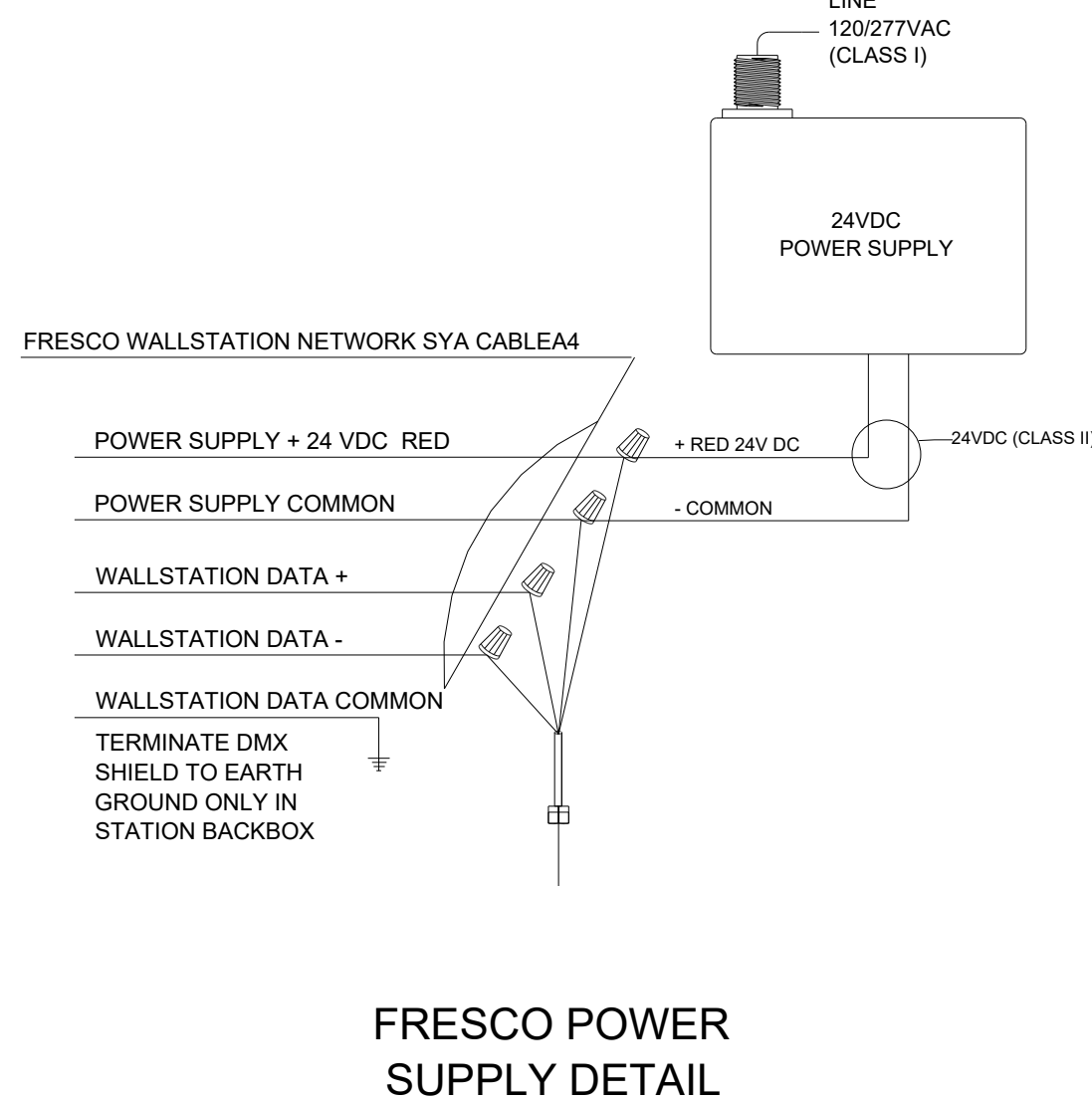
NSYA IR PARTITION SENSOR DETAIL w/ FRESKO

N.T.S.



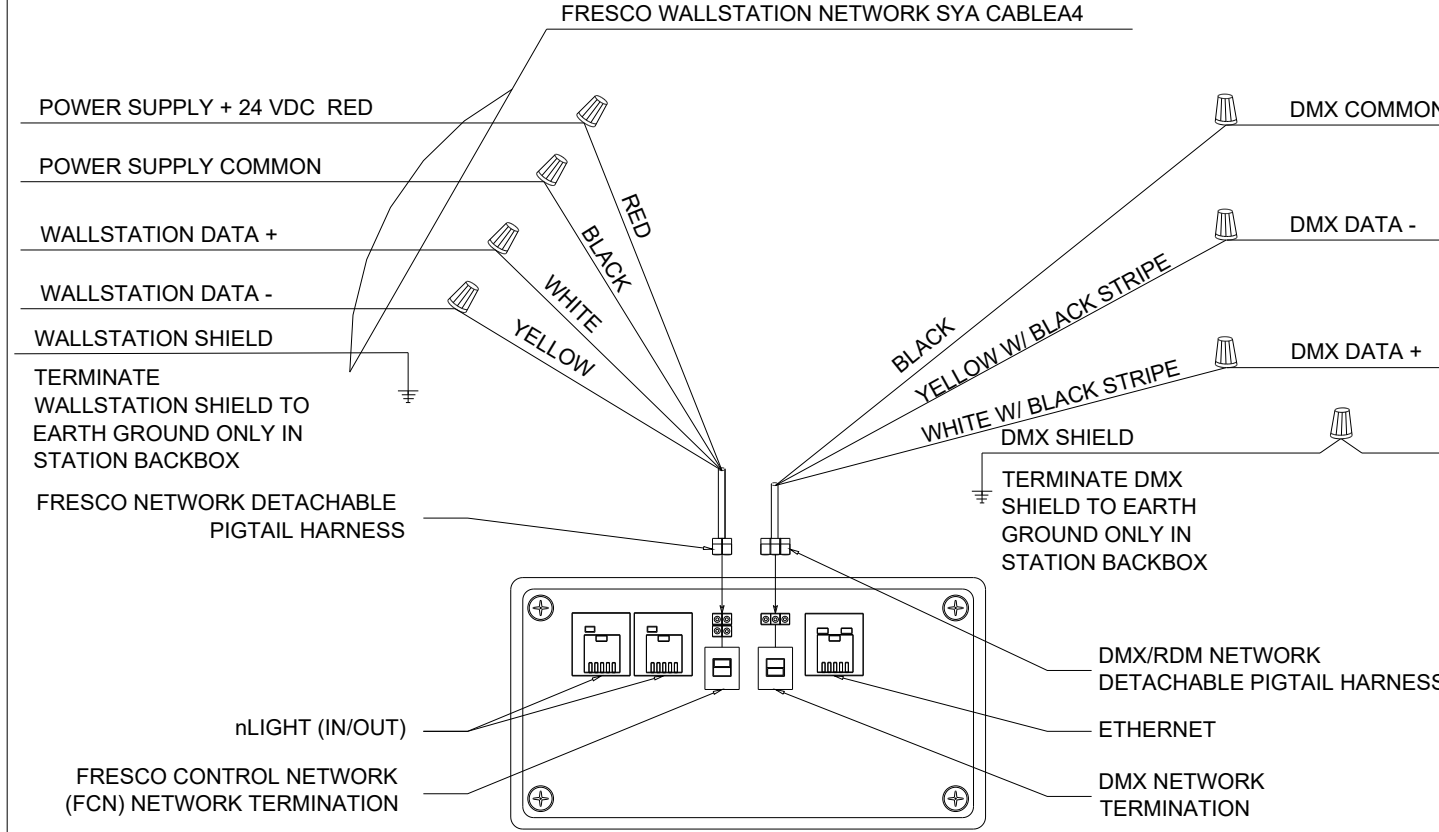
TYPICAL WIRING DIAGRAM: NPS 80

N.T.S.



FRESKO POWER SUPPLY & TERMINATION DETAIL

N.T.S.



LOW VOLTAGE WIRE #18-22 AWG CABLE TERMINATION

| Typical Function | Wire Color |
|--------------------------|------------------------|
| +24VDC | RED |
| SIGNAL | WHITE |
| COMMON | BLACK |
| SIGNAL | BLUE |
| SWITCH SIGNAL(CHANNEL 1) | WHITE w/ BLUE STRIPE |
| SWITCH SIGNAL(CHANNEL 2) | BLUE w/ WHITE STRIPE |
| 0-10V DAMPING SIGNAL | VIOLET |
| 0-10V COMMON | GREY |
| 3-WAY TRAVELER | YELLOW |
| 3-WAY TRAVELER | YELLOW w/ BLACK STRIPE |

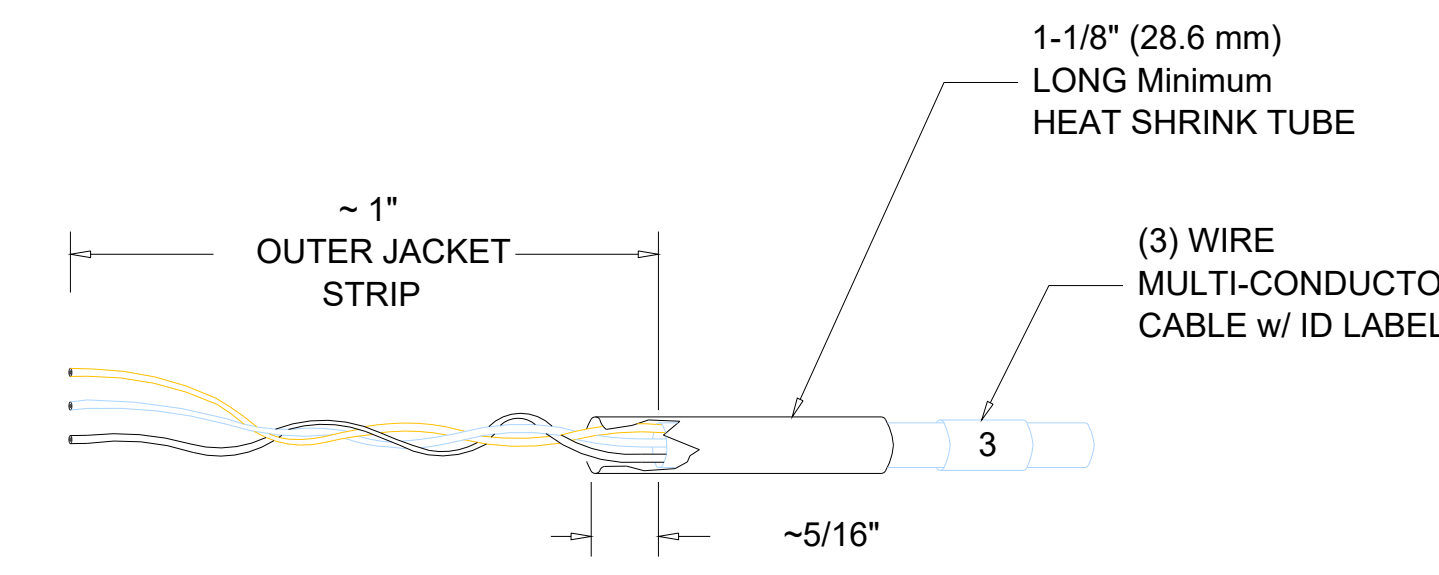
Cable termination requirements :

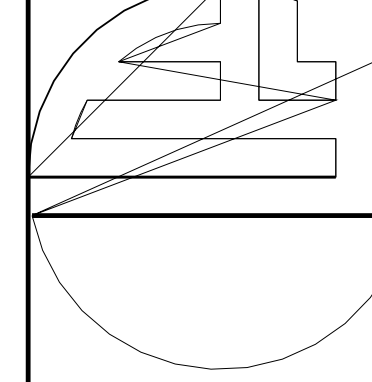
- Strip off outer jacket - approximately 1-1/2" (37.6 mm)
- Fit a piece of 1-1/8" (28.6 mm) long heat shrink tube over the cable extending out 1/4" (6.35 mm) from outer jacket
- Terminate approximately 1/2" (12.2 mm) from end of conductors - maximum untwist of conductors to terminations is 1/2" (12.2 mm) - trim excess leads
- Shrink tubing and seal appropriate as label to the cable at the end of the heat shrink tube

MAXIMUM LENGTH OF ANY RUN FROM INTIAL TO END DEVICE IS 1800 FEET.
NUMBER OF LOW VOLTAGE CONDUCTORS MAY VARY DEPENDING ON LOW VOLTAGE SWITCHING OR DAMPING APPLICATIONS
PLEASE SEE CUT SHEETS OR TYPICAL WIRING DIAGRAMS FOR NUMBER OR LOW VOLTAGE CONDUCTORS REQUIRED

LOW VOLTAGE WIRE #18-22 AWG CABLE TERMINATION

N.T.S.



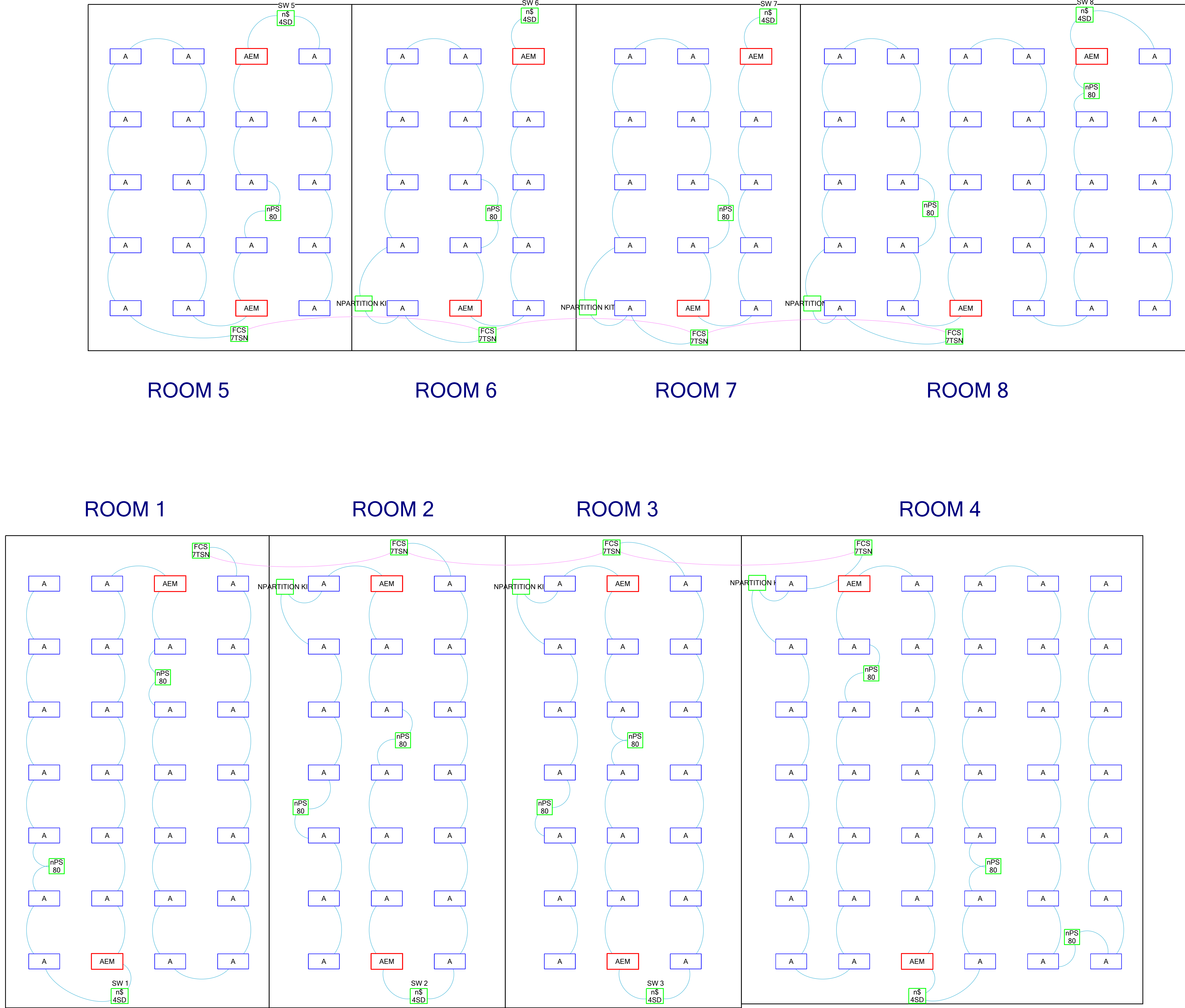


| | | |
|---|----------------|--|
| Created by Greg Smith LC1.0 Project: ALLIANT ENERGY | | |
| 176 | A | A 2BLT4 TUWH PROR 60L ADP MVOLT NLT Luminaire nLight Enabled tuneable white |
| 16 | AEM | AEM 2BLT4 TUWH PROR 60L ADP MVOLT NLTEMG EL14L Luminaire Emergency nLight Enabled tuneable white |
| 8 | FCS 7TSN | FCS 7TSN FCS 7TSN XXX FRESCO DEVICE, 7" TOUCH SCREEN |
| 8 | nS 4SD | nS 4SD NPODMA 4S DX XX nLight Wired Wallpod, 4-Scene, On/Off, Raise/ Lower |
| 6 | NPARTITION KIT | NPARTITION KIT NPARTITION KIT nLight Wired Room Partition Kit, Kit |
| 14 | nPS 80 | nPS 80 NPS 80 Power Supply, 80 mA |

ALLIANT ENERGY

| | |
|-------------------------|-----------------------|
| Drawing Type: Layout | Prepared For: **** |
| Date: 5/1/2021 | Scale: 1/8" = 1' |
| Drawn By: GS | Project #: |
| DWG Ref: | E# ## (XX/XX/20XX) |
| Sheet: | LC1.0 |

| WIRE LEGEND - LC1.0 | |
|---------------------|--|
| | A4 A4 A4 wire |
| | CAT5e CAT5e Pre-terminated CAT5e cable |

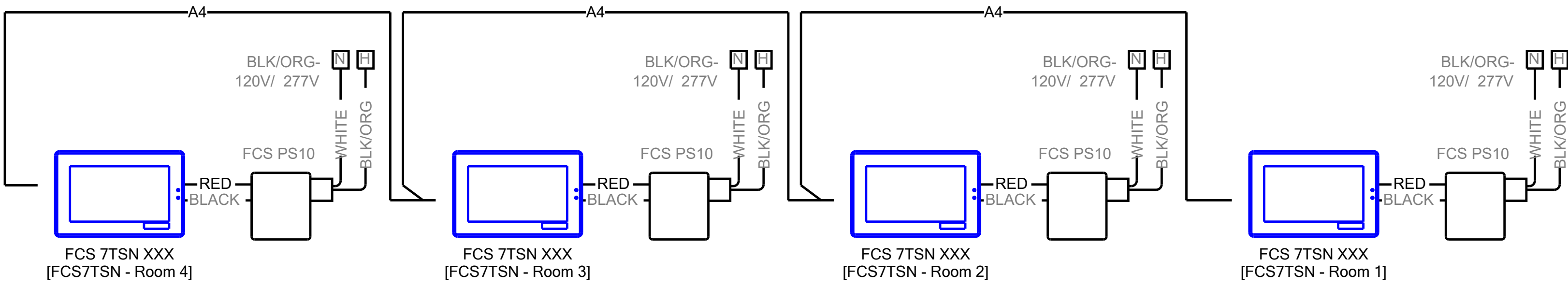
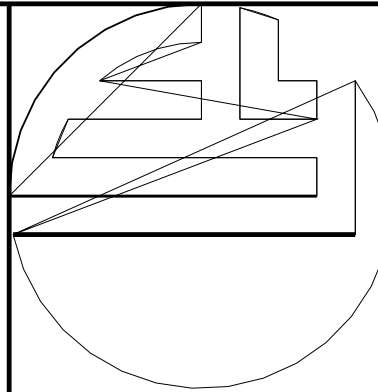


Battery fixtures locations not known as I am not sure where the doors are. Please put them in the correct location when installing.

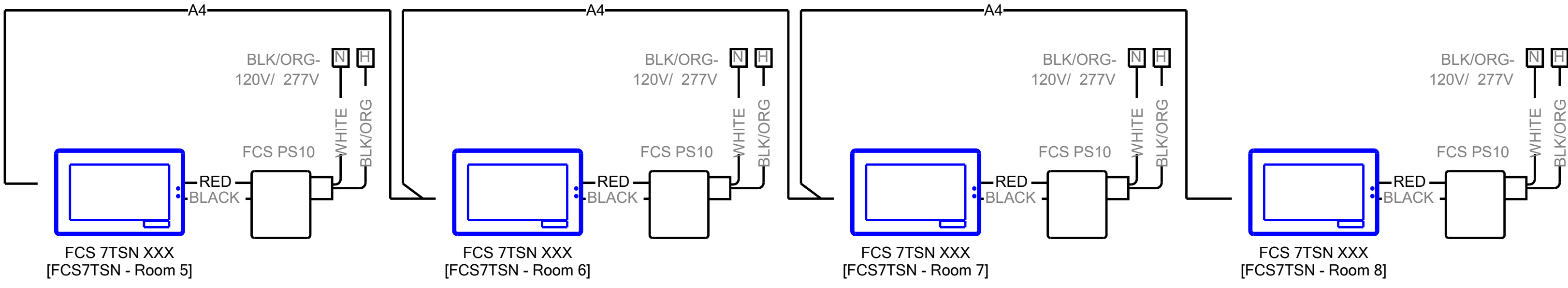
A LC1.0
3/16" = 1"

Disclaimer

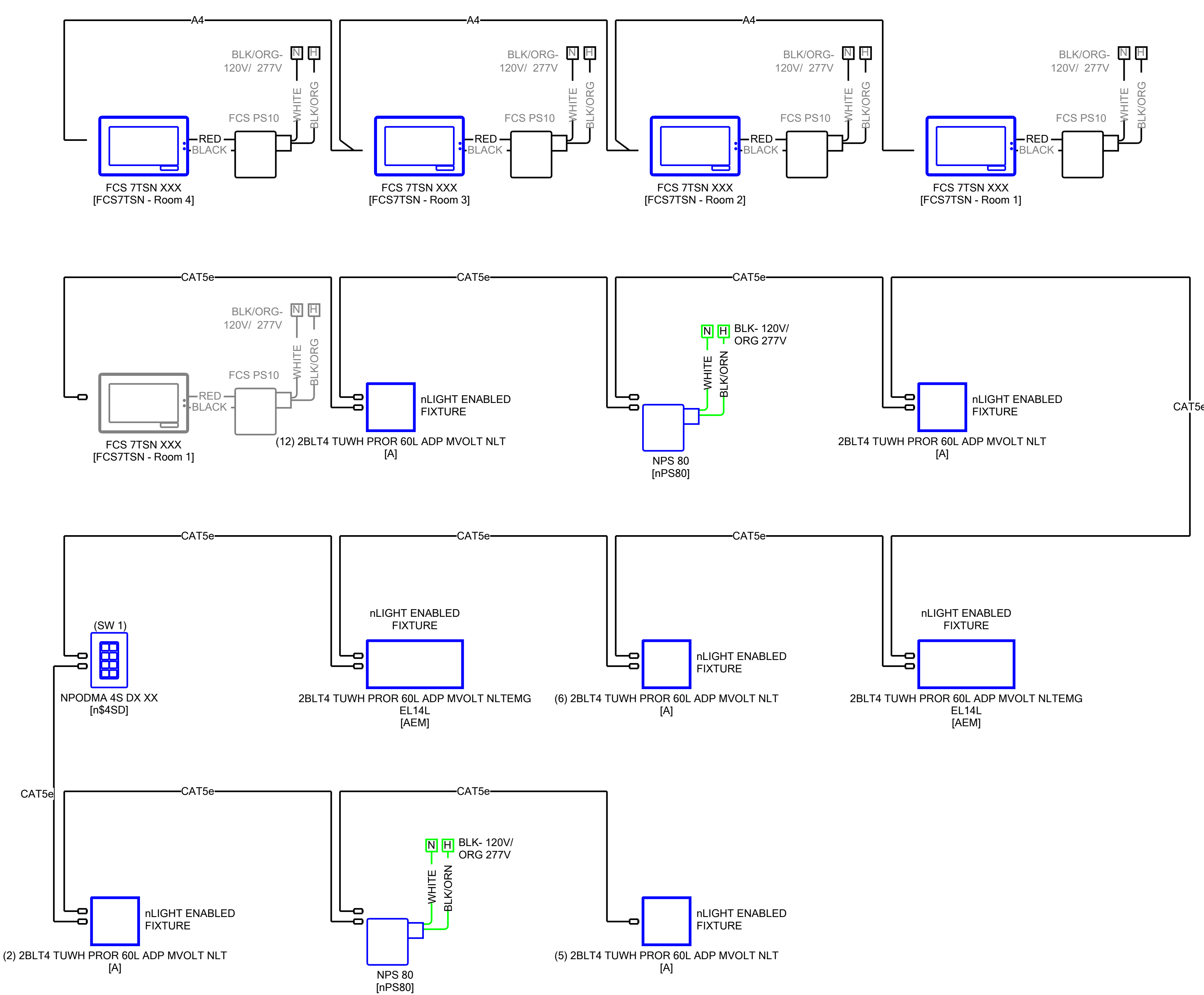
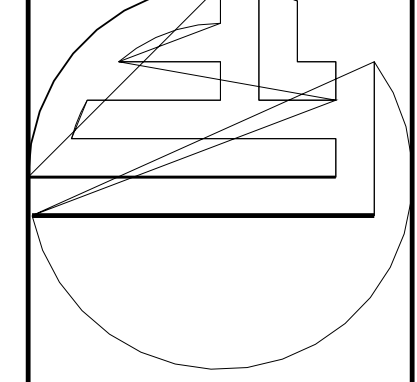
THIS CONTROLS SYSTEM LAYOUT DIAGRAM IS NOT A PROFESSIONAL ENGINEERING DRAWING, AND IS PROVIDED ONLY FOR INFORMATIONAL PURPOSES AND TO HELP THE CUSTOMER OR END-USER (AS APPLICABLE) UNDERSTAND HOW VARIOUS CONTROLS DEVICES ARE ARRANGED AND CONNECT TO EACH OTHER. THIS CONTROLS SYSTEM LAYOUT DIAGRAM IS STRICTLY BASED ON THE INFORMATION PROVIDED TO ACUTY BRANDS, AND IS PROVIDED WITHOUT WARRANTY AS TO ACCURACY, COMPLETENESS, RELIABILITY OR OTHERWISE. IF THE INFORMATION (INCLUDING BUT NOT LIMITED TO FLOOR PLANS, REFLECTED CEILING PLANS, ELECTRICAL PLANS AND SPECIFICATIONS) PROVIDED TO ACUTY BRANDS IS INCOMPLETE OR NOT CURRENT (I.E., NEWER VERSIONS EXIST), THE ACCURACY OF THE LAYOUT DIAGRAM MAY BE ADVERSELY AFFECTED. ONCE THIS CONTROLS SYSTEM LAYOUT DIAGRAM IS RECEIVED BY THE CUSTOMER OR END-USER (AS APPLICABLE), IT IS THE OBLIGATION OF THE CUSTOMER OR END-USER (AS APPLICABLE) TO CONSULT WITH A PROFESSIONAL ENGINEERING ADVISOR TO DETERMINE WHETHER THE PROPOSED DESIGN MEETS THE APPLICABLE PROJECT REQUIREMENTS FOR THE CONTROLS SYSTEM'S PERFORMANCE, CODE COMPLIANCE, SAFETY, SUITABILITY AND EFFECTIVENESS FOR USE IN A PARTICULAR APPLICATION. IN NO EVENT WILL ACUTY BRANDS BE RESPONSIBLE FOR ANY LOSS RESULTING FROM ANY USE OF THIS CONTROLS SYSTEM LAYOUT DIAGRAM.



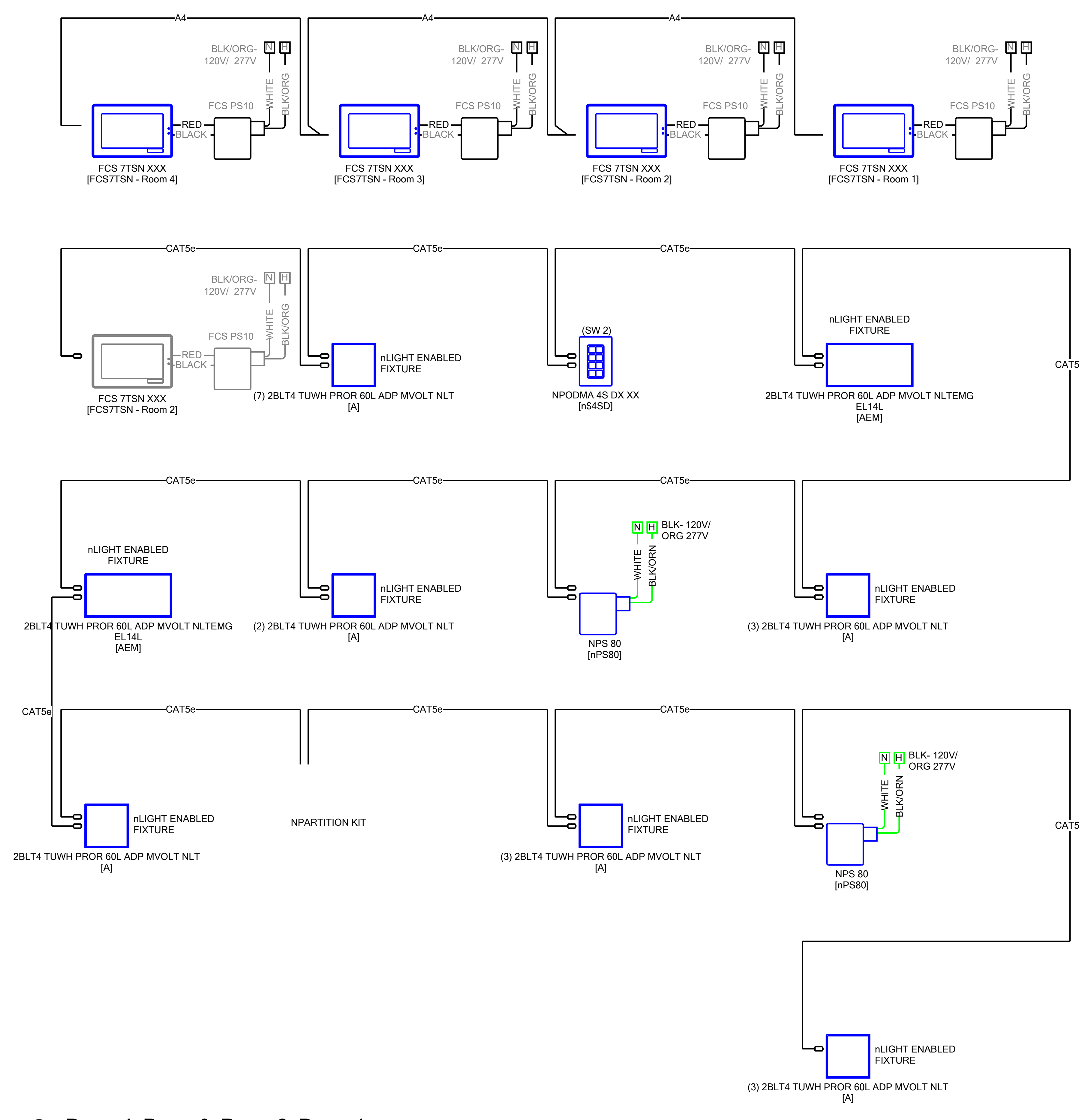
1 FCS7TSN
LC1.0



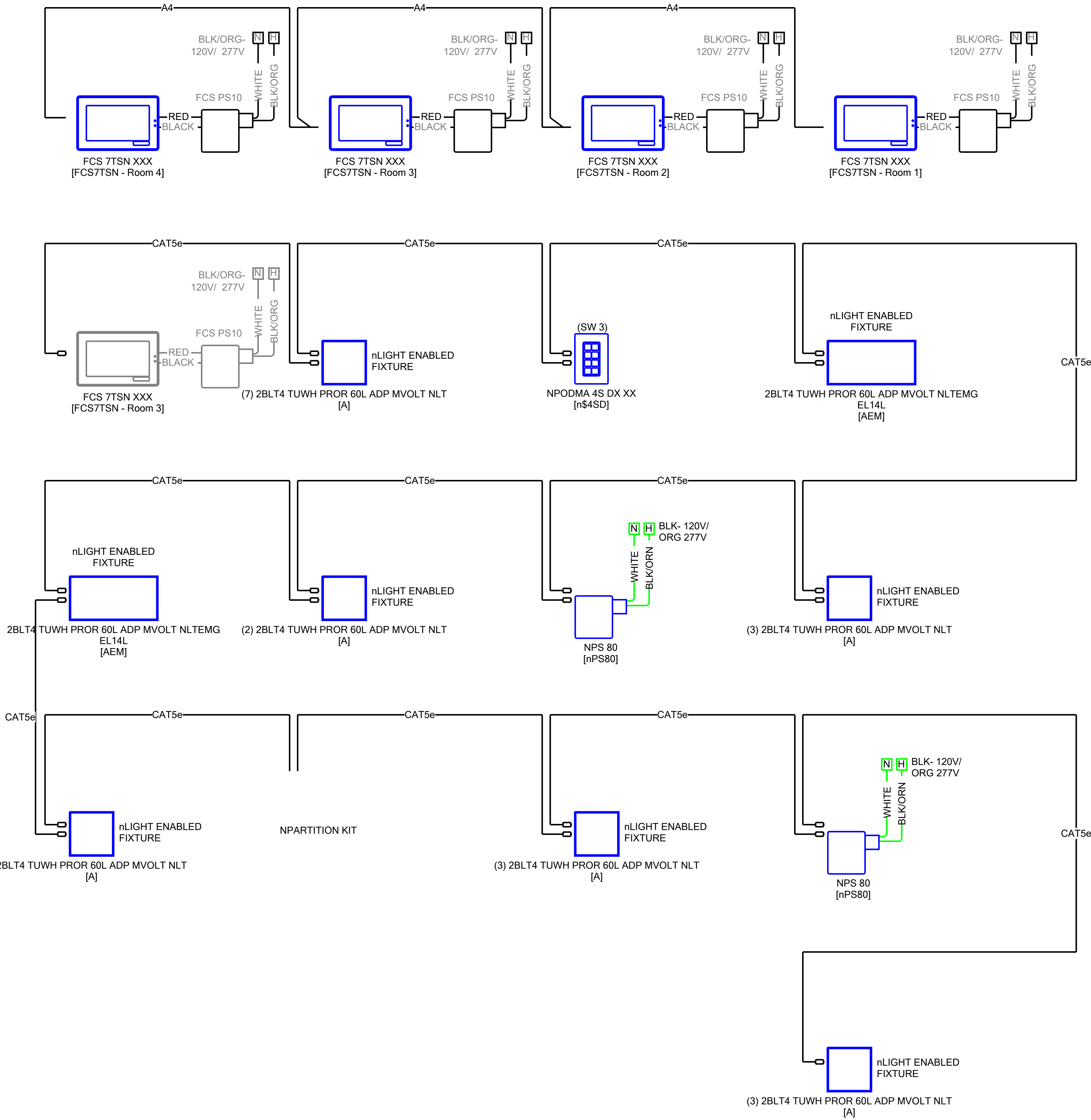
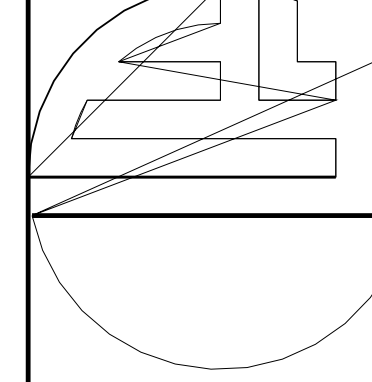
2 FCS7TSN
LC1.0



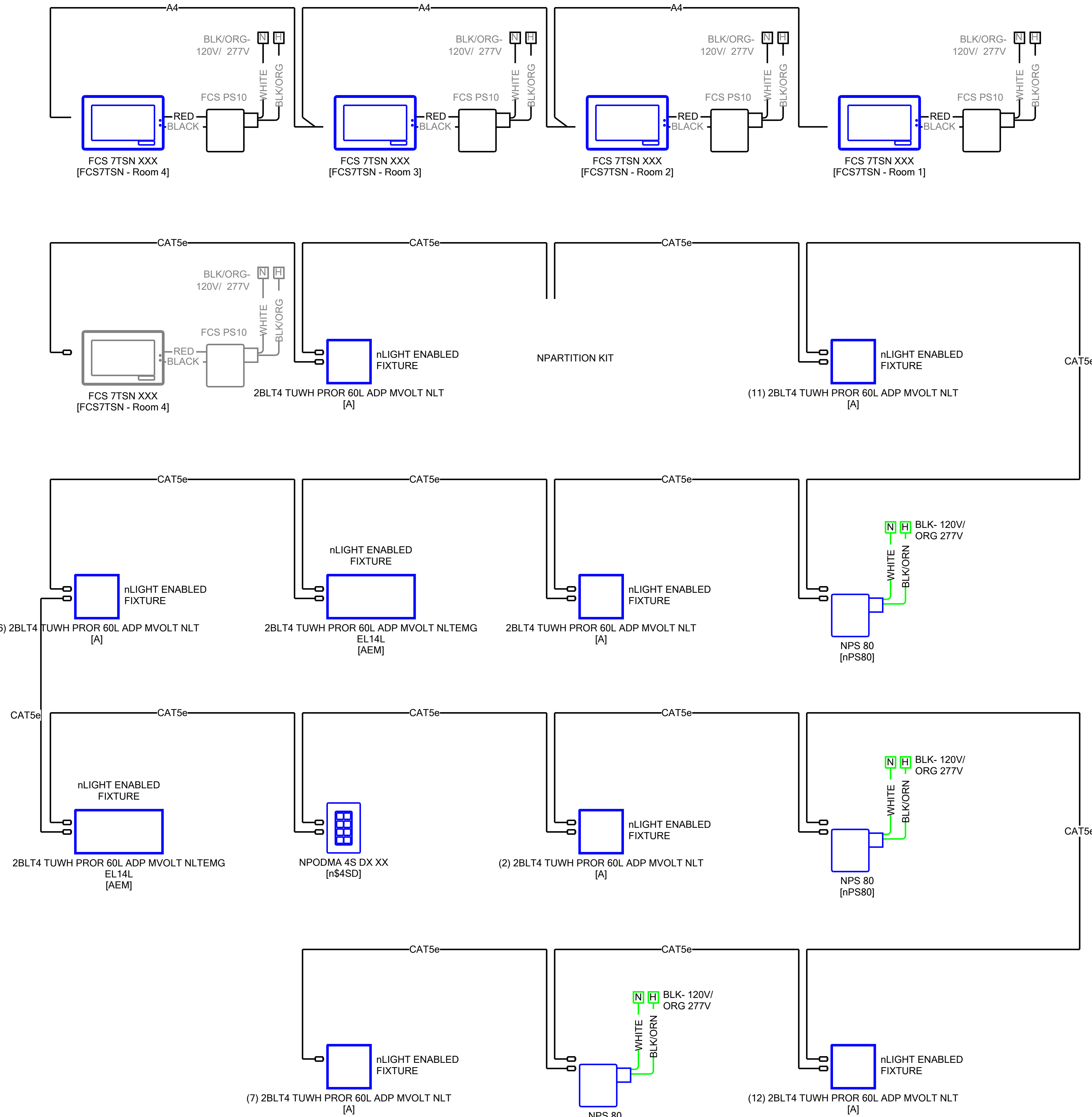
3 Room 4, Room 3, Room 2, Room 1
LC1.0



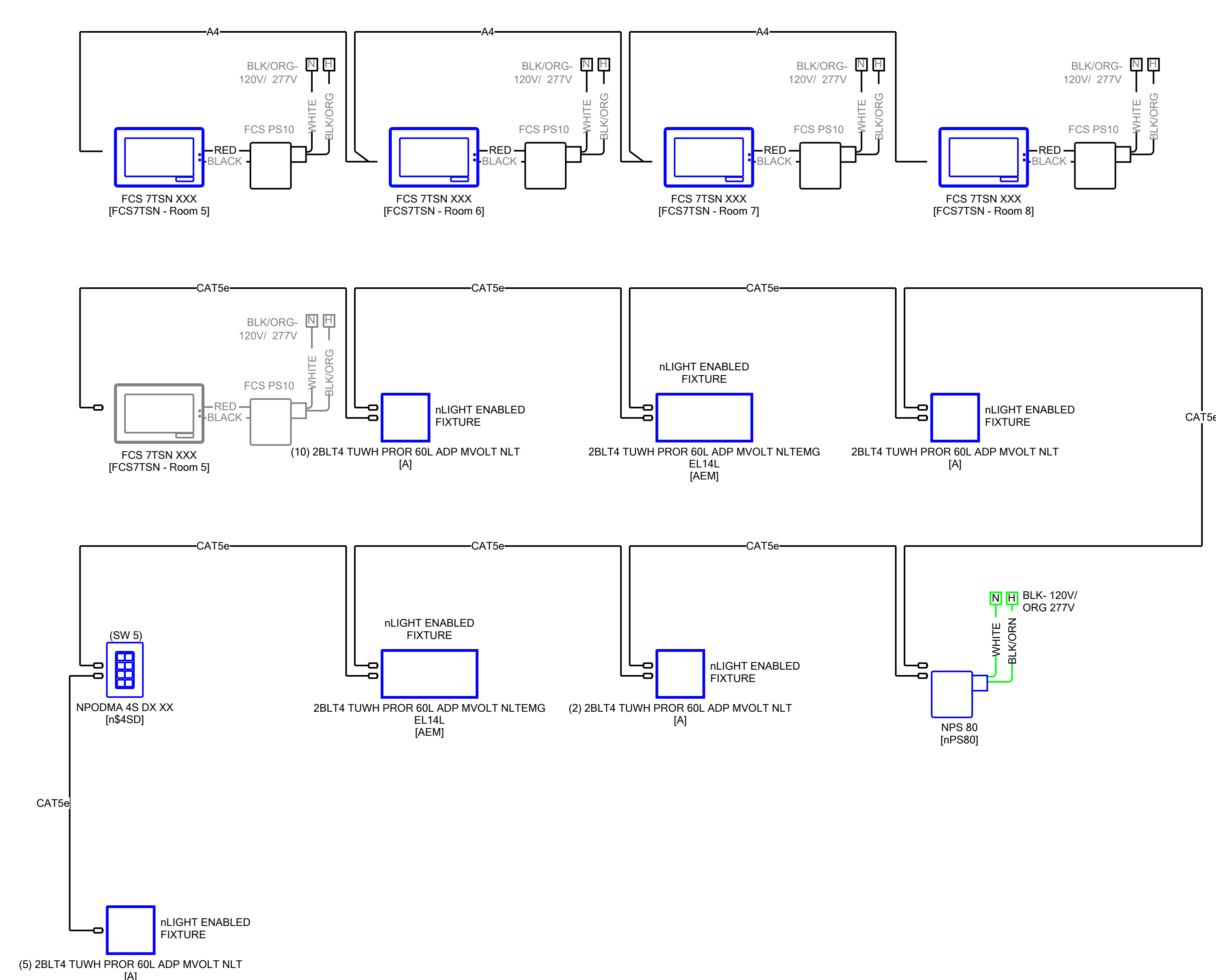
4 Room 4, Room 3, Room 2, Room 1
LC1.0



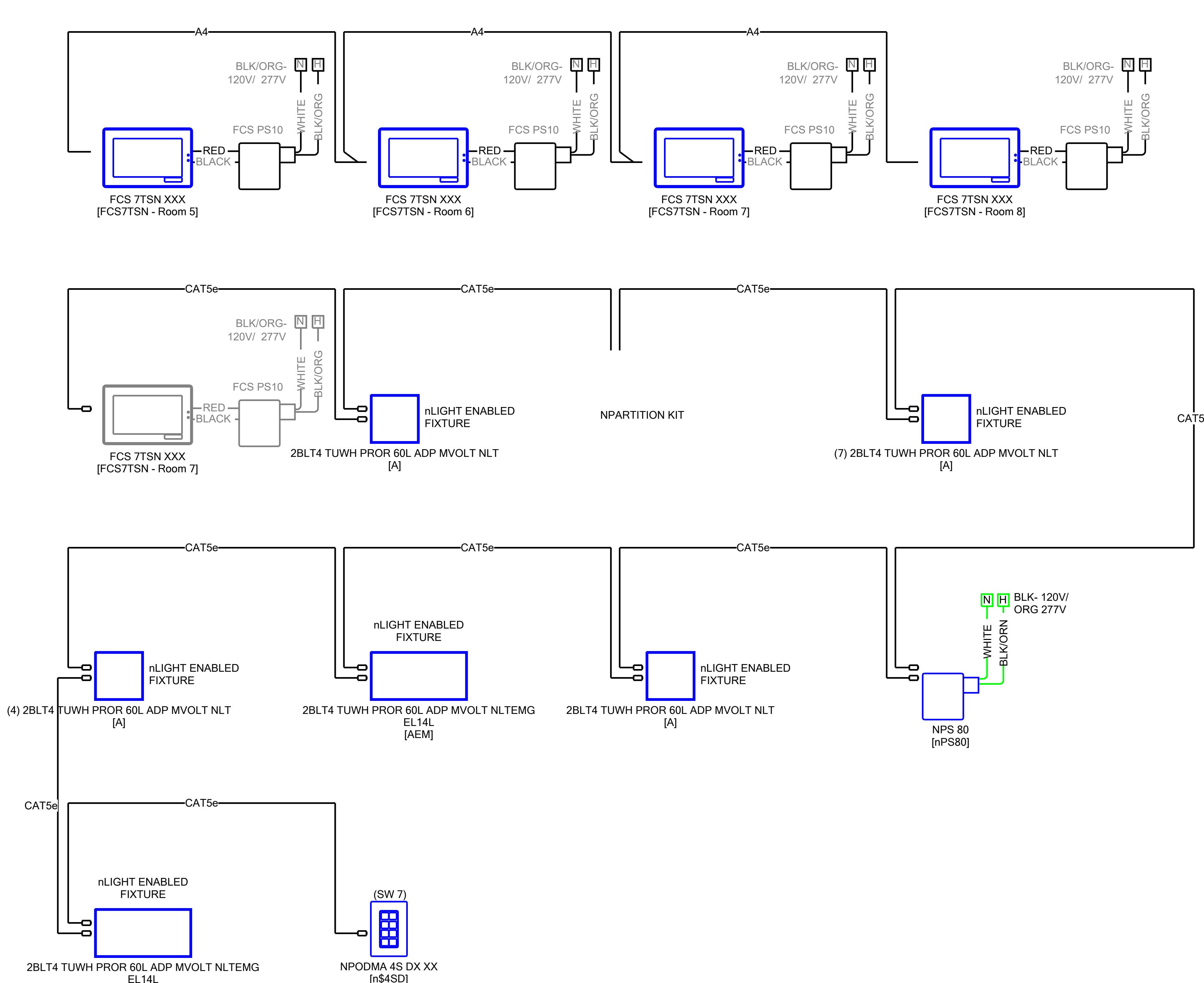
5 Room 4, Room 3, Room 2, Room 1
LC1.0



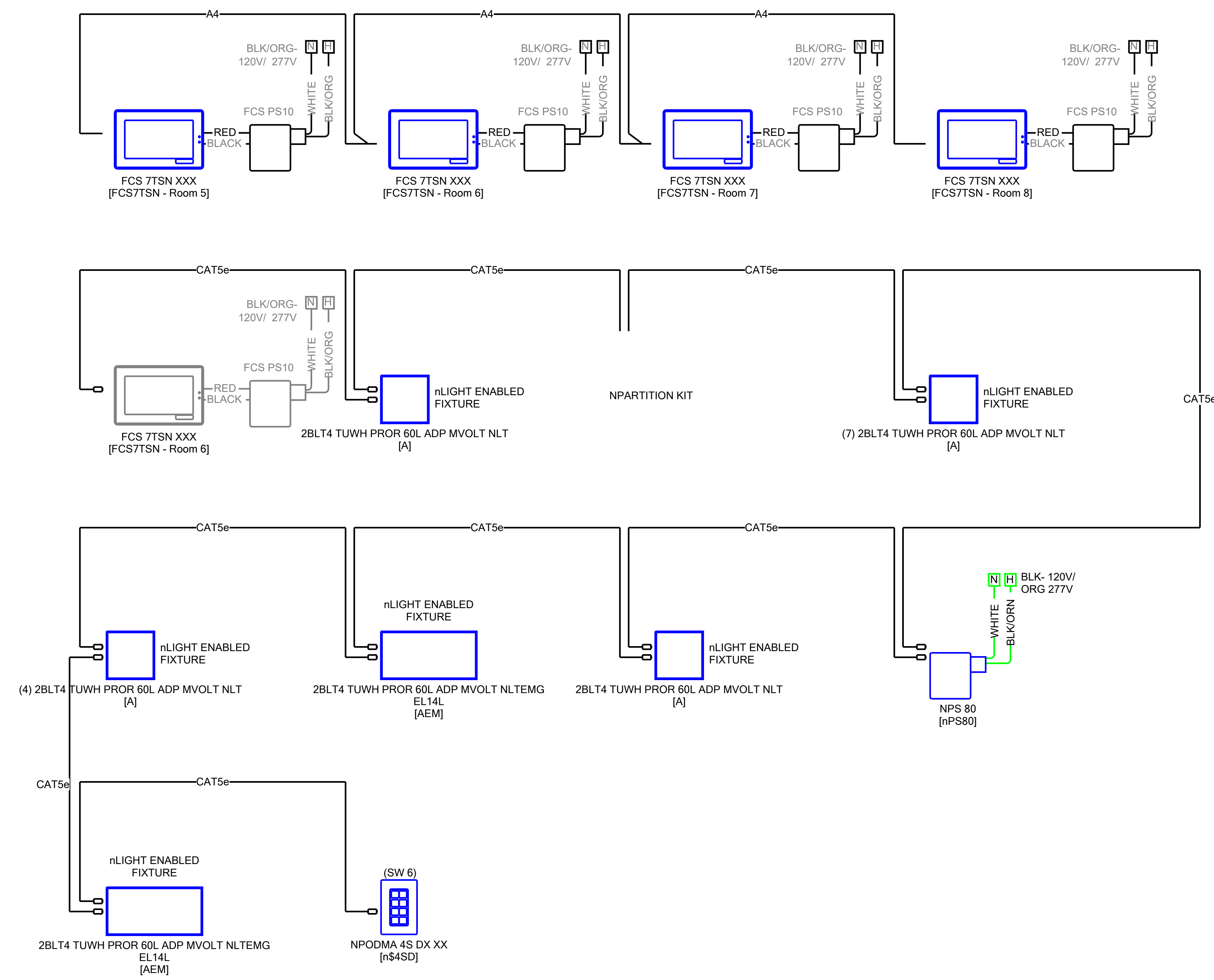
6 Room 4, Room 3, Room 2, Room 1
LC1.0



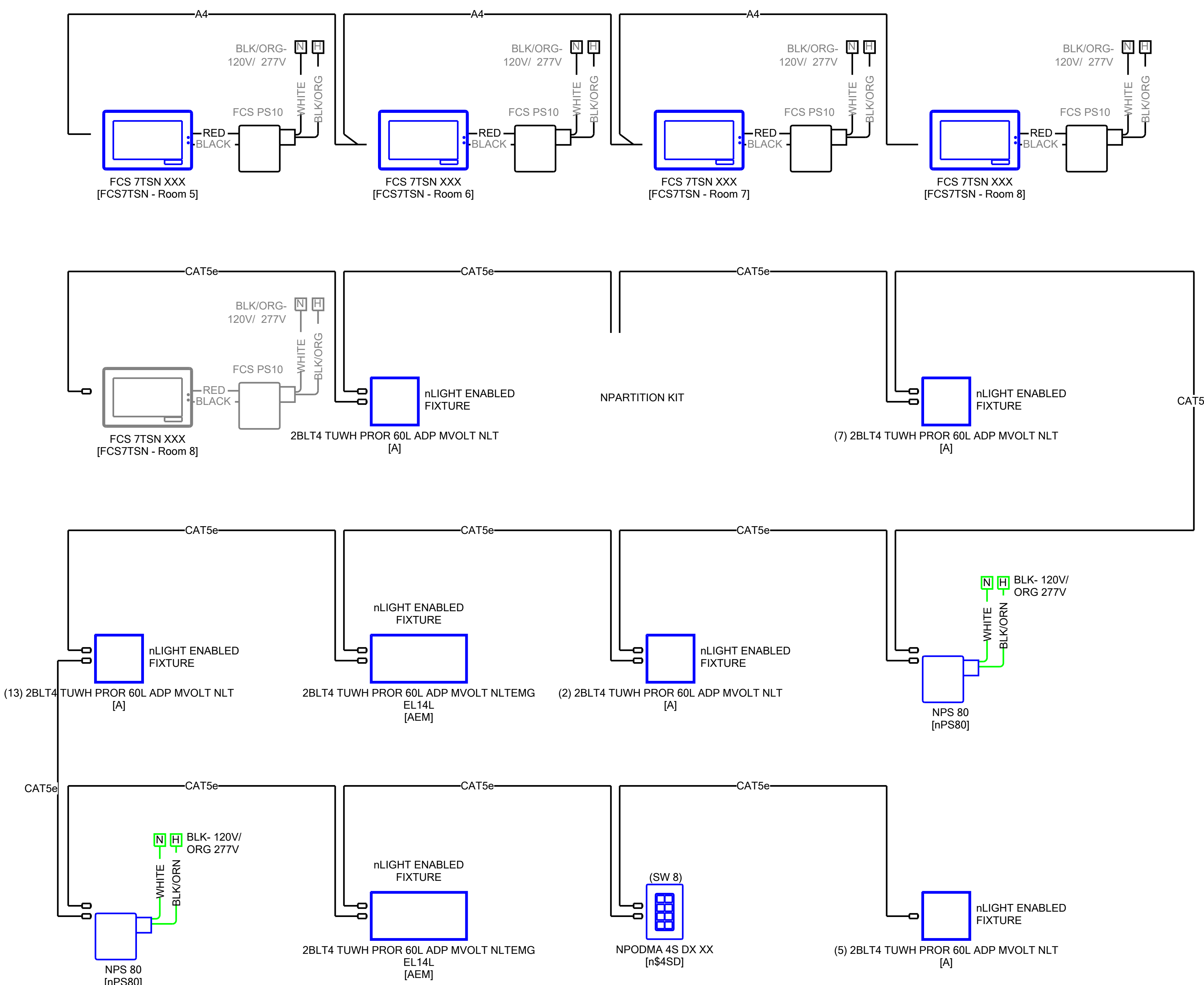
7 Room 5, Room 6, Room 7, Room 8
LC1.0



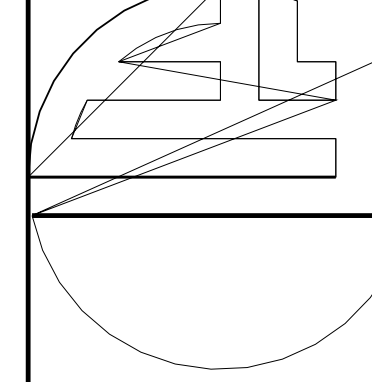
9 Room 5, Room 6, Room 7, Room 8
LC1.0



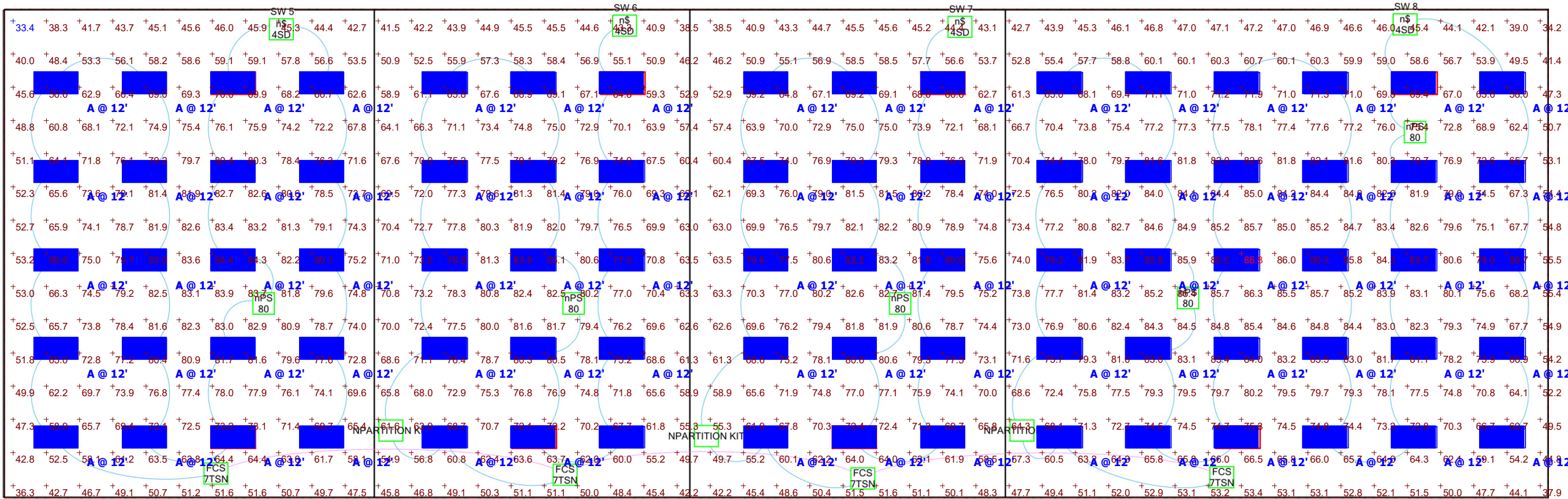
8 Room 5, Room 6, Room 7, Room 8
LC1.0



10 Room 5, Room 6, Room 7, Room 8
LC1.0



ALLIANT ENERGY

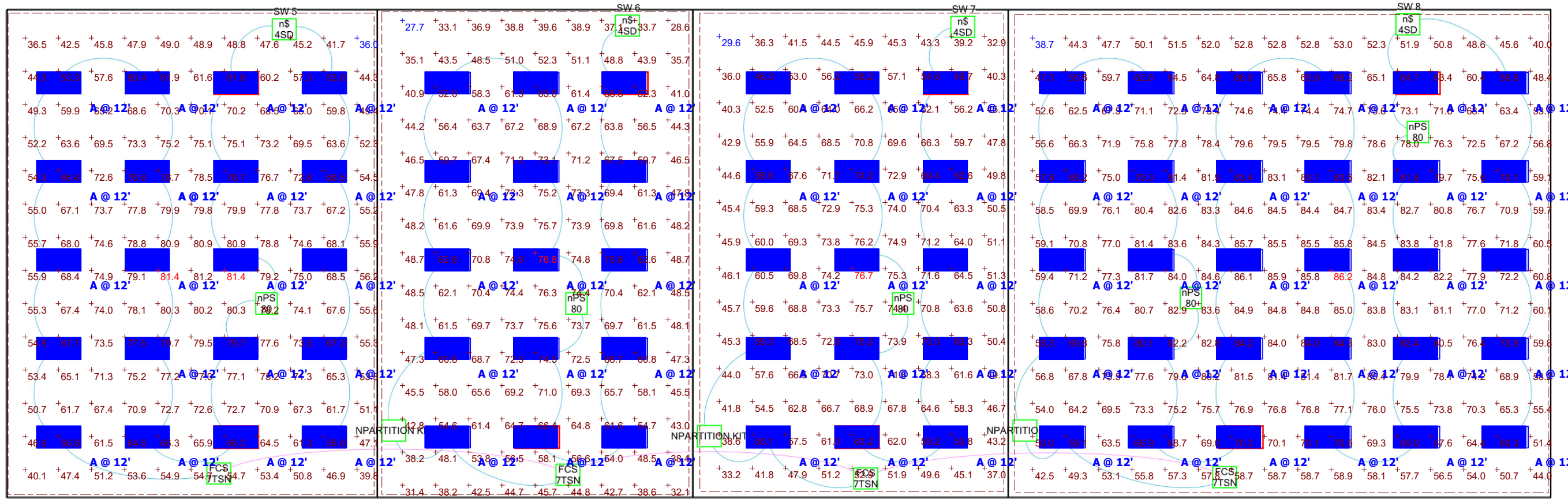


ROOM 5

ROOM 6

ROOM 7

ROOM 8

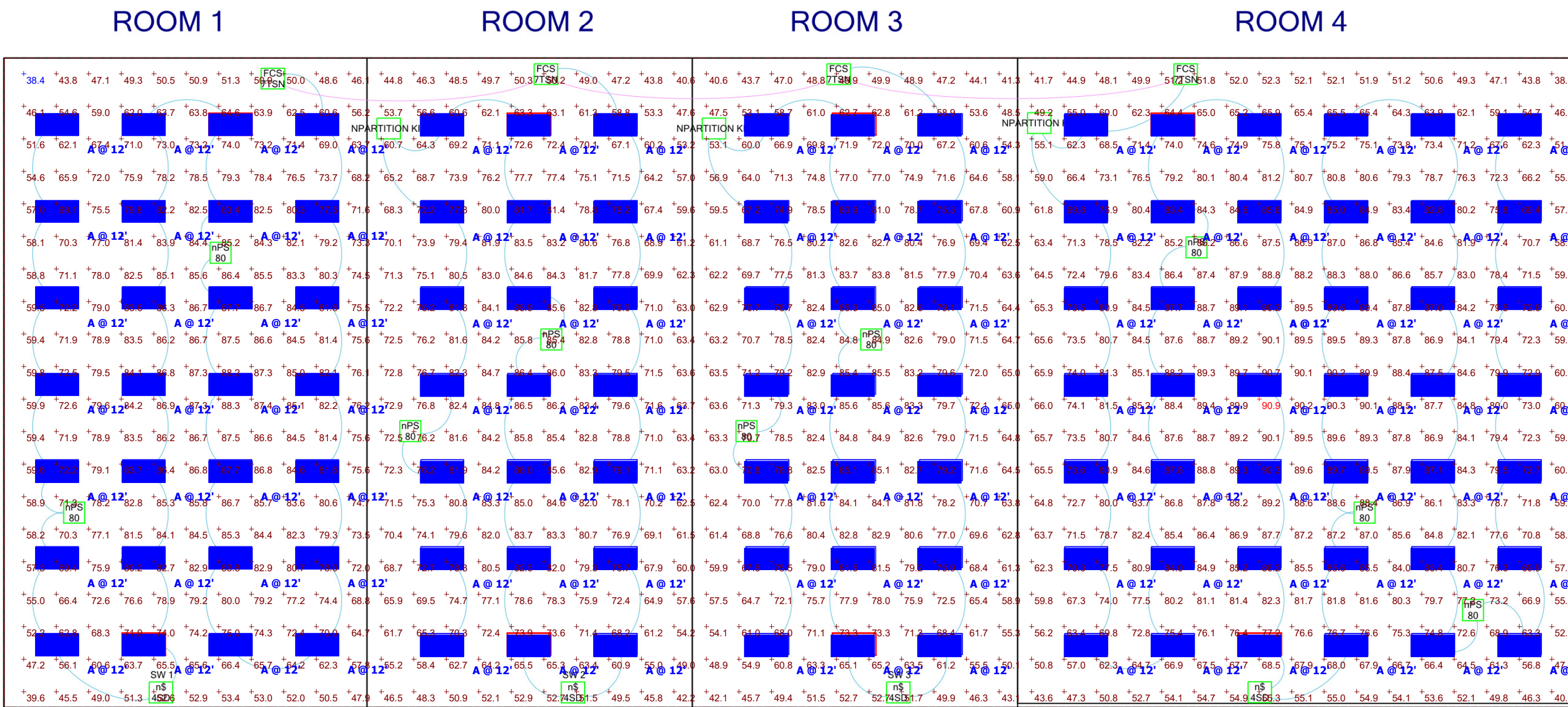


ROOM 5

ROOM 6

ROOM 7

ROOM 8

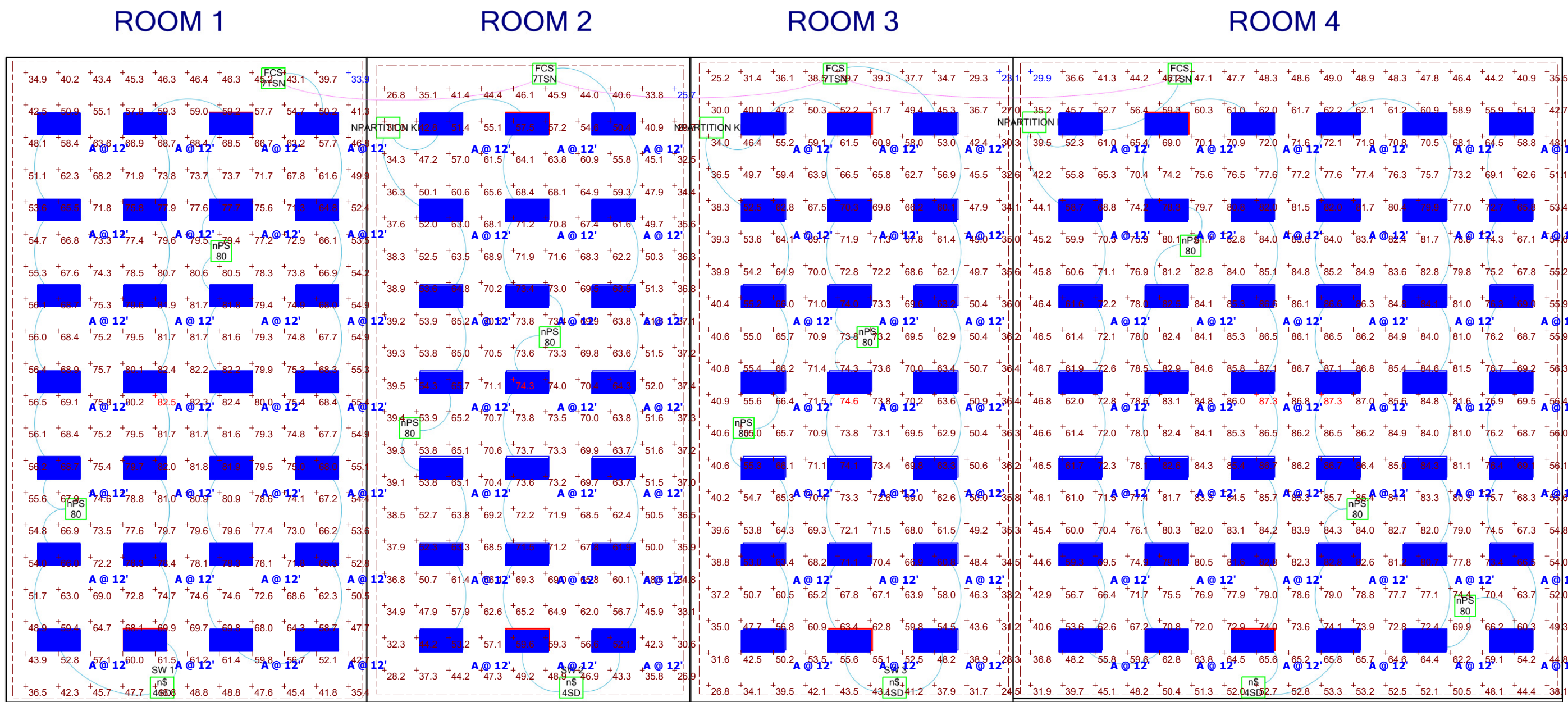


ROOM 1

ROOM 2

ROOM 3

ROOM 4



ROOM 1

ROOM 2



ROOM 3

ROOM 4

NO PARTITIONS

WITH PARTITIONS

Plan View
Scale - 1" = 10ft

| Schedule | | | | | | | | | | | | | |
|---|-------|---|-----|-------------------|--------------------------------|--|------|--------------|-------------------------------------|-----------------|------------------|------|---------|
| Symbol | Label | Image | QTY | Manufacturer | Catalog Number | Description | Lamp | Number Lamps | Filename | Lumens per Lamp | Lumen Multiplier | LLF | Wattage |
|  | A |  | 384 | Lithonia Lighting | 2BLT4 TUWH PROR 60L ADP @4000K | BLT 2x4 TUWH, 6000 NOMINAL LUMENS, Curved Linear Prismatic lens, 4000K CCT | | 1 | 2BLT4_TUWH_P_ROR_60L_ADP_@4000K.les | 5813 | 1 | 0.95 | 44.52 |

| Statistics | | | | | | |
|--------------------------|--------|---------|---------|---------|---------|---------|
| Description | Symbol | Avg | Max | Min | Max/Min | Avg/Min |
| RM 1 | + | 65.8 fc | 82.5 fc | 33.9 fc | 2.4:1 | 1.9:1 |
| RM 1,2,3,4 NO PARTITIONS | + | 72.2 fc | 90.9 fc | 38.4 fc | 2.4:1 | 1.9:1 |
| RM 2 | + | 54.9 fc | 74.3 fc | 25.7 fc | 2.9:1 | 2.1:1 |
| RM 3 | + | 53.9 fc | 74.6 fc | 23.1 fc | 3.2:1 | 2.3:1 |
| RM 4 | + | 69.4 fc | 87.3 fc | 29.9 fc | 2.9:1 | 2.3:1 |
| RM 5 | + | 64.7 fc | 81.4 fc | 36.0 fc | 2.3:1 | 1.8:1 |
| RM 5,6,7,8 NO PARTITIONS | + | 68.1 fc | 86.8 fc | 33.4 fc | 2.6:1 | 2.0:1 |
| RM 6 | + | 56.9 fc | 76.8 fc | 27.7 fc | 2.8:1 | 2.1:1 |
| RM 7 | + | 58.3 fc | 76.7 fc | 29.6 fc | 2.6:1 | 2.0:1 |
| RM 8 | + | 70.4 fc | 86.2 fc | 38.7 fc | 2.2:1 | 1.8:1 |