HAEGER ENGINEERING
consulting engineers · land surveyors

100 East State Parkway
Schaumburg, Illinois 60173
tel: 847.394.6600
fax: 847.394.6608

Memorandum Report

Revised July 30, 2021

A preliminary engineering review was conducted relative to the revised site and engineering plans pertaining to the proposed Islamic Center campus development that is proposed along 248th Avenue opposite Honey Locust Drive in the City of Naperville, IL.

Haeger Engineering was retained to review the revised plans and comment on the civil and traffic engineering issues related to the proposed over all development and to determine any potential impacts that could affect the health, safety, and welfare of the surrounding land uses and the public in general. Haeger Engineering was not retained to review the suitability of the proposed land use to be developed on the subject property or any financial impacts on the property values of the surrounding properties.

The development negatively affects the health, safety, and welfare of the surrounding land uses and the public

Our traffic analysis highlights safety concerns:

- No adequate space for left-turn queues creating dangerous conditions
- Addition of a traffic light increases accident potential
- One lane driveways create dangerous overflow conditions and back-ups on 248th Avenue
- The north / south driveway constraints force dangerous vehicle movements
- The Phase I plan does not show full access for emergency response equipment
- LOS F represents extreme congestion that will cause delays and lead to serious accident potential
- Traffic delays exiting the site violates the standards for a safe development

Deficiencies identified in the KLOA traffic study:

- KLOA did not use appropriate accident data thus minimizing reports
- Traffic diversion is not realistically addressed in the KLOA study
- The KLOA analysis was limited to the adjacent roadways and does not address the regional impact
- KLOA analysis did not consider the internal circulation system within the development to make sure that there would be no traffic backups onto 248th Avenue

Conclusions and Professional Opinions

A development of this size should be located along major arterial highways with access points from multiple roadways

Haeger Engineering is not commenting on the type of land use or the components that are being considered for this property. The comments made pertain solely to civil and traffic engineering issues related to a development of this size. The size of this development and the number of parking spaces is comparable to large commercial developments like a Costco Warehouse, Sam's Club, Wal-Mart store, an automobile dealership, etc. Those types of developments are located along major arterial highways with multiple access points from two or more

roadways. A major development of this size and land use components should be located on major roadways like Route 59 in order to mitigate and reduce congestion and not in an area surrounded by single family subdivisions.

Too many parking spaces has resulted in inadequate circulation and design issues

The proposed site plan must be re-designed based on the required geometric design of the internal circulation system, access requirements, pavement widths, storage and loading areas, circulation requirements for service vehicles, etc. The site plan that was submitted is not an accurate layout to serve the development. The overall parking supply will be reduced from what is indicated in the parking report.

The site is too small and has inadequate frontage for a development of this size

This is a relatively small parcel for a development of this size. There is inadequate site frontage along 248th Avenue. The plan as submitted will create considerable congestion due to the turning movement conflicts at both driveway openings. The petitioner should consider a site on a major arterial such as Route 59.

The traffic report is inadequate and extensive roadway improvements are required along the full length of 248th Avenue to support this volume of traffic

The traffic report does not adequately address how the existing streets within the adjacent subdivisions will be impacted by patron traffic using those streets as short cuts to reach 248th Avenue which is the only access road that will serve the property. The petitioner is assuming that the City of Naperville will widen and finance the reconstruction of 248th Avenue. Full widening improvements including left and right turn storage lanes are required in the initial phase of the proposed development. Likewise, extensive improvements are required along the full length of 248th Avenue based on the project site generated traffic volumes coupled with the existing traffic and the direction of approach and departure patterns for this development.

Detrimental light impacts to adjacent properties

The initial Photometric Plan submitted to the City failed the code requirements and an updated detailed site lighting plan was not submitted as a part of the overall site engineering plan. Even if direct cutoff and shielded luminaries are provided, the number of parking lot lights will cast a glow or glare that can be seen from a distance. This would be like driving near a large commercial shopping center parking lot, a car dealership, and even a school athletic field. The light glare will have a detrimental impact on the adjacent single-family homes.

Document Review

Revised documents were reviewed to date in order to provide appropriate comments relative to potential impacts that can be generated by the proposed development if constructed along 248th Avenue opposite Honey Locust Drive in the City of Naperville. The documents that have been reviewed to date include:

- Revised Master Site Phasing Plan as prepared by Dome Designers
- Auto Turn Exhibit as prepared by Intech Consultants, Inc
- Traffic Impact Study as prepared by Kenig, Lindgren, O'Hara, Aboona, Inc. (known as KLOA)
- Revised Parking Study for the Islamic Center as prepared by Intech Consultants, Inc.
- Revised Phase 1 Plan as prepared by Intech Consultants, Inc.
- Revised Overall Phasing Plan as prepared by Intech Consultants, Inc.
- Revised Phase 1 Preliminary Engineering Plan as prepared by Intech Consultants, Inc.

- Revised Overall Preliminary Engineering as prepared by Intech Consultants, Inc.
- School Dropoff Plan as prepared by Intech Consultants, Inc.
- School Dropoff Summary Explanation
- Master Site Plan as prepared by Intech Consultants, Inc.
- Narrative Description of the project assumed to have been prepared by the Petitioner

As indicated, the above referenced documents and related revised plans were reviewed and analyzed. The documents contain information about the proposed development but in our professional opinion there are items of major concern that need to be identified and discussed. Any proposed development must be able to be integrated into an area that would not have any impact on the surrounding land uses and would not have an impact on the health, safety, and welfare of the general public. The proposed use is a large mixed-use development that is to be constructed on a relatively small parcel of land. The larger the development on a small parcel of land could lead to major impacts and items of concern. Listed below are the preliminary comments that have been generated to date relative to the documents that have been reviewed for the proposed Islamic Center Development along 248th Avenue.

Master Site Plan

The revised Master Site Plan was reviewed from an engineering standpoint and not from a land planning or land use basis. The engineering review comments based on the revised plans and documents include:

1. A detailed land plan identifies all the components that are to be constructed with the subject property. The land plan should be prepared based on a current property survey but was not provided in order to determine if everything will fit into the parcel. The revised documents that were received to review did not include a boundary survey of the property. Because of the extremely large parking lot it is difficult to determine if the entire parking lot can fit on the property and meet the required setbacks.
2. The revised Master Site Plan/land plan does not include the required parking lot setback dimensions along the property lines
3. The turning radii at the site entrances are required to be shown to determine if large service vehicles can enter and exit the property without running over the curbs. Larger radii at the site entrances and at the entrance into the various parking aisles may need to be expanded which can reduce the overall parking supply. A properly scaled drawing is required.
4. The main driveway entrance should be a minimum of two traffic lanes in each direction in order to allow patron traffic to properly and easily enter the parking aisles and prevent traffic backups out onto 248th Avenue. Widening the entrance aisle will reduce the parking supply.
5. The turnaround/cul-de-sac in front of the building is too narrow and needs to be expanded. The reason will be explained in another review section. The expansion of this turn around will reduce the parking supply.
6. The long dead-end parking aisles along the north, west, and south sides of the development will create circulation conflicts and massive delays.
7. The City requires curbing along the parking lot. No curb is indicated along the east curb line and the detention pond.
8. The plan indicates that the top of the east bank of the detention pond is right against the east property line. There is insufficient space for a proper setback for safety reasons and for landscaping. The proper setback

should be at least ten (10) feet plus one (1) foot for every foot of depth of the detention pond. If the pond is six (6) feet-deep, then the setback should be 16 feet.

9. The site plan includes one (1) very small trash enclosure. This is totally inadequate for a development of this size. Expanding the trash enclosure area will reduce the parking supply.
10. The site plan does not indicate a dedicated pathway to the detention pond for maintenance purposes.
11. It appears that there is inadequate outdoor storage space for a development of this size. Any expansion of storage space will reduce the overall parking supply. The City code should be reviewed to determine how much storage space is required.
12. With all the proposed youth activities, additional bike rack spaces maybe required.
13. The site plan indicates a proposed monument sign at the main access drive. The placement of this sign should be based on the ultimate pavement cross section of 248th Avenue to prevent sight distance restrictions at that entrance. The proper sign location will reduce the proposed parking supply.
14. The site plan should include the west right-of-way (ROW) line along 248th Avenue due to the required and possible widening in the future by the City of Naperville.
15. Because of the size and land use components of the proposed development, this property will be served by large service vehicles including tractor trailer trucks. The site plan does not take into consideration these types of vehicles. Maneuverability and circulation are critical. The site plan may need to be adjusted which in turn will affect and reduce the parking supply.
16. City Ordinances need to be checked to see the actual required number of loading spaces for this land use and related components. Additional loading spaces maybe required which will the reduce the proposed parking supply.
17. The Phase 1 site plan indicates a temporary turn around at the northeast corner of the phase line. Fire protection is a critical element and around the building access is required. The phase plan does not comply with this requirement. The Phase 1 plan does not show full access for emergency equipment.
18. The Phase 1 plan does not include the turnaround/cul-de-sac in front of the building. Emergency access for fire equipment is also needed in front of the building.
19. From an engineering viewpoint, the larger the development means more access points are needed to enter and exit the site and not to cause backups into the adjacent street
20. The plan goal of the petitioner is to provide an efficient traffic circulation plan. However, the full access driveway is at the south end of the development. Northbound movements desiring to enter the north driveway will conflict with the southbound traffic trying to enter the driveway. This condition does not provide efficient traffic circulation.
21. With most of the proposed parking to be located on the west and north sides of the development, the driveways are in the wrong location.
22. The proposed south entrance driveway is too short in length. Entering vehicles must then make a quick left turn in order to enter the west parking lot in Phase 1. Traffic backups will occur out onto 248th Avenue. The same situation will occur when the remaining phases are constructed.
23. The overall site plan is inefficient from a civil and traffic engineering viewpoint.

Auto Turn Exhibit

An Auto Turn exhibit was prepared based on an overall vehicle length of 45 feet. This is not an accurate description of the path of the vehicle, nor does it indicate that any large size vehicle can circulate through the property. The review comments include:

1. The City fire department/Fire Prevention Bureau needs to verify that this will be the largest fire truck that will enter the site.
2. Because of the size, density, and height of the buildings that are proposed, larger and longer equipment will enter the site in an emergency. Likewise, larger service trucks will enter the site as well and the current geometry of the curb radii is insufficient. This will affect the overall parking supply.
3. The exhibit does not indicate how the 45-foot-long truck will enter the property from 248th Avenue. The correct plan should indicate that the rear wheels can stay on the pavement and not drive over the lawn area. The pavement radii must be increased/ expanded.
4. The entering vehicle must then cross over into the outbound lane in order to make the right turn and go south. The curb radii adjacent to the 12-car parking spaces must be expanded which will reduce the parking supply in that area of the site.
5. As that vehicle approaches the main entrance it cannot enter the turnaround area in front of the building. As a matter of fact, the exhibit indicates that the fire truck is hitting the curbs on the curved section of the parking aisle. The same condition exists along the curved section just south the entrance driveway. The pavement area needs to be widened which in turn will reduce the parking supply.
6. Examination of this exhibit clearly indicates that the 45-foot fire truck cannot circulate around the turn around/cul-de-sac in front of the building without hitting the parked cars in the handicapped spaces and even the curbs. The turnaround pavement must be widened which will reduce the parking supply.
7. A circulation plan is required to indicate how the east, north, and south sides of the building will be served in Phase 1 if no pavement is to be installed. The fire department requires full access around all sides of a building of this type and size.
8. The exhibit does not indicate how any large size vehicle can circulate around the temporary turnaround area as indicated on the Phase 1 Plan.
9. A correct land plan is required along with an Auto Turn exhibit in order to prove that emergency equipment can properly circulate through the property in all phases of the proposed development.

School Dropoff Plan

1. The petitioner did not provide an Auto Turn Exhibit to support this plan.
2. If this plan will also include school busses, then the turning radii are too tight to adequately accommodate the busses in front of the building and at the east end turnaround.
3. A significant number of back-ups will occur in the aisles because of vehicles waiting for students that will ultimately back out onto 248th Avenue.
4. This plan is basically a circulation plan. A designated drop-off area is not indicated on the plan.

Traffic Appraisal Study

A revised traffic and analysis study was not submitted with the revised site development plans. Modifications were made to the overall square footage of the proposed buildings and the parking supply of 719 spaces was increased to 726 spaces without any land banked spaces. There are issues that need to be addressed with respect to traffic. The previous comments were reviewed. Any changes were included the in the following paragraphs.

The KLOA traffic report does include the proper information that must be included in such a study which includes the identification of existing roadways, land use description, anticipated approach and departure patterns, existing and projected traffic volumes, a capacity analysis and related recommendations. However, it is our professional

opinion that because of the size and density of the proposed development with the various land use components, additional items should have been analyzed and considered. For any development to be viable, it must have safe, convenient, efficient, and suitable access. The proposed development will only have access from one local street. The review comments related to the traffic study include:

1. The study discusses the section of 248th Avenue in the vicinity of the site. Since this road will be the only access point to the property, additional information should have been included and analyzed with respect to the roadway intersections at 95th Street, 103rd Street, and at 111th Street.
2. It appears that the analysis is limited to the adjacent area and not on a regional basis.
3. The proposed land use and the related components will not just attract traffic in the local surrounding area but also from areas several miles away from the site. The approach and departure estimate indicates that 60% of the traffic will come from the north and the remaining 40% will approach and depart to the south. This report should indicate how those distributions were determined and provide some type of a service area map indicating what roads are leading to 248th Avenue to deposit that traffic.
4. The report should identify what streets were used to generate the 60% of the traffic from the north. How much traffic will use such roadways as Wolfs Crossing, 95th Street, Lapp Lane, Trumpet Avenue, and other local streets north of the site.
5. The report should identify what streets were used south of the site to generate the remaining 40% of the site destined traffic volumes. How much traffic would enter from the south from both sections of Honey Locust Drive, 103 Street, 111th Street, Landsdown Avenue, etc. It is critical to include this information because it could increase the accident potential on the various local streets.
6. Additional information and analysis should have been presented with respect to the use of the Tall Grass Greenway Trail just north of the subject property. This is a major recreational amenity that will be impacted by the proposed development. The only comment made was that it is being investigated by the City as a part of a potential roadway improvement along 248th Avenue. If the roadway is not widened for several years, then the trail will be impacted by the increased traffic volumes due to the proposed development
7. The traffic report indicates that the City of Naperville is currently conducting a "Phase 1" study for improving 248th Avenue between 95th Street and 103rd Street. The report also includes the term "will likely" include certain improvements. A Phase 1 study is basically a preliminary plan for an improvement. Funding will be a major issue before any timetable for construction is established. Therefore, this project should have been analyzed based on no involvement with a city widening project.
8. Even if the roadway is widened in 2024 as indicated, the traffic congestion on 248th Avenue will be horrendous. Roadway widening will be done in phases. A bypass lane must be constructed, and the traffic lanes are adjusted when one half of the roadway is removed and then widened. In addition, all roadway utilities must be installed. This roadway cannot be widened and completed in 12 months. The existing power poles along the roadway must be relocated first before any roadway work can commence.
9. This project must construct the necessary offsite roadway widening improvements in order to support the projected traffic volumes destined to this property in advance of any City widening improvement. This is necessary to protect the safety condition along the roadway. The revised site plans indicate a proposed left turn lane at the south entrance. However, no documentation was provided to determine if the required storage length of the turning lane is adequate.
10. KLOA indicated that they obtained traffic accident data from IDOT (Illinois Department of Transportation). The report should have also included accident data from the City of Naperville Police Department because not all accident data is submitted to IDOT.

11. The report adequately discusses the phasing of the project and the peak operating times of the land use components. There will be conflicts with the site generated traffic volumes and the existing through traffic volumes on the street system that must be resolved.
12. The report did not consider the conflicts between the northbound site traffic bypassing the south driveway attempting to enter the north driveway with the southbound site traffic attempting to make the left turn into the south driveway. These conflicts will create extreme time delays and traffic backups and congestion on 248th Avenue. These conflicts cannot be properly handled with Islamic Center personnel and police officers to control traffic. If you stop the southbound traffic to allow northbound traffic to either enter the south driveway or go to the north driveway, then there will be considerable congestion and delays to the north and prevent through traffic to move. The opposite will occur when you stop the northbound traffic and allow the southbound traffic to enter the south driveway.
13. The overall site plan should be redesigned to provide better access and circulation. This way the traffic could enter and exit the site more efficiently.
14. The projected Friday site traffic will cause extreme congestion along 248th Avenue. Through traffic volumes will be impacted without full pavement widening and appropriate turn lanes.
15. With the inclusion of the proposed school, the traffic volumes will increase during the critical AM and PM peak street traffic hours. Additional roadway widening improvements will be needed. It appears that the petitioner is expecting the City to resolve the traffic problems by widening and financing the roadway improvements along 248th Avenue.
16. The same impacts will occur when the multi-purpose hall and the gymnasium is constructed. Additional traffic volumes will be added to 248th Avenue not only during the day but into the night and on weekends. This will result in future delays and will add more unnecessary traffic on local streets such as Honey Locust Drive, Lapp Lane, Landsdown Avenue, etc.
17. Figures 6, 7, 8, and 9 indicate that site generated traffic will also use the nearby local streets. KLOA does not indicate if those trips come from within the local subdivision or are trips using those streets as a short cut from Route 59 located to the east of the subject property.
18. The KLOA report does not analyze what improvements would be required off site near 248th Avenue and 95th Street. Overall, they project that 60% of the site traffic will come from the north.
19. KLOA does not indicate what improvements would be needed at 248th Avenue and 103rd Street because they project that 40% of the traffic will come from the south.
20. The KLOA analysis does not include or consider the need to provide right turn storage lanes at the site entrances in order to accommodate turning movements into the site in order to allow through traffic to move with minimal delays
21. I agree with KLOA's findings that the Level of Service (LOS) at certain locations is at LOS F. This represents extreme congestion that will cause delays and lead to serious accident potential
22. It appears that the KLOA report is basing their findings and conclusions on the fact that 248th Avenue will be widened by the City of Naperville. They state many times in their report that they "assume" that 248th Avenue will be widened. Any proposed development must stand on its own and construct the necessary improvements to support that development.
23. The KLOA analysis did not consider or analyze the internal circulation system within the proposed development to make sure that there would be no traffic backups onto 248th Avenue.
24. The KLOA analysis did not include if service or emergency equipment could properly enter and exit the property without causing any delays or circulation problems.
25. The KLOA analysis assumes, and they have stated many times that "Further, given that the ICN has committed to use traffic control personnel/police officers at this intersection during prayer services and other large services/events, the traffic control personnel/police officers will be able to monitor the queue and ensure that it does not exceed the left turn lane". No information was provided on how those people

would be able to control the conflicts identified in Item 12 above without turning movement volumes backing up into the one lane through lane or even if the roadway was widened.

26. It appears from the KLOA signal warrant analysis that a traffic signal would not be approved at Honey Locust Drive and 248th Avenue. Before any signal can be constructed it must meet certain warrants as KLOA identified. The City of Naperville is required to meet all standards and requirements before approving any improvement for construction. IDOT and the Federal Highway Administration have standards that must be complied with including the installation of traffic signals.
27. On Page 28 of the report, KLOA states that traffic will be able to exit onto 248th Avenue but may experience some additional delay during peak periods. This position violates the standards for a safe development. As previously indicated, for a site to be viable it must have safe, convenient, efficient, and suitable access.
28. KLOA states that the Tall Grass Greenway Trail crossing will need to be relocated further north to allow for a proposed left turn lane improvement. They did not provide any information relative to where the trail had to be relocated to support the roadway improvement.
29. The report should have included an analysis of the parking lot layout and building location to achieve a better access and a circulation plan to prevent or reduce delays along 248th Avenue.
30. On the bottom of Page 38 of the report, KLOA states that "The length of the proposed 248th Avenue left-turn lane and/or taper serving the south access drive will need to be reduced by approximately 50 feet as the end of the left-turn lane taper will encroach on the location of the north full access drive". This recommendation has no basis for providing safe and proper access to a site. The length of a left turn storage lane is determined not only by the number of left turns but also by the posted speed limit along the roadway and certain design standards. The City of Naperville must approve projects complying with not only their standards but also standards of other regulatory agencies such as IDOT. Table 3-205.05a of the IDOT Design Manual sets forth certain design standards for roadways within the State based on the speed of the roadway. The posted speed limit on 248th Avenue is 45 mph. According to IDOT Standards (which Naperville follows), the required length of the entrance taper into a left-turn storage lane on a 45mph roadway is 210 feet. The overall length of the entrance taper and storage lane is 375 feet. The required length of the storage lane is then 165 feet. This design length allows a driver to enter the storage lane at the posted speed limit and then slow down to make the turn. This distance allows vehicles to get out of the through lane in order to reduce delays and potential congestion. According to the projected left turn movements in the year 2050 (Figure 9), there will be 208 movements during the mid-day peak hour at the north driveway, and 140 turns during the same time period at the south driveway.
31. A rule of thumb that is generally followed is that the length of the storage lane should be a minimum of one foot per turning movement. The south driveway storage lane cannot be reduced by 50 feet as stated and recommended.
32. Design exceptions to storage lanes are not considered to be appropriate for new developments. Design exceptions have been included in roadway widening projects on existing roads when it affected the damages to the remainder of existing developments under the Eminent Domain process. In this case, there is no existing development on the subject property (other than one single family home that will be razed) and there is no Eminent Domain matter in place.
33. It appears from a civil and traffic engineering viewpoint that there is insufficient site frontage along 248th Avenue to support the proposed development. There is also an insufficient number of access points to accommodate the projected traffic volumes without causing congestion and delays.
34. In our opinion the traffic study needs to be modified based on the preparation of a correct land plan that includes correct geometry, setbacks, pavement dimensions, accurate number of parking spaces, lane widening improvements, etc.
35. The traffic study did not consider or analyze the impact of access restrictions (such as at Wolfs Crossing) due to the existing Canadian National Railway line located just to the west of 248th Avenue. If 60% of the

site traffic will be generated from the north, then in our opinion the rail line will have an impact on site access.

36. As mentioned above, the traffic study provides data and studies adjacent to the site. The report appears to be simply an ingress/egress report and not a comprehensive report dealing with access from a single roadway with two closely spaced driveways.

Parking Study

In our opinion the parking study simply indicates that the proposed parking supply meets City Code based on the land plan that was presented to the City. As stated in the above review comments, many geometric changes are required in order to ensure proper access and internal circulation:

1. Internal pavement widths are inadequate to accommodate not only patron vehicles but also large service vehicles including but not limited to fire equipment, delivery trucks, and disposal trucks.
2. Additional loading docks and storage space maybe necessary.
3. The trash enclosure area needs to be expanded because of the size and density of the proposed development.

These items, when properly included in a correct land plan, will affect the overall parking supply. The supply numbers within the report will be reduced. At that time, it can be determined if the supply meets code.

Engineering Plan

A proper engineering plan is necessary to serve and accommodate any proposed development plan. Intech Consultants, LLC has prepared a plan that appears to contain the necessary utility improvements to serve the proposed development but there are items of concern that need to be confirmed before any approvals can be granted in our opinion. The items of concern include:

1. The proposed project, along with its land use components, is a major development that will require a large source of water for domestic and fire flow purposes. It is realized that these are only preliminary plans and are not being submitted or reviewed for final permit purposes, but the existing system needs to be properly analyzed if the system can support this development.
2. Static and residual flow tests should be conducted to determine if there is an adequate water supply to serve this development without affecting the adjacent land uses. Water storage tanks and booster pumps maybe necessary to be included in this development. If so the placement of these facilities would affect the land plan and further reduce the necessary parking supply. Fire flow tests should also be conducted to determine the required volume of water needed to serve the proposed fire protection system.
3. The engineering plan indicates two points of connection to the City's existing water line. One connection point is at Honey Locust Drive and the second point is at the northwest corner of the site on the west side of 248th Avenue. If there is a water main break, the development would be severely impacted by this condition. Large scale developments (which this is) need multiple water supply points. A water line should be extended into the site from the north and from the east to provide a proper water supply. Subdivision

plats should be investigated to determine the locations of any easements that can be used in order to construct additional water supply lines to adequately serve the site.

4. The proposed 6-inch water line on the west side of the building should be increased to a 12-inch line for better fire flows.
5. The engineering plan indicates that sanitary sewer service will be extended into the property from an existing sanitary manhole on the south side of Honey Locust Drive and 248th Avenue. Does the downstream sanitary sewer have the capacity to accept the projected flows for this large-scale development. The size of the downstream sewer is not indicated on the preliminary engineering plan. Considerable discharge flows will be generated from the multi-purpose hall, the school, and the gymnasium.
6. The sanitary sewer to serve the proposed gymnasium should have its own sewer service lateral and not be extended through the school building. Each building should have its own sewer line because if there is a sewer problem within the school building then the gymnasium would not have a working sewer and would have to be shut down until the necessary repairs are made.
7. The engineering plan indicates that the storm sewer outlet from the proposed development will be connected to an existing 18-inch storm sewer along the northside of the Tall Grass Greenway Trail. The Petitioner needs to provide proof that an easement can be obtained to connect to this sewer.
8. Does the 18-inch offsite storm sewer outlet have the capacity to accept the discharge flows from the proposed development.
9. The volume and size of the storm water detention system is also governed by the available capacity of the receiving system. If the offsite sewer has limited capacity, then the onsite storm water detention basin would have to be increased in size.
10. No information was provided with respect to the path of the overland storm water flow route from the detention basin at the proposed high-water elevation. How will that flow not impact the existing greenway trail.
11. It appears that the top of the bank of the detention pond is at elevation 688. The existing ground elevation in the rear yards of the existing homes to the east is generally at elevation 687. That means that there will be surface water runoff between the top of the berm and the east property line which will discharge onto the adjacent properties.
12. As previously indicated in the review of the site plan, the proposed detention facility should be shifted to the west and a minimum of at least a 16-foot setback should be provided. The outfall storm sewer along the east property line could be constructed within that setback area to collect surface water runoff from the berm and not create any drainage problems for the adjacent single-family homeowners.
13. An adequate setback area along the east property line is also required for maintenance purposes, for a landscape buffer, and for safety reasons. A fence should also be provided because a large detention facility such as the one being proposed can become an attractive and potentially dangerous nuisance.
14. The proposed detention basin will have a flat bottom. This type of design will become weed infested because the bottom will not dry out and it will be extremely difficult to mow the lawn. A wide paved sloped bottom swale should be included in the design.
15. Sloped paved swales should be provided between the entering discharge pipes into the basin to the outlet structures on the east side of the basin.
16. Drainage issues are also a concern along the north and south sides of the proposed parking lot. With a minimum setback as indicated on the plan, it must be proven that no surface water runoff from this development will discharge onto the adjacent properties.
17. A detailed site lighting plan was not submitted as a part of the overall site engineering plan. Even if direct cutoff and shielded luminaries are provided, the number of parking lot lights will cast a glow or glare that can be seen from a distance. This would be like driving near a large commercial shopping center parking lot, a car dealership, and even a school athletic field. The light glare will have an impact on the adjacent

single-family homes. Because of the size and type of use of the proposed development the lighting system will be active during all nighttime hours. This will also result in being an unattractive nuisance.

Proposed Development

The proposed Islamic Center development parcel is to be constructed on a 13.63-acre vacant parcel of land that also contains a single-family home at the extreme southwest corner of the subject property. The anticipated development is proposed to be constructed in roughly five (5) phases over at least a forty (40) year period. However, it is necessary to review the entire proposed development at this time and not on a phase or on a piece meal basis.

The ultimate and potential development as proposed by the petitioner in all five phases will consist of the following land use components:

- Mosque Worship Space 31665 sq. ft
- School building 41,749 sq. ft.
- Multi-Purpose Hall 22,226 sq. ft.
- Gymnasium 25,595 sq. ft.
- Parking spaces 726 spaces

The proposed development will be developed in five (5) phases based on the revised overall site plan. The development phases consist of the following:

- Phase 1 Mosque 28,400 sq. ft.
- Phase 2 School 41,749 sq. ft. in 2030
- Phase 3 Multi-Purpose Hall 22,226 sq. ft. in 2040
- Phase 4 Gymnasium 25,595 sq. ft. in 2050
- Phase 5 Mosque Addition 3,265 sq. ft. in 2060

A review of the documents indicate that the ultimate size of the Mosque will be increased from 29,478 sq. ft. to 31,665 sq. ft. The school building size has not changed since the initial view of the project. The size of the Multi-Purpose Hall will be reduced in size from 22,814 sq. ft. to 22, 226 sq. ft. The size of the Gymnasium will be reduced from 26,852 sq. ft. to 25,595 sq. ft.

Revisions were also made to the parking lot. The original overall plan included 719 spaces and 182 spaces that would be land banked if an additional supply was needed. The revised plan being proposed will contain 726 spaces and no land bank spaces.

Haeger Engineering reserves the right to modify, add, or change their opinions if additional or revised documents are submitted to the City of Naperville.

From: Joe E. Zgonina <joe-z@haegerengineering.com>
Sent: Saturday, July 31, 2021 1:07 PM
To: Dan Shapiro
Subject: Islamic Center Naperville

July 31, 2021

Dan:

In my original Statement of Opinions Report dated March 25, 2021, I made reference for the need to determine where the right-of-way (ROW) line was along 248th Avenue. The Petitioner provided a revised master site plan and preliminary engineering plans. Those documents did not contain any information regarding the location and or width of the ROW. The revised plans indicated a slight increase in the proposed building square footage, a slight increase in the parking supply, the elimination of the land backed parking spaces, and the inclusion of a left turn lane on 248th Avenue into the south entrance of the proposed development.

The ROW width is a very critical issue with respect to this development. Other than the left turn lane that they are proposing, they did not include the need for right turn lanes into their driveways as well as a future southbound to westbound right turn lane on 248th Avenue at Honey Locust Drive when the existing roadway is widened by the City of Naperville. Right turn lanes into the development is necessary in order to not impact the through traffic volumes on 248th Avenue

When 248th Avenue is widened, the basic cross section will consist of two southbound and two northbound through lanes (which contains 48 feet), a median with a left turn lane (which contains 16 feet), a right turn lane at Honey Locust (which contains 12 feet) and at least a 10 foot wide parkway on each side of the roadway for utilities and a sidewalk. Therefore, the minimum ROW width would be 96 feet or roughly 100 feet. When you add the required right turn lanes into the development you need an additional 12 feet of ROW.

The actual existing ROW width must be determined at this time and be included on the site plan. In addition, the City of Naperville has a required setback distance between the ROW line and the back of curb of the parking lot.

This project must be reviewed and if approved must be based on the ultimate and required ROW width along 248th Avenue adjacent to the site. If additional ROW is required it must be dedicated as a condition to the approval process. If additional ROW is required, then the site plan and parking lot layout must be pushed to the east into the open aera on the west side of the proposed retention basin. However, the retention basin has to be shifted to the west in order to prevent site runoff from entering the properties to the east of this site.

These issues can affect the site plan with respect to the proposed parking supply. In my report, I pointed out issues with respect to internal circulation, the geometrics of the driveway aisles, the small trash enclosure, the loading dock, the school drop-off area, etc. The petitioner and his consultants have not properly demonstrated how large equipment such as 53 foot tractor trailers can get into the loading dock and circulate through the site. Likewise, their fire truck circulation plan was based on a smaller type truck. As mentioned in the report, they need to verify the type of fire equipment that would service this site. In my opinion, changes in the circulation plan coupled with the ability for large trucks to move through the site will create a loss in an available parking supply. That being the case, the overall building square footage would need to be reduced.

Even though the proposed development is scheduled to be fully developed over at least 40 years, it should be noted that as each phase is being constructed there will be internal circulation and parking problems. Large construction equipment will be needed to construct those future buildings. Parking areas will be affected as well as the internal circulation aisles. Entering passenger vehicles will have difficulties entering the parking lot and attempting to park their cars without backing up out onto 284th Avenue.

Phase 5 includes the expansion of the Mosque and the construction of the 136 parking spaces. The Phase 3 parking lot will basically be lost when the construction occurs on the Mosque expansion. An area will be need for equipment, material storage, etc. Further circulation and parking problems will occur.

Based on the above issues and the opinions outlined in the updated report, the items of concern that need to be properly evaluated are:

- The ROW width along the site frontage on 248th Avenue
- A proper and calculated site and internal circulation plan
- The relocation of the retention basin to control site runoff to the east

Joseph Zgonina, PE

HAEGER ENGINEERING
100 East State Parkway
Schaumburg, IL 60173

tel: 847.394.6600 x361 fax: 847.394.6608
direct: 847.230.3161 cell: 847.287.6900

Joseph E. Zgonina, PE
Senior Associate

AREAS OF EXPERTISE:	Consulting Civil, and Traffic Engineer
EDUCATIONAL BACKGROUND:	Bachelor Degree – Bradley University, Peoria, Illinois Masters Degree – Civil Engineering, Traffic and Municipal Eng. University of Wisconsin, Madison, Wisconsin
PROFESSIONAL ORGANIZATIONS:	American Society of Civil Engineers Institute of Transportation Engineers Illinois Society of Professional Engineers National Society of Professional Engineers American Public Works Association
PUBLICATIONS:	Co-author – "Trip Generation Characteristics of Selected Commercial and Residential Developments", Traffic Engineering Magazine, March 1971 Co-author – Fourth Edition of the ITE Trip Generation Manual, 1989 Author – "Engineering Implications of Eminent Domain CLE International, September 2003 Author – "Roadway Issues in Urban Development", Lorman Conference, March 2005 Author – "Development vs. Hydrology" Law Seminars International, August 2005
PROFESSIONAL EXPERIENCE:	Barton-Aschman and Associates, Inc. Village of Schaumburg Marchris Engineering, Limited Haeger Engineering LLC
PROFESSIONAL LECTURER:	-Engineering Seminar, Lorman Education, Rosemont, Illinois, March 2005 -Traffic Engineering Conference, University of Illinois, Urbana, Illinois -Eminent Domain Conference – Chicago Annual Conference, Chicago, Illinois, September 2003 -Law Seminars International – Chicago Conference, August, 2005
REGISTRATIONS:	Illinois, Indiana, Wisconsin, Michigan, Ohio, Minnesota, Kentucky, Florida, California, Utah, Colorado, Pennsylvania, Arizona
APPOINTMENTS:	University Council – Bradley University

Joe Zgonina, PE
Haeger Engineering LLC
100 East State Parkway
Schaumburg, Illinois 60173
Joe-z@haegerengineering.com