GOVERNMENT OF THE DISTRICT OF COLUMBIA
OFFICE OF PLANNING

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Office of the Director

D.C. BOARD OF ZONING
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MEMORANDUM

TO: Board of Zoning Adjustment

FROM: Andrew Altman, Director

DATE: May 7, 2002

SUBJECT: BZA Application #16868
Washington Metropolitan Area Transit Authority (WMATA) for
1290 U Street, NW -- Square 274, Lot 133

BZA
Case No. 16868
Exhibit No. 22

I. APPLICATION SUMMARY

WMATA wishes to develop property atop the western entrance to the U Street/Cardozo Green Line Metro stop. 1290 U Street is within the C-2-A zone district, and also subject to the benefits and requirements of the Uptown Arts-Mixed Use Overlay (ARTS) District.

The property's development rights have been awarded to Blue Horseshoe LLC, based on a proposal to construct a mixed-use building. The developer proposes to lease the upper floors to the D.C. Commission on Mental Health, and sublease the first floor for retail uses. The Commission on Mental Health (the Commission) is currently located at 16th and U Streets, 3 blocks from the proposed site. The retail tenants have not yet been determined.

The applicant is requesting:

- A special exception from the ARTS overlay design standards in 11 DCMR Section 1906 for placement/frequency of entrances for ground floor retail space, and amount of display window;

- Relief from parking requirements, in the form of either a special exception under 11 DCMR Section 2107 or, in the alternative, a variance under Section 3103.

II. OFFICE OF PLANNING RECOMMENDATION-IN-BRIEF

The Office of Planning (OP) recommends the application for special exception from the ground floor retail doorway design and placement standards be **approved, subject to minor conditions**. OP recommends the special exception request from display window standards be **approved, subject to clarification of Metro regulations**. OP further recommends that the application for parking relief be considered as a special exception, and that the request be a**pproved subject to conditions the Board may require under 11 DCMR Section 2107**.

Board of Zoning Adjustment
District of Columbia
CASE NO.16868
EXHIBIT NO.22A1

#22

III. SITE AND AREA DESCRIPTION *(See Attachments 1,2 and 3)*

The site is within the burgeoning U Street corridor of northwest Washington. This corridor is an increasingly vibrant mixed-use area containing single family and multi-family housing, retail services, government and private offices, and many entertainment venues. It is intensely served by public transit, including Metrorail, Metrobus, and shuttle busses that connect the Red Line Metro (Woodley Park/Zoo/Adams-Morgan) and Green Line Metro (U Street-Cardozo).

Square 274, where the applicant proposes to build, is bounded by:

- West: 13th Street
- East: 12th Street
- North: U Street
- South: T Street.

There are two east-west alleys within the Square. Each has entrances on both 13th and 14th Streets. There is also a north-south alley that connects the east-west alleys. The northernmost alley is 15'3" wide, and abuts the rear of the applicant's site.

Parcel 133 runs for approximately 212 feet along the south side of U Street, beginning at the southeast corner of the 13th and U Streets intersection. The parcel is generally 100' deep, but is "notched-out" on the west side by an existing 60' x 40' commercial building that is flush with the alley entrance at 13th Street. The western end of the parcels is, therefore, 60' deep.

The parcel is atop a Metro station, and fronts on a prominent corner. A score of restaurants, entertainment establishments and shops are within three blocks of the site. Several hundred new and renovated residential units have been recently completed, or are in different stages of the development process.

The parcel has several conditions that make its development a challenge. The north-central section along U Street must be kept open to the sky for the existing Metro escalators and two vent grates. An elevator connecting the street level with the Metro mezzanine level must be incorporated within the proposed new building. There are building line restrictions at the northeastern corner for additional utilities serving Metro. The buildable site is, therefore, quite irregular. *(See Attachment 2).*

IV. AREA ZONING AND HISTORIC DISTRICTS *(See Attachment 1)*

The site is zoned C-2-A and is within the area covered by the Uptown ARTS-Mixed Use Overlay. The 14th Street and U Street corridors within this area are covered by this overlay. The underlying zoning includes the C-2-A, C-2-B, C-3-A, and CR zone districts. The residential zoning, which is R-4 and R-5-B, usually starts at a depth of one lot back from the 14th and U Street corridors.

The zoning immediately adjacent to the applicant's site is:

C-2-A/ARTS to the east and west;
R-5-B/ARTS, CR/ARTS, and R-5-B to the north;
R-4 to the south, southeast and southwest.

The ARTS overlay is intended to help develop a pedestrian-oriented neighborhood with a lively mix of retail, services, and arts-uses by prescribing certain design treatments, controlling the amount of block frontage devoted to some uses and granting density bonuses to certain other preferred uses.

The site is within the Greater U Street Historic District and within the same square as landmarked structures. The Historic Preservation Review Board (HPRB) approved the building's 3-story design and staff is comfortable with the proposed addition of a fourth story, though it has not been reviewed by the Board.

V. PROJECT DESCRIPTION *(See Attachments 1,2, 4 and 6)*

The applicant, WMATA, owns the land atop the western entrance to the U-Street/Cardozo Metro stop. It currently contains Metro escalators, and an elevator to the Metro mezzanine. The remainder of the site functions as an informal public plaza, which is given identity by a large mural of "Duke" Ellington. The mural is due to be relocated soon.

The applicant has signed an agreement with Blue Horseshoe LLC for the development of the property as a commercial building. . The applicant had originally filed with the Board of Zoning Adjustment (BZA) on March 7, 2002. At that time, the proposal was for a three-story building totaling 33,676 square feet, including both office and retail use on the first floor, and providing 12 parking spaces.

The current proposal, filed with the BZA on April 30, 2002, is for a four-story building containing 44,000 square feet. It would have at least 34,758 square feet of office space on the 2nd through 4th floors, plus 3,242 square feet of lobby on the first floor serving the office space on the upper floors. The remaining 6,000 square feet of the 9,242 square foot first floor would be devoted to three separate, as yet to be determined, retail users.[1] The current design devotes a larger portion of ground floor space to retail usage than had the earlier proposal, and accommodates the office space needs of the D.C. Mental Health Commission by adding the fourth floor. There would also be 12 parking spaces that can be counted for zoning purposes, and 5 stacked parking spaces that cannot be counted for zoning purposes. Of the 12 spaces, 4 would be reserved for the retail stores; the remaining spaces would be reserved for Commission on Mental Health employees on weekdays, and would be made available to the retail store patrons during evening hours and on weekends. *(See Attachment 6).* The lease contains easements for the Metro escalators, elevator, site lines, and sub-surface

The site is 18,813 SF. At the usual C-2-A commercial FAR of 1.5, the applicant would normally be entitled to develop 28, 219 GSF of non-residential space. The Zoning Administrator has determined that the proposed use will qualify as a social services agency under 11 DCMR Sections 1904 and 1907. As such, it is one of the preferred uses in the ARTS overlay and will generate bonus density at a rate of 1:1.5 for the commercial space, and could generate additional bonus density at the rate 1:2 for the retail space if that space is devoted to one of the "preferred uses" under Sections 1904 or 1907.

Section 1904.1(b) sets a maximum density of 3.0 for any building in the C-2-A underlying zone, no matter how much additional bonus density it may generate. The applicant is, therefore, entitled to no

[1] The 6,000 square foot retail allocation is contained in the traffic and parking analysis provided to OP on May 6, 2002 (Attachment 6).

more than 56, 439 square feet of floor area on the site. The proposed 44,000 square foot development is well within that envelope.

The ARTS overlay identifies U Street as a pedestrian street and, on such street, has certain requirements for the percentage of the building wall that must be constructed to the building line. However, due to the restrictions imposed by Metro escalators, vents, and other below-ground equipment, the proposed structure will be able to be constructed to the building line for only its 60' frontage on 13th Street, and for approximately 50' of its frontage along U Street. The remainder of the U Street façade has been brought as close to the building line as possible, given the Metro restrictions.

The first floor would contain 9,242 square feet of space, in three distinct retail areas totaling approximately 6,000 square feet, plus a lobby for the upper floors. These spaces would be:

- An approximately 50' x 60' space fronting directly on the sidewalk at the corner of 13th and U Streets. This space would have retail entrances on two sides that meet the design standards of 11DCMR Section 2106, but would have no openings on the side facing the Metro escalators, due to Metro regulations;

- An approximately 32' x 65' space at the eastern end of the building, contiguous with the wall of the adjacent building that currently has the Ellington Mural. This area's U Street frontage would be set-back from building line approximately 16' in order to respect certain Metro easements. However, its retail entrances would meet the spacing requirements of Section 2106. The applicant and lessee are exploring the feasibility of using the easement space in front of this part of the U Street façade for outdoor seating, or other uses that would extend the retail/entertainment experience out to the building line.

- An approximately 80' x 16' space set-back approximately 32' from the building line, behind the Metro escalators and future Metro canopy. This may have one to two entrances, depending on Metro restrictions. However, due to Metro regulations, it would not meet the retail design standards of Section 2106.

- A 3,242 square foot lobby for the upper, office floors.

The remainder of the first floor would be devoted to a Metro elevator for the disabled, and at the rear of the building, 12 "legal" parking spaces accessed from the public alley entered from 13th Street, another 5 stacked spaces that cannot be counted for zoning purposes, and the required loading dock and service areas.

While the first floor would contain only 9,242 SF, in order to accommodate the parking, the second through fourth floors would each contain 11,586 SF, by cantilevering over the stacked parking spaces.

The applicant and the lessee are exploring the feasibility of installing permanent seating in the open space to the east of the Metro escalators, in order to create more of a sense of place for the Metro easement area. This seating would be designed so it would not interfere with circulation for the building lobby, Metro elevator, possible retail entrance, and Metro vents.

VI. REQUESTED ZONING RELIEF

The applicant is seeking the following zoning relief:

1. A Special Exception from the Design Standards of 11 DCMR Sections 1903.3, and 1903.4 that require:
   - at least 75% of the street wall to be built to the property line (1903.3);
   - at least 50% of that streetwall be devoted to display windows and to entrances to commercial uses or to the larger buildings (1903.4);
   - and that the entrances shall occur, on the average, at least every forty feet [1903.4(b)].

   The applicant states it is not possible to develop the site in adherence with all of the overlay's standards due to physical conditions inherent in developing the site with all of the restrictions imposed by Metro facilities and easements. It has tried to conform with the requirements as much as the Metro restrictions make feasible by keeping the streetwall definition at the building line at the corner of 13th and U Streets; by keeping it as close to the building line in all other locations as is permitted by Metro restrictions; and by conforming to the 40' average spacing for door openings wherever this is not precluded by the placement of Metro escalators.

2. A Special Exception (or, in the alternative, a Variance) from the parking requirements of Section 2101.1, as the Board is empowered to do under Section 2107.1.

   Under Section 2101.1 in a C-2-A zone, between 70 and 76 parking spaces would be required. This figure is based on:

   - One space for every 300 square feet of retail space over 3,000 square feet, i.e., 21 spaces for the 9242 square feet of retail space referred to in pre-hearing statement of April 30, 2002 or, in the alternative, 10 spaces for the 6,000 square feet of retail space referred to in the traffic and parking study of May 6, 2002;[2]

   - One space for every 600 square feet of office space over 2,000 , i.e., 55 spaces for the approximately 34,758 square feet of office space referred to in the April 30th pre-hearing statement or, in the alternative, 60 spaces for the 36,000 square feet of office space and lobby referred to in the May 6 study.[3]

   The applicant is requesting between an 83% and an 84.2% reduction in required parking under the provision of Section 2107.1 that allows the Board to:

   > "Reduce or eliminate the amount of required parking spaces for nonresidential buildings or structures located outside the Central Employment Area; Provided, that the building or structure is provided with a direct connection to a Metrorail station..."

   Because there has never been an explicit definition of what constitutes a "direct connection to a Metrorail station" the applicant is also, in the alternative, seeking relief as a variance under

[2] Under Section 2101, fractional space requirements round up after 50% or greater of a space..
[3] ibid.

Section 3103. For the purposes of a variance under that section the applicant contends that Metro construction and easements make the provision of below-grade parking impossible; and that these conditions, plus the Overlay requirements and other physical constraints, also make the provision of sufficient parking at grade level impossible.

VII. RELATIONSHIP OF THE APPLICATION TO THE COMPREHENSIVE PLAN AND OTHER PLANS *(See Attachment 3)*

Special Exceptions From Design Standards of 11 DCMR Section 1903.3, 1903.4 and 1903.4 (b)

OP finds the requested Special Exceptions to be consistent with the Comprehensive Plan.

The proposed development that would be enabled by the Special Exceptions is consistent with the Comprehensive Plan's Generalized Land Use Map, as well as with the Comprehensive Plan's objectives for the U-Street corridor. The Generalized Land Use Map designates the area for a mix of medium density commercial and medium density residential uses. C-1 and C-2-A are the typical zoning districts for such areas.

There are numerous objectives and policies in 10 DCMR Sections 1202 and 1203 (the Economic Development Sections of the Ward 1 Plan Element) that stress the importance of commercial development and the desirability of increasing employment opportunities in, among other areas, the U Street-Cardozo corridor and Metrorail station area. Sections 1202.1 (a) and (b) and 1203.1 (b) and (d) are particularly relevant.

Requested Relief From the Parking Requirements of Section 2101

OP finds the requested relief to be generally consistent with the Comprehensive Plan.

The requested relief is consistent with the Transportation Objectives for Ward 1. Sections 1213.1 (b) and (c), which emphasize the need to promote the use of mass transit and to reduce the ward's dependence on private automobiles. Section 1215.1 (j) (2) encourages the use of mass transit for commuter trips.

The requested relief is consistent with the Ward 1 Policies in Support of Public Facilities Objectives. Section 1217.1 (c), which emphasizes the location of public facilities to provide optimum service and to support land use, transportation, economic, social development and neighborhood improvement plans.

However, the Ward 1 Actions to Implement Transportation Objectives, in Section 1215.1 (a) (2) also calls for the provision of privately financed off-street parking to accommodate the demands generated by the [U Street/Cardozo, Columbia Heights and Georgia Avenue/Petworth] Metro stations and spin-off development. Section 1215.1(g,) notes that "parking spaces are inadequate in commercial and residential areas", and suggests, under Section 1215.1 (g) (2), "providing public parking facilities for both residents and customers in the ...14th and U Streets commercial areas...".

The requested parking relief would, nevertheless, be consistent with the recommendations of the report of Mayor's Task Force on Transit Oriented Development (TOD Task Force). The report cites the

provisions of the zoning regulations that allow a decrease in, and even elimination of, parking requirements for developments near Metro stations as examples of pro-TOD policies that encourage the use of transit.

VIII. DOES THE APPLICATION MEET THE TESTS FOR THE REQUESTED RELIEF?

11 DCMR Section 3104.1 authorizes the Board to grant special exceptions if they are:

- In harmony with the general purpose and intent of the Zoning Regulations and Zoning Maps, and;
- Will not tend to affect adversely the use of neighboring property in accordance with the Zoning Regulations and Zoning Maps.

11DCMR Section 1906.1 specifies the additional criteria that must be met for relief from Section 1903's Uptown ARTS overlay street frontage design requirements. These are:

> (a) The use(s), building(s), or feature(s) at the size, intensity and location(s) proposed, will substantially advance the stated purposes of the ARTS Overlay District and will not adversely affect neighboring property or be detrimental to the health, safety, convenience, or general welfare of persons living, working, or visiting in the area;
>
> (b) Exceptional circumstances affecting the property make compliance with the requirements of this chapter difficult or impossible, or the development provides alternative public benefits, in lieu of the excepted uses or features, that are of comparable value to the public in achieving the purposes of this chapter and of the Comprehensive Plan;
>
> (c) The architectural design concept of the project will enhance the urban design features of the immediate vicinity in which it is located; provided, that if a historic district or historic landmark is involved, the Board shall refer the application to the State Historic Preservation Office for review and report;
>
> (d) Vehicular access and egress are located and designed so as to minimize conflict with principal pedestrian ways, to function efficiently, and to create no dangerous or otherwise objectionable traffic conditions; and
>
> (e) The Board may impose requirements pertaining to design appearance, signs, size, landscaping, or other such requirements as it shall deem necessary to protect neighboring property and to achieve the purposes of the ARTS Overlay District.

11DCMR Section 2107 specifies additional criteria that must be met for special exception relief from Section 2101's parking requirements. These will be listed below, when the parking relief is considered.

In analyzing the application, OP has assumed that, because the criteria specified by Sections 1903, 1906 and 2107 are more restrictive than the tests specified in Section 3104, if the applicant meets the criteria of the Sections 1903,1906 and 2107, the applicant is also meeting the tests of Section 3104

Special Exception Relief from the Design Standards of Section 1903.3:

The applicant has requested relief from:

1. Section 1903.3: Each new building on a lot that fronts on a pedestrian street shall be designed and built so that not less than seventy-five percent (75%) of the streetwall(s) to a height of not less than fifteen feet (15ft.) shall be constructed to the property line between the subject lot and the abutting street right-of way.

2. Section 1903.4: Not less than fifty percent (50%) of the surface area of the streetwall(s) at the ground level of each building on a lot that fronts on a pedestrian street shall be devoted to display windows and to entrances to commercial uses or to the building.

3. Section 1903.4 (b) Entrances to the building, including entrances to shops and to the main lobby, shall be separated by not more than forty feet (40 ft), on average, along the linear frontage of the building.

In OP's opinion, the applicant has demonstrated that it meets the tests for relief from Sections 1903.3 and 1903.4(b). The applicant has demonstrated that the unusual requirements of the site's Metro easement restrictions do not allow 75% of the streetwall to be constructed to the property line, and that these same requirements make impractical and even preclude the separation of entrances by not more than 40 feet on average. The location of a four story building with retail uses, and the Commission on Mental Health: will advance the purposes of the Arts Overlay district; will not adversely affect neighboring property (which is used for commercial or non-profit purposes) or those in the area; overcomes the exceptional restrictions on what most had considered to be an vacant, undevelopable property and enhances the site with a building that, in the view of the HPRB, is consistent with the historic district; and enables a public service agency considered a preferred use by the ARTS overlay to stay within its current neighborhood .

OP feels that additional information is necessary to determine if the revised design of April 30, 2002 meets the tests for relief from Section 1903.4. The April 30th plans indicate that the majority of the ground floor will now be devoted to retail uses. OP understands that Metro restrictions preclude the location of entrances approximately every 40 feet, but without more information from the applicant pertinent to Section 1903.4, OP is unable to determine why the applicant cannot now meet the requirement to devote at least 50% of the surface area of the groundfloor streetwall to display windows and/or entrances. OP suggests the Board ask the applicant to further clarify why it is unable to meet the requirements of Section 1903.4.

OP further suggests that, in order to help the applicant compensate for its inability to comply completely with Sections 1901.3, and1903.4(b) and, possibly, with Section 1903.4, the Commission require the following, in order to achieve the purposes of the Arts Overlay District, as is permitted to the Board by Section 1907.1 (e):

- The provision of movable seating, if appropriate to the indoor retail usage, and/or landscaping between the building line and the property line for the easternmost 32 feet of the project, in order to maintain a sense of the building line;
- The provision of secure, stationery seating to the west of the commercial space entrance and the east of the Metro escalators, if permitted by Metro restrictions, in order to create a sense of public space adjacent to the Metro entrance.

These conditions have been discussed with, and agreed to by, the applicant.

Relief from the Parking Standards of Section 2101.1 *(See Attachment 5)*

Absent a clear definition in the Zoning Regulations of what constitutes a "direct connection" to a Metrorail station, it is necessary to consider whether the requested relief from parking requirements should be considered as a special exception or as a variance.

OP believes the special exception standards should apply. The property proposed for development is directly on top of an existing Metrorail station. The very encumbrances that contribute to the property's inability to meet the parking requirements are generated by escalators and elevators to this station that are within the proposed development's property line. Had the proposed building been constructed prior to the Metro station's construction – as with the Sears/Hechinger's building in Tenleytown that the Board recently considered in Case # 16857; or had the site made excavation and underground connection practical – as with the Connecticut Connection building or the Hecht Company building in downtown Washington, the applicant may have been able to have a clear physical linkage with the Metro. OP is comfortable considering a structure that has a Metro entrance within its property line as having a "direct connection" with a Metrorail station. However, OP emphasizes that it is saying only that the definition of direct connection applies to a direct linkage or location within the property line. OP is not saying that: i) adjacency to a Metro entrance, or ii) distance from a station entrance comparable to a property that has a direct connection would also satisfy the "direct connection" requirement.

If the parking relief is considered under 11DCMR Section 2107's provisions, as a special exception for a non-residential building located outside the CEA, and with a direct connection to a Metrorail station, the following regulations apply:

Section 2107.1: The Board may reduce or eliminate the amount of required parking;

Section 2107.2: The Board shall consider:
(a) The nature and location of the building and its connection to Metro;
(b) The maximum number of users who can reasonable be expected to use the proposed building at one time;
(c) Existing traffic congestion, and that, if any, which the building can reasonably be expected to create;
(d) Off-street parking on the property or in the neighborhood that can reasonably be expected to be available when the building is in use;
(e) Public Transportation, and/or a District-approved ride sharing program.

Section 2107.4 also requires the Board to refer the application to the District Department of Public Works for review and report.

At the time this OP report was being completed (May 6, 2002) the applicant had submitted to the Office of Zoning and/or the Office of Planning information pertinent to Section 2107.2 (a) (b) (d) and (e)[4]. This information has indicates the following:

- the proposed building has a direct connection to Metro;
- the requested parking relief should be considered as a special exception, rather than as a variance;
- the site is well served by Metrorail and Metrobus;
- there will be 40 employees occupying the approximately 34,700 SF on floors 2- 4;
- the percent of Commission employees planning to walk or take transit to work is projected to increase from one-third at the present location to one-half at the new location;
- if only 50% of the Commission employees drive to work at the new location, 85% of those driving would be able to park on-site if all the 12 "legal" and 5 stacked parking spaces to be provided on-site were allocated to them (an allocation OP thinks may not be the most appropriate, as noted below);
- there are potentially 100 paid parking spaces available for daytime public use within 2 blocks of the new facility (inclusive of parking at the Reeves Center, where additional parking is also available in the evening);
- the Commission anticipates serving approximately 65 people per day on-site and expects 99% of those people will use public transit, as they do at the current Commission location;
- the approximately 6,000 square feet of retail space is anticipated to have the local neighborhood as its primary market and will, therefore, generate little auto traffic or parking demand;
- the intersection of 13th and U Streets, NW has a level of service C in the a.m. peak hour, a level of service D in the p.m. peak hour, and is expected to have the same levels of service C and D after the completion of a 186 unit apartment and local-serving retail building diagonally across that intersection from the applicant's proposed building.

D-DOT has reviewed the applicant's April 30th and May 6th documents. The division has no problem with the requested relief. D-DOT's response is attached. *(Attachment 7)*

OP is also aware of residents' complaints about the lack of existing parking in the neighborhood adjacent to the proposed project. Therefore, OP recommends that, should the Board approve the requested relief, it condition that relief on an examination of the feasibility of providing Metro-check to those working in the proposed building. This would be in addition to the allocation of certain parking spaces to retail tenants, and to Commission employees.

Based on the above, OP recommends the Board approve the requested parking relief, with conditions. As noted earlier, OP's feels that if the applicant has met meets the more restrictive criteria of 11 DCMR Sections 1903, 1904 and 2107, it has also met the special exception tests of Section 3401.4. (i.e.,

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[4] See attached Supplemental Statement in Support of Application for Special Exceptions to Construct a Mixed-Use Project at 1290 U Street, NW (Attachment 4); attached 1290 U Street Employee Transportation Impact Survey (Attachment 5) and Traffic Impact Assessment – Proposed Ellington Plaza Residential Development..(Attachment 6, Exhibit B).

Harmony with the Zoning Regulations and Map, and Their Intent; No Adverse Impact on Neighboring Properties).

IX. COMMUNITY COMMENTS

ANC 1B approved the April 30 version of the requested relief on May 2, 2002, by a vote of 6-1.

The Ward 1 Councilperson, in whose ward the project would be located, has expressed his strong support for the project to OP.

As of May 3, 2002, OP was aware of no opposition to the requested zoning relief.

X. OTHER AGENCY COMMENTS

There were no other agency comments as May 3, 2002. However, as noted above, OP anticipates D-DOT will submit a response to the applicant's submissions of April 30, 2002 and May 6, 2002

XI. OP SUMMARY RECOMMENDATION

OP recommends the Board approve the requested special exceptions from the design standards of 11 DCMR Section 1903.3, 1903.4 and 1903.4 (b) subject to the following conditions:

- The applicant's provision of movable seating, if appropriate to the indoor retail usage, and/or landscaping between the building line and the property line for the easternmost 32 feet of the project, in order to establish a sense of the building line;
- The applicant's provision of secure, stationary seating to the west of the commercial space entrance and the east of the Metro escalators, subject to Metro restrictions, in order to create a sense of public space adjacent to the Metro entrance;
- The applicant's further clarification of why the revised, April 30th proposal is unable to meet the requirements of Section 1903.4.

OP recommends the Board approve the requested relief from the parking requirements of 11 DCMR Section 2101.1 as a special exception under the provisions of 11 DCMR Section 2107, subject to the following conditions:

- The reservation of at least 4 parking spaces for the patrons of the project's retail space;
- The consideration of additional arrangements, such as the provision of Metro-check to building employees, in order to reduce the possible impact, if any, of the proposed project and requested parking relief, on the adjacent neighborhood.

Attachments (7)

AA/slc,aicp

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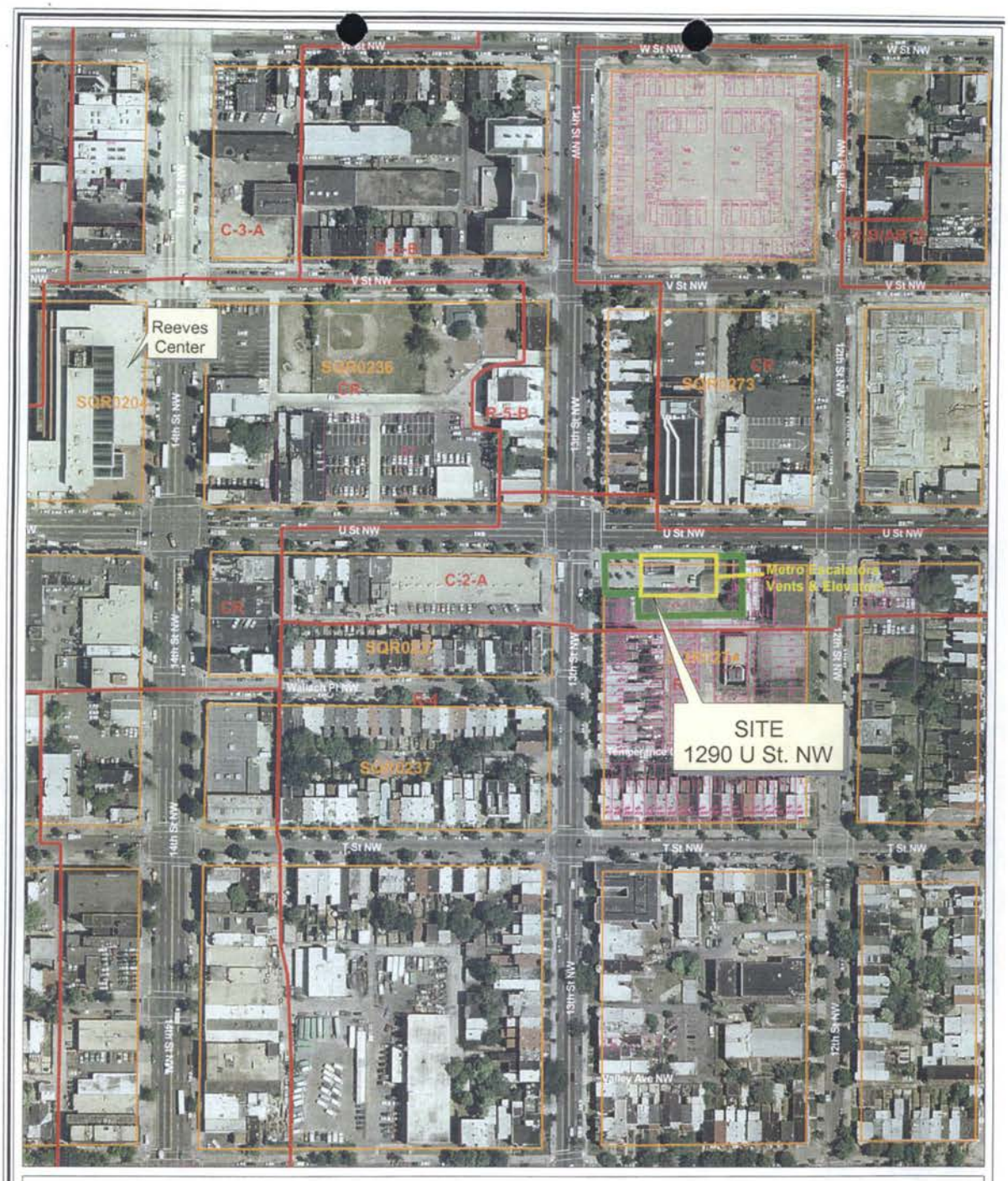
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Attachments (7)

AA/slc,aicp



Feature Key

Zoning Boundaries
Square Index

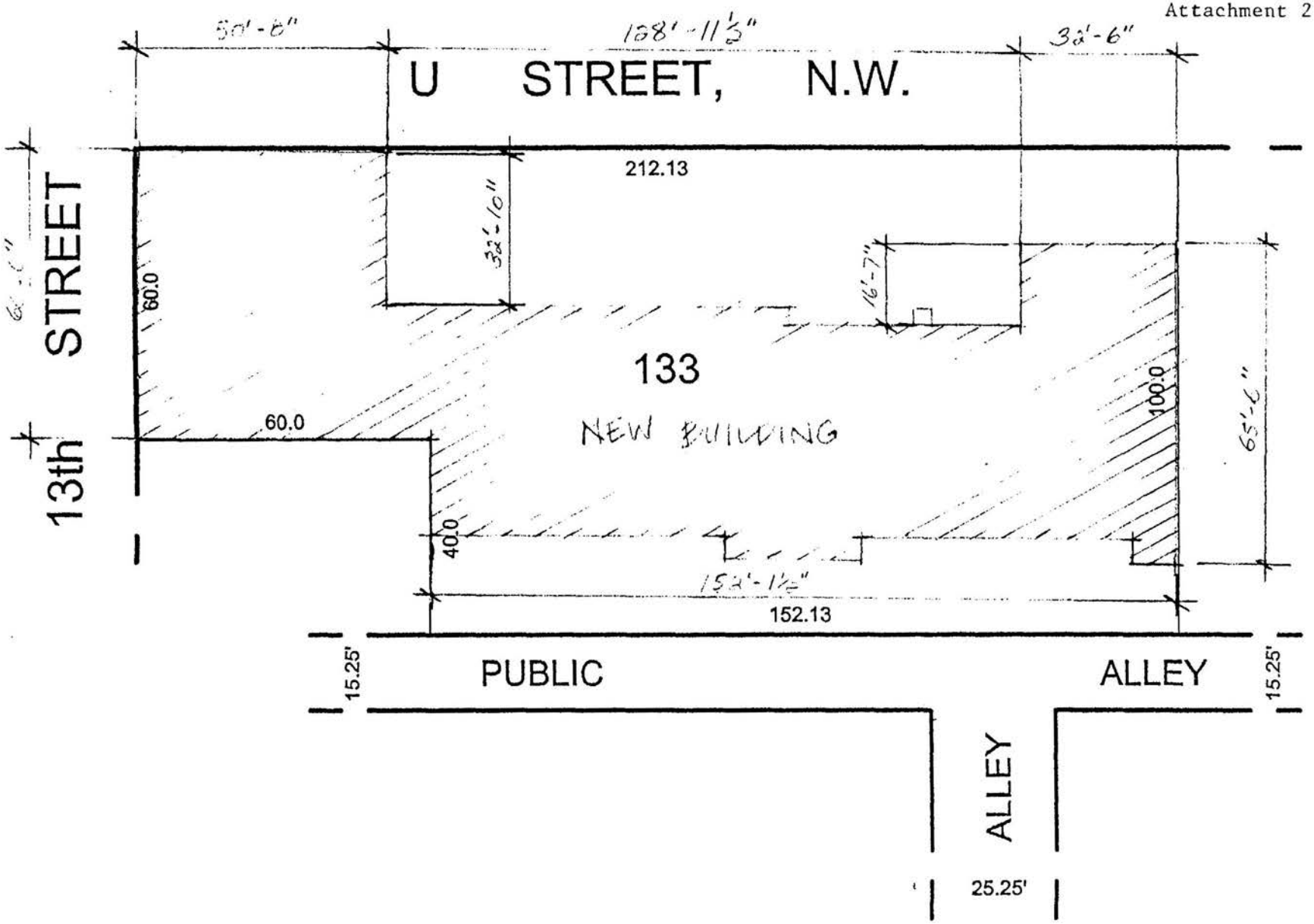
Board of Zoning Adjustment
Application No. 16868

DC Office of Planning
May 7, 2002

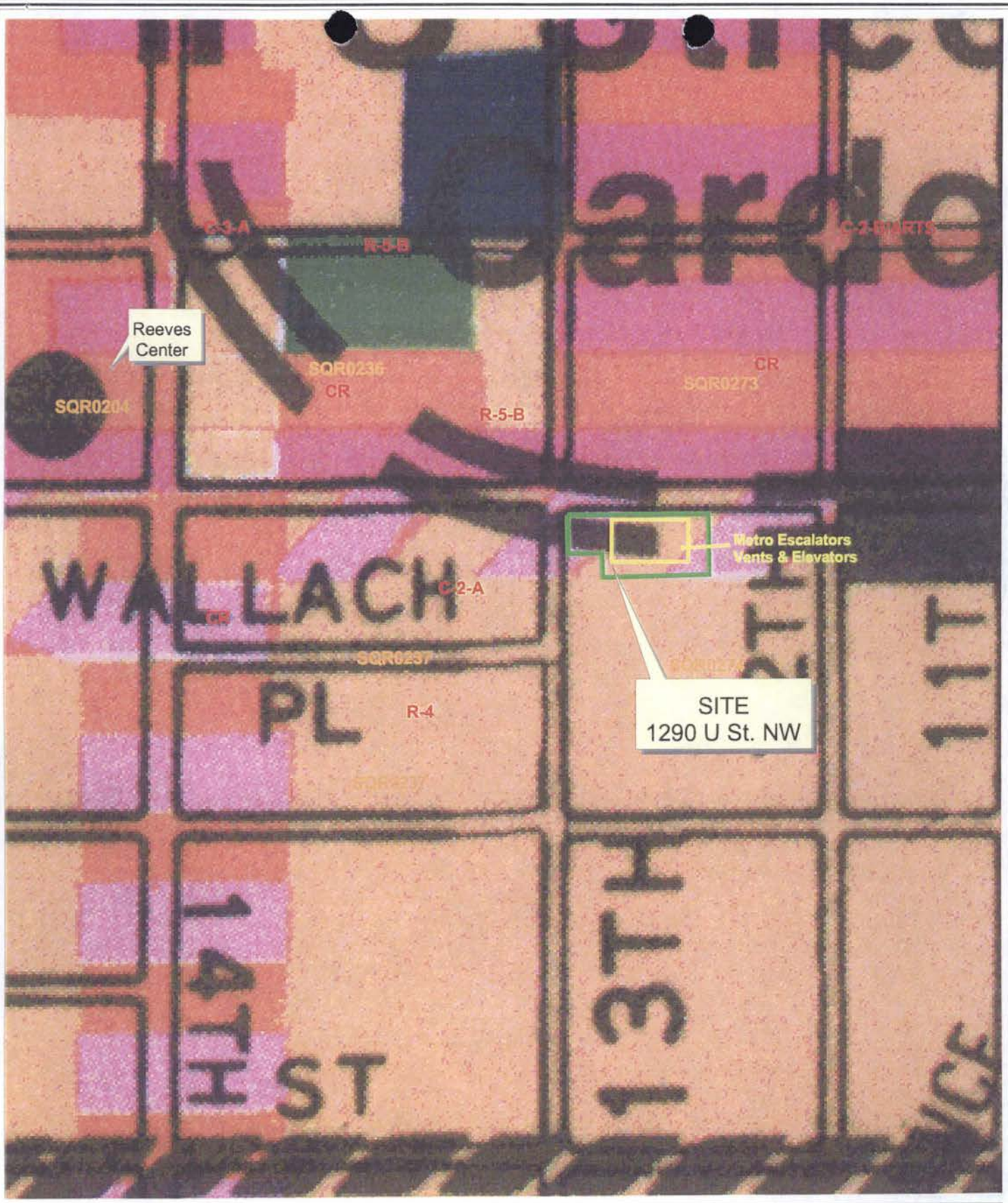
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25 0 25 50 75 100 Feet

Attachment I



Attachment 2



Generalized Land Use Key

- Residential Low Density
- Residential Moderate Density
- Residential Medium Density
- Residential High Density
- Water
- Commercial Low Density
- Commercial Moderate Density
- Commercial Medium Density
- Commercial Med.-high Density
- Commercial High Density
- Federal
- Institutional
- Local Public
- Parks, Recreation and Open Space
- Production and Technical Employment

Comprehensive Plan Landuse

DC Office of Planning
May 3, 2002

Scale 1:2522

N

0 150 Feet

Attachment 3

BEFORE THE BOARD OF ZONING ADJUSTMENT
FOR THE DISTRICT OF COLUMBIA

Re: Supplemental Statement in Support of Application for Special Exceptions to Construct a Mixed-Use Project at 1290 U Street, N.W.

I. Nature of Relief Sought

This is an application for special exception relief pursuant to section 3104 of the Zoning Regulations for a new mixed-use (office and retail) building at 1290 U Street, N.W., Lot 133, Square 274 (the "subject property"). The following relief is being requested: (1) a special exception to deviate from the ARTS overlay design standards (§ 1906) and (2) a special exception to reduce the amount of required parking (§ 2107), or, in the alternative, for a variance to reduce the amount of required parking (§ 3103). The subject property is zoned ARTS/C-2-A.

II. Jurisdiction of the Board of Zoning

The Board of Zoning Adjustment has jurisdiction to grant the relief requested pursuant to Sections 3104 and 3103 of the Zoning Regulations.

III. Subject Property Description and Background

The subject property is located in Square 274 which is bounded by U Street, T Street, 13th Street, and 11th Street, N.W. The subject property is owned by the Washington Metropolitan Area Transit Authority ("WMATA") and is located at the southeast corner of the intersection of 13th and U Streets. It has a land area of 18,813 square feet and is vacant except for the entrance platform and set of escalators which lead down to the U Street/Cardozo Station, on Metro's Green Line.

WMATA has selected Blue Horseshoe LLC (the "developer") to develop the subject property with a four-story, 56,439 square foot mixed-use project which will contain office space and ground level retail uses. The developer has entered into an agreement with the City to rent the office space to the D.C. Commission on Mental Health.

The subject property is also located in the Greater U Street Historic District. An application for concept approval of the project design has been submitted to the Historic Preservation Review Board.

A zoning referral letter from the Zoning Administrator confirming the types of relief needed for the project is attached hereto as Exhibit "A".

IV. Subject Property Zoning

The subject property is located in both the C-2-A District and the Uptown ARTS-Mixed Use ("ARTS") Overlay District. The C-2-A District is a mixed-use community business district zone which provides for a maximum height of 50 feet and a maximum FAR of 2.5, with nonresidential uses limited to 1.5.

The ARTS overlay district provides for bonus density for specified preferred uses and imposes design standards for new development. The ARTS District was designed to encourage pedestrian activity, especially retail, entertainment, and residential uses in the 14th and U Streets corridor and to foster 18-hour activity and increased public safety. Under the ARTS District, bonus density is generated by including preferred uses in a project. A public agency office use is a preferred use and the intended use of the majority of the prepared project (*i.e.*, office of the D.C. Commission on Mental Health). A public agency use generates bonus density (at a ratio of 1 square foot of preferred use to 1.5 square feet of bonus density). Under the ARTS Overlay, the bonus density may be used on-site to increase density in a C-2-A District up to a maximum FAR of 3.0. The proposed project will utilize approximately 28,219 square feet of bonus density. (See Zoning Computations Summary attached hereto as Exhibit "B".)

Physical design standards are imposed in the ARTS District for the purpose of strengthening the design character and identity of the area. Design standards are imposed on properties fronting on certain designated "pedestrian" streets including U Street on which the subject property fronts. These design standards include mandatory placement of a minimum percentage of building streetwalls on the property line, as well as required amounts of glass and entrance doors at the ground level.

V. Detailed Description of Zoning Relief Requested

The following two special exceptions are being requested for the project:

- pursuant to § 2107 of the Zoning Regulations, a special exception to reduce the parking requirements for the project from 31 required spaces to 12 provided spaces, or, in the alternative, a parking variance; and

- pursuant to § 1903 a special exception for two deviations to the ARTS overlay design standards applicable to U Street, which is a designated "pedestrian" street in the ARTS Overlay zone.

A detailed description of the relief requested and the standards therefor are provided as follows:

A. ***Design Standard Deviations Special Exception***. Section 1903 of the Zoning Regulations provides for certain design standards for the major pedestrian streets within the ARTS Overlay including U Street on which the subject property fronts. This application requests permission to deviate from the following Section 1903 standards:

- § 1903.3 – Each new building on a lot that fronts on a pedestrian street shall be designed and built so that not less than seventy-five percent (75%) of the streetwall(s) to a height of not less than fifteen feet (15 ft.) shall be constructed to the property line between the subject lot and the abutting street right-of-way.

- § 1903.4 – Not less than fifty percent (50%) of the surface area of the streetwall(s) at the ground level of each building on a lot that fronts on a pedestrian street shall be devoted to display windows and to entrances to commercial uses or to the building.

    (a) [not applicable]

    (b) Entrances to the building, including entrances to shops and to the main lobby, shall be separated by not more than forty feet (40 ft.) on average for the linear frontage of the building.

This application is seeking a special exception to deviate from the 75% streetwall requirement at the property line because Metro easements do not permit any construction at the property line in front of the Metro escalators. The proposed project is set back from the property line for a substantial distance around the escalators in accordance with these easements, which were designed to protect the visibility of the station entrance and to protect WMATA's access to utilities and structure in and around the Metro station below.

The application also seeks a deviation from the requirement to provide entrances at the ground level within every 40 feet on average for the linear frontage of the building. Because the building must be pulled back from the escalators as described above, the linear frontage of the building is very lengthy. As a result, the entrance requirement of every 40 feet on average is excessive for the proposed project, far exceeding the reasonable needs of prospective tenants. If enforced, such a requirement would probably have the effect of discouraging, rather than encouraging,

the kinds of retail and public agency uses preferred in the ARTS overlay district.

Section 1903 provides that exceptions to these requirements may be granted by the BZA based on the following criteria:

(a) The use(s), building(s) or feature(s) at the size, intensity and location(s) proposed, will substantially advance the stated purposes of the ARTS Overlay District and will not adversely affect neighboring property or be detrimental to the health, safety, convenience, or general welfare of persons living, working, or visiting in the area;

(b) Exceptional circumstances affecting the property make compliance with the requirements of this chapter difficult or impossible, or the development provides alternative public benefits, in lieu of the excepted uses or features, that are of comparable value to the public in achieving the purposes or this chapter and of the Comprehensive Plan;

(c) The architectural design concept of the project will enhance the urban design features of the immediate vicinity in which it is located; Provided, that if a historic district or historic landmark is involved, the Board shall refer the application to the State Historic Preservation Officer for review and report;

(d) Vehicular access and egress are located and designed so as to minimize conflict with principal pedestrian ways, to function efficiently, and to create no dangerous or otherwise and objectionable traffic conditions; and

(e) The Board may impose requirements pertaining to design appearance, signs, size, landscaping, or other such requirements as it shall deem necessary to protect neighboring property and to achieve the purposes of the ARTS Overlay District.

B. ***Parking Reduction Special Exception or Parking Variance.*** A reduction in the parking requirements from 76 required spaces to 12 "legal" provided spaces is requested hereto. Five additional stacked spaces will also be provided. (See Exhibit "B" Zoning Computations Summary for detailed parking calculations.) Section 2107 authorizes the BZA to reduce or eliminate the amount of required parking spaces for nonresidential buildings or structures located outside the Central Employment Area where the building has a direct connection to a Metrorail station currently in operation or for which a construction contract has been awarded.

Section 2107 does not define what is meant by a "direct connection" (*i.e.*, whether there has to be a physical link between the Metro escalators or station and the project or whether it is sufficient for the project site to be directly linked to the Metro station). At the time of this writing, there are no BZA case precedents which define what degree of connection is required. (A recent application (BZA No. 16857) has this issue squarely before the BZA for an imminent decision.) We believe that the latter was intended and should be deemed sufficient in this case. In this case, an actual physical connection is precluded by the aforementioned WMATA easements.

Given the lack of definition as to the Section 2107 requirement of a "direct connection" to Metro, the applicant requests that a variance from the parking requirements also be advertised "in the alternative" in this case. As will be further detailed in the Applicant's prehearing submission, a variance is warranted due to the uniqueness of the subject property, which is improved with a Metro station entrance, but encumbered with easements which preclude the construction of any physical improvements (*i.e.*, connections) around the escalators as well as below-grade excavation for parking.

In addition to a Metro connection, Section 2107 requires evidence that the parking spaces normally required are not necessary to serve the use located in the building or structure. In determining whether the parking spaces are necessary, the Board is directed to give consideration to the following criteria set forth in Section 2107.2:

"(1) The nature and location of the building or structure and the nature and location of the connection to Metrorail;

(2) The maximum number of students, employees, guests, customers, or clients who can reasonably be expected to use the proposed building or structure at one time;

(3) The amount of traffic congestion existing or which the building or structure can reasonably be expected to create in the neighborhood;

(4) The quantity of existing public, commercial, or private parking, other than on-street parking, on the property or in the neighborhood which can reasonably be expected to be available when the building or structure is in use; and

(5) The availability of public transportation service in the area, or a ride-sharing program approved by the District of Columbia Department of Public Works." (§ 2107.2)

VI. Rationale for Granting Zoning Relief Requested

As indicated above, the proposed project is being developed on WMATA property which is improved with the escalators which lead down to the U Street/ Cardozo Metrorail Station. WMATA has selected Blue Horseshoe Partnership to develop the property with a four-story building which will be devoted to offices and ground-level retail uses.

Due to the location of the escalators above, and the Metrorail station and tunnel below, WMATA has encumbered the property with various easements which basically preclude construction of improvements in front of and around the escalators on U Street as well as the construction of below-grade space on the site. Further, the developer cannot meet the street frontage design requirements of the ARTS District which require that 75% of the project streetwalls along U Street be constructed to the U Street property line or the requirement for the placement of entrances every 40 feet on average at the ground level.

At the hearing, the Applicant will demonstrate in detail that the applicable special exception standards (set forth above) are met with the project as proposed. The deviations from the street frontage design requirements are necessary to successfully develop the WMATA site and such development is in the best interests of the public. The proposed project will promote activity and security around the Metrorail Station as desired by the City.

The parking reduction special exception is also justified in this instance due to the proximity of Metro. The reduced amount of parking which is proposed to be provided in the project will be adequate for the needs of the D.C. Commission on Mental Health (the "Commission") which will occupy all of the office space provided in the building. The Commission will be relocating to the site from their current building located a few blocks away at the corner of 16th and U Streets, N.W. The current building has no parking and no proximate Metro station. Many of the Commission's employees and most of its clientele come to the site by bus. The relocation will greatly improve the current condition by providing onsite parking as well as ready access to Metro.

1290 U St Employee Transportation Impact Survey

The proposed facility at 1290 U St. NW will be a relocation of the Department of Mental Health facility currently located at the Pride Building, 1536 U St. NW. The present facility houses administrative offices as well as the Multi-Cultural Center and the Northwest Family Children's Center with a total of approximately 35 employees. The proposed new facility will provide the same services with approximately 40 employees.

The new facility will provide both on-site client services and, in accordance with federal regulations, client services off site (i.e. client's homes) representing 51% of total services. Currently, approximately 65 clients visit the Pride Building offices on a daily basis and 99% of all clients utilize public transportation.

The existing offices at the Pride Building provides no parking for staff. The proposed facility at 1290 U St. will allocate 13 parking spaces, including 5 stacked spaces (for the exclusive use of Department of Mental Health employees). Recently, a survey was conducted of the current modes of transportation used by the existing employees and their intended mode of transportation upon relocation to the new facility:

Mode of Transportation	Current % (1536 U St.)	New % (1290 U St.)
Walk	13.5%	11%
Metro	8.0%	31%
Bus	11.0%	8%
Drive	67.5%	50%

As set forth in this survey, there will be a significant beneficial traffic impact as a result of the relocation of the facility directly above the U St/Cardozo Metro station. Currently over two-thirds of the employees drive and park in the neighborhood. At the proposed facility only one-half of the employees will drive, with approximately two-thirds of such employees able to park on site. At the present time, only 8% of employees travel by Metro. Upon relocation, that number will increase to over 30%.

Finally, a survey has been made of the amount of paid parking available for daytime public use within a 2 block radius of the new facility. This survey determined that there are potentially 100 spaces available, including parking in the Reeves Center at 14th & U St.

In conclusion, the relocation of this facility to 1290 U St. will have a very positive traffic impact on the neighborhood, because the DMH will gain 13 off-street parking spaces for use by employees who drive to work and other employees will be able to take Metro to and from work.

Attachment 6

ARNOLD & PORTER

202.942.5000
202.942.5999 Fax

555 Twelfth Street, NW
Washington, DC 20004-1206

Fax Transmittal

May 6, 2002

RECIPIENT NAME(S)	RECIPIENT FAX NUMBER(S)	RECIPIENT TELEPHONE NUMBER(S)	RECIPIENT ROOM #(S)
Steve Cochran Abdoulaye Bah	202 442-7638 202 671-0617	202 442-8806 202 671-0494	
SENDER	**SENDER'S TELEPHONE NUMBER**	**SENDER'S ROOM NUMBER**	
Cynthia A. Giordano	202 942-5840	1012	
CLIENT/MATTER NUMBER	**TIMEKEEPER NUMBER**	**NUMBER OF PAGE(S)**	
13820.005	4943	We are transmitting 35 page(s) (including this cover sheet)	
TRANSMISSION DEADLINE (DATE & TIME)		**ALTERNATE TELEPHONE NUMBER (OPTIONAL)**	
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MESSAGE

Please see attached.

MAY 6 PM2:23

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Attachment 6

1290 U STREET TRAFFIC AND PARKING ANALYSIS

Background

Blue Horseshoe LLC plans to develop an office and retail project located at the Southwest corner of 13th and U Streets N.W. within Square 274 in Washington, D.C. The site's improvements will consist of a 4-story, 44,000 square foot office building with ground floor retail. The building will be constructed directly on top of the U Street/Cardozo Metro station with "direct connection" to the metro escalators and elevator. The project will be supported by 12 on-site parking spaces and an additional 5 stacked parking spaces, for a total of 17 on-site parking spaces. The project's office space, consisting of the entire 2nd, 3rd and 4th floors, has been leased to the District of Columbia Department of Mental Health ("DMH"). This facility will be a relocation of the DMH facility currently located at the Pride Building, 1536 U St. NW. The proposed facility will house administrative and clinical offices of the Multi-Cultural Center and the Northwest Family Children's Center with approximately 35 employees. The new facility will provide both on-site client services and, in accordance with federal regulations, client services off site (i.e. client's homes, public schools) representing 51% of total services.

Parking

At the present time, the Pride Building provides no parking for DMH personnel. The proposed new facility at 1290 U St. will provide 13 parking spaces (including 5 stacked spaces) for the exclusive use of DMH employees. In addition, the facility will provide 4 parking spaces for the approximately 6,000 square feet of retail stores. [DMH has agreed to make all of their parking spaces available in the evenings and weekends, when the facility is closed, to accommodate the retail activity.]

Based on DMH's experience with the current facility at 1536 U St and with other comparable facilities throughout the City, 99% of all clients visiting the new facility are anticipated to utilize public transportation. Therefore, client activity will have no adverse traffic impact on the 13th & U St. corridor.

In addition, a survey was conducted of the current modes of transportation used by the existing employees and their intended mode of transportation upon relocation to the new facility:

Mode of Transportation	Current % (1536 U St.)	New % (1290 U St.)
Walk	13.5%	11%
Metro	8.0%	31%
Bus	11.0%	8%
Drive	67.5%	50%

As set forth in this survey, there will be a significant beneficial traffic impact as a result of the relocation of the facility directly above the U Street/Cardozo Metro station. Currently over 2/3 of the employees drive and park in the neighborhood. At the proposed

facility only ½ of the employees will drive, with approximately 2/3 of such employees able to park on site. At the present time, only 8% of employees travel by Metro. Upon relocation, that number will increase to over 30%.

Finally, a survey has been made of the amount of paid parking available for daytime public use within a 3-block radius of the new facility. This survey determined that there are potentially 100 spaces available, including parking in the Reeves Center at 14th & U St. The relocation of this facility to 1290 U St. will have a very positive traffic impact on the neighborhood, as contrasted with the current facility.

Existing Land Use and Traffic Situation

The subject property, consisting of 18,813 square feet of land, is currently used as an "open plaza" for the metro escalators and elevator as shown on Exhibit A. With regard to future vehicle trip generation to and from the proposed development, it is important to note the following:

1) The U Street/Cardozo metro station is situated underneath the subject property.
2) The subject property has "direct connection" from the building to the metro rail station.
3) In addition to the metro rail, the site is served by a number of metro buses, including a stop conveniently located at 13th & U St.
4) 99% of all clients visiting the facility will be utilizing public transportation.
5) The retail component of the project, which is only 6,000 square feet, is anticipated to draw customers primarily from the direct neighborhood including the new residential projects, i.e. The Lincoln Condominiums, the townhouse development in Square 236 (block bounded by 12th St, 13th St, V St. and W St.), and the proposed Ellington Plaza project on the north side of U St. NW between 13th St. and 14th St.

In connection with the Ellington Plaza development, a Traffic Impact Assessment study was performed by Osborne George and Associates (attached as Exhibit B). This recent study (July 26, 2001) specifically analyzed the traffic activity at the 13th St and U St. intersection. The study indicates that the 13th & U intersection currently operates at a very acceptable level of service and that is "well within the City's standard" (See Table 1 and conclusions on page 4 of Exhibit B).

Future Traffic Situation

In light of the following factors it is apparent that the proposed use will not have any appreciable impact on the traffic in the 13th & U St. intersection:

1) The project's access in relation to public transportation facilities.
2) The fact that 99% of clients utilizing the site will rely on public transportation.

3) Federal regulations require DMH to provide 51% of client services off site.
4) The additional number of parking spaces for DMH employees compared to the current facility.

It should be noted that Ellington Plaza, which consists of 186 apartment units and 15,000 square feet of retail, (is over 5 times larger in size and scope than the proposed project) was found to have no adverse impact on future traffic at the 13th & U intersection (see Tables 2 and 3 of exhibit B). Of additional interest, and as set forth in the Osborne George study, the current utilization of the Ellington site is a 200 car public parking lot. The elimination of this lot, even with the addition of the Ellington and the proposed facility at the Metro Plaza, will actually improve the traffic pattern of the area.

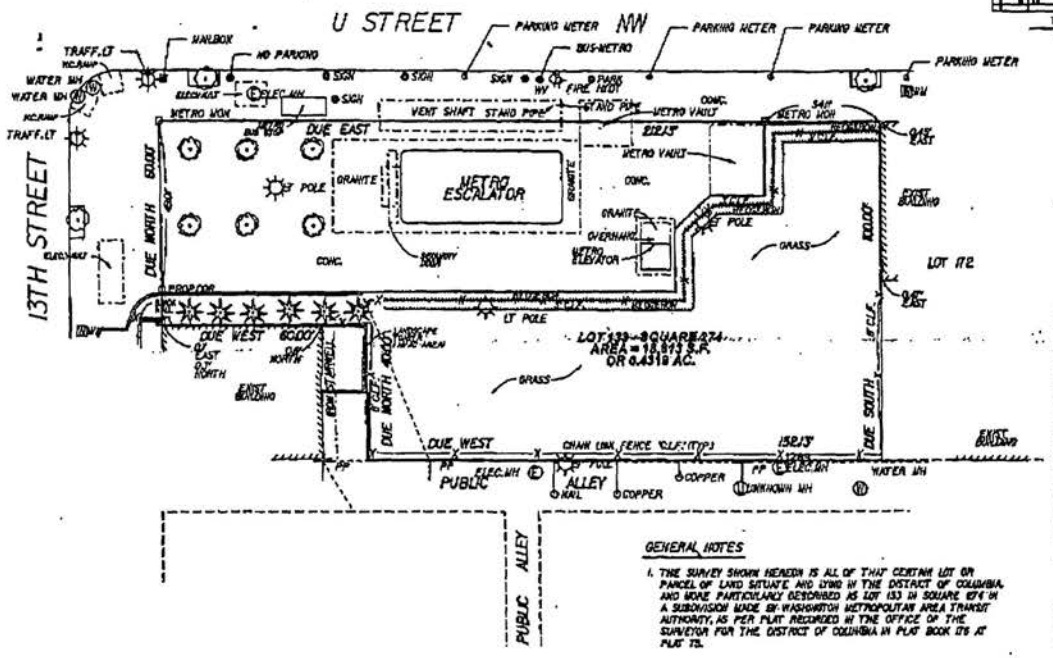
Summary and Conclusions

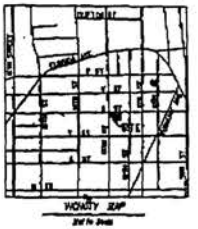
1) As set forth in the Osborne George study, the current and proposed traffic operational conditions at the 13th & U intersection are acceptable and well within the City's standards.
2) The proposed development is uniquely and favorably situated with a "direct connection" to the metro station.
3) The proposed development will generate very low vehicular traffic volumes during weekday morning and afternoon peak hours due to a) the limited number of employees who will be driving b) the fact that 51% of client services are required to be administered off site and c) the fact that 99% of clients visiting the site will travel by public transportation. Additionally, there will be virtually no weekend or evening traffic generated from the office building.
4) The limited retail activity, 6,000 square feet divided into 3 or more small stores, is not anticipated to generate driving traffic, since it will serve primarily the local neighborhood.
5) The Osborne George study indicates that future traffic anticipates virtually no delays at the 13th & U intersection and the elimination of the current parking facility may actually result in enhanced traffic conditions.
6) The present DMH facility provides no parking for the approximately 25 employees who drive, and as a result park in the 16th & U neighborhood. At the new facility it is anticipated that the number of employees driving will be reduced from 25 to 17 or18 with on-site parking available for 13 of such employees. The 16th & U corridor currently has almost no public parking available within a 3-block radius. The new facility will have approximately 100 public parking spaces available in a 3-block radius, including some in the Reeves Center at 14th & U.
7) DMH has agreed to make all of their parking spaces available during non-business hours in the evenings and on weekends to the neighborhood and the retail facilities.

All of the foregoing demonstrates that the proposed project at 13th St and U St. NW will not have any appreciable adverse impact on traffic delays or parking within the 13th & U corridor.

05/08/02 14:25 FAX 202 942 5999 ARNOLD & PORTER 006/035

EXHIBIT A





LEGEND

- TELEPHONE PED.
- ELEC.TRANSFORMER
- ELEC.MANHOLE
- GAS VALVE/METER
- FIRE HYDRANT
- WATER VALVE
- WATER METER
- SEWER MANHOLE
- STORM DRAIN MH
- LIGHT POLE
- DECIDUOUS TREE
- EVERGREEN TREE
- FENCE POLE
- MAILBOX

SURVEYOR'S CERTIFICATE

TO BLUE HORSESHOE, LLC, WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY, AND FIDELITY NATIONAL TITLE INSURANCE COMPANY OF NEW YORK:

THIS IS TO CERTIFY THAT THIS MAP OR PLAT AND THE SUR ON WHICH IT IS BASED WERE MADE IN ACCORDANCE WITH "MINIMUM STANDARD DETAIL REQUIREMENTS FOR ALTA / ACSM LAND TITLE SURVEYS," JOINTLY ESTABLISHED AND ADOPTED BY ALTA, ACSM AND NSPS IN 1999, AND INCLUDES ITEMS 1, 2, 3, 4, 7, A, 8, 9, 10, 11(a), AND 14 OF TABLE A THEREOF, PURSUANT TO THE ACCURACY STANDARDS AS ADOPTED BY ALTA, NSPS AND ACSM AND IN EFFECT ON THE DATE OF THIS CERTIFICATION, THE UNDERSIGNED FURTHER CERTIFIES THAT THE SURVEY MEASUREMENTS WERE MADE IN ACCORDANCE WITH THE "MINIMUM ANGLE, DISTANCE, AND CLOSURE REQUIREMENTS FOR CONTROL LAND BOUNDARIES FOR ALTA/ACSM LAND TITLE SURVEYS."

DATED: JULY 10, 2001

BARBARA ANNETTE FLETCHER DILLMAN
PROFESSIONAL LAND SURVEYOR
MARYLAND REG. NO. 10062

STATE OF MARYLAND — BARBARA ANNETTE FLETCHER DILLMAN — No. 10062 — REGISTERED PROFESSIONAL LAND SURVEYOR

GENERAL NOTES

1. THE SURVEY SHOWN HEREON IS ALL OF THAT CERTAIN LOT OR PARCEL OF LAND SITUATE AND LYING IN THE DISTRICT OF COLUMBIA, AND MORE PARTICULARLY DESCRIBED AS LOT 133 IN SQUARE 274 IN A SUBDIVISION MADE BY WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY, AS PER PLAT RECORDED IN THE OFFICE OF THE SURVEYOR FOR THE DISTRICT OF COLUMBIA IN PLAT BOOK 175 AT PLAT 75.

2. THE PROPERTY AND SURVEY SHOWN HEREON HAS BEEN REVIEWED AGAINST THE ALTA PLAIN ENGLISH TITLE INSURANCE COMMITMENT NO. 000-1014, DATED FEBRUARY 19, 2000 BY FIDELITY NATIONAL TITLE INSURANCE COMPANY OF NEW YORK. THERE ARE NO EASEMENTS OF RECORD LISTED AMONG THE SCHEDULE B - SECTION 2 EXCEPTIONS THEREIN.

3. THE PROPERTY SHOWN HEREON LIES WITHIN FLOOD ZONE DESIGNATION "C" (AREA OF MINIMAL FLOODING) AS SHOWN ON THE FEMA FLOOD INSURANCE RATE MAP FOR THE DISTRICT OF COLUMBIA, WASHINGTON, D.C., COMMUNITY PANEL NUMBER 110001 0010 B, DATED NOVEMBER 15, 1985.

No.	REVISION	DATE	BY

ENGINEERING-PLANNING-EARTH SCIENCES-SURVEYING

GREENHORNE & O'MARA, INC.
9001 EDMONSTON ROAD, GREENBELT, MARYLAND 20770
(301) 982-2800 ©Latest Date Hereon

ALTA / ACSM LAND TITLE SURVEY
LOT 133, SQUARE 274, N.W.
U STREET - CORDOZA METRO STATION

JACKET | SCALE 1"=20'
CHKD | TOP
DRAWN | 1 OF 1
THIS SHEET | SHEET

EXHIBIT B

Technical Memorandum:

TRAFFIC IMPACT ASSESSMENT - PROPOSED ELLINGTON PLAZA RESIDENTIAL DEVELOPMENT, SQUARE 236, FOURTEENTH AND U STREETS, N.W., WASHINGTON, D.C.

Prepared for:

ELLINGTON PLAZA – D & K, INC., G.P.
c/o Donatelli & Klein, Inc.
7200 Wisconsin Avenue, Suite 310
Bethesda, MD 20814
Brian A. Rogers, P.E., Project Manager

Prepared by:

O. R. GEORGE & ASSOCIATES, INC.

10210 Greenbelt Road, Suite 310
Greenbelt, MD 20706
Tel: (301) 794-7700

July 26, 2001

O. R. GEORGE & ASSOCIATES, INC.

Traffic Engineers – Transportation Planners

10210 Greenbelt Road, Suite 310 • Greenbelt, MD 20706-2218
Tel: (301) 794-7700 • Fax: (301) 794-4400
E-mail: orgassoc@aol.com

MEMORANDUM

DATE: July 26, 2001

TO: Ellington Plaza - D & K, Inc., G.P.
c/o Donatelli and Klein, Inc.

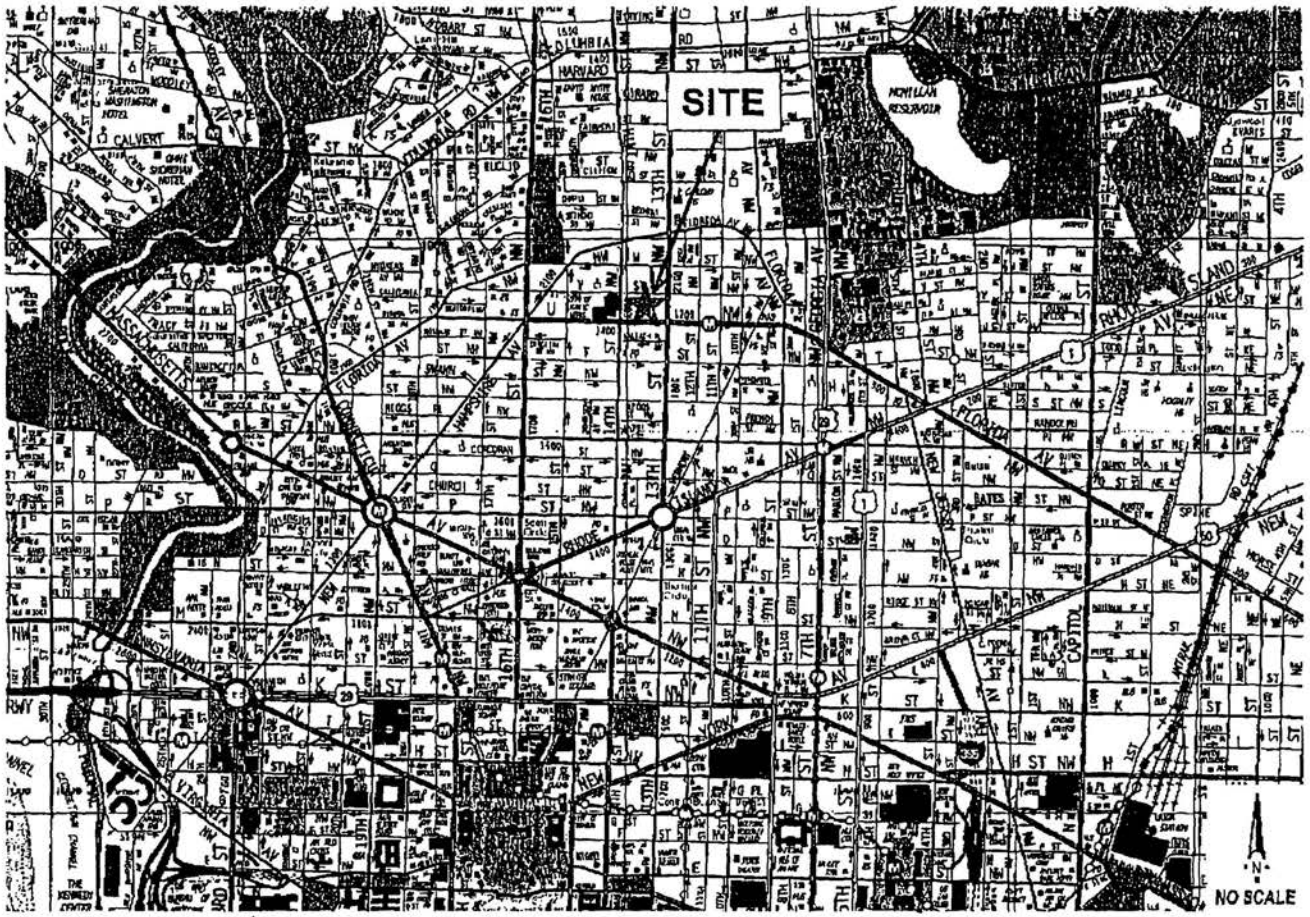
FROM: Osborne George

RE: Traffic Impact Assessment - Building Permit Application for Ellington Plaza, Northwest Washington, D. C.

INTRODUCTION AND BACKGROUND

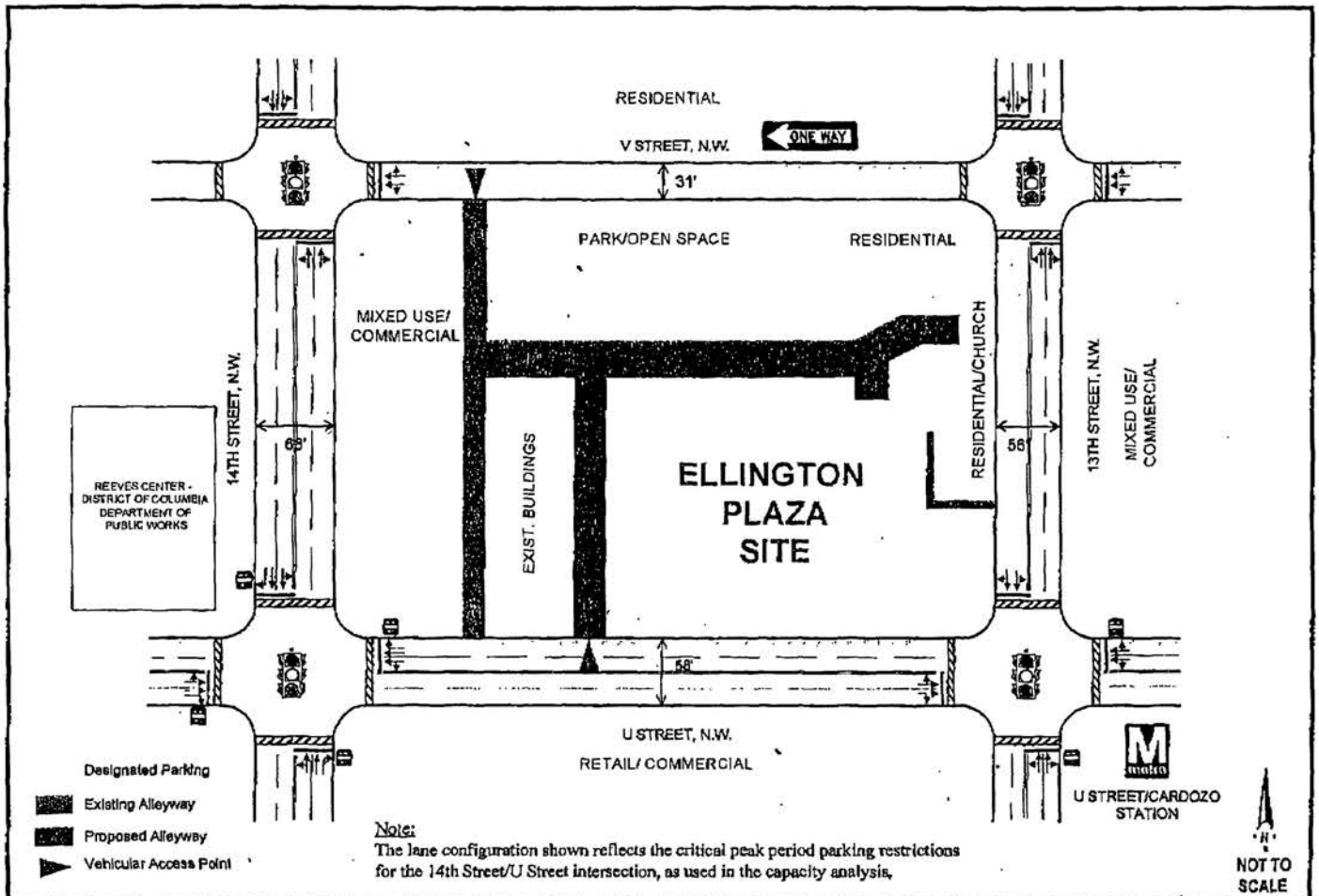
Ellington Plaza – D & K Inc., G. P., plans to develop a residential complex to be known as Ellington Plaza, to be located within Square 236 in the District of Columbia. That Square is bounded by Thirteenth, Fourteenth, "U" and "V" Streets in the Northwest sector of the City. Under Application No. 00-36 submitted to the City, and per Bill No. 13-797 (DC Law 13 - 247) the City Council approved the closure of (and other modifications to) the alleyway system within Square 236. As part of the alley closure application submission, our firm prepared and submitted a technical memorandum dated September 12, 2000. That analysis focused on the traffic impacts associated with the alleyway closure and related modifications. In view of the specific purpose of that application, the analysis was relatively cursory, and utilized more generalized planning procedures, notably involving the Critical Lane Volume capacity analysis technique for evaluating the operations at the adjacent intersections, which are critical to the access needs of the site.

The developer is currently processing building permit applications for the site improvements proposed within the southeastern portion of the Square. These will consist of an eight-story 186-unit residential apartment building with ground floor retail uses, supported by 177 on-site parking spaces. The City requires that an Environmental Impact Screening Form (EISF) be completed; and this form further stipulates certain traffic analysis assessments which are needed to quantify and support the developer's responses to certain questions on the form. This memorandum presents an updated analysis. In order to facilitate the presentation, which follows, Exhibit 1 shows the location of the subject site. Exhibit 2 shows the boundaries of the properties within the square, which are to be developed and the points of access from the roadways adjacent to the square.



O. R. GEORGE & ASSOCIATES, INC.
Traffic Engineers - Transportation Planners

EXHIBIT 1: Site Location Map - Proposed Ellington Plaza, Square 236, Northwest Washington D.C.



O. R. GEORGE & ASSOCIATES, INC.
Traffic Engineers - Transportation Planners

EXHIBIT 2 : Proposed Site Access - Ellington Plaza
Square 236, Northwest, Washington, D.C.

05/06/02 14:27 FAX 202 942 5999 ARNOLD & PORTER 010/035

EXISTING LAND USE AND TRAFFIC SITUATION

As shown in the applicant's site development plans, the subject property is currently improved with use including principally a commercial parking lot of approximately 200 spaces (including the adjacent area formerly used as the Washington Metropolitan Area Transit Authority area office.) With regard to future vehicle trip generation from the proposed development, it is important to note the following:

(a) The U Street/Cordozo Metrorail Station on the WMATA Green Line is situated diagonally across the 13th Street/U Street intersection from the subject property.

(b) The site is served by a number of Metrobus routes along both U Street and 14th Street, with bus stops conveniently located at the two (2) adjacent intersections.

(c) The proposed residential complex is in proximity to major employment centers, notably the Frank D. Reeves Municipal Center to the west, and Howard University/Hospital complex to the east.

In order to assess current traffic operating conditions, the turning movement counts taken at the adjacent intersections were utilized, and analyzed using the Highway Capacity Manual procedures as stipulated by the DPW Intermodal Planning Division. The intersection and peak hour turning movement counts are included as Exhibit 3. The capacity analysis results are summarized in Table 1 below; and the analysis worksheets are included as Attachment 1.

TABLE 1

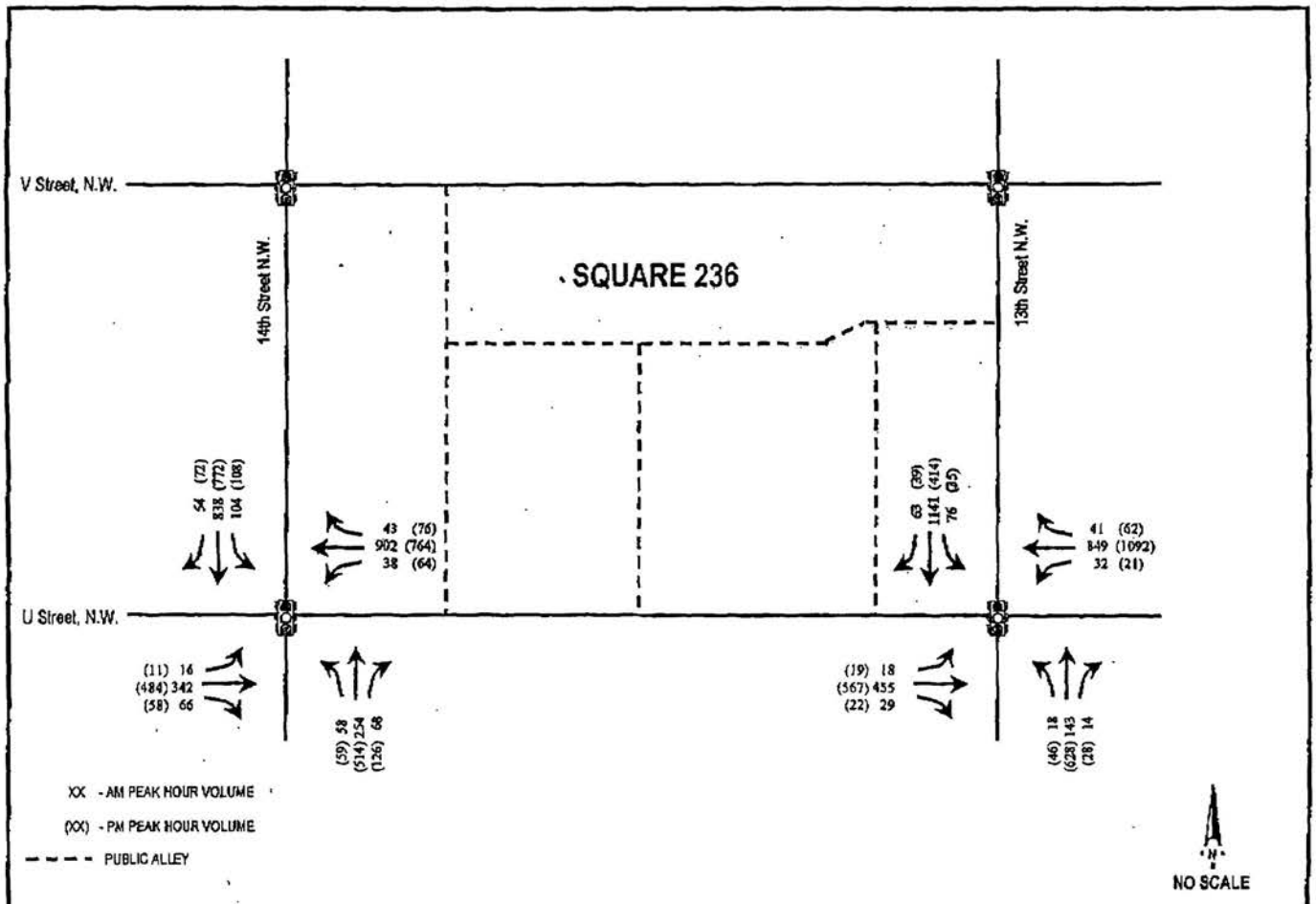
Ellington Plaza - Summary of Capacity Analysis Results - Existing Traffic Conditions

INTERSECTION	AM PEAK HOUR		PM PEAK HOUR	
	LOS	AVG. DELAY*	LOS	AVG. DELAY*
• 13th Street @. U St. NW	C	27.5	D	37.3
• 14th Street @ U St. NW	C	21.0	B	15.0

*Average Delay in Seconds.

Source: O. R. George & Associates.

The capacity analysis results presented in Table 1 shows that both study area intersections currently operate at quite acceptable levels of service, well within the City's standards. Particularly, they are well within the standards stipulated in Section III of the EISF (Question 15). That question stipulates a delay of 40.1 seconds. However, in recent applications submitted to the City, the review staff has accepted that the 40.1 second value is based on the 1994 Highway Capacity Manual. The current 1997 Manual stipulates that the upper limit of level of service E/F is 80 seconds. Correspondence with the City documenting this understanding is included as Attachment 2.



O. R. GEORGE & ASSOCIATES, INC.
Traffic Engineers - Transportation Planners

EXHIBIT 3 : Existing Peak Hour Traffic Volumes - Proposed Ellington Plaza Square 236, Northwest, Washington D.C.

FUTURE TRAFFIC SITUATION

As noted earlier, the application proposes to develop 186 apartment units and local serving/community retail within the Ellington Plaza. Considering the location of the development relative to the City's Central Employment area, and to public transportation facilities and services, the projected weekday morning and afternoon peak hour vehicle trip generation is shown in Table 2.

TABLE 2

Ellington Plaza - Projected Weekday Peak Hour Vehicle Trip Generation

	AM Peak Hour			PM Peak Hour		
Trip Rates	In	Out	Total	In	Out	Total
• Trips/Dwelling Unit	0.06	0.28	0.34	0.24	0.14	0.38
Trip Generation						
• Trips/186 Dwelling Units	11	52	63	45	26	71
• With adjustments for transit and other modes	6	26	32	23	13	36

The above table shows trip generation rates based upon the current edition of the Institute of Transportation Engineers Trip Generation Manual. The table also shows adjustments to reflect the assumption that fifty percent (50%) of the site trips during the morning and afternoon peak hours, would be via non-motorized modes of travel.

Based upon the level of vehicle trip generation shown in Table 2, and the multiple points of access for the site, it becomes immediately apparent that the proposed use will not have an appreciable impact. However, in order to provide a quantitative basis for the responses to the EISF, the projected trips were distributed and assigned to the study area road network; and the resulting total intersection turning movement volumes were analyzed using some procedures as was done for the existing traffic situation. The trip assignment is shown in Exhibit 4. The total traffic situation is shown in Exhibit 5. Table 3 presents the capacity analysis results (for the total traffic situation) and capacity analysis worksheets are presented as Attachment 3.

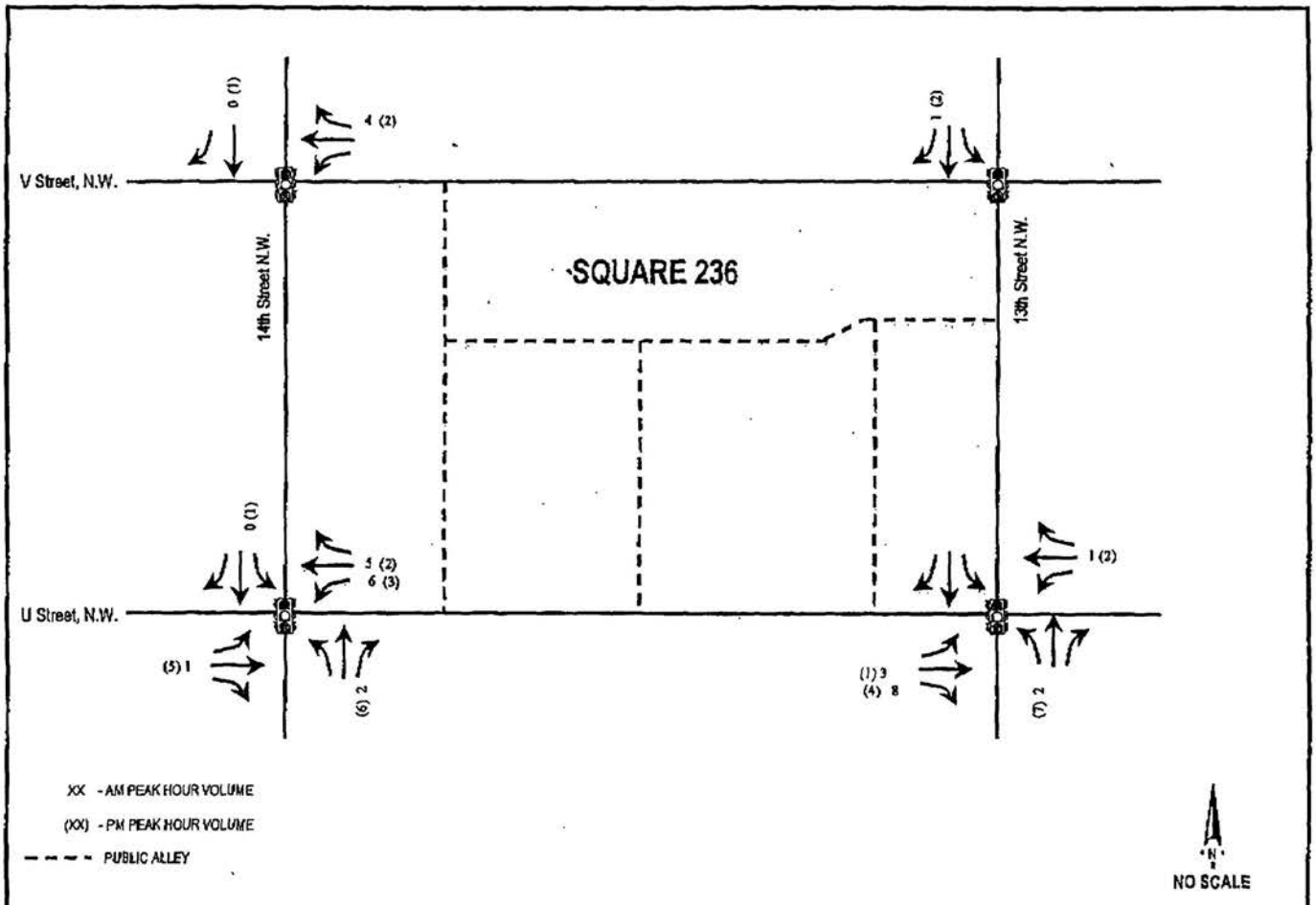
TABLE 3

Ellington Plaza - Summary of Capacity Analysis Results - Total Traffic Conditions

INTERSECTION	AM PEAK HOUR		PM PEAK HOUR	
	LOS	AVG. DELAY*	LOS	AVG. DELAY*
• 13th Street @ U St. NW	C	27.7	D	37.8
• 14th Street @ U St. NW	C	21.2	B	15.2

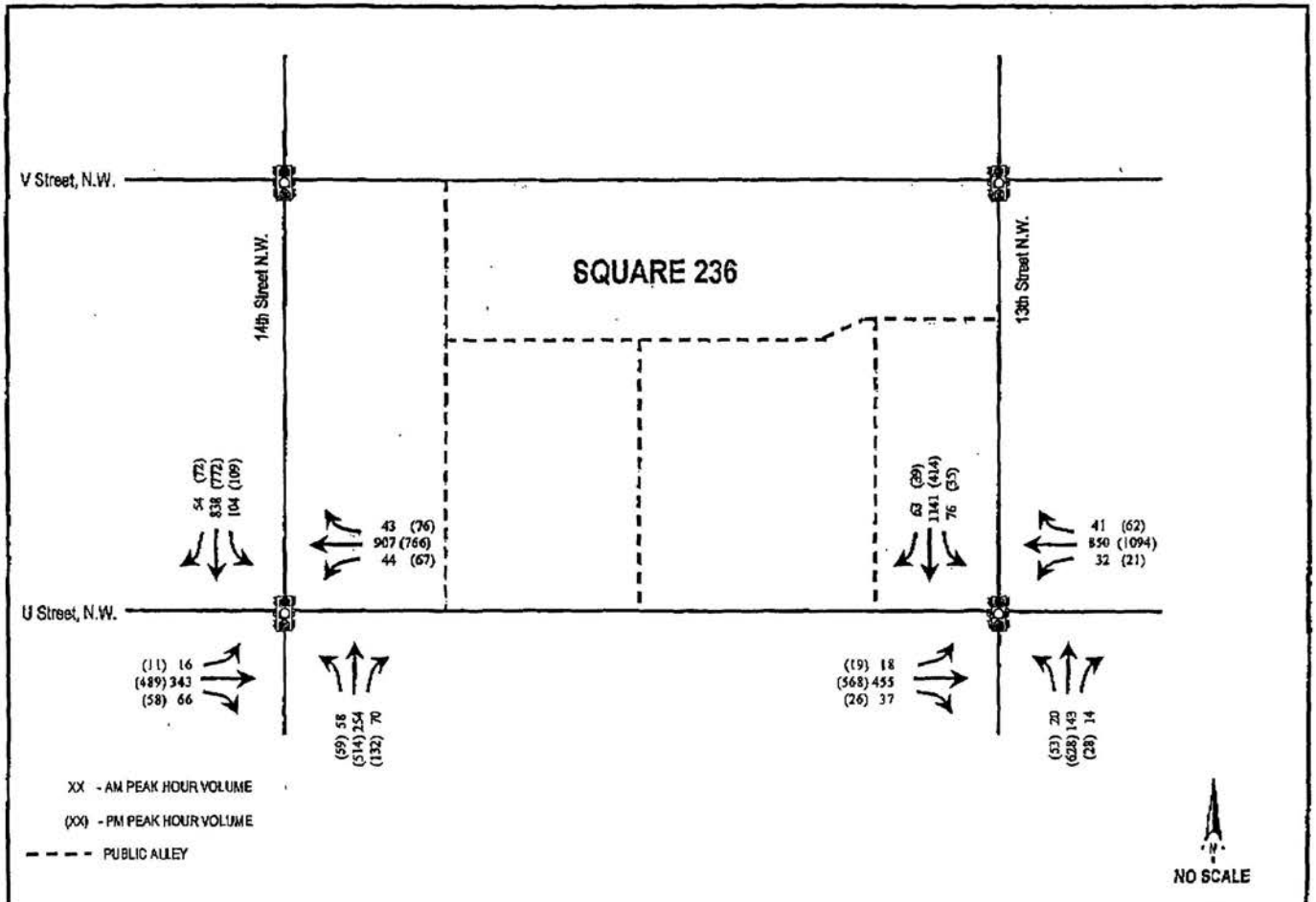
*Average Delay in Seconds.

Source: O. R. George & Associates.



O. R. GEORGE & ASSOCIATES, INC.
Traffic Engineers - Transportation Planners

EXHIBIT 4 : Peak Hour Traffic Assignment - Proposed Ellington Plaza
Square 236, Northwest, Washington D.C.



O. R. GEORGE & ASSOCIATES, INC.
Traffic Engineers - Transportation Planners

EXHIBIT 5 : Projected Peak Hour Traffic Volumes - Proposed Ellington Plaza Square 236, Northwest, Washington D.C.

05/06/02 14:28 FAX 202 942 5999 ARNOLD & PORTER 015/035

The traffic impact of the subject development can readily be seen by comparing Table 1 (Existing Traffic Conditions – Summary of Capacity Analysis Results) on page 4, with Table 3 (Total Traffic Conditions – Summary of Capacity Analysis Results) on page 6. The comparison shows that delays experienced at the two intersections will increase by less than one (1) second. Furthermore, all intersections will continue to operate well within the standards stipulated by the Department of Public Works, and on the EISF form of the Environmental Health Administration.

SUMMARY & CONCLUSION

The foregoing data, discussion and analysis have shown that development of the Ellington Plaza, as currently proposed will have no appreciable impacts on the delays experienced by motorists utilizing the adjacent intersections along U Street. More specifically, the analysis has determined the following:

(a) Current traffic operational conditions at the two (2) intersections adjacent to the site are quite acceptable, and are well within the City's standards.

(b) The proposed development is quite favorably situated relative to public transportation facilities and to major employment.

(c) The development will generate very low vehicular traffic volumes during weekday morning and afternoon peak hours. The traffic volumes generated will also be well distributed, thus diffusing potential impacts on any intersection.

(d) Analysis of the future total traffic situation shows virtually no change in the delays that would be experienced at the two key study area intersections.

In addition to the above specific findings, it is important to note that the analysis is conservative in its approach. *This is because it makes no adjustment for existing uses within the site, which would be eliminated by the proposed development.* These uses include (most notably) the existing 200±-space public parking lot within the existing site. We note that that this conservative approach allows for a considerable "factor of safety," which is appropriate for the planning process. This study also presented information regarding transportation mode splits projected for residents and visitors to the new development. The data and considerations presented in this report could be the basis for some of the responses required under Section III - Project Description, of the Environmental Impact Screening Form.

We trust that the above satisfies your requirements. If we can be of further assistance in this matter, please let us know. *Thank you!*

ORG/pcp

Attachments: As Noted

ATTACHMENT

1

CAPACITY ANALYSIS RESULT
EXISTING TRAFFIC CONDITIONS
(ELLINGTON PLAZA RESIDENTIAL DEVELOPMENT)

HCS: Signalized Intersections Release 3.2

Inter: 13th ST. @ U St., NW
Analyst: MFO
Date: 07/25/2001
E/W St: U Street, NW

City/St: Washington, DC
Proj #: Ellington Plaza
Period: AM Peak Existing
N/S St: 13th Street, NW

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	2	0	0	2	0	0	2	0	0	2	0
LGConfig		LTR			LTR			LTR			LTR	
Volume	18	455	29	32	849	41	18	143	14	76	1141	63
Lane Width		11.0			11.0			12.0			12.0	
RTOR Vol			10			25			10			10

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left	P				NB Left	P		
Thru	P				Thru	P		
Right	P				Right	P		
Peds	X				Peds	X		
WB Left	P				SB Left	P		
Thru	P				Thru	P		
Right	P				Right	P		
Peds	X				Peds	X		
NB Right					EB Right			
SB Right					WB Right			
Green	28.0					41.0		
Yellow	4.0					4.0		
All Red	2.0					1.0		

Cycle Length: 80.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
LTR	965	2757	0.56	0.350	23.3	C	23.3	C
Westbound								
LTR	1036	2959	0.91	0.350	38.3	D	38.3	D
Northbound								
LTR	1386	2705	0.14	0.512	10.4	B	10.4	B
Southbound								
LTR	1566	3055	0.87	0.512	24.2	C	24.2	C

Intersection Delay = 27.6 (sec/veh) Intersection LOS = C

HCS: Signalized Intersections Release 3.2

Inter: 13th ST. @ U St., NW
Analyst: MFO
Date: 07/25/2001
E/W St: U Street, NW

City/St: Washington, DC
Proj #: Ellington Plaza
Period: PM Peak Existing
N/S St: 13th Street, NW

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	2	0	0	2	0	0	2	0	0	2	0
LGConfig		LTR			LTR			LTR			LTR	
Volume	19	567	22	21	1092	62	46	628	28	35	414	39
Lane Width		11.0			11.0			12.0			12.0	
RTOR Vol			10			25			10			10

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left	P				NB	Left	P			
	Thru	P					Thru	P			
	Right	P					Right	P			
	Peds	X					Peds	X			
WB	Left	P				SB	Left	P			
	Thru	P					Thru	P			
	Right	P					Right	P			
	Peds	X					Peds	X			
NB	Right					EB	Right				
SB	Right					WB	Right				
Green		32.0						37.0			
Yellow		4.0						4.0			
All Red		2.0						1.0			

Cycle Length: 80.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
LTR	982	2456	0.76	0.400	26.3	C	26.3	C
Westbound								
LTR	1201	3002	1.05	0.400	64.9	E	64.9	E
Northbound								
LTR	1371	2965	0.51	0.463	16.6	B	16.6	B
Southbound								
LTR	1332	2879	0.39	0.463	14.9	B	14.9	B

Intersection Delay = 37.5 (sec/veh) Intersection LOS = D

HCS: Signalized Intersections Release 3.2

ıter: 14th ST. @ U St., NW
ıalyst: MFO
.te: 07/25/2001
W St: U Street, NW

City/St: Washington, DC
Proj #: Ellington Plaza
Period: AM Peak Existing
N/S St: 14th Street, NW

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
. Lanes	0	2	1	0	2	1	0	2	1	0	2	1
Config		LT	R		LT	R		LT	R		LT	R
lume	16	342	66	38	902	43	58	254	68	104	838	54
ne Width		10.0	10.0		10.0	10.0		11.0	11.0		11.0	11.0
OR Vol			20			20			20			20

ration 0.25 Area Type: All other areas

Signal Operations

ase Combination	1	2	3	4			5	6	7	8
Left	P				NB	Left	P	P		
Thru	P					Thru	P	P		
Right	P					Right	P	P		
Peds	X					Peds	X	X		
Left	P				SB	Left		P		
Thru	P					Thru		P		
Right	P					Right		P		
Peds	X					Peds	X	X		
Right					EB	Right				
Right					WB	Right				
ien	31.0						7.0	28.0		
low	4.0						4.0	4.0		
Red	1.0						0.0	1.0		

le Length: 80.0 secs

Intersection Performance Summary

r/ e	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
tbound								
	1224	3014	0.32	0.406	9.5	A	9.4	A
	512	1261	0.10	0.406	8.4	A		
tbound								
	1263	3108	0.80	0.406	16.8	B	16.5	B
	512	1261	0.05	0.406	8.0	A		
:hbound								
	1267	2502	0.26	0.506	4.0	A	4.0	A
	756	1493	0.07	0.506	3.4	A		
:hbound								
	1100	2983	0.97	0.369	36.5	D	35.6	D
	551	1493	0.07	0.369	10.2	B		

Intersection Delay = 21.0 (sec/veh) Intersection LOS = C

HCS: Signalized Intersections Release 3.2

ıter: 14th ST. @ U St., NW
ıalyst: MFO
ıte: 07/25/2001
'W St: U Street, NW

City/St: Washington, DC
Proj #: Ellington Plaza
Period: PM Peak Existing
N/S St: 14th Street, NW

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
. Lanes	0	2	1	0	2	1	0	2	1	0	2	1
Config		LT	R		LT	R		LT	R		LT	R
lume	11	484	58	64	764	76	59	514	126	108	772	72
ne Width		10.0	10.0		10.0	10.0		11.0	11.0		11.0	11.0
OR Vol			20			20			20			20

ration 0.25 Area Type: All other areas

Signal Operations

ase Combination	1	2	3	4			5	6	7	8
Left	P				NB	Left	P	P		
Thru	P					Thru	P	P		
Right	P					Right	P	P		
Peds	X					Peds	X	X		
Left	P				SB	Left		P		
Thru	P					Thru		P		
Right	P					Right		P		
Peds	X					Peds	X	X		
Right					EB	Right				
Right					WB	Right				
;en	30.0						7.0	29.0		
.low	4.0						4.0	4.0		
. Red	1.0						0.0	1.0		

:le Length: 80.0 secs

Intersection Performance Summary

ır/ ıe ı	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
tbound								
	1237	3142	0.45	0.394	11.3	B	11.1	B
	497	1261	0.09	0.394	9.0	A		
tbound								
	1143	2903	0.76	0.394	16.5	B	16.1	B
	497	1261	0.12	0.394	9.2	A		
thbound								
	1584	3053	0.37	0.519	3.9	A	3.8	A
	774	1493	0.14	0.519	3.2	A		
thbound								
	1048	2749	0.89	0.381	25.3	C	24.4	C
	569	1493	0.10	0.381	9.7	A		

Intersection Delay = 15.0 (sec/veh) Intersection LOS = B

ATTACHMENT

2

MISCELLANEOUS CORRESPONDENCE WITH
DISTRICT OF COLUMBIA AGENCIES
REGARDING INTERSECTION DELAY STANDARDS
(ELLINGTON PLAZA RESIDENTIAL DEVELOPMENT)

O. R. GEORGE & ASSOCIATES, INC.
Traffic Engineers - Transportation Planners

1738 Elton Road, Suite 321
Silver Spring, MD 20903
Tel: (301) 439-7722
Fax: (301) 439-7759
orgassoc@aol.com

FAX COVER SHEET

TO: Mr. Stan Tracy
DC Envir Health Administration FAX No.: 202-535-1371

FAX No.:

FAX No.:

FROM: Osborne George DATE: 02/12/01

REGARDING: PROJECT NAME: Trinity College Campus Center
Permit Application
NUMBER:

NUMBER OF PAGES INCLUDING COVER: 8

COMMENTS:

Greetings, Stan:

Thanks for your kind reception last Thursday. I am attaching the material you requested to support the Trinity Campus Center Building Permit Application. Kindest regards.

Osborne George

ORIGINAL BEING SENT: YES [ ] MAIL [ ]
NO [ ] COURIER [ ]
OTHER:

O. R. GEORGE & ASSOCIATES, INC.

Traffic Engineers – Transportation Planners

1738 Elton Road, Suite 321 • Silver Spring, MD 20903
Tel: (301) 439-7722 • Fax: (301) 439-7759
E-mail: orgassoc@aol.com

August 10, 2000

District of Columbia Environmental
Health Administration
51 N. Street, N.E., Room 5016
Washington, D. C. 20002-3823

Attn: Mr. Dan Wambsgans, Project Manager, Air Quality Division

Re: Residences at Park Hyatt, Washington, D. C. - Prospective Permit Application

Dear Mr. Wambsgans:

Further to our telephone conversation last week, this letter will confirm that we have been retained by Pritzker Residential, LLC, to provide traffic engineering analysis data which your Division may need to support environmental assessments pertaining to the developer's pending application for a construction permit for the referenced project. Following our conversation, we also spoke with Mr. Abdoulaye Bah of the Department of Public Works, Office of Intermodal Planning. Mr. Bah has indicated that he accepts the following as the basis for evaluating operational conditions at the adjacent intersection of 24th and M Streets, N.W.

a) Considering the magnitude of the proposed development (i.e., 85 multi-family/ apartment units) to be located within an urban setting, and the trip distribution patterns for peak hour trips, the impact of this development on the adjacent intersection is likely to be quite marginal.

b) While there may be some decrease in traffic within the general area due to the current "vacation" season and the congressional schedule, these factors may be significantly offset by increased visitor activity to the City during this period.

c) It would be acceptable to perform an analysis of the proposed development's traffic impact, for the environmental assessment, based upon data collected during the current Summer period.

Since you had indicated that your office would accept any understandings reached with Mr. Bah's office, we propose to proceed as follows:

1) Undertake a weekday morning and afternoon peak period turning movement count at the intersection of 24th Street at M Street, N. W., and analyze the data using the current version of the Highway Capacity Software.

2) Develop peak hour vehicle trip generation estimates for the subject development, and assign the site trips to the subject intersection. The assignment will be based on consideration of the site location relative to the Washington, D. C. Central Employment Area, and employment/business opportunities within the region generally, as well as considering the roadway network adjacent to the site.

2-4

3) Analyze the turning movement volumes to determine the impact of the site trips, and to obtain overall Levels of Service for the subject intersection.

We expect to forward the information to you within the next two (2) to three (3) weeks. By that time, the permit application should have been referred to your office.

In addition to the above, we note that the delay criteria specified in Question No. 3(f), of the "Environmental Impact Screening Form" calls for a maximum average delay of 40.1 seconds equivalent to an overall intersection Level of Service E or F. This delay value was based on the 1994 version of the Highway Capacity Manual. The current 1997 edition of the Manual and the year 2000 version of the Highway Capacity Software call for the following delay values as the upper limits:

Level of Service	Upper Limits (Delay in Seconds)
A	10
B	20
C	35
D	55
E	≤ 80
F	> 80

We are attaching a copy of pages 9-5 through 9-7 of the 1997 Highway Capacity Manual, dealing with Capacity and Level of Service for signalized intersections. The delay ranges for the six (6) Levels of Service categories are shown in Table 9-1 on page 9-7.

Once again, we appreciate your attention and assistance on this matter, particularly considering that the application is yet to be formally submitted for review by your division. Thank you.

Sincerely,
O. R. GEORGE & ASSOCIATES, INC.

Osborne R. George
President

ORG/jfk

Attachment: As Noted.

cc: Mr. Abdoulaye Bah (DPW/OIP)
Mr. Richard L. Boales (Pritzker Residential, LLC)
Mr. Robert N. Stockwell AIA, (WDG)

Ref: C:\My Docs\Letters\Park Hyatt (J)

2-5

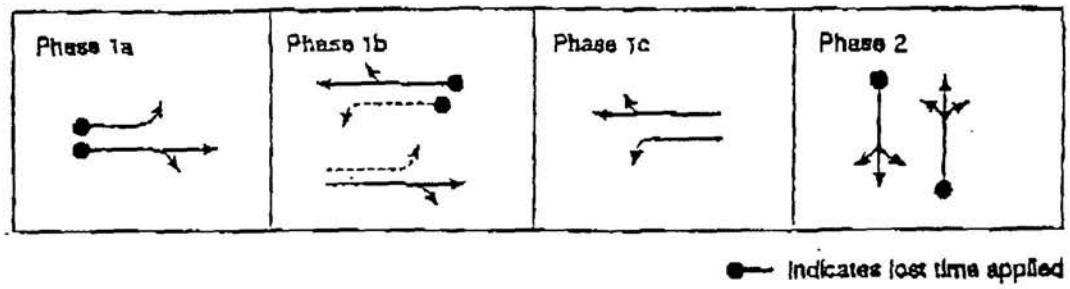


Figure 9-2. Protected-plus-permitted signal phasing.

- In Phase 1b, the EB through and left-turn movements continue. No lost times are assigned to the continuing movements in this phase. The WB through and left-turn movements begin in this phase, however, and a lost time t_L must be applied to these movements.
- In Phase 1c, only the WB through and left turns continue. Because these movements did not start in this phase, no lost time is applied here. Further, because no movements begin in Phase 1c, no lost time is applied to any movement in Phase 1c.
- In Phase 2, northbound (NB) and southbound (SB) movements begin, and a lost time t_L must be applied.

The total lost time in the signal cycle, L, is also important. This is the total lost time involved in the critical path through the signal cycle. The determination of the critical path and the finding of L are discussed later in this chapter.

APACITY AND LEVEL OF SERVICE

The concepts of capacity and level of service are central to the alysis of intersections, as they are for all types of facilities. In ersection analysis, however, the two concepts are not as strongly related as they are for other facility types. In previous chapters, same analysis results yielded a determination of both the capac- and the level of service of the facility. For signalized intersec- ns, the two are analyzed separately and are not related in a ple way to each other. It is critical to note at the outset, however, t both capacity and level of service must be fully considered evaluate the overall operation of a signalized intersection.

separate capacity is computed for each *lane group* ap- aching an intersection. A lane group is defined as one or more es that accommodate traffic and have a common stop line and acity shared by all vehicles. Capacity analysis results in the putation of volume-to-capacity (v/c) ratios for each lane group. v/c ratio is the actual or projected rate of flow on a designated group during a 15-min interval divided by the capacity of the group. Although the capacity of the entire intersection is not ed, a composite v/c ratio for the sum of the critical lane groups in the intersection is computed as an indication of the overall section sufficiency.

vel of service is based on the average control delay per vehicle arious movements within the intersection. Although v/c affects , there are other parameters that more strongly affect it, such quality of progression, length of green phases, cycle lengths, others. Thus, for any given v/c ratio, a range of delay values result, and vice versa. For this reason, both the capacity and of service of the intersection must be carefully examined.

The v/c ratio is a measure of capacity sufficiency, that is, whether or not the physical geometry and signal design provide sufficient capacity for the subject movement or movements. Delay is a measure of quality of service to the road user. Both must be analyzed to fully understand the anticipated operational characteristics of the intersection, and neither can be substituted for the other. As a practical matter, however, it must be recognized that an intersection cannot operate beyond its capacity indefinitely without experiencing excessive delay.

For planning purposes, it may be more appropriate to consider the provision of adequate future capacity as related to geometric design features. Delay may be less of a concern, because it may be improved significantly through coordination of signals and improved signal design. In the analysis of existing problem locations, delay may be a more significant consideration when improved controls are considered. Both of these important concepts are discussed in more detail in the sections that follow.

Capacity of Signalized Intersections

Capacity at intersections is defined for each lane group. The lane group capacity is the maximum rate of flow for the subject lane group that may pass through the intersection under prevailing traffic, roadway, and signalization conditions. The rate of flow is generally measured or projected for a 15-min period, and capacity is stated in vehicles per hour (vph).

Traffic conditions include volumes on each approach, the distribution of vehicles by movement (left, through, right), the vehicle type distribution within each movement, the location of and use of bus stops within the intersection area, pedestrian crossing flows, and parking movements near the intersection area.

Roadway conditions include the basic geometrics of the intersection, including the number and width of lanes, grades, and lane use allocations (including parking lanes).

Signalization conditions include a full definition of the signal phasing, timing, and type of control, and an evaluation of signal progression for each lane group.

The capacity of designated lane groups within an approach is evaluated and determined using the procedures in this chapter. This may be done to isolate lanes serving a particular movement or movements, such as an exclusive right- or left-turn lane. Lanes so designated for separate analysis were defined earlier as *lane groups*. The procedure in this chapter contains guidelines for when and how separate lane groups should be designated on an approach.

Capacity at signalized intersections is based on the concept of saturation flow and *saturation flow rate*, defined as the maximum

2-6

te of flow that can pass through a given lane group under prevail-
g traffic and roadway conditions, assuming that the lane group
as 100 percent of real time available as effective green time.
aturation flow rate is given the symbol s and is expressed in units
f vehicles per hour of effective green time (vphg) for a given
ne group.

The *flow ratio* for a given lane group is defined as the ratio of
e actual or projected demand flow rate for the lane group (v_i) to
e saturation flow rate (s_i). The flow ratio is given the symbol
$/s)_i$ (for lane group i).

The capacity of a given lane group may be stated as

$$c_i = s_i\,(g_i/C) \tag{9-3}$$

here

c_i = capacity of lane group i, vph;
s_i = saturation flow rate for lane group i, vphg; and
g_i/C = effective green ratio for lane group i.

The ratio of flow rate to capacity (v/c), often called the *volume-capacity ratio*, is given the symbol X in intersection analysis. is new symbol is introduced in this chapter to emphasize the ong relationship of capacity to signalization conditions and for sistency with the literature, which also refers to this variable the *degree of saturation*.

For a given lane group i:

$$X_i = (v/c)_i = v_i/(s_i g_i/C) = v_i C/(s_i g_i) \tag{9-4}$$

ere

$(v/c)_i$ = ratio for lane group i;
v_i = actual or projected demand flow rate for lane group i, vph;
s_i = saturation flow rate for lane group i, vphg;
g_i = effective green time for lane group i, sec; and
C = cycle length, sec.

ssible values of X_i range from 1.0 when the flow rate ds capacity to zero when the flow rate is zero. Values above ndicate an excess of demand over capacity.

he capacity of the full intersection is not a significant concept is not specifically defined here. Rarely do all movements at ntersection become saturated at the same time of day. It is the y of individual movements to move through the intersection some efficiency that is the critical concern.

nother capacity concept of utility in the analysis of signalized tersections, however, is the critical v/c ratio X_c, which is the tio for the intersection as a whole, considering only the lane ps that have the highest flow ratio (v/s) for a given signal . For example, in a two-phase signal, opposing lane groups during the same green time. Generally, one of these two groups will require more green time than the other (i.e., it ave a higher flow ratio). This would be the "critical" lane for the subject signal phase. Each signal phase will have a l lane group that determines the green-time requirements for ase. When signal phases overlap, the identification of these l lane groups becomes somewhat complex; this situation is ssed in Section II, *Methodology*.

critical v/c ratio for the intersection is defined in terms of l lane groups or approaches:

$$X_c = \sum (v/s)_{ci}\,[C/(C - L)] \tag{9-5}$$

where

X_c = critical v/c ratio for the intersection;
$\sum(v/s)_{ci}$ = summation of flow ratios for all critical lane groups, i;
C = cycle length, sec; and
L = total lost time per cycle, computed as the sum of the lost time t_i for all critical lane groups, i.

Equation 9-5 is useful in evaluating the overall intersection with respect to the geometries and total cycle length provided and also in estimating signal timings when they are unknown or not specified by local policies or procedures. It gives the v/c ratio for all critical movements, assuming that green time has been allocated in proportion to the v/s values. It is therefore possible to have a critical v/c ratio of less than 1.0 and still have individual movements oversaturated within the signal cycle. A critical v/c ratio less than 1.0, however, does indicate that all movements in the intersection can be accommodated within the defined cycle length and phase sequence by proportionally allocating green time. In essence, the total available green time in the phase sequence is adequate to handle all movements if allocated solely on the basis of v/s.

The X_c value can, however, be misleading when used as an indicator of the overall sufficiency of the intersection geometrics, as is often required in planning applications. The problem is that low flow rates dictate the need for short cycle lengths to minimize delay. Inspection of Equation 9-5 suggests that shorter cycle lengths produce a higher X_c, for a specified level of traffic demand. Furthermore, many signal timing methods, including the planning method described later in this chapter, are based on a fixed target value of X_c. This tends to make X_c independent of the demand volumes.

A broader indicator of the overall sufficiency of the intersection is therefore obtained by substituting the maximum cycle length acceptable to the agency responsible for the signal operation in place of the actual cycle length in Equation 9-5:

$$X_{cm} = \sum (v/s)_{ci}\,[C_m/(C_m - L)] \tag{9-6}$$

where

X_{cm} = critical v/c ratio based on the maximum acceptable cycle length, and
C_m = maximum acceptable cycle length, sec.

For planning purposes, X_{cm} offers a more appropriate indicator of the proportion of the actual capacity of the intersection that is being used by the specified traffic volumes. In the balance of this chapter, X_c will be used to represent the critical v/c ratio for operational analyses and X_{cm} will be used for planning analysis.

The analysis of capacity in this chapter focuses on the computation of saturation flow rates, capacities, and v/c ratios for various lane groups of the intersection. Procedures for these computations are described in greater detail in Sections II, *Methodology*, and III, *Procedures for Application*.

Level of Service for Signalized Intersections

Level of service for signalized intersections is defined in terms of delay, which is a measure of driver discomfort, frustration, fuel consumption, and lost travel time. The delay experienced by a motorist is made up of a number of factors that relate to control, geometrics, traffic, and incidents. Total delay is the difference

TABLE 9-1. LEVEL-OF-SERVICE CRITERIA FOR SIGNALIZED INTERSECTIONS

LEVEL OF SERVICE	CONTROL DELAY PER VEHICLE (SEC)
A	≤10
B	>10 and ≤20
C	>20 and ≤35
D	>35 and ≤55
E	>55 and ≤80
F	>80

between the travel time actually experienced and the reference travel time that would result during ideal conditions: in the absence of traffic control, in the absence of geometric delay, in the absence of any incidents, and when there are no other vehicles on the road. In Chapters 9, 10, and 11, only the portion of total delay attributed to the control facility is quantified. This delay is called *control delay*. Control delay includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. In contrast, in previous versions of this chapter of the HCM (1994 and earlier), delay included only stopped delay. In this chapter, control delay may also be referred to as *signal delay*.

Specifically, LOS criteria for traffic signals are stated in terms of the average control delay per vehicle, typically for a 15-min analysis period. The criteria are given in Table 9-1. Delay may be measured in the field or estimated using procedures presented later in this chapter. Delay is a complex measure and is dependent on a number of variables, including the quality of progression, the cycle length, the green ratio, and the *v/c* ratio for the lane group in question.

LOS A describes operations with very low control delay, up to 10 sec per vehicle. This level of service occurs when progression is extremely favorable and most vehicles arrive during the green phase. Most vehicles do not stop at all. Short cycle lengths may also contribute to low delay.

LOS B describes operations with control delay greater than 10 and up to 20 sec per vehicle. This level generally occurs with good progression, short cycle lengths, or both. More vehicles stop than with LOS A, causing higher levels of average delay.

LOS C describes operations with control delay greater than 20 and up to 35 sec per vehicle. These higher delays may result from fair progression, longer cycle lengths, or both. Individual cycle failures may begin to appear at this level. The number of vehicles stopping is significant at this level, though many pass through the intersection without stopping.

LOS D describes operations with control delay greater than 35 and up to 55 sec per vehicle. At level D, the influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, or high *v/c* ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.

LOS E describes operations with control delay greater than 55 and up to 80 sec per vehicle. This level is considered by many agencies to be the limit of acceptable delay. These high delay values generally indicate poor progression, long cycle lengths, and high *v/c* ratios. Individual cycle failures are frequent occurrences.

LOS F describes operations with control delay in excess of 80 sec per vehicle. This level, considered to be unacceptable to most drivers, often occurs with oversaturation, that is, when arrival flow rates exceed the capacity of the lane group. It may also occur at high *v/c* ratios below 1.0 with many individual cycle failures. Poor progression and long cycle lengths may also be major contributing factors to such delay levels.

Relating Capacity and Level of Service

Because delay is a complex measure, its relationship to capacity is also complex. The levels of service in Table 9-1 were established on the basis of the acceptability of various amounts of delay to drivers. Although local standards may vary, LOS C may be regarded as a desirable design objective. It is important to note that this concept is not related to capacity in a simple one-to-one fashion.

In previous chapters, the lower bound of LOS E was defined to be capacity; that is, the *v/c* ratio is by definition 1.0. This is not the case for the procedures in this chapter. It is possible, for example, to have delays in the range of LOS F (unacceptable) while the *v/c* ratio is below 1.0, perhaps as low as 0.75 to 0.85. Very long delays can occur at such *v/c* ratios when some combination of the following conditions exists: (*a*) the cycle length is long, (*b*) the lane group in question is disadvantaged by the signal timing (has a long red time), and (*c*) the signal progression for the subject movements is poor.

The reverse is also possible: a saturated lane group (i.e., *v/c* ratio greater than 1.0) may have short delays if (*a*) the cycle length is short or (*b*) the signal progression is favorable for the subject lane group, or both.

Thus, the designation LOS F does not automatically imply that the intersection, approach, or lane group is over capacity, nor does a level of service better than E automatically imply that unused capacity is available.

The procedures and methods in this chapter require the analysis of both capacity and LOS conditions to fully evaluate the operation of a signalized intersection. It is imperative that the analyst recognize the unique relationship of these two concepts as they apply to signalized intersections.

Computational Alternatives for Delay and Level of Service

This chapter defines the level of service at a signalized intersection in terms of average control delay per vehicle. It also establishes threshold delay values for the various levels of service and presents a detailed computational methodology for estimating delay. The methodology prescribed here represents a broad accumulation of professional knowledge, experience, and research. As such, it offers a consistent and impartial means of assessing the level of service at signalized intersections under a full range of operating conditions.

It must be recognized, however, that delay is a quantity that may be directly measured in the field. The results of the computations described in this chapter cannot be expected to supersede the results of properly executed field studies that measure delay. Furthermore, the literature contains a variety of models that offer delay estimation techniques based on complex software algorithms, some of which require additional field data. Some of these models are designed to deal explicitly with unusual situations of geometrics, signal operation, driver behavior, and so forth. It is not, therefore, possible to argue the superiority of the macroscopic model contained in this chapter over all of the more micro-