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December 7, 2004

NORMAN M. GLASGOW, JR.
202-419-2460
Internet Address:
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VIA HAND DELIVERY

D.C. Board of Zoning Adjustment
Suite 210
441 4th Street, N.W.
Washington, D.C. 20001

Re: **Application No. 17232 for Variance and Special Exception**
1400-20 Park Rd., NW; 3100-3220 14th St., NW; and 1417-37 Irving St., NW
Square 2674, Lots 719, 720, 812, 832, 863, 866,869, 870, 871 and 872

Honorable Members of the Board:

On behalf of the applicant in the above-referenced case, enclosed please an original and twenty copies of its supplemental prehearing submission in support of the application for variance and special exception relief.

Should you have any questions regarding this matter, please do not hesitate to contact me at (202) 419-2460.

Sincerely,

Norman M. Glasgow, Jr.

Enclosure

cc: Ellen McCarthy, Steven Cochran, Office of Planning (w/enclo. - via Hand Delivery)
ANC 1A (w/enclo. - via Hand Delivery)
Thomas Ruffin, Jr., Esq. (w/enclo. - via Hand Delivery)

BZA
Case No. 17232
Exhibit No. 37

Board of Zoning Adjustment
District of Columbia
CASE NO. 17232
EXHIBIT NO. 37A1

BEFORE THE BOARD
OF ZONING ADJUSTMENT
FOR THE DISTRICT OF COLUMBIA

APPLICATION OF RLA REVITALIZATION CORPORATION	**BZA APPLICATION NO. 17232** **HEARING DATE: NOVEMBER 16, 2004** **ANC 1A**

SUPPLEMENTAL STATEMENT OF THE APPLICANT

I.
INTRODUCTION

This supplemental statement is submitted on behalf of RLA Revitalization Corporation, the owner of property located at 1400-1420 Park Road, N.W.; 3100-3220 14th Street, N.W.; and 1417-1437 Irving Street, N.W., Lots 719, 720, 812, 832, 863, 866, 869, 870, 871 and 872 in Square 2674 (the "Site") in support of the application to the Board of Zoning Adjustment (the "Board") for a special exception from the roof structure requirements (§411) and a variance from the parking requirements (§2101.1). This relief is requested in order to permit the construction of a mixed-use commercial establishment, including retail uses, a health club, and other uses permitted as a matter of right in the C-3-A zoning district (the "Project").

The Board scheduled a public hearing on Tuesday, November 16, 2004 to consider the application. The Applicant was prepared to proceed with its case, but Kelsey Temple Church of God in Christ and the Temple Church Building & Economic Development Corporation (collectively referred to herein as "Parties in Opposition") sought to dismiss the application or to reschedule the hearing. The Board rescheduled the hearing for December 21, 2004 in order to provide the

Applicant time to address concerns raised by Board Members and the Office of Planning (OP), to allow the Applicant time to review and respond to the report filed by the District Department of Transportation (DDOT), and to allow the Parties in Opposition time to prepare their case. Each of the issues raised by the Board and directed to the Applicant during the public hearing are addressed in this Supplemental Statement of the Applicant.

II.
PROJECT DESIGN AND DEVELOPMENT

A. Overview of Project Design

1. Summary of Project

This Project has a long history in the District. Pursuant to Order No. 16858, dated May 16, 2002, the Board granted a special exception to allow a reduction in parking for a previous version of the Project. Since that time, the Project has been reduced in size from approximately 550,000 square feet to approximately 516,949 square feet, and the number of parking spaces has been reduced from 1,364 to 1,000 spaces in a garage that will have two below grade levels instead of three. Moreover, pursuant to D.C. Resolution 15-653, the Council of the District of Columbia approved the issuance of tax increment revenue bonds to assist in the development costs associated with constructing the parking facility for the Project and costs associated with creating a small business assistance program around the Project's area.

The Applicant's current proposal calls for the construction of a three floor multi-use commercial establishment that will include approximately 516,949 square feet of gross floor area. See Architectural Plans and Drawings, attached hereto as Exhibit A. As indicated on the tabulation of development data included in page Z102 of the Architectural Plans and Drawings, the Project will only have an FAR of approximately 2.39, which is below the permitted density of 2.5 for commercial use.

The Project will include Target, which will own its portion of the building, other permitted retail uses, and a health club. Target will occupy approximately 178,000 gross square feet of the Project. The proposed building will have a height of 64.4 feet to the point of measurement. The immense roof areas, which measure approximately 189,000 square feet, will be improved with several roof structures. The Applicant also proposes to provide two levels of below grade parking that will provide a total of 1,000 parking spaces for the Project.

2. Changes to Sidewalk Design

OP and DDOT submitted reports recommending approval of the requested parking variance. However, OP and DDOT conditioned their recommendations upon the Applicant reconfiguring certain sidewalk widths around the Site. As the letter attached hereto as Exhibit B from OP indicates, the Applicant has communicated with OP and DDOT regarding sidewalk widths. The Applicant has agreed to the following:

1. The Applicant will provide a 120-foot (6 car) lay-by in front of the main entrance of the Project, with a minimum sixteen foot (16') sidewalk, as measured from the farthest edge of structure to the edge of the curb running the length of 14th Street between Irving and Park Road. OP and DDOT agreed to a 3 foot (3') reduction in travel lanes and lay-by as

per OP/DDOT plans: i.e., 1 foot in each of two travel lanes (14' reduced to 13') and a 1 foot reduction in lay-by width from 8' to 7'.

2. The Applicant will provide an additional 60-foot (3 car) lay-by north of the main entrance lay-by, with a "bumpout" in between the two lay-bys to allow for minimum 16' sidewalk.

3. The Applicant, DDOT and OP agree that loading in these two lay-bys, and customer assisted loading in the parking garage, is sufficient to allow for the removal of the lay-by on Park Road. This allows for a minimum sidewalk width of fifteen feet eight inches (15'-8").

4. Along Irving Street, dependent upon the length of the left turn queue (to be assessed by DDOT), OP and DDOT agree to create "bumpouts" on both sides of the shopping center's vehicular exit on Irving Street to provide for wider sidewalks and street furnishing/planting zones. The Applicant agrees to setback that portion of the building along Irving Street immediately adjoining the left-turn lane for additional sidewalk width. Under this scenario, the minimum sidewalk width would be eleven feet six inches (11'-6"), again from face of farthest edge of structure to edge of curb. There would be a minimum 10' clear walkway, with the remainder to be used for a safety-promoting edge strip. The location and width of planting strips will vary.

5. The Applicant has prepared new drawings reflecting these changes and has presented them to OP and DDOT for discussion, review and agreement.

The Architectural Plans and Drawings attached hereto as Exhibit A reflect these sidewalk design changes on sheets Z003 and Z2004

B. Compliance with Burden of Proof

During the public hearing on November 16, 2004, the Board requested additional information regarding the uniqueness of the Site and the practical difficulties associated with complying with Section 2101.1 of the Zoning Regulations, which provides that a retail or service establishment measuring more than 3,000 square feet in the C-3-A zoning district must provide 1 parking space for each additional 300 square feet of gross floor area and cellar floor area. The

Applicant's proposed building will have a gross floor area of approximately 516,949, however only approximately 480,611 square feet is included in the parking calculation, since appropriate elements are excluded from the calculation. Thus, the Applicant is required to provide 1,592 parking spaces. However, the Applicant can only provide 1,000 parking spaces.

The Board is authorized to grant an area variance where it finds that three conditions exist: (1) the property is unusual because of its size, shape or topography or other extraordinary or exceptional situation or condition; (2) the owner would encounter practical difficulties if the zoning regulations were strictly applied; and (3) the variance would not cause substantial detriment to the public good and would not substantially impair the intent, purpose and integrity of the zone plan as embodied in the Zoning Regulations and Map. See D.C. Code §6-641.07(g)(3) and 11 DCMR §3103.2; see also *French v. District of Columbia Board of Zoning Adjustment*, 658 A.2d 1023, 1035 (D.C. 1995) (*quoting Roumel v. District of Columbia Board of Zoning Adjustment*, 417 A.2d 405, 408 (D.C. 1980)), and *Capitol Hill Restoration Society, Inc. v. District of Columbia Board of Zoning Adjustment*, 534 A.2d 939 (D.C. 1987).

As outlined below, the Applicant has met its burden of proof in establishing that the Site is unique and that there are practical difficulties associated with complying with Section 2101.1 of the Zoning Regulations.

1. Uniqueness of Site

a. Size and Shape of Site

It is well-established that a property can be unique because of its size, shape or topography. See *French v. District of Columbia Board of Zoning Adjustment*, 658 A.2d 1023, 1035 (D.C. 1995) (*quoting Roumel v. District of Columbia Board of Zoning Adjustment*, 417 A.2d 405, 408 (D.C. 1980)). In this case, the Site is unusual, in part, because it is very large and has an unusual shape. The Site contains approximately 215,871 square feet of land. As the land areas chart attached hereto at Exhibit C indicates, the average land area of privately held properties within 225 feet of the Site is only 7,440 square feet, and the largest property other than the Site has a land area of approximately 53,495 square feet, which is only approximately 24% of the size of the Site. Unlike other properties in the immediate area, due to the large size of the Site, it is ideally suited for uses to accommodate large tenants, including "big box" retailers such as Target, that require large floor plates. Moreover, the Site is unique because of its unusual shape, its angeled lot lines and the fact that the Site is a corner lot fronting on four streets and has frontage of approximately 510 feet on Irving Street, 510 feet on 14th Street, 225 feet on Park Road and 245 feet on Hiatt Place.

b. Water Table

In addition to being extremely large and having an unusual shape, the Site also suffers from groundwater conditions that render it unique. The requirement to provide 1,592 parking spaces would force the Applicant to construct a third, full-sized level of parking, and a fourth smaller level of parking. However, a subsurface

investigation report prepared by the Applicant's engineer, Mueser Rutledge Consulting Engineers, attached hereto as Exhibit D indicates that groundwater levels are approximately 6'-8" above the finished floor elevation of the third parking level and that mitigation of this problem will require an extensive drainage and waterproofing system.

c. Presence of Metro Rail Tunnel Below 14th Street

The Site is also unique because the Columbia Heights Metro Station, which has entrances on Irving Street and 14th Street, is beneath the Site. As discussed in the memorandum prepared by Clark Construction, attached hereto as Exhibit E, the Site's location adjacent to the metro station requires an additional WMATA surcharge and additional monitoring costs in order to proceed with the proposed project. These factors combine to render the Site unique since other parcels in the District would not encounter the same degree of difficulty in order to provide below-grade parking.

2. Practical Difficulty of Complying with Section 2102.1

a. Parking Demand

The Board has recognized that providing more parking spaces than the anticipated parking demand for a project can constitute a practical difficulty. See Application and Order Nos. 16131, 16163 and 17165. As discussed in the Revised Parking Reduction Analysis prepared by the Applicant's traffic consultant, the 1,000 proposed parking spaces is sufficient to meet the expected demand since the practical parking need rate results in only 983 spaces. The parking reduction analysis includes a "practical need calculation" based on retail industry standard

parking ratios observed in practice at shopping centers and documented by the Urban Land Institute (ULI). The practical need calculation, a summary of which is illustrated in the table below, demonstrates that for approximately 40% of the operational hours of the year, over half of the 1,000 parking spaces provided by the Applicant will remain empty, and that the peak parking demand of 983 parking spaces is 98% of what the Applicant proposes to provide.

Peak Parking Demand Calculations

Amount (GLA)	ULI Ratio	Employee Reduction	Transit Reduction	Adjusted Ratio	Adjusted Demand
445,000 SF	4 spaces per 1,000 SF	(15%)	(35%)	2.2 spaces per 1,000 SF	983

Thus, based upon the practical parking needs for the Project, the 1,000 parking spaces provided will be sufficient to meet the parking needs of the development. Forcing strict compliance with Section 2101.1 of the Zoning Regulations would require the extremely costly construction of additional parking spaces that will not be utilized.

As requested by the Board during the public hearing, a copy of relevant portions of the Urban Land Institute *Parking Requirements for Shopping Centers, 2nd Edition*, and the Cambridge Systematics *Columbia Heights/Mount Pleasant Transportation Study*, both of which are cited in the Revised DC USA Parking Reduction Analysis prepared by the Applicant's traffic consultant, and a copy of the *Development-Related Ridership Survey II* prepared by WMATA, which is cited in the Revised Traffic Impact Analysis, are attached hereto as Exhibits F, G, and H, respectively.

b. Cost Of Constructing Additional, Unnecessary Parking Levels

The preliminary construction budget analysis prepared by Clark Construction, attached hereto at Exhibit E, indicates that to provide the total amount of parking spaces required by the Zoning Regulations, the Applicant would have to construct a full third level and a partial fourth level of parking. As indicated in the construction budget analysis, the estimated cost of constructing the additional parking levels is approximately $23.8 million, approximately $40,000 per space. The cost to construct the first two levels of parking is approximately $27,600 per space, meaning that the additional spaces would cost approximately fifty percent more than the spaces on the first two levels.

The preliminary construction budget analysis also details the factors contributing to the cost premiums, as follows:

- *Groundwater Levels* - The Subsurface Investigation report prepared by Mueser Rutledge, dated April 13, 2004, indicates that actual groundwater would be approximately 6-8' above the finished floor elevation of the 3rd parking level. Project construction costs and time will be significantly increased to handle major site dewatering and higher soil stabilization costs associated with deeper excavation in super saturated soils. Mitigation of this problem for the life of the building will require an extensive drainage and waterproofing system added to the current design. Increased safety risks during construction and ongoing flooding risks during the life of the building will need to be dealt with. Other continual costs may include a pumping system (including a connection and increased sizing to the emergency generator), and District dewatering charges. There are also operational costs involved including the electrical consumption charges for the pumping system that are not included in the estimate above. A fourth parking level may also require a thicker slab on grade.

- *WMATA Tunnel* - A WMATA subway tunnel runs adjacent to the site on 14th Street. According to the structural engineers, there would be a premium associated with the additional WMATA Surcharge as well as increased monitoring costs. There will also be additional monitoring costs for constructing the third and fourth levels.

- *Sheeting/Shoring/Underpinning Premium* - The additional parking levels are much more difficult for sheeting and shoring and involve exponentially higher loads on the sheeting as the excavation gets deeper. Therefore the cost of sheeting/shoring/underpinning is substantially higher than the upper floors. Support of the existing facade will also increase.

- *Design Inefficiencies* - Adding additional parking levels require that many design elements that are not based on the number of cars, such as elevators, exit stairs and parking ramps be extended to the lower levels. This results in an extremely high incremental cost per parking spot. In addition, the additional parking levels may increase the size of garage exhaust ventilation ductwork that must run through the building to the roof. All exhaust fans serving these areas will need to be increased accordingly.

- *Increased Construction Schedule* - The third parking level will add approximately four months to the overall construction schedule and the partial fourth parking level an additional two months. This will result in additional costs for project management, and construction general conditions.

- *Exposure to Unforeseen Conditions* - The deeper the excavation, the higher the risk of project exposure to the unexpected. These exposures may be in the form of unsuitable materials, undocumented utilities and/or adverse weather conditions. The success of the construction project is largely how quick we can get out of the hole and get the shell of the building completed and dried-in. Normal excavations are vulnerable to adverse weather conditions. Deep excavations in supersaturated soils with continual dewatering systems are very vulnerable and unfortunately have longer exposure periods due to the many related support activities and safety measures that must be taken.

c. Legislation

The feasibility of the entire project has always been, and continues to be, based upon financial assistance from the District Government. The legislation passed by the Council to assist in funding this development capped the public financing for the Project at approximately $42 million, but the net available to the developer for construction is approximately $35 million. The number of parking spaces proposed was based on the Project budget assuming the maximum amount of public financing. The amount of retail space included in the Project likewise is a

function of the per square foot demand for the number of parking spaces provided. In sum, additional parking spaces cannot be supported by the Project.

III.
EXHIBITS SUBMITTED IN SUPPORT OF THE APPLICATION

Exhibit A:	Architectural Plans and Drawings;
Exhibit B:	Letter from Office of Planning;
Exhibit C:	Land Area Chart;
Exhibit D:	Mueser Rutledge Consulting Engineers Subsurface Investigation Report;
Exhibit E:	Clark Construction analysis of costs to provide additional full and partial levels of parking;
Exhibit F:	Urban Land Institute, *Parking Requirements for Shopping Centers*
Exhibit G:	Cambridge Systematics, *Columbia Heights / Mount Pleasant Transportation Study*
Exhibit H:	WMATA, *Development-Related Ridership Survey II*
Exhibit I:	Outline of Testimony of Drew Greenwald, Project Developer;
Exhibit J:	Outline of Testimony of Michael L. Prifti, Project Architect;
Exhibit K:	Outline of Testimony of Lou Slade, Traffic Consultant; and
Exhibit L:	Outline of Testimony of Steven E. Sher, Land Planner.

IV.
WITNESSES

A. Drew Greenwald, Project Developer

B. Michael L. Prifti, Project Architect

C. Lou Slade, Traffic Consultant

C. Steven E. Sher, Land Planner

V.
CONCLUSION

For the reasons stated above, the requested relief meets the applicable standards for area variances and special exception relief under the Zoning Regulations. Accordingly, the Applicant respectfully requests the Board to grant the application.

Respectfully submitted,

HOLLAND & KNIGHT, LLP

By: _____
Norman M. Glasgow, Jr.

By: _____
Kyrus L. Freeman*

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2430366_v5

A

BOWER LEWIS THROWER ARCHITECTS

DC USA

Washington DC Columbia Heights Park Road and Irving Street 14th Street and Hiatt Place

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PROJECT NO: 756102

DATE:

DRAWN BY:

CHECKED BY:

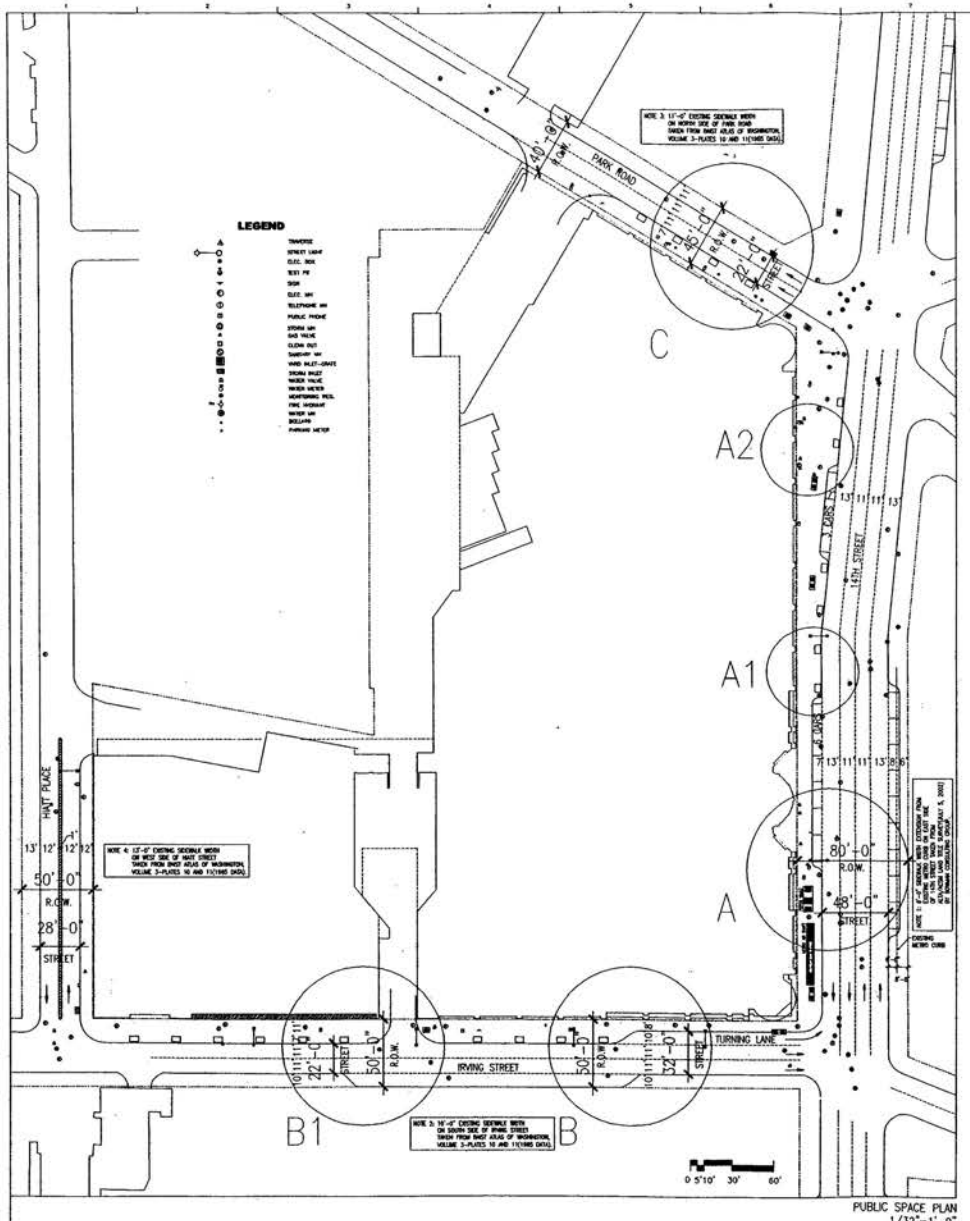
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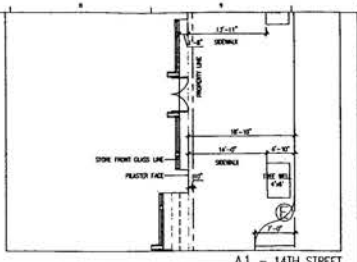
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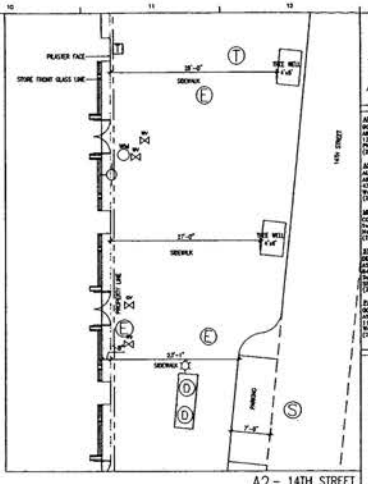
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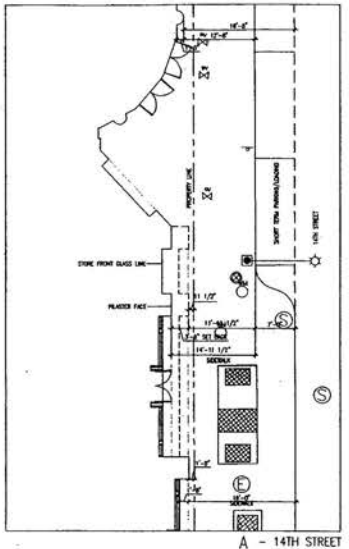
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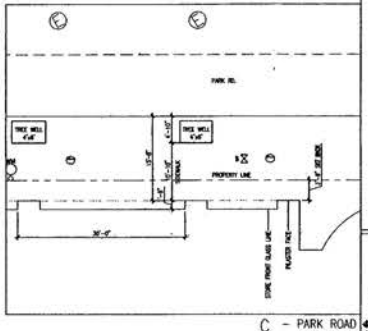
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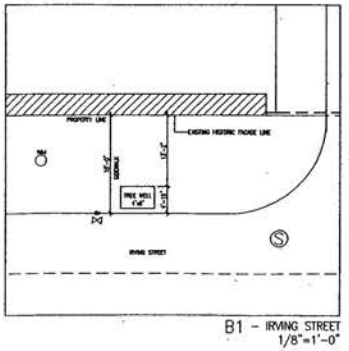
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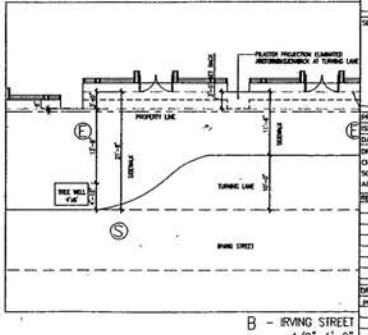
A - 14TH STREET
1/8"=1'-0"



C - PARK ROAD
1/8"=1'-0"



B1 - IRVING STREET
1/8"=1'-0"



B - IRVING STREET
1/8"=1'-0"

BOWER LEWIS THROWER
ARCHITECTS

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DC USA
Washington DC Columbia Heights Park Road and Irving Street 14th Street and Hart Place

KEYPLAN

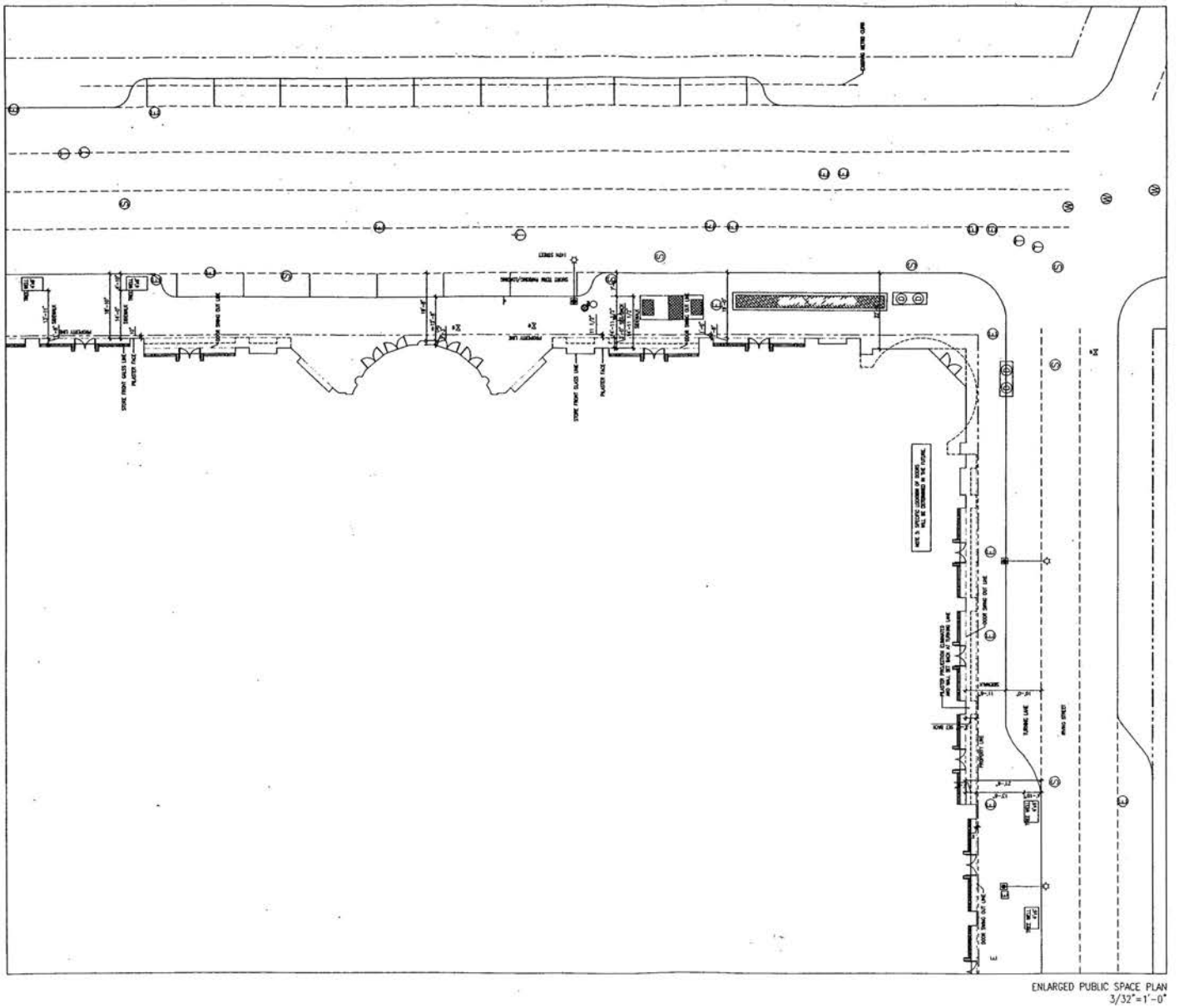
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ISSUE: ZONING SET
DATE: DEC. 07, 2004
DRAWN BY: MC
CHECKED BY: JAB
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ACAD FILE: 756Z003

REVISIONS:
11/29/04 UPDATED
12/03/04 UPDATED
12/07/04 UPDATED
12/08/04 UPDATED

DRAWING TITLE:
PUBLIC SPACE PLAN

DRAWING NO:
Z003



ENLARGED PUBLIC SPACE PLAN
3/32"=1'-0"

BOWER LEWIS THROWER
ARCHITECTS

DC USA

Washington DC Columbia Heights Park Road and Irving Street 14th Street and Hiatt Place

KEYPLAN

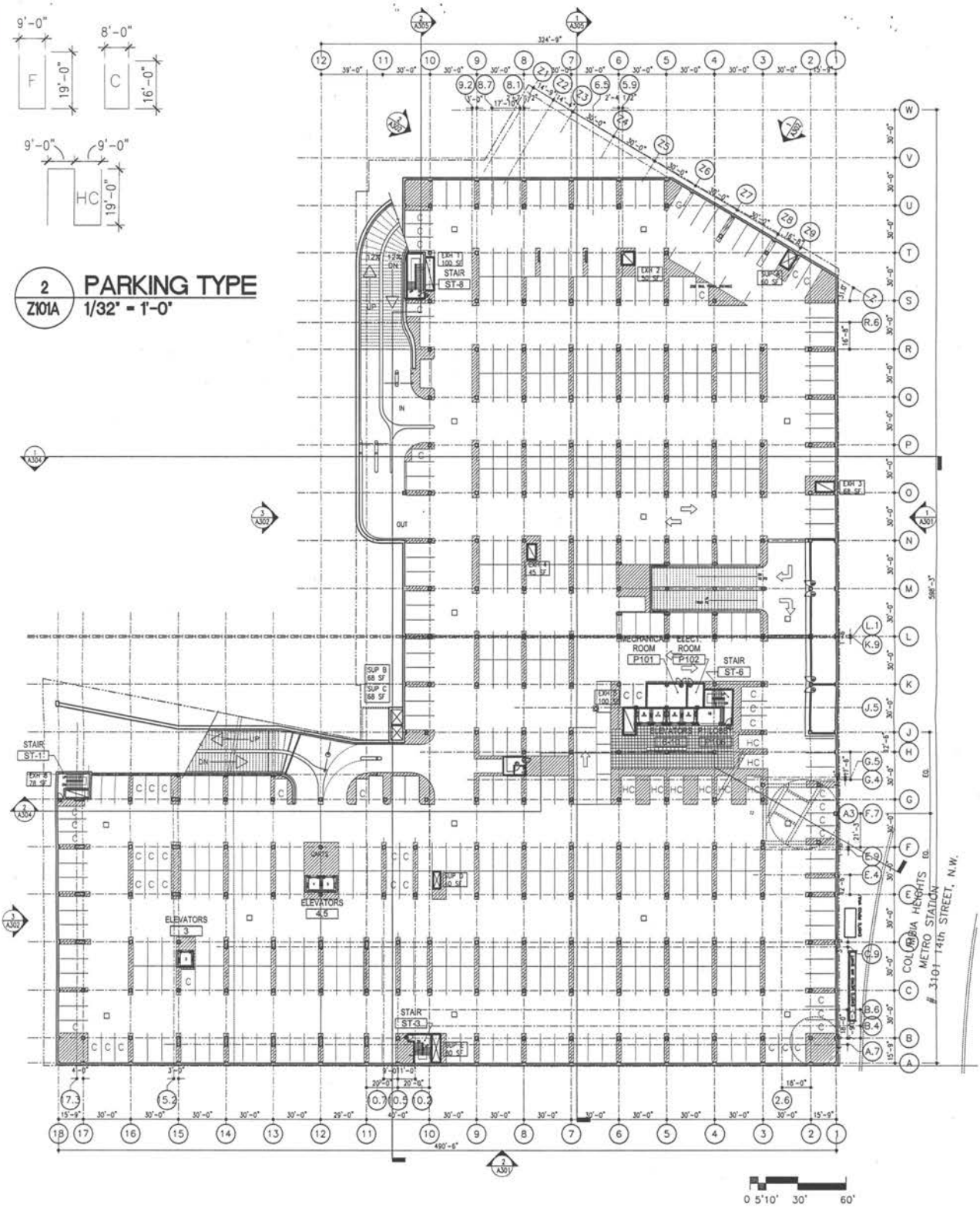
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REVISIONS:
11/29/04 UPDATED
12/01/04 UPDATED
12/02/04 UPDATED
12/06/04 UPDATED

DRAWING TITLE:
PUBLIC SPACE
ENLARGED PLAN

DRAWING NO:
Z004



P

ZONING MEASURING POINT: 194.56'
PROJECT F.F POINT: 194.00' = 0'-0"
P1 F.F ELEVATION: 181.0' = -13'-0"

PARKING COUNT				
	FULL SIZE	COMPACT	HANDICAP	TOTAL
P1	431	45	8	484
P2	464	44	8	516
TOTAL	895	89	16	1000

BOWER LEWIS THROWER ARCHITECTS

ARCHITECTS:
BOWER LEWIS THROWER ARCHITECTS
1216 ARCH STREET PHILADELPHIA PA 19107
TEL: (215) 563 3900 FAX: (215) 563 3026

SEAL:

REVISIONS:
12/01/04 UPDATED
12/02/04 UPDATED
12/02/06 UPDATED

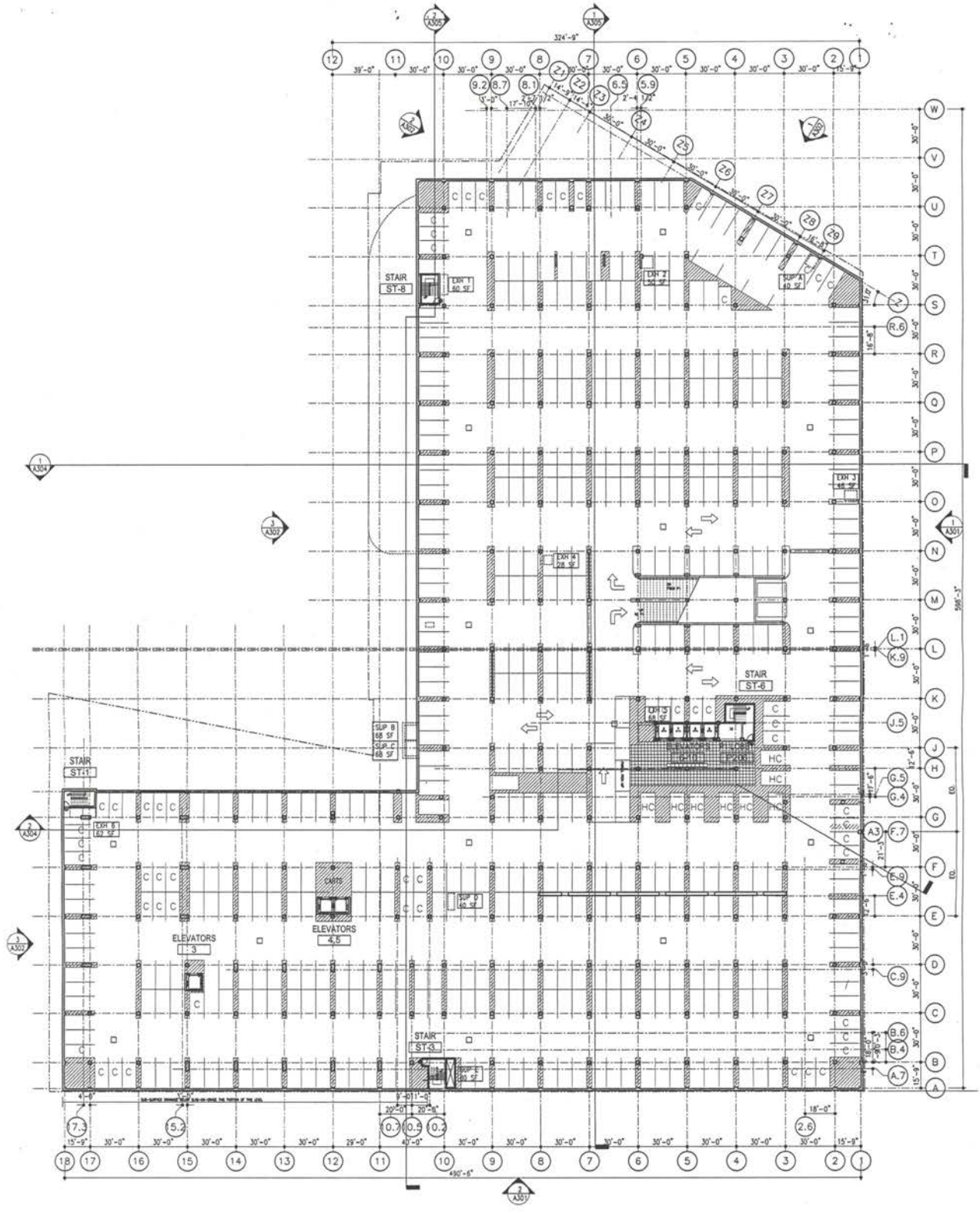
DC USA

Washington DC Columbia Heights Park Road and Irving Street 14th Street and Hiatt Place

PROJECT NO: 756102
DATE: 12/07/04
DRAWN BY: MC
CHECKED BY: BJ
SCALE: AS NOTED
ACAD FILE: 7561Z101

DRAWING TITLE: ZONING SUBMITTAL

DRAWING NO: Z101A



1 / Z101B

PARKING LEVEL P2 PLAN

1" = 60'-0"

ZONING MEASURING POINT: 194.56'

PROJECT F.F POINT: 194.00' = 0'-0"

P2 F.F ELEVATION: 170.5' = -23'-6"

	FULL SIZE	COMPACT	HANDICAP
P1	431	4	
P2	464	44	
TOTAL			

BOWER LEWIS THROWER ARCHITECTS

ARCHITECTS: BOWER LEWIS THROWER ARCHITECTS, 1216 ARCH STREET PHILADELPHIA PA 19107, TEL: (215) 563 3900 FAX: (215) 563 3036

REVISIONS:
- 12/01/04 UPDATED
- 12/02/04 UPDATED
- 12/02/06 UPDATED

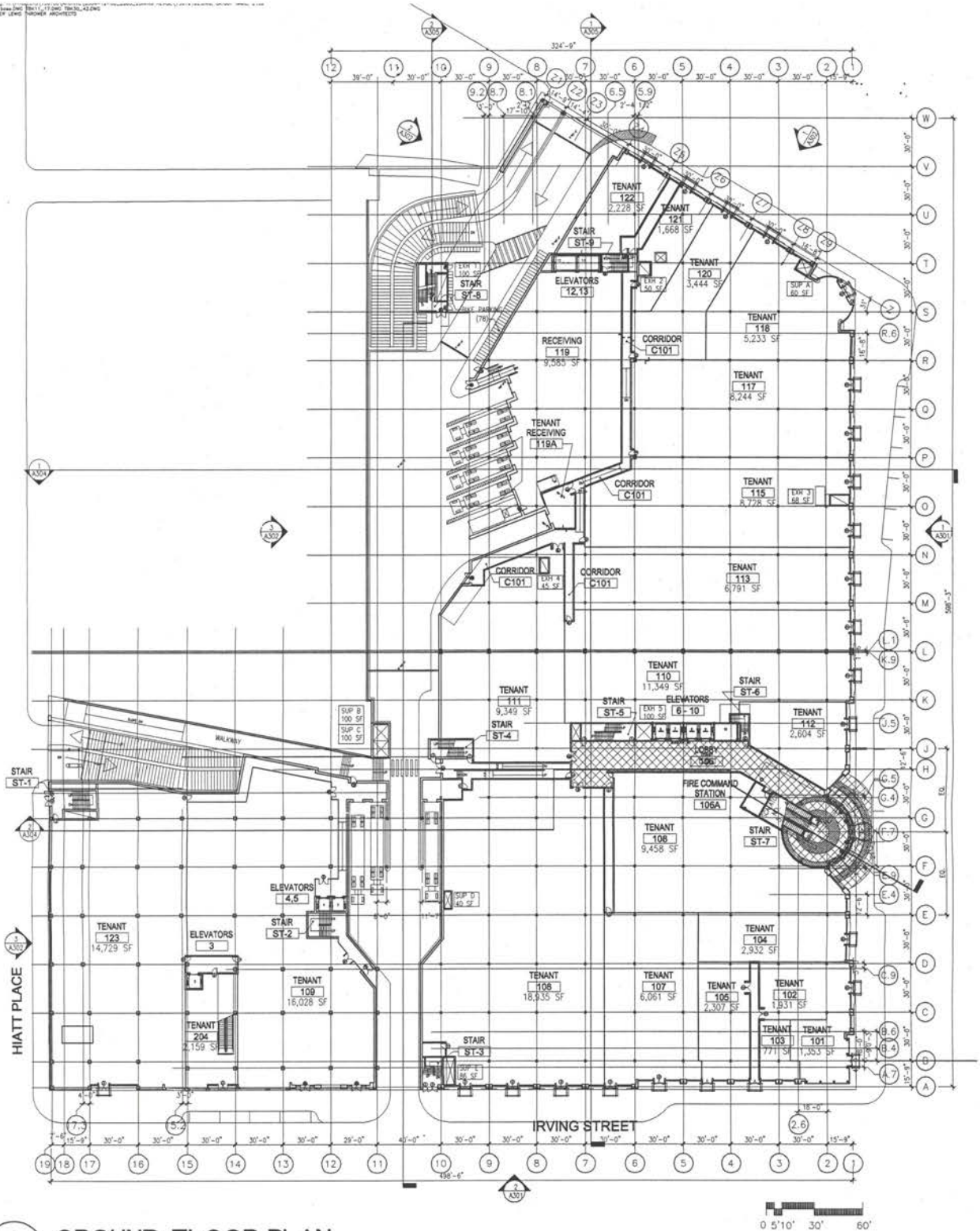
DC USA

Washington DC Columbia Heights Park Road and Irving Street 14th Street and Hiatt Place

PROJECT NO: 756102
DATE: 12/07/04
DRAWN BY: MC
CHECKED BY: BJ
SCALE: AS NOTED
ACAD FILE: 756IZ101

DRAWING TITLE: ZONING SUBMITTAL

DRAWING NO: Z101B



1 / Z102A **GROUND FLOOR PLAN**

1" = 60'-0"

FLOOR AREA SUMMARY CHART

FLOOR	PARKING	RETAIL	HEALTH CLUB	SERVICE	BUILDING TOTAL	CLOSED COURT	ZONING FA	PARKING CAL. FA
ROOF				8,370 SF	8,370 SF		8,370 SF	
3RD FL		86,597 SF	40,000 SF	14,098 SF	140,695 SF		140,695 SF	137,443 SF
2ND FL		166,886 SF		15,927 SF	182,813 SF		182,813 SF	180,114 SF
GROUND		144,522 SF		21,077 SF	165,599 SF	19,472 SF	185,071 SF	163,054 SF
P1	199,307 SF				199,307 SF			
P2	190,355 SF				190,355 SF			
TOTAL	389,662 SF	398,005 SF	40,000 SF	59,472 SF	887,139 SF	19,472 SF	516,949 SF	480,611 SF

SITE AREA 213,288 SF + (1/2 ALLEY) 2583 SF = 215,871 SF
ZONING FAR 2.5 X 215,871 SF = 539,678 SF

BOWER LEWIS THROWER ARCHITECTS

ARCHITECTS:
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1216 ARCH STREET PHILADELPHIA PA 19107
TEL: (215) 563 3900 FAX: (215) 563 3036

REVISIONS:
12/01/04 UPDATED
12/03/04 UPDATED
12/02/06 UPDATED

DC USA

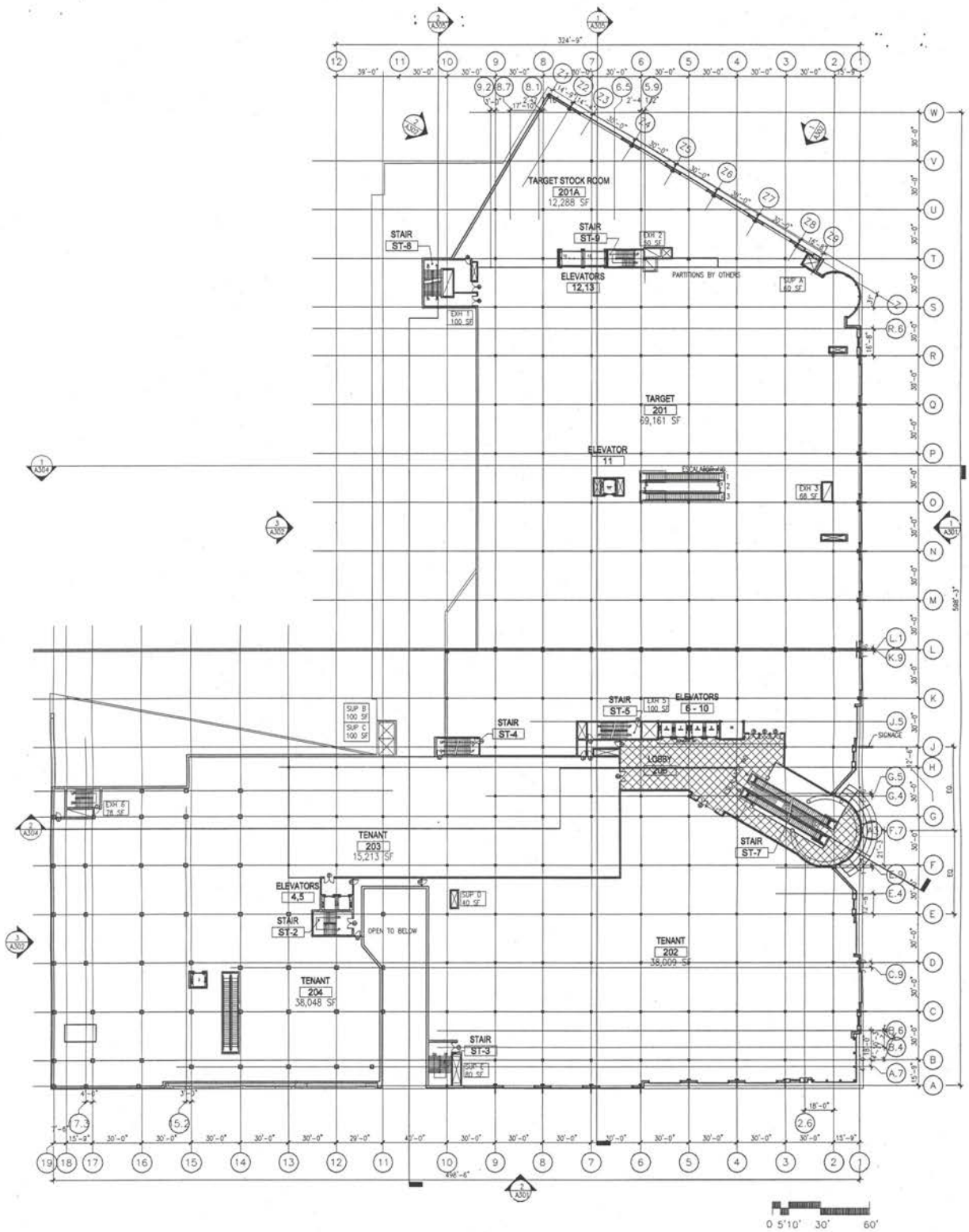
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DRAWN BY: MC
CHECKED BY: BJ
SCALE: AS NOTED
ACAD FILE: 758102

DRAWING TITLE: ZONING SUBMITTAL

DRAWING NO. Z102A

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1 SECOND FLOOR PLAN

Z102B

1" = 60'-0"

ZONING MEASURING POINT: 194.56'

PROJECT F.F POINT: 194.00' = 0'-0"

2ND F.F. ELEVATION: 214.0' = +20'-0"

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SEAL:

REVISIONS:
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12/02/04 UPDATED
12/02/06 UPDATED

DC USA

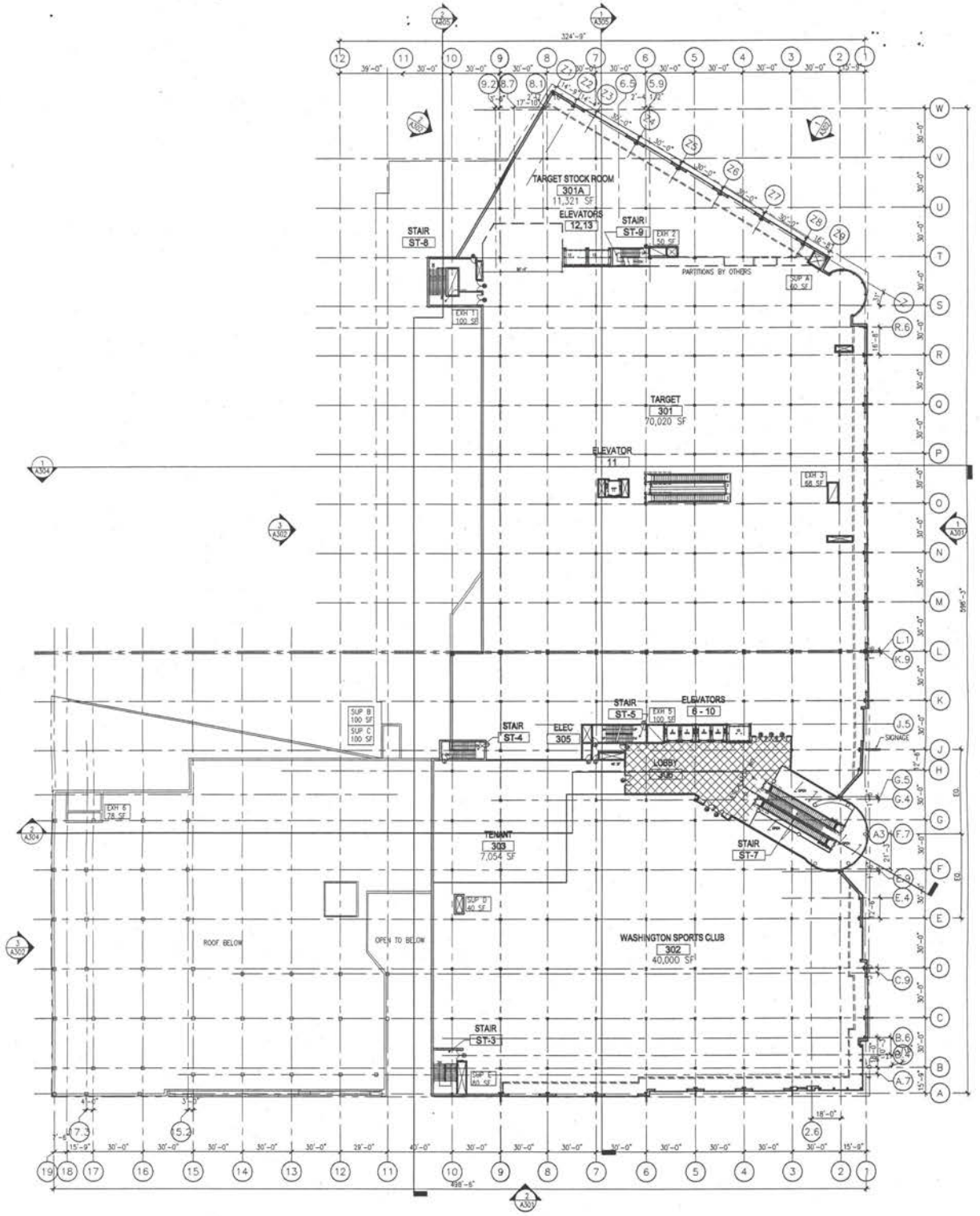
Washington DC Columbia Heights Park Road and Irving Street 14th Street and Hiatt Place

PROJECT NO: 756102
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ACAD FILE: 756102102

DRAWING TITLE: ZONING SUBMITTAL

DRAWING NO: Z102B

\\nela-1\dc17_17.DWG 7/6/2004 10:30:42 AM
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1 THIRD FLOOR PLAN

Z103A

1" = 60'-0"

ZONING MEASURING POINT: 194.56'

PROJECT F.F POINT: 194.00' = 0'-0"

3RD F.F. ELEVATION: 235.0' = +41'-0"

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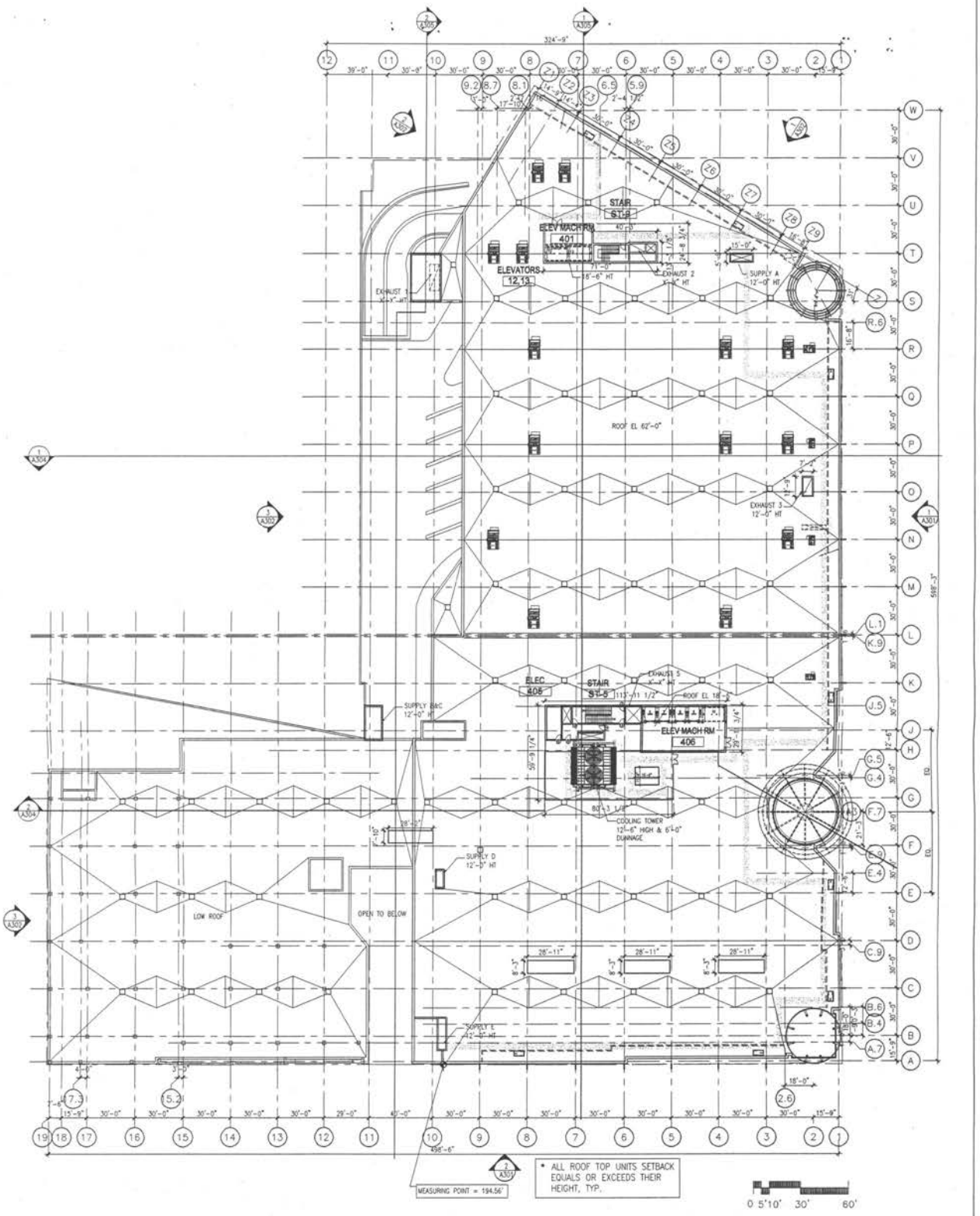
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ACAD FILE: 756103

DRAWING TITLE: ZONING SUBMITTAL

DRAWING NO: Z103A



1 / Z103B ROOF PLAN

1" = 60'-0"

ZONING MEASURING POINT: 194.56'
PROJECT F.F POINT: 194.00' = 0'-0"
ROOF H.P. ELEV.: 256.0' = +62'-0"
T.O. PARAPET ELEV.: 259.0' = +65'-0"

ZONING MEASURING POINT (M.P.): 194.56'
ROOF H.P. ELEV.: +61.44' ABOVE M.P.
T.O. PARAPET ELEV.: +64.44' ABOVE M.P.

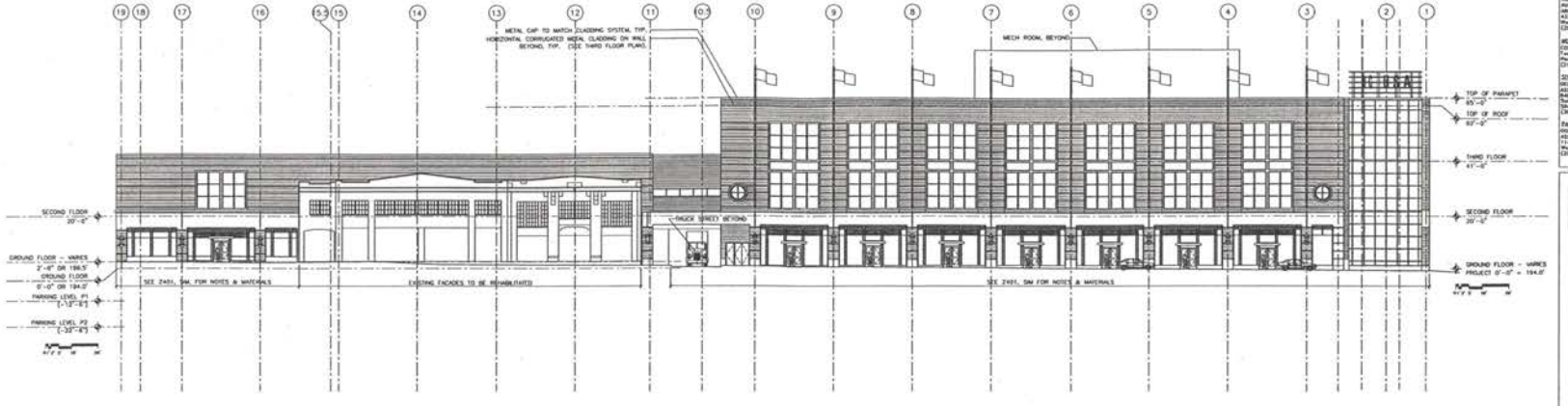
BOWER LEWIS THROWER ARCHITECTS
ARCHITECTS: BOWER LEWIS THROWER ARCHITECTS 1216 ARCH STREET PHILADELPHIA PA 19107 TEL: (215) 563 3900 FAX: (215) 563 3038

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12/02/04 UPDATED
12/02/04 UPDATED

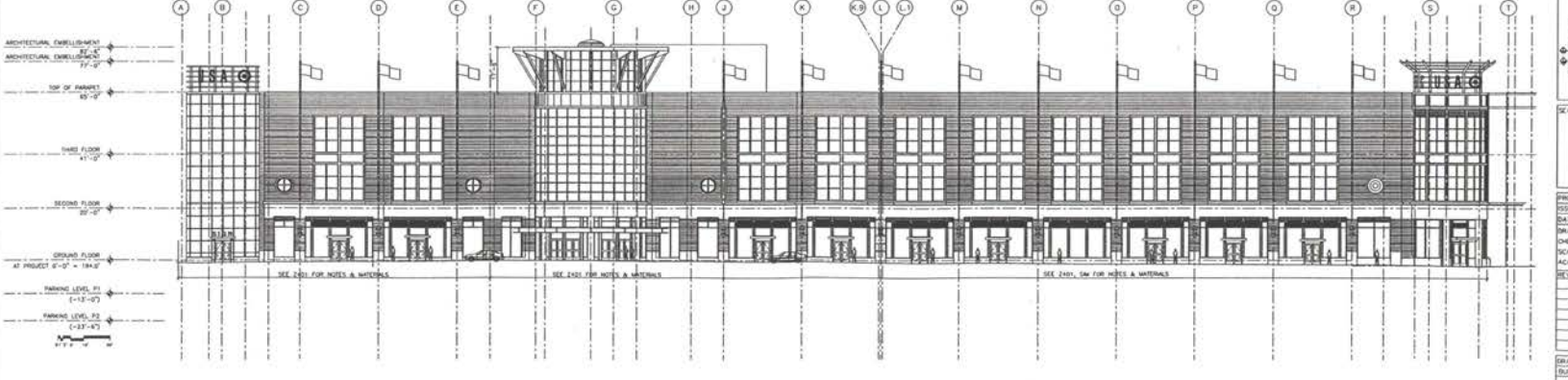
DC USA
Washington DC Columbia Heights Park Road and Irving Street 14th Street and Hiatt Place

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DATE: 12/07/04
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SCALE: AS NOTED
ACAD FILE: 756121Z103

DRAWING TITLE: ZONING SUBMITTAL
DRAWING NO: Z103B



1 / A301 **IRVING STREET ELEVATION**
1/16" = 1'-0"
PROJECT 0'-0" = 194'-0"
ZONING MEASURING POINT = 194.58'



1 / A301 **14th STREET ELEVATION**
1/16" = 1'-0"
PROJECT 0'-0" = 194'-0"
ZONING MEASURING POINT = 194.58'

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DC USA

Washington DC Columbia Heights Park Road and Irving Street 14th Street and Kent Place

KEYPLAN

SEAL:

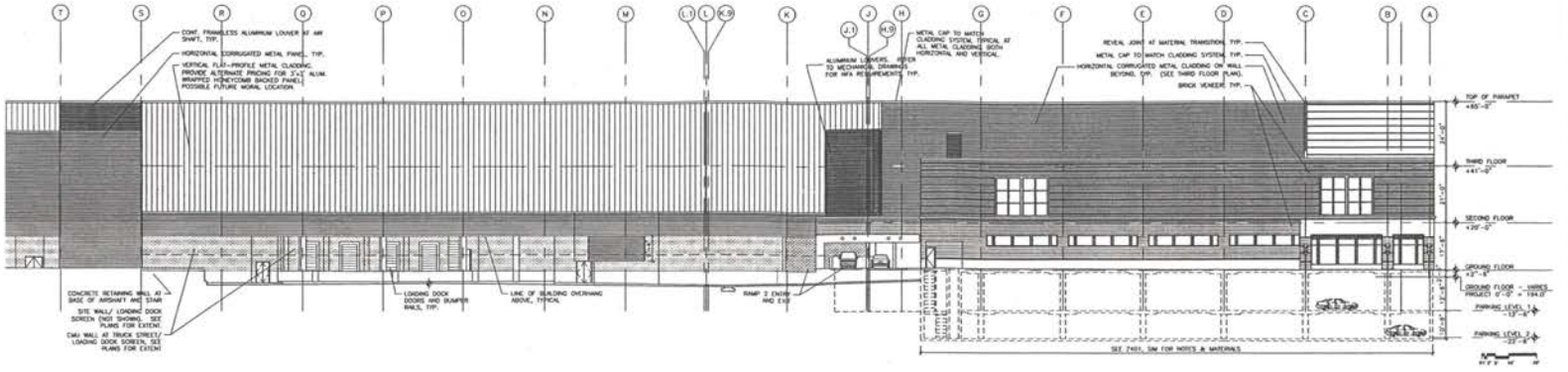
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REVISIONS:
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12/02/04 UPDATED
12/06/04 UPDATED

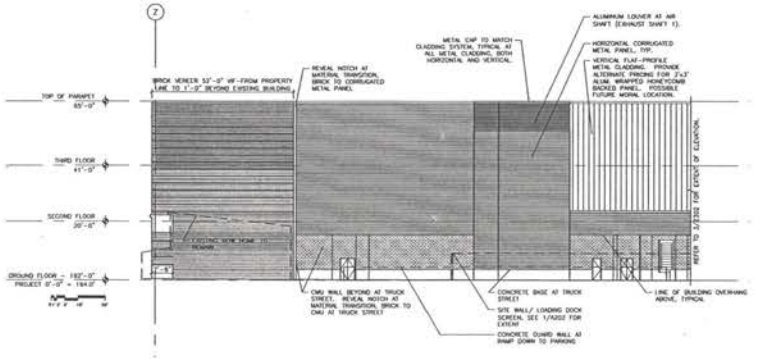
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H





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DC USA

Washington DC Columbia Heights Park Road and Irving Street, 14th Street and Hiatt Place

KEYPLAN

SEAL:

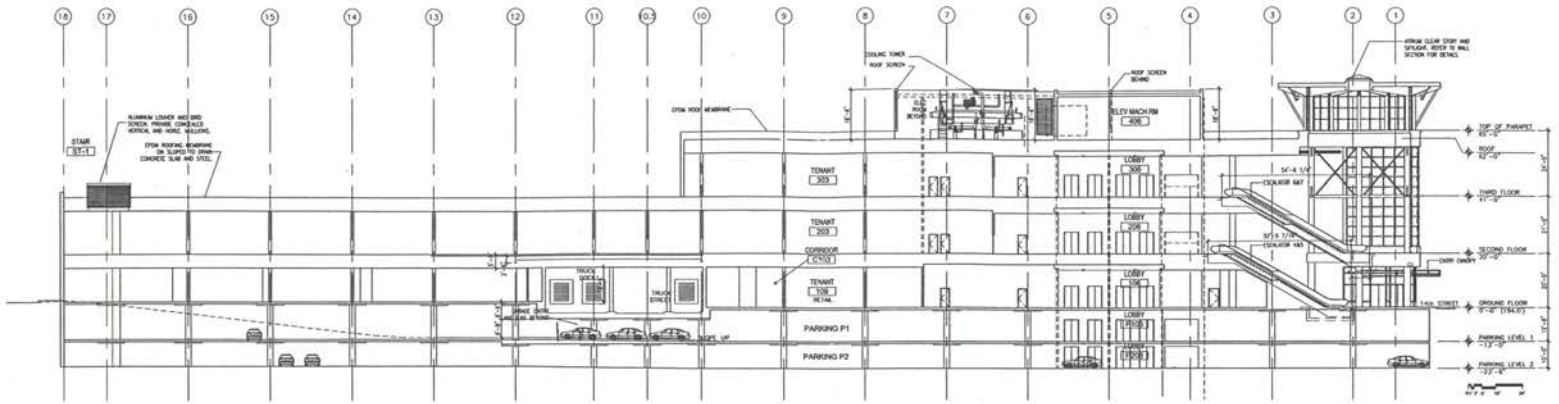
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REVISIONS:
12/01/04 UPDATED
12/02/04 UPDATED
12/06/04 UPDATED

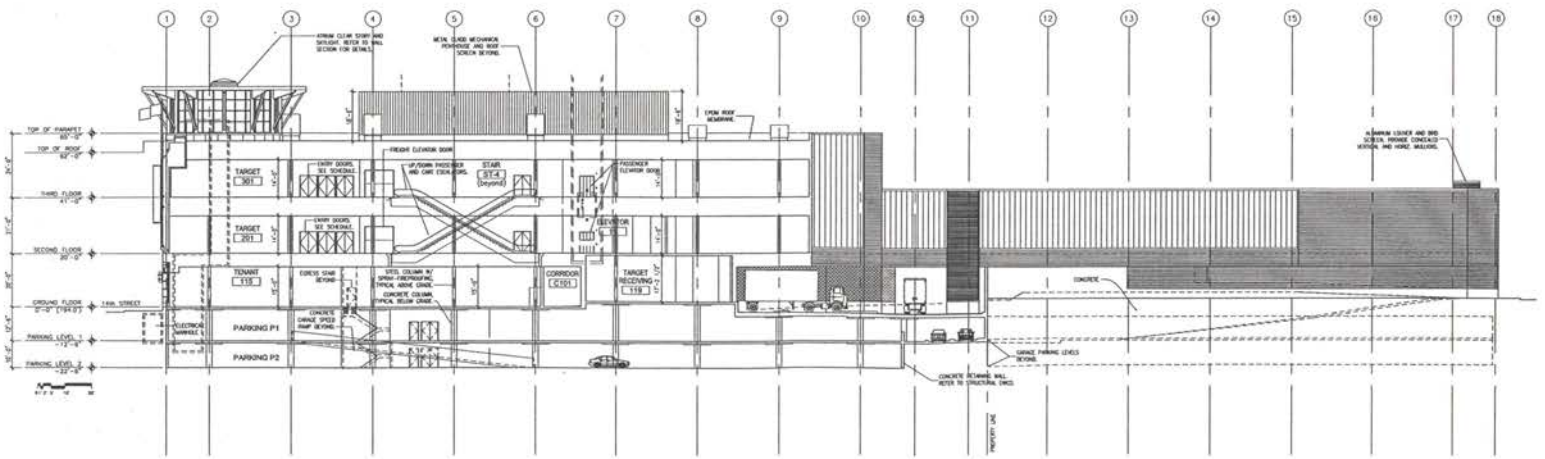
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User: BOWER LEWIS THROWER ARCHITECTS
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2 / A304 BUILDING SECTION LOOKING NORTH
1/16" = 1'-0"



1 / A304 BUILDING SECTION LOOKING SOUTH
1/16" = 1'-0"

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Washington DC Columbia Heights Park Road and Irving Street 14th Street and Kiosk Place

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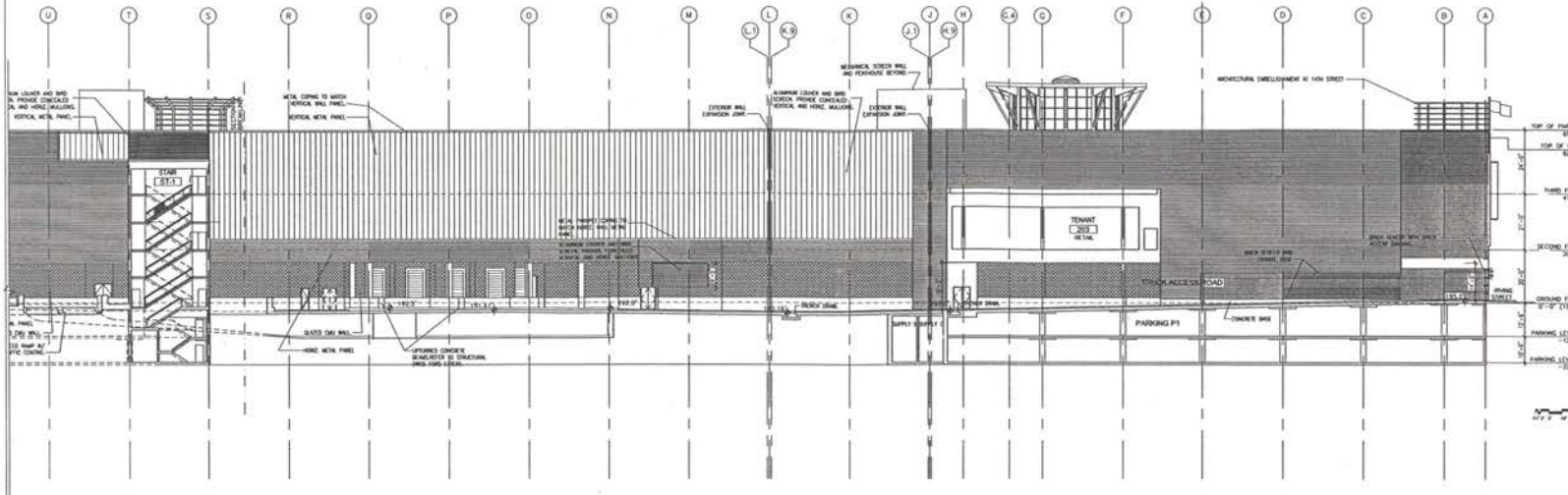
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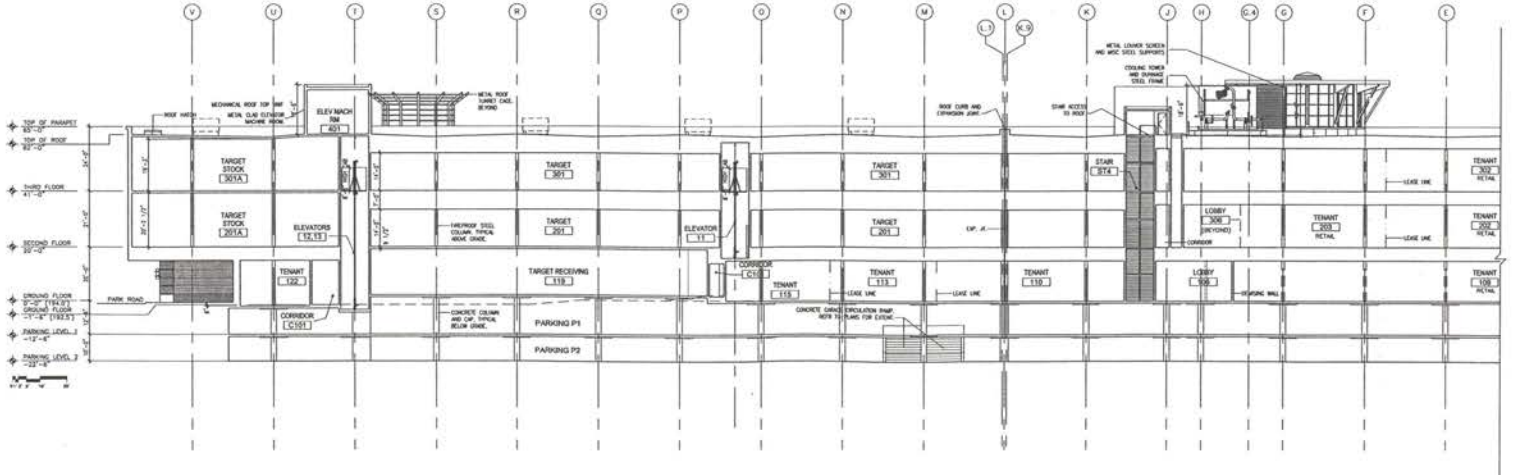
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2 A305 BUILDING SECTION LOOKING EAST
1/16" = 1'-0"



1 A305 BUILDING SECTION LOOKING EAST
1/16" = 1'-0"

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KEYPLAN

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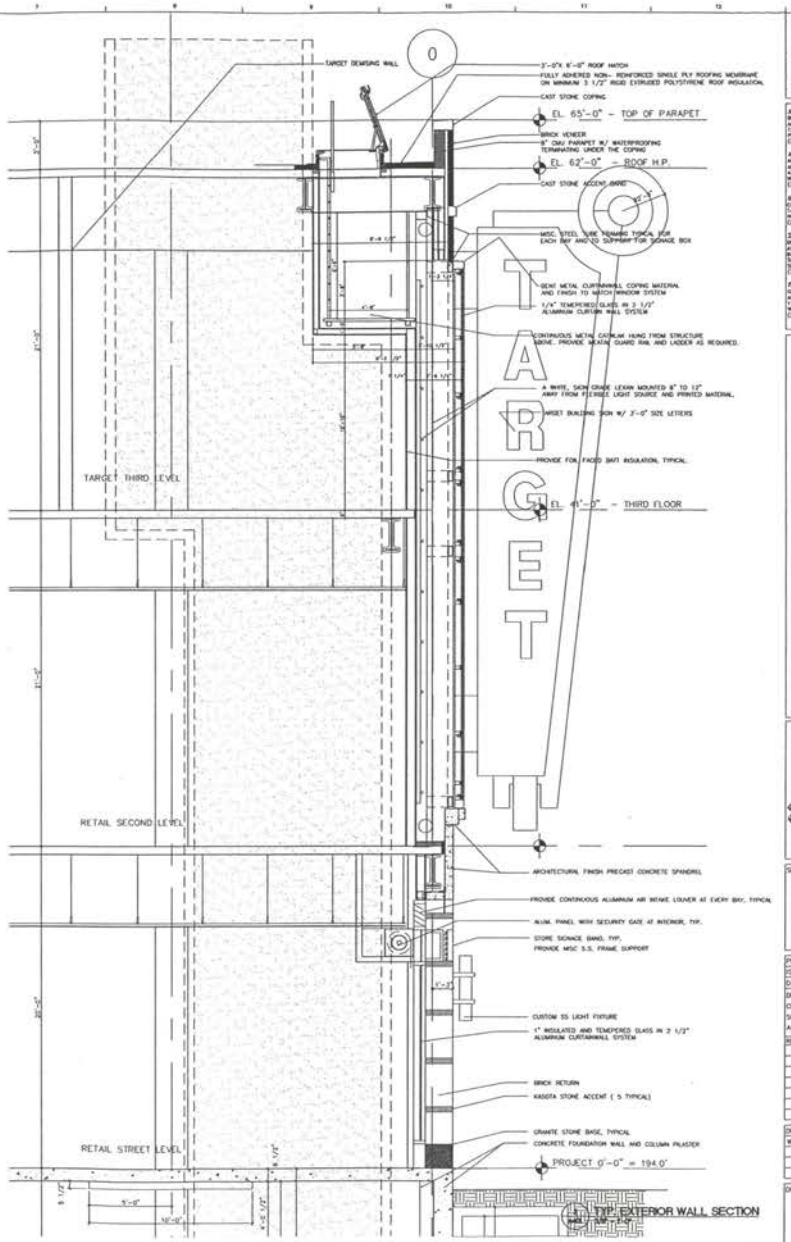
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DC USA

Washington DC Columbia Heights Park Road and Irving Street 14th Street and Kiosk Plaza

KEYPLAN

SEAL:

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DATE:	DEC. 07, 2004
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REVISIONS:
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12/06/04 UPDATED

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WALL SECTIONS

DRAWING NO:
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B

GOVERNMENT OF THE DISTRICT OF COLUMBIA
OFFICE OF PLANNING

Office of the Director

Norman Glasgow, Jr.
Holland + Knight LLP
2099 Pennsylvania Avenue, NW
Suite 100 Washington, DC 20006

November 29, 2004 – By E-Mail With Hard Copy to Follow

RE: BZA 17232 – Summary of November 16, 2004 Discussions Regarding Grid/ DC USA and the Columbia Heights Public Realm Framework

Dear Chip:

This follows up on the conversation, and draft notes sent to you last week. Based on discussions prior to the Board of Zoning Adjustment (BZA) hearing on Nov. 16, 2004 the Office of Planning (OP) and the District Department of Transportation (DDOT) agreed with Grid to continue discussions about changes to the Grid site plan prior to the next BZA hearing, which is scheduled for December 21, 2004. As reflected in notes drafted my Michael Downie and reviewed by other District Government participants in the conversations, it was agreed that:

1. Grid would provide a 160-foot (8 car) lay-by in front of the main entrance of DC-USA, with a minimum sixteen foot (16') sidewalk, as measured from the farthest edge of structure to the edge of the curb running the length of 14th Street between Irving and Park Road. OP and DDOT agreed to a 3 foot (3') reduction in travel lanes and lay-by as per OP/DDOT plans: i.e., 1 foot in each of two travel lanes (14' reduced to 13') and a 1 foot reduction in lay-by width from 8' to 7'.

2. Grid agreed to provide an additional 60-foot (3 car) lay-by north of the main entrance lay-by, with a "bumpout" in between the two lay-bys to allow for 16' sidewalk. The exact location is to be determined.

3. All parties agreed that loading in these two lay-bys, and customer assisted loading in the parking garage, is sufficient to allow for the removal of the lay-by on Park Rd. This allows for a minimum sidewalk width of seventeen feet (17'). The appropriate turning radius into the parking garage must be determined.

4. Along Irving Street, dependent upon the length of the left turn queue (to be assessed by DDOT), OP and DDOT agreed to create "bumpouts" on both sides of the shopping center's vehicular exit on Irving Street to provide for wider sidewalks and street furnishing/planting zones. Grid agreed to reduce the depth of its pilasters along Irving Street to the edge of the glazing to allow an additional one foot eight inches (1'8"), or more, for sidewalks. Under this scenario, the minimum sidewalk width would be eleven feet two inches (11'2), again from face of farthest

edge of structure to edge of curb. There would be a minimum 10' clear walkway, with the remainder to be used for a safety-promoting edge strip. The location and width of planting strips will vary.

5. Grid will prepare new drawings reflecting these changes, and any changes in BZA-review-level drawings of building location, structure and floor plans, and present them to OP and DDOT for discussion, review and agreement.

OP believes that all parties would benefit from OP and DDOT review of Grid's proposed revisions prior to their submission to the BZA on Tuesday, December 7, 2004. If OP and DDOT could get the proposed revisions by close of business on Thursday, December 2, 2004, we would be able to get our comments back to you by the close of business on Friday, December 3, 2004.

We look forward to hearing from you and your clients.

Very truly yours,

Stephen Cochran
Zoning and Special Projects Planner

Michael Downie
Revitalization Planner

C: Doug Noble, Ken Laden, Ellen McCarthy, Jennifer Steingasser, Vivian Guerra, Alex Nyan, Michael Jasso, Jennifer Budoff

C

Land Area Chart

Square/Lot	Land Area	Premise Address	Owner Name
2676 0795	53495	3300 14TH ST NW	PARK ROAD LP
2843 0078	40703	1368 PARK RD NW	TRIANGLE DEVELOPMENT ASSOCIATES LLC
2672 0719	24497	3020 14TH ST NW	UNITY HEALTH CARE INC
2676 0822	18850	1451 PARK RD NW	1451 PARK ROAD COOPERATIVE
2676 0813	15500	1437 PARK RD NW	TEMPLE CHURCH GOD IN CHRIST
2849 0108	14408	3031 14TH ST NW	14TH & IRVING VENTURES LLC
2672 0853	12302	1460 IRVING ST NW	1460 IRVING STREET LP
2676 0824	10150	1445 PARK RD NW	PARK TIVOLI LP
2672 0007	9728	1450 IRVING ST NW	CCHL INVESTMENTS INC
2672 0873	9409	1454 IRVING ST NW	DOMENICO PANZA TRUSTEES & GLORIA PANZA T
2674 0704	8907	1448 PARK RD NW	PARK REDEVELOPMENT LP
2674 0718	3668	1430 PARK RD NW	TEMPLE CHURCH BUILDING & ECONOMIC DEVELO
2674 0854	3156	3237 HIATT PL NW	3237 LP
2674 0710	2575	1438 PARK RD NW	ANN R BERGAN
2674 0711	2344	1436 PARK RD NW	WASHINGTON APOSTOLIC CHURCH INC
2674 0712	2140	1434 PARK RD NW	CHI F CHENG
2674 0855	1931	3223 HIATT PL NW	HIATT PLACE GP
2676 0746	1930	1418 MONROE ST NW	ALAR C HIGGINS
2676 0290	1917	1426 MONROE ST NW	M E PRENDER
2676 0291	1917	1424 MONROE ST NW	MARY A WARNER
2676 0745	1885	1420 MONROE ST NW	JEREMY A GRANT
2676 0806	1881	1422 MONROE ST NW	JAMES B NASTUS
2674 0599	1752	3221 HIATT PL NW	QUANG T NGUYEN
2674 0639	1570	3229 HIATT PL NW	SONIA M PAZ
2674 0715	1528	1428 PARK RD NW	SAN MIGUEL GROUP INC
2674 0638	1507	3227 HIATT PL NW	F ALVARENGA
2674 0611	1463	1452 PARK RD NW	PHONG HOANG
2674 0637	1361	3225 HIATT PL NW	M BANULS
2674 0608	1360	1458 PARK RD NW	LUISA MALDONADO
2674 0609	1360	1456 PARK RD NW	FLORENTINO G TUREIOS
2674 0610	1360	1454 PARK RD NW	PILAR A PEREL
2674 0856	1350	1460 PARK RD NW	HORIZON 2012 LLC
2674 0716	1325	1426 PARK RD NW	SAN MIGUEL GROUP INC
2674 0717	1170	1424 PARK RD NW	JOSEFINA AYALA
2674 0851	13	NW	T B COFER
	7440		

D



Mueser Rutledge
Consulting Engineers

SUBSURFACE INVESTIGATION
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WASHINGTON, DC

DC USA Operating Co., LLC
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New York, NY 10027

Mueser Rutledge Consulting Engineers
14 Penn Plaza, 225 West 34th Street
New York, NY 10122

April 13, 2004

Mueser Rutledge Consulting Engineers

14 Penn Plaza • 225 W. 34th Street • New York, NY 10122
Tel: (917) 339-9300 • Fax: (917) 339-9400
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Martha J. Huguet
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April 13, 2004

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c/o Grid Properties Inc.
2309 Frederick Douglass Boulevard
New York, NY 10027

Attention: Mr. Jim Tuman

Re: Subsurface Investigation
DC USA
14th Street and Irving Place, NW
Washington, DC
MRCE File 9976A

Gentlemen:

In accordance with our proposal dated July 24, 2003, we summarize herein the results of our soils and foundation investigation for the proposed DC USA project to be constructed in the Columbia Heights section of Northwest Washington, DC.

Exhibits

The following exhibits are attached to illustrate our report:

Drawing No. B-1	Boring Location Plan
Drawing No. GS-1	Geologic Section A-A
Drawing No. GS-2	Geologic Section B-B
Drawing No. GS-3	Geologic Section C-C
Drawing No. GS-4	Geologic Section D-D
Drawing No. GS-5	Geologic Section E-E
Drawing No. GS-R	Geotechnical Reference Standards
Plate No. 1	Gradation Curves
Plate No. 2	Gradation Curves
Appendix A	Boring Logs

Available Information

The following items used in the preparation of our report were obtained from Grid Properties or members of the design team:

1. *Boundary and Topographic Survey, 14th and Park Road, N.W.,* dated March, 2003, prepared by A. Morton Thomas and Associates, Inc.

2. DC USA Proposed Boring Location Plan, SKC-1, dated April 17, 2003.

3. Drawings A201, A202, etc. plans, sections etc. provided electronically by Bower Lewis Thrower on September 22, 2003.

4. *Preliminary Geotechnical Engineering Report, Parcel 27/Columbia Heights, 14th and Irving Streets, N.W., Washington, D.C.,* dated December 12, 2000, prepared by GeoConcepts Engineering, Inc., for Grid Properties, Inc.

Site Description

The site is located in Northwest Washington, DC, and is bounded by 14th Street on the east, Park Road on the north, Hiatt Place and other properties on the west and Irving Street on the south. The majority of the site is occupied by parking lots. There are several one-story masonry buildings at the northeast corner of the site, some with basements, which are scheduled to be demolished. The site abuts the east and south sides of Bell Multicultural Senior High School, which we understand contains one level below grade. A 16-foot wide alley separates the site from the east edge of the high school structure, but the south edge abuts the site property line. A 130-foot long façade is present along the south edge of the site near Hiatt Place.

The Washington Metro Columbia Heights station is beneath 14th Street adjacent to the southeast corner of the site. The Metro tunnels turn east at the north end of the station, heading away from the project site. Site grades range from Elev. 193 at the southeast corner and the northern edge to Elev. 197 in the south-central and southwest areas.

Project Description

The project consists of a retail structure with three stories above grade and three parking levels below grade. The footprint of the building is 210,000 square feet in an L-shape. The structure will be built to the property line shared with Metro on all levels. The second and third parking levels will be set back from the property lines in portions of the north and west sides. Along Park Road loading areas will be constructed which will have no basements. Along the west edge of the site adjacent to the alley and along the north side of the western leg of the site adjacent to Bell Multicultural Senior High School, ramps will be constructed which will not extend below

the first basement level. The historic façade along the south site boundary will be preserved and incorporated into the new building.

Field Exploration

Field work began on October 6, 2003 and finished on October 17, 2003. Eleven borings were made at the location of the proposed building. These borings are identified with an M prefix. Three borings made previously by GeoConcepts are also shown, and are identified with a B prefix.

Borings were made by GeoServices Corporation of Forestville, MD, under contract to DCUSA Operating Co., LLC. Field work was performed under the part-time inspection of our resident engineer, Mr. William Hobson. Boring locations and elevations were provided by the boring contractor's surveyor. Elevations are referenced to the National Geodetic Survey Datum, a mean sea level datum.

Representative soil samples were recovered from the borings with a two-inch split spoon sampler driven with a 140-pound hammer free-falling 30 inches. The number of blows required to advance the sampler through each of three or four six-inch intervals was recorded. The Standard Penetration Test (SPT) resistance, an index of the density of the material sampled, is calculated by summing the blows from the second and third intervals. An automatic hammer was used in the current investigation. The automatic hammer typically delivers a higher energy per blow than the older style cathead driven hammers used in many earlier investigations.

M-series borings were advanced and stabilized using weighted drilling fluid and temporary casing, and extended to depths of 60 feet. Piezometers were installed in three of the completed borings to determine present groundwater levels. Falling head tests were performed in the piezometers to demonstrate that they were functioning properly and permit an estimate to be made of the permeability.

After completion of the borings, GeoServices Corporation shipped the soil samples to our office. Samples were reexamined in our laboratory and field descriptions were verified or revised as necessary. All soil samples are described in accordance with the system shown on Drawing No. GS-R. Relatively undisturbed samples were subjected to laboratory testing to determine strength and consolidation characteristics. Groundwater levels were recorded during the course of the field work. Readings are shown on the appropriate boring log sheets.

SUBSURFACE CONDITIONS

The results of the boring program are shown on the boring logs attached as Appendix A. The logs include sample number, depth, blow count, individual soil descriptions for each sample and descriptions of drilling operations. Our interpretation of subsurface conditions is illustrated on

Geologic Sections A-A through E-E, shown on Drawings Nos. GS-1 through GS-5. Generalized descriptions of the soil strata encountered in the borings are summarized below in order of their occurrence with increasing depth:

Stratum F - Fill

The uppermost material encountered in all of the recent borings is fill ranging in thickness from 4 to 17.5 feet. Stratum F consists of loose to very compact brown gray gravelly fine to coarse sand, trace to some silt, to fine to coarse sand, some gravel, silt, grading to clayey and silty fine to coarse sand, trace to some gravel, with trace to some concrete, brick, trace rock fragments, clay pockets, glass, roots, occasional boulders.

Stratum T1 – Terrace Clay

Stratum T1was encountered beneath the fill in Boring M-3. This stratum was 2 feet thick, and consisted of stiff gray red silty clay, trace fine sand.

Stratum T2 – Terrace Sand

Stratum T2 was encountered beneath Stratum F in Borings M-9 and M-10, and consisted of medium compact brown gray clayey fine to medium sand; to silty fine to medium sand, trace clay, clay pockets. A typical N value was 12 blows per foot.

Stratum T3 – Terrace Sand and Gravel

Stratum T3 consists of medium compact to very compact brown gray gravelly fine to coarse sand, trace to some silt, trace clay pockets, to fine to coarse sandy gravel, trace silt, clay, grading to fine to coarse sand, some gravel, trace to some silt, clay, with occasional cemented sand and cobbles. N values generally ranged from 8 to 90 blows per foot, with an average value of 38. This stratum was encountered in all M-series borings beneath Strata F, T1, or T2. Thickness ranged from 1 to 15.5 feet.

Sampler penetration resistance was lower in the M-series borings than in previous borings. Studies by others indicate that the automatic hammer reduces N-values by 20 to 25 percent when compared with a cathead-driven hammer. We attribute the lower N-values in the current investigation to the use of an automatic hammer.

Stratum P2 – Potomac Sand

This stratum was encountered beneath Stratum F or the T-series strata in all of the recent borings, occasionally interlayered with Stratum P1. Measured thicknesses ranged from 33 to 44 feet. Stratum P2 consists of loose to compact tan brown silty fine to medium sand; trace clay, clay pockets, gravel; to clayey fine to medium sand, trace gravel, grading to fine to coarse sand,

some silt, trace to some gravel, trace clay, clay pockets, with occasional cemented sand, cemented sand layers, clay layers. N-values ranged from 3 to 48 with an average value of 22 blows per foot.

Stratum P1 – Potomac Clay

Stratum P1 was encountered beneath Stratum P2 in all of the recent borings and extended beyond the bottom of the borings. Stratum P1 consisted of stiff to hard gray to red brown silty clay; to plastic clay; to clayey silt, with trace fine sand, fine sand pockets and layers, occasional cemented sand cemented silt, lignite, lignite layers (fissured to slickensided). N-values ranged from 15 to 37 blows per foot, with an average value of 24.

Groundwater

Groundwater was measured in three permanent piezometers installed during the field work. Groundwater levels corresponded to Elev. 166.6 to 168.1. Subsequent readings have shown little change in water level.

Permeabilities estimated from falling head tests ranged from 2.8×10^{-5} to 3.0×10^{-4} ft/min and are summarized in the table below. It appears that these test results reflect the permeability of Stratum P2 even though the column of sand in the wells extended to more permeable strata above that were also above the groundwater table. Permeabilities determined in previous investigations in Stratum P2 soils in Washington, DC have ranged from 10^{-3} to 10^{-5} ft/min.

Boring No.	**Estimated Permeability (ft/min)**
M-1P	2.8×10^{-5}
M-8P	1.2×10^{-4}
M-12P	3.0×10^{-4}

DESIGN AND CONSTRUCTION RECOMMENDATIONS

Foundations

Current plans call for Parking Level P3, the lowest basement level, to be established at Elev. 160 feet. Subgrade at this elevation will be in Stratum P2. The western portion of the building, in the area of Borings M-7, M-8P, and M-11, will contain two basements. Parking Level P2, the second basement, will be established at Elev. 170.5. Subgrade in this area will also be in Stratum P2.

We recommend support of the new structure on spread foundations bearing in Stratum P2 at an allowable bearing pressure of 2 tsf. In areas where no basement will be constructed beneath the structure, including the northwest corner along Park Road and the ramps east and south of the adjacent Bell Multicultural High School (in the area of Borings M-1P, B-2, M-3 and northeast of M-7) foundations must extend through the fill and into the underlying natural strata. This could be achieved by lowering the footings or constructing deep foundations. Driven or drilled-in piles, drilled piers or caissons would provide the recommended support in these areas. However, footings will extend only 6 to 7 feet deep in granular fill well above the water table. If the adjacent 2-story brick building has a basement the new footings would have to extend to the same level as the basement footings. If there is no existing basement, it may be necessary to underpin the wall footing in order to place the new footings at a deeper level.

Underdrainage

Measured groundwater levels are six to eight feet above the lowest finished floor elevation. The lowest slab and basement walls must be designed to resist groundwater. Design water level should be taken as five feet above the water levels read in the piezometers at the site, or Elev. 173. The slab should be underdrained, with a 12-inch thick layer of clean 3/4 inch crushed stone or washed gravel placed beneath the slab underlain by a layer of geotextile filter fabric and overlain by a vapor barrier. The specifications for the stone or gravel should require that these materials be durable with no potential to slake or abrade and should contain no more than 2 % passing the No. 40 standard sieve. A network of perforated PVC pipes should be installed in the stone with holes down, spaced 20 feet on centers or centered between the columns, to collect any water that enters the stone layer and carry it to a sump or sumps below the floor. Pipes should be connected to each other at every crossing. The sump or sumps should be equipped with two pumps set to operate as a primary and a secondary, and sized so that the primary pump cycles no more than four times per hour. A secondary power source should be provided to the pumps so that they operate in the event of a power failure. The pumps must be capable of lifting the collected water to the level of the DC sewers in the street. The District of Columbia assesses a disposal fee on water discharged into the sewer system. We estimate that steady state flow into the underdrainage system may range from 15 to 30 gallons per minute based on a future groundwater level at Elev. 173 ft and an estimated average permeability of 1×10^{-3} ft/min. We recommend that the pumps be sized for about five times the higher estimate or 150 gallons per minute (gpm). The quantity of groundwater pumped during construction should be metered and recorded. Permanent pump size should be revised if indicated by the construction dewatering data.

Groundwater within the Washington, DC area typically exhibits relatively high iron content, which in a wet aerobic environment gives rise to the growth of iron-loving bacteria which can clog drainage lines and pumps. Previous experience in Washington projects indicates that frequent purging of the underdrainage system should be performed to minimize clogging by these bacteria. Cleanouts which are accessible from the lowest floor level should be located in

every line at distances not to exceed 100 to 200 feet, to allow the lines to be flushed from above with mild acids to purge any bacteria which might accumulate. Lines should be designed with excess capacity to allow efficient drainage between cleanings. Pipes should be smooth walled perforated PVC to minimize areas where clogging bacteria could accumulate. Points of entry of air into the system should be minimized. Lines which discharge into sumps should have their ends submerged below the permanent water level in the sumps to preclude easy entry of air into the lines, and cleanouts with tightly sealed caps should be located within the sumps to allow for cleaning of the incoming lines. Floor drains below the lowest parking level should be kept separate from the underdrainage lines to preclude entry of air into the underdrainage lines. Operations instructions to the building staff should explain the procedures and the need for regular maintenance of the underdrainage lines.

Below Grade Walls

For design of below grade walls, we recommend an equivalent fluid pressure of 60 lbs per cubic foot (pcf) above the groundwater table and 90 pcf below the groundwater table. Live load surcharge should be added to the above pressures particularly over the upper part of the walls.

Waterproofing and wall drainage should be applied to the outside of the walls below the design groundwater table. Waterproofing should consist of a bituminous coating and a rubber membrane with overlap at the sealed seams, or a sprayed-on membrane waterproofing. Wall drainage should consist of Enkadrain, Miradrain, or a similar product, with a collector pipe placed at the base of the wall. The collector pipe should be bedded in gravel and the gravel covered with geotextile in accordance with the wall drain manufacturer's recommendations. The collector pipe should carry the collected water into one or more of the sumps in the deepest basement. Collected water should not be routed through the underdrainage network but in separate lines. Waterstops should be installed in all concrete joints below the design groundwater level. Damp proof coating should be used on walls above the design groundwater level to limit infiltration during wet periods including street flooding and possible water main breaks.

CONSTRUCTION CONSIDERATIONS

Support of Excavation

The anticipated depth of excavation is up to 35 feet below existing grades. Support of excavation is expected to consist of soldier piles and lagging with tiebacks and/or internal braces. For temporary excavation support, we recommend using a soil unit weight of 130 pcf and an angle of internal friction of 34 degrees. On the east side of the site along the WMATA facilities, design earth pressures for temporary support of excavation are as specified in our WMATA submittal. On the remaining sides of the site the second and third basements will be stepped in from the first basement. This will require two rows of soldier piles. Loads imposed by the upper soldier piles must be considered in the design of the lower soldier piles. Soldier

piles installed within 30 ft of existing structures should be inserted in pre-augered holes filled with grout to limit vibrations which could damage the existing structures. Positive measures should be provided to prevent soil from being washed between lagging boards during rainstorms causing subsidence outside of the sheeting and potential damage.

Heelblocks to resist raker loading may be designed assuming an angle of internal friction of the P2 sands of 34 degrees, provided that the angle of the raker above horizontal is at least 45 degrees and the heelblock is completely embedded in the soil. Care must be taken to avoid excavation behind the heelblocks while they are loaded. Rakers should be preloaded to 80 percent of their design load prior to excavation to the supported wale level to minimize movement of the soldier piles and lagging. It may be possible to use temporary tiebacks above the subway tunnels and below the existing and surrounding streets if permission can be obtained from the appropriate parties. If tiebacks are used, they should be installed using drilling procedures that minimize the loss of ground to avoid damage to the existing structures.

Underpinning

Underpinning must be considered for buildings within the influence zone of the proposed excavation. The influence zone is defined by a line rising upward and outward from the excavation perimeter at a slope of 1H:1V. Buildings founded above this line or utilities buried above this line are subject to settlement if the excavation support system moves toward the excavation. We understand that garage ramps will be constructed adjacent to the south end of Bell Multicultural High School and the abutting structures on Park Road NW. If no adjoining structures are founded above the line described above, underpinning will not be needed unless footings are extended to below adjacent footings to reach natural soil. The façade to remain on the south will require underpinning and lateral support during construction, and should be considered in design of the support of excavation. Wind loads on the façade must be taken into account in design of the support system.

Monitoring

A survey of the structures which could be damaged by construction should be performed prior to the start of construction. Such a survey should document all existing cracks, settlement, water or other damage to the structures. This will permit interested parties to distinguish later what damage may have occurred during construction of DCUSA as distinct from pre-existing damage. The settlement caused by construction of DCUSA may cause minor cosmetic damage to the adjacent buildings.

A series of settlement and lateral movement monitoring points should be established on the existing buildings and sidewalks and baseline readings taken, referenced to a benchmark which is far enough from the site to be unaffected by the construction. These points should be monitored at regular intervals especially when construction is being performed nearby. Threshold movement and action levels should be established for these points. If threshold levels

are exceeded monitoring frequency should increase. If action levels are reached, construction should stop until remedy can be implemented.

WMATA will also require monitoring of their facilities beneath 14th Street NW. This monitoring will be addressed separately in the WMATA submittal package.

Dewatering

Dewatering of construction excavations should be anticipated. Water levels should be drawn down at least 2 feet below subgrade levels by installing wells and pumping in advance of excavation. Quantities of water pumped during construction should be metered and recorded. These data should be reviewed and the design of the permanent underdrainage system adjusted if indicated. Construction dewatering intakes should be fitted with screens to minimize entry of fines into the system from the surrounding ground, and discharge lines should be equipped with Rossum sand testers or equivalent to monitor the quantity of fines pumped. If excessive amounts of fines are pumped, ground subsidence and settlement of adjacent structures could result.

Tunneling for Metro Sections E2, E3 and E4 which run from U Street NW along 14th Street, Park Road, and New Hampshire Avenue involved intense efforts at predrainage of groundwater. Installation and operation of deep wells encountered exceptional difficulties, particularly along Park Road. These involved the pervasive influence of iron-loving bacteria in clogging well filter packs and screens. No efficient remedy other than frequent purging was devised. Chemical treatment proved only to temporarily increase well yields. It is thought that the bacteria intruded the wells from contamination in the shallow Pleistocene strata. Every effort should be made to seal the uppermost section of the wells and make them absolutely watertight above the groundwater contours. Tools used in well installation that may have been contaminated should not be transferred to new wells without sterilization to destroy bacteria.

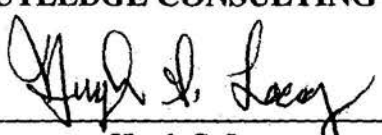
Foundation Subgrades

Construction traffic on the exposed subgrade should be limited to minimize disturbance of the subgrade soils. Subgrades should be inspected by a qualified geotechnical engineer prior to placing concrete.

Please contact us if you have any questions concerning this report.

Very truly yours,

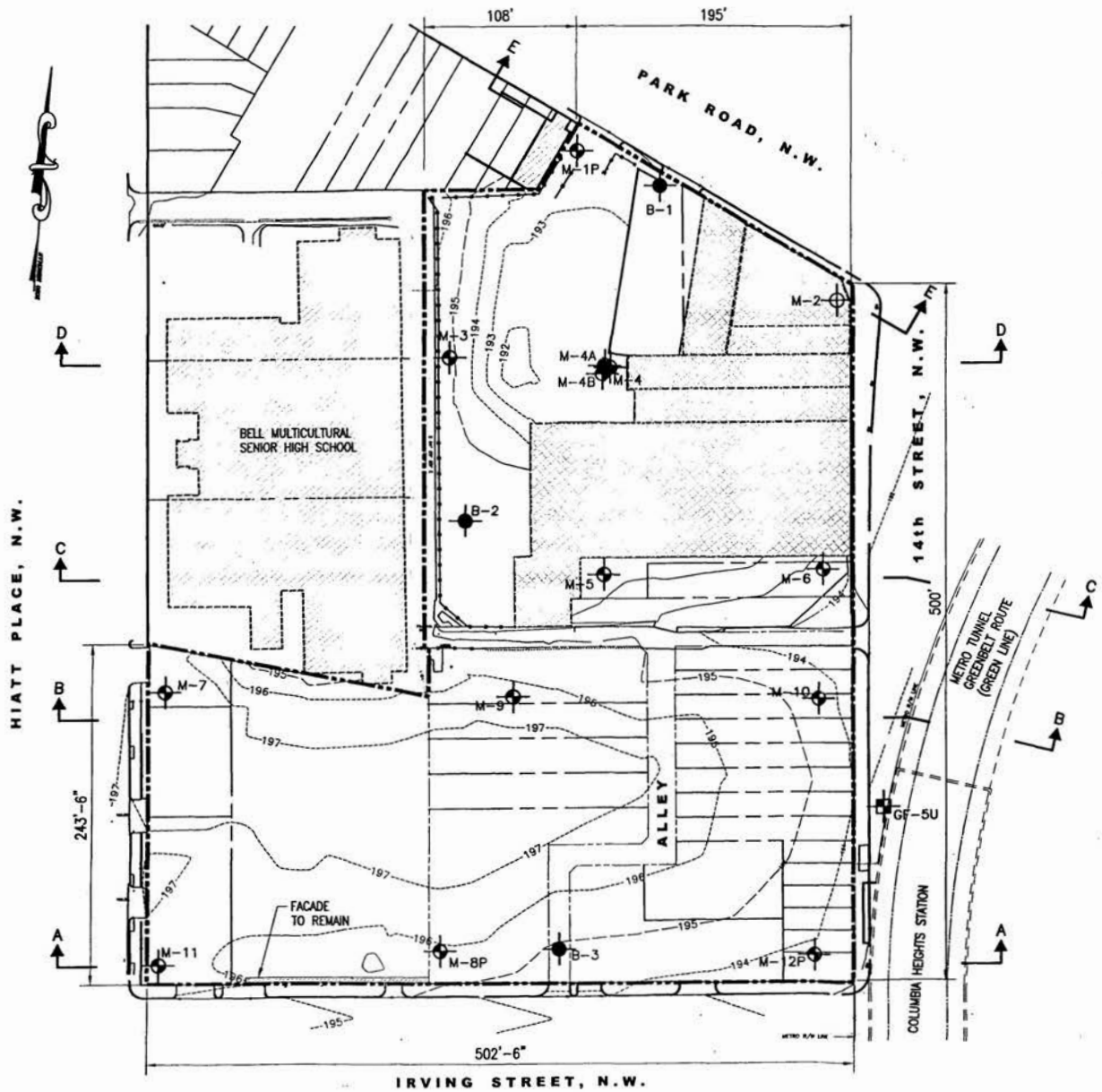
MUESER RUTLEDGE CONSULTING ENGINEERS



Hugh S. Lacy

DWC:HSL:Ltr-1.doc

EXHIBITS



LEGEND:

- M-1P — BORING MADE IN 2003 BY GEOSERVICES CORP AND INSPECTED BY MRCE
- P — DENOTES PIEZOMETER
- M-2 — BORING NOT TAKEN
- B-1 — BORING MADE BY GEO-CONCEPTS ENGINEERING FOR DC USA IN 2001.
- GF-5U — BORING MADE FOR WMATA IN 1992 UNDER MRCE INSPECTION
- EXISTING BUILDING TO REMAIN
- EXISTING BUILDING TO BE DEMOLISHED
- SITE LIMITS
- 193 — CONTOURS OF GROUND SURFACE ELEVATION

NOTES:

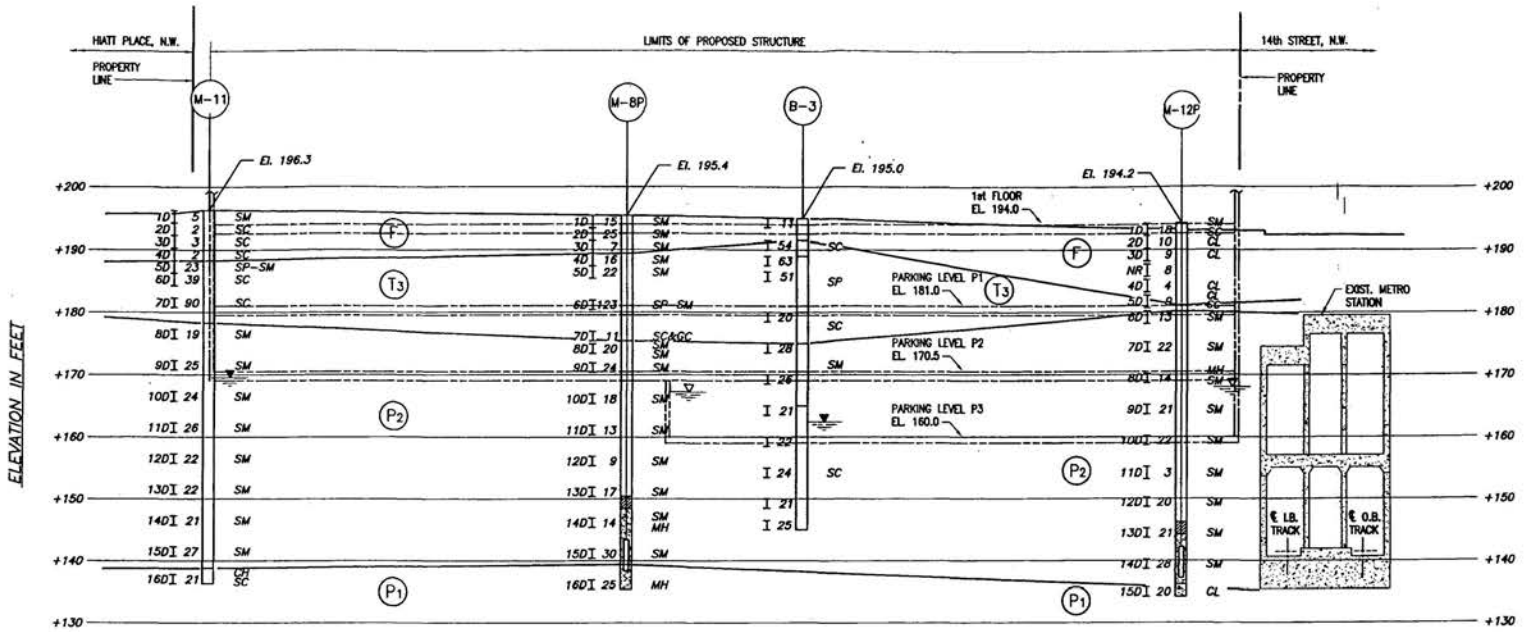
1. BASE DRAWING WAS TAKEN FROM "BOUNDARY AND TOPOGRAPHIC SURVEY, 14TH AND PARK ROAD, NW" DATED MARCH 2003, PREPARED BY A. MORTON THOMAS AND ASSOCIATES.
2. FOR GEOLOGICAL SECTIONS A-A THROUGH E-E, SEE DRAWINGS GS-1 THROUGH GS-5.
3. FOR GENERAL NOTES AND LEGEND SEE DRAWING NO. GS-R.
4. STRATIFICATIONS SHOWN ARE INTERPOLATIONS BETWEEN BORINGS AND MAY NOT REPRESENT ACTUAL SUBSURFACE CONDITIONS.
5. ELEVATIONS ARE REFERENCED TO DCDPW DATUM.
6. BUILDING DATA WERE TAKEN FROM DRAWINGS PROVIDED ELECTRONICALLY BY BOWER LEWIS THROWER ON SEPTEMBER 22, 2003.
7. BORING M-2 IS SCHEDULED TO BE MADE AFTER BUILDINGS ARE DEMOLISHED.

GRAPHIC SCALE
40' 20' 0 40' 80'

DC USA
WASHINGTON DC
DC USA OPERATING CO., LLC
NEW YORK NY
MUESER RUTLEDGE CONSULTING ENGINEERS
14 PENN PLAZA – 225 W. 34TH STREET, NY, NY 10122

SCALE	MADE BY J.E.M./A.P. DATE 4-12-04	FILE NO.
1"=80'-0"	CK'ED BY V.K. DATE 4-12-04	9976A

BORING LOCATION PLAN — DRAWING NO. B-1



SECTION A–A

GENERAL STRATA DESCRIPTIONS

(F)	FILL	LOOSE TO VERY COMPACT BROWN GRAY GRAVELLY FINE TO COARSE SAND, TRACE TO SOME SILT; TO FINE TO COARSE SAND, SOME GRAVEL, SILT, GRADING TO CLAYEY AND SILTY FINE TO COARSE SAND, TRACE TO SOME GRAVEL, WITH TRACE TO SOME CONCRETE, BRICK, TRACE ROCK FRAGMENTS, CLAY POCKETS, GLASS, ROOTS, OCCASIONAL RIP-RAP.
(T_1)	TERRACE CLAY	STIFF GRAY RED SILTY CLAY, TRACE FINE SAND.
(T_2)	TERRACE SAND	MEDIUM COMPACT BROWN GRAY CLAYEY FINE TO MEDIUM SAND; TO SILTY FINE TO MEDIUM SAND, TRACE CLAY, CLAY POCKETS.
(T_3)	TERRACE SAND AND GRAVEL	MEDIUM COMPACT TO VERY COMPACT BROWN GRAY GRAVELLY FINE TO COARSE SAND, TRACE TO SOME SILT, TRACE CLAY POCKETS; TO FINE TO COARSE SANDY GRAVEL, TRACE SILT, CLAY, GRADING TO FINE TO COARSE SAND, SOME GRAVEL, TRACE TO SOME SILT, CLAY, WITH OCCASIONAL CEMENTED SAND AND COBBLES.
(P_1)	POTOMAC CLAY	STIFF GRAY TO RED BROWN SILTY CLAY; TO PLASTIC CLAY; TO CLAYEY SILT, WITH TRACE FINE SAND, FINE SAND POCKETS AND LAYERS, OCCASIONAL CEMENTED SAND, CEMENTED SILT, LIGNITE, LIGNITE LAYERS (FISSURED TO SLICKENSIDED).
(P_2)	POTOMAC SAND	LOOSE TO COMPACT TAN BROWN MEDIUM TO FINE SAND, SOME SILT, TRACE CLAY, CLAY POCKETS, GRAVEL; AND CLAYEY TO SILTY FINE TO MEDIUM SAND, TRACE GRAVEL, GRADING TO FINE TO COARSE SAND, SOME SILT, TRACE TO SOME GRAVEL, TRACE CLAY, CLAY POCKETS, WITH OCCASIONAL CEMENTED SAND, CEMENTED SAND LAYERS, CLAY LAYERS.

NOTE

1. FOR BORING LOCATION PLAN, SECTION LOCATION, LEGEND AND NOTES SEE DRAWING NO. B-1

GRAPHIC SCALE

HORIZ. 30' 20' 10' 0 30' 60'

VERT. 10' 5' 0 10' 20'

DC USA

WASHINGTON DC

DC USA OPERATING CO., LLC

NEW YORK NY

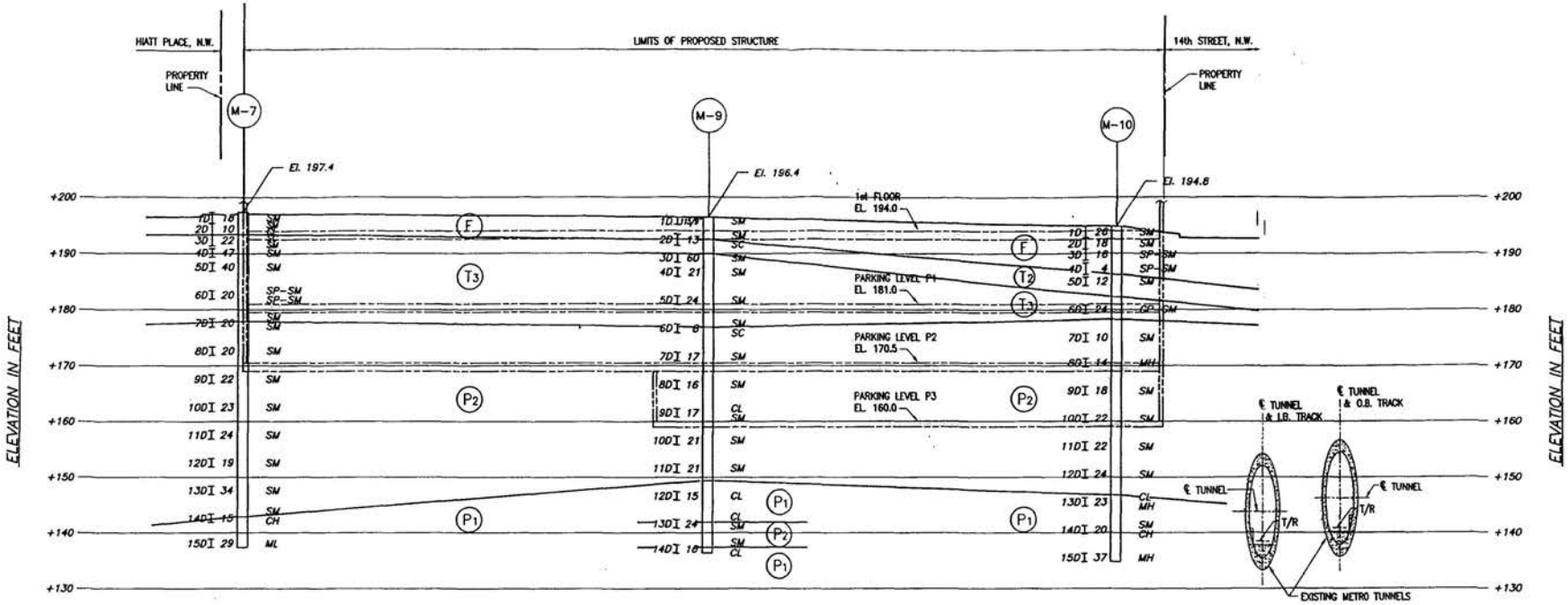
MUESER RUTLEDGE CONSULTING ENGINEERS

14 PENN PLAZA – 225 W. 34TH STREET, NY, NY 10122

SCALE	MADE BY	DATE	FILE NO.
GRAPHIC	LY.	10-20-03	9976A
	CHKD BY D.C.	DATE 10-20-03	DRAWING NO.

GEOLOGIC SECTION A–A

GS–1



SECTION B–B

GENERAL STRATA DESCRIPTIONS

(F)	FILL	LOOSE TO VERY COMPACT BROWN GRAY GRAVELLY FINE TO COARSE SAND, TRACE TO SOME SILT; TO FINE TO COARSE SAND, SOME GRAVEL, SILT, GRADING TO CLAYEY AND SILTY FINE TO COARSE SAND, TRACE TO SOME GRAVEL, WITH TRACE TO SOME CONCRETE, BRICK, TRACE ROCK FRAGMENTS, CLAY POCKETS, GLASS, ROOTS, OCCASIONAL RIP-RAP.
(T1)	TERRACE CLAY	STIFF GRAY RED SILTY CLAY, TRACE FINE SAND.
(T2)	TERRACE SAND	MEDIUM COMPACT BROWN GRAY CLAYEY FINE TO MEDIUM SAND; TO SILTY FINE TO MEDIUM SAND, TRACE CLAY, CLAY POCKETS.
(T3)	TERRACE SAND AND GRAVEL	MEDIUM COMPACT TO VERY COMPACT BROWN GRAY GRAVELLY FINE TO COARSE SAND, TRACE TO SOME SILT, TRACE CLAY POCKETS; TO FINE TO COARSE SANDY GRAVEL, TRACE SILT, CLAY, GRADING TO FINE TO COARSE SAND, SOME GRAVEL, TRACE TO SOME SILT, CLAY, WITH OCCASIONAL CEMENTED SAND AND COBBLES.
(P1)	POTOMAC CLAY	STIFF GRAY TO RED BROWN SILTY CLAY; TO PLASTIC CLAY; TO CLAYEY SILT, WITH TRACE FINE SAND, FINE SAND POCKETS AND LAYERS, OCCASIONAL CEMENTED SAND, CEMENTED SILT, LIGNITE, LIGNITE LAYERS (FISSURED TO SLICKENSIDED).
(P2)	POTOMAC SAND	LOOSE TO COMPACT TAN BROWN MEDIUM TO FINE SAND, SOME SILT, TRACE CLAY, CLAY POCKETS, GRAVEL; AND CLAYEY TO SILTY FINE TO MEDIUM SAND, TRACE GRAVEL, GRADING TO FINE TO COARSE SAND, SOME SILT, TRACE TO SOME GRAVEL, TRACE CLAY, CLAY POCKETS, WITH OCCASIONAL CEMENTED SAND, CEMENTED SAND LAYERS, CLAY LAYERS.

NOTE

1. FOR BORING LOCATION PLAN, SECTION LOCATION, LEGEND AND NOTES SEE DRAWING NO. B-1

GRAPHIC SCALE

HORIZ. 30' 20' 10' 0 30' 60'

VERT. 10' 5' 0 10' 20'

DC USA

WASHINGTON DC

DC USA OPERATING CO., LLC

NEW YORK NY

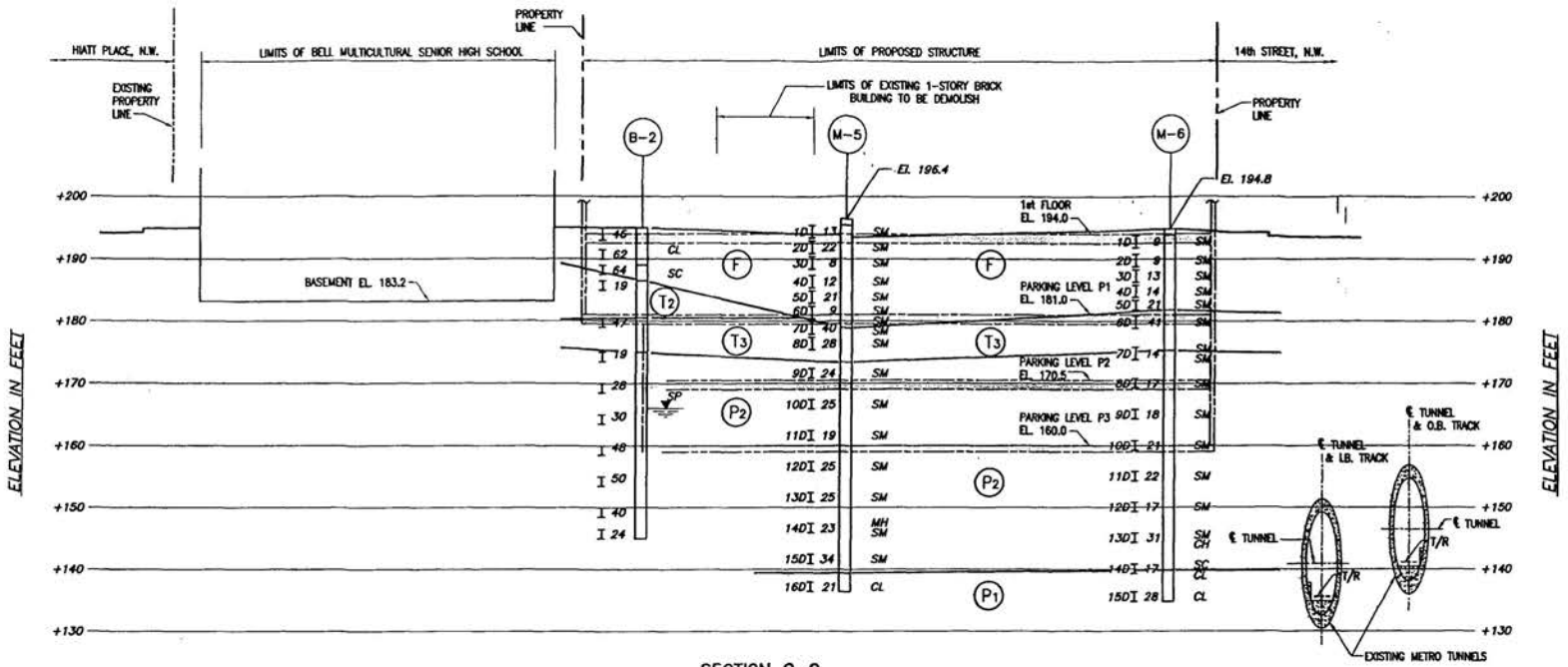
MUESER RUTLEDGE CONSULTING ENGINEERS

14 PENN PLAZA – 225 W. 34TH STREET, NY, NY 10122

SCALE	MADE BY	DATE	FILE NO.
GRAPHIC	I.Y.	10-20-03	9976A
	CHKD BY D.C.	10-20-03	

GEOLOGIC SECTION B–B

DRAWING NO. GS-2



SECTION C–C

GENERAL STRATA DESCRIPTIONS

(F)	FILL	LOOSE TO VERY COMPACT BROWN GRAY GRAVELLY FINE TO COARSE SAND, TRACE TO SOME SILT; TO FINE TO COARSE SAND, SOME GRAVEL, SILT, GRADING TO CLAYEY AND SILTY FINE TO COARSE SAND, TRACE TO SOME GRAVEL, WITH TRACE TO SOME CONCRETE, BRICK, TRACE ROCK FRAGMENTS, CLAY POCKETS, GLASS, ROOTS, OCCASIONAL RIP-RAP.
(T1)	TERRACE CLAY	STIFF GRAY RED SILTY CLAY, TRACE FINE SAND.
(T2)	TERRACE SAND	MEDIUM COMPACT BROWN GRAY CLAYEY FINE TO MEDIUM SAND; TO SILTY FINE TO MEDIUM SAND, TRACE CLAY, CLAY POCKETS.
(T3)	TERRACE SAND AND GRAVEL	MEDIUM COMPACT TO VERY COMPACT BROWN GRAY GRAVELLY FINE TO COARSE SAND, TRACE TO SOME SILT, TRACE CLAY POCKETS; TO FINE TO COARSE SANDY GRAVEL, TRACE SILT, CLAY, GRADING TO FINE TO COARSE SAND, SOME GRAVEL, TRACE TO SOME SILT, CLAY, WITH OCCASIONAL CEMENTED SAND AND COBBLES.
(P1)	POTOMAC CLAY	STIFF GRAY TO RED BROWN SILTY CLAY; TO PLASTIC CLAY; TO CLAYEY SILT, WITH TRACE FINE SAND, FINE SAND POCKETS AND LAYERS, OCCASIONAL CEMENTED SAND, CEMENTED SILT, LIGNITE, LIGNITE LAYERS (FISSURED TO SLICKENSIDED).
(P2)	POTOMAC SAND	LOOSE TO COMPACT TAN BROWN MEDIUM TO FINE SAND, SOME SILT, TRACE CLAY, CLAY POCKETS, GRAVEL; AND CLAYEY TO SILTY FINE TO MEDIUM SAND, TRACE GRAVEL, GRADING TO FINE TO COARSE SAND, SOME SILT, TRACE TO SOME GRAVEL, TRACE CLAY, CLAY POCKETS, WITH OCCASIONAL CEMENTED SAND, CEMENTED SAND LAYERS, CLAY LAYERS.

NOTES

1. FOR BORING LOCATION PLAN, SECTION LOCATION, LEGEND AND NOTES SEE DRAWING NO. B-1
2. DETAILS OF BELL MULTICULTURAL SENIOR HIGH SCHOOL BUILDING TAKEN FROM "BOUNDARY AND TOPOGRAPHIC SURVEY, 14TH. AND PARK ROAD, NW", PREPARED BY A. MORTON THOMAS AND ASSOCIATES.

GRAPHIC SCALE

HORIZ. 30' 20' 10' 0 30' 60'

VERT. 10' 5' 0 10' 20'

DC USA

WASHINGTON DC

DC USA OPERATING CO., LLC

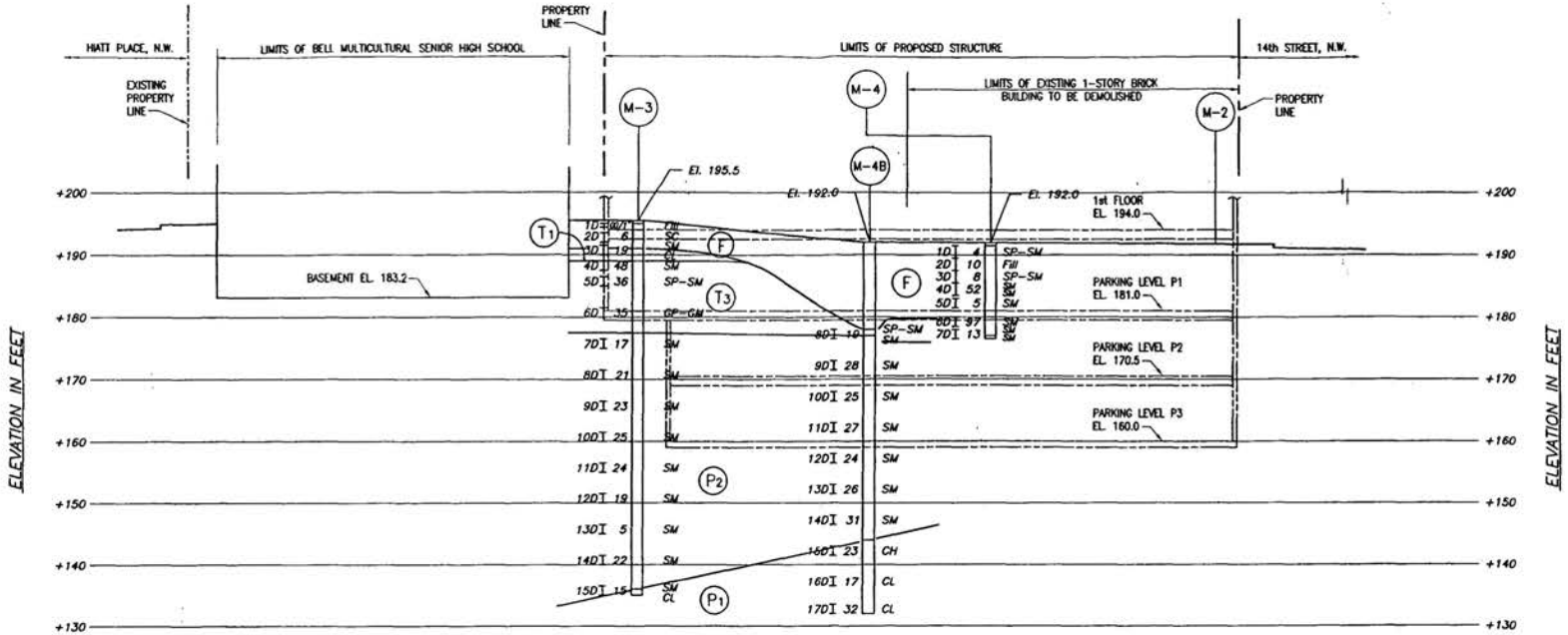
NEW YORK NY

MUESER RUTLEDGE CONSULTING ENGINEERS
14 PENN PLAZA – 225 W. 34TH STREET, NY, NY 10122

SCALE	MADE BY L.Y.	DATE 10-20-03	FILE NO.
GRAPHIC	CHKD BY D.C.	DATE 10-20-03	9976A

GEOLOGIC SECTION C–C

DRAWING NO. GS-3



SECTION D-D

GENERAL STRATA DESCRIPTIONS

(F)	FILL	LOOSE TO VERY COMPACT BROWN GRAY GRAVELLY FINE TO COARSE SAND, TRACE TO SOME SILT; TO FINE TO COARSE SAND, SOME GRAVEL, SILT, GRADING TO CLAYEY AND SILTY FINE TO COARSE SAND, TRACE TO SOME GRAVEL, WITH TRACE TO SOME CONCRETE, BRICK, TRACE ROCK FRAGMENTS, CLAY POCKETS, GLASS, ROOTS, OCCASIONAL RIP-RAP.
(T1)	TERRACE CLAY	STIFF GRAY RED SILTY CLAY, TRACE FINE SAND.
(T2)	TERRACE SAND	MEDIUM COMPACT BROWN GRAY CLAYEY FINE TO MEDIUM SAND; TO SILTY FINE TO MEDIUM SAND, TRACE CLAY, CLAY POCKETS.
(T3)	TERRACE SAND AND GRAVEL	MEDIUM COMPACT TO VERY COMPACT BROWN GRAY GRAVELLY FINE TO COARSE SAND, TRACE TO SOME SILT, TRACE CLAY POCKETS; TO FINE TO COARSE SANDY GRAVEL, TRACE SILT, CLAY, GRADING TO FINE TO COARSE SAND, SOME GRAVEL, TRACE TO SOME SILT, CLAY, WITH OCCASIONAL CEMENTED SAND AND COBBLES.
(P1)	POTOMAC CLAY	STIFF GRAY TO RED BROWN SILTY CLAY; TO PLASTIC CLAY; TO CLAYEY SILT, WITH TRACE FINE SAND, FINE SAND POCKETS AND LAYERS, OCCASIONAL CEMENTED SAND, CEMENTED SILT, LIGNITE, LIGNITE LAYERS (FISSURED TO SLICKENSIDED).
(P2)	POTOMAC SAND	LOOSE TO COMPACT TAN BROWN MEDIUM TO FINE SAND, SOME SILT, TRACE CLAY, CLAY POCKETS, GRAVEL; AND CLAYEY TO SILTY FINE TO MEDIUM SAND, TRACE GRAVEL, GRADING TO FINE TO COARSE SAND, SOME SILT, TRACE TO SOME GRAVEL, TRACE CLAY, CLAY POCKETS, WITH OCCASIONAL CEMENTED SAND, CEMENTED SAND LAYERS, CLAY LAYERS.

NOTES

1. FOR BORING LOCATION PLAN, SECTION LOCATION, LEGEND AND NOTES SEE DRAWING NO. B-1
2. DETAILS OF BELL MULTICULTURAL SENIOR HIGH SCHOOL BUILDING TAKEN FROM "BOUNDARY AND TOPOGRAPHIC SURVEY, 14TH. AND PARK ROAD, NW", PREPARED BY A. MORTON THOMAS AND ASSOCIATES.
3. BORING M-2 IS SCHEDULED TO BE MADE AFTER BUILDINGS ARE DEMOLISHED.

GRAPHIC SCALE

HORIZ. 30' 20' 10' 0 30' 60'

VERT. 10' 5' 0 10' 20'

DC USA

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NEW YORK NY

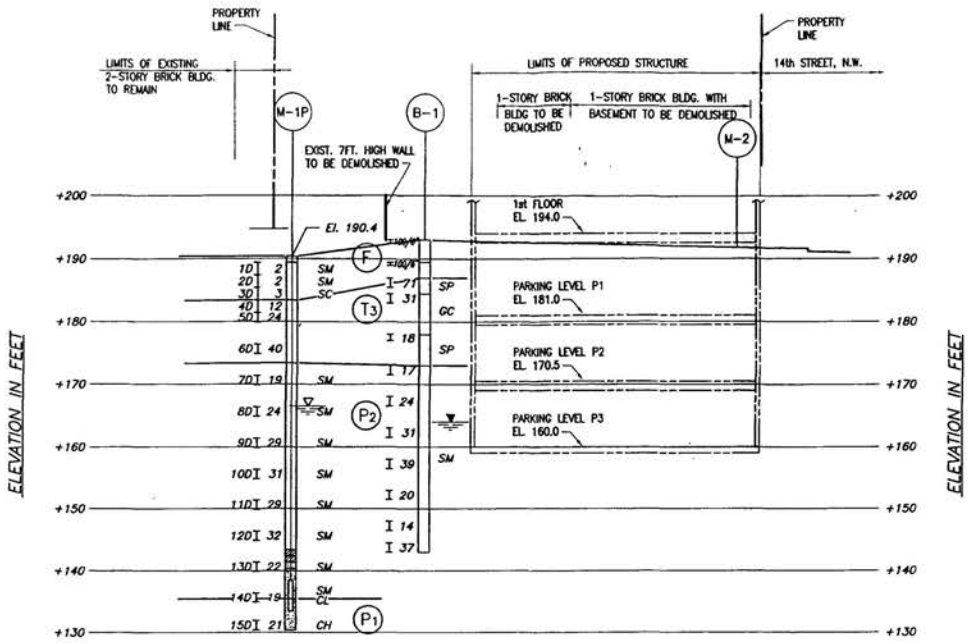
MUESER RUTLEDGE CONSULTING ENGINEERS

14 PENN PLAZA - 225 W. 34TH STREET, NY, NY 10122

SCALE	MADE BY	DATE	FILE NO.
GRAPHIC	LY.	10-20-03	9976A
	CHKD BY D.C.	10-20-03	

GEOLOGIC SECTION D-D

DRAWING NO. GS-4



SECTION E-E

GENERAL STRATA DESCRIPTIONS

(F) FILL — LOOSE TO VERY COMPACT BROWN GRAY GRAVELLY FINE TO COARSE SAND, TRACE TO SOME SILT; TO FINE TO COARSE SAND, SOME GRAVEL, SILT, GRADING TO CLAYEY AND SILTY FINE TO COARSE SAND, TRACE TO SOME GRAVEL, WITH TRACE TO SOME CONCRETE, BRICK, TRACE ROCK FRAGMENTS, CLAY POCKETS, GLASS, ROOTS, OCCASIONAL RIP-RAP.

(T1) TERRACE CLAY — STIFF GRAY RED SILTY CLAY, TRACE FINE SAND.

(T2) TERRACE SAND — MEDIUM COMPACT BROWN GRAY CLAYEY FINE TO MEDIUM SAND; TO SILTY FINE TO MEDIUM SAND, TRACE CLAY, CLAY POCKETS.

(T3) TERRACE SAND AND GRAVEL — MEDIUM COMPACT TO VERY COMPACT BROWN GRAY GRAVELLY FINE TO COARSE SAND, TRACE TO SOME SILT, TRACE CLAY POCKETS; TO FINE TO COARSE SANDY GRAVEL, TRACE SILT, CLAY, GRADING TO FINE TO COARSE SAND, SOME GRAVEL, TRACE TO SOME SILT, CLAY, WITH OCCASIONAL CEMENTED SAND AND COBBLES.

(P1) POTOMAC CLAY — STIFF GRAY TO RED BROWN SILTY CLAY; TO PLASTIC CLAY; TO CLAYEY SILT, WITH TRACE FINE SAND, FINE SAND POCKETS AND LAYERS, OCCASIONAL CEMENTED SAND, CEMENTED SILT, LIGNITE, LIGNITE LAYERS (FISSURED TO SLICKENSIDED).

(P2) POTOMAC SAND — LOOSE TO COMPACT TAN BROWN MEDIUM TO FINE SAND, SOME SILT, TRACE CLAY, CLAY POCKETS, GRAVEL; AND CLAYEY TO SILTY FINE TO MEDIUM SAND, TRACE GRAVEL, GRADING TO FINE TO COARSE SAND, SOME SILT, TRACE TO SOME GRAVEL, TRACE CLAY, CLAY POCKETS, WITH OCCASIONAL CEMENTED SAND, CEMENTED SAND LAYERS, CLAY LAYERS.

NOTES

1. FOR BORING LOCATION PLAN, SECTION LOCATION, LEGEND AND NOTES SEE DRAWING NO. B-1
2. BORING M-2 IS SCHEDULED TO BE MADE AFTER BUILDINGS ARE DEMOLISHED.

GRAPHIC SCALE

HORIZ. 30' 20' 10' 0 30' 60'

VERT. 10' 5' 0 10' 20'

DC USA

WASHINGTON DC

DC USA OPERATING CO., LLC

NEW YORK NY

MUESER RUTLEDGE CONSULTING ENGINEERS

14 PENN PLAZA – 225 W. 34TH STREET, NY, NY 10122

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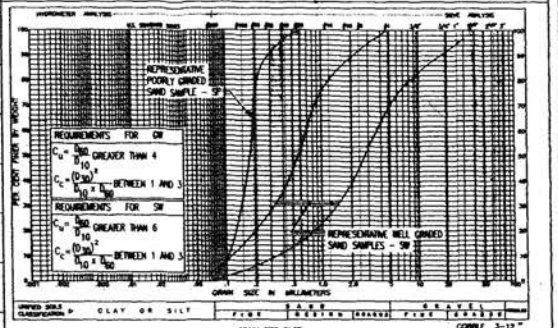
GEOLOGIC SECTION E-E — GS-5

UNIFIED SOIL CLASSIFICATION (INCLUDING IDENTIFICATION AND DESCRIPTION)

MAJOR DIVISIONS			GROUP SYMBOLS	TYPICAL NAMES	FIELD IDENTIFICATION PROCEDURES (EXCLUDING PARTICLES LARGER THAN 3 IN. AND BASING FRACTIONS ON ESTIMATED WEIGHTS)		
1	2		3	4	5		
COARSE-GRAINED SOILS MORE THAN HALF OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE	GRAVELS MORE THAN HALF OF COARSE FRACTION IS LARGER THAN NO. 4 SIEVE SIZE.	CLEAN GRAVELS (LITTLE OR NO FINES)	GW	WELL GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES.	WIDE RANGE IN GRAIN SIZES AND SUBSTANTIAL AMOUNTS OF ALL INTERMEDIATE PARTICLE SIZES.		
			GP	POORLY GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES.	PREDOMINANTLY ONE SIZE OR A RANGE OF SIZES WITH SOME INTERMEDIATE SIZES MISSING.		
		GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES.	NONPLASTIC FINES OR FINES WITH LOW PLASTICITY (FOR IDENTIFICATION PROCEDURES SEE ML BELOW)		
			GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES.	PLASTIC FINES (FOR IDENTIFICATION PROCEDURES SEE CL BELOW)		
	SANDS MORE THAN HALF OF COARSE FRACTION IS SMALLER THAN NO. 4 SIEVE SIZE. (FOR VISUAL CLASSIFICATION, THE 1/4 IN. SIZE MAY BE USED AS EQUIVALENT TO THE NO. 4 SIEVE SIZE)	CLEAN SANDS (LITTLE OR NO FINES)	SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES.	WIDE RANGE IN GRAIN SIZES AND SUBSTANTIAL AMOUNTS OF ALL INTERMEDIATE PARTICLE SIZES.		
			SP	POORLY GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES.	PREDOMINANTLY ONE SIZE OR A RANGE OF SIZES WITH SOME INTERMEDIATE SIZES MISSING.		
		SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)	SM	SILTY SANDS, SAND-SILT MIXTURES.	NONPLASTIC FINES OR FINES WITH LOW PLASTICITY (FOR IDENTIFICATION PROCEDURES SEE ML BELOW)		
			SC	CLAYEY SANDS, SAND-CLAY MIXTURES.	PLASTIC FINES (FOR IDENTIFICATION PROCEDURES SEE CL BELOW)		
FINE-GRAINED SOILS MORE THAN HALF OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE THE NO. 200 SIEVE SIZE IS ABOUT THE SMALLEST PARTICLE VISIBLE TO THE NAKED EYE.					IDENTIFICATION PROCEDURES ON FRACTION SMALLER THAN NO. 40 SIEVE SIZE		
					DRY STRENGTH (CRUSHING CHARACTERISTICS)	DILATANCY (REACTION TO SHAKING)	TOUGHNESS (CONSISTENCY NEAR PL)
	SILTS AND CLAYS LIQUID LIMIT IS LESS THAN 50		ML	INORGANIC SILTS, SANDY SILTS, ROCK FLOUR, OR CLAYEY SILTS WITH SLIGHT PLASTICITY.	NONE TO SLIGHT	QUICK TO SLOW	NONE
			CL	INORGANIC CLAYS, OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS.	MEDIUM TO HIGH	NONE TO VERY SLOW	MEDIUM
			OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY.	SLIGHT TO MEDIUM	SLOW	SLIGHT
	SILTS AND CLAYS LIQUID LIMIT IS GREATER THAN 50		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS, ELASTIC SILTS.	SLIGHT TO MEDIUM	SLOW TO NONE	SLIGHT TO MEDIUM
			CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS.	HIGH TO VERY HIGH	NONE	HIGH
			OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS.	MEDIUM TO HIGH	NONE TO VERY SLOW	SLIGHT TO MEDIUM
HIGHLY ORGANIC SOILS			PT	PEAT AND OTHER HIGHLY ORGANIC SOILS.	READILY IDENTIFIED BY COLOR, ODOR, SPONGY FEEL AND FREQUENTLY BY FIBROUS TEXTURE.		

BOUNDARY CLASSIFICATIONS: SOILS POSSESING CHARACTERISTICS OF TWO GROUPS ARE DESIGNATED BY COMBINATIONS OF GROUP SYMBOLS, I.E.: SP-SC POORLY GRADED SAND WITH CLAY BINDER.

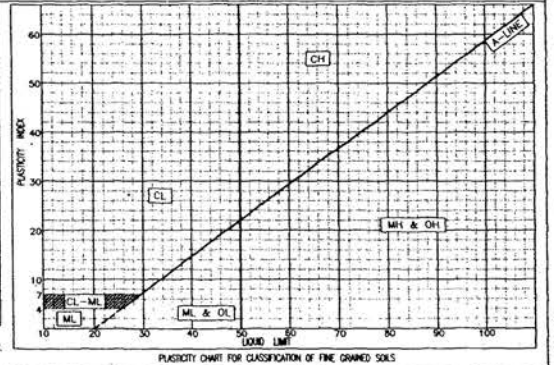
LABORATORY CLASSIFICATION CRITERIA



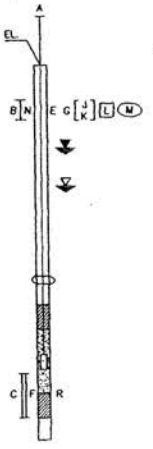
GRAIN SIZE PLOT

DEPENDING ON PERCENTAGE OF FINES (FRACTION SMALLER THAN NO. 200 SIEVE SIZE) COARSE GRAINED SOILS ARE CLASSIFIED AS FOLLOWS:

LESS THAN 5%	GW, GP, SW, SP
MORE THAN 12%	GM, GC, SM, SC
5% TO 12%	BORDERLINE CASES REQUIRING USE OF DUAL SYMBOLS, I.E.: SP-SM, GP-GM



PLASTICITY CHART FOR CLASSIFICATION OF FINE GRAINED SOILS



BORING LEGEND

- A – NUMBER, TYPE AND LOCATION OF BORING
- EL. – GROUND SURFACE ELEVATION AT BORING
- B – NUMBER AND TYPE OF SAMPLE
  - D – DRY SAMPLE TAKEN WITH 2 INCH O.D. SPLIT SPOON
  - U* – UNDISTURBED SAMPLE TAKEN WITH 3 INCH O.D. FIXED PISTON TYPE SAMPLER
  - UD – UNDISTURBED SAMPLE EXTRUDED IN FIELD AND PLACED IN JAR DUE TO POOR RECOVERY OR DISTURBANCE
  - S – THIN TUBE SAMPLE TAKEN WITH SHELBY TUBE SAMPLER
  - W – WASH SAMPLE
  - NR – NO RECOVERY
- I – LENGTH OF SAMPLE ATTEMPT
- N – STANDARD PENETRATION RESISTANCE. NUMBER OF BLOWS FROM 140 LB. HAMMER FREE FALLING 30 INCHES REQUIRED TO DRIVE 2 INCH O.D. SPLIT SPOON SAMPLER ONE FOOT AFTER INITIAL PENETRATION OF 6 INCHES, UNLESS A SPECIFIC PENETRATION IS INDICATED.
  - P – PRESSED OR PUSH SAMPLE
  - WH – SAMPLE TAKEN UNDER WEIGHT OF HAMMER AND RODS
  - WR – SAMPLE TAKEN UNDER WEIGHT OF RODS
- E – AVERAGE NATURAL WATER CONTENT OF SAMPLE, IN PERCENT OF DRY WEIGHT
- G – UNIFIED SOIL CLASSIFICATION GROUP SYMBOL OF SAMPLE
- [J] = ATTERBERG LIQUID LIMIT VALUE; [K] = ATTERBERG PLASTIC LIMIT VALUE
- [L] – COMPRESSIVE STRENGTH IN TSF DETERMINED FROM UNCONFINED COMPRESSION TEST
- (M) – COMPRESSIVE STRENGTH IN TSF DETERMINED FROM UNCONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST
- ▼ – GROUNDWATER LEVEL OBSERVED IN BORING
  - ▽ – MUD LEVEL
- ▽ – GROUNDWATER LEVEL OBSERVED IN PIEZOMETER
- C – ROCK CORE NUMBER
- ‖ – LENGTH OF CORE RUN
- F – LENGTH OF CORE RECOVERED EXPRESSED AS A PERCENT OF THE LENGTH OF CORE RUN
- R – ROCK QUALITY DESIGNATION–THE SUM OF THE LENGTHS OF PIECES OF RECOVERED CORE WHICH ARE EQUAL TO OR GREATER THAN FOUR INCHES IN LENGTH, EXPRESSED AS A PERCENTAGE OF THE TOTAL LENGTH OF CORE RUN. LENGTHS ARE MEASURED BETWEEN IN-SITU SEPARATIONS AND MECHANICAL BREAKS RESULTING FROM CORING ARE IGNORED.
- ▨ – IMPERVIOUS SEAL
- ▨ – SAND FILTER SURROUNDING PIEZOMETER INTAKE ELEMENT
- ▯ – INTAKE ELEMENT
- ⬭ – COBBLE OR BOULDER

TERMINOLOGY USED IN MORE SOIL DESCRIPTIONS

DEGREE OF COMPACTION FOR NON-PLASTIC SOIL	
DEGREE OF COMPACTION	BLOWS* PER FOOT
LOOSE	0 TO 10
MEDIUM COMPACT	11 TO 29
COMPACT	30 TO 50
VERY COMPACT	GREATER THAN 50

* STANDARD PENETRATION RESISTANCE USING 140 LB. HAMMER FREE FALLING 30 INCHES TO DRIVE A 2 INCH O.D. SPLIT-SPOON SAMPLER

CONSISTENCY OF CLAY AND CLAYEY SILT +		
CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TSF)	IDENTIFICATION CHARACTERISTICS
SOFT	LESS THAN 0.5	EASILY REMOLDED WITH SLIGHT FINGER PRESSURE
MEDIUM	0.5 TO 1.0	REQUIRES SUBSTANTIAL PRESSURE FOR REMOLDING
STIFF	1.0 TO 4.0	DIFFICULT TO REMOLD WITH FINGERS
HARD	GREATER THAN 4.0	CANNOT BE REMOLDED WITH FINGERS

\+ NONPLASTIC SILTS ARE DESCRIBED USING DEGREE OF COMPACTION AS PRESENTED FOR NON-PLASTIC SOIL.

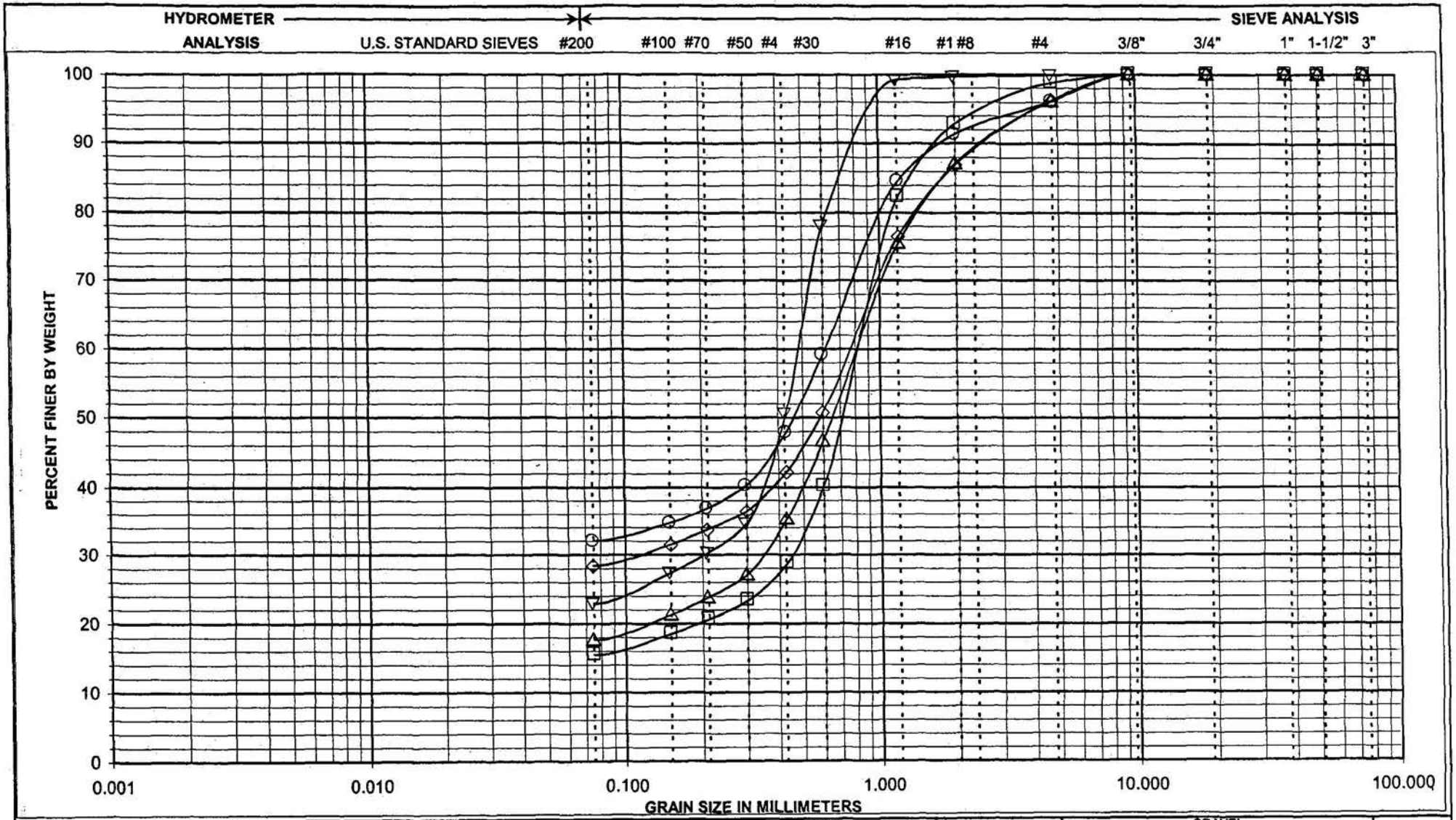
DESCRIPTION OF CONSTITUENT PERCENTAGES AS USED IN SOIL SAMPLE CLASSIFICATIONS	
1% TO 12%	– "TRACE"
13% TO 30%	– "SOME"
31% TO 49%	– ADJECTIVE FORM OF SOIL GROUP (EG. SANDY)
EQUAL AMOUNT	– "AND" (EG. SAND AND GRAVEL)

REVISED – SEPTEMBER, 2001

MUESER RUTLEDGE CONSULTING ENGINEERS
225 WEST 34TH STREET – 14 PENN PLAZA
NEW YORK, NY 10122

GEOTECHNICAL REFERENCE STANDARDS

DRAWING NO. GS-R



UNIFIED SOILS CLASSIFICATION	CLAY OR SILT	SAND			GRAVEL		COBBLES
		FINE	MEDIUM	COARSE	FINE	COARSE	

SYMBOL	BORING	SAMPLE	STRATUM	DESCRIPTION OF SAMPLE
○	M-3	11D	P2	Brown gray silty medium to fine sand, trace coarse sand, gravel, clay (SM)
□	M-4B	12D	P2	Brown medium to fine sand, some silt, trace coarse sand, gravel, clay (SM)
△	M-5	12D	P2	Brown medium to fine sand, some silt, trace coarse sand, gravel, clay (SM)
◇	M-6	11D	P2	Brown medium to fine sand, some silt, trace coarse sand, gravel, clay (SM)
▽	M-7	9D	P2	Gray brown medium to fine sand, some silt, trace clay, gravel (SM)

PLATE NO. 1

D C USA

WASHINGTON D.C.

MUESER RUTLEDGE CONSULTING ENGINEERS

225 WEST 34TH STREET, NEW YORK, N.Y. 10122

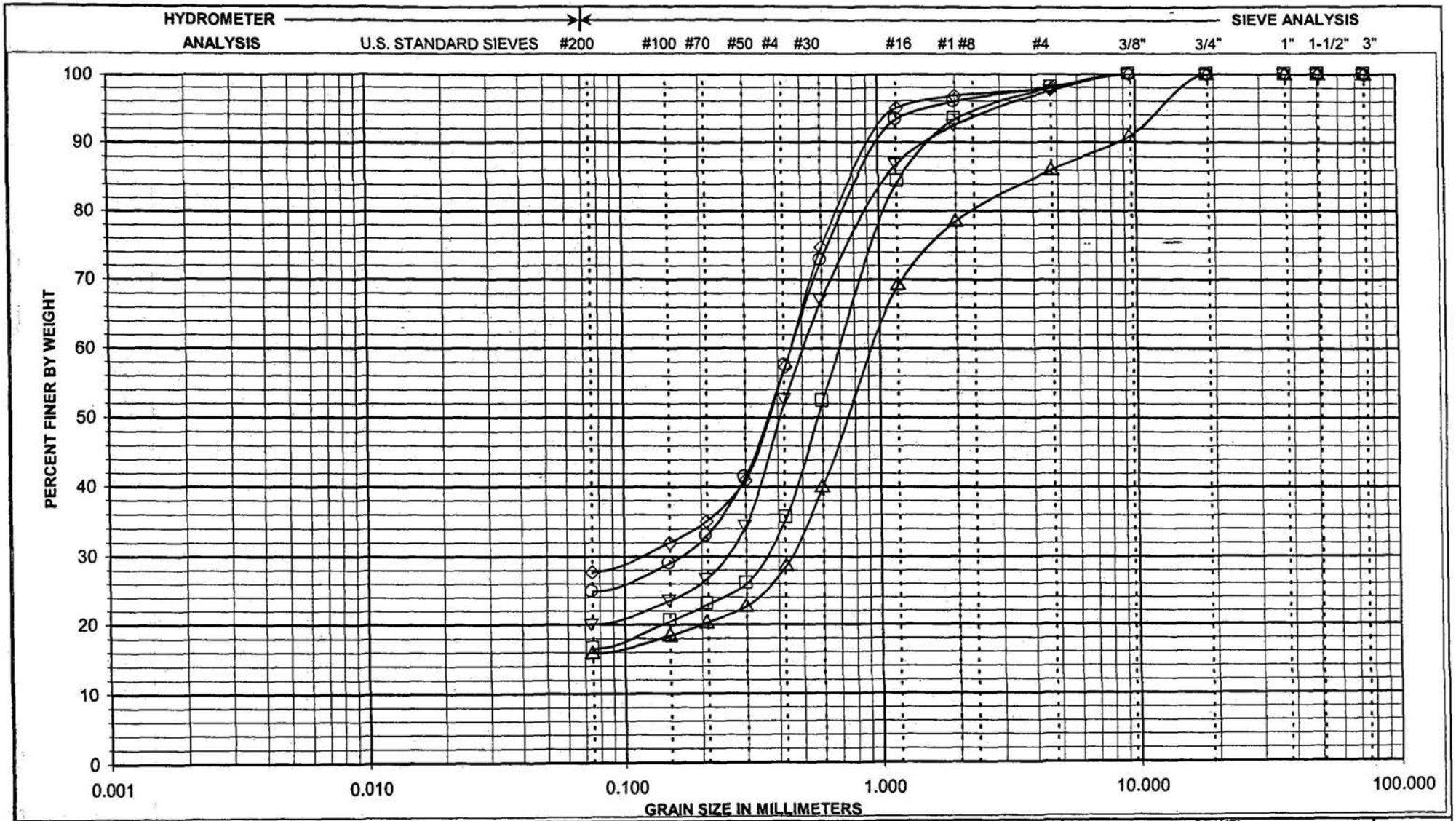
MADE BY: BEE DATE: 12-08-03

CH'KD BY: AAA DATE: 12-09-03

FILE NO. 9976A

GRADATION CURVES

PLATE NO. 1



UNIFIED SOILS CLASSIFICATION	CLAY OR SILT	SAND			GRAVEL		COBBLES
		FINE	MEDIUM	COARSE	FINE	COARSE	

SYMBOL	BORING	SAMPLE	STRATUM	DESCRIPTION OF SAMPLE
○	M-8P	10D	P2	Gray brown medium to fine sand, some silt, trace coarse sand, gravel, clay (SM)
□	M-9	10D	P2	Brown medium to fine sand, some silt, trace coarse sand, gravel, clay (SM)
△	M-10	11D	P2	Brown medium to fine sand, some silt, gravel, trace coarse sand, clay (SM)
◇	M-11	10D	P2	Gray brown medium to fine sand, some silt, trace clay, gravel, coarse sand (SM)
▽	M-12P	11D	P2	Gray medium to fine sand, some silt, trace coarse sand, gravel, clay (SM)

PLATE NO. 2

D C USA

WASHINGTON D.C.

MUESER RUTLEDGE CONSULTING ENGINEERS

225 WEST 34TH STREET, NEW YORK, N.Y. 10122

MADE BY: BEE DATE: 12-08-03

CH'KD BY: AAA DATE: 12-09-03

FILE NO. **9976A**

GRADATION CURVES

PLATE NO. **2**

APPENDIX A

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING LOG

BORING NO. M-1P
SHEET 1 OF 4
FILE NO. 9976A
SURFACE ELEV. 190.4
RES. ENGR. BILL HOBSON

PROJECT: DC USA
LOCATION: WASHINGTON, D.C.

DAILY PROGRESS	SAMPLE NO.	SAMPLE DEPTH	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	CASING BLOWS	REMARKS
08:00					*	1	4"	*12" concrete at
10-14-03	1D	1.0	1-1	Brown gravelly fine to coarse sand, some silt,				surface.
Tuesday		3.0	1-1	trace clay pockets (Fill) (SM)				
	2D	3.0	1-1	Brown gravelly fine to coarse sand, some silt,	F			
		5.0	1-1	fine to medium sandy clay pockets (Fill) (SM)		5		
	3D	5.0	1-1	Brown clayey fine to coarse sand, some				
		7.0	2-1	gravel (Fill) (SC)		7		
	4D	7.0	2-3	Brown gravelly fine to coarse sand, trace silt				
		9.0	9-9	(SP-SM)				
	5D	9.0	12-13	Do 4D (SP-SM)		10		
		10.5	11					
					T3			
								Cobbles at 13'.
	6D	14.0	14-14	Do 4D, trace clay pockets (SP-SM)		15		
		15.5	26					
						17		
								Washed ahead of
							▼	casing to 19'.
	7D	19.0	5-8	Gray tan silty fine sand, trace clay (SM)		20	USED	Casing blows not
		20.5	11				REVERT	recorded.
	8D	24.0	10-10	Brown silty fine to medium sand, some clayey		25		
		25.5	14	fine to medium sand pockets, trace gravel (SM)				
	9D	29.0	8-12	Gray medium to fine sand, some silt, trace		30		
		30.5	17	clay, gravel, coarse sand (SM)				
	10D	34.0	8-13	Gray fine to coarse sand, some gravel, silt,		35		
		35.5	18	trace clay (SM)				
					P2			
	11D	39.0	10-13	Gray fine to coarse sand, some silt, trace clay,		40		
		40.5	16	gravel (SM)				
	12D	44.0	7-14	Gray brown medium to fine sand, some silt,		45		
		45.5	18	trace clay (SM)				
	13D	49.0	5-8	Gray silty fine sand, trace clay, clayey fine sand		50		
		50.5	14	pockets (SM)				

MUESER RUTLEDGE CONSULTING ENGINEERS

BORING LOG

BORING NO. M-1P
SHEET 2 OF 4
FILE NO. 9976A
SURFACE ELEV. 190.4
RES. ENGR. BILL HOBSON

PROJECT: DC USA
LOCATION: WASHINGTON, D.C.

DAILY PROGRESS	SAMPLE NO.	SAMPLE DEPTH	SAMPLE BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	CASING BLOWS (USED / REVERT)	REMARKS
							USED / REVERT	
10-14-03 Tuesday					P2			
	14D	54.0	4-7	Top: Do 13D (SM)		55		
		55.5	12	Bot: Stiff gray silty clay, trace fine sand (CL)				WC=37
					P1			
	15D	58.5	5-8	Stiff gray clay, trace fine sand (CH)				WC=37
10:40		60.0	13			60		End of boring at 60'.
						65		WC=Water Content In percent of dry weight.
						70		
						75		
						80		
						85		
						90		
						95		
						100		

MRCE Form BL-1

BORING NO. M-1P