H

THE EDDY GROUP

Consulting Engineers

August 28, 2002

Mr. Al Hedin
Mr. Doug Yurechko
P.N. Hoffman
4725 Wisconsin Avenue, NW
Suite #200
Washington, D.C. 20016

Re: Subsurface Exploration and
and Geotechnical Engineering Services
2327 Champlain Street, NW
Washington, D.C.
TEG Project Number: 02-01-10031

Dear Mr. Hedin,

In compliance with your instructions, we have conducted subsurface exploration and geotechnical engineering services for the referenced project. The results of this exploration, together with our recommendations, are to be found in the accompanying report, 3 copies of which are being transmitted herewith.

Often, because of design and construction details which occur on a project, questions arise concerning subsurface conditions, THE EDDY GROUP would be pleased to continue its role as Geotechnical Engineer during the project implementation.

THE EDDY GROUP also has great interest in providing materials testing and inspection services during the construction of this project. If you will advise us of the appropriate time to discuss these engineering services, we will be pleased to meet with you at your convenience.

Sincerely,
THE EDDY GROUP, INC.

Richard E. Finnen, Jr., P.E.
Senior Project Engineer

Dana K. Eddy, P.E.
Principal Engineer



P.N. Hoffman
2327 Champlain Street, NW
August 28, 2002

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P.N. Hoffman
2327 Champlain Street, NW
August 28, 2002

SYNOPSIS

An exploration and evaluation of the subsurface conditions have been made on the site of the proposed multi-floor structure. Test borings have been drilled and selected soil samples submitted for laboratory tests. The data have been carefully analyzed in light of the project information provided by P.N. Hoffman and Ehlert/Bryan, Inc.

In general, beneath the asphalt cement concrete and Portland cement concrete pavements encountered at the site, existing fill materials were encountered to depths ranging from approximately 5.5 to 13.5 feet below the ground surface. The existing fill typically consisted of very loose to medium dense silty sands and clayey sands with varying amounts of deleterious materials. The existing fill was typically underlain by medium dense clayey sands and clayey gravels typical of the Coastal Plain terrace deposits. A layer of highly plastic silt was encountered in the southern portion of the site at elevations ranging from approximately El 131± to El 132.5±. The highly plastic silt extended to elevations ranging from approximately El 121± to El 123.5±.

Based on conversations with the structural engineer, we understand that the planned garage finished floor elevation is planned for El 129.4±. Based on the results of the test borings, the southern portion of the structure ground slab and foundations are planned to bear within the highly plastic silts. Based on our understanding of the planned construction, these materials are unsuitable for support of the structure. We recommend that all ground slabs in the area of the highly plastic silt soils be constructed with a minimum 2 foot gravel base below the planned slab subgrade elevation. The gravel base can also act as a stable mat to allow for construction as the highly plastic silts will deteriorate rapidly when exposed to inclement weather conditions and construction traffic.

We anticipate that the use of Geo-Piers may be required to modify the settlement characteristics of the highly plastic silt stratum and to lower foundation loads to the underlying medium dense to very dense sand and gravel stratum. Based on the results of the test borings and on our experience with The Lofts at Adams Morgan, we anticipate that the highly plastic silt layer may extend to depths greater than encountered in the test borings at the southern most portion of the site.

Once demolition of the existing one story structure at the southern portion of the site is accomplished, we recommend that additional soils borings be advanced to fully characterize the extent of the highly plastic silt stratum. The results of the soils borings may indicate that the use of alternative foundation remedial measures may be appropriate. If the highly plastic silt stratum is limited in depth, the use of concrete sub foundations may be a viable option.

Based on the groundwater levels encountered in the soil borings, we anticipate that dewatering of the site will be required during construction and on a permanent basis. Additionally, shoring of the adjacent alley, Kalorama Road and Champlain Street will be required and we anticipate that the existing adjacent structures will require foundation underpins.

Detailed analyses of subsurface conditions, recommended foundation types, remedial measure recommendations and pertinent design recommendations are included herein. The final decision as to which foundation type to be used should be based on the design parameters given, costs, risk of foundation movement, and other factors beyond the scope of this study.

THE EDDY GROUP cannot be responsible for the interpretation or implementation of this report by others. THE EDDY GROUP should be retained to perform services sufficient to determine compliance with its recommendations

P.N. Hoffman
2327 Champlain Street, NW
August 28, 2002

SUBSURFACE EXPLORATION AND FOUNDATION RECOMMENDATIONS

INTRODUCTION

Authorization

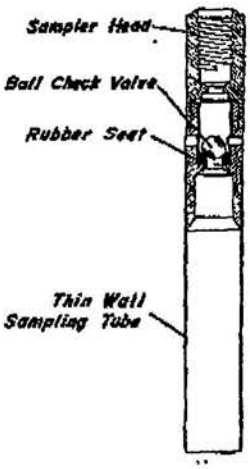
This report presents the results of a soils exploration and foundation analysis for the proposed structure at 2327 Champlain Street, NW conducted for P.N. Hoffman, Inc. of Washington, D.C. The work for this project was performed in accordance with our Proposal No 02050 dated April 24, 2002. Authorization to perform this exploration and analysis was in the form of an executed Proposal Acceptance Agreement from P.N. Hoffman, Inc. to THE EDDY GROUP, INC.

Purpose

The purpose of this exploration was to evaluate the subsurface conditions at the site and to recommend type and depth of foundation system suitable for the proposed structure; as well as to provide criteria for the architects and design engineers to use in preparing the foundation design.

Scope

The scope of the exploration and analysis included the subsurface exploration, field and laboratory testing, and an engineering analysis and evaluation of the foundation materials. An apparent petroleum odor was noticed during the drilling of the test borings. As authorized by P.N. Hoffman, two soil samples were collected from an off-set boring adjacent to boring B-5 at depth of 5 to 6.5 feet and 8.5 to 12 feet. The soil samples were submitted to an for determination of total petroleum hydrocarbons (TPH), diesel range organics (DRO) and gasoline range hydrocarbons (GRO). The results were interpreted by our subconsultant, Environmental Resolutions, Inc. and is summarized in a letter dated May 17, 2002. The letter is included in the appendix of this report.



With exception of the above indicated tests, the scope of service did not include any environmental assessment for the presence or absence of wetlands or hazardous or toxic materials in the soil, surface water, groundwater, or air, on or below or around this site. Any statements in this report or on the boring logs regarding odors, colors or unusual or suspicious items or conditions are strictly for the information of the client. Prior to purchase or development of this site, an environmental site assessment is advisable.

GENERAL

The exploration and analysis of the foundation conditions reported herein are considered sufficient in detail and scope to form a reasonable basis for the foundation design. The recommendations submitted for the proposed construction are based on the available soil information obtained from soil borings and the preliminary design details furnished by Mr. Al Hedin representing P.N. Hoffman, Inc. and Mr. John Chanson representing Ehlert/Bryan, Inc.

If there are any revisions to the plans for the proposed structure, or if deviations from the subsurface conditions noted in this report are encountered during construction, THE EDDY GROUP should be retained to determine if changes in the foundation recommendations are required. After the plans and specifications are complete, it is recommended that THE EDDY GROUP be provided the opportunity to review the final design and specifications, in order to verify that the earthwork and foundation recommendations are properly interpreted and implemented. At that time, it may be necessary to submit supplementary recommendations.

The Geotechnical Engineer warrants that the findings, recommendations, specifications, or professional advice contained herein, have been presented after being prepared in accordance with generally accepted professional engineering practice in the fields of foundation engineering, soil mechanics and engineering geology. No other warranties are implied or expressed.

DESCRIPTION OF SITE

Site Location and Description

The site for the proposed condominium structure upon which this soils exploration has been made is located at 2327 Champlain Street, NW in Washington, D.C. The subject site consists of Lots 101, 879 and 883 located in Square 2563. This is shown on the accompanying site location map. The site is bound by Kalorama Road to the south, Champlain Street to the west and a existing public alley to the east, and an adjacent lot with a two story building to the north.

Site Topography, Drainage and Vegetation

In general, the majority of the site slopes downwards from the northeast (El 151) to southwest (El 141) with relief of approximately 10 feet.

An existing two story structure is present at the northern portion of the site and an existing one story structure is present at the southern portion of the site. The remaining site is utilized as Portland cement concrete or asphalt concrete paved parking. Several small shed structures are present in the central portion of the site. Public and private utilities were observed at property limits.

GEOLOGY

General Area Geology

The proposed site is located in the Coastal Plain Geologic Province of the Mid-Atlantic States. The Coastal Plain consists mainly of marine sediments which were deposited during successive periods of fluctuating sea level and moving shorelines. The formations tend to dip slightly seaward, and several are exposed at the surface in bands paralleling the coast. Many beds exist only as fragmented, erosional remnants with more continuous strata located above and below.

The soils in this province are typical of those deposited in a shallow, sloping sea bottom; sands, silts, and clays, with irregular deposits of shells. Some of the existing formations contain predominantly over-consolidated plastic clays interbedded with strata of sands and gravels and poorly consolidated sandstones and limestones. Others contain predominantly sand and gravel with localized deposits of highly plastic clays.

The overall geologic conditions at the site have been altered by placement of fill materials. The existing fill materials were likely the result of demolition debris and other waste materials deposited on the property during prior use. In addition, on previously developed sites, it is not uncommon to encounter buried waste and other undesirable materials.

FIELD EXPLORATION

Scope

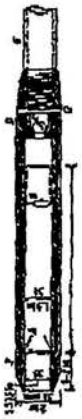
The field exploration to evaluate the engineering characteristics of the foundation materials included a reconnaissance of the project site, drilling the test borings, performing standard penetration tests and recovering soil samples. The soil samples were secured for the purpose of performing tests in the laboratory and visual classification.

Five (5) test borings were drilled to depths of 40 feet below the existing ground surface. The test borings are shown on the accompanying boring located plan in the appendix of this report. Water level measurements were recorded in each test boring at the time of drilling. Upon completion of the test borings, the drill holes were backfilled with the soil spoils and the site was cleaned as required.

Drilling and Sampling Procedures

The test borings were made by a drilling rig equipped with a rotary head. Hollow-stem augers were used to advance the holes. Representative samples were obtained employing split-barrel sampling procedures in general accordance with the procedures for "Penetration Test and Split-Barrel Sampling of Soils" (ASTM D 1586). The samples recovered were identified and evaluated by an experienced geotechnical engineer.

Field Tests and Measurements



Penetration Tests - During the sampling procedure, standard penetration tests (SPT) were performed at pre-determined intervals to obtain the standard penetration value of the soil. The standard penetration value (N) is defined as the number of blows of a 140 pound hammer, falling thirty (30) inches, required to advance the split-barrel sampler one (1) foot into the soil. The sampler is lowered to the bottom of the previously cleaned drill hole and advanced by blows from the hammer. The number of blows are recorded for each of three (3) successive increments of six (6) inches penetration. The "N" value is obtained by adding the second and third incremental numbers.

The results of the standard penetration test indicate the relative density of cohesionless soils and comparative consistency of cohesive soils, and thereby provide a basis for estimating the relative strength and compressibility of the soil profile components.

Water Level Measurements - Water level depths were obtained during the test boring operations. They are noted on the test boring logs presented in the Appendix. In relatively pervious soils, such as sandy soils, the indicated depths are usually reliable groundwater levels. In relatively impervious soils, a suitable estimate of the groundwater depth may not be possible, even after several days of observation. Seasonal variations, temperature, land-use, proximity to adjacent construction, and recent rainfall conditions may influence the depths to the groundwater. Volumes of water will largely depend on the permeability of the soils.

Ground Surface Elevations and Field Stake-Out - The elevation of the ground surface shown on each test boring log was interpolated from the Topographic Survey plan prepared by W.L. Meekins, Inc. Ground surface elevations have been rounded to the nearest one-half foot. Field location of the test borings was provided by THE EDDY GROUP and are indicated on the boring location plan included in the Appendix.

The field stake-out was performed by measuring distances and angles from existing reference points.

LABORATORY TESTING PROGRAM

In addition to the field exploration, a supplemental laboratory testing program was conducted to evaluate pertinent engineering characteristics of the foundation materials necessary in analyzing the behavior of the foundation systems for the proposed construction.

The laboratory investigation consisted of a physical examination and classification of samples obtained from the excavation operations by an experienced geotechnical engineer. Classification of the soil samples was performed in general accordance with ASTM D-2488 (Visual-Manual Procedure for Description of Soils). Soil classifications include the use of the Unified Soil Classification System described in ASTM D-2487 (Classification of Soils for Engineering Purposes). The soil classifications also include our evaluation of the geologic origin of the soils. Evaluations of geologic origin are based on our experience and interpretation and may be subject to some degree of error.

Natural water content determinations, Atterberg limits testing, grain-size analysis of soils,, consolidation testing and specific gravity determinations were performed on selected samples to aid in soil classification and evaluation of engineering characteristics. The results of the laboratory are included in the Appendix.

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SUBSURFACE CONDITIONS

General

The types of foundation bearing materials encountered in the test borings have been visually classified. They are described on the boring logs. The results of the field penetration tests, strength tests, water level observations and other laboratory tests are presented in the Appendix in tabular form. Representative samples of the soils were placed in sample jars. They are now stored in the laboratory for further analysis if desired. Unless notified to the contrary, all samples will be disposed of after two (2) months.

The stratification of the soil as shown on the boring logs, represents the soil conditions at the actual boring locations. Variations of the subsurface conditions may occur between the borings. Lines of demarcation represent the approximate boundary between the soil types, but the transition may be gradual, or not clearly defined. It is to be noted that, whereas the test borings are drilled and sampled by experienced drillers, it is sometimes difficult to record changes in stratification within narrow limits.

Soil Conditions

From the ground surface in borings B-1, B-2 and B-3, existing asphalt cement concrete (typically3 to 4 inch in thickness) was encountered. From the ground surface in borings B-4 and B-5, existing Portland cement concrete (typically3 to 4 inch in thickness) was encountered.

Beneath the existing asphalt and Portland cement concrete, existing fill materials were encountered to depths ranging from approximately 5.5 to 13.5 feet below the ground surface. The existing fill typically consisted of loose to medium dense silty sands (USCS SM) and clayey sands (USCS SC) and medium stiff moderately plastic clays (USCS CL) with varying amounts of undesirable debris. The existing fill was generally encountered to elevations ranging from approximate El 131 to El 132.5.

Beneath the existing fill, Coastal Plain sediments were encountered. The materials encountered generally consisted of clayey sands (USCS SC) and clayey gravels (USCS GC) of medium dense to very dense consistency. A layer of hard, low plasticity clay was encountered in boring B-2 and a stratum of stiff to very stiff, highly plastic silt (USCS MH) was encountered in borings B-4 and B-5 above the sand and gravel layers. The clay encountered in B-2 was encountered above the planned garage finished floor elevation of El 129' 5". However, the highly plastic silt layer was encountered at approximate El 131 to El 132.5 and extended to approximate El 121 to El 123.5. Beneath the sand and gravel stratum in boring B-5, over-consolidated Potomac Group clay was encountered at an approximate depth of 38 feet (approximate El 106.5) below the ground surface. Each soil boring was terminated in Coastal Plain soils.



Detailed results are to be found on the Records of Subsurface Exploration and laboratory test results located in the Appendix.

Groundwater Conditions

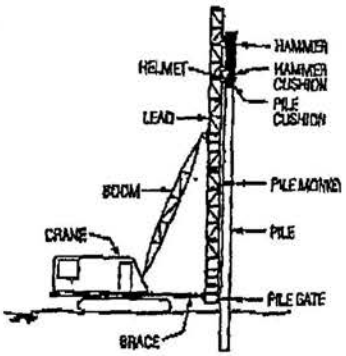
Groundwater was encountered in each test boring during the drilling operations. The depth to water, as measured in the test borings ranged from 14.7 feet to 33 feet below the existing ground surface. Each soil boring was backfilled upon completion to avoid presenting a hazard to pedestrian traffic. Please note that groundwater levels fluctuate seasonally as a function of rainfall, topography, the infiltration rate of the soil, and adjacent construction. At a time of the year different from the time of drilling, there is the possibility of a considerable change in the recorded levels.

FOUNDATION DISCUSSION AND RECOMMENDATIONS

The following recommendations are based on the information available on the proposed structure; the data obtained from the soil test borings; the geotechnical report prepared by THE EDDY GROUP for The Lofts at Adams Morgan; and our experience with soils and subsurface conditions similar to those encountered at this site.

Since the test borings and test pits represent a small statistical sampling of subsurface conditions, it is possible that conditions may be encountered during construction that are substantially different from those encountered during the field exploration. In these instances, adjustments to the design and construction may be necessary depending on actual conditions.

When the plans and specifications are complete, or if significant changes are made in the character or location of the proposed garage expansion a consultation should be arranged to review the changes with respect to the prevailing soil conditions. At that time, it may be necessary to submit supplementary recommendations.



All sheeting, shoring, and bracing of trenches, pits and excavations should be made the responsibility of the contractor and should comply with all current and applicable local, state and federal safety codes, regulations and practices, including the Occupational Safety and Health Administration.

Project Description

Based upon the information provided, it is understood that the proposed structure consists of one below grade parking level, one level of English apartments (partial basement), four residential levels above grade and a penthouse level. Column loads were reported to range between 800 kips to 900 kips. External wall loads were reported to range between 5 kips and 6 kips per lineal foot. No significant quantity of fill is planned; while excavation of 12 to 22 feet are anticipated for the below grade garage level planned with a finished floor of El 129.4±.

The site is located to the east of The Lofts at Adams Morgan, across Champlain Street, NW.

Engineering Analysis

Two (2) requirements must be fulfilled in the design of foundations. First, the load must be less than the ultimate bearing capacity of the foundation soils to maintain stability; and secondly, the differential settlement must not exceed an amount which will produce adverse behavior of the superstructure. The allowable settlement is usually exceeded before bearing capacity considerations become important; thus, the allowable bearing pressure is normally controlled by settlement considerations.

Settlements of non-cohesive materials, such as sand, due to pressure applied by foundations occur almost immediately upon application of load. In this case, nearly all of the settlement of the foundation due to dead loads is expected to take place during construction. The portion of the settlement due to the live load will generally take place soon after the first application of this load.

The amount of settlement, that a structure founded on sand will experience, is primarily governed by the relative density of the material, the sizes and depths of the foundations, and the pressure imposed on the soil. Standard Penetration Testing at this site indicate that the Coastal Plain sands and gravels are in a medium dense to very dense state and appears suitable for support of the proposed structure on shallow foundations. However, in the vicinity of borings B-4 and B-5, Geo-Piers or other suitable alternatives should be implemented to stabilize and densify the existing highly plastic silt (USCS MH) soils and to transfer the foundation loads to suitable bearing soils.

Foundation Discussion

Considering the subsurface conditions at the site and the proposed construction, we anticipate that the proposed structure can be supported on conventional spread and continuous wall footing foundations bearing in the Coastal Plain sand and gravel soils encountered in the majority of the soil test borings at or near approximate El 126±. Due to the presence of the highly plastic silt soils encountered at the foundation level in borings B-4 and B-5, we anticipate that the use of Geo-Piers or other suitable alternatives will be required to transfer the foundation loads to the sand soils in the southern portions of the site.

Conventional Spread and Continuous Wall Footings - Conventional spread and continuous wall footings are generally most economical when the existing soil conditions allow them to be founded at shallow depths. With economy, however, come certain risks which may not be reliably predicted. If elimination of risk is essential, other, more expensive foundations may be required. At this site there is a risk of finding unsatisfactory fill materials and soft marine soils at shallow to deep depths. If you have any questions regarding this, please contact THE EDDY GROUP.

Considering the soil conditions on this site and the anticipated loads of the proposed construction, it appears that conventional spread and continuous wall footings may be a suitable foundation system for the planned structure.

Geo-Piers – Geo-Piers can be used to reinforce the in-situ soils so they can support conventional spread footings. Geo-Pier elements consist of highly densified well-graded aggregate that is placed in controlled lifts in a predrilled hole. The aggregate is densified using a special high-energy impact hammer with a 45 degree beveled tamper. The beveled tamper transfers the impact energy down and to the sides of the hole as it compacts the gravel. The tamping action pre-stresses the soils adjacent to the Geo-Pier element which provides lateral confinement to the Geo-Pier Element. By reinforcing and stiffening the foundation soils with Geo-Pier elements, the composite soil is capable of supporting a significantly higher allowable bearing pressures and reduces total and differential settlement.

RECOMMENDED FOUNDATION TYPE

Recommendations

Considering the subsurface conditions and the proposed construction, the structure can be founded on the conventional shallow foundations bearing within the sandy soils encountered at approximate El 126± and on reinforced Geo-Piers in the southern portion of the site. Estimated total settlements no greater than one (1) inch nor differential settlements no greater than half that value are anticipated if the following design and construction details are incorporated.

Conventional shallow foundations bearing in the Coastal Plain sand soils can be designed for an allowable soil bearing pressure of 6,000 psf in the northern and central portions of the site. Conventional shallow foundations bearing on reinforced Geo-Piers should be planned for the southern portion of the site.



We anticipate that the Geo-Piers should extend to from the planned foundation bearing elevations to approximate El 121 to El 123.5 feet where underlying Coastal Plain sands and gravels were encountered. Based on site topography and our experience with The Lofts at Adams Morgan, we anticipate that the highly plastic silt layer may extend to depth greater that that encountered in the test borings B-4 and B-5 in the southern most portions of the site.



Additional exploration can be performed to identify the depth and extent of the highly plastic silt soils. Depending upon the test results, the use of concrete sub-foundations extending through the highly plastic silt soils and bearing in the underlying sands and gravels may be considered to be a suitable alternative for foundation remediation versus the use of Geo-Piers.



Geo-piers are capable of developing allowable soil bearing pressures of up to 8,000 psf. However, we suggest utilizing 6,000 psf to be consistent with the other portions of the structure. Geo-Piers appear ideally suited to the adverse soil conditions encountered in the southern portion of the site. However, THE EDDY GROUP can evaluate other remedial alternatives, if design necessitates.

We recommend that THE EDDY GROUP be retained during installation of the recommended Geo-Piers to perform inspection services. Inspection services should include verifying depth, diameter and spacing of the Geo-Piers. In addition, we can quantify the amount of crushed stone used to construct the Geo-Piers for payment purposes.

Extreme care should be taken to prevent the weakening of the foundation bearing surface because of prolonged atmospheric exposure, construction activity disturbance or an increase in moisture content. In the event that an overnight delay in concrete placement is anticipated, the footing excavations should be cut approximately six (6) inches high and subsequently excavated to final grade immediately before placement of concrete. Alternatively, a mud mat can be created by over-excavating the footing by six inches and backfilling the undercut with concrete to the design bottom of the foundation.

All conventional shallow foundations must be placed at a minimum depth of 30 inches below the finished grade in order to protect against frost action. In order to reduce the effects of differential movement that may occur due to variations in the character of the supporting soils and any variations in seasonal moisture contents, it is recommended that all continuous footings be suitably reinforced.

Conventional shallow footings supporting individual columns should have a minimum dimension of thirty (30) inches, and continuous footings have a minimum width of twenty four (24) inches, even if that dimension gives a bearing pressure less than the allowable. The purpose of limiting the minimum footing size is to prevent a "punching" shear, to provide for vertical stability and to reduce the possibility of bearing on an isolated weak zone.

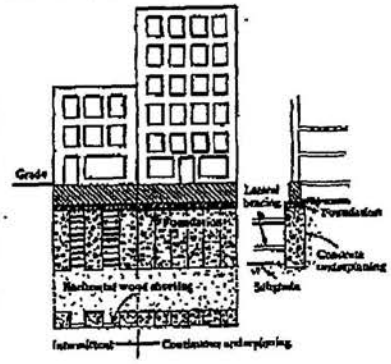
Prior to the placing of concrete for the footings, the bearing surfaces should be inspected and approved by the Geotechnical Engineer. Where reinforcing steel is placed in the foundations, an inspection must be conducted to observe that specified chairs or supports are provided and that the reinforcing steel is properly positioned, as specified.

Foundation Underpinning

Underpinning is anticipated for the existing structures located north of the site. We believe that as much as 23 feet of undercut is required to achieve the design grades for the below grade parking level. Because of this unbalanced soil conditions concrete underpins should be considered the best alternative underpin system for the project.

Underpinning consists of concrete pits, which are installed by excavating by hand under the existing foundation. The underpins are formed by filling the pits with concrete. After the concrete has sufficiently hardened, the narrow space between the bottom of the existing foundation and the new concrete is dry packed to transfer the load to the underpin.

The underpins should extend under the entire foundation and should be 3 to 5 feet wide. Based on the proposed construction, we believe the concrete underpins would extend to depths that match the planned foundation bearing levels of the new structure. The contractor can excavate several underpins at the same time but must space the underpins so that the foundation loads can be temporarily supported on the unexcavated soils between the underpins. This is possible due to an arching effect. The contractor must establish the spacing based on his experience and the soil conditions, which may vary from those, found in our test borings. After the underpins are complete, the approach pits should be backfilled for safety purposes. We recommend that the approach pits be backfilled with on site soils.



We anticipate that shoring will be required to resist the lateral earth pressure on the foundation underpins during construction and on a permanent basis. A system of whalers with soil tie-backs or rakers could be implemented to resist the lateral earth pressures developed due the unbalanced earth conditions caused by excavation for the below grade levels of the garage. Since the rakers will extend into the excavation and will likely conflict with the planned construction a permanent retaining structure will be required if the earth pressures cannot be transferred safely to the structural system of the addition. As an alternative, the use of bracketed steel H-piles with tie-backs could also be considered.

During construction, THE EDDY GROUP should be retained to observe the installation of the underpins and to observe the transfer of structural loads. During this time, it may be necessary to alter our recommendations due to conditions found different from what was observed during our study.

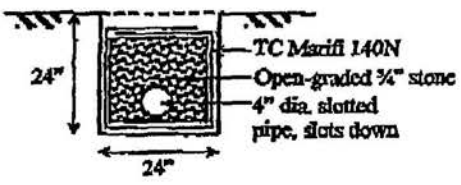
Permanent Dewatering

Groundwater measurements taken in borings drilled at the site encountered groundwater above the reported lowest finished floor level. We believe that a permanent dewatering system will be required for this project. We anticipate that the dewatering system will consist of a network of sub-slab drains, foundation wall drains, sump pits and pumps. If carefully considered, portions of the construction dewatering trenches could be converted for use in the permanent dewatering system. Any pits extending below the subdrainage system should be designed for uplift pressures and should be waterproofed. Exterior walls below grade should be dampproofed.

The sub-slab drainage system should utilize 'French' drains to collect and transfer groundwater to sump pits with pumps. A typical 'French' Drain Detail is included in the appendix. We recommend that the drains be placed at a minimum depth of 2 feet below the lowest floor elevation. A non-woven filter fabric (TC Marifi 140N or equal) should be installed along the perimeter of the trench drain to minimize the infiltration of soil fines. The trench bottoms should be graded to provide gravity flow to the sump pits. We recommend that redundant pumps with a battery back-up be utilized for each sump pit. Additionally, a high water alarm is also recommended.

Prefabricated drainage geocomposite panels (Miradrain, or equal) should be placed continuously against the outside of basement walls. The drainage panels should extend from the foundation level to approximately 5 feet below the final exterior grades. The drainage panels should discharge into the sub-slab drainage system. A layer of non-woven filter fabric (TC Marifi 140N or equal) should be used between the drainage panels and the soil backfill or timber lagging. A layer of 6-mil polyethylene should placed between cast-in-place concrete and the drainage materials.

The 4-inch layer of open graded crushed stone below the slab-on-grade for the lowest garage level should be incorporated into the sub-slab drainage system. We anticipate that sub-slab trench drains placed at a 30 to 50 feet spacing across the entire building footprint. A plan should be prepared to indicate the entire system, location of cleanouts, types of materials, piping, sump and pump sizes, invert grades and disposal of groundwater. We recommend that we review the subdrainage layout plan.



The plan should require annual maintenance of the system. Cleanouts should be incorporated into the system after every second angle bend in the subdrainage pipe to facilitate flushing. Access to the sump pits will be required. The sump collection pits should be pumped and cleaned and an inspection of the pumping systems should be performed.

The design and construction of a subdrainage system is not completely foolproof and localized system failures may occur due to various causes. The subdrainage recommendations have been prepared to assist in the design of the subdrainage system for this project. These recommendations are based on the subsurface and groundwater data contained in this report and on the available information about the proposed construction. Attention to details of construction and observation by qualified personnel are considered necessary for the subdrainage system.

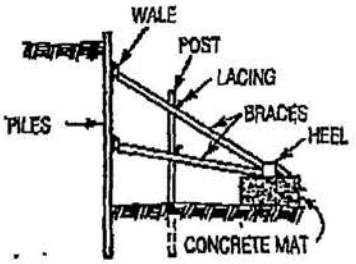
CONSTRUCTION CONSIDERATIONS

Site Preparation

All necessary demolition of existing structures; excavation and removal of existing foundations; removal of buried demolition debris; and removal or relocation of existing underground utilities should be completed before site grading operations begin. We recommend that existing underground utilities be re-routed outside of the planned construction area. The existing utility lines can either be removed or properly abandoned in place.

If the removal of existing utilities and existing fill results in excavations extending below the planned lowest level finished floor subgrade elevation, the resulting excavations should be backfilled in accordance with the recommendations presented in the Structural Fill section of this report. Soil density tests should be performed to verify that the backfill materials have been placed in accordance with structural fill recommendations presented in this report.

The use of sheeting, shoring, bracing, foundation underpins, tiebacks, and rakers can result in congested construction areas, a great deal of planning and caution should be exercised. The impact and influence of one system on another should be studied and evaluated prior to and during construction to substantially mitigate any potential problem(s).



We recommend that abandoned utilities left in place be grouted solid to prevent the inadvertent introduction of fluids into the construction area and to prevent any long term possible collapse of the utility structure.

The presence of highly plastic silt soils in the southern portions of the site may result in rapid deterioration of ground slab subgrades due to climatic exposure and exposure to construction traffic. We recommend that a minimum two (2) thick gravel working mat be constructed in this area to provide a stable working base and to isolate the planned ground slab from the highly plastic soils. Care should be taken during site excavation operations to prevent excessive deterioration of these material which may result need for increased excavation of destabilized subgrade soils. We anticipate that the use of a track-mounted hydraulic excavator may be required to remove and replace the highly plastic silt soils with gravel to avoid excessive disturbance of these materials.

Site Seismic Considerations

Based upon the guidelines presented in the BOCA National Building Code, 1996, the soil-profile type for the soils encountered in the test borings advanced at the site are type S_1. An S_1 soil profile is defined as a profile with either:

1) Rock of any characteristic, either shale-like or crystalline in nature, which has a shear wave velocity greater than 2,500 feet per second.

2) Stiff soil conditions where the soil depth is less than 200 feet and the soil types overlying rock are stable deposits of sands, gravel or stiff clays.

The Site Coefficient, S, for the site is 1.0.

Construction Dewatering

Based on the relatively high ground water levels recorded in the planned construction area and the nature of the subgrade soils, we anticipate that considerable difficulty during excavation and construction of the proposed foundations, ground slabs, foundation underpins and elevator pit will be encountered. Our past experience indicates that foundation bearing soils will likely soften when exposed to free water. The contractor should keep the excavation dry to prevent softening of foundation bearing soils and slab subgrade soils.

To facilitate lowering of groundwater, we recommend that a gravity drainage system utilizing a collection pit and sump pump be installed to dewater during construction and should be converted into a permanent sump pump. The sump pump pit should be installed within the elevator pit at a minimum of 2.5 feet below the planned elevator pit bearing elevation. The remaining construction area can be dewatered by constructing permanent perimeter and under floor drains which drain to the sump pit by gravity flow. The sump pit and under floor drains should be backfilled with open graded crushed stone (AASHTO #57 recommended) and should be surrounded by a properly graded filter medium. The purpose of the filter medium is to prevent clogging of the drainage system by the infiltration of fine-grained soils. A typical French drain detail is attached in the Appendix. If carefully located, we anticipate that the construction dewatering system may be modified and incorporated into the recommended permanent dewatering system.

Pumping from the sump pit should be done with care to prevent the loss of soil fines, development of soil boils, or instability of slopes. We must emphasize that dewatering requirements will be dictated by ground water conditions at the time of construction and may require more aggressive dewatering techniques. The contractor should use a technique or combination of techniques which achieves the desired result under actual field conditions.

Floor Slab-On-Grade

Care must be taken so that all excavations made for the foundations are properly backfilled with suitable material compacted in accordance with the procedures outlined below. Before the backfill is placed, all water and loose debris should be removed from these excavations.

Prior to the placing of concrete floors or pavements on this site, or before any floor supporting fill is placed, the excessively organic, loose or obviously compressive materials encountered in the soil borings must be removed. The subgrade should then be proofrolled with a 20 ton fully loaded dump truck, if accessible, until the grade offers a relatively unyielding surface or until the specified degree of compaction has been achieved. Areas of excessive yielding should be excavated and be backfilled with engineered backfill as described below. In lieu of proofrolling, subgrade observation and compaction testing can be performed to verify compliance with the structural fill requirements of this report.

Highly plastic silt (USCS MH) soils were encountered at and below the planned ground slab subgrade elevation. We recommend that a minimum two (2) foot thick gravel base be installed beneath the planned ground slab subgrade to isolate the slab from these materials. Dependant upon the encountered conditions, additional thickness of gravel and/or the use of geotextile stabilization fabrics may be required to provide a stable working base.

Any fill used to increase the elevation of the floor slab or backfill should be a coarse grained material classified as GW, GC, GM, SW, SC, or SM according to the Unified Soil Classification System such as bank run sand and gravel or crushed stone. If the fine portion of the material exceeds 25 percent, the liquid limit and plasticity index of the fine portion should not exceed 40 and 15, respectively. It should be placed in layers of not more than eight (8) inches in thickness, at moisture contents within ± 3 percentage points of optimum moisture, and compacted to a minimum density of 100% of the maximum dry density as determined by the "Moisture Density Relationship of Soils" Test, Standard Proctor, ASTM D-698.



A granular mat of open graded, crushed stone such as AASHTO #57 should be provided between the floor slab(s) and the subgrade soil(s). It should have a minimum thickness of four (4) inches and be properly compacted as recommended in this report. An impervious membrane consisting of 6-mil polyethylene should be provided as a vapor barrier beneath the slab.

The floor slab should be suitably reinforced to make it as rigid as practical. Proper joints should be provided at the junctions of the slab and foundation system so that a small amount of independent movement can occur without causing damage. Large floor areas should be provided with contraction or control joints at frequent intervals to compensate for concrete volume changes during curing.

Inasmuch as the ground slab will be supporting live loads in the form of automobiles, it is recommended that all construction joints in the floor slab be provided with a key or dowels to permit the proper transfer of vertical loads. Depending upon the traffic conditions, it may be necessary to apply pavement design procedures in developing the floor slab design.

Construction activities and exposure to the environment often cause deterioration of the prepared slab-on-grade subgrade. Therefore, we recommend that the subgrade soils be evaluated by a representative of the Geotechnical Engineer immediately prior to floor slab construction. This evaluation may include a combination of visual observations, proofrolling observations, and field density tests to verify that the subgrade has been properly prepared. If soft areas are encountered, recommendations for remedial measures should be provided by the Geotechnical Engineer.

Excavations

The contractor is solely responsible for designing and constructing stable, temporary excavations and should shore, slope, or bench the sides of the excavations as required to maintain stability of both the excavation sides and bottom. All excavations should comply with applicable local, state, and federal safety regulations including the current OSHA Excavation and Trench Safety Standards. Construction site safety generally is the sole responsibility for the means, methods, and sequencing of construction operations. We are providing this information solely as a service to our client. Under no circumstances should the information provided herein be interpreted to mean that THE EDDY GROUP is assuming responsibility for construction site safety or the contractor's activities; such responsibility is not being implied and should not be inferred.



In no case should slope height, slope inclination, or excavation depth, including utility trench excavation depth, exceed those specified in local, state, and federal safety regulations. Specifically, the current OSHA Health and Safety Standards for Excavations, 29 CFR Part 1926 should be followed. It is our understanding that these regulations are being strictly enforced and if they are not closely followed, the owner and the contractor could be liable for substantial penalties.

The contractor's "responsible person", as defined in 29 CFR Part 1926, should evaluate the soil exposed in the excavations as part of the contractor's safety procedures. If an excavation, including a trench, is extended to a depth of more than twenty (20) feet, it will be necessary to have the side slopes designed by a professional engineer registered in the Commonwealth of Virginia.

Materials removed from the excavation should not be stockpiled immediately adjacent to the excavation, inasmuch as this load may cause a sudden collapse of the embankment. A slope stability analysis should be performed to determine the factor of safety for cut or fill slopes.

The contractor's "responsible person" should establish a minimum lateral distance from the crest of the slope for all vehicles and spoil piles. Likewise, the contractor's "responsible person" should establish protective measures for exposed slope faces.

Retaining Wall Design and Construction

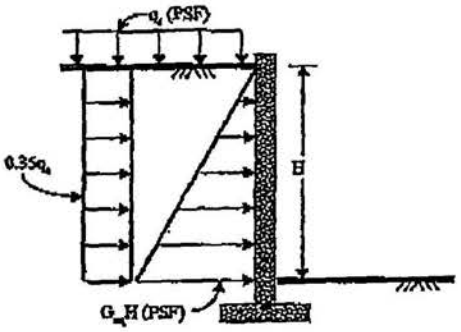
We understand that certain walls for the project may be located below the final ground surface and must therefore be designed to resist lateral earth pressure. Retaining walls which also serve as foundation walls will typically be restrained at the top of the wall and will be essentially unable to rotate under the action of earth pressure. Such walls should therefore be designed for the "at rest" stress conditions. For retaining walls which can move outward at the top and are free to rotate about its base, the active state of stress may be used for wall design. For the evaluation of the resistance of soil to lateral loads, which is frequently necessary for evaluating the stability of retaining walls, and laterally loaded foundations; the passive earth pressure must be calculated.

Most of the soils encountered in the test borings classified as silty sands and clayey sands. For these types of materials, we provide the following earth pressure coefficients.

Active	0.36
At Rest	0.53
Passive	2.77

It should be noted that full development of passive pressure requires deflections toward the soil mass on the order of 1.0% to 4.0% of total wall height.

For analysis of sliding resistance of the base of a retaining wall, the coefficient of friction may be taken as 0.4 for the soils at the project site. The force which resists the base sliding is calculated by multiplying the normal force on the base by the coefficient of friction. Full development of the frictional force could require deflection of the base of roughly 0.1 to 0.3 inches.



The above design recommendations assume that the wall backfill will be horizontal; that the backfill will be compacted to 95 percent of standard Proctor maximum dry density; no safety factor is included; any surcharge is not considered; and wall friction is negligible.

For convenience, equivalent fluid densities are frequently used for the calculation of lateral earth pressures. For "at rest" stress conditions, an equivalent fluid density of 60 pcf may be used. For the "active" state of stress an equivalent fluid density of 40 pcf may be used. These equivalent fluid densities are based on the assumptions that drainage behind the retaining wall will allow *no* development of hydrostatic pressure; that native sandy silts or silty sands will be used as backfill; that the backfill soils will be compacted to 95 percent of standard Proctor maximum dry density; that backfill will be horizontal; and that no surcharge loads will be applied. We have included a depictive diagram in the Appendix.

ADDITIONAL SERVICES RECOMMENDED

Additional foundation engineering, testing, and consulting services recommended for this project are summarized below:

(1) Proofrolling Observation: Proofrolling should be observed by a representative of the Geotechnical Engineer to determine if remedial measures are necessary in certain instances.

(2) Quality Control of Fill Placement and Compaction: It is recommended that an experienced engineering technician witness any required filling operations and take sufficient in-place density tests to verify that the specified degree of compaction has been achieved. Soil engineering judgments will be involved and should be made by the project geotechnical engineer with information provided by the engineering technician.

(3) Footing and Slab Evaluations: It is recommended that footing and slab areas for this project be evaluated by a representative of the Geotechnical Engineer. The purpose of these evaluations will be to verify that the design soil bearing pressure is available and that subgrade areas are properly prepared.

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The recommendations conveyed in this report have been based upon data derived from limited sampling and testing. Accordingly, the recommendations' appropriateness cannot be evaluated until THE EDDY GROUP learns more about actual subsurface conditions by observing earthwork in the field, at which time THE EDDY GROUP will finalize its recommendations. It is in the best interest of the Client to retain THE EDDY GROUP to observe earthwork operations with respect to the contractor's compliance with design concepts, specifications, and recommendations, and to help develop alternative recommendations if the conditions observed differ from those inferred to exist.

No entity can be as familiar with the design concepts inherent in these recommendations at THE EDDY GROUP. Accordingly, only observations by THE EDDY GROUP can permit THE EDDY GROUP to finalize its recommendations and enhance the likelihood of the design concept being adequately considered during implementation of its recommendations.

THE EDDY GROUP appreciates the opportunity to work with you during the design phase of this project. We are prepared to provide the recommended construction materials testing and inspection services during the construction phase.

1

OUTLINE OF TESTIMONY
2327 CHAMPLAIN STREET LLC

I. Introduction

A. Description of Applicant and Developer

B. History and Experience in Washington

II. Background and Description of Project

III. Development of Area

IV. Work with Community and Community Support

V. Special Exception and Variance Relief

A. Brief Description of Relief Requested

1. Variance from Lot Occupancy Requirement

2. Variance from FAR Requirement

3. Special Exception from Maximum Permitted Height Under Reed-Cooke Overlay District

4. Special Exception from Roof Structure Requirements

B. Architect to Provide Detailed Description

VI. Conclusion

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OUTLINE OF TESTIMONY
HICKOCK WARNER FOX ARCHITECTS, PROJECT ARCHITECT

I. Introduction

A. Description of HWF Architects

B. History and Experience in Washington

II. Description of Project

A. General Description

1. Description of Area
2. Description of Site
3. Description of Building Design
4. Development of Surrounding Area
5. Number and Types of Units
6. Amount of Parking Spaces

B. Exceptional Conditions Affecting Site

III. Relief Requested

A. Variance from Lot Occupancy Requirement

1. Exceptional Condition or Situation
2. Practical Difficulty
3. No Detriment to Public Good

B. Variance from FAR Requirement

1. Exceptional Condition or Situation
2. Practical Difficulty
3. No Detriment to Public Good

C. Special Exception from Maximum Permitted Height under Reed-Cooke Overlay District

1. Advances the Stated Purposes of the Reed-Cooke Overlay District

2. Compliance with Chapter 14

D. Special Exceptions for Walls of Equal Height Requirement for Roof Structures

1. Deviation from Requirement

2. Standard for Special Exception Relief Met

E. Special Exception for Roof Structure Setback Requirement

1. Deviation from Requirement

2. Standard for Special Exception Relief Met

IV. Conclusions



OUTLINE OF TESTIMONY
MARTY WELLS, WELLS & ASSOCIATES, LLC

I. Introduction

II. Experience and Expertise

III. Review of Transportation Analysis

IV. Analysis of Development and Findings

VI. Conclusions

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OUTLINE OF TESTIMONY OF
ERIC SMART, BOLAN SMART ASSOCIATES, INC.

I. Introduction

II. Experience and Expertise

III. Description of Site and Project

IV. Economic Issues

- A. By-Right Development
- B. Issues and Costs Related to Development of Site
- C. Proposed Development
- D. Conclusions and Comparisons

V. Conclusions

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*Representative Office

Outline of Testimony
before the Board of Zoning Adjustment

BZA Application No. 16931
2327 Champlain Street, N.W.

Steven E. Sher
Director of Zoning and Land Use Services
Holland & Knight LLP

October 29, 2002

I. Site location and description

A. Location

1. Southwest portion of the square bounded by Champlain and Euclid Streets and Ontario and Kalorama Roads, N.W.

2. Project site consists of lots 101, 879 and 883 in Square 2563

3. Site located in the Adams Morgan/Reed-Cooke area

B. Size

1. Total site area is approximately 22,602 square feet

2. Unusually shaped site with frontage of approximately 290 feet on Champlain Street and 70 feet on Kalorama Road

3. Site widens to approximately 106 feet in depth at north end

C. Existing site conditions:

1. Former Amoco gas station

2. Abandoned auto repair shop

3. Liquor store

4. Portion of property presently paved and striped for parking

II. Description of surrounding area

A. Adams Morgan/Reed-Cooke area

B. Area contains mix of residential, retail and industrial uses and building types

C. Remainder of Square 2563

1. Immediately to the north are two story buildings devoted to commercial uses

2. Further to the north is:

a. Parking lot

b. Mix of two and three story residential buildings

c. Six story Courtland Apartments at the southeast corner of the intersection of Champlain and Euclid Streets

3. To the east, across the public alley, at the corner of Ontario and Kalorama Roads, are one story commercial buildings, primarily devoted to automobile repair

4. Further north are two and three story residential buildings, followed by the six story Euclid apartment building at the southwest corner of the intersection of Ontario Road and Euclid Street

D. Uses to the south:

1. Primarily lower rise residential buildings along Champlain Street and Ontario Road

2. Marie Reed Learning Center

E. Uses to the east:

1. Commercial buildings along the north side of Kalorama Road

2. Residential buildings to the north along Ontario Road

3. Dorchester House high rise apartments at the northwest corner of the intersection of 16th Street and Kalorama Road

F. Uses to the west:

1. Adams Morgan Lofts, relatively new four story apartment house

2. 18th Street commercial strip

G. Uses to the north:

1. Two story residential buildings

2. Offices of the City Paper

3. First Church of Christ Scientist at the southwest corner of the intersection of Champlain and Euclid Streets

III. Existing zoning: RC/R-5-B

A. R-5-B District

1. Uses (§§350 – 361)

a. Single family dwelling, flat and multiple dwelling

b. Institutional use (church, museum, hospital, etc.)

2. Height - maximum of 50 feet (§400.1)

3. Density - maximum of 1.8 FAR (§402.4)

4. Lot occupancy – maximum of 60% (§403.2)

5. Rear yard – 4" per foot of height from the finished grade to the highest point of the roof, but not less than 15 feet (§404.1)

6. Side yard - not required (§405.6)

7. Parking for apartment house use: minimum of 1 space for each 2 units (§2101.1)

B. Reed-Cooke (RC) Overlay District (Chapter 14)

1. Applies to new buildings, alterations or additions to existing buildings involving more than 50 percent of assessed value of building in any eighteen month period, change in use requiring a new certificate of occupancy or any use that requires a new permit from the Alcoholic Beverage Control Board (§1400.5)

2. Prohibited uses – not applicable to the proposed development (§1401.1)

3. Height:

a. Maximum of 40 feet (§1402.1)

b. In RC/C-2-B, 50 feet allowed with low and moderate income housing (§1402.1)

4. Exceptions allowed with BZA approval (further described below) (§1403.1)

IV. Proposed development

A. Use: apartment house of approximately 68 units

B. Gross floor area of approximately 62,073 square feet (2.75 FAR)

C. Height: 4 stories plus partial basement/cellar, 50 feet

D. A total of 56 parking spaces below grade and at grade

V. Relief required

A. Variances

1. Lot occupancy

a. Maximum permitted: 60%

b. Proposed: 67.3%

c. Variance: 7.3%

2. Floor area ratio

a. Maximum permitted: 1.8

b. Proposed: 2.75

c. Variance: 0.95 (53%)

B. Special exceptions

1. Roof structures (§411.11)

a. Walls of unequal height

b. Not meeting the 1:1 setback

2. Exception to the Reed-Cooke overlay to allow a 50 foot height (§1403.1)

VI. Standards for a variance (§3103.2)

A. Where, by reason of exceptional narrowness, shallowness or shape of a specific piece of property at the time of the original adoption of the regulations, or by reason of exceptional topographical conditions or other extraordinary or exceptional situation or condition of a specific piece of property,

B. the strict application of any regulation adopted under D.C. Code §§5-413 to 4-432 (1981) would result in peculiar and exceptional practical difficulties to or exceptional and undue hardship upon the owner of the property, to authorize, upon an appeal relating to the property, a variance from the strict application so as to relieve the difficulties or hardship;

C. Provided, that the relief can be granted without substantial detriment to the public good and without substantially impairing the intent, purpose, and integrity of the zone plan as embodied in the Zoning Regulations and Map.

VII. Compliance with the variance standards

A. Exceptional or extraordinary situation or condition

1. Fronts on two relatively narrow streets (50 feet wide), resulting in setbacks from the property line and inclusion of bays in gross floor area, rather than in public space

2. Change in grade, creating part basement/part cellar on the lower level

3. High water table

4. Presence of contaminated soil from former gas station

B. Practical difficulty

1. Narrow width creates difficulties for the design of the parking garage and for subsequent column grid above

2. Cost of foundation work necessitated by subsoil conditions

3. Without variances, the size of the residential building would be substantially smaller

4. Would be insufficient number of units to absorb the costs required to ameliorate the site conditions and provide building core and support services

C. No detriment to the public good

1. Would be approximately same height and building mass as apartment building across the street

2. Residential uses are favored in the Reed-Cooke Overlay area

VIII. Standards for the roof structure special exception (§411.11)

A. Where impractical because of operating difficulties, size of building lot, or other conditions relating to the building or surrounding area

B. that would tend to make full compliance unduly restrictive, prohibitively costly, or unreasonable

C. the Board of Zoning Adjustment shall be empowered to approve the location, design, number and all other aspects of such [roof] structure ...

D. Provided that the intent and purpose of this chapter and this title shall not be materially impaired by the structure, and the light and air of adjacent buildings shall not be affected adversely.

IX. Compliance with the special exception standards for roof structure

A. Size of building lot and other conditions

1. Long and narrow lot, with a depth of only 65 feet at the south, widening to 106 feet at the north

2. Setbacks and sloping roof provided as architectural feature

B. Unduly restrictive and unreasonable

1. With walls of equal height, penthouse would be greater mass on roof

2. Unreasonable to provide enclosure of equal height

C. Impact on light and air of other buildings

1. Building is same approximate mass as apartment house across Champlain Street

2. Penthouse heights are lower than the maximum permitted

X. Standards for the special exception for an exception to the Reed-Cooke Overlay (§1403.1)

A. Use, building or feature at the size, intensity and location proposed will substantially advance the stated purpose of the overlay

B. Vehicular access and egress minimizes conflicts with pedestrian ways, functions efficiently and creates no dangerous or otherwise *objectionable traffic conditions*

C. Adequate off-street parking is provided

D. In a C-2-B zone, use shall not be within 25 feet of a Residence District, unless separated by an alley

E. Noise will not adversely affect adjacent or nearby residences

F. No outdoor storage of materials nor outdoor processing, fabricating or repair

G. Use, building or feature at the size, intensity and location proposed will not adversely affect adjacent or nearby property

XI. Compliance with the special exception standards for exception to Reed-Cooke Overlay

A. Residential is one of the most favored uses of the Overlay

B. Redevelopment of current unattractive conditions

C. Access is provided adjacent to the alley on Kalorama Road, thereby eliminating additional curb cuts on Champlain Street

D. Substantially more parking is provided than is required by the Regulations (56 versus 34)

E. Property is in R-5-B, rather than C-2-B

F. Apartments will generate no noise

G. No outdoor storage

H. Residential use will anchor southern half o square in comparable fashion to the loft apartment building across Champlain Street

XII. Conclusions

A. Subject property is affected by exceptional conditions, because of the dimensions of the site, subsurface conditions and the widths of adjoining streets

B. Strict application of the Regulations would result in fewer apartment units which would not be enough to redevelop the site, adversely affecting the ability to build the project

C. The variances can be granted without substantial detriment to any surrounding properties

D. The walls of unequal height and the lack of setback on the north end can be approved as a functional, aesthetic design

E. Approval of the application would be a significant contribution to city policy of encouraging residential in Reed-Cooke

F. The application should be granted