

RESPONSES TO ENGINEERING DEPARTMENT IDC dated August 30, 2011

1. There appears to be no fire access around the building or turnaround provided. We defer comment on the accessibility of an SU-30 fire truck to the fire chief.

Response *The access to the site was found to be acceptable for the previously proposed larger buildings.*

2. The proposed use does not appear to generate a significant number of trips however the applicant reserves the right for the building to be used as a “building trade shop”. This nebulous term could potentially generate a higher number of trips depending on the other allowed uses.

Response *Building trade shops are a use contained in the Bylaw and allowed in this District [3.1.14]. A minimum of 2 parking spaces [6.3.1.13] are required by the Bylaw for building trade shops. The number of parking spaces required indicates that the Bylaw considers building trade shops to require fewer parking spaces than a vehicle repair shop [6.3.1.15], and by deduction, to generate less traffic. Neither use generates significant traffic.*

3. The plans do not show any proposed utilities (gas, electricity, etc).

Response *Electric and other cable utilities will extend through the access and utility easement connecting the site to Sudbury Road unless other service routes can be negotiated with an abutting property owner.*

4. The engineer should clearly label the Tennessee Gas pipeline and easement on all their plan sheets along with the notes to ensure the contractor is well aware of the location of this gas transmission line.

Response *The gas easement will be labeled on Sheet 2, as on Sheets 1 and 5, and we believe that the note on Sheet 1 is sufficient to make contractors aware of the presence of the gas easement.*

The provisions of DIG-SAFE requirements make the repetition of the note redundant.

5. The engineer should describe how the applicant will provide fire protection for the site.

Response *The building’s size and construction do not require fire protection beyond that normally required to be presented at the time a building permit is filed for.*

6. The engineer needs to show how they intend to provide potable water for the proposed facility. Our maps indicate that the water main ends on Sudbury Road at the existing hydrant opposite Westside Drive. Any work within the Sudbury Road will require a Permit To Construct Within a Public Way and will need to be coordinated with the developer for the Alexan Concord Housing project.

Response *At present a private well is proposed, as shown on the plan. Alternative routes for a connection to municipal distribution systems are also being considered, but any design or negotiation with abutting landowners will be delayed until site plan approval has been achieved.*

7. The engineer has not shown how they plan to handle solid waste on-site.

Response *Solid waste will be stored inside the building for offsite recycling or disposal. It is expected that most wastes should be directly recycled.*

The provision of exterior waste containers would decrease recycling of materials and the containers could, at this remote location, be used by others. The Acton Town Hall/Library does not have exterior solid waste containers.

8. The engineer needs to label all the dimensions for the parking spaces within the site and indicate any signs, pavement markings, etc for any required accessible parking spaces.

Response *The exterior parking spaces are labeled with “typical” dimensions which are sufficient to control construction.*

Accessible parking spaces are not required [521 CMR 23.2.1].

9. The engineer should label the minimum required 24 foot width for the maneuvering aisle on the site at the building to ensure the contractor is aware of this requirement. We scaled the width of pavement and it appears to be slightly less than the width needed for a 24’ maneuvering aisle and the 18.5’ parking space.

Response *The maneuvering aisle has been labeled as being 24 feet and the building location was adjusted.*

10. The plans do no reference any vertical datum. The plans should be referenced to the 1929 NGVD datum with the location and elevation of the starting bench mark shown and 2 temporary benchmarks on-site that are set on fixed objects that will not be disturbed or destroyed during construction.

Response *A note stating that plan datum is NGVD 1929 will be added to the plan, along with a note stating that two benchmarks will be established after clearing and initial grading have been performed. It appears that construction activities on the adjacent property have compromised the two temporary benchmarks now shown on the plans.*

With global positioning instruments there is no need to utilize a starting bench mark.

11. The property lines are noted on the plans as being graphic representations and not a result of a land survey. The applicant should be required to perform a survey to certify the location of the property lines to ensure their construction activities do not encroach onto the neighboring lots due to the close proximity of the work to their lot lines. The plans should be stamped by a certified land surveyor.

Response *Property lines have been established and are shown on the 1"=50' Site Plan (Sheet 1). An Approval Not Required (ANR) Plan is to be presented to the Planning Board upon the completion of the appeal period for the Zoning Board of Appeals decision regarding frontage and access. A Certified Plot Plan will be required prior to the issuance of a building permit, and a note has been added to the plan stating that property lines within 25 feet of construction activities must be staked by a Professional Land Surveyor.*

12. There is very little detail for the existing and proposed grades on the site. The building is built into a steep slope and appears to be at a finish floor elevation of 211'-6" and 201'-7" and the existing elevations are as low as 198 in the area of the building. There is no detail on what proposed grading or retaining walls are used. Any proposed retaining walls or grading should be reviewed by a geotechnical and a structural engineer. The abutting property in the Town of Concord had a severe washout on the steep slope and precautions need to be taken to prevent this from happening at this location during construction and after the work is complete and the buildings are occupied.

Response *Existing and proposed contours are presented with a one foot contour interval and spot grades to the nearest 0.1 feet are shown on the corners of the proposed parking lot.*

The buildings are to serve as retaining walls, and the 3-foot high retaining walls adjacent to the building are detailed on the plans. Building construction will be subject to the normal reviews required for a building permit.

13. The engineer has not demonstrated if/how the site will comply with the Massachusetts Stormwater Regulations since the work is outside the jurisdiction of the Conservation Commission.

Response *It is agreed that the project is outside the jurisdiction of the Conservation Commission, and therefore there is no regulatory procedure for a review under the Massachusetts Stormwater Regulations.*

We believe that the contents of the Stormwater Management Calculations and Stormwater Management Report demonstrate compliance.

14. No soil borings were provided in the application. The site is in Groundwater Protection Zone 3 and without the soil borings there is no depth to groundwater referenced anywhere in the drainage report. The engineer needs to provide documentation to support that the bottom of the proposed recharge facilities shall not be less than 2 feet above the maximum groundwater elevation.

Response *Sheet 5 presents the record of four soil evaluations witnessed by the Board of Health, which show that the estimated high groundwater elevation is below 199.5 feet. The bottoms of the recharge systems are above elevation 206, so the 2 foot minimum offset is exceeded.*

15. More detail is needed for the existing and proposed topography of the site. The only existing or proposed grades provided are in the vicinity of the building.

Response *Existing and proposed topography within 100 feet of site alterations are shown. There is no need to show topographic information in areas of the site removed from the area of construction.*

16. The existing runoff rates and volumes were not calculated. The drainage calculations only consider the runoff from the impervious areas however portions of the site that are pervious contribute to runoff offsite and those runoff rates and volumes were not included in the drainage calculations. Without knowing the existing rates and volumes it could not be verified that the proposed rates and volumes do not exceed the existing.

Response *Runoff from site areas that will remain as being classified as pervious will not be increased, will not impact the design of the stormwater management system or the validity of the calculations, or provide useful information.*

The Bylaw [10.4.3.1] limits the increase in stormwater runoff to a 10 percent increase based on a 10-year storm event. The area to be altered is less than 3 percent of the site, and if made entirely impervious and allowed to directly discharge to the Assabet River, the increase in the rate of runoff could not exceed the 10 percent limitation.

The stormwater management system has been designed and demonstrated to store and recharge stormwater runoff resulting from a 100-year [0.01 probability of return] 24-hour storm event.

The drainage calculations clearly show that runoff from the building and parking lot are retained.

17. Portions of the existing parking lot drain on to the site and were not included in the calculations. The applicant shows a “high point” at the property line to prevent water draining from offsite however there is no detail on this high point. There are no drainage calculations for the portion of the existing lot that drains on to the site.

Response *We believe that there is no detail required other than the note indicating that a high point is required, and the sufficiency of such notes has been demonstrated by many other site plans.*

Offsite runoff from adjacent properties will not be tributary to the stormwater management system designed to serve the site, and is not relevant to the design or functioning of the proposed system.

Runoff from adjacent properties does flow onto the site over 700 feet from the stormwater management system.

18. No soil types or soil map were provided.

Response *The four soil evaluations shown on Sheet 5 provide site-specific soil information that is better suited for design purposes. A soil map is attached.*

19. The applicant does not propose curbing for the parking area. The intent of the design is to direct runoff to the inlet structure and recharge area; however, without curbing the water appears to shed offsite. The applicant should show the proposed watershed areas in the drainage report.

Response *A concrete curb is shown extending from the building to the curb inlet to insure runoff is collected by the inlet box. The easterly edge of the parking lot is shown to be graded at a slope of 0.9 percent to the inlet box. Runoff from the parking lot will not be shed offsite.*

20. The Stormwater Operation and Maintenance notes should indicate who is responsible for inspecting and maintaining the drainage system.

Response *The owner of the property is responsible for the operation and maintenance of the stormwater management system.*

21. The Stormwater Operation and Maintenance and Site Plan and Details should include information about how to shut-off the drainage system (i.e. inlet structure, recharge areas, etc...) in the event of any potential spill. In the event of a spill the engineer needs to show they intend to contain the material on the impervious surface without curbing to avoid contaminating the site. There should be notes on the plans clearly establishing the process and procedures that need to be followed by the future owners/tenants.

Response *The inlet box has been designed with the capacity to store 90 gallons of petroleum products or other liquids that will float on water.*

A note has been added to the plans describing how the inlet structure can be closed to inhibit the entrance of liquids.

22. The Stormwater Operation and Maintenance notes should also include information about the monitoring well for the underground infiltration system. The notes should describe, in layman's terms, the inspection process and how to determine when there is there is a problem.

Response *Sheet 4 contains a detailed description of the stormwater management system and its operation and maintenance, including, in the final paragraph, a description of the monitoring well and how to determine if the recharge system is under duress.*

We believe that the stormwater management system Operation and Maintenance procedures are written to be understood by persons that would be suitable for overseeing the system.

23. The engineer should ensure the recharging of runoff at the retaining walls on the steep slope will not undermine the existing soils underneath the wall footings and cause the walls to prematurely fail.

Response *Due regard has been given in the design of the site improvements to insure that erosion and subsidence will not occur.*

24. The Zoning Bylaw requires that all runoff from the impervious area within Groundwater Protection District Zone 3 shall be funneled into a gas-trap catch basin.

Response *Runoff from roofs is typically not routed through a gas trap catch basin prior to disposal and this has not been the practice in Acton, especially for single family homes.*

Combining roof runoff, essentially rainwater, with runoff from parking lots will result in decreasing the effectiveness of devices designed to remove impurities. Present stormwater guidelines recommend that roof runoff be isolated from runoff from parking lots or other sources that could contain impurities.

To our knowledge, roof runoff has never been combined with runoff from road/driveway surfaces and diverted to gas-trap catch basins prior to disposal.

Bylaw 4.3.6.3 allows the Board of Selectmen to approve alternate methods of runoff treatment and renovation if the intent of the Bylaw is met. The intent [Purpose] of the Bylaw is presented in 4.3.1 as being to protect public water supplies, and the segregation of rainfall from runoff possibly containing impurities meets this purpose.

At this site, all runoff from the parking lot is directed to the inlet box that contains a four foot deep sump that provides a storage capacity of 16 cubic feet for storage of detritus [a mixture of grit and organic materials], and a baffle, allowing for the storage of over 90 gallons of liquids that will float on water.

The parking lot has an area of 2800 square feet.

25. There is no curbing being proposed along the parking area and recharge areas are being shown directly next to the parking allowing for the potential of direct infiltration. Also, the runoff entering the inlet structure is only for the initial flush of runoff. Once the sand bed is full or inundated by a peak flow that it may not be able to handle, the runoff from the impervious surface is diverted to recharge area without any pretreatment such as gas trap catch basin as required by the Zoning Bylaw.

Response *A concrete curb is shown on the plan and its purpose is to segregate the parking lot from the recharge area.*

The inlet box has a baffle and will serve as the gas trap required by the Bylaw and the Massachusetts Stormwater Regulations. The inlet box will also provide for the storage of 90 gallons of petroleum products.

26. The first inch of runoff is supposed to be diverted to a retention pond that will allow exposure to sunlight and vegetation and lined with a soil featuring a permeability of 0.1417 in/hr or less so that it will be retained for an average of at least 3 days. The engineer needs to demonstrate there is sufficient storage capacity within the sand bed to contain the entire first inch and that it will retain the runoff for an average of at least 3 days. There is no vegetative layer being shown for the sand bed. The engineer has indicated a layer of pea stone on filter fabric instead of vegetation as required by the zoning bylaw. If a portion of the storage capacity is considered within the soil layers for the sand bed, we have some concerns that the runoff will not be able to infiltrate through the soil layer as quickly as the rate of runoff for a larger storm event.

Response *A vegetative layer has been substituted for the 3 inch layer of 3/8 inch stone shown in the detail. It is our opinion that the layer of 3/8 inch stone will allow for ease of maintenance, limit the breeding of mosquitoes, and not be subject to freezing.*

The submitted calculations confirm compliance with the requirements of 4.3.6.3 for the runoff from the parking lot.

Runoff in excess of the first 1 inch is diverted to the recharge area as allowed by the Bylaw.

27. The engineer has shown some absorbent triangle areas on the backside of the proposed buildings. There is no way for future tenants/owners to access these areas with equipment to maintain and/or replace these areas when maintenance is required.

Response *Roof runoff is collected by the building's oversized 8 inch wide gutters and transported to the recharge areas at the sides of the building. Only precipitation falling directly on the areas designated as "absorbent triangles" will enter the stone and there should be no need for maintenance, especially not with "equipment".*

The absorbent triangles were designed to insure that the triangular areas at the junctions of the building would be completely stabilized, and to serve as redundant recharge works. A similar approach was taken to the backfill requirements along the full length of the rear of the building.

The slope at the rear of the building can be traversed on foot and any landscape litter could be removed by traveling around the building or via the door from the basement that exits onto the larger absorbent triangle.

28. Maintenance and routine inspections of the drainage facilities and the steep slope will be crucial at this site to try and prevent any clogged systems from overflowing and eroding the slope that will compromise the safety of the facility and its occupants

No response necessary.

29. The notes & typical details for the drainage system needs to clearly state the inlet structure, baffles, pipe connections, joints, etc... will be watertight to contain the pollutants that will be trapped within the structure.

Response *The inlet box has been designed with a polypropylene baffle properly attached to the precast concrete inlet box and sealed to prohibit the passage of liquids. Floatable runoff impurities will be retained on the inlet side of the baffle. Notes concerning making the structure watertight have been added to the plan.*

30. The engineer has indicated pervious pavement to be used with certain locations on the site, including parking areas and at the holding tank and the Oil, Sand and Gas separator for the interior floor drain system. The runoff from the impervious areas cannot discharge to the inlet structure without draining over the porous pavement thus it will allow direct infiltration without pretreatment through a gas trap catch basin as required by the Zoning Bylaw.

Response *The area of impervious pavement has been extended to the concrete curb where it intersects the building corner to direct runoff across an impervious surface to the inlet box.*

As an alternative, the entire parking lot can be paved with porous pavement to achieve a runoff coefficient of less than 0.70.

31. The cross section for the porous pavement shows it being installed with a compacted processed gravel base. This will restrict the infiltration capacity by compacting the layers and minimizing the voids in the soil. The cross section should also state the existing soils shall not be compacted in any form to maintain its natural infiltrative characteristics.

Response *The porous pavement detail is a “standard” detail utilized by most designers and is widely acceptable. We will review any detail from acceptable sources presented by the Engineering Department for use at this project.*

The compacted gravel base is required to support the 6 inch stone reservoir contained below the porous pavement, and the pavement itself. Compaction will not decrease the permeability of the gravel beyond that necessary. Compaction of in situ soils will decrease their permeability below acceptable limits.

32. Due to the porous pavement, sanding the parking area during the winter months should be prohibited to prevent clogging the porous material. Also, the maintenance of the porous pavement may need to be revised. We’ve found that some sources indicate monthly inspections and vacuuming the porous surface almost to that frequency, if needed, to maintain its ability to allow runoff to pass through the voids in the material.

Response *The parking lot has a grade of less than 2 percent and will be well exposed to sunlight negating the need for sanding. The area of porous pavement is limited to the areas near the building, where thermal gain will be greatest. The stormwater management system operation and maintenance plan requires vacuum sweeping of the parking lot surface to maintain its permeability.*

33. The Applicant will need to show the locations of any proposed signs along Sudbury Road that will be used to identify the businesses on the site. The sign location will need to Account for the roadway improvements being done by the Contractor for the Alexan Concord Housing Development.

Response *The site might be used as an adjunct facility for a nearby automobile enterprise, and a sign may not be required or found desirable.*

The type and need for a sign will be determined after a tenant has been selected, and it can be assumed that road improvements will have been completed at that time.

34. It's my recommendation that the applicant should, at a minimum, post a street address sign on Sudbury Road to clearly identify the location of this facility. I want to be sure that emergency personnel can easily locate the driveway for the facility in case of an emergency 911 situation. The Applicant will need to obtain approvals from the Acton Police and Fire for the street numbering system proposed for the site before we can issue a final approval.

Response *Any directional signs allowed and required for public safety will be placed at the entrance onto Sudbury Road.*

35. There is an existing stone bound labeled on the Concord's side of the town line near the proposed sand bed. The stone bound should be clearly marked in the field so that it is not disturbed during construction. If any survey markers are damaged or disturbed during construction, the applicant will be required to hire a registered land surveyor to reset and certify the new survey location.

Response *The stone bound is clearly visible in the field and a note on the plan states that it is to be protected. The bound is outside the area of work, outside of the property, and outside of Acton.*

36. The developer for Alexan Concord will be constructing a sidewalk along their frontage on Sudbury Road and there is an existing sidewalk along their frontage on Powdermill Road next to the canoe landing.

Response *Our client has cooperated with the past and present owners of the Alexan Concord site to allow remedial measures required for the completion of that project to be made on this site and other properties under the applicant's control.*

37. There should be an Erosion & Sedimentation Control Note clearly stating that the developer is responsible to immediately clean up any sand, dirt or debris that erodes onto private property or into any existing drainage system (including catch basin sumps, pipelines, manholes, and ditches).

Response *The requested note has been added to the Erosion and Sedimentation Control Notes as well as to General Note 8.*

38. The engineer should include an Erosion and Sedimentation Control Plan to show locations of erosion control barriers, crushed stone construction entrances, check dams, etc... We are very concerned about erosion along this steep slope.

Response *The installation of temporary construction barriers at this site is unnecessary and their installation may serve to delay construction, increase areas of disturbance, and result in the concentration of runoff, causing an increase in the potential for erosion.*

Both the foundation backfill methods and the absorbent triangles were incorporated into the design to limit the impact of runoff from the building during construction. Additional notes pertaining to runoff from the building during construction will be added to the plans.

Additional notes have been added to the Erosion Controls description pertaining controlling runoff during construction.

39. The architectural plans show 2 side doors on the buildings, but there are no walkways provided for them on the site plan.

Response *The doors are for emergency purposes only and sidewalks will not be provided.*

40. The existing canoe landing and parking that is located on this property along the Powder Mill Road is not shown on the plans.

Response *The Assabet Canoe landing was created by the applicant and its location is indicated on Sheet 1.*

41. The engineer should show the proposed location for their sewage disposal system

Response *The subsurface sewage disposal system location, design criteria, and construction details are contained on Sheet 5.*

OVERVIEW OF STORMWATER MANAGEMENT

It is our understanding that facilities required by Zoning Bylaw 4.3.6.3 were based on an article contained in a trade magazine some 20 years ago. Since that time, considerable progress has been made in stormwater management and DEP has adopted extensive Stormwater Management Standards that may be contrary to the provisions of 4.3.6.3.

We suggest that the Engineering Department review the Stormwater Management Standards and determine if 4.3.6.3 should be amended to require that stormwater systems be designed to conform with the State's Standards.