



Villanova CICD CARE Group
Radnor Township Building, Radnorshire Room
February 2, 2017, 6:30 PM
Agenda

- 1) Pledge of Allegiance
- 2) Adoption of Agenda
- 3) Approval of Minutes
- 4) Chair Report
- 5) Review
 - a. West Lancaster Avenue lot
 - i. Lighting report
 1. Discussion
 2. Action steps to consider
 - b. Overview of Recent Construction Activity (RT)
 - c. Review of Event Parking Plan (RT/VU)
 - d. Status of RT testing of Main Lot asphalt
- 6) Communication (VU)
 - a. Update on phases and project timing
 - i. Pedestrian Bridge
 - ii. Residence Halls
- 7) Planning
 - a. VU Neighbor's meeting – Feb. 9th
 - b. Pedestrian Bridge – Design Review Board (Feb. 15th)
- 8) New Business
- 9) Public Comment
- 10) Set Next Meeting Date – Thursday, March 2nd (in 2nd floor Admin area)?
 - a. Conflicts for Radnorshire Room - unavailable March 2nd and April 6th.
 - i. Room is available March 29 and April 19
 - ii. Discuss among the above options.

Note: Villanova's latest Phase Update and Information is located at
<http://designconceptforlancasteravenue.com/news-updates/>

TOWNSHIP OF RADNOR
Villanova CICD CARE Group
Minutes of the Meeting of January 5, 2017

The Villanova CICD CARE Group met at 6:30 PM in the Radnorshire Room of the Radnor Township Municipal Building, 301 Iven Avenue, Wayne, PA 19087

Present

<i>Philip Ahr, Chair</i>	<i>Robert Zienkowski, Vice-Chair</i>
<i>Rick Leonardi</i>	<i>Stephen Norcini, P.E.</i>
<i>Chris Kovolski</i>	<i>Jane Galli</i>
<i>Marilou Smith</i>	

Also Present: *members of the public, and Leah McVeigh, Administrative Assistant.*

Phil Ahr called the meeting to order and led the assembly in the Pledge of Allegiance

Adoption of Agenda

Jane Galli made a motion to adopt the agenda, seconded by Robert Zienkowski. Motion passed 7-0.

Approval of Minutes

Steve Norcini made a motion to approve the minutes of the November 3 meeting. Marilou Smith requested the minutes include the following amendment: 100 trees were planted at the Aldwyn Triangle and 22 trees planted around the Pike Garage area. The motion with amendment was seconded by Jane Galli. Motion passed 7-0. A motion was made and seconded to approve the minutes of the December 8 meeting. Motion passed 7-0.

Chair Report

Phil Ahr welcomed everyone to the meeting. He noted that the seating for the meeting was changed up as suggested at a Board of Commissioners meeting, and to allow for more dynamic teamwork, and to start the new year from a new prospective.

Review

a. West Lancaster Avenue Lot

i. Lighting Report & Discussion

- The lighting assessment report from the lighting expert, FXB Engineering was received today and distributed to the committee. This report was generated using the information obtained from the night meeting which occurred across the tracks from the parking lot in the neighbor backyards. Steve Norcini suggested the report be tabled, and the consultant be brought to the February meeting to answer questions.
- Bob Zienkowski suggested a privacy fence approximately 50' long could serve as a long term solution for the lights flowing into the backyards near the new driveway. He would like Villanova to commit to installing a fence. Steve Norcini agreed that although the planted buffer was the approved plan, there is a certain angle that headlights from cars entering St. Thomas Way interfere with the neighboring properties.

- Chris Kovolski responded that Villanova had complied with all the additional requests for enhancing the buffer and it hasn't had a chance to grow and fill in yet. He would like more time for the buffer to establish before considering the installation of a fence.
- Rick Leonardi stated that the neighbors would prefer a fence and there is already a right of way fence there which could be replaced with a hurricane type fence. He feels the neighbors have been patient and time has come for other solutions to be considered.
- Jane Galli mentioned that sometimes drawn plans do not always accomplish the desired results and there are a few small gaps in the buffer which could be solved with a fence.
- Phil Ahr also believes the buffer is doing a good job of blocking light by about 90% but at St. Thomas Way where headlights come directly in there remains a concern.
- Marilou Smith explained that VU is trying to work with the township and the neighbors however the expectations seem to be never ending. VU will look at the area again at the St. Thomas Way drive.
- More discussion occurred with Bob Zienkowski strongly suggesting VU install a few sections of fence where the driveway comes into the lot. He would like an answer by January 20 as to whether VU will install a few sections of fence.
- Steve will have the lighting expert attend the February meeting.

b. Overview of Construction Activity (RT)

- Steve Norcini gave an overview of the construction activity. VU has received the U&O for the Pike Garage. Marilou Smith told the committee that there will be a soft opening of the garage on Monday and it will be used for the basketball game on Tuesday. They are having a walk through with the Radnor Police Department so they are familiar with traffic flow.
- Jane Galli asked whether there will be more lighting on the garage, and Marilou Smith explained the lighting. VU is using a different light fixture from a different manufacturer which meets the dark sky compliance and has been approved by Kevin Kochanski, the Community Development Director, and Roger Philips, the Township Engineer.

Communication

a. Update on project schedule

- Marilou Smith provided the group with an update on the project work.
 - i. Roadwork activity expected – Marilou Smith reported there is currently no roadwork occurring.
 - ii. Pike Garage – opening Monday.
 - iii. Residence Halls – starting work on the main parking lot to begin construction on the residence halls. They will maintain an access drive to the rear parking lot. The access drive will be open for special events to help with traffic.

b. Upcoming phases and projects

- i. Pedestrian Bridge – the bid time has been extended to January 12. Expecting work to begin in the Spring.
 - ii. Residence Halls – construction will start from the west and move east.
- Rick Leonardi mentioned that he has a concerns with the dumpster by Moriarty Hall which has had the doors broken off and they are stacked there for some time. There is a second dumpster

which has now appeared. He expressed his concern over the maintenance of the facilities.

Marilou Smith explained that there is a new design needed for the dumpster and the dumpster area as there is a problem. VU is addressing all of the dumpster concerns.

- Roberta Winters asked if there were any changes in the Phasing of the construction process. Marilou Smith explained that construction is moving forward in the phases as presented.
- Phil Ahr asked if the stairs from the SEPTA bridge will remain. Marilou stated that the stairs on the north side will be removed.
- Rick Leonardi state that the SEPTA station is not ADA compliant. Randy Maude spoke to the committee regarding removal of the staircase. Marilou Smith explained that in conjunction with SEPTA & PennDOT the stairs needed to be removed per the engineers.
- Randy Maude thanked the Committee for moving forward with hiring a lighting consultant to provide the report.

Planning

a. Main Parking Lot

- i. Asphalt Milling – Phil Ahr explained that there has been concerns expressed about the asphalt milling which will occur to remove the asphalt from the Main Lot in regards to the possibility of it having asbestos. Phil has been contacted by the Board of Health regarding this issue, and he is requesting that we have some core samples tested of the asphalt for asbestos.
 - Marilou Smith explained that VU has done some research and believes the Township has as well. Asbestos was used in asphalt in the 1960's and VU's parking lot was installed in the 1950's. VU has no reason to believe there is asbestos in the asphalt but in order to be proactive and minimize the dust the asphalt will not be milled. It will be excavated with a loader, wet down, and removed in trucks. This would be the same process used to remove the asphalt if asbestos were being mitigated. Steve asked that VU show the specs and the requirements of DEP so that the Township can inspect the process correctly. Marilou Smith stated that VU is going to do everything required by DEP during this process and is excavating to minimize dust.
 - Discussion occurred. Rick Leonardi asked if there has been any testing done for dioxins. Marilou Smith – Villanova had to do geotechnical reports before construction. Cobalt was discovered, and VU had to do a leach test. VU is comfortable with all the results of the geotechnical testing.
 - Phil Ahr asked if the Township is satisfied with the test results and VU removing the asphalt as proposed. Steve Norcini understands the process that VU is proposing; however, he doesn't know if this meets DEP's requirements if asbestos were to be in the asphalt. He believes VU should take core samples and have it tested. Bob Zienkowski asked VU to test the asphalt for asbestos. The Township wants to know if there is asbestos there or not, and if VU is not going to test he is going to proceed to having the Township having the asphalt tested.
 - Phil Ahr appreciates the work VU is doing to address the concerns of the residents. He appreciates the communication between VU, the Township and the community in regards to the project.
 - Chris Kovolski explained that the goal of VU is to be proactive especially in regards to the health of the community. VU wants to protect the community and the students at all times and

especially during this project. They are not trying to do anything nefarious and do not want the public to believe they are acting in response to concerns, but are doing everything possible to be proactive.

- VU will let the Township know tomorrow if they will perform the asphalt testing.
 - Tish Long contacted the Delaware County Conservation District. DEP will be coming out to check on the project.
 - Roberta Winters thanked the residents and VU for taking the public health issues seriously.
 - Andrew Foreman, Chairman of the Board of Health, expressed his appreciation regarding everything that is being done to address the citizen's concerns.
 - Randy Maude asked if there were environmental studies that they be available for public review.
- ii. Condition of water under Main Lot
- Phil Ahr summarized the memo from the Delaware Riverkeeper that there was a suspected stream under the main lot and request has been made to daylight this stream. The DEP was copied on this memo from May. The committee will talk about it.
 - Rick Leonardi read several paragraphs from the Delaware Riverkeeper memo. According to the DRN the stream starts under the main lot, flows through the P&W embankment and daylights in the Aldwyn Triangle where it then winds through the neighborhoods to Ithan Creek. Rick has done some studies of his own and there is a storm water inlet which contains water, and although the water has been reported as stagnant he knows from two dye tests that the water does have movement. He is concerned with construction contaminants which will have a direct path to the watershed.
 - Marilou Smith explained that VU has done an investigation and has been told it is a storm inlet.
 - Chris Kovolski explained that VU has a clear position and is moving forward with the project. If there is a stream discovered during construction it will be addressed at that time.
 - Steve Norcini consulted with John Rice, and the issue was not raised during the land development process. The University has their approvals and the Township cannot require VU to daylight a possible stream.
 - Rick Leonardi believes that VU has the ability to do something constructive as they have the expertise and talent on their staff. VU has a faculty member who has designed and developed a treatment train to deal with the stormwater coming off of the St. Augustine garage. VU has the expertise to deal with this stream if they choose.
 - Roberta Winters recalls this issue being discussed at the land development meetings. She believes the university could use this stream as a learning environment for the students, and believes the Academy of Natural Sciences would possibly come out and do some testing and monitoring of the waters at the Aldwyn Triangle during construction.
 - Tish Long does not believe this issue can be ignored. It is a significant finding and she would like to see a 3rd party hired to do a study.
 - Rick believes that the Township/VU should hire a hydrologist to do a study.
 - Phil Ahr – there are two opinions and VU has their permits. He requests that if VU finds something during excavation that they consider their down-stream neighbors.

c. Process for any possible future site visits.

- Phil Ahr wanted to discuss the expectations of any future site visits and who would be permitted to attend. This is a transparent process and trying to correct any mistakes.
- Jane Galli suggested in the future that it be voted on and specific as to who may attend any site meetings.

d. Pedestrian Bridge Ornamentation – Design Review Board (Jan 11)

- Phil Ahr announced that the ornamentation on the pedestrian bridge will be brought before the Design Review Board on January 11 for anyone who wishes to attend.
- Sara Pilling expressed her unhappiness that she was not given ample notice to prepare for that meeting.
- Rick Leonardi asked where the public could get the cost breakdown of how the bridge project is being funded. Steve Norcini is not aware that this information is available.
- Phil Ahr asked where someone could find the plans for the Design Review Board – Steve Norcini suggests they be found on the website under the agenda items for the Design Review Board.

New Business

No New Business

Public Comment

Sara Pilling noted that driving east on Lancaster Avenue is now a pleasure; however she was driving and the street sweeper wasn't using water and was creating a large amount of dust.

Set Next Meeting Date

The next meeting will be Thursday, February 2 @ 6:30 p.m.

There being no further business, the meeting adjourned on a motion duly made and seconded.

Respectfully submitted,

Leah McVeigh



Township of
Radnor Pennsylvania

TOWNSHIP OF RADNOR
LIGHTING ASSESSMENT
FOR
VILLANOVA UNIVERSITY'S
WEST LANCASTER AVENUE
PARKING FACILITY
RADNOR TOWNSHIP, PA
BY



December 28, 2016

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A. Executive Summary

FXB Engineering has been retained to review citizen concerns about lighting issues at the newly constructed West Lancaster Avenue Parking Facility ("WLAPF") for Villanova University ("VU") located in Radnor Township. As part of this study, attendance at a nighttime public township review meeting on site was provided, which included meeting several township citizens at their properties on Aldwyn Lane to notate individual concerns and complaints. An evaluation of the lighting design of the parking facility was provided, which included review of the design documents, specified luminaires, as well as those luminaires submitted for review/installation, and an assessment of compliance with present, relative ordinances of Radnor Township.

There are two basic aspects to the content of this report; what part does the WLAPF lighting contribute to the perceived lighting by affected citizens, and does the lighting installation at WLAPF adhere to Radnor Township ordinances.

This report will also provide general suggestions to ameliorate the light being observed by the Aldwyn Lane residents, & to adhere to local ordinances. Images have been made available in an Appendix to this report, as a means of illustrating some of the provided comments & observations.

B. Citizen Concerns

Several residents from the north side of 13-37 Aldwyn Lane shared their concerns with lighting observable from their homes & properties that were reported by them to have not been present prior to the construction of the WLAPF. Concerns that were shared ranged from the level of light perceived in/at residences coming from the university grounds & WLAPF, direct headlight glare entering WLAPF (specifically as via an opening in an existing wall) from cars, general area lighting which is located on other properties in proximity to the WLAPF, and other existing street and building lights now visible due to removal of trees and vegetation, namely during construction of the WLAPF.

C. Observations

During the site visit, the parking facility was noted to be illuminated with a white LED light source, with lighting levels measured to be commensurate with design targets identified for the parking surface, suggesting the parking facility was lit adequately. Direct glare from the luminaire's LED array was neither predominant when observed at the WLAPF from a location other than immediately below a given fixture, nor distinctly identifiable as being the array from the distance of the Alwyn Lane properties. However, reflected illuminance off the inside of the smooth fixture lens was readily observed on several fixtures at both locations, in the WLAPF & at the residences of Aldwyn Lane. It was also noted that some light sources of annoyance were not just from the new WALPF property and associated vehicle headlights entering from Lancaster Avenue; some had existed prior, emanating from a campus basketball court and local food establishments across Lancaster avenue, as well as an adjacent office building, a PECO/SEPTA electrical substation building serving the Norristown High Speed Line ("NHSL"), which runs between and parallel to the Alwyn Lane and WLAPF properties), & the SEPTA rail station which bridges the NHSL.

D. Documents Reviewed

Radnor Township Zoning and Subdivision & Land Development Ordinance ("SALDO"), Permit Application Review Documentation, WLAPF construction documents, associated luminaire shop drawings and shop drawing approval comments were reviewed. These documents represent the Codes and guidelines which the construction of the WLA parking facility was required to adhere to.

1. Radnor Township SALDO documents:

Per §255, Article V, "Design Standards" of the Subdivision and Land Development Ordinances ("SALDO"), there are two subsections that are applicable to the lighting issues.

§255:29, titled "Parking Facilities" includes paragraph (19) which states:

"All artificial lighting used to illuminate any parking space or spaces shall be so arranged that no direct rays from such lighting shall fall upon any neighboring property or streets, nor shall any high-brightness surface of the luminaires be visible from neighboring residential properties or from a public street."

§255:42, titled "Buffer Screens" includes directives for the install of Buffer Screens, and a means to determine the type and method of providing this type of natural bulwark "[...] to soften visual impact, to screen glare and to create a visual barrier between conflicting land uses".

2. Radnor Township Zoning documents:

Per §280, Article X, "CO Commercial-Office District":

§280:44 "Special Regulations", paragraph A lists:

"Along each side and rear property line which abuts a residential district in the Township or similar district in another municipality, a buffer planting strip, as defined in §280-4B, of not less than 10 feet shall be provided and maintained."

Per §280, Article XX "General Regulations":

§280:105 "Access & Highway Frontage" paragraph E lists:

"All outside lighting, including sign lighting, shall be directed in such a way as not to create a nuisance in any agricultural, institutional or residential district, and in every district, all such lighting shall be arranged so as to protect the street or highway and adjoining property from direct glare or hazardous interference of any kind. Any luminary shall be equipped with some type of glare shielding device approved by the Township Engineer. The height of any luminary shall not exceed 25 feet."

3. Permit Application Review Documentation:

DRB Application number 2015-57 was submitted and approved, which included a Lantern style, post top mounted, full “cut-off” Dark Sky compliant luminaire. The luminaire submitted for township review listed 80 watts, with an LED light source of 4000K color temperature.

4. Villanova University Parking Facility Construction Documents:

A complete set of drawings and a Lighting Design Book prepared by O’Donohoe and Rose Lighting was provided as part of the construction documents reviewed. The construction drawings dated August 10, 2015 includes drawing C7.3, which lists pole mounted luminaire types EP01, EP02, EPO4, EP05 and EP06, specifying them to be a lantern style, post top mounted with clear acrylic lens, with dimming ballast, fixture mounted “cut-off” optics of Type III, Type III with house-side shield, and Type V distributions, and mounted on poles that are 12’-0”, 14’-0” and 10’-0” in height. The luminaire specified is 57 watts with an LED light source of 4500K color temperature.

5. Luminaire Shop Drawings and Review Comments:

Luminaire catalog sheets were submitted to the professional of record for review which indicated a lantern style, post top mounted with clear acrylic lens, with dimming ballast, fixture mounted “cut-off” optics of Type III, Type III with house-side shield, and Type V distributions, and mounted on poles that are 12’-0”, 14’-0” and 10’-0” in height (which matches the specifications per the aforementioned construction documents). The submitted luminaire is indicated to be 94 watts, with an LED light source of 3500K color temperature; the color temperature appears to be a revision during the shop drawing review submission, as it is noted “Revision – CHG TO 3500K”. Review comments provided by John O’Donohoe included structural items for the pole, voltages, finishes and pole mounted receptacles, and banner accessories. No comments were listed concerning differences in wattage, “cut-off” or Dark Sky compliance, suggesting the submitted items were acceptable to the document’s reviewer.

E. Analysis of Lighting Issues:

Reviewing all the documents and considering the information from the resident comments, there is more than one contributing cause of the lighting concerns. There are also more locations instigating disturbance to the Aldwyn Lane residents than the West Lancaster Avenue Parking Facility. The analysis of the lighting concerns will require some technical terms be defined.

1. Definition of Terms:

Light Source: There are many sources of light used to illuminate exterior areas. Low cost exterior lighting will utilize incandescent/halogen luminaires. High Pressure Sodium, Metal Halide and Mercury Vapor are very common in older installations. LED has become very popular in the last 5 years for exterior lighting providing a very energy efficient and controllable light source.

Incandescent/Halogen: Resistive light source generated by providing current through an element. Various gases are included inside a bulb to increase lamp life but typically incandescent/halogen lamps are not energy efficient. Incandescent lamps used for exterior lighting are typically floods which are very directional. Color is considered white to light orange.

High Pressure Sodium: High Intensity Discharge light source utilize ignition of gases inside a bulb. This light source last a long time and is energy efficient but provides an orange or yellow appearance.

Metal Halide: High Intensity Discharge light source utilize ignition of gases inside a bulb. This light source last a longer time than incandescent/halogen but is not as energy efficient as high pressure sodium and provides a blue tint light but is considered a white source, unlike High Pressure Sodium.

Mercury Vapor: An early form of Metal Halide providing more blue to green tint. This lamp is the least energy efficient of the High Intensity light sources but last a long time but will reduce light output until barely illuminated.

LED ('Light Emitting Diode'): Light source utilizes solid state technology to provide light. The light source is very controllable and is available in many output colors. The colors available are expressed in Kelvin Temperature which typical range from an orange to white to a blue tint. The lower the Kelvin Temperature, the closer to orange the light output or "warmer" it is. Higher the Kelvin Temperature, the closer to blue the light output or "cooler" it is.

1000K: 1,000 kelvin temperature is candle light source.

2000K: 2,000 kelvin temperature is sunset or sun rise.

2200K: 2,200 kelvin temperature provided by high pressure sodium light source.

3000K: 3,000 kelvin temperature provided by halogen flood light.

4000K: 4,000 kelvin temperature provided by metal halide light source.

5000K: 5,000 kelvin temperature sunlight at noon.

6300K: 6,300 kelvin temperature provided by mercury vapor light source.

Dark Sky Compliant: International Dark Sky Association (IDA) Fixture Seal of Approval Program, "The Fixture Seal of Approval Program aims to address the demand for a third-party 'certification' of luminaires which do not pollute at night." Any manufacturer may submit a luminaire for review. The IDA evaluates fixtures based on the Upward Light Output Ratio (ULOR), meaning the "amount of upward flux a fixture produces." Currently, the IDA only approves fixtures deemed "full cutoff" and "fully shielded," for general area exterior lighting.

Cut-off optics: luminaires utilize reflectors, refractors and internal aiming of light source to provide a controlled light pattern on surface. The light distribution is "cut-off" at angles that are not beneficial or desired.

2. Analysis of Lighting:

a. WLAPF Luminaire:

- i. LED light source is very directional and the installed luminaires have the LED array installed in the top of the fixture, shining downward on angles, providing a specific light pattern. The installed luminaires included cut-off optics, which means to direct the light onto the parking surface in a desirable pattern. During the site visit this was confirmed, however the light from the LED array reflected off the smooth, angled, interior surfaces of the luminaire's acrylic lens, which was clearly observed & perceived as bright while standing at a distance of approximately 30 feet from the base of the fixture. It is our opinion that this reflected light, which may be inferred by the residents of Alwyn Lane as being directly from the light source (the LED array), however at the distance to their properties, this distinction was not discernable. Documentation has been received since the site meeting which notes that full cut off shielding has been installed on (5) five fixtures in close proximity to Aldwyn Lane, & a 2" shielding strip has been installed on (33) thirty-three of the other WLAPF fixtures (and will be installed on (4) four fixtures yet to be installed), and (9) nine fixtures along Lancaster Avenue remain with no additional shielding.
- ii. Per the shop drawings, the light source is LED providing 3500K light, which color is commensurate to sunlight between sun rise and at noon.
- iii. The luminaire is 94 watts, which is approximately 65% higher than the specified 57 watts, which equates to 65% more light output than the light fixtures prescribed in the design documents.
- iv. The submitted and installed luminaires did not have a Dark Sky Compliant certification, for which the luminaires filed with the original permit application did.
- v. The luminaire also is listed as having 'clear acrylic lenses' and thus does not provide "some type of glare shielding device" as required by the township zoning ordinance.

b. Sources of Lighting Concern:

It was observed that the parking facility lighting, as well as head lights from vehicles entering WLAPF, was the source of some of the light nuisance, but there was a notable amount of non-WLAPF/VU lighting commented upon:

- i. These properties are adjacent to VU and/or WLAPF:
 - a) Existing mercury vapor wall mounted luminaire and HID wall fixtures on restaurant across Lancaster Avenue
 - b) Existing wall mounted high pressure sodium luminaire on a banking facility
 - c) Existing wall mounted high pressure sodium fixture on the PECO building
 - d) Existing pole mounted high pressure sodium fixtures at SEPTA NHSL station
 - e) Existing pole mounted high pressure sodium street light across Lancaster Avenue

- ii. There is also university exterior basketball court lighting near Delurey Hall, which appears to utilize a metal halide light source, that is clearly observable from the neighboring residences, presumably due to the removal of trees and/or vegetation prior to &/or during the construction of the WLAPF.
- c. Color of Lighting Concern:

During the site visit, it was observed the reflected light was a “white source” which would suggest the LED luminaires utilized 4000K LED’s or cooler. This is an item that should be verified with the installed luminaires. The documentation would suggest the LED luminaires are to be 3500K, which is a bit more “warm”, similar to an incandescent light source. This is mentioned because a white light source is contrasting, since it is not a natural light color at night. As listed above, sunset is 2000K, typical exterior lighting is High Pressure Sodium which provides 2200K, so to have the LED provide a 3500K or 4000K light source is quite noticeable, especially when it is a new facility in an area where there were, as reported by one resident “no lights to be seen before.”
- d. Non-Lighting Items contributing to Lighting Concerns:

Prior to the parking facility construction, there was a row of trees and greenery which provided a mature buffer screen. Once these trees were removed, the existing residence had an unobstructed view to the university property and adjacent properties. This was the most significant change due to the construction of the parking facility, though online imaging indicates other trees have been removed, which may be affecting perception of increased light at Aldwyn Lane. Ordinances require a buffer screen or buffer planting strip. This was provided as planned, but is young, and will eventually grow into a more effective buffer in coming years as it matures; opinions expressed by some of the Aldwyn Lane residents indicate that this is understood to be true.

F. Summary of WLAPF/VU Deficiencies:

1. Submitted WLAPF luminaire does not satisfy the section of §280:105 stating “some type of glare shielding device” as required by the township Zoning ordinance; either a full cutoff shield or 2” shielding strip has been installed on several luminaires, however all are required to have shielding.
2. WLAPF luminaire has a smooth, clear acrylic lens, which is reflecting the light horizontally, & thus does not satisfy the second part of SALDO requirement §255:29 “[...] nor shall any high-brightness surface of the luminaires be visible from neighboring residential properties or from a public street.”
3. Basketball court lighting near Delurey Hall; though this is an existing condition, it is suggested that these fixtures be modified (i.e., reoriented, shielded, et cetera) to provide relief from light spill to adjacent properties.

G. Summary of non-WLAPF/VU Deficiencies:

As with the Delurey Hall court lights, these are existing conditions:

1. Mercury vapor wall mounted luminaire and HID wall fixtures on restaurant across Lancaster Avenue.
2. Wall mounted high pressure sodium luminaire on a banking facility.
3. Wall mounted high pressure sodium fixture on the PECO Building.
4. Pole mounted high pressure sodium fixtures at SEPTA NHSL Station.
5. Pole mounted high pressure sodium street light across Lancaster Avenue.

H. Possible Solutions:

1. WLAPF Luminaires: Manufacturers have glare controls, i.e., frosted glass or films, which are options. These might be retrofitted in each existing fixture to reduce the highly reflective smooth surface of the fixture lens to meet the ordinance. Existing fixtures on VU campus proper have a diffused lens, which achieves a similar affect (see Appendix)
2. WLAPF Luminaires: Per the shop drawings, the luminaires each have a dimming driver and considering the light output is higher than indicated on the construction documents, the light output may be reduced. This may not remediate the observed concern, just lower the light level; the light uniformity will not be affected, only the light level, since the distribution or 'throw' is not changing.
3. WLAPF Luminaires: Verifying the LED light source is 3500K would confirm the light source is as approved. The kelvin temperature could be lowered in the luminaires but that would involve changing the LED modules, which is not a simple, low cost solution.
4. WLAPF Buffer Screen: Increasing the magnitude of the buffer screen may provide an immediate solution, although this screen needs to be discussed with a civil or land development firm to develop the most efficient screening method. Allowing the planned buffer screen to mature as designed may achieve the best affect in time, at no additional cost.
5. The Non-University Luminaires: These luminaires are not new and may not be addressable by the township unless they have been installed under a recent permit, or the township has another means of redress at their discretion. Each of the buildings observed having exterior lighting could upgrade, and possibly even be compensated financially for doing so by utility rebate programs which may available; cost savings on reduced electrical usage may also provide incentive to do so. These rebate programs reimburse the owners for upgrading exterior lighting to LED energy efficient luminaires and will require glare control, Dark Sky approved luminaires.

I. Closing Statement:

The situation that has occurred is quite typical when a larger construction project is performed adjacent to an existing residential area. Certain elements are modified and - even though the intent of all parties involved is to satisfy the stake holders of existing residents, occupants of the new facility, the municipality, and its ordinances - not all concerns are completely satisfied in reality once completed, though every step may have been taken to fulfill this goal throughout the planning & approval process.

When a mature area of trees and greenery is removed, or reduced in any part, thus opening the site lines to a large, developed area - in this case includes Villanova University campus & WLAPF, restaurants, banking facility, vehicle headlights and street lights, et cetera - 'additional' lighting will be observed. Unfortunately, replacing the tree line with the same size, caliper, & canopy of trees, shrubbery, and foliage is not feasible or practical. The mature tree line provided the screening that blocked much of the lighting from the direction of campus. The new buffer screen will be a substitution for it in time, as the trees and greenery will grow and become a more robust, natural curtain, greatly reducing the present lighting concerns of the Aldwyn Lane residents.

The next best thing is to reduce the brightness reflecting off the luminaire's lens surface, and possibly reduce the light output without sacrificing pedestrian safety. This may reduce the resident's concerns related to the WLAPF lighting levels, while providing adequate parking lot lighting levels that is not visible from Aldwyn Lane, as it was reported to have been prior to the construction of the WLAPF. This possible solution does not address the other non-university sources of the lighting concerns. It is suggested that the owners of these fixtures be approached by Radnor Township & requested of to modify (i.e., replace, reorient, shield, et cetera) these fixtures to provide relief from light spill to adjacent properties, & conform to present code requirements.

APPENDIX: PHOTOS

Radnor Township
West Lancaster Ave. Parking Facility
Lighting Assessment

Aerial photo, Preconstruction, c. October 2011



Radnor Township
West Lancaster Ave. Parking Facility
Lighting Assessment

Aerial photo, During construction, c. May 2016



Site photo, typical WLAPF luminaire with 2" shielding band



Site photo, typical WLAPF luminaire with full cut-off shield



Site photo, Basketball court lighting at Delurey Hall



Site photo, restaurant luminaires



Site photo, typical PECO/SEPTA substation wall mounted luminaire



Site photo, typical SEPTA NHSL station pole-mounted luminaire



Site photo, pole mounted street light at Lancaster Avenue



Site photo, existing VU campus luminaire with diffused lens

