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Memorandum

Date: 1/11/2023

Re: 0 North Mountain Drive, Dobbs Ferry, NY

To Whom it May Concern,

Integral Engineering Services has been retained to review the following documents prepared by Gotham Design Planning & Development related to proposed designs for the development of the subject property:

1) Excavation and Mechanical Rock Removal – Mitigation Plan
   6 pages (Dated December 15, 2022)
2) Traffic, Parking, and Driveway Analysis
   8 pages (Dated December 15, 2022)

During the review of these documents, supplemental information was gathered, including plans/specifications in support of the facts and data presented in the documents. A field investigation was also performed on January 6th, 2023 to observe the existing site conditions.

The two memos have been reviewed an analyzed by the undersigned & provide for a systematic approach for methods of construction and code compliance thereof. As such, please accept this letter as formal certification of the reference documents.

Should you have any additional questions or concerns, feel free to contact me at my direct line: 914-774-0343.

Thank you,

STATE OF NEW YORK
SIRUS MIANDOABI
EXCELSIOR
100618
LICENSED PROFESSIONAL ENGINEER

Sirus Miandoabi, PE

Founder/President

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December 15, 2022

0 North Mountain Drive
Excavation and Mechanical Rock Removal - Mitigation Plan

These notes pertain to the excavation required for the construction of a single family home located at 0 North Mountain Drive in Dobbs Ferry, New York and the process that will be required for the removal of surplus material from that site. This excavation applies to both soil and rock removal by mechanical means. The purpose of this Plan is to provide an understanding of both the methods to be used for the excavation and the mitigation methods that will be implemented to control wind-blown soil and rock contamination of air and water, improve working conditions on-site, to prevent dust from obscuring visibility on the adjacent driveways, to retain as much soil and rock as possible on-site, and to protect the health, comfort, and well-being of neighboring residents.

The construction activities at 0 North Mountain Drive will inevitably result in the exposure and disturbance of soils and rock. The rock removal process with mechanical means has a particular risk of creating dust, which can be adverse to both on-site and off-site conditions. This Plan included the intent to control the dust that will be generated by the mechanical rock removal process necessary for the construction of a single family home on this property.

Calculation of Material to be Excavated and Removed from the Site:

Hudson Engineering has calculated a total of 2,253.44 cubic yards of soil and rock to be excavated, as indicated on the Cut/Fill Summary on Hudson Engineering's Sheet C-3, dated 12-14-2022. Based on the investigations at the site, including the four test pits evaluated by Hudson Engineering, it is projected that 60% of the material to be excavated will be rock and 40% of the material will be soil. This computes to 1,352 cubic yards of rock and 902 cubic yards of soil.

The Cut/Fill Summary indicates that 356 cubic yards of soil will be used for fill on the site. The retaining walls shown on the Site Plans are gravity, dry stone construction, with the base of the walls required to be 2/3 of the height of the wall in width. Given the length and height of the retaining walls, it is calculated that a total of 491 cubic yards of rock will be required for the construction of the retaining walls.

Subtracting the 356 cubic yards of soil for fill from the total of 902 excavated computes to 546 cubic yards of excavated soil being removed from the site.

Subtracting the 491 cubic yards of rock to be used for the construction of the retaining walls from the total of 1,352 cubic yards excavated computes to 861 cubic yards of excavated rock being removed from the site.

Process for Soil Excavation and Removal:

The first step in excavation will be to strip the top soil and set it aside in a stockpile, as indicated on Hudson Engineering's Sheets C-2 and C-4, dated 12-14-2022.

With the top soil cleared, an excavator with a 1 yard bucket will be used to remove the soil to the required depth where possible, or otherwise to the top of rock ledge. Excavated soil to be retained for use on the site will be set aside in a stockpile, as indicated on Hudson Engineering's Sheets C-2 and C-4, dated 12-14-2022.

It is anticipated that the excavator will be able to excavate approximately 150 cubic yards per day. Surplus soil will be removed from the site by 20 ton trucks capable of containing 18 yards. Removing 546 cubic yards of soil will require a total of approximately 30 truck trips. It is anticipated that an 18 yard truck can be positioned, filled, and leave the site every 30 minutes. Assuming an 8 hour day, this is 15 tips per day, which computes to two days of soil removal from the site. For the purposes of this analysis, however, understanding that construction sites are not always able to operate at full efficiency, it is anticipated that the excavation and removal of soils will be completed over the course of one five day work week, which is an average of 6 truck trips per day.

Process for Rock Excavation and Removal:

Rock removal will commence after the soil has been removed to the depths possible without use of a rock hammer. With the soils removed, the calculation of the volume of rock compared to soil to be removed can be refined, but for the purposes of these calculations the available data is sufficient.

An excavator with a 20 ton hammer will be used to remove the rock. This is a large hammer, which has been selected to obviate the concerns expressed about the inefficiency of rock removal with a small hammer. Other projects in Dobbs Ferry have attempted to remove rock with a 5 ton hammer. This is typical of a small excavator with equipment that is intended for standard excavation for single family homes. We have used a 20 ton hammer for other projects in Dobbs Ferry and Irvington and find it more efficient, although more expensive on the basis of per hour use. The efficiency in the use of this larger hammer, however, offsets this additional cost by reducing the number of hours of use required for the equipment.

The anticipated volume of rock removal is estimated to be between 80 and 100 yards per day. At this rate, the 861 cubic yards of rock computes to requiring 9 to 11 days of removal. Noting that construction sites do not manage peak efficiency, 15 days of rock excavation, or three weeks, is anticipated.

Approximately 500 cubic yards of excavated rock will be retained on site for the construction of the retaining walls. This will be stockpiled in the back of the proposed parking area and in the back of the proposed pool area. The excavated rock scheduled for removal from the site will be removed in 20 ton 18 yard trucks. Since the rock will have voids, it is anticipated that each truck will only be able to contain approximately 13 yards of rock. With 861 cubic yards of rock to be removed and 13 yards per truck, it is anticipated that approximately 66 truck trips will be required.

Using a 4 yard bucket, it is anticipated that an 18 yard truck can be positioned, filled, and leave the site every 20 minutes. Assuming an 8 hour day, this is approximately 22 trips per day, which computes to three days of rock removal from the site. For the purposes of this analysis, however, understanding that construction sites are not always able to operate at full efficiency and that the rock removal process will not operate at that pace, it is anticipated that the excavation and removal of rock will be completed over the course of three work weeks or 15 days, which is an average of 4 to 5 truck tips per day.

Mitigating Measures:

Work shall proceed in strict compliance with the following requirements:

1. No work shall commence until an Excavation Permit or a Building Permit has been issued by the Dobbs Ferry Building Department. All work shall incorporate the best practices for dust control and site protection.

2. Rock removal work shall be limited to the hours between 9:00 AM and 5:00 PM Monday through Friday. No work is permitted on national holidays or weekends.

3. Prior to beginning work, survey and stake the proposed excavation for the foundation, the stormwater drainage system, the driveway and the retaining walls. A datum elevation mark shall be set on site for use in determining the required depth of excavation. Care shall be taken to avoid excavating more material than required.

4. The removal of existing vegetation and soils are subject to rules and regulations that were established in the Erosion and Sediment Control Plan that was created for this project and approved by the Dobbs Ferry Planning Board.

5. All work shall proceed in strict compliance with the approved Erosion and Sediment Control Plan.

6. Strip topsoil and stockpile at the locations indicated on the plans. Temporarily stabilize topsoil stockpiles with hydroseed during May 1st through October 31st planting season, or by covering with tarpaulins November 1st through April 30th. Install silt fence around the toe of slope.

7. Excavate the soils to the required depth and to expose rock ledge requiring removal. Stockpile material on site scheduled for reuse at the locations indicated on the plans covering with tarpaulins and installing silt fence around the toe of slope. Soil that is not scheduled for reuse at the site shall be removed from the site as soon as practical.

8. Construction operations shall be scheduled to minimize the amount of area disturbed at one time.

9. It is understood that it will be necessary to move the rock hammer around to achieve the best results, but care should be taken to work methodically, wetting or temporarily covering disturbed areas if necessary to prevent dust from becoming airborne.

10. Prior to initiating rock removal, a dewatering pit shall be constructed on-site consisting of a hole or trench positioned downslope from the area subject to rock removal. The hole or trench shall be fully located within the area designated for construction disturbance on the Site Plan approved by the Dobbs Ferry Planning Board and shall not be placed within 5 feet of the subsurface stormwater structure on the site. The hole or trench shall not be deeper than four (4) feet and shall have a base filled to a depth of one (1) foot with 2 inch clean aggregate. Water and sludge shall be directed to the dewatering pit by means of trenching and temporary berms.

11. A water spray system shall be set up to wet the surfaces of rock as they are being hammered. Using hand held hoses with a suitable hose spray nozzle attached that is designed to break the water stream into small droplets, rock surfaces scheduled for removal shall be sprayed down with water to reduce airborne dust. Areas shall be kept wet during all times when removal or the handling of rock material is in process. Since water is not available at the site, a water tank shall be provided on the property.

12. Care shall be exercised in the watering process to avoid excessive irrigation, which could create runoff and erosion problems. The frequency and volume of water spray shall be limited to that amount necessary to achieve the goal of controlling dust from the rock removal process.

13. If water begins to collect in the area where rock is being removed, confirm first that the area is not being overwatered. If continued watering is required to control the dust and if it is not practical to have the water flow to the dewatering pit by gravity, a pump and hose may be used to remove the water from the rock removal area and discharge it into the dewatering pit.

14. The percolation tests previously performed at this site indicate that the dewatering pit should be able to drain naturally. If water begins to fill in the dewatering pit, cease watering the rock and cease rock removal until the conditions have been corrected.

15. Dewatering pits shall be inspected daily during the operation for clogging or overflow. Inlet and discharge hoses shall be cleared of obstructions whenever necessary.

16. Excavated rock shall be stored on the site in the stock pile locations indicated on the Site Plan approved by the Dobbs Ferry Planning Board or otherwise as required by the Building Department.

17. Rock and particulate matter retained on site shall be sufficiently wetted or covered to prevent particulate matter from becoming airborne. Tarps, plastic, or other suitable materials shall be secured over the stock piles and work area as required by the Building Department to further reduce dust emissions.

18. Excavated rock that is not scheduled to be retained on-site for the purposes of the proposed construction shall be removed by trucks duly licensed for this purpose as soon as practical.

19. Trucks transporting soils, rock, and particulate matter shall be covered prior to leaving the site and shall be kept covered until reaching the destination for unloading.

20. During periods of steady winds exceeding 15 mph or gusts exceeding 20 mph, rock removal operations shall be suspended until the wind subsides. If necessary wind barriers consisting of fences or barriers suitable for this purpose may be required. Snow, burlap, and silt fences may be used to control air currents and reduce dust blowing. Hay bales and similar sediment control devices may also serve as wind breaks. Barriers should be placed perpendicular to prevailing currents, at intervals approximately 15 times their height.

21. Dust control measures shall be maintained through dry weather periods until all disturbed areas are stabilized.

22. Clean up of work areas, rock storage piles, and other areas where there is a risk of dust and similar debris as a result of this work shall include the wetting down of the area and the use of brooms and rakes to collect the material for disposal. When sweeping areas of dust and debris, sweeping compound, such as GreenSweep, shall be used to reduce airborne dust.

23. Maintain the street free of dirt and debris. On days when there has been truck traffic, sweep the streets clean and, if necessary, employ a street sweeper.

24. The Site Plan approved by the Dobbs Ferry Planning Board includes grading plans, erosion and sediment control plans and details, and a landscaping plan and details which should be reviewed and considered integral to the efforts to mitigate dust on the site, as well as the permanent controls intended to stabilize the site.

Management of Vehicles on Site During Construction:

North Mountain Drive is a hilly street with twists and turns. It is also relatively narrow, although two approaching cars can pass. This street is the access to the Ardsley County Club, which has many programs that can bring a large number of people up this street in a short time period. Keeping the street free for traffic requires proper management of construction vehicles.

25. Provisions will be made for the equipment required for both the soil and rock removal, whether digging or loading vehicles, and the positioning of vehicles in the process of being loaded to all be on-site.

26. Trucks being used for the removal of material from the site shall be scheduled at intervals such that there is no need for vehicles to be staged on the street for a time period longer than 10 minutes. When vehicles are staged on the street, a flag man shall be present to assist traffic.

27. The General Contractor shall provide a parking area on site for workers vehicles to prevent these vehicles being parked along the street. If sufficient space for vehicles on site is not possible, the General Contractor shall either arrange for car pooling to reduce the number of vehicles on site or arrange for remote parking and shuttle workers to the site.

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December 15, 2022

0 North Mountain Drive
Traffic, Parking, and Driveway Analysis

This Memo evaluates the anticipated impacts of a single family home proposed to be built at 0 North Mountain Drive in Dobbs Ferry, New York on the neighborhood as a result of the additional traffic that this use will generate, including parking. This Memo also documents the design and location of the proposed driveway, specifically in terms of impacts on safety for vehicles accessing 0 North Mountain Drive from the driveway.

North Mountain Drive is a Dobbs Ferry Village street with a width of approximately 17 feet to 18 feet from edge of paving to edge of paving, in a right of way with a width of approximately 35 feet, and a length of approximately 1,690 feet from where it intersects with Osceola Avenue and ends at the entry to the Ardsley Country Club. While some sections of North Mountain Drive have curbing, the section of the road in front of the subject property does not have curbing on either side of the street. There are 12 single family parcels accessed from North Mountain Drive, five of which, including the subject property, are currently unimproved.

It is hypothesized that the reason that this public street may be labeled as a “Drive” is because it serves as the primary driveway to the Ardsley Country Club. One could contemplate whether this is a driveway to the Country Club that provides access to a few single family homes or whether this is a street serving a few single family homes, and also provides the primary entry to the Country Club. Since this is a dedicated public street on the Official Map of the Village of Dobbs Ferry, we contend that it is the latter and that the property owner of the subject parcel, which has more than 183 feet of frontage on the public street, has the right to access their property from the public street. The OF-2 Zoning District, within which the subject parcel is located, requires lots with a minimum width of 125 feet and a minimum of 25 feet of frontage on an improved street.

Concerns have been expressed that the volume of traffic generated by the Country Club may result in adverse impacts on the public safety of this use of the Village Street. The Country Club has been in operation for more than 100 years and actually transitions the change from a horse and carriage world to one in which automobiles are the primary method of transportation. The fact that North Mountain Drive is hilly with twists and turns contributes to these concerns.

An inquiry was made to the Dobbs Ferry Police Department to gain an understanding of the performance of North Mountain Drive with its current use, specifically in terms of accidents, does not indicate that there is any particular concern with the safety of this street.

There is no evidence that the existing use and design of North Mountain Drive presents any pressing need for changes to protect life and property as a result of either its current use or its use with the addition of one single family home.

Traffic:

The Institute of Transportation Engineers (ITE) identifies Single Family Detached Units as Use Code 210. This use is anticipated as creating an average of 10.0 trips per day, with a range of between 21.9 trips maximum and 4.3 trips minimum.

A copy of Table 4. Summary of Trip Generation Rates for Land Use Code 210 is included in this Memorandum.

The ITE projects totals of 1 trip for the weekday morning peak hour, 1 trip for the weekday afternoon peak hour, and 1 trip per morning and afternoon peak hour for both Saturday and Sunday. The proposed single family home will not have any measurable impact on the vehicular traffic in this area that would otherwise suggest that further traffic counts are needed for either the use of the road or the Level of Service at affected intersections. Even when there are large events happening at the Country Club, the volume of traffic using this road is considered light.

Parking:

As proposed, the house will have three garage parking spaces and three additional parking spaces in front of the garage. The Zoning Ordinance requires two on-site parking spaces for a single family home. There is room for additional vehicles to be parked in the parking area, albeit with the same inconvenience that any single family home permitting temporary parking of cars blocking other cars would experience to accommodate a special event. There is also space for additional paved parking to be created on the property, but the concerns about stormwater runoff suggest that increasing the number of vehicles parked on site is not justified.

Although the width of the paved street is narrow and not conducive for curbside parking, Section 290-28 On-street parking restrictions in the Dobbs Ferry Village Code does not impose parking restrictions on North Mountain Drive, nor on Osceola Avenue or on Sherman Avenue, which are the streets used to access North Mountain Drive from Washington Avenue. From where it is accessed from Osceola Avenue, there are no other street connections to North Mountain Drive. There are no “No Parking” signs on North Mountain Drive, Osceola, or Sherman Avenues.

Special provisions have been proposed for parking during construction. These are included in the Construction Sequence Notes provided on Gotham’s Sheet GN dated 12/09/2022, as well as in the Gotham Memorandum “Excavation and Mechanical Rock Removal - Mitigation Plan”, dated December 15, 2020. The intent is to use the proposed parking area for the construction vehicles during construction. If it turns out that the number of vehicles coming to the site for construction would exceed the number that can be accommodated in the parking area, the General Contractor is required to make arrangements for off-site parking for the workers, who would then be shuttled to the site.

Driveway Location and Visibility:

The proposed driveway is located at the south corner of the property, which is at the top of the hill in this section of North Mountain Drive, where there are clear site lines in both directions on the road. Photographs have been provided showing the visibility from the center of the driveway 180 feet to the east and 180 feet to the west. Photographs have also been provided showing the visibility from the center of the driveway 100 feet to the east and 100 feet to the west. A Chart has been provided listing stopping distances, including driver reaction time, showing that the visibility for drivers either approaching the driveway or exiting the site is sufficient for vehicles traveling at more than 40 MPH. The posted speed limit on the road is 25 MPH.

There are existing shrubs that are not in good condition located along the north side of the right-of-way in front of the subject property, which need to be removed to improve visibility for a driver exiting the site from further up the driveway in both directions. Repositioning the existing telephone pole at this corner of the property has also been proposed, although this is not mandatory for safe sight lines.

Driveway Design:

The driveway has a minimum width of 12 feet and a taper on both sides, widening the driveway as it connects to the road. The driveway has one section that is relatively steep, with a slope of 12%, but this slope reduces to 5% and then 3% where it blends to the 2% in the road and to 8% and then 4% where it blends to the 2% slope in the parking area in front of the garage. North Mountain Road has a slope of approximately 7% in the vicinity of the subject property The crests and sags in the driveway have vertical curves. All geometries are in compliance with NYS DOT “Residential and Minor Commercial Driveways” issued under EB 16-012 as 608-03, which consists of 9 sheets of drawings dated as approved March 07, 2016 by Richard W. Lee, P.E., Deputy Chief Engineer, NYS DOT. Pertinent Diagrams based on that document have been attached to this memo.

The driveway and parking area have been designed so that there is adequate dimension for vehicles in the parking area so that drivers will be able to turn to have a frontal approach to the road. A concern was expressed about having to back out into the street, but that is not necessary.

The driveway and parking area are proposed to be a macadam top coat of 1.5" on a macadam base coat of 2" on a 4" compacted gravel base on compacted subsoil. Permeable pavers were considered, but discarded on the basis that plowing snow from the steeply sloped driveway would make pavers problematic. Porous asphalt may be considered, if the sub-grade is determined to be of an appropriate type of soil for percolation. If porous asphalt is used, 4" of porous asphalt will be placed on a minimum of 8" of angular, open-graded drain rock, wrapped with non-woven geotextile fabric. With this installation, the rock provides a storage reservoir that temporarily holds water, allowing it to drain slowly into the ground. It should be anticipated that only the parking area where the grade is 2% or less would receive the porous asphalt.

A yard drain is located in the parking area to collect stormwater runoff and there is a trench drain proposed at the base of the driveway to capture and manage stormwater runoff that could otherwise run into the street and points further downstream.

There is sufficient space provided along the retaining wall to the north of the parking area for the storage of snow plowed from the driveway and parking area.

Summary:

The proposed parking area and driveway have been designed to meet all regulatory standards, providing significantly more on-site parking than is required by the Code for the proposed use. Specifically -

1. The driveway has been designed so that vehicles leaving the site will not need to back out into the street.

2. Sufficient parking on-site has been provide to obviate the need for the use of on-street curbside parking.

3. There is adequate visibility on the existing street for a driver exiting the site to see on-coming traffic and for drivers of vehicles on the street to see vehicles entering or exiting the subject property.

4. The steepness, width, and configuration of the driveway is compliant with Dobbs Ferry Standards, as well as the NYS DOT standards.

5. The stormwater management plan and the provisions for snow management are sufficient to avoid any impacts on the parking area, driveway, street or neighboring properties.

View to East
From Driveway Center

< 180 Feet

> 100 Feet

View to West
From Driveway Center

< 180 Feet

> 100 Feet

View of Driveway
Location

< Looking Northwest

> Looking Northeast

Shrubs to be removed in right-of-way; Electric Pole to be repositioned.

Table 4.

SUMMARY OF TRIP GENERATION RATES

Land Use/Building Type Single Family Detached House ITE Land Use Code 210

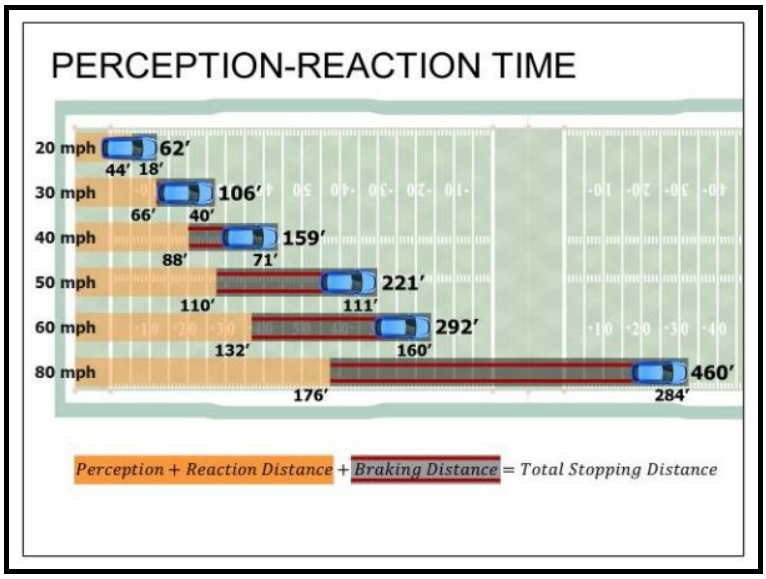
Independent Variable—Trips per Dwelling Unit

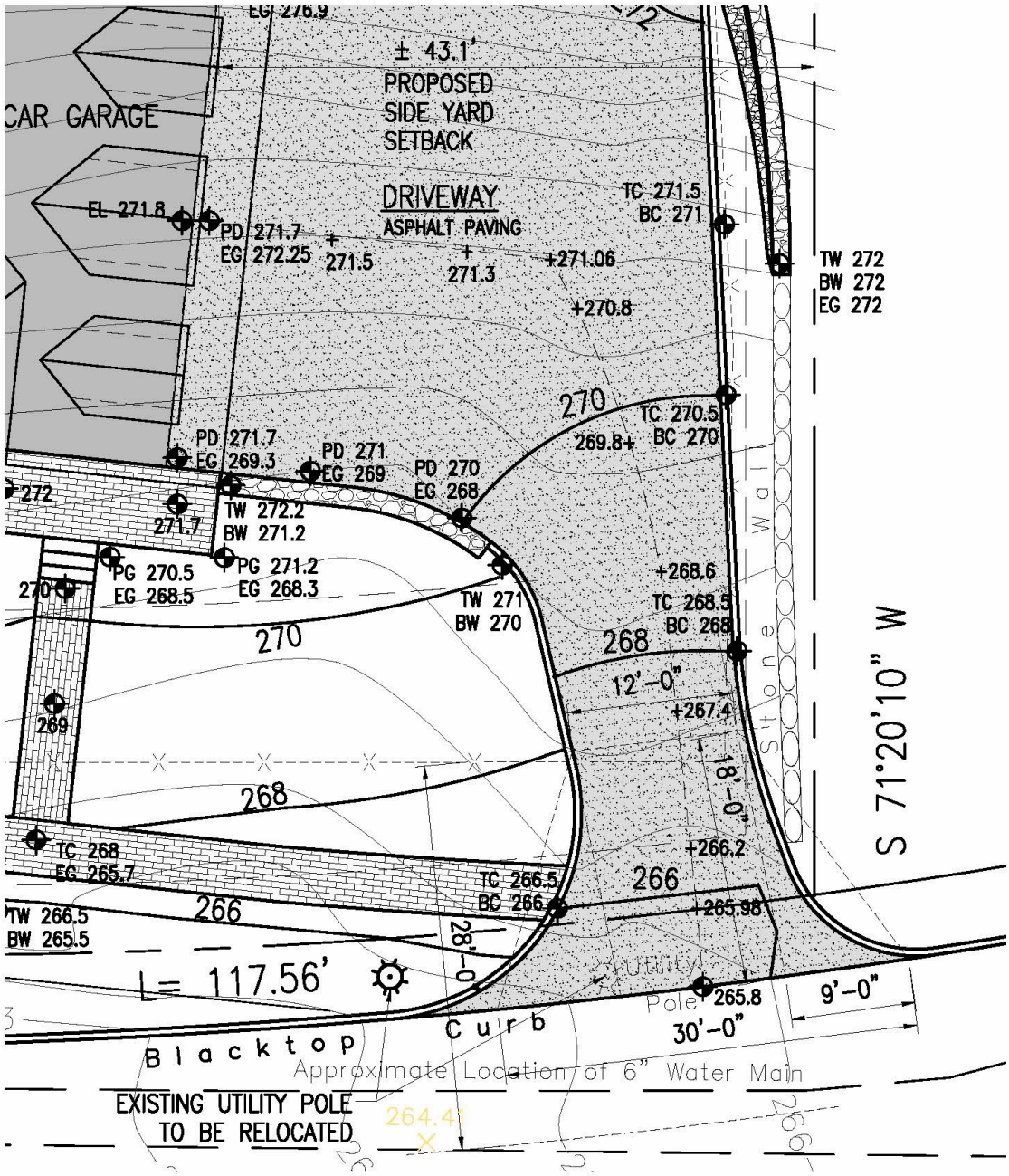
			Average Trip Rate	Maximum Rate	Minimum Rate	Correlation Coefficient	Number of Studies	Average Size of Independent Variable/Study
Average Weekday Vehicle Trip Ends			10.0	21.9	4.3		208	506
Peak Hour of Adjacent Street Traffic	A.M. Between 7 and 9	Enter	0.3	0.6	0.1		37	248
		Exit	0.6	1.7	0.2		38	258
		Total	0.8	2.3	0.4		173	269
	P.M. Between 4 and 6	Enter	0.7	1.8	0.3		38	245
		Exit	0.4	1.2	0.1		38	245
		Total	1.0	3.0	0.4		196	292
Peak Hour of Generator	A.M.	Enter	0.3	0.6	0.1		38	245
		Exit	0.6	1.7	0.2		38	245
		Total	0.8	2.3	0.4		175	271
	P.M.	Enter	0.7	1.8	0.3		40	252
		Exit	0.4	1.2	0.1		38	245
		Total	1.0	3.0	0.4		193	261
Saturday Vehicle Trip Ends			10.1	14.7	6.3		43	292
Peak Hour of Generator		Enter	0.5	1.0	0.4		21	273
		Exit	0.5	0.7	0.3		21	273
		Total	1.0	1.7	0.7		35	296
Sunday Vehicle Trip Ends			8.8	11.7	0.5		38	301
Peak Hour of Generator		Enter	0.5	0.8	0.3		19	252
		Exit	0.5	1.2	0.4		19	252
		Total	1.0	2.0	0.7		34	284

Source Numbers 1, 4, 5, 6, 7, 8, 11, 12, 13, 14, 16, 19, 20, 21, 24, 26, 34, 35, 36, 38, 40, 71, 72 (references appear in the committee's full report, available from ITE).

ITE Technical Committee 6A-6—Trip Generation Rates

Date:



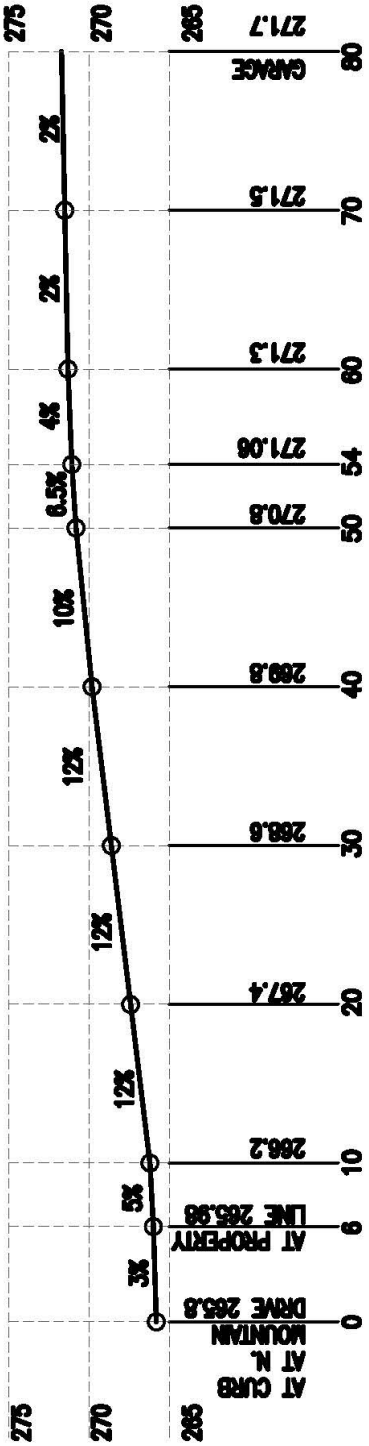


DRIVEWAY OPENING LAYOUT

SCALE : 1/8" = 1'-0"

GRAPHIC SCALE IN FEET

0 4 8 16



PROPOSED DRIVEWAY PROFILE

SCALE : 1" = 10'-0"

GRAPHIC SCALE IN FEET

0 5 10 20